

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:33 PM

Wednesday, March 17

Live Pre Event: Women's Panel - Moving Innovation Forward

Session Code WP100

Room 1 Session 12:30 p.m.

Time	Paper No.	Title
12:15 p.m.	ORAL ONLY	Meet and Greet with Fellow Attendees
		..
12:30 p.m.	ORAL ONLY	Welcome and Opening Remarks Terry Barclay, Inforum
12:35 p.m.	Panel	Roundtable Discussion - Moving Innovation Forward With the evolution of automation, MaaS, connectivity, smart Infrastructure and vehicle electrification based upon the economic climate, managers within the mobility industry are having to look at new development and implementation strategies for innovations. Hear this group of expert panelist talk about the impact of this new normal on leading teams to create innovative products based upon consumer demand and a need for safer more efficient vehicles.Sponsored by Learn more about the Roundtable Participants Moderators - Kristin Slanina, TrueCar Inc. Panelists - Jacquelyn Birdsall, Toyota; Karen Folger, VP Automations, Bosch USA; Raelyn Holmes, R.L. Holmes Consulting LLC; Desi Ujkashevic, Director of Engineering, Ford Motor Company;
1:40 p.m.	ORAL ONLY	Closing Remarks Carla Bailo, Center For Automotive Research

Tuesday, March 30

SAE Sits Down with DTE Energy and talks EVs

Session Code WC100

Room TBD Session 11:30 a.m.

With recent OEM strategy announcements and the CA 2035 mandate, EVs are posed to make a critical market impact over the next few years, but how ready is the grid? Come hear Sean Gouda, Manager, electrification talk about how DTE Energy (a Detroit-based diversified energy company) is getting prepared to handle the influx of EVs including fleet and ground vehicle and take this opportunity to get your question answered.Sean will also be a part of the WCX Leadership Summit roundtable discussion on EVs – Customer Choice or Forced by Legislation.Learn more about the SpeakerRegister Now

Presenters - Sean Gouda, DTE Energy

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:34 PM

Monday, April 12

Session 1 – Electrification (including mild hybrids)

Session Code HEE1

Room TBD Session 8:00 a.m.

Light duty vehicles are rapidly becoming electrified. This means that the traditional all-mechanical powertrain will be complemented with more and more electric components. This range from mild hybrid to full hybrids, plug-in hybrids and eventually a fully electric powertrain. Most future projections estimate that most LDV will have a combustion engine and thus this should be optimized for fuel efficiency and ultra-low emissions. This session focus on the benefits electrification can give for engine design with smaller operating range required by the engine and what can be achieved for both gasoline and diesel technology. It includes reports from the SIP project in Japan that reached 50% brake thermal efficiency for both engine types.

Moderators - Graham Conway, Southwest Research Institute

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	Opening Remarks Graham Conway, Southwest Research Institute
8:15 a.m.	ORAL ONLY	Possibility of Well to Wheel CO2 Zero with High Efficiency ICE "The realization of a decarbonized society is now a common goal around the world, and its realization is urgently needed. It is a common understanding that carbon-free in automobiles is a keyword to survive in the future. Therefore, electric vehicles will become mainstream in the future, and it is said that ""the internal combustion engine has no future."" In order for the internal combustion engine to survive toward 2050, the key is whether carbon-free can be achieved. Shuji Kimura, NISSAN MOTOR COLTD
8:45 a.m.	ORAL ONLY	Challenge for Super Lean Burn Combustion Technology for SI Engine to Achieve 50% Thermal Efficiency The Cabinet Office in Japan organized a grave project as Innovative Combustion Technology in the Cross-ministerial Strategic Innovation Promotion Program (SIP) for 5 years from fiscal year 2014 to fiscal year 2018. The presentation introduces Research and Development on the Super Lean Burn Concept for Gasoline Engines by the Gasoline Combustion Team with 28 universities. To achieve 50% thermal efficiency of gasoline SI engines, the lean burn operation is one of valid techniques to increase thermal efficiency by reducing heat losses with low temperature combustion. Super lean mixture of more than 2.0 excess air ratio is applied a single cylinder SIP prototype engine in order to reduce the combustion temperature less than 2,000K and to decrease heat losses as well as NOx emission. However, the prolongation of combustion duration due to decrease in laminar flame velocity, and the increase in cycle-to-cycle combustion fluctuation and/or quenching become barriers to realize the super lean-burn engine. So, the prototype engine is designed to generate a high intensity tumbling flow of 25m/s, and combustion acceleration effects by turbulence generated by tumble collapse are employed. The engine has a spark ignition system supplying 10 times longer discharge duration and higher electric discharge energy than that of conventional engine to realize the stable cycle-to-cycle ignition and combustion.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:34 PM

Time	Paper No.	Title
9:15 a.m.	ORAL ONLY	<p>Norimasa Iida, Keio Univ.</p> <p>Creating a Sustainable Future for the ICE Through Electrification</p> <p>As pressure grows to abandon ICE technology for “zero carbon” solutions, the need to understand the challenges facing the ICE and potential solutions to those challenges is very high. SwRI continues to examine the potential for improving the ICE and, given the challenges of the future, investigates the potential that an even closer symbiosis between the ICE and the electric motor has to decrease CO2 emissions while keeping the personal automobile an affordable solution for the masses. By examining the potential for improving ICE efficiency by using an electric motor to reduce constraints on the engine, we show that combining the motor and engine in a true hybrid system has enormous potential for reducing CO2 emissions.</p> <p>Terrence Alger, Southwest Research Institute</p>

Monday, April 12

Session 2 – Heavy-Duty

Session Code HEE2

Room TBD

Session 10:00 a.m.

Heavy-duty engines are rapidly evolving to meet changing customer requirements as well as new greenhouse gas and pollutant emissions regulations. To meet these needs, manufacturers are undertaking significant efforts to rethink many aspects of the engine and its surrounding systems. This session focuses on emerging heavy-duty engine trends and technologies that are intended to increase capability, fuel efficiency and/or reduce emissions. Topics for this session include the reduction of parasitic and combustion heat losses, in-cylinder combustion phenomena, emissions formation, advanced air-path control, aftertreatment devices, waste-heat recovery systems, and integration into electrified powertrains.

Moderators - Bengt Johansson, Chalmers University

Time	Paper No.	Title
------	-----------	-------

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:35 PM

Time	Paper No.	Title
10:00 a.m.	ORAL ONLY	<p>How to Reduce Heat Loss from ICEs for Further Improvement in Thermal Efficiency?</p> <p>It becomes much more important to reduce greenhouse gas emissions from the prime mover of automotive vehicles. However, it is not sufficient to achieve the future anticipating target only with the reduction of mechanical loss by the internal combustion engines' (ICEs) design optimizations, because of their limited contribution to the thermal efficiency. Heat loss reduction is certainly the most essential measure to increase in energy resource which is transformed into the growth in indicated thermal efficiency (ITE). Nevertheless, exhaust heat loss should not be reduced further to maintain the current efficiency of both turbocharger and exhaust aftertreatment system, which are indispensable for not only the modern diesel engines but the diluted gasoline engines. Therefore, the reduction of cooling loss from the in-cylinder wall is currently attracting attention. Thermal barrier coating (TBC) technique has been expected as one of the measures to reduce cooling loss in the cylinder since 1980s. However, the insulating effects of TBC for ICEs have been still very limited even if the thermal conductivity of the TBC materials is very low. This presentation reviews the published papers on TBCs and discusses about the future direction of the investigation into complicated heat loss mechanism from the cylinder.</p> <p>Noboru Uchida, New Ace Inst. Co., Ltd.</p>
10:30 a.m.	ORAL ONLY	<p>Experimental Evaluation of Novel Thermal Barrier Coatings in a LD Diesel Engine</p> <p>The subject of this presentation is improvement of the thermal properties of plasma sprayed thermal barrier coatings (TBC) for internal combustion engines. Four measures for improvement were evaluated: i) modification of the coating's microstructure by using a novel suspension plasma spraying method, ii) application of gadolinium-zirconate, a novel ceramic material with low thermal conductivity, iii) polishing of the coating to achieve low surface roughness, and iv) sealing of the porous coating surface with a polysilazane. Six coating variants with different combinations of the selected measures were applied on the piston crown and evaluated in a single cylinder light duty diesel engine. Results will be shown for indicated efficiency, heat losses and exhaust losses, as well as engine out emissions. The new TBC microstructure from suspension plasma spraying in combination with the use of gadolinium-zirconate showed promising results with respect to indicated efficiency and heat loss reduction. The presence of the evaluated TBCs also has a noteworthy adverse effect on the apparent rate of heat release, for which different explanations will be discussed.</p> <p>Joop Somhorst, Volvo Global Truck Tech. Powertrain Eng.</p>

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:35 PM

Time	Paper No.	Title
11:00 a.m.	ORAL ONLY	Prof. Bengt Johansson, Title TBD

The internal combustion engine has been used for more than 100 years and is the dominating choice for transport applications. The efficiency of the engine is dictated by the thermodynamical processes that is used to convert the heat produced by combustion to mechanical work on the piston. On top of that we have losses during the gas exchange process and mechanical friction to consider. This presentation will start with showing that the engine efficiency could reach 80% if we can get a best possible thermodynamic cycle in place. The practical limits will then be discussed and the trade-off between thermodynamic and mechanical efficiency highlighted. The temperature of the charge before combustion will be shown to be important with high efficiency thermodynamics and the implications on the possible combustion modes will be discussed. Finally, a concept showing a potential of 60% brake efficiency is shown.

Bengt Johansson, Chalmers University

Monday, April 12

Session 3 – Combustion Prechambers

Session Code HEE3

Room TBD Session 11:45 a.m.

Igniting fuel and air mixtures in prechambers, which subsequently ignites the main chamber with hot or reactive gas jets, can enable higher efficiency by decreasing the combustion duration and by extending the dilution limit for both fuel-lean and stoichiometric combustion. However, prechamber igniters are face challenges, such as using the same prechamber design at all speed and load operating conditions and increased heat losses at light load operating conditions. This session will provide details about benefits and challenges of some prechamber igniter applications in light-duty engine applications, as well as an update of a prechamber igniter project focused on using natural gas in heavy-duty applications.

Moderators - Robert Prucka, Clemson Univ.

Time	Paper No.	Title
------	-----------	-------

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:35 PM

Time	Paper No.	Title
11:45 a.m.	ORAL ONLY	<p>Pre-Chamber Combustion System Development for High Efficiency SI Engines</p> <p>Gasoline thermal engines are expected to remain an essential component for current and future hybrid powertrain developments. To comply with the objective of mobility footprint reduction on the global warming, it becomes mandatory to strongly increase the efficiency of thermal engines. One of the main levers to increase engine efficiency is the use of highly diluted combustion (air or EGR). On a standard gasoline combustion system, such strategy leads to combustion issues such as low combustion speed, Cycle to Cycle Variability (CCV) and incomplete combustion. Turbulent Jet Ignition (TJI) using a pre-chamber ignition system is a promising solution to overcome those limitations. Indeed this device reduces the combustion duration thanks to a volume ignition in the main combustion chamber and can allow to better control the mixture properties at the ignition location independently from global dilution ratio. Consequently, as a key component of the combustion system, a specific attention should be paid on the pre-chamber optimization.</p> <p>To achieve such pre-chamber optimization, a deep understanding of the complex phenomena involved in TJI as well as validated numerical tools are required. The present paper aims at providing such an understanding using both numerical simulations and experimental investigations. First, considering a passive pre-chamber, a dedicated experimental methodology was deployed on an optical engine providing a characterization of the flame jets depending on the pre-chamber geometry. Then, the numerical 3D CFD tool was setup to model these experimental configurations. The computations brought additional information on the different mechanisms taking place in the pre-chamber during the compression up to the turbulent flame jet ejection. Experiments were then carried out on a single cylinder SI engine, replacing the conventional spark plug by a passive pre-chamber. The contribution of this ignition device to the improvements of engine efficiency was confirmed and the limits in terms of maximum achievable dilution rate were highlighted.</p> <p>Consecutive to the passive pre-chamber study described above, a second optimization campaign was performed to assess numerically and experimentally the potential of an active pre-chamber device. Higher dilution rate around 50% were achieved. A four steps combustion process has been highlighted: combustion in the pre-chamber, flame ejection, kernels propagation, ending by a controlled auto-ignition without knock, enabling very fast and stable combustion.</p> <p>All the different collected information highlight that the pre-chamber is one of the most promising solution to promote highly diluted combustion allowing to achieve high efficiency spark ignited engine.</p>

Florence Duffour, IFP Energies Nouvelles

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:35 PM

Time	Paper No.	Title
12:15 p.m.	ORAL ONLY	<p>Modeling and Testing Pre-Chamber Ignition for Heavy-Duty Natural Gas Engines</p> <p>This presentation will cover the research effort carried out at Argonne National Laboratory to study pre-chamber (PC) spark-ignition (SI) combustion in a natural gas (NG) engine for heavy-duty (HD) applications. The main goal of this study was to characterize the lean combustion limit of the NG HD engine, for both unfueled PC and fueled-PC configurations. Engine testing was used to assess the combustion lean limit and validate a computational fluid dynamics (CFD) model of the engine. The validated CFD model was then leveraged to shed light into the combustion process in both the pre-chamber and the main chamber. The analysis of different modeling approaches highlights the change of combustion regime between pre-chamber and main chamber for the two configurations evaluated.</p> <p>Riccardo Scarcelli, Argonne National Laboratory</p>
12:45 p.m.	ORAL ONLY	<p>Optimizing Dilute Jet Ignition Engines: Efficiency Opportunities and Application Challenges</p> <p>The ceaseless requirement to increase powertrain efficiency in the transportation sector has led to an increasing strain on ignition systems in spark ignited (SI) engines. Higher charge density and especially reduced charge ignitability have driven research into advanced ignition systems. One such technology with a wealth of research history is the pre-chamber jet igniter. The MAHLE Jet Ignition® (MJI) pre-chamber concept has demonstrated the ability to significantly reduce combustion duration and to enable high levels of homogeneous charge dilution. While jet ignition produces efficiency benefits across a range of dilution methods and levels, the mechanisms of optimization can vary across this range. The efficiency potential of various jet ignition engine applications are described, as are the efficiency contributions of key additive technologies. The challenges of both applying jet ignition and implementing highly dilute combustion are presented and solutions are proposed.</p> <p>Mike Bunce, Mahle Powertrain, Ltd.</p>

Monday, April 12

Session 4 – Light-duty Emissions and NOx Controls

Session Code HEE4

Room TBD

Session 1:30 p.m.

Engines face the challenge of meeting increasingly stringent criteria emission regulations to improve air quality while simultaneously increasing vehicle efficiency. Technologies that are beneficial in improving fuel economy frequently make the emission controls challenges more difficult through reducing the exhaust temperature, requiring a lean NOx emission controls strategy, and through more frequent engine starts. This session will provide an overview of the state of these challenges and the state of emissions technologies to comply with future criteria emission regulations.

Moderators - James Szybist, Oak Ridge National Laboratory

Time	Paper No.	Title
------	-----------	-------

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:36 PM

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	<p>SwRI Low NOx Update</p> <p>SwRI is supporting CARB and EPA activities toward NOx emissions reductions for future on- and off-road vehicles. This presentation provides an overview of the current activities, including summaries of SwRI consortia efforts to develop longer term R&D activities in high efficiency low emissions transportation solutions.</p> <p>Charles E. Roberts Jr., Southwest Research Institute</p>
2:00 p.m.	ORAL ONLY	<p>How Do ZEV Emissions Stack-up Against Super-Clean Gasoline and Diesel Engines?</p> <p>" Zero Emission Vehicles (ZEVs) are touted for their superior greenhouse gas (GHG) and criteria pollutants (particulate matter (PM) and nitrogen oxides (NOx)) reduction relative to gasoline and diesel. Using U.S. EPA certification emission values comparisons and vehicles' engine air and ambient air pollution consumption, and given California's ambient air quality and available sources of electricity in the U.S., our analysis finds that ZEVs do not necessarily outperform the cleanest gasoline and diesel vehicles on criteria pollutants. Also, the cleanest gasoline vehicles were found to be net-negative NOx emitters when operated in poor air quality ambient environments on the highway cycle. Several diesel vehicles were also found to be net-negative PM emitters in poor air quality environments.</p> <p>Gary Yowell, Stillwater Associates</p>
2:30 p.m.	ORAL ONLY	<p>Passive SCR System for Controlling Emissions from Lean Gasoline Engines</p> <p>Lean gasoline engines offer greater fuel economy than the stoichiometric gasoline engines that currently dominate the light-duty vehicle fleet in the U.S. The control of NOx emissions from lean gasoline engines, however, is challenging and present a major technical barrier limiting introduction of these fuel-efficient engines into the market. While a three-way catalyst (TWC) is very effective in controlling NOx emissions under stoichiometric exhaust conditions, it is unable to reduce NOx in the presence of excess oxygen. A passive SCR concept is a potential strategy for adapting TWC for NOx control from lean gasoline engines. It makes use of a TWC to generate NH3 under slightly rich conditions, which is then stored on a downstream selective catalytic reduction (SCR) catalyst and is used to reduce NOx during periods of lean engine operation. Control of the overall passive SCR process can be more challenging than the urea-based approach (currently implemented on diesel engines) because it relies on fuel-rich engine operation to provide the required NH3 inventory, and must be implemented in the context of transient engine operation. This presentation discusses the challenges and opportunities of the passive SCR system to control emissions from lean gasoline engines and improving the fuel savings potential of lean gasoline engines.</p> <p>Vitaly Prikhodko, Oak Ridge National Laboratory</p>

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:36 PM

Tuesday, April 13

Live: ADAS/AVS - Fundamentals

Session Code AE191

Room 1 Session 9:00 a.m.

This session focuses on 5 keynotes that address the foundational information for ADAS implementation followed by a brief QA&. Topics include: sensors, analyzing the Impact of CACC, Platooning, Driver Health Monitoring, lessons learned from Aviation Safety and an overview of SAE's STPA Recommended Practices

Organizers - Sue Bai, Honda R&D Americas Inc.; Joseph D'Ambrosio, General Motors LLC; Phares Noel, Diversified Engineering Concepts LLC

Chairperson - Sue Bai, Honda R&D Americas Inc.; Phares Noel, Diversified Engineering Concepts LLC

Time	Paper No.	Title
9:00 a.m.	2021-01-0068	Teammate Advanced Drive System Using Automated Driving Technology Tomoya Kawasaki, Toyota Motor Corporation; Derek Caveney, Toyota Motor North America Inc.; Masayuki Katoh, Woven Core Inc.; Daisuke Akaho, Yosuke Takashiro, Toyota Motor Corporation; Kenji Tomiita, J-QuAD DYNAMICS Inc.
9:15 a.m.	2021-01-0069	Using Demanded Power and RDE Aggressiveness Metrics to Analyze the Impact of CACC Aggressiveness on Heavy Duty Platooning Power Consumption Jan Siefert, Evan Stegner, Philip Snitzer, Jacob Ward, David M. Bevly, Mark Hoffman, Auburn University; Andrew Kotz, National Renewable Energy Laboratory
9:30 a.m.	2021-01-0103	A Method of Filter Implementation Using Heterogeneous Computing System for Driver Health Monitoring Giribabu Sinnapolu, Shadi Alawneh, Oakland University
9:45 a.m.	2021-01-0074	Adopting Aviation Safety Knowledge into the Discussions of Safe Implementation of Connected and Autonomous Road Vehicles Umar Zakir Abdul Hamid, Mohit Mehndiratta, Erkan Adali, Sensible 4 Oy
10:00 a.m.	ORAL ONLY	SAE STPA Recommended Practices Overview Mark Vernacchia, General Motors LLC
10:15 a.m.	ORAL ONLY	Q & A with Presenters

...

Tuesday, April 13

Live: Next Generation Powertrain Development under Electrification, Autonomy, and Connectivity - Panel Discussion

Session Code PFL191

Room 1 Session 11:00 a.m.

Meeting aggressive CO2 emissions requirements in a sustainable way will require synergistic application of many technologies that are practical in the near-term. An expert panel will discuss efficiency improvement potential for powertrains developed in synergy with electrification and carbon-neutral fuels in an increasingly connected and automated mobility ecosystem. Learn more about the Panel

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:36 PM

Participants

Organizers - Scott Hotz, Southwest Research Institute

Moderators - Terrence Alger, Southwest Research Institute

Panelists - Christopher Atkinson, Ohio State University; Zissis C. Samaras, Aristotle University of Thessaloniki; Peter Kelly Senecal, Convergent Science Inc.; John Van Gilder, General Motors LLC;

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

Live: Leadership Summit: What will it take to get to SAE Level 3 and 4?

Session Code LS100

Room 1 Session 1:15 p.m.

When following the framework of SAE's J3016 Standard there is more than technology to resolve when trying to get to SAE level 3 or 4. Issues of business model, infrastructure, regulations, partnerships and ownership model all need to be considered in addition to technology. Panelists will address these issues as well as market penetration, easing customers into accepting levels and does level 4 need to be perfect in our current culture. Come hear these technology and business of technology discussions and their effect on current and future state of the OEM strategies and deployment as industry prepares for the next 3-5 vehicles development cycles. Sponsored by Learn more about the Panel Participants

Moderators - Marc LeDuc, SAE International

Panelists - Nat Beuse, VP of Safety, Aurora Innovation; Hilary Cain, VP, Technology, Innovation, & Mobility Policy, Alliance for Automotive Innovation; Robert Dingli, Plus; Angela Du, SoftBank Corp.; Kelly Funkhouser, Head of HMI UX ADAS CaVs, Consumer Reports; Maarten Sierhuis, Chief Technology Director, Nissan Alliance Innovation Lab - Silicon Valley;

Planned by WCX Technical Advisory Group (TAG) / Ground Vehicle Advisory Group

Tuesday, April 13

Live: Leadership Summit: Is Data and the Connected Vehicle the Holy Grail or a Panacea?

Session Code LS700

Room 1 Session 2:45 p.m.

In the near future, all vehicles will be connected through a high-speed, low latency connection to smart and powerful infrastructure that has the promise and potential to radically change the way we think about infrastructure and the role it plays in the collection, analysis and delivery of data to and from the vehicle. Everything from mapping to sensors to privacy and cybersecurity has the potential to be enhanced and augmented by an expansion of the vehicle architecture to include smart and connected infrastructure. This roundtable will challenge our thinking on where the edge of the vehicle architecture ends, and infrastructure begins. Learn more about the Roundtable Participants

Moderators - Jack Weast, Senior Principal Engineer & Vice President, Intel

Panelists - Çetin Meriçli, Founder and CEO, Locomotion; Mahsa Nakhjiri, HARMAN Connected Services; Dean Phillips, Worldwide Technical Leader for Automotive, Amazon Web Services; Faisal Saleem, ITS Branch Manager, Maricopa County Dept. of Transportation; Hank Skorny, President, Aptiv Connected Services;

Planned by WCX Technical Advisory Group (TAG) / Ground Vehicle Advisory Group

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:36 PM

Tuesday, April 13

Live: Leadership Summit: Evolution of the Vehicle Architecture

Session Code LS600

Room 1 Session 4:15 p.m.

Domain consolidation has long been a concept just around the corner, but the industry is finally reaching an inflection point that requires new thinking about what the E/E architecture of a vehicle should look like for the future. Beyond domain consolidation, entirely new smart vehicle architectures are being conceived that upend the traditional separation between compute, data and I/O. Fortunately, technologies from other industries, notably the Information Technology industry, bring proven technologies that are getting a fresh look in automotive. This roundtable will explore the speed and scope at which these changes will happen, and what the implications are for future vehicle architectures. Sponsored by Learn more about the Roundtable Participants

Moderators - Glen De Vos, Aptiv

Panelists - JF Bastien, Software Architect, Woven Planet Holdings; Markus Lipinsky, Aptiv; Curt Moore, Texas Instruments Inc.; Michael E. Murzyn, DENSO International America Inc.; Gerd Roesel, Head of Innovation and E-Products, Vitesco Technologies; Douglas B. Thornburg, Manager, Research and Advanced Electrical Architecture, Ford Motor Company (Retired);

Planned by WCX Technical Advisory Group (TAG) / Ground Vehicle Advisory Group

Tuesday, April 13

Live: Toward Net-Zero Carbon Fuels for Transportation - Panel Discussion

Session Code PFL391

Room 10 Session 9:00 a.m.

The panel will discuss the potential opportunities for Net-Zero Carbon Fuels for Transportation which include paths for GHG reduction utilizing existing fuels and potential for other renewable fuels (both petroleum and non-petroleum). The challenges for bringing these fuels forward will be highlighted. Learn more about the Panel Participants

Organizers - Michelle Kidder, Oak Ridge National Laboratory; Toby Rockstroh, Argonne National Laboratory

Moderators - Elana Chapman, General Motors LLC; Vincent Costanzo, Aramco Research Center; Michelle Kidder, Oak Ridge National Laboratory; Toby Rockstroh, Argonne National Laboratory; Andre Swarts, Southwest Research Institute

Panelists - Johnathan Holladay, Pacific Northwest National Laboratory; Andre Casal Kulzer, Porsche AG; Paul Male, Sasol Group Technology; KC Tran, MIT Plasma Science and Fusion Center; Wolfgang Warnecke, Shell;

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

Live: Fatigue Analysis of Lightweight Materials, Structural Joint, and Additive Manufacturing Metals

Session Code M292

Room 10 Session 11:00 a.m.

Lightweight materials and additive manufacturing metals are becoming more and more important with the technology's transition towards automotive industrial utilization. Three talks will provide an overview of the most recent forefront development in the fatigue field - The state-of-art technology in durability designs with the emerging manufacturing techniques and lightweight materials. Learn more about the Moderator

Organizers - Yung-Li Lee, FCA US LLC; Gavin Song, Ford Motor Company

Moderators - Gavin Song, Ford Motor Company

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:37 PM

Time	Paper No.	Title
11:00 a.m.	ORAL ONLY	<p>Defect-Based Fatigue Life Assessment of Castings and Additive Manufactured Metals</p> <p>Presence of defects such as voids and porosity are common in some manufacturing processes such as castings and additive manufacturing. It is well known that fatigue performance of metals produced by these processes heavily depends on defect characteristics such as size, shape, and location. In this talk a fracture mechanics-based framework is presented for fatigue life assessment of castings and additive manufactured metals based on their defect content and characteristics. High pressure die cast aluminum and laser powder bed fusion additive manufactured Ti alloy and stainless steel are used as illustrative examples. Experimental fatigue data from these metals and processes will be used to demonstrate the life assessment methodology. The fatigue data were generated under both uniaxial and multiaxial stress states and constant amplitude as well as variable amplitude loading conditions. The goal is to develop a more robust life prediction approach for such metals and processes to facilitate light weighting and design optimization.</p> <p>Ali Fatemi, University of Memphis</p>
11:30 a.m.	ORAL ONLY	<p>Recent Developments in CAE Fatigue Evaluation Method for Joints in Multi-materials Lightweight Structures</p> <p>Over the recent years, multi-material structures have received an increasing attention for achieving the most effective lightweighting. In addition to manufacturability, particularly in dissimilar materials jointability, there existing some significant challenges in ensuring structural durability which is dominated by various forms of connections or joints enabled by advanced joining processes. In this presentation, some of the recent developments in robust joint modeling method and joint fatigue capacity characterization will be presented in a structural context. Some specific topics include:</p> <ul style="list-style-type: none">• Fit-for-purpose based joint quality criteria for qualifying dissimilar materials joints• Mesh-insensitive traction stress method as a tool for optimizing dissimilar materials joint design for jointability and joint performance• A unified structural strain parameter for durability design of multi-materials structures. <p>Pingsha Dong, University of Michigan</p>

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:37 PM

Time	Paper No.	Title
12:00 p.m.	ORAL ONLY	<p>Modeling Fatigue of Notched ZEK100 Magnesium Sheet:</p> <p>Cyclic behaviour of materials like steel and aluminum is generally modeled by using Ramberg-Osgood equation (n' and k') assuming Masing-type behaviour with a factor of two. Due to their HCP crystal structure and limited slip systems at room temperature, magnesium need additional deformation mechanism, known as twinning, to accommodate plasticity. This results in asymmetric hysteresis (distinct upward and downward reversals) in cyclic loading. For their fatigue analysis, a replacement for Ramberg-Osgood equation is therefore required. Furthermore, applicability of methods for elasticplastic stress and strain corrections at the notch root such as Neuber's rules that are well established and incorporated in fatigue software (n-Code/MS-CFatigue) has not yet been examined for asymmetric material. This talk presents extensive characterization and modeling research conducted in the author's research lab on magnesium sheet materials. ZEK100 is a promising magnesium alloy that possess acceptable ductility and formability as a candidate for use in body panels. First, cyclic behavior of ZEK100 is characterised at low and high strain and stress amplitudes. Following the method proposed by Dallmeier et al. (IJF 80, 2015, pp. 306), a procedure for modeling the cyclic stress-strain curve, and hysteresis at different strain amplitudes is presented. It is shown that all the required parameters for such modeling may be obtained from a single strain controlled tests at 2%. The model is then verified by comparing its predictions with experimentally obtained hysteresis at a wide range of strain amplitudes. Elastic-plastic strain field in the vicinity of notch was then measured experimentally using the digital image correlation (DIC) technique in ZEK100 samples with a central circular notch. The merits of Neuber's and Glinka's rules in correcting elastic stress and strain at the notch root in upward and downward reversals were examined for four different nominal stress levels: 50%, 60%, 70%, and 80% of compressive yield strength equivalent load. It is shown that plane strain Neuber's rule, and Glinka's rule with plastic redistribution correction estimations are in good agreement with the experimental measurements. A Matlab Toolbox is then developed for design life calculations of notched asymmetric materials. This Toolbox combines the asymmetric hysteresis modeling with load-time history, rain flow cycle counting, plane stress and plane strain Neuber's and Glinka's rules with and without plastic redistribution corrections, and critical plane SWT and Jahed-Varvani energy-based life models corrected for asymmetric materials in order to perform fatigue assessment of a notched component. Examples of the application of this Toolbox for life estimation in different load-histories of a notched ZEK100 sample is demonstrated and compared with experimental results.</p>

Hamid Jahed Motlagh, University of Waterloo

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:37 PM

Tuesday, April 13

Live: 2 Cyber Panel Discussions - How Secure is Secure /Challenges of Applying ISO/SAE 21434 in the Real World

Session Code AE391

Room 2 Session 9:00 a.m.

This session features 2 panel discussions of the current state of cyber security, the associated research/standards work and a look at the threat landscape w/ potential solutions. The first will focus on the lessons learned on application of ISO/SAE 21434. The second will focus on one of the critical discussions that all OEMs are having "How Secure is Secure Enough?" Audience member participation is critical in the Q&A portion of each panel so come prepared with your questions.

Organizers - Fabian Koark, Invenity Inc.; John Krzeszewski, Eaton; Christopher Lupini, Aptiv; Mark Pope, Mark Zachos, DG Technologies

Time	Paper No.	Title
------	-----------	-------

9:00 a.m.	Panel	Panel Discussion: ISO/SAE 21434
-----------	-------	---------------------------------

Now that the FDIS is imminent, and assuming it passes ballot, the final release a few months later; this panel will discuss what changed since DIS, how consensus was achieved, the need to build a cybersecurity management system in your company, performing risk assessments in regards to the road user and potential future enhancements. Learn more about the Panel Participants

Moderators - John Krzeszewski, Eaton

Panelists - Lisa Boran, Ford Motor Company; Suzanne Lightman, National Institute Of Standards & Techno; Bill Mazzara, ISO/SAE 21434 SAE Expert; Brian Murray, Luminar Technologies;

9:45 a.m.	Panel	Panel Discussion: How Secure is Secure?
-----------	-------	---

The vehicle needs to be secured from an ever-changing landscape. This is a major challenge. One of the decisions is: "How Secure is Secure Enough?" when designing for mitigations for potential threats. An OEM could take a conservative approach, say making the vehicle a military grade vehicle. But, does this "conservatism" put the OEM at a price disadvantage when compared to another OEM that chooses a less conservative approach. This panel will discuss the trade-offs of risk, money, customer acceptance, and "How Secure is Secure Enough?". Learn more about the Panel Participants

Moderators - Gloria D'Anna, Ford Motor Company

Panelists - Shmuel Bar, IntuView; Karl Heimer, Heimer & Associates; Mert D. Pesé, University of Michigan; Andre Weimerskirch, Lear Corporation;

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:37 PM

Tuesday, April 13

Live: Hybrid and Electric Vehicle e-fluids – Industry Trends and Future Challenges - Panel Discussion

Session Code PFL392

Room 2 Session 11:00 a.m.

Growth in hybrid vehicle (HV) and battery electric vehicle (BEV) powertrain designs are pushing traditional lubricants to reconsider design requirements of vehicle fluids. This panel will look at current and future trends in e-fluids from various perspectives of the industry. Learn more about the Panel Participants

Organizers - Vickey Kalaskar, Southwest Research Institute; Timothy Newcomb, Lubrizol Corp.; Ati Tolou, FEV North America Inc.

Moderators - Jason Andersen, PACCAR Inc.

Panelists - Alistair Drury, BP; Arup Gangopadhyay, Ford Motor Company; Timothy Newcomb, Lubrizol Corp.; Andrew Ritchie, Infineum International, Ltd.;

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

Live: Occupant Protection: Biomechanics - Virtual Vehicle Development and Certification: Benefits and challenges to transportation safety in the future

Session Code SS596

Room 3 Session 9:00 a.m.

Current vehicle certification processes cannot accommodate all desired or required crash configurations envisioned for the ADS world. Advances in computational modeling capabilities suggest that virtual development, assessment, and certification will help address this issue. While CAE will be a necessary component of future safety, it will not provide a perfect solution. This panel will discuss the advantages and shortcomings associated with moving toward virtual certification: The current state of the science, what needs to be achieved in the future, how to meet those needs, and what can be reasonably expected along this forward path. Learn more about the Panel Participants

Organizers - Devon Albert, Virginia Tech.; Kerry Danelson, Wake Forest Univ. School of Medicine; Jacob Fisher, Exponent Inc.; Warren Hardy, Virginia Tech.; Elizabeth McNeil, Walter Reed Army Inst. Res.

Moderators - Suzanne Tylko, Transport Canada

Panelists - Saeed Barbat, Ford Motor Company; Karin Brodin, Lightness by Design AB; Matthew Craig, NHTSA; Scott Gayzik, Elemance LLC; Shigeki Hayashi, Toyota Motor Corp.; Jingwen Hu, Univ. of Michigan-Ann Arbor; Corina Klug, Graz University of Technology;

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

Live: Technical Expert Panel Discussion: Next Generation of Prognostics Development

Session Code AE392

Room 3 Session 11:00 a.m.

Prognostics offers solutions to efficiently diagnose and predict anomalies in vehicles. Today more than ever by utilizing "big data" techniques, prognostics is evolving to prevent industry wide recalls, warranty, and maintenance costs. The expert panel provides an overview of the evolution of big data techniques to promote prognostic development and shows some case studies for the next generation of prognostics development. Learn more about the Panel Participants

Organizers - Mark Pope, DG Technologies

Chairperson - Mark Monohon

Moderators - Mark Pope, DG Technologies

Panelists - Andreas Hege, RA Consulting GMBH; Steve Holland, VHM Innovations LLC; Troy Schilling, Robert

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:37 PM

Bosch LLC; Evandro Silva, Volvo Group; Peter Subke, Softing AE;

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

Live: Vehicle Aerodynamics: Fundamental Aero + Experimental Techniques + Wheel & Tire Aerodynamics

Session Code SS891

Room 4 Session 9:00 a.m.

Organizers of the Aerodynamics committee have invited a technical keynote and selected two experts selected based on their technical manuscript merit to present their work for this session. Each presentation includes Q&A. Please take this opportunity to ask your questions of these subject matter experts.

Organizers - Timo Kuthada, Institut Fuer Krafftahwesen; Kurt Zielinski, Honda R & D Americas Inc.

Chairperson - Timo Kuthada, Institut Fuer Krafftahwesen

Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	Keynote Presentation: Lessons Learned from 20+ years Jochen Wiedemann, FKFS
9:45 a.m.	2021-01-0948	Aerodynamic Simulation of a Standalone Round and Deforming Treaded Tire Mehdi Mortazawy, Richard Shock, Dalon Work, Justin Sacco, James Hoch, Dassault Systemes Simulia Corp.
10:05 a.m.	2021-01-0958	On the Aerodynamics of the Notchback Open Cooling Drive: A Detailed Investigation of Wind Tunnel Data for Improved Correlation and Reference Burkhard Hupertz, Karel Chalupa, Lothar Krueger, Kevin Howard, Hans-Dieter Glueck, Ford Motor Company; Neil Lewington, Ford Motor Company of Australia, Ltd.; Jin-Hyuck Chang, Yong-su Shin, Hyundai Motor Company

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

Tuesday, April 13

Live: ADAS/AVS - Simulation and Testing for ADAS and Connected Automated Vehicle (CAV) Systems

Session Code AE194

Room 4 Session 11:00 a.m.

The session will feature 3 keynote presentations from the session authors, followed by a 30 minute Q&A session between the panel and the audience. Topics include simulation and testing methodologies and processes for ADAS and connected automated vehicle (CAV) systems, automatic emergency braking and adaptive cruise control. The challenges of implementation, and evaluation of enhanced ADAS systems and higher-level CAV systems (L3 & above).

Organizers - Jace Allen, dSPACE Inc.; Joseph D'Ambrosio, General Motors LLC; C. J. Reddy, Altair Engineering

Chairperson - Jace Allen, dSPACE Inc.; Joseph D'Ambrosio, General Motors LLC

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:37 PM

Time	Paper No.	Title
11:00 a.m.	2021-01-0112	Microsimulation-Based Evaluation of an Eco-Approach Strategy for Automated Vehicles Using Vehicle-in-the-Loop Miriam Di Russo, Simeon Iliev, Kevin Stutenberg, Trevor Crain, Argonne National Laboratory
11:15 a.m.	2021-01-0115	Assessment of Novel V2X Applications Using a Simulation Platform Samer Rajab, Radovan Miucic, Lear Corporation
11:30 a.m.	2021-01-0116	Implementation Methodologies for Simulation as a Service (SaaS) to Develop ADAS Applications Huzefa Kagalwala, Siddhant Srivastava, Manikanda Balaji Venkatesan, Srivatsan Srinivasan, Venkat N Krovi, Clemson University
11:45 a.m.	Panel	Panel Discussion with Speakers

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

Live: Thermal Systems for Hybrid and Electric Vehicles

Session Code HX190

Room 5 Session 9:00 a.m.

Industry experts share technology advances relative to the thermal management of electric and hybrid vehicles and systems specific to: highly efficient power generation from liquid-based hydrocarbon fuels, TCEI materials for electric motors, and predictive control methods for battery thermal management.

Organizers - Bashar AbdulNour, Kettering Univ.; Jeffrey Bozeman, General Motors LLC; Christophe Petitjean, Valeo; Andrew Sutherland, TI Fluid Systems; Jie Zeng, Denso; Tao Zhan, California Air Resources Board

Moderators - Bashar AbdulNour, Kettering Univ.

Time	Paper No.	Title
9:00 a.m.	2021-01-0222	Thermally Conductive Electrically Insulative (TCEI) Materials for E-Motors Saikrishna Sundararaman, Ray Szparagowski, Freudenberg-NOK Inc.
9:30 a.m.	2021-01-0223	Extending Battery Lifetime of Electric Mining Vehicles through Thermal and Duty Cycle Management Nicolas Voeltzel, Mahmood Shirazy, Luc Frechette, Samuel Fillion, Calogy Solutions
10:00 a.m.	2021-01-0224	Investigation of Combined Compression-Ignition Combustion and Solid Oxide Fuel Cell System for High Efficiency Power Generation from Liquid Based Hydrocarbon Fuels Thomas S. Welles, Syracuse University; Andrew Ahn, Fayetteville-Manlius High School; Benjamin Akih Kumgeh, Syracuse University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:37 PM

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Tuesday, April 13

Live: Occupant Protection: Accident Reconstruction - UNCOMMON EVIDENCE SOURCES

Session Code SS595

Room 5 Session 11:00 a.m.

The session title is intended to speak for itself. We will be discussing sources of evidence that are not common knowledge in the broader accident reconstruction community but can be used to reconstruct an incident. We will be drawing from authors that have revealed these evidence sources through diligent investigation and then published their findings. The session will be broken into three (3) keynote addresses followed by a Question and Response (Q&R) at the end.

Chairperson - Christopher Armstrong, Armstrong Forensic Reconstruction Corp.; Jarrod Carter, Origin Forensics LLC

Time	Paper No.	Title
11:00 a.m.	2021-01-0878	Bicycle GPS Positional Accuracy Elvis Desai, JS Forensic Consulting LLC; Philip Wang, Impact Reconstruction Engineering LLC; Jeffrey Suway, Krystina Engleman, JS Forensic Consulting LLC
11:20 a.m.	2021-01-0882	Evaluating the Accuracy and Reliability of Bicycle GPS Devices Omair Siddiqui, Stephan DiBiase, Ryan Hoang, Benjamin Nguyen, Omar Khan, Nicholas Famiglietti, Momentum Engineering Corp.
11:40 a.m.	2021-01-0897	Validation of Telemetry Data Acquisition in Marine Environment Wendy Sanders, Karla Petroskey, Ivan Tibavinsky, Adriano Voza, Explico Engineering Co.
12:00 p.m.	Panel	Panel Discussion: Accident Reconstruction - UNCOMMON EVIDENCE SOURCES Panelists - Elvis Desai; Wendy Sanders, Explico Engineering Co.; Omair Siddiqui, Momentum Engineering Corp.;

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00006, and also Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

Live: Human Factors in Seating Comfort

Session Code SS399

Room 6 Session 11:00 a.m.

Designing vehicles with good ergonomics is one of the many factors needed to achieve high customer satisfaction. To design for seat comfort requires knowledge of the size of the driver, the structure of the seat, the position of the seat in the vehicle and the trip duration. This session will feature 3 keynotes followed by a Q&A session based upon manuscript. Papers offers in this session could include topics such as seat back angle, vehicle packaging and trip duration. Learn more about the Chairpersons

Organizers - Henry Hojnacki, Woodbridge Group; Bonita Thomas, General Motors

Chairperson - Henry Hojnacki, Woodbridge Group; Bonita Thomas, General Motors

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:37 PM

Time	Paper No.	Title
11:00 a.m.	ORAL ONLY	Keynote Presentation: HADD Committee Activities Relating to Seat Comfort Terry O'Bannon
11:20 a.m.	2021-01-0862	Gauge R & R Study for SAE J3103 David Richard Bratkowski, General Motors LLC; Scott Ziolk, Hyundai Motor Group
11:40 a.m.	2021-01-0863 ORAL ONLY	Development converting position seat for reduction fatigue of rear seat passenger Moon Hyunkyu, Tomas
12:00 p.m.	ORAL ONLY	Q&A with Presenters .. .

Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

Live: Lightweighting Trends in EVs Roundtable

Session Code M192

Room 7 Session 9:00 a.m.

Electric vehicles are seeing increasing market share and popularity in the automotive industry. This session provides viewpoints from several industry experts on current and future lightweighting trends in electric vehicles. Learn more about the Panel Participants

Organizers - Mark Kozdras, CanmetMATERIALS; Jonathan Weiler, Meridian Lightweight Technologies

Panelists - Abey Kuruvilla Abraham, Ducker Worldwide LLC; Andrew Halonen, Mayflower Consulting LLC; Raed Kadri, Ontario Autonomous Vehicle Innovation Network; Brett Smith, Center For Automotive Research; Richard Yen, Altair Engineering;

Planned by Metallic Materials Committee / Materials Engineering Activity

Tuesday, April 13

Live: Motorsports presentations

Session Code MSEC999

Room 7 Session 11:00 a.m.

Organizers of the Motorsports committee have invited famed author Richard Keller and 2 paper authors to present their thoughts in this session following the traditional format of twenty minutes for each presentation, followed by a 30 minute Q&A session with all three speakers. Take this opportunity to ask your questions of these 3 subject matter experts.

Organizers - Gregory Fadler, FCA US LLC

Chairperson - Gregory Fadler, FCA US LLC

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:37 PM

Time	Paper No.	Title
11:00 a.m.	ORAL ONLY	Technical Keynote: SPEEDQUEST – Inside The Blue Flame Richard A. Keller
11:20 a.m.	2021-01-0373	Torque Vectoring Control Strategies for Distributed Electric Drive Formula SAE Racing Car Yiwen Sun, Runfeng Lee, Guangyu Tian, Tsinghua University
11:40 a.m.	2021-01-0372	Some Basic Investigations into the Principles of Race Bike Aerodynamics for Real-World Racetrack Scenarios Christoph Simon Feichtinger, Peter Fischer, Graz University of Technology
12:00 p.m.	ORAL ONLY	Q&A with Presenters .. .

Planned by Motorsports Engineering Committee / Motorsports Engineering Activity

Tuesday, April 13

Live: Ground Vehicle Alliance: University Research Partnerships with the US Army DEVCOM Ground Vehicle Systems Center (GVSC)

Session Code IDM901

Room 8 Session 9:00 a.m.

The US military is undergoing a rapid transformation in response to emerging global threats. To address this challenge, the US Army DEVCOM GVSC has created a Ground Vehicle Alliance (GVA) consisting of university research projects focused on virtual prototyping of autonomy-enabled ground systems. Each project includes Army and industry representatives to foster dual-use applications. This session gives an overview of the GVA and its role in developing new capabilities for future ground vehicles.

Organizers - Matthew P. Castanier, David Gorsich, Denise M. Rizzo, US Army DEVCOM GVSC

Chairperson - Matthew P. Castanier, US Army GVSC; David Gorsich, US Army RDECOM; Denise M. Rizzo, US Army GVSC

Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	Automotive Research Center (ARC) led by the University of Michigan Bogdan I. Epureanu, University of Michigan
9:30 a.m.	ORAL ONLY	Virtual Prototyping of Autonomy-Enabled Ground Systems (VIPR-GS) Center at Clemson University Zoran Filipi, Clemson Univ.
10:00 a.m.	ORAL ONLY	Autonomous Vehicle Mobility Institute (AVMI) at the University of Alabama at Birmingham Vladimir V. Vantsevich, University of Alabama at Birmingham

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:38 PM

Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

Tuesday, April 13

Live: NeXTgeneration Automotive Aluminum Technologies (Part 1 of 2)

Session Code M193

Room 8 Session 11:00 a.m.

The metallics committee has selected a group of subject matter experts to give their insight on NeXTgeneration Aluminum technologies based upon the expertise. Specific presenters were selected based upon the results of their submitted manuscript. Each presentation will include an opportunity to ask questions of the speaker.

Organizers - Theresa MacFarlane, Novelis Global Research & Tech. Ctr.; Rahul Kulkarni, Novelis Corporation

Chairperson - Rahul Kulkarni, Novelis Corporation; Theresa MacFarlane, Novelis Global Research & Tech. Ctr.

Time	Paper No.	Title
11:00 a.m.	ORAL ONLY	Microstructure and Electrochemistry of Al-Rich Primer Gerald S. Frankel, Ohio State Univ.
11:20 a.m.	ORAL ONLY	Controlling Texture to Improve Formability in 6xxx Aluminum Alloys Sazol Das, Matthew Heyen, John Ho, ChangOok Son, Novelis Global Research & Tech Ctr
11:40 a.m.	ORAL ONLY	Fire Performance Evaluation of A Lightweight Aluminum Battery Enclosure for Electric Vehicles Mehdi Shafiei, Leon Kaunitz, Novelis; Swapnil Salokhe, Ramesh Dwarampudi, Velayudham Ganesan, Roger Almenar, ESI Group
12:00 p.m.	ORAL ONLY	Understanding the interplay of microstructural parameters on intergranular corrosion in AA5xxx alloys Jahnvi Desai Choundraj

Planned by Metallic Materials Committee / Materials Engineering Activity

Tuesday, April 13

Live: General Powertrain Development - Overview, Highlights, and Q&A

Session Code PFL190

Room 9 Session 9:00 a.m.

Session organizers from the General Powertrain Development Committee will create a panel of experts share their views on the impact of electrification, autonomy and connectivity and highlight the best technical papers received in 2021 and use the panel discussion to address questions regarding general powertrain development in the near future.

Moderators - Haiwen Ge, Texas Tech. University; Yichao Guo, FCA US LLC

Panelists - Hardo Barths, General Motors LLC; Marcello Canova, Ohio State University; Matthew Hall, Univ. of Texas-Austin; Xin He, Aramco Services Co.; Federico Millo, Politecnico di Torino; Mark Monohon; David Roth, Roth Engine Science LLC; Zhe Wang, Ford Motor Company;

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:38 PM

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

Live: Technical Expert Panel Discussion: Interior Design Challenges/Opportunities with EVs

Session Code M399

Room 9 Session 11:00 a.m.

This session will discuss current and future trends in EV development and their impacts on the design of automotive interiors and seats, including new packaging, safety and ergonomics challenges.

Organizers - John Berndtson, General Motors LLC; Stephen Pitrof, Inteva LLC; Santosh Kumar Sarang, Aisin Technical Center of America

Moderators - John Berndtson, General Motors LLC

Panelists - Sathish Thandapani, FCA US LLC; Greg Watson, General Motors LLC; Phillip Wilson, General Motors;

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: ADAS and Autonomous Vehicle System: General and Advanced Topics

Session Code AE101

Room TBD Session

This session covers ADAS and AVS topics such as architecture, advanced technologies, regulation/policy, standards and stakeholder general activity that are not captured in domain-specific technical sessions.

Organizers - Sue Bai, Honda R&D Americas Inc.; Yixin Chen, FCA; Sumanth Reddy Dadam, Ford Motor Company; Soodeh Dadras; Benjamin Hager, dSPACE Inc.; Feilong Liu, Hongjing USA Inc.

Time	Paper No.	Title
	2021-01-0060	V2X Connectivity with ROS for AD Applications Siddhartha Yedida, Ajay Paudyal, Sherif Matta, Tom Tasky, FEV North America Inc.
	2021-01-0061	Techno-Economic Analysis of Fixed-Route Autonomous and Electric Shuttles Nick Goberville, Md Marsad Zoardar, Johan Rojas, Nicolas Brown, Farhang Motallebiaraghi, Western Michigan University; Anthony Navarro, Unity Technologies; Zachary Asher, Western Michigan University
	2021-01-0062	Driving Automation System Test Scenario Development Process Creation and Software-in-the-Loop Implementation Mayur Patil, Alexander Lybarger, Transportation Research Center Inc.; Shawn Midlam-Mohler, The Ohio State University; Evan Stoddart, General Motors LLC
	2021-01-0063	Intelligent Voice Activated Drone(s) for in-Vehicle Services and Real-Time Predictions Mayunthan Nithiyannantham, University of Waterloo; Giribabu Sinnapolu, Oakland University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:38 PM

Time	Paper No.	Title
	2021-01-0064	Correlation between Sensor Performance, Autonomy Performance and Fuel-Efficiency in Semi-Truck Platoons Cristian Adam, Sridhar Lakshmanan, Paul Richardson, University of Michigan-Dearborn; Evan Stegner, Jacob Ward, Mark Hoffman, David M. Bevly, Auburn University
	2021-01-0066	Leveraging Risk Tolerances and Simple Kinematics to Quantify Fault Tolerant Time Intervals for Commercial Trucks Darren K Jones, Collins Awowede, Michael Ellinger, Eaton Cummins Automated Transmission Tech.; Angelina Kretz, Jayalekshmi Krishnamoorthy, kVA
	2021-01-0067	Leveraging Systems Theoretic Process Analysis (STPA) for Efficient ISO 26262 Compliance Rajiv Bongirwar, Hemraj Consultants Ltd.
	2021-01-0070	Research on Automatic Joint Calibration Method of Multi 3D-LIDARs and Inertial Measurement Unit Jinghua Zhang, Rui He, Jian Wu, Shuai Li, Xuesong Chen, Zhiqiang Du, Guosheng Chen, Zhicheng Chen, Jilin University
	2021-01-0071	Experimental Fuel Consumption Results from a Heterogeneous Four-Truck Platoon Evan Stegner, Jacob Ward, Jan Siefert, Mark Hoffman, David M. Bevly, Auburn University
	2021-01-0072	Research on Photobiological Safety of Automotive Active Infrared Detection System Yue Hu, Tong Zhu, CATARC; Qian Li, Xiong Yang, EVERFINE Corp.
	2021-01-0073	System Architecture Design Suitable for Automated Driving Vehicle: Hardware Configuration and Software Architecture Design Akiomi Kunisa, Yusuke Nemoto, Woven Core Inc.; Hiroshi Kato, Tomonori Hasegawa, Masanori Kato, Toyota Motor Corp.; Tomohisa Mashima, J-QuAD DYNAMICS Inc.
	2021-01-0075	Development of Fault Detection and Emergency Control for Application to Autonomous Vehicle Lee Jong Min, Seoul National University; Kwang Seok Oh, Hankyong National University; Taejun Song, Smart Mobility Lab.
	ORAL ONLY	OpenSCENARIO 2.0: Exchangeable Scenario Descriptions through a standardised Domain Specific Language Benjamin Engel, Asam Ev
	ORAL ONLY	Prototyping and Validating FMCW LiDAR Jason Murray Marks, National Instruments
	ORAL ONLY	Acceleration of Internationalization of Standardized Testing Methods for Highly Automated Driving through an Alliance Peter Doty, SAE ITC

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00683, and also

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:38 PM

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: ADAS and Autonomous Vehicle System: Perception

Session Code AE102

Room TBD

Session

This session will focus on presentations from the session authors on the latest research on object detection and tracking methodologies for ADAS and AVS. The areas include detection of static (curbs, lanes, potholes) and dynamic objects in complex real-life scenarios and in difficult weather conditions, using camera, radar and LiDAR sensors. Advanced sensor fusion and Simultaneous Localization and Mapping (SLAM) techniques will also be discussed in this context.

Organizers - Yixin Chen, FCA; Amit Choudhury, Visteon Corp.; Sara Dadras, Ford Motor Company; Vivek Jaikamal, AVL North America Inc.; Bin Li, Aptiv PLC

Time	Paper No.	Title
	2021-01-0076	A Real-Time Curb Detection Method for Vehicle by Using a 3D-LiDAR Sensor Zhiqiang Du, Jian Wu, Rui He, Guojun Wang, Shuai Li, Jinghua Zhang, Guosheng Chen, Jilin University
	2021-01-0077	Visual SLAM in Long-Range Autonomous Parking Application Based on Instance-Aware Semantic Segmentation via Multi-Task Network Cascades and Metric Learning Scheme Yixiong Yan, Yang Hang, Tianren Hu, Hao Yu, Feng Lai, Dongfeng Motor Corp.
	2021-01-0078	A Semantic Slam System Based on Visual-Inertial Information and around View Images for Underground Parking Lot Wei Li, Chaohui Li, Dongjie Xiao, Dong Zhou, Hunan University; Tao Wang, CSLZQC. Co., Ltd; Libo Cao, Hunan University
	2021-01-0080	Validating an Approach to Assess Sensor Perception Reliabilities Without Ground Truth Marco Kryda, Technical University of Munich; Mario Berk, Boris Buschardt, AUDI AG; Daniel Straub, Technical University of Munich
	2021-01-0081	Impact of Fog Particles on 1.55 m Automotive LiDAR Sensor Performance: An Experimental Study in an Enclosed Chamber Lu Zhan, William F. Northrop, University of Minnesota-Twin Cities
	2021-01-0082	Human Body Orientation from 2D Images Karam Abughalieh, Shadi Alawneh, Oakland University
	2021-01-0083	Detection & Tracking of Multi-Scenic Lane Based on Segnet-LSTM Semantic Split Network Meng Ye, Gangfeng Tan, Wuhan University of Technology; Jingning Tang, National AQSI Center for Dedicated Equipment; Jiaming Feng, Xin Huang, Wenchao Sun, Wuhan University of Technology
	2021-01-0084	Multi-Sensor Fusion in Slow Lanes for Lane Keep Assist System Qusay Alrousan, Sherif Matta, Tom Tasky, FEV North America Inc.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:38 PM

Time	Paper No.	Title
	2021-01-0089	Object Segmentation and Augmented Visualization Based on Panoramic Image Segmentation Jiacai Liao, Libo Cao, Yipeng Gong, Junjie Zhao, Zhen Chen, Hunan University; Kai Chen, LZQCSJ. Co., Ltd
	2021-01-0091	Dynamically Adjustable LiDAR with SPAD Array and Scanner Masato Nakajima, Takehiro Hata, Akifumi Ueno, Noriyuki Ozaki, Fumiaki Mizuno, Shinji Kashiwada, Kenichi Yanai, DENSO Corporation

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00683, and also Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: ADAS and Autonomous Vehicle System: Path Planning

Session Code AE103

Room TBD

Session

This session targets topics related to automated vehicles motion planning with various levels of automation (SAE automation levels 1 to 5). Examples of such topics include; behavioral planning, novel and improvements to existing path planning algorithm, end to end and other machine learning supported planning and cooperative planning. The session content is of interest to robotics engineers, connected and automated vehicles engineers as well as general public interested in motion planning.

Organizers - Yixin Chen, FCA; Amit Choudhury, Visteon Corp.; Sara Dadras, Ford Motor Company; Soodeh Dadras; Feilong Liu, Hongjing USA Inc.; Samer Rajab, Lear Corporation; Junfeng Zhao, General Motors

Time	Paper No.	Title
	2021-01-0093	Stability Criteria for Accurate Path Tracking in Automated Guided Vehicle Systems Mostafa Mehrabi, University of Detroit Mercy
	2021-01-0095	An Online Coverage Path Planning Method for Sweeper Trucks in Dynamic Environments Weiyang Zhang, Yong Sun, Wenbo Yu, MENG XU, Isuzu Technical Center of America Inc.
	2021-01-0097	Fusing Offline and Online Trajectory Optimization Techniques for Goal-to-Goal Navigation of a Scaled Autonomous Vehicle Ajinkya Joglekar, Bhooshan Deshpande, Mugdha Basuthakur, Venkat N Krovi, Clemson University
	2021-01-0098	High-Definition Map Based Motion Planning, and Control for Urban Autonomous Driving Youngmin Yoon, Heungseok Chae, Kyongsu Yi, Seoul National University
	ORAL ONLY	Compound Box Algorithm for Integrated Lateral and Longitudinal control for Collision avoidance rahul kumar tiwari, Hyundai Motor India Engineering PVT LTD

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:38 PM

Time	Paper No.	Title
	ORAL ONLY	Research on Decision Making and Path Planning System of Autonomous Parking Based on Inverse Reinforcement Learning Fang Peiyuan, Tongji University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00683, and also Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: ADAS and Autonomous Vehicle System: Control / Actuation

Session Code AE104

Room TBD

Session

This session includes topics related to automated vehicle actuation and control. Examples of such topics are; control techniques supporting active and passive safety and mobility systems, enhancements to automated vehicle controllers' performance and novel and improvements to existing vehicle control algorithms. The session content is of interest to control engineers, connected and automated vehicles engineers as well as general public interested in automated vehicles control and actuation.

Organizers - Yixin Chen, FCA; Amit Choudhury, Visteon Corp.; Sumanth Reddy Dadam, Sara Dadras, Ford Motor Company; Soodeh Dadras; Fabian Koark, Invensity Inc.; Feilong Liu, Hongjing USA Inc.; Samer Rajab, Lear Corporation; Junfeng Zhao, General Motors

Time	Paper No.	Title
	2021-01-0099	Model Predictive Control-Based Lateral Control of Autonomous Large-Size Bus on Road with Large Curvature Hyeongho Lim, Changhee Kim, Ara Jo, Seoul National University
	2021-01-0100	Accurate Pressure Control Based on Driver Braking Intention Identification for a Novel Integrated Braking System Bing Zhu, Yihan Zhang, Jian Zhao, Zhicheng Chen, Wanli Jin, Jilin University
	2021-01-0101	Control and Validation of an Autonomous Drag Racing Vehicle Vatche Donikian, Joseph Bell, Nadim Khairallah, University of California-Irvine; Gregory Washington, George Mason University
	ORAL ONLY	Automated valet parking experiments – system identification and control aspects Alexandru Forrai, Siemens Digital Industries Software
	ORAL ONLY	Enabling Technologies for Vehicle Automation Robert James, Robert James

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00683, and also Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:38 PM

Tuesday, April 13

On-Demand: ADAS and Autonomous Vehicle System: Driver Interface

Session Code AE105

Room TBD Session

This session focuses on driver interface, human factors and other technical areas that relates to driver/rider interaction, operation and impact related to ADAS and AVS

Organizers - Sue Bai, Honda R&D Americas Inc.; Geoff Bauer, Continental AG

Time	Paper No.	Title
	2021-01-0104	A Visual-Vestibular Model to Predict Motion Sickness Response in Passengers of Autonomous Vehicles Nishant Jalgaonkar, Daniel Sousa Schulman, Sneha Ojha, Shorya Awtar, University of Michigan
	2021-01-0105	Windshield with Enhanced Infrared Reflectivity Enables Packaging a Driver Monitor System in a Head-Up Display David K. Lambert, Fidelis Itsede, Panasonic Corp. of North America; Kazuhiro Tomura, Atsushi Nohara, Kinryo Chou, Dylan Carty, Sekisui S-LEC America LLC

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: ADAS and Autonomous Vehicle System: Simulation and Testing

Session Code AE106

Room TBD Session

This session focuses on simulation and testing methodologies and processes for ADAS and connected automated vehicle (CAV) systems. Current ADAS systems are addressed, such as automatic emergency braking and adaptive cruise control. The challenges of implementation, and evaluation of enhanced ADAS systems and higher-level CAV systems (L3 & above) are key focuses of this session, including current toolchains and processes for simulation and industry-processes for validation and verification.

Organizers - Jace Allen, dSPACE Inc.; Joseph D'Ambrosio, GM R&D Center; Sara Dadras, Ford Motor Company; Vivek Jaikamal, AVL North America Inc.; Bin Li, Aptiv PLC; C. J. Reddy, Altair Engineering

Time	Paper No.	Title
	2021-01-0106	No Cost Autonomous Vehicle Advancements in CARLA through ROS Gabriel Prescinotti Vivan, Nick Goberville, Zachary Asher, Nicolas Brown, Johan Rojas, Western Michigan University
	2021-01-0107	Motion Estimation of Connected and Automated Vehicles under Communication Delay and Packet Loss of V2X Communications Ziran Wang, Toyota Motor North America
	2021-01-0108	Studies on Simulation and Real Time Implementation of LQG Controller for Autonomous Navigation Ahammad Basha Dudekula, Jeffrey Naber, Michigan Technological University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:38 PM

Time	Paper No.	Title
	2021-01-0109	Simulation Study to Evaluate Robustness of the Lane Centering Feature Tejas Varunjikar, Arpit Awathe, Pushpendra Kushwaha, Chao Chen, Magna Electronics Inc.
	2021-01-0110	Object Tracking Comparison for Automated Vehicles Using MathWorks Toolsets Alex Bassett, David Cicotte, Patrick Currier, Embry-Riddle Aeronautical University
	2021-01-0111	Customized Co-Simulation Environment for Autonomous Driving Algorithm Development and Evaluation Mustafa Ridvan Cantas, Levent Guvenc, The Ohio State University
	2021-01-0113	Arrangement and Control Method of Cooperative Vehicle Platoon Guosheng Chen, Jian Wu, Shuai Li, Jinghua Zhang, Zhiqiang Du, Guojun Wang, Zhicheng Chen, Jilin University
	2021-01-0114	Simulation Based Virtual Testing for Safety of ADAS Algorithms - Case Studies Harnarayan Singh, Shawn Midlam-Mohler, Punit Tulpule, The Ohio State University
	2021-01-0117	An Automatic Emergency Braking System for Collision Avoidance Assist of Multi-Trailer Vehicle Based on Model Prediction Control Yucheng Liu, John Ball, Sherif Abdelwahed, Ge He, Mississippi State University
	2021-01-0118	Simulation Framework for Testing Autonomous Vehicles in a School for the Blind Campus Karthik Kalidas, Sukru Yaren Gelbal, Bilin Aksun Guvenc, The Ohio State University
	ORAL ONLY	An Update on the OpenSCENARIO Standard– Accelerating the autonomous revolution with reusable maneuvers Andreas Hege, RA Consulting GMBH

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00683, and also Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Automotive Embedded Software and Systems: Hardware and Software Design

Session Code AE201

Room TBD Session

This session will feature three technical keynotes followed by a Q&A session based upon manuscript submissions received and approved for publication. Topics include innovations in automotive embedded systems with a specific focus on software methodologies to model, simulate, implement, and test them in the vehicle. See presentation titles for more specifics.

Organizers - Subramaniam Ganesan, Oakland University; Kevin Sittner, IAV Automotive Engineering Inc.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:38 PM

Time	Paper No.	Title
	2021-01-0119	Research on Parallel Regenerative Braking Control of the Electric Commercial Vehicle Based on Fuzzy Logic Meng Ye, Gangfeng Tan, Wuhan University of Technology; Fushou Lei, Suizhou Product Qual Supervision and Inspection Institute; Kailang Chen, Jiaming Feng, Feng'an Zhao, Wuhan University of Technology
	2021-01-0120	Design Analysis and Architecture of Ethernet Switch for Automotive Using AUTOSAR Bhavik Mehta, Mubin Sharikmaslat, John Deere India Pvt., Ltd.
	2021-01-0121	Anode Pressure Control with Fuzzy Compensator in PEMFC System Xichen Ye, Chunjuan Shen, Tong Zhang, Zhen Song, Tongji University
	2021-01-0122	Traction Control System of Electric Vehicle with 4 In-Wheel Motors using Lyapunov Stability Analysis Algorithm Yongqiang Zhao, Jilin University; ZhouZehui Hui, Jinlong Cui, FAW Group
	2021-01-0123	Intelligent Deceleration Energy-Saving Control Strategy for Electric Vehicle Yongqiang Zhao, Jilin University; Qiang Zhang, Erchao Pang, Jun Li, Liu Jiankang, FAW Group
	2021-01-0124	Innovative Control and Monitoring Algorithms and Strategies Based on Judicious Functional Partitioning and Frugal Engineering Concepts Vishwas Manohar Vaidya, Automotive engineering Consultant and In

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Automotive Embedded Software and Systems: Modeling and Simulation

Session Code AE202

Room TBD

Session

This session seeks submissions concerning innovations in automotive embedded systems with a specific focus on software methodologies to model, simulate, implement, and test them in the vehicle. Control and signal processing algorithm developments are encouraged, and topics can come from a wide range of vehicle subsystems such as Infotainment, Navigation, Driver Assistance, Battery management, Propulsion, Chassis, etc..

Organizers - Mahendra Muli, dSPACE Inc.; Scott Rush, General Motors LLC

Time	Paper No.	Title
	2021-01-0125	Synthesis and Validation of Multidimensional Driving Cycles Jakov Topi, Branimir Škugor, Joško Deur, University of Zagreb
	2021-01-0126	Speed Planning System for Commercial Vehicles in Mountainous Areas

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:39 PM

Time	Paper No.	Title
		Dengzhi Peng, Wuhan University of Technology; Kekui Fang, Hubei Center for Quality Inspection of Special Purpose Veh.; Zhongpeng Tian, Yuxiao Zhang, Gangfeng Tan, Wuhan University of Technology
	2021-01-0127	Automated Highway Overtaking: A Perspective from Decision-Making
		Abhishek Singh Tomar, HAN University of Applied Sciences; Alexandru Forrai, Siemens Digital Industries Software; Frans Tillema, HAN University of Applied Sciences
	2021-01-0128	Virtual ECU Development for Antilock Braking System (ABS)
		Varaprasad Gandhi, Lavanya M S Jr, Sharath Sindhe Jr, Tata Elxsi
	2021-01-0129	Future Automotive Embedded Systems Enabled by Efficient Model-Based Software Development
		Juergen Schaefer, Infineon Technologies AG; Herbert Christlbauer, Audi AG; Alexander Schreiber, Graham Reith, The MathWorks GmbH; Mischa Jonker, Jordy Potman, Synopsys; Udo Dannebaum, Tjark Eissfeldt, Infineon Technologies AG
	2021-01-0130	A Research on Modeling and Pressure Control of Integrated Electro-Hydraulic Brake System
		Bing Wang, South China University of Technology; Minghui Wang, Yongfeng Jiang, Shandong Meichen Industry Group Co., Ltd.; Wen-Bin Shangguan, South China University of Technology

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Automotive Embedded Software and Systems: Software Engineering

Session Code AE203

Room TBD

Session

This session seeks submissions concerning innovations in automotive ECU software architecture, operating systems, computer-aided software engineering (CASE) tools, development operations, etc.. Submissions can include such diverse topics as Adaptive AUTOSAR application, hypervisor or container deployments, diagnostic and robustness methodologies in safety-critical systems, and frameworks supporting multi-core symmetric or heterogeneous parallel processing.

Organizers - Scott Rush, General Motors LLC

Time	Paper No.	Title
	2021-01-0131	Application of Casting to Automotive ECU's
		Mustafa H. Chmeiseh, Dennis Kazensky, General Motors LLC; Sankar Sengupta, Oakland University
	2021-01-0132	Commercial Viability Assessment and Planning of Safety-Critical Embedded SW of Electrified Road Vehicles
		Abhishek Shah Alias Sangani, University of Surrey; Caner Harman, Emrah Kinav, Ford Otomotiv Sanayi A.S.; Mehmet Göl, Istanbul Gelisim University; Ahu Ece Hartavi, University of Surrey

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:39 PM

Time	Paper No.	Title
	ORAL ONLY	Innovation in the Fast Lane: Disrupting Automotive Software Development through Open Source Dan Cauchy, Automotive Grade Linux
	ORAL ONLY	AUTOSAR as a Foundational Software Architecture for Intelligent Vehicles Rick Flores, General Motors LLC

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Automotive Embedded Software and Systems: Testing and Validation

Session Code AE204

Room TBD

Session

Automotive embedded Software testing and validation includes, Software in the loop. Hardware in the loop, Model based simulation and testing. Secure communication testing, performance and real time characteristics measurement are also covered in this session.

Organizers - Subramaniam Ganesan, Oakland University; Mahendra Muli, dSPACE Inc.; Chirag Sonchal, John Deere India Pvt, Ltd.

Time	Paper No.	Title
	2021-01-0133	Automated Hardware-in-the-Loop Testing Using a Cloud-Based Architecture Norbert Wiechowski, Mindmotiv GmbH; Alain Chevalier, Frederic Stefan, Daniel Roettger, Ford Motor Company; Florian Goebe, Mindmotiv GmbH
	2021-01-0135	Calibre - A Novel Approach to Assessment of Software Test Effectiveness and Efficiency Ranjit Vinayak Abhyankar, Aptiv Components India Pvt, Ltd.
	2021-01-0136	Secure Controller Area Network Logging Jeremy Daily, Duy Van, Colorado State University
	ORAL ONLY	Software-In-the-Loop Simulation and Test-bench for design and validation of Camera Monitor System Geonyoung Choi, SMR Automotive Modules Korea Ltd; Jaehong Kim, Wonsik Hong cEng, Hojin Huh, SMR Automotive Modules Korea; Shiho Kim, Yonsei Univ.

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:39 PM

Tuesday, April 13

On-Demand: Foundations of Automobile Electronics

Session Code AE300

Room TBD Session

This session is seeking submissions focusing on Systems Engineering, Vehicle Networks and Communication, Cybersecurity, System Diagnostics/Prognostics and Predictive Maintenance (data analytics), Wiring and Harnesses, Electromagnetics, antennas and Reliability and Safety Critical systems of Electronics. Abstracts with focus on new technologies, trends, research, process development and applications are greatly encouraged.

Organizers - Amit Choudhury, Visteon Corp.; Howard Evans, Colletronics, Ltd.; Riccardo Groppo, Ideas & Motion; Fabian Koark, Invensity Inc.; John Krzeszewski, Aptiv; Joseph Lowndes, Leoni AG; Christopher Lupini, Aptiv; Mark Monohon, MJM & Associates Consulting; Mert D. Pese, University of Michigan; Mark Pope, DG Technologies; Kirk Rasmussen, EDAG Inc.; C. J. Reddy, Altair Engineering; Mark Steffka, University of Detroit Mercy; Mark Zachos, DG Technologies

Time	Paper No.	Title
	2021-01-0137	Leading edge Requirements Engineering for the Automotive industry (with the use of JAMA) Fabian Koark, Invensity Inc.; Adrian Rolufs, JAMA Software

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Foundations of Automobile Electronics: Cybersecurity

Session Code AE302

Room TBD Session

The 2021 topics of interest include: • Recommendations and best-practices in processes, methods and tools for excellent cyber-security engineering (e.g. acc. SAE J3061 and ISO21434) • Analysis and design of mitigation controls for cyber-security threats • Evaluation of know and innovative cyber-security mechanisms for automotive real-time applications • Recommendation for further standardization and guidance in cyber-security engineering

Organizers - Christopher Lupini, Aptiv; Changsheng Su, Cummins Inc.; Mark Pope, DG Technologies; John Krzeszewski, Aptiv; Fabian Koark, Invensity Inc.; Amit Choudhury, Visteon Corp.; Mert D. Pese, University of Michigan; Mark Zachos, DG Technologies

Chairperson - John Krzeszewski, Eaton

Time	Paper No.	Title
	2021-01-0138	Cybersecurity Metrics for Automotive Systems Madeline Cheah, Horiba Mira Ltd.; Dennis Kengo Oka, Synopsys, Inc.
	2021-01-0139	Integrating Fuzz Testing into the Cybersecurity Validation Strategy Nico Vinzenz, ZF Friedrichshafen AG; Dennis Kengo Oka, Synopsys, Inc.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:39 PM

Time	Paper No.	Title
	2021-01-0140	Application Controlled Secure Dynamic Firewall for Automotive Digital Cockpit Anu Jawahar, Anu Gupta, Asadullah Ansari, Rabindra Paikaray, Sabarinathan Ravi, Muthukumar Alagesan, Harman International India Pvt, Ltd.
	2021-01-0141	Zero-Day Attack Defenses and Test Framework for Connected Mobility ECUs Ameer Kashani, Gopalakrishnan Iyer, Carlos Mora-Golding, Hirofumi Yamashita, Remma Takeuchi, DENSO Corporation
	2021-01-0144	Vehicular Visual Sensor Blinding Detection by Integrating Variational Autoencoders with SVM Sarala S M, Maya Karki, Ramaiah Institute of Technology
	2021-01-0145	Mechanism for Secure Storage without a Trusted Execution Environment for Low/Mid Automotive Segments Asadullah Ansari, Shyju Thekkumbadan, Sourabh Das, JIPIN JOSE, Iflaha Sana, Harman International India Pvt, Ltd.
	2021-01-0146	A Digital Forensic Method to Detect Object based Video Forgery Security Attacks on Surround View ADAS Camera System Sarala S M, Maya Karki, Ramaiah Institute of Technology
	2021-01-0147	Light Source Authentication in ADAS/Autonomous Vehicles Asadullah Ansari, SRM University; Pamela Das, Harman International India Pvt., Ltd.; Mohammad Aziz, National Institute of Technology Hamirpur; Kabilan Velusamy, DINESH KAMALAKANNAN, Pavan Prasad, Harman International India Pvt., Ltd.
	2021-01-0148	THARA - A Framework to Align the Functional Safety and Security Process in Automotive Domain Vivek Agrawal, Balasubramanian Achuthan, Asadullah Ansari, Vishal Tiwari, Vikas PANDEY, Harman International India Pvt, Ltd.
	ORAL ONLY	Automotive cybersecurity is not one-size-fits-all Nathaniel Meron, C2A Security

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Foundations of Automobile Electronics: Electromagnetics and Antennas

Session Code AE303

Room TBD

Session

Now-a-days use of electromagnetics in automotive system design involves engineering high performance and cost-effective antennas for communication, navigation, ADAS, RKE, TPMS, Infotainment, and wireless sensors for vehicle health monitoring while minimizing undesired effects. This session covers the development, analysis (including computer-based simulation methods), and testing of the intentional and unintentional electromagnetic environment of today's automotive systems.

Organizers - C. J. Reddy, Altair Engineering; Mark Steffka, University of Detroit Mercy

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:39 PM

Time	Paper No.	Title
	2021-01-0149	Simulation Study on the Influence of the Shielding Mechanism of the Battery Pack Shell on the Vehicle Radiation Emission Ji Zhang, Jianchang Wang, Xiangjie Lv, Tongji University
	2021-01-0150	Low Profile PIFA Antenna for Vehicular 5G and DSRC Communication Systems Ahmad Yacoub, Daniel Aloï, Oakland University
	2021-01-0151	Research in OFDM-Based High-Speed In-Vehicle Network Connectivity for Cameras and Displays Taiji Kondo, MegaChips Corporation; Kayo Ueda, DENSO Corporation; Naoshi Serizawa, Yazaki Corporation; Tomoyuki Koike, DENSO Corporation; Hisashi Kondo, MegaChips Corporation
	2021-01-0152	Assessing Magnetic Fields in Electrified Vehicles: An Exploratory Campaign Rosanna Pinto, ENEA Casaccia; Germana Trentadue, Marco Zanni, Giorgio Martini, EC Joint Research Centre
	2021-01-0153	Modeling Radio Frequency Interference (RFI) Between Co-Located RF Systems Karen Burnham, Electro Magnetic Applications
	2021-01-0154	Optimization of Antenna Coupling through Machine Learning for "Smart" TPMS Readers Saranraj Karuppuswami, C. J. Reddy, Altair Engineering
	2021-01-0155	Considerations for Verification of Vehicle Occupant Magnetic Field Protection Laura Ball, Scott Piper, General Motors LLC
	2021-01-0156	Performance of DSRC V2V Communication Networks in an Autonomous Semi-Truck Platoon Application Cristian Adam, Russell Andres, Brandon Smyth, Timothy Kleinow, Katharina Grenn, Sridhar Lakshmanan, Paul Richardson, University of Michigan-Dearborn

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Foundations of Automobile Electronics: Reliability, Diagnostics & Prognostics for Safety Critical Electronic Systems

Session Code AE304

Room TBD

Session

On Board Diagnostics have been around for a long time and are well understood and standardized. Huge amounts of diagnostic data have piled up over the years. Many variants and dimensions must be supported. Fortunately, the data is machine readable. This presentation provides an overview of the evolution of big data techniques to promote prognostic development and shows some case studies for the next generation of prognostics development.

Organizers - Mark Monohon, MJM & Associates Consulting; Mark Pope, DG Technologies

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:39 PM

Time	Paper No.	Title
	2021-01-0157	Functional Safety & Safety Critical Systems - An Overview Melissa Mendias, Sneha Lele, Ashish Arora, Exponent Inc.
	2021-01-0158	Right First Time: Cloud-Based Cyber-Physical System for Data Acquisition and Remote Diagnostics to Optimize the Service Quality Peter Subke, Muzafar Moshref, Softing Automotive Electronics GmbH
	2021-01-0159	Streamlined Process for Cloud Based Diagnostics Using Amazon Web Services Nassim Khaled, Prince Mohammad Bin Fahd University
	2021-01-0161	An Online Degradation Forecasting and Abatement Framework for Hybrid Electric Vehicles Phuong Huu Hoang, Gokhan Ozkan, Payam Ramezani Badr, Christopher S. Edrington, Clemson University; Behnaz Papari, University of North Carolina Charlotte
	ORAL ONLY	SAE ITC HRCS Consortium Moves to Advance IVHM Peter Grau, SAE ITC
	ORAL ONLY	Using JA6268 to Improve Maintenance for Commercial Trucking Tim Felke, Garrett Advancing Motion
	ORAL ONLY	SOTIF Risk Management for Different Levels of Automation Hsing-Hua Fan, Krzysztof Pennar, General Motors LLC; Marco gomez, General Motors Vehicle Engineering Cntr.
	ORAL ONLY	Light Activated Microtransponder Technology for Unique Serialization of Integrated Circuits, Safety Components and Electronic Systems Bill Eibon, p-Chip Corporation

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Smart Transportation and Infrastructure

Session Code AE400

Room TBD

Session

This session will feature three technical keynotes followed by a Q&A session based upon manuscript submissions received and approved for publication. Topics to include Intelligent Transportation Systems and their associated technologies, research on smart transportation, Automated Vehicles 3.0, V2I/V2X, testing and simulation, roads and infrastructure technologies, and similar mobility and transportation topics.

Organizers - Jan-Mou Li, Metropolitan Washington Council of Gover; Xiangrui Zeng, Worcester Polytechnic Institute

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:39 PM

Time	Paper No.	Title
	2021-01-0162	Research on Vehicle Lane Change Based on Vehicle Speed Planning Li Liu, Gangfeng Tan, Hongwei Ling, Puchun Zeng, Changxi Li, Chunguo Ou, Wuhan University of Technology
	2021-01-0164	Virtual and Real Data Populated Intersection Visualization and Testing Tool for V2X Application Development Sukru Yaren Gelbal, Mustafa Ridvan Cantas, Bilin Aksun Guvenc, Levent Guvenc, The Ohio State Univiversity
	2021-01-0165	Infrastructure Camera Video Data Processing of Traffic at Roundabouts Jagruiti Patil, Punit Tulpule, The Ohio State University
	2021-01-0166	A Systematic Approach to Develop Metaheuristic Traffic Simulation Models from Big Data Analytics on Real-World Data Ashish Naidu, Archak Mittal, Rebecca Kreucher, Alice Chen Zhang, Walter Ortmann, James Somsel, Ford Motor Company
	2021-01-0167	A Vehicle Dimensions Dynamic Detection Method Based on Image Recognition Feng'an Zhao, Gangfeng Tan, Wuhan University of Technology; Bin Luo, Hubei Public Security Department; Wenchao Sun, Jiaming Feng, Kailang Chen, Wuhan University of Technology
	2021-01-0169	Application of Data Analytics to Decouple Historical Real-World Trip Trajectories into Representative Maneuvers for Driving Characterization Ashish Naidu, Alice Chen Zhang, Rebecca Kreucher, Archak Mittal, Walter Ortmann, James Somsel, Ford Motor Company
	2021-01-0172	Overload Identification System Based on Vibration State of Two-Axle Vehicle Wenchao Sun, Gangfeng Tan, Wuhan University of Technology; Xingguo Han, Hubei Public Security Department; Feng'an Zhao, Meng Ye, Jiaming Feng, Wuhan University of Technology
	2021-01-0173	Connected UAV and CAV Coordination for Improved Road Network Safety and Mobility Ozgenur Kavas-Torris, Sukru Yaren Gelbal, Mustafa Ridvan Cantas, Bilin Aksun Guvenc, Levent Guvenc, The Ohio State University
	2021-01-0174	The Driving Planning of Pure Electric Commercial Vehicles on Curved Slope Road in Mountainous Area Based on Vehicle-Road Collaboration Hongwei Ling, Wanyang XIA, Wuhan University of Technology; Jingning Tang, National AQSI Center for Dedicated Equipment; Li Liu, Puchun Zeng, Changxi Li, Zujie Yang, Wuhan University of Technology
	2021-01-0176	Environmental Traffic Modeling and Simulation SIL Toolset for Electrified Vehicles Shanthan Kumar Padisala, Benjamin Yurkovich, The Ohio State University
	2021-01-0177	Assessing the Impacts of Dedicated CAV Lanes in a Connected Environment: An Application of Intelligent Transport Systems in Corktown, Michigan Archak Mittal, Richard Twumasi-Boakye, Xiaolin Cai, James Fishelson, Yifan Chen, Eric Wingfield, Ford Motor Company

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:39 PM

Time	Paper No.	Title
	ORAL ONLY	Micropositioning on Highways Robert James, Robert James
	ORAL ONLY	The State of Misbehavior Detection in V2X Communications Farah Haidar, ESCRYPT
	ORAL ONLY	Queuing model for the Fruit Lake Tunnel based on the vehicle follow-through theory

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Updates on the Cooperative Automated Transportation (CAT) Coalition

Session Code AE404

Room TBD

Session

The Cooperative Automated Transportation Coalition (CAT) serves as a collaborative focal point for federal, state and local government officials, academia, industry and their related associations to address critical program and technical issues associated with the nationwide deployment of connected and automated vehicles on streets and highways. This session will provide in-depth presentations on the latest work in Infrastructure, Vehicle, Standards, and Policy.

Organizers - Roy Goudy, Nissan Motor Co., Ltd.; Jan-Mou Li, Metropolitan Washington Council of Governments

Time	Paper No.	Title
	ORAL ONLY	Developing and Testing CARMA Cloud to support infrastructure role for TSMO strategies Taylor Lochrane, Dept of Transportation
	ORAL ONLY	Prototype development at the edge to support analysis of CDA-Transportation Management Systems and Operations (TSMO) use cases for arterials Govindarajan Vadakpat, FHWA
	ORAL ONLY	What is Cooperative Driving Automation? Key Concepts from SAE J3216 Shawn Kimmel, Quantitative Scientific Solutions
	ORAL ONLY	The Road Ahead: Standards Addressed by C-V2X Technical Committee Jim Misener, Qualcomm Technologies Inc.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:39 PM

Time	Paper No.	Title
	ORAL ONLY	New SAE Cooperative Driving Automation (CDA) Committee
		Barbara Wendling, Quantitative Scientific Solutions

Tuesday, April 13

On-Demand: AI and Machine Learning

Session Code AE500

Room TBD Session

This session is seeking submissions focusing on real-world and theoretical methods and advanced algorithms in AI, machine learning and related technologies for both inside and outside the Vehicle. Abstracts are being sought on the state of the art in AI and identifying potential applications of AI-based technologies in vehicle design, control systems, human/machine interface and automated operation, as well as smart mobility and infrastructure of the future.

Organizers - Zachary D. Asher, Western Michigan Univ.; Amit Choudhury, Visteon Corp.; Fabian Koark, Invensity Inc.; Jan-Mou Li, Metropolitan Washington Council of Gover; Prakash Peranandam, GM; Ramesh S, GM R&D Center; Alok Warey, General Motors; Xiangrui Zeng, Worcester Polytechnic Institute

Time	Paper No.	Title
	2021-01-0178	A Comparative Study of Physics Based Grey Box and Neural Network Trained Black Box Dynamic Models in an RCCI Engine Control Parameter Prediction Chinmaya Mishra, P M V Subbarao, Indian Institute of Technology Delhi
	2021-01-0179	A Hybrid Method for Automotive Entity Recognition Navya K Sivaraman, Rajesh Koduri, Mithun Manalikandy, Tata Elxsi, Ltd.
	2021-01-0180	Reward Function Design via Human Knowledge Graph and Inverse Reinforcement Learning for Intelligent Driving Rong Guo, Ze Hong, Xiang Xue, Tongji University
	2021-01-0181	High-Fidelity Modeling of Light-Duty Vehicle Emission and Fuel Economy Using Deep Neural Networks Farhang Motallebiaraghi, Western Michigan University; Aaron Rabinowitz, Shantanu Jathar, Colorado State University; Alvis Fong, Zachary Asher, Western Michigan University; Thomas Bradley, Colorado State University
	2021-01-0182	Predictive Gearbox Oil Temperature Using Machine Learning Varaprasad Gandhi, Tata Elxsi, Ltd.
	2021-01-0183	Deep Learning Based Real Time Vulnerability Fixes Verification Mechanism for Automotive Firmware/Software Asadullah Ansari, SRM University; Mohamed Ameen Alimohideen, Harman International India Pvt, Ltd.; Karthik P.C., SRM University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:39 PM

Time	Paper No.	Title
	2021-01-0184	A Framework for Benchmarking Feedback-Based Dynamic Data Collection Methods in Connected Vehicle Networks Alp Sahin, Xiangrui Zeng, Worcester Polytechnic Institute
	2021-01-0185	Driver Identification Using Driving Behavior, Habits and Driver Characteristics Milad Jalaliyazdi, Tooba Sheikh, Alaeddin Bani Milhim, Regan Dixon, General Motors of Canada, Ltd.; Huong CHIM, General Motors LLC
	2021-01-0186	Using Deep Learning to Predict the Engine Operating Point in Real-Time Srikanth Kolachalama, General Motors LLC; Sridhar Lakshmanan, University of Michigan-Dearborn
	2021-01-0187	Decision Tree Regression to Identify Representative Road Sections for Evaluating Performance of Connected and Automated Class 8 Tractors Chen Zhang, Andrew Kotz, Michael Lammert, Kenneth Kelly, National Renewable Energy Laboratory
	2021-01-0188	Multi-Modal Neural Feature Fusion for Pose Estimation and Scene Perception of Intelligent Vehicle Aiguo Zhou, Zhenyu Li, Jiakun Pu, Jiangyang Yu, Ronghui Wei, Tongji University; Zhenbiao Dong, Shanghai Institute of Technology
	2021-01-0189	Extracting Features from Driving Scenarios for Driving Workload Level Classification - A Case Study of Transfer Learning Yongkang Liu, John Hansen, University of Texas-Dallas
	2021-01-0190	Machine Learning and Response Surface-Based Numerical Optimization of the Combustion System for a Heavy-Duty Gasoline Compression Ignition Engine Balaji Mohan, Saudi Aramco; Meng Tang, Argonne National Laboratory; Jihad Badra, Yuanjiang Pei, Michael Traver, Saudi Aramco
	2021-01-0191	Scenario Uncertainty Modeling for Predictive Maintenance with Recurrent Neural Adaptive Processes (RNAPs) Wenbo Yu, Xijian Zhao, Yong Sun, Xuejiao Li, Isuzu Motors, Ltd.
	2021-01-0192	Object Detection Method of Autonomous Vehicle Based on Lightweight Deep Learning Rong Guo, Xin Xie, Tongji University
	2021-01-0193	Coalesce of Artificial Intelligence into ADAS Hardware-In-the-Loop Testing Bharathi Krishnamoorthy, Giri Nammalwar, Torsten Wulf, Nandini Pazhur, Ford Motor Company
	2021-01-0194	Multi-task Learning of SemanticsGeometry and Motion for Vision-based End-to-End Self-Driving Hailong Ni, Jian Wu, Dong Zhang, Guojun Wang, Zhicheng Chen, Jilin University
	2021-01-0195	Building Responsibility in AI: Transparent AI for Highly Automated Vehicle Systems Monika Minarcin, Accenture

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:40 PM

Time	Paper No.	Title
	2021-01-0196	Putting Safety of Intended Functionality SOTIF into Practice Amr Abdulazim, Moustafa Elbahaey, Abdullah Mohamed, Autonomous Instruments
	2021-01-0197	Reinforcement Learning Based Energy Management of Hybrid Energy Storage Systems in Electric Vehicles Ibrahim Haskara, Bharatkumar Hegde, Chen-Fang Chang, General Motors LLC
	ORAL ONLY	Advanced Driver Assistant System utilizing intelligent e-side mirrors VINAYAGAM MARIAPPAN, SMR Automotive Modules Korea Ltd; Ho Suk, Sungmoon Ahn, Yonsei Univ.; Geonyoung Choi, Jaehong Kim, SMR Automotive Modules Korea Ltd; Shiho Kim, Yonsei Univ.
	ORAL ONLY	A Reinforcement Learning Approach for Autonomous Navigation In Gazebo Framework Jerry Samuel R, KEDARNATH RUGGE, John Deere
	ORAL ONLY	Integration of AI/ML in CAE and Vehicle design and development Divesh Mittal, ETA Inc.; Abhishek Shrawan, Shiva Munivenkatappa, ETA Inc (Engineering Tech Assoc)

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00686, and also Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Electrification: Chargers and Charging Electronics Architecture/Design

Session Code AE600

Room TBD

Session

CHARGERS – The topic includes both onboard and offboard charging. The following are some of the abstracts that would be considered: High Voltage Vehicle Wireless Charging; High voltage Vehicle Charging Standards, example SAE J2954, J1772, J2931, J2836, J2847, J2953 and GB / T 38775; New/innovative solutions for the existing HV Vehicle Charging Level 1, Level 2 and DC Fast Charging (Level 3). CHARGING ELECTRONICS ARCHITECTURE/DESIGN - The following are some of the topics that would be considered: Battery controls and balancing, Energy and Power management for batteries and charging, Contactor technology, IGBT technology and IGBT Heatsink technology to improve vehicle charging and performance. (For EV and PHEV Battery Technology see PFL730) (For Electric Motor and Electric Motor Controls See PFL740, PLF750 PFL780)

Organizers - Sumit Bhargava, Mahle Aftermarket Inc.; Fabian Koark, Invensity Inc.; Eugene Saltzberg, Retired - EV Charging Systems Engineer; Vincent Socci, National Instruments; Jack Waters, dSPACE Inc.

Time	Paper No.	Title
	2021-01-0199	Analyzing the Impact of Electric Vehicles Charging Stations on Power Quality in Power Distribution Systems Abdullah Hamadi, Md Shahin Alam, Seyed Ali Arefifar, Oakland University
	2021-01-0200	Electro-Thermal Control on Power Electronic Converters: A Finite Control Set Model Predictive Control Approach Gokhan Ozkan, Phuong Hoang, Payam Badr, Christopher Edrington, Clemson University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:40 PM

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Thermal System Components

Session Code HX101

Room TBD Session

Thermal Management represents one of the key aspects of the vehicle development. It ensures that the temperatures in the underhood and underbody areas are in desired ranges, that thermal systems operate as designed, and that no component operation is at risk due to excessive temperatures. This session covers the design of thermal components and systems and their vehicle integration.

Organizers - Ronald Semel, Ford Motor Company; Gursaran Mathur, Marelli; Alaa El-Sharkawy, FCA US LLC; Ales Alajbegovic, Dassault Systemes

Time	Paper No.	Title
	2021-01-0201	Investigation of Temperature Distribution inside the Diesel Particulate Filter (DPF) during the Drop to Idle Test (DTIT) Performed at Steady-State and Worst-Case Driving Cycles Radhakrishnan Shankar, Aadhar Chauhan, Nandhakumar Krishnan, Vasudevan Chandrasekaran, Mahindra Group

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Thermal Systems Modeling and Simulation

Session Code HX102

Room TBD Session

The Thermal Systems Modeling and Simulation session focusses on state of the art simulation technologies for modeling thermal systems and their application in the development and optimization of vehicle thermal management and fuel economy. The papers in the session will range from empirical, 1D modeling methods to three dimensional CFD models as well as coupled methods.

Organizers - Wilko Jansen, Jaguar & Land Rover; Ales Alajbegovic, Dassault Systemes; Apoorv Kalyankar, Cummins Inc.; Vamshi Korivi, CCDC Ground Vehicle Systems Center; Jason Lustbader, US Dept. of Energy; Gursaran Mathur, Calsonic Kansei North America Inc.; Kumar Srinivasan, FCA US LLC; Arpit Tiwari, Gamma Technologies LLC; Sudhi Uppuluri, Computational Sciences Experts Group

Time	Paper No.	Title
	2021-01-0203	Modelling of Engine Cooling System with a New Modelling Approach Based on Dynamic Neural Network Hongyang Zhang, Thomas Weyhing, Xiuyang Fan, Georg Blesinger, Olaf Toedter, Thomas Koch, Karlsruhe Institute of Technology
	2021-01-0206	Optimal Design of a Heat Recovery System Based on an Organic Rankine Cycle Rodrigo Alvarez Ojeda, Luis Munoz, Universidad de Los Andes

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:40 PM

Tuesday, April 13

On-Demand: Energy Efficiency of Thermal Systems

Session Code HX103

Room TBD Session

Proper thermal management can significantly contribute to overall system energy efficiency. This session highlights the latest developments in thermal management energy efficiency.

Organizers - Gursaran Mathur, Marelli; Ronald Semel, Ford Motor Company; Tarek Abdel-Salam, East Carolina University; Ales Alajbegovic, Dassault Systemes

Time	Paper No.	Title
	2021-01-0207	Impact of Thermal Architecture on Electric Vehicle Energy Consumption/Range: A Study with Full Vehicle Simulation Bozhi Yang, Meng Yao, Xiaohui Li, Meng Wang, Dan Wei, Gang Li, GAC Motor Co, Ltd.
	2021-01-0208	A Study on Heat Dissipation of Electric Vehicle Motor Based on Heat-Pipe Heat Transfer Analysis Li Liu, Gangfeng Tan, Wuhan University of Technology; Fangyu Zhou, China National Heavy Duty Truck Co., Ltd.; Meng Sun, ZhiQiang Liu, Chunyun Yang, Wuhan University of Technology
	2021-01-0209	Designing Thermoacoustic Engines for Automotive Exhaust Waste Heat Recovery Jianhua Zhou, Xijie Wang, Beihang University; Mikael Karlsson, Mats Abom, KTH Royal Institute of Technology

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Climate Control

Session Code HX104

Room TBD Session

Climate control is a defining vehicle attribute and is associated with brand image. Thermal performance and quality of climate control are both critical to customer satisfaction. The system has strong design interaction with other vehicle systems, while its primary objective is to deliver thermal comfort and occupant safety with low energy consumption. Localized Comfort, Secondary Fluids, Air Quality, Controls, System Sizing and HVAC consumer interface are just a few of the recent advances.

Organizers - Bashar AbdulNour, Kettering Univ.; Ales Alajbegovic, Dassault Systemes; Jeffrey Bozeman, General Motors LLC; Gursaran Mathur, Calsonic Kansei North America Inc.; Jie Zeng, Denso

Time	Paper No.	Title
	2021-01-0213	Environmental and Energy Sustainability Analysis of Conventional and Electric Powertrain Aditya Pratap Singh, KTH Royal Institute of Technology, Sweden; Diwanshu Wadhvani, AVL India Pvt., Ltd.; Prashant Sharma, Hero MotoCorp Ltd.; Mridul Agrawal, Jaipur Engineering College
	2021-01-0215	1D Modeling of HVAC Unit Air Flow for Automatic Climate Control Simulations Yasaman Masoudi, MEDA Ltd.; Shankar Natarajan, FCA Canada Inc.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:40 PM

Time	Paper No.	Title
	2021-01-0216	A Practical Approach towards Reducing the HVAC Flow Noise
		SOMNATH SEN, Kamlesh Kumar Singh, Abhishek Raj, Arun Kumar Goel, Subros, Ltd.

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Thermal Systems for Hybrid and Electric Vehicles

Session Code HX105

Room TBD Session

The purpose of this session is to share experiences and lessons learned to advance the technology in the field of thermal management of electric and hybrid vehicle systems. This session presents topics covering both testing and simulation of hybrid and electric vehicle thermal systems.

Organizers - Bashar AbdulNour, Kettering Univ.; Ales Alajbegovic, Dassault Systemes; Alaa El-Sharkawy, FCA US LLC; Christophe Petitjean, Valeo; Kumar Srinivasan, FCA US LLC; Andrew Sutherland, TI Fluid Systems; Arpit Tiwari, Gamma Technologies LLC; Jie Zeng, Denso

Time	Paper No.	Title
	2021-01-0217	Nonlinear and Adaptive Model Predictive Control Methods for Battery Thermal Management System
		Mingru Zhao, Feng Ding, Le Li, Yujiao Cheng, United Automotive Electronic Systems Co., Ltd.
	2021-01-0218	Design of a Compact Thermal Management System for a High-Power Silicon Carbide Traction Inverter
		Jigar Mistry, Yicheng Wang, Peter Azer, Berker Bilgin, McMaster University
	2021-01-0219	Analysis of the Effect of Heat Pipes on Enhancement of HEV/PHEV Battery Thermal Management
		Alaa El-Sharkawy, FCA US LLC; Amr Sami, Abd El-Rahman Hekal, Optumatics LLC; Dipan Arora, FCA US LLC; Ahmed Uddin, KCM Technical Inc
	2021-01-0220	Investigation of a Piston Engine and Solid Oxide Fuel Cell Combined Hybrid Modular Powerplant for Unmanned Aerial Vehicles
		Alexander Metcalf, Thomas Welles, Jeongmin Ahn, Syracuse University

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Powertrain Thermal Management

Session Code HX106

Room TBD Session

This session considers thermal-fluids modeling (zero-D, 1D, 3D CFD) and experimental papers. Systems include combustion, lubrication, cooling, fuel, EGR, transmission etc. Components include pumps, fuel injectors, turbochargers, torque converters, gear box, bearings, valves, ports, manifolds, oil cooler, EGR cooler, after-treatment (SCR, DOC, DPF); battery cooling etc.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:40 PM

Organizers - Bashar AbdulNour, Kettering Univ.; Ales Alajbegovic, Dassault Systemes; Edward Gerges, Dana Inc.; Sowmyalatha Jayaraman, General Motors LLC; Raj Ranganathan, Simerics Inc.; Jeff Schlautman, GM

Time	Paper No.	Title
	2021-01-0225	Model Predictive Control for Engine Thermal Management System Yue-Ming Chen, Jason Lee, Justin Holmer, Jinho Ha, Hyundai-Kia America Technical Center Inc.
	2021-01-0226	A Simulation Method for the Calculation of Water Condensation inside Charge Air Coolers Irina Basler, University of Stuttgart; Heinrich Reister, Rainer Rossmann, Daimler AG; Bernhard Weigand, University of Stuttgart
	2021-01-0227	Automotive Coolant Inhibitor Protection of an EV Cooling System Having Copper and Aluminum Heat Exchangers John Burgers, Mehdi Jalili, Meinrad Machler, Dana Canada Corporation; Ralf Strauss, BASF SE
	2021-01-0228	Development of Boiling Prediction Method in LP-EGR Cooler and Shape Optimization for Suppressing Boiling using Boiling Index Hyunwook Park, Seungjae Kang, Jaehun Jeong, Hyundai Motor Group
	2021-01-0229	Numerical Simulation of Surface Temperature Fluctuation and Thermal Barrier Coating at the Piston Top for a Diesel Engine Performance Improvement Yong Yin, Tongji Universtiy; Zhijun Wu, Tongji University; Zongjie Hu, Tongji Universtiy; Quan Long, Tongji University; Weiqi Ding, Minglong Li, Tongji Universtiy; Xiao Han, Qisheng Liu, Dongfeng Commercial Vehicle Co., Ltd.; Liguang Li, Tongji Universtiy

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Autonomous and Connected Vehicle Thermal Management

Session Code HX107

Room TBD Session

This session focuses on thermal management of autonomous vehicles. It highlights the ever-developing needs of thermal management systems for autonomous vehicles as well as the existing and developing technologies used to address these needs.

Organizers - Ales Alajbegovic, Dassault Systemes; Wilko Jansen, Jaguar & Land Rover; Sowmyalatha Jayaraman, General Motors LLC; Jie Zeng, Denso

Time	Paper No.	Title
	2021-01-0231	Impact of Lateral Alignment for Cooling Airflow during Heavy-Truck Platooning Chen Zhang, Michael Lammert, National Renewable Energy Laboratory; Brian McAuliffe, National Research Council Canada

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:40 PM

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Reliability and Robust Design in Automotive Engineering

Session Code IDM100

Room TBD

Session

This session is seeking submissions on reliability and robust design methods, good practices and applications, including among others uncertainty quantification, RBDO as well as accelerated reliability and durability testing.

Organizers - Alaa El-Sharkawy, FCA US LLC; Zhen Hu, University of Michigan; Lev Klyatis, Sohar Inc.; An Li, FCA; Paul Lubinski, Thermo King Corp.; Zissimos Mourelatos, Oakland University; Richard Sun, Fluid Consulting By Sun LLC; Jeff H. Trilling, Port Authority of NY/NJ

Time	Paper No.	Title
	2021-01-0232	Development of a Robust Thermal Management System for Lead-Acid Batteries Alaa El-Sharkawy, Dipan Arora, FCA US LLC; Amr Sami, Mohamed Zaki, Optumatics LLC; Krishna Guntur, FCA US LLC
	2021-01-0233	Decision-Making for Autonomous Mobility Using Remotely Sensed Terrain Parameters in Off-Road Environments Vijitashwa Pandey, Oakland University; Jeremy P. Bos, Jordan Ewing, Sam Kysar, Thomas Oommen, Michigan Technological University; William Smith, Paramsothy Jayakumar, David Gorsich, U.S. Army
	2021-01-0234	Application of DFSS Taguchi Method to Design Robust Shock Tower Madhav Hanamshet, Roshan N Mahadule, FCA Engineering India Pvt., Ltd.; Krzysztof Michalowski, FCA US LLC
	2021-01-0235	Parametric Design Study of McPherson Strut to Stabilizer Bar Link Bracket Weld Fatigue Using Design for Six Sigma and Taguchi Approach Sashanka Pilla, Kameshwara Rao Appana, FCA Engineering India Pvt., Ltd.; Sandip Datta, FCA US LLC
	2021-01-0237	1D-3D Online Coupled Transient Analysis for Powertrain-Control Integrated Thermal Management in an Electric Vehicle Heng Yi, Chenghao Deng, Changan New Energy Auto Tech Co Ltd.; Xu Gong, Changan Auto Co Ltd.; Xing Deng, Changan New Energy Auto Tech Co Ltd.; Michael Blatnik, Siemens Digital Industries Software
	2021-01-0238	Prediction of Spark Timing to Achieve a Specified Torque Profile in Spark-Ignition Engines Using Time-Dependent Metamodeling Ali Tafreshi, Zissimos Mourelatos, Oakland University
	2021-01-0239	Providing Reliability of Novel High Speed Aerial / Rocketry Vehicles on the Stages of Design and Testing Boris Y. Ganelin; Boris B. Ganelin

Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:40 PM

Tuesday, April 13

On-Demand: Intelligent Manufacturing / Industry 4.0

Session Code IDM200

Room TBD Session

This session is seeking submissions on AR/VR, additive manufacturing, digital twin, robotics, artificial intelligence (AI)-including machine learning, big data-including predictive analytics, predictive/preventative maintenance, industrial internet of things (IIoT), and other smart manufacturing technologies.

Organizers - Ana Djuric, Wayne State Univ.; Randy Gu, Oakland University; Ramakrishna Koganti, University Of Texas System; Monika Minarcin, Accenture; Chandan Mozumder, General Motors LLC; Yu Teng, BAIC Motor Corporation, Ltd.

Time	Paper No.	Title
	2021-01-0240	A Digital Twin Based Approach for Simulation and Emulation of an Automotive Paint Workshop Sergio Escriche Ing, Lucía Royo, Adrián Ruperez Ing, Guillermo Cucalón Ing, ELECTROINGENIERÍA INDUSTRIAL XCLC, S.L.; Aitor Martinez, Luis Bacaicoa, Francisco Rodriguez, Blanca Lopez, VOLKSWAGEN Navarra S.A.
	2021-01-0241	Data-based Process-Integrated 3D-Measurements of Magnesium Parts for Lightweight Car Body Construction Christian-Andreas Schumann, Jens Baum, Eric Forkel, Thomas Klein, West Saxon University
	2021-01-0242	Integrated COBOT, Human, and Manufacturing Task Kinematic Chain
	ORAL ONLY	Yun Bi, Ana Djuric, J Rickli, Wayne State Univ
	ORAL ONLY	Identify, Acensorize, Discover, Learn, Predict, Redesign and Relearn - A New Problem Solving Strategy for Quality 4.0 Carlos Escobar, General Motors LLC
	ORAL ONLY	Long Range Nozzles for Robotic Arms using Square Fractal Grids Theo Wells, Wells Gelven Fractal Technology

Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: AI and ML in Vehicle-Level Applications

Session Code IDM300

Room TBD Session

This session focuses on automotive applications of artificial intelligence (AI) and machine learning (ML), including use of connected vehicle data sources, predictive or prescriptive, preventive maintenance, and big data analytics.

Organizers - Yan Fu, Ford Motor Company; Ramakrishna Koganti, University Of Texas System; Monika Minarcin, Accenture; Qigui Wang, General Motors LLC; Zhenfei Zhan, Chongqing University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:41 PM

Time	Paper No.	Title
	2021-01-0243	Deep Generative Design Models for Improved Door Frame Performance Nirmal Puthuvayil, Ford India Pvt, Ltd.; Thoheer Zaman, Arunkumar K, RLE International; Sivasankari S, Ramesh Cheyadri, Ford India Pvt, Ltd.
	2021-01-0244	Machine Learning Algorithm for Automotive Collision Avoidance Ramakrishna Koganti, Shambhavi Jha, Sai Pranathi Polisetti, Emma Yiran Yang, Md Rajib, Saichandra Sikkem, Michael They, University of Texas-Arlington
	2021-01-0245	The Auxiliary System of Cleaning Vehicle Based on Road Recognition Technology Jiaming Feng, Feng'an Zhao, Meng Ye, Wenchao Sun, Wuhan University of Technology
	2021-01-0246	Connected Vehicle Data Time Series Dependence for Machine Learning Model Selection and Specification Dominique Meroux, Cassandra Telenko, Zhen Jiang, Ford Motor Company
	2021-01-0247	Automatic and Interpretable Predictive Maintenance System Xuejiao Li, Yong Sun, Wenbo Yu, Isuzu Technical Center of America, Inc.
	2021-01-0248	Implementation and Validation of Behavior Cloning Using Scaled Vehicles Ankit Verma, Siddhesh Bagkar, Naga Venkata SaiTeja Allam, Adhiti Raman, Matthias Schmid, Venkat N Krovi, Clemson University
	2021-01-0249	Application of Artificial Intelligence to Solve an Elasto-Plastic Impact Problem Shakti Chavan, Hassan Hor, FCA US LLC

Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Military Ground Vehicles

Session Code IDM400

Room TBD Session

This session serves as a forum to address the unique challenges, current gaps, and emerging technologies related to the design, development, and manufacturing of military ground vehicles. The scope includes modeling, simulation, performance analysis, optimization, testing, and validation.

Organizers - Matthew P. Castanier, Denise M. Rizzo, US Army DEVCOM GVSC

Time	Paper No.	Title
	2021-01-0250	Supervised Terrain Classification with Adaptive Unsupervised Terrain Assessment Akhil Kurup, Sam Kysar, Jeremy Bos, Michigan Technological University; Paramsothy Jayakumar, William Smith, US Army

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:41 PM

Time	Paper No.	Title
	2021-01-0251	Unstructured with a Point: Validation and Robustness Evaluation of Point-Cloud Based Path Planning Sam Kysar, Jeremy Bos, Akhil Kurup, Zach Jeffries, Jake Carter, Casey Majhor, Michigan Technological University; Paramsothy Jayakumar, US Army; William Smith, US Army GVSC
	2021-01-0252	Amphibious Vehicle Water Egress Modeling and Simulation Using CFD and Bekker's Methodology Nathan Tison, US Army
	2021-01-0253	An Innovative Service Load-Agnostic Structural Light-Weighting Design Optimization Methodology Kumar B. Kulkarni, US Army
	2021-01-0254	Nondestructive Evaluation of Terrain Using mmWave Radar Imaging Howard Brand, Bing Li, Clemson University
	2021-01-0255	Multilevel Design of Sandwich Composite Armors for Blast Mitigation using Bayesian Optimization and Non-Uniform Rational B-Splines Homero Valladares, Purdue University; Andres Tovar, Indiana University Purdue University Indianapolis
	2021-01-0256	Tanker Truck Rollover Avoidance Using Learning Reference Governor Kaiwen Liu, Nan Li, Ilya Kolmanovsky, University of Michigan; Denise Rizzo, US Army; Anouck Girard, University of Michigan
	2021-01-0257	Multi-Objective Design Optimization of an Electric Motor Thermal Management System for Autonomous Vehicles Shervin Shoai Naini, Richard Miller, Clemson University; Denise Rizzo, US Army; JOHN Wagner, Clemson University
	2021-01-0258	Developing Prediction Based Algorithms for Energy and Exergy Flow Robert Jane, US Army Research Laboratory; CDT Tae Kim, LTC Corey James, US Military Academy
	2021-01-0259	A Functional Decomposition Approach for Feature-Based Reference Architecture Modeling Alessandra St. Germain, Ryan Colletti, Chris Paredis, Clemson University; Denise Rizzo, US Army; Ahsan Qamar, Ford Motor Company
	2021-01-0260	Automatic Formal Verification of SysML State Machine Diagrams for Vehicular Control Systems Maziar Mahani, Clemson University; Denise Rizzo, US Army; Chris Paredis, Yue Wang, Clemson University
	2021-01-0261	Direct Yaw Control Based on Optimal Longitudinal Tire Forces for 8x8 Combat Vehicle Mohamed Omar, Moustafa El-Gindy, University of Ontario Institute of Technology
	ORAL ONLY	Exergy-based analysis of ground vehicles Federico Dettù, Gabriele Pozzato, Stanford University; Denise Rizzo, US Army GVSC; Simona Onori, Stanford University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:41 PM

Time	Paper No.	Title
	ORAL ONLY	A SysML Profile and Modeling Approach for Configuring ROS-based Autonomy Stacks Huzefa Dossaji, Ryan Colletti, Clemson University; Ahsan Qamar, Ford Motor Company; Denise Rizzo, US Army GVSC; Chris Paredis, Clemson University
	ORAL ONLY	System Theoretic Approach to Imitation Learning with Application to Vehicle Autonomy Umesh Vaidya, Clemson University
	ORAL ONLY	Real-Time Autonomous Navigation of a Military Vehicle in a Synthetic Off-Road Environment Samudhbhav Prabhu Srinivas, Ted Sender, Igor Khalip, Ram Vasudevan, Bogdan Epureanu, University of Michigan

Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Vehicle Internet of Things (IoT)

Session Code IOT101

Room TBD

Session

Organizers - Sumit Bhargava, Mahle Aftermarket Inc.; Jacques Fluet, Telecommunications Industry Association; Partha Goswami, General Motors LLC; Jan-Mou Li, Metropolitan Washington Council of Gover; Raj Paul, Microsoft

Time	Paper No.	Title
	2021-01-0262	Evaluation of Voice Biometrics for Identification and Authentication Nikhitha Bekkanti, Leah Busch, Scott Amman, Ford Motor Company
	ORAL ONLY	Solve Wrong-Way Driving from Inside your Car Willy Sorenson, Iowa DOT - Office of Traffic and Safety

Planned by Vehicle Internet of Things Program Committee / Ground Vehicle Advisory Group

Tuesday, April 13

On-Demand: Advances in Lightweight Materials

Session Code M102

Room TBD

Session

This session presents the latest developments in automotive applications of wrought products. The papers cover a wide range of the technical aspects including alloy development, lightweight design, multi-material usage for body structures, process development and simulation as well as performance optimization.

Organizers - Raghu Echempati, Kettering Univ.; Jidong Kang, CanmetMATERIALS

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:41 PM

Time	Paper No.	Title
	2021-01-0264	Computational Study of the Candidate Material for Weight Optimization of the Crankshaft Amit Chetry, Mayank Kamboj, Narayan Khatri, Anshul BANSAL, Sarthak Jain, University of Petroleum and Energy Studies, Dehradun
	2021-01-0265	Modified Multi-material Topology Optimization Considering Isotropic and Anisotropic Materials Mixture Rubens Bohrer, Queen's University; Manish Pamwar, Balbir Sangha, General Motors Canada, Ltd.; Il Yong Kim, Queen's University

Planned by Metallic Materials Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Applications of Advanced High-Strength Steels and Press Hardening for Automotive Structures

Session Code M104

Room TBD

Session

This symposium provides a forum for researchers and application engineers to disseminate the knowledge and information gained in the area of advanced high-strength and press-hardening steel development and applications in automotive structures, enabling light-weight and durable vehicles with improved safety.

Organizers - Constantin Chiriac, Ford Motor Company; Jason Coryell, General Motors LLC; Emmanuel De Moor, Colorado School of Mines; Brandon Hance, United States Steel Corp.; Jatinder Singh, General Motors LLC

Time	Paper No.	Title
	2021-01-0266	Strain Amount and Strain Path Effects on Instrumented Charpy Toughness of Baked Third Generation Advanced High Strength Steels Adam D. Hodges, Sarah Tedesco, General Motors LLC; Lindsay Golem, Gestamp North America; Gang Huang, ArcelorMittal

Planned by Metallic Materials Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Sheet Metal Forming Technology

Session Code M105

Room TBD

Session

This session will feature the latest developments in sheet metal forming technology. Presentations will address general areas of forming processes, formability issues and modeling. These include forming processes (Stamping, hydroforming, gas forming, high temperature forming), formability Issues (springback, edge cracking, stretch-bend failures and fracture), Modeling (materials, forming limits, failure criteria in various deformation modes and process modeling & optimization).

Organizers - Xiaoming Chen, Novelis North America; Raghu Echempati, Kettering Univ.; ZiQiang Sheng, General Motors LLC; Dajun Zhou, FCA

Time	Paper No.	Title
------	-----------	-------

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:41 PM

Time	Paper No.	Title
	2021-01-0267	Formability Characterization of 3rd Generation Advanced High-Strength Steel and Application to Forming a B-Pillar Jon Edward Gutierrez, Jacqueline Noder, University of Waterloo; Neil Paker, Jamie Bowman, Bowman Precision Tooling; Amir Zhumagulov, University of Waterloo; James Dykeman, Skye Malcolm, Honda R & D Americas Inc.; Hesham Ezzat, AISI; Cliff Butcher, University of Waterloo
	2021-01-0268	Analysis of Springback Effects in Deep Drawing Processes: Simulation and Experimental Studies R.W.M. Said, M. Mehrabi, University of Detroit Mercy
	2021-01-0269	Optimal Design and Forming Analysis of the Stamping Process for Front Wall of Automobile Considering Springback Compensation Technology Haohan Zeng, Zhaoming Huang, Wanjiang University of Technology; Tao Wang, Nanjing Univ of Science & Technology; Huiming Sun, Liangmo Wang, Nanjing University of Science & Technology

Planned by Metallic Materials Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Advances in Metalcasting and Forging

Session Code M106

Room TBD

Session

Metalcasting and forging are a few of the oldest manufacturing processes, dating back over five millennia. However, recent advances continue to expand the horizons of metalcasting and forging: new alloys and new manufacturing techniques are leading to enhanced properties, process modeling and simulation tools are enabling better automotive component designs, the increasing use of metal-matrix composites is opening new frontiers in performance, and additive manufacturing techniques such as 3D printing of pattern materials are reducing lead times for prototype parts. This session will cover the latest developments in ferrous and non-ferrous metalcasting and forging technologies for the mobility industry

Organizers - David Anderson; Gaurav Argade, Jian Zhou, Cummins Inc.

Time	Paper No.	Title
	2021-01-0270	Simplified CFD Model for Assessing the Cooling Channel Design in 3D Printed High-Pressure Tools for Aluminium Alloy Casting Essam Abo-Serie, James Jewkes, Tongyan Zeng, Yuancheng Liang, Coventry University
	2021-01-0272	Analysis of Solidification Behavior of Compacted Graphite Iron Exhaust Manifold and Its Comparison with Si-Mo Ductile Iron Prfull Patil, Basker Balaji P K, Mohammad Saifullah Khan, John Deere India Pvt., Ltd.

Planned by Metallic Materials Committee / Materials Engineering Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:41 PM

Tuesday, April 13

On-Demand: NeXTgeneration Automotive Aluminum Technologies

Session Code M108

Room TBD Session

Aluminum has been used in automotive vehicles for well over 100 years and its use is expected to grow now at a faster pace than at any other time in history. With this comes the challenges of incorporating it into both mixed material and aluminum intensive vehicle designs. This session highlights the work that has been done to optimize its incorporation into automotive applications and covers joining technologies such as spot welding, SPR and adhesive bonding as well as work on alloy design towards enhancing corrosion protection, specific strength and formability.

Organizers - Rahul Kulkarni, Novelis Corporation; Theresa E. MacFarlane, Novelis Global Research & Tech. Ctr.

Time	Paper No.	Title
	2021-01-0273	The Effect of Quench Parameters on Self-Piercing Rivet Joint Performance in a High Strength Automotive 6111 Aluminum Alloy Daniel Freiberg, Andrey Ilinich, Garret Huff, Amanda Freis, S. George Luckey, Ford Motor Company; David Barbier, Phil Dodge, Jean-Philippe Masse, He Qin Wang, Andreas Afseth, Constellium
	ORAL ONLY	Fracture Model Calibration from A Shell-Element Specific Viewpoint Sebastijan Jurendic, Novelis Deutschland GmbH; David Anderson, Akshay Kulkarni, Tudor Piroteala, Novelis Inc.; David Leyvraz, Novelis Switerland SA
	ORAL ONLY	Predicting Damage of Thin Metal Components under Multi-Axial Bending Loads Juan G. Londono, Thornton Tomasetti Inc.; Pawel Woelke, A. Ojema, Thornton Tomasetti; T. Erhart, A. Haufe, DYNAmore GmbH; Sebastijan Jurendic, Novelis Deutschland GmbH; David Anderson, Novelis Inc.

Planned by Metallic Materials Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Magnesium Technology

Session Code M109

Room TBD Session

The interest in Magnesium alloys in the automotive market for new and existing applications is primarily due to their mass reduction potential. Research of magnesium alloys, processing methods including die-casting, sheet and extrusion, enabling developments in durability, corrosion and joining technologies, and development of new applications continues to receive strong interest. The technical papers to be presented in this session reflect these new developments in magnesium technologies.

Organizers - Mark Kozdras, CanmetMATERIALS; Jonathan P. Weiler, Meridian Lightweight Technologies

Time	Paper No.	Title
	2021-01-0274	Cast Magnesium Subframe Development - Bolt Load Retention Xiaoming Chen, David Wagner, Gerald Heath, Sanjay Mehta, John Uicker, Ford Motor Company

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:41 PM

Time	Paper No.	Title
	2021-01-0275	Joining Magnesium Die Casting using Self-Piercing Riveting with a Rivet Receiver Yuchao (Chad) Liu, Gerry Wang, Jonathan Weiler, Meridian Lightweight Technologies
	2021-01-0276	Corrosion Performance of a Magnesium Tower Brace Kimberly Lazarz, James Cahill, TJ Ciccone, Ken Redlin, Steven Simko, Ford Motor Company
	2021-01-0277	Concepts for Manufacturing a Seat Backrest Structure Dominated by an Extruded Magnesium Alloy S.P. Sikora, E. Beeh, German Aerospace Center; A. Jäger, KODA Stanz- und Biegetechnik GmbH; O. Junk, Faurecia GmbH; D. Putschkat, KODA Stanz- und Biegetechnik GmbH; H. Sulaiman, Faurecia GmbH
	2021-01-0279	Cast Magnesium Subframe Development-Corrosion Mitigation Strategy and Testing Xiaoming Chen, David Wagner, Andrew Wedepohl, Ken Redlin, Sanjay Mehta, John Uicker, Ford Motor Company
	ORAL ONLY	A New Magnesium Sheet Alloy for Room-Temperature Forming Alan Luo, Ohio State University
	ORAL ONLY	Joining of Magnesium Castings to Carbon Fiber Composites Aashish Rohatgi, Pacific Northwest National Laboratory; Kumar Sadayappan, Gabriel Birsan, CanmetMATERIALS; Dustin Clelland, Pacific Northwest National Laboratory

Planned by Metallic Materials Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Fatigue Analysis and Design

Session Code M200

Room TBD Session

This session focuses on innovative and improved fatigue analysis/design methodologies and problem solving techniques in the ground vehicle industry. The subjects of interest include studies and discussion on (1) structural stress generation, (2) fatigue of metallic material including new lightweight metals, (3) fatigue of non-metallic materials (plastic, elastomer and composites), (4) fatigue of joints and bearings (mechanical, welded, and adhesive-bonding), (5) environmental effects on fatigue performance (elevated temperatures, oxidation, corrosion, and humidity), (6) effect of manufacturing processes on fatigue behavior (surface treatment, residual stresses), (7) vibration fatigue, (8) probabilistic fatigue, and (9) microstructure-mechanics based fatigue.

Organizers - Gavin Song, Ford Motor Company; Mark Barkey, Univ. of Alabama; Guofei Chen; Efthimio Duni, FCA EMEA; Carlos Engler-Pinto, Ford Motor Company; Ali Fatemi, Univ. of Memphis; Huairui Guo, Mingchao Guo, FCA US LLC; Jeong Hong, Engineering Mechanics Corp. of Columbus; Hong Tae Kang, Univ. of Michigan-Dearborn; Abolhassan Khosrovaneh, GM; Yung-Li Lee, Yi Liu, FCA US LLC; Paul Lubinski, Thermo King Corp.; Sean McKelvey, FCA US LLC; Ali A. Roostaei, University of Waterloo; Xuming Su, Ford Motor Co.; Zhigang Wei, Tenneco Inc.; Xijia Wu, National Research Council Canada

Time	Paper No.	Title
------	-----------	-------

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:41 PM

Time	Paper No.	Title
	2021-01-0280	Reliability Based Design Optimization Process for Door Slam Durability Pravin C. Kapadnis, David Hamilton, Frank Haubold, Charles Cory, General Motors LLC
	2021-01-0281	Thermo-Mechanical Fatigue (TMF) Life of Ductile SiMo Cast Iron with Aluminum Addition Guangchun Quan, 3DFoundri; Delin Li, Xijia Wu, National Research Council Canada
	ORAL ONLY	Connecting Rod Durability and Big-End Bore Distortion Study Nabeel Thekke Kolayath, Royal Enfield
	ORAL ONLY	Methodology for predicting the fatigue life of axle cover pans subjected to cyclic fore-aft beaming fatigue loads Anoop Vasu, AAM (American Axle & Mfg Inc)
	ORAL ONLY	Weld root failure investigation under in-plane shear dominant loading Jeong Hong, Engineering Mechanics Corp. of Columbus; Gery Wilkowski PhD, Engineering Mechanics Corp of Columbus
	ORAL ONLY	Finite Element based Modeling Approach for Fatigue Crack Propagation of Structural Components Paul Ilie, Ayhan Ince, Concordia University

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Advanced Analysis, Design, and Optimization of Materials, Restraints, and Structures for Enhanced Automotive Safety and Weight Reduction

Session Code M202

Room TBD

Session

This session explores innovative ideas to enhance automotive safety with improved material constitutive modeling, analysis method developments, simulation and pre/post processing tools, optimization techniques, crash code developments, finite element model updating, model validation and verification techniques, dummies and occupants, restraint systems, passive safety as well as lightweight material applications and designs.

Organizers - William Altenhof, Univ. of Windsor; Guofei Chen, Arconic Corporation; Wei Li, Autoliv; Jwo Pan, University of Michigan; Tau Tyan, Ford Motor Company

Time	Paper No.	Title
	2021-01-0283	Experimental Investigation of Machining Characteristics of Al 6063 Aluminium Alloy Using Response Surface Methodology Vipin Kumar Sharma, Maharaja Agrasen Institute of Technology

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:42 PM

Time	Paper No.	Title
	2021-01-0284	Development of a Lightweight Electric Light Duty Truck Structure Giles Bryer, Tom Siberski, Joung Choi, General Motors LLC; Manish Pamwar, General Motors Canada, Ltd.
	2021-01-0285	Maximized Energy Absorption and an Investigation on Practical Limitations for the Axial Cutting and Hybrid Cutting/Clamping Deformation Modes Aryen Shakib, John Magliaro, William Altenhof, University of Windsor
	2021-01-0286	Crash Performance of Steel, Aluminum and Carbon Fiber Composite Bumper Beams with Steel Crush Cans Deeptej Kudav, Pankaj K. Mallick, University of Michigan-Dearborn
	2021-01-0287	BIW Multidisciplinary Design Optimization (MDO) with Equivalent Static Load Method - Quick MDO Methodology Raghu Kanugula, Sai Rama Narayana Peddi, Mahindra & Mahindra Ltd.
	2021-01-0288	Protecting Passenger Vehicles from Side Underride with Heavy Trucks Garrett Mattos, Keith Friedman, Friedman Research Corporation; Aaron Kiefer, Collision Safety Consultants; Perry Ponder, Seven Hills Engineering, LLC.
	2021-01-0289	Multi-Material Hybrid Rocker Panel Structures for EV Battery Protection Vamsy Godthi, Somasekhar Bobba, Arunachala P, Harindranath Sharma, Marcel Rijnkels, Yi Li, SABIC
	2021-01-0290	Fracture Limit Curve Development on ABW (Arc Brazing Weld) Considering Joint Efficiency in LS-DYNA3D Hwawon Lee, Parvath Police, General Motors LLC
	2021-01-0291	Numerical Investigation on Axial Crushing of Double-Arrowed NPR Filled Thin-Walled Tubes Huiming SUN, Chengqiang Ge, Nanjing University of Science & Technology; Qiang Gao, The Chinese University of Hong Kong; Tao Wang, Nanjing University of Science & Technology; Zhaoming Huang, Wanjiang University of Technology; Liangmo Wang, Nanjing University of Science & Technology
	2021-01-0292	Evaluation of Hardtop Roof Mounting Schemes for High Speed Performance and Noise Siddharth Bhupendra Unadkat, Sriresh Kadakuntla, Venugopal Pandurangan, Aditya Pandey, S Ganesh, Sathish Kumar Balaram, Mahindra & Mahindra Ltd.
	2021-01-0293	Compressive and Bending Resistance of the Thin-Walled Hat Section Beam with Strengthened Ridgelines Yuqing Zheng, Xiaojing Nie, Huzhou University; Xichan Zhu, Tongji University; Shuiqiang Zhang, Huzhou University
	2021-01-0294	Stress Distribution of High-Strength Thin-Shell Structure during Buckling Collapse Nozomu Miura, Hiroaki Kubota, Kazunari Yoshida, Tokai University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:42 PM

Time	Paper No.	Title
	ORAL ONLY	Compact Lightweight Steel Hood Design& Development Using ACP Opdesign® Divesh Mittal, ETA Inc.
	ORAL ONLY	Hybrid solutions for light weight automotive Body-In-White Structures Somasekhar Bobba, Vamsy Godthi, Arunachala P, Harindranath Sharma, Kottresh Kurudimath, SABIC
	ORAL ONLY	Exploration of Cost-Mass-Performance Balance in BEV BiW Structure Design – Floor Structure Virtual Demonstrator Denis Schmitz, Forward Engineering GmbH; Michael Meier, Sika Automotive AG
	ORAL ONLY	Designing the Future with Optimization-Led Design & AI/ML Solution Akbar Farahani, ETA Inc (Engineering Tech Assoc); divesh mittal, ETA Inc.

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00006, and also Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Automotive Engineering Testing and Test Methods

Session Code M203

Room TBD Session

The focus of this session are the tests and test methods employed in the evaluation of the performance and durability of powertrain (engines, transmissions), driveline (4WD systems, driveshafts, axles), chassis (frame, suspensions, brakes, etc.) and body components, subsystems, and full vehicle systems.

Organizers - Darryl S. Taylor, Dana; Mikhail Temkin, Liang Wang, FCA US LLC

Time	Paper No.	Title
	2021-01-0295	Modeling Ventilation System for Minimizing Temperature Amount of the Heat on the Contact Surface of the Brake Disc Jamshid Valiev Fayzullayevich, Gangfeng Tan, Wuhan University of Technology; Fushou Lei, Suizhou Product Qual Supervision and Inspection Institute; Philip Agyeman, Justice Frimpong, Yovkocho Sarvar, Chunyun Yang, Wuhan University of Technology
	2021-01-0296	Method for Estimation of Time at Temperature Histogram of Vehicle Interior Parts Exposed to Meteorological Environments around the World (Third Report) Takeru Fukuda, Jun Abe, Honda Motor Co., Ltd.
	2021-01-0297	Use of Digital Olfaction to Standardize Cabin Odor Testing in Automotive Interiors Etienne Bultel, Aryballe Technologies SA; Mike Franchy, John Klein, Asahi Kasei Corp; Lucie Brun, Johanna Decors, Elizabeth Facticeau, Aryballe Technologies SA; Laura Shereda, Asahi Kasei Corp; Aurélie Pasqualon, Tristan Rousselle, Aryballe Technologies SA

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:42 PM

Time	Paper No.	Title
	2021-01-0298	The Study of the Effective Contact Area of Suction Cup Bicheng Guo, Boyang Zhang, Siyuan Fang, Lianxiang Yang, Aofei Zhang, Oakland University
	2021-01-0299	CAE Correlation of Sealing Pressure of a Press-in-Place Gasket Fan Yang, Oakland University; Raghu Rajan Ramamoorthi, FCA US LLC; Gary Barber, Oakland University; Wensheng Zhang, FCA US LLC; Bingxu Wang, Oakland University
	2021-01-0300	Design and Construction of an Experimental Test Bench for Storing Kinetic Energy in a Flywheel Carlos Alberto Romero Piedrahita, Universidad Tecnologica de Pereira; Andrés Felipe Rodríguez, Universidad Autónoma de Occidente

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Optical Measurement and Nondestructive Testing Techniques in Automotive Engineering

Session Code M204

Room TBD

Session

Optical based Techniques/technologies for Materials Characterization, Strain/Measurement, Nondestructive Testing, and Validation of Materials Models etc.

Organizers - Beiwen Li, Iowa State University; Sheng Liu, General Motors LLC; Kah Wah Long, FCA US LLC; Lianxiang Yang, Oakland University

Time	Paper No.	Title
	2021-01-0302	Simultaneous Measurement of Three-Dimensional Displacement Gradients Using Tri-Color Michelson-Type Digital Shearography: Comparison and Optimization of Optical Setups Huiying Wang, Sijin Wu, Weixian Li, Beijing Information Science & Technology University
	2021-01-0304	Review and Comparison of Different Multi-Channel Spatial-Phase Shift Algorithms of Electronic Speckle Pattern Interferometry Boyang Zhang, Bicheng Guo, Xiaowan Zheng, Oakland University; Lei Yang, HeFei University of Technology; Lianxiang Yang, Oakland University
	2021-01-0305	Real-Time Simultaneous Measurement for Dual-Directional First Derivative of 3D Deformation Based on Shearography Haotian Xie, Shuangle Wu, Fangyuan Sun, Qihan Zhao, Xiangwei Liu, Yonghong Wang, Hefei University of Technology
	ORAL ONLY	Quantitatively Solitary Wave Attenuation Strategies Within One-dimensional Granular System Wen Zhang, Jun Xu, UNC Charlotte Motorsports Engineering

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:42 PM

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Materials Characterization and Modeling

Session Code M205

Room TBD

Session

Materials are very important for vehicle design and performance. From the traditional combustion engines to electrified powertrain systems and battery, material challenges occur in almost every design step. This session focuses on material characterization and modeling technique already or potentially involved in automobile industry. Special emphases are residual stress, microstructure and properties during additive manufacturing, crack growth and interaction with environment, battery materials and simulation. Key words: residual stress, microstructure, mechanical properties, additive manufacturing, crack growth, environment effects, battery materials, material modeling, simulation.

Organizers - Ke An, Oak Ridge National Laboratory; Hamid Jahed, University of Waterloo; Yi Liu, FCA US LLC; Qigui Wang, General Motors LLC

Time	Paper No.	Title
	2021-01-0306	Porosity Characterization of Cast Al Alloys with X-Ray Computed Tomography and Scanning Electron Microscope Liang Wang, Qigui Wang, Daniel Wilson, General Motors LLC
	2021-01-0307	A FINITE ELEMENT MODELING ACCOUNTING FOR CASE-HARDENED STEEL WITH CONTINUALLY VARYING HARDNESS Zane Yang, Valeo
	2021-01-0308	Constitutive, Formability, and Fracture Characterization of 3rd Gen AHSS with an Ultimate Tensile Strength of 1180 MPa Jacqueline Noder, Jon Edward Gutierrez, Amir Zhumagulov, Farinaz Khameneh, University of Waterloo; Hesham Ezzat, AISI; James Dykeman, Honda; Cliff Butcher, University of Waterloo
	2021-01-0309	Machine Learning Based Parameter Calibration for Multi-Scale Material Modeling of Laser Powder Bed Fusion (L-PBF) AISi10Mg Yang Li, Ziang Li, Wei-Jen Lai, Ford Motor Company; Hongyi Xu, University of Connecticut; Zhendan Xue, ESTECO North America; Xuming Su, Zhenyan Gao, Ford Motor Company
	2021-01-0310	Three Failure Models for CFRP Composites HaiYan Yu, Hangyu Wu, Tongji University
	2021-01-0311	Modeling Quasi-Static Crack Using XFEM and FECM Hengcheng Liao, Southeast University
	2021-01-0312	Experimental Evaluation of True Stress-Strain for Ductile Thermoplastics Vijaya Kumar R L, TATA Consultancy Services; Jayaraj Radhakrishnan, Nanyang Technological University; Vesna Savic, General Motors LLC; Swaroop Kavi, Biswajit Tripathy, TATA Consultancy Services
	2021-01-0313	Modeling the Effect of Elastic Modulus of the Second Phase Particle on Crack Propagation Using FECM Hengcheng Liao, Southeast University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:42 PM

Time	Paper No.	Title
	2021-01-0314	High-Temperature Approaches to Synthesize Fe ₁₆ N ₂ through the Heat Treatment of As-Nitride Fe-Cu-B Ribbon Guannan Guo, Bin Ma, Jinming Liu, Fan Zhang, Jian-Ping Wang, University of Minnesota
	ORAL ONLY	Assessing Thermomechanical Fatigue of a Cast Aluminum Alloy Cylinder Head of an Internal Combustion Engine (SAE Paper 2020-01-1077) Yi Liu, Pallavi Annabattula, Seyed Mirmiran, Lin Zhang, Jim Chen, Surendra Gaikwad, Kanwerdip Singh, FCA US LLC
	ORAL ONLY	High-Throughput Characterization of Mechanical Properties for Supporting Advanced Materials Design and Manufacturing Richard W. Neu, Georgia Institute of Technology; Anirudh S. Bhat; Jonathan Fok Wai Leung
	ORAL ONLY	Solution Annealing of Direct Metal Laser Sintered Inconel 718 Ala'aldin Alafaghani, University of California - Merced; Ala Qattawi, The University of Toledo
	ORAL ONLY	Manufacturing Energy Analysis Using Theoretical Models And LCA For Reshaping Sheet Metal Based Components: A Case Study Ala Qattawi, The University of Toledo; Muhammad Ali Ablat, University of California - Merced; Masuma Akter, The University of Toledo

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Load Simulation and Vehicle Performance: Nonlinear Components/Systems

Session Code M206

Room TBD

Session

Focusing on new theory, formulation and modeling of amplitude-, frequency- and temperature-dependent nonlinear components/systems such as mounts or bushings, shock absorbers, and joint friction/damping; dynamic characterization through lab and field testing; Linearization methodology; Model validation, application, and sensitivity analysis in vehicle system/subsystem simulations; Nonlinear system identification, modeling, and application in testing accuracy improvement, etc.

Organizers - Guangqiang Wu, Tongji Univ.; Jinglai Wu, Hefei University of Technology; Peijun Xu, Ebco Inc.; Fulun Yang, Tenneco Inc.

Time	Paper No.	Title
	2021-01-0315	Dynamic Model and Experimental Research of Novel Air Spring with Parallel Unidirectional Pipes and Single Additional Chamber Yangxuefei Liu, South China University of Technology; Ran Zhen, Ruilong Li, Shandong Meichen Industry Group Co., Ltd
	2021-01-0316	Research and Parameter Optimization on Ride Comfort and Road Friendliness of Interconnected Air Suspension for Commercial Vehicles Yu Huang, Wen-Bin Shangguan, Kang Yin, South China University of Technology; Minghui Wang, Yongfeng Jiang, Shandong Meichen Industry Group Co., Ltd.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:42 PM

Time	Paper No.	Title
	2021-01-0317	Comparison of Rubber Bushing Models for Loads Analysis Kai Yue, Yunqing Zhang, Huazhong University of Science and Tech.; Peijun Xu, Ebco Inc.
	2021-01-0318	Anti-Rollover of the Counterbalanced Forklift Truck Based on Zero-Moment Point Guang Xia, Jiacheng Li, Xiwen Tang, Yang Zhang, Linfeng Zhao, Hefei University of Technology
	2021-01-0319	Nonlinear Force Model of Electromagnetic Damper and Its Influence on Vibration Control Pengfei Liu, Minyi Zheng, Liang Luo, Donghong ning, Nong Zhang, Hefei University of Technology
	2021-01-0320	Optimal Gearshift Strategy in Inertia Phase of Dual-Clutch Transmissions Yichao Tao, Guangqiang Wu, Tongji University
	2021-01-0321	Dynamic Modelling and Simulation of a New Spring-Based Synchronizer for Electric Vehicle Yiwei Wang, Jinglai Wu, Xianqian Hong, Nong Zhang, Hefei University of Technology
	ORAL ONLY	Hydraulically interconnected suspension configuration switching control based on nonlinear model predictive control Tong Chen, Minyi Zheng, Pengfei Liu, Nong Zhang, Liang Luo, Hefei University of Technology

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Load Simulation and Vehicle Performance: Ride Comfort

Session Code M207

Room TBD Session

Focusing on vehicle ride comfort, addressing issues such as ride evaluation, suspension tuning, occupant biomechanics, seating dynamics, and semi-active and active suspensions. Topics may include traditional vehicle primary and secondary ride issues, structural shake, brake pulsation, smooth road shake, power hop, launch shudder, freeway hop, etc. and any new ride issues raised from electric vehicles (e.g. in-wheel motors driven EVs) and autonomous vehicles (e.g. motion sickness prevention through vehicle design and driving pattern optimization).

Organizers - Fangwu (Mike) Ma, Jilin Univ.; Xuting Wu, GAC R&D Center; Zhi Yuan, Dassault Systèmes

Time	Paper No.	Title
	2021-01-0322	Multi-Objective Control of Dynamic Chassis Considering Road Roughness Class Recognition Xuyang Liu, Guangqiang Wu, Huize Hu, Tongji University
	2021-01-0323	Research on Airborne Noise of Battery Electric Vehicles Based on Transfer Path Analysis

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:43 PM

Time	Paper No.	Title
		Yue Zhang, South China University of Technology; Xinxing Xie, Dongting Mei, Ningbo Tuopu Group Co., Ltd.; Wen-Bin Shangguan, South China University of Technology
	2021-01-0324	Structural Design and Simulation Analysis of an Intelligent Speed Bump
		Puchun Zeng, Wuhan University of Technology; Di Zhao, Hubei Public Security Department; Li Liu, Zujie Yang, Gangfeng Tan, Wuhan University of Technology
	2021-01-0325	Virtual Evaluation of Seat Shake Performance Using Four Poster Shaker
		Suraj Ajay Kumar, Pranav Hol, Dhanasekar Venkatesan, FCA Engineering India Pvt., Ltd.; Paul Davis, FCA US LLC

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Load Simulation and Vehicle Performance: Tire and Terrain

Session Code M208

Room TBD Session

Focusing on tire and terrain mechanics modeling, tire model and test development, parameters identification, sensitivity analysis, road profile characterization, interactions between tire, suspension/steering/brake systems, and different terrains, spindle loads/travel variation attributes due to deterministic and rough roads, tire noise, rolling resistance, correlation studies, design of intelligent tires and ADAS, and changes in tire load duty cycles from traditional to autonomous vehicles.

Organizers - Mustafa Ali Arat, Goodyear Tire & Rubber Co.; Jennifer Bastiaan, Kettering Univ.; Emmanuel O. Bolarinwa, Coventry University; Xiaobo Yang, Oshkosh Corporation

Time	Paper No.	Title
	2021-01-0326	Modeling of Tire-Obstacle Contact with Focus on Calculation Accuracy and Efficiency Yun Pang, Günther Prokop, Technische Universität Dresden
	2021-01-0327	Off-Road Vehicles' Traction Performance Augmented by Controlling Tire Inflation Pressure Alhossein Mostafa Sharaf, Mohamed Nassar, Egyptian Armed Forces
	2021-01-0328	Active Limitation of Tire Wear and Emissions for Electrified Vehicles Gunda Obereigner, Johannes Kepler University; Robert Shorten, Imperial College London; Florian Meier, Johannes Kepler University; Stephen Jones, Niklas Wikström, AVL List GmbH; Luigi del Re, Johannes Kepler University
	2021-01-0329	Advanced Analytical Truck Tires-Terrain Interaction Model
	2021-01-0330	Fractional Derivative Rigid Ring Tire Model with Berg Friction for Vehicle Dynamic Analysis Kaidi Zhang, Yunqing Zhang, Huazhong University of Science and Technology; Peijun Xu, Ebco Inc.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:43 PM

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Load Simulation and Vehicle Performance: Multi-body Dynamics and Intelligent Vehicle Dynamics

Session Code M209

Room TBD

Session

Multibody system modeling and simulation, rigid and flexible body modeling, loads predictions for vehicle body, frame/sub-frame, exhaust system, driveline, and powertrain, modeling of vehicle dynamics simulation and durability loads simulation, process considering vehicle dynamics and durability loads, data processing and analysis, loads sensitivity analyses for model parameters, design load minimization, prediction of loads effects, robust design methods, driver modeling, and system modeling.

Organizers - Yunkai Gao, Tongji Univ.; Paramsothy Jayakumar, US Army; Yunqing Zhang, Huazhong University of Science and Tech.

Time	Paper No.	Title
	2021-01-0333	Passenger Car Door Closing Effort Prediction Using Virtual Simulation and Validation Baskar Anthonysamy, Ankush Nandi, Partho BHOWAL, Vishal V Chaudhari, Mahindra & Mahindra Ltd.
	2021-01-0334	Study on Vibration Reduction Technology for Transportation of TEG Dehydration Unit Regeneration Module Weili Kong, Huazhong University of Science & Technology; Zixuan Chen, Kaidi Zhang, Huazhong University of Science and Tech; Yunqing Zhang, Huazhong University of Science & Technology
	2021-01-0335	Collision Avoidance Strategy of High-Speed AEB System Based on Minimum Safety Distance Jun Guo, Huazhong University of Science and Technology; Hongchang Zhang, Wuhan University of Technology

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Load Simulation and Vehicle Performance: Handling and Dynamics

Session Code M210

Room TBD

Session

Focusing on analysis and enhancement of vehicle dynamics performance including handling/braking/traction characteristics as well as robustness and active stability under the influence of loading, tire forces, and intelligent tire technology for improving overall vehicle system dynamics and safety. Influence of load variations and other uncertainties, as well as impact of system hybridization, electrification, and autonomous systems on vehicle dynamics and controls will be discussed.

Organizers - Jennifer Bastiaan, Kettering Univ.; Xuewu Ji, Tsinghua Univ.; Ken Kang, Honda R & D Americas LLC; Bin Li, Aptiv PLC

Time	Paper No.	Title
	2021-01-0336	A Methodology for Parameter Estimation of Nonlinear Single Track Models from Multibody Full Vehicle Simulation Enrico Galvagno, Michele Galfrè, Gianluca Mari, Mauro Velardocchia, Antonio Tota, Politecnico di Torino

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:43 PM

Time	Paper No.	Title
	2021-01-0337	Automated Vehicle Path Planning and Trajectory Tracking Control Based on Unscented Kalman Filter Vehicle State Observer Zixuan Chen, Yupeng Duan, Yunqing Zhang, Huazhong University of Science and Technology
	2021-01-0338	Research on Adaptive Cruise Control Strategy Considering the Disturbance of Preceding Vehicle and Multi-Objective Optimization Jian Zhao, Zhicheng Chen, Bing Zhu, Jian Wu, Jilin University
	2021-01-0339	Local Path Planning and Tracking Control Considering Tire Cornering Stiffness Uncertainty Yanan Wang, Yupeng Duan, Yunqing Zhang, Huazhong University of Science and Technology

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Multi-Discipline Interaction and Special CAE Applications

Session Code M213

Room TBD

Session

This session will address recent advances in simulation technologies at scales ranging from theoretical development, real world CAE applications, and special simulation techniques for the hybrid, EV, fuel cell and autonomous vehicles. The session focus on the use of the combination of the dynamic, static, linear and nonlinear finite element (FE), mesh free, computational fluid dynamics (CFD), and multibody dynamics (MBD) to evaluate the performance of the vehicle system. Subject coverage topics include: mesh free, geometry-based methods and their applications; Fluid & Structure Coupling; Thermal & Structural Coupling; Electromagnetic and Structural Coupling; 1-D & 3-D Multi-Domain Coupling; Preload/Stress & Manufacture Effect Consideration in Simulations.

Organizers - Peiran Ding, ESI; Fan Li, GM

Time	Paper No.	Title
	2021-01-0340	Modelling and Crush Simulation of a Generic Battery Module for Electric Vehicles Peiran Ding, ESI Group; Weiran Jiang, Farasis Energy USA; Alexandre Henry, Farasis Energy Europe GmbH
	2021-01-0341	Thermal Improvement of Integrated Electromagnetic and Friction Braking System of Trailers Ren He, Jiangsu University

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Automotive Tribology

Session Code M214

Room TBD

Session

This technical session focuses on fundamental and applied research that lowers frictional energy losses and enhances reliability and durability of automotive components. The topics include, but not limited to engine and drivetrain tribology, seals, bearing and gear lubrication, materials tribology, surface engineering, lubricants and additives, computer-aided tribology, tribotesting, as well as friction,

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:43 PM

wear and lubrication fundamentals.

Organizers - Meng Li, FCA US LLC; Rong Zhang, Schaeffler Group USA Inc.; Qian Zou, Oakland University

Time	Paper No.	Title
	2021-01-0342	Calculation of Oil Film Thickness on Bearing Raceway Grooves by Measuring Raceway Outer Ring Temperature Kenji Matsumoto, Hideharu Koga, Yuki Ono, Honda R & D Co., Ltd.; Yuji Mihara, Tokyo City University
	2021-01-0343	Stainless Steel Thermal Spray Coating of Cylinder Bores for VC-Turbo Engine Hayato Hirayama, Tsuyoshi Higuchi, Hiroaki Hoshikawa, Yoshitsugu Noshi, Daisuke Terada, Nissan Motor Co., Ltd.; Mototsugu Oosaki, Daido Steel Co., Ltd.
	2021-01-0345	Modeling the Three Piece Oil Control Ring Dynamics and Oil Transport in Internal Combustion Engines Wang Zhang, Sebastian Ahling, Tian Tian, Massachusetts Institute of Technology
	2021-01-0348	Friction Force Reduction for Electrical Terminals using Solution-Processed Reduced Graphene Oxide Coating Suki Naifang Zhang, Purdue University; Babak Arfaei, Ford Motor Company; Zhihong Chen, Purdue University

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Modeling and Simulation in Composites, Plastics, and Polymers

Session Code M215

Room TBD

Session

This session focuses on state-of-art developments in physical testing and modeling of plastics and fiber reinforced polymer composite materials for the automotive industry. Special emphasis will be given to material properties and microstructure modeling during manufacturing processes and material behavior under different environmental and loading conditions. Studies and discussions on innovative theories and experimental methods, constitutive behavior, integrated computational materials engineering (ICME), and CAE correlation with testing will also be addressed. Other materials considered for this session include rubbers, adhesives, metal/plastic hybrid and materials fabricated by additive manufacturing (3D printing).

Organizers - Carlos Engler-Pinto, Ford Motor Company; Mingchao Guo, FCA US LLC; Abolhassan Khosrovaneh, GM; Y Charles Lu, Univ. of Kentucky; Srikanth Pilla, Clemson Univ.; Jian Tao, FCA US LLC

Time	Paper No.	Title
	2021-01-0349	Virtual Simulation of Sprayer Composite Boom Using 1D Approach Raja Vaddadi, John Deere India Pvt., Ltd.; Carlos Villalba Gomez, King Agro; Rajarshi Rajkhowa, John Deere India Pvt., Ltd.
	2021-01-0350	A Numerical Simulation for the Hybrid Single Shot (HSS) Process Used to Manufacture Thermoset-Thermoplastic Components Hakan Kazan, Clemson University, Amasya University; Saeed Farahani, Clemson University; Sila Seydim, TOBB University of Economics and Technology; Srikanth Pilla, Clemson University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:43 PM

Time	Paper No.	Title
	2021-01-0351	Short Fiber Filled Injection Molded Workflow with Multiscale Simulation Hayden Cornwell, Siemens
	2021-01-0352	Benefits of Semi-Analytical Model Polymer Techniques (SAMP-1 with GISSMO Failure) for Crashworthiness of Critical Thermoplastic Automotive Structural Parts Kottresh Kurudimath, Vamsy Godthi, Prasad Dasappa, Somasekhar Bobba, SABIC

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Welding, Joining, and Fastening

Session Code M216

Room TBD

Session

Presentations related to welding and joining of similar or dissimilar materials of plastics, composites, aluminum, magnesium, titanium, and conventional and advanced high strength steels will be given. Papers related to friction stir (spot) welding, ultrasonic welding, resistance welding, arc welding, laser welding, brazing or soldering, riveting and bolting, and adhesive are planned as well. Papers related to strength, fracture and fatigue of welds, joints and fasteners have been invited.

Organizers - John Kim, Toyota Motor Corp.; Wei-Jen Lai, Ford Motor Co.; Pai-Chen Lin, National Chung Cheng Univ.; Jwo Pan, University of Michigan; Tau Tyan, Ford Motor Company

Time	Paper No.	Title
	2021-01-0353	A Numeric Study of the Strength for the Riveted Plates during the Riveting Operation Zane Yang, Valeo
	ORAL ONLY	Improvement of Tightening Reliability of Bolted Joints Using Elliptical Confidence Limit in Calibrated Wrench Method SOICHI Hareyama, Tokyo Metropolitan Univ.
	ORAL ONLY	Development of predictive models for weldment under compressive dominated loading Anoop Vasu, AAM (American Axle & Mfg Inc)
	ORAL ONLY	Internal Defect Recognition in Aluminium Overlap Welds Using High-Speed Camera Imaging Francois Nadeau, NRC-National Research Centre

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:43 PM

Tuesday, April 13

On-Demand: Materials-Environment Interactions

Session Code M217

Room TBD Session

Corrosion, oxidation, erosion, corrosion-fatigue, stress-corrosion cracking, wear, etc. These issues in aluminum and magnesium are immediate challenges to the development of lightweight materials. Modeling, simulation, testing, diagnosis, and mitigation related to these issues are all challenging and fascinating.

Organizers - Anusha Chilukuri, Cummins Inc.; Carlos Engler-Pinto, Ford Motor Company; Mingchao Guo, Yi Liu, FCA US LLC; Jwo Pan, University of Michigan; Qigui Wang, General Motors LLC

Time	Paper No.	Title
	2021-01-0354	Graphene Coating as a Corrosion Protection Barrier for Metallic Terminals in Automotive Environments Suki Naifang Zhang, Zhihong Chen, Purdue University; Babak Arfaei, Ford Motor Company
	ORAL ONLY	Solving Modern Corrosion Challenges in The Automotive Industry with The Help of Machine Learning Algorithms Marc-Olivier Gagné, National Research Council Canada
	ORAL ONLY	Effects of Hydrogen on Cohesive Parameters for Crack Extensions in Small Arc-Shaped Tension Specimens of 21-6-9 Austenitic Stainless Steels Using Cohesive Zone Modeling Shengjia Wu, Jwo Pan, University of Michigan; Paul S. Korinko, Michael Morgan, Savannah River National Laboratory

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Automotive Polymeric, Plastic Components and Composites

Session Code M300

Room TBD Session

Presentations of this session will address the development of polymeric and composite materials for automotive interiors and exteriors, powertrain components, as well as structural and non-structural applications. Focus is on design, processes, bonding and manufacturing technologies, as well as lightweighting strategies.

Organizers - Somasekhar Bobba, SABIC; Emile Homsj, Croda Inc.; Srikanth Pilla, Clemson Univ.; Bryant Tokarz, O-Flex Group Inc.; Holger Warth, Aliaxis Holding Germany GmbH

Time	Paper No.	Title
	2021-01-0355	The Impact of Plastic pH on Silicone Elastomer Compression Set Christopher W. Coyne, Ford Motor Company
	2021-01-0357	Development of Hybrid Natural Fiber Reinforced Epoxy Matrix Composites with SiC as Filler Devaiah Malkapuram, Geethanjali College of Engg and Technology

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:43 PM

Time	Paper No.	Title
	2021-01-0358	Evolution of Phenolic Formaldehyde Based Hybrid Polymer Matrix Composite (PMC) Reinforced with Silicon Carbide and Fly Ash Devaiah Malkapuram, Geethanjali College of Engg and Technology
	ORAL ONLY	Development and Evaluation of Recovered Ocean Plastics as a Recyclate Source for Automotive Components Amanda Nummy, Hyundai Motor Co.

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Advances in Instrument Panels, Seats, and Interiors

Session Code M301

Room TBD

Session

This session will feature technical presentations that will discuss new technology and industry insights in automotive interiors. Focus areas include materials, perceived quality, environmental concerns, manufacturing, safety, and durability.

Organizers - John Berndtson, General Motors LLC; Stephen Pitrof, Inteva LLC; Santosh Kumar Sarang, Aisin Technical Center of America

Time	Paper No.	Title
	2021-01-0359	Research on Influencing Factors of Sound Absorption Coefficient in Reverberation Chamber Yue Zhang, South China University of Technology; Xinxing Xie, Dongting Mei, Ningbo Tuopu Group Co., Ltd.; Wen-Bin Shangguan, South China University of Technology
	2021-01-0360	Analysis of Formaldehyde Scavenger and Its Reaction Products in POM Using Mass Spectrometry Hye Jin Jang, Chan Ho Jeong, Hyundai Motor Company

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Automotive Composite Materials and Structures

Session Code M302

Room TBD

Session

Provides a forum to share the latest developments in various aspects of the application of composite materials and structures for next-generation vehicles. Specific topics include: new paradigms in design/development/manufacturing of composites; novel experiments/methods for characterization of composites; damage, failure, and fatigue testing of composites; response of composites subjected to extreme environments/loading; practical designs of composite structures in automotive applications.

Organizers - Somasekhar Bobba, SABIC; Y Charles Lu, Univ. of Kentucky; Srikanth Pilla, Clemson Univ.; Jian Tao, FCA US LLC; Richard Dale Tonda

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:44 PM

Time	Paper No.	Title
	2021-01-0361	Automotive Hood Panel Design Utilizing Anisotropic Multi-Material Topology Optimization Evan Munroe, Stephen Roper, Rubens Bohrer, Kiarash Kashanian, Queen's University; Manish Pamwar, Balbir Sangha, General Motors Canada, Ltd.; Il Yong Kim, Queen's University
	2021-01-0362	Development of Unidirectional CFRP Reinforced Aluminum Bumper Reinforcement Masaya Miura, Michiharu Ishii, Kanji Takaoka, Yasumasa Horibe, Shintaro Kitakata, Atsushi Mikuni, Toyota Motor Corporation
	2021-01-0363	Automation of a Design Optimization Process for Fiber Reinforced Polymer Sandwich Structures William McCormack, Chris Paredis, Nicholas Couch, Clemson University
	2021-01-0364	Composite Control Arm Design: A Comprehensive Workflow Massimiliana Carello, Henrique de Carvalho Pinheiro, Alessandro Messana, Alexander Freedman, Alessandro Ferraris, Andrea Giancarlo Airale, Politecnico di Torino
	2021-01-0365	Designing a Production-Ready Ultra-Lightweight Carbon Fiber Reinforced Thermoplastic Composites Door Ashir Mittal, Anmol Kothari, Sai Aditya Pradeep, Sushil Savla, Madhura Limaye, Gang Li, Srikanth Pilla, Clemson University; Pal Swaminathan, Lanxess Corp.; Shridhar Yarlagadda, University of Delaware; Ryan Hahnen, Duane Detwiler, Honda R & D Americas, LLC.
	2021-01-0366	Artificial Intelligence for Damage Detection in Automotive Composite Parts: A Use Case Alberto Ciampaglia, Antonio Mastropietro, Alessandro De Gregorio, Francesco Vaccarino, Giovanni Belingardi, Politecnico di Torino; Enrico Busto, AddFor S.p.A.

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Advances in Coatings

Session Code M400

Room TBD

Session

Presentations of this session will address application and research on coatings for exterior body and plastics (including polycarbonate) as well as vehicle interiors and underbody/underhood. Focus will be on the 3-10 year timeframe.

Organizers - Rasheeda Daanyal, FCA; Jim Keller, Mankiewicz Coatings LLC; Daniel Wright, BASF Corp.

Time	Paper No.	Title
	2021-01-0367	Study on Selective Electroplating for Pattern/Lighting on Plastic Woo Chul Jung, Chun Soo Lee, Sung Ho Yoon, Hyundai Motor Company

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:44 PM

Time	Paper No.	Title
	ORAL ONLY	Super High Transfer Efficiency Application for Body Coating (SAE Paper 2020-01-0901) Yuki Murai, Takahito Kondo, Shinji Tani, Wataru Murata, Toyota Motor Corp
	ORAL ONLY	Responsible Coatings for Automotive Interiors Elenor Ekman, Mankiewicz Coatings LLC

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: UV EB Materials for 3D printing and Automotive Applications

Session Code M401

Room TBD

Session

Success in cure technology attained through advances photocurable materials, UV Laser technology, lamp development, 3D computer imaging, and the development of novel materials, processes and facilities, are significantly advancing the efforts of energy reduction and vehicle lightweighting resulting in improvements of reduced GHG emissions, manufacturing Cycle Time, Small Footprint manufacturing, speedy proto-typing.

Organizers - Mary Ellen Rosenberger, BaySpring Solutions LLC; Christopher Seubert, Ford Motor Company

Time	Paper No.	Title
	ORAL ONLY	Interior and Exterior Weathering Testing for Automotive Components Andy Francis, Q-Lab. Corporation
	ORAL ONLY	Recent Innovation in Photo-reactive Chemistry Unlocks Under-the-Hood Automotive Chemistry Tim Downing, Origin Laboratories Inc.
	ORAL ONLY	Processing of 3D Printed High Temperature Materials Amelia Davenport, Neil Cramer, Trevor Goldman, Mike Idacavage, Colorado Photopolymer Solutions
	ORAL ONLY	Rapid, Large-Volume, Thermally Controlled 3D Printing Using A Mobile Liquid Interface David A. Walker, James L. Hedrick, Chad A. Mirkin, Azul3D Inc.
	ORAL ONLY	Formulation and Optimization of Radiation-Curable Non-Isocyanate Poly-urethane Wood Coatings by Mixture Experimental Design Methodology Forough Zareanshahraki, Vijay Mannari, Eastern Michigan University
	ORAL ONLY	Digital Light Processing in a Hybrid Atomic Force Microscope: In situ, Nanoscale Characterization of the Printing Process

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:44 PM

Time	Paper No.	Title
		Callie I. Higgins, Tobin E. Brown, Jason P. Killgore, National Institute of Standards and Technology

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Tuesday, April 13

On-Demand: Motorsports Engineering

Session Code MSEC100

Room TBD Session

This session focusses on the links between motorsports, the mainstream automotive industry and academia. As such, it is the forum at the WCX where ideas and knowledge involving motorsports can be exchanged between the three communities. This exchange will be accomplished by the use of featured speakers from motorsports, and presentations, both written and oral, of topics deemed to be of relevant interest to the motorsports community in general, and to students and faculty involved in engineering education.

Organizers - Gregory Fadler, FCA US LLC; Raymond Leto, TotalSim LLC; Wiley McCoy, McLaren Engineering; Sriram S. Pakkam, Ford Performance Vehicles; Michael Royce; H. Robert (Bob) Welge; Dwight Woodbridge, Knowledge Power

Time	Paper No.	Title
	2021-01-0368	Analysis of Energy Recovery System of Formula One Cars Karan Bopaiah, Auburn University; Stephen Samuel, Oxford Brookes University
	2021-01-0371	A Case for Technology - Forcing Transformative Changes in the F1 Power Unit Abdelrahman Elmagdoub, Stephen Samuel, Oxford Brookes University

Planned by Motorsports Engineering Committee / Motorsports Engineering Activity

Tuesday, April 13

On-Demand:0-D and 1-D Modeling and Numerics

Session Code PFL110

Room TBD Session

Separate sub-sessions cover zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

Organizers - Fabio Bozza, Univ. of Naples; Federico Millo, Politecnico di Torino; Angelo Onorati, Politecnico di Milano; Per Tunestal, Lund University

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:44 PM

Tuesday, April 13

On-Demand: 0-D and 1-D Modeling and Numerics - CI Comb

Session Code PFL111

Room TBD Session

Separate sub-sessions cover zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

Organizers - Federico Millo, Politecnico di Torino; Oldrich Vitek, Czech Technical Univ.

Time	Paper No.	Title
	2021-01-0374	Stochastic Cycle to Cycle Prediction in a Reactivity Controlled Compression Ignition Engine Using Double Wiebe Function Chinmaya Mishra, P M V Subbarao, IIT Delhi
	2021-01-0375	A Phenomenological Carbon Monoxide Model for Diesel Engines Christian Schnapp, University of Stuttgart; Qirui Yang, Michael Grill, FKFS; Michael Bargende, University of Stuttgart; Markus Wenig, Winterthur Gas & Diesel Ltd.

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: 0-D and 1-D Modeling and Numerics - SI Comb

Session Code PFL112

Room TBD Session

Separate sub-sessions cover zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

Organizers - Fabio Bozza, Univ. of Naples; Federico Millo, Politecnico di Torino; Angelo Onorati, Politecnico di Milano; Xiaofeng Yang, General Motors LLC

Time	Paper No.	Title
	2021-01-0376	Advanced 1-D Ignition and Flame Growth Modeling for Ignition and Misfire Predictions in Spark Ignition Engines Ahmed Abdul Moiz, Zainal Abidin, Thomas Briggs, Graham Conway, Southwest Research Institute
	2021-01-0377	New Criteria for 0D/1D Knock Models to Predict the Knock Boundary for Different Gasoline Fuels Marco Hess, University of Stuttgart; Michael Grill, FKFS; Michael Bargende, University of Stuttgart; Andre Kulzer, Porsche AG
	2021-01-0378	Simulative Investigation of the Service Methane Number of LNG Mixtures Using 1D-Engine Simulation and Reaction Kinetics

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:44 PM

Time	Paper No.	Title
		Dario-Vincenzo Di Modica, Jelto Frerichs, Christian Meier, Peter Eilts, Technische Universität Braunschweig; Bo Shu, Physikalisch-Technische Bundesanstalt
	2021-01-0379	Numerical Estimation of Wiebe Function Parameters Using Artificial Neural Networks in SI Engine Antonio J. Torregrosa, Alberto Broatch, Pablo Olmeda, Sebastian Aceros, Universitat Politècnica de València
	2021-01-0380	Simulation Study on Implementation of Oxy-Fuel Combustion for a Practical GDI Engine Xiang Li, Zhijun Peng, Tahmina Ajmal, Khaqan-Jim Rana, University of Bedfordshire; Abdel Aitouche, Raouf Mobasher, University of Lille; Yiqiang Pei, Tianjin University
	2021-01-0381	Knock Model Covering Thermodynamic and Chemical Influences on the Two-Stage Auto-Ignition of Gasoline Fuels Marco Hess, University of Stuttgart; Michael Grill, FKFS; Michael Bargende, University of Stuttgart; Andre Kulzer, Porsche AG
	2021-01-0382	Feasibility Assessment of Methanol Fueling in Two-Wheeler Engine Using 1-D Simulations Hardikk Valera, Dhananjay Kumar, Avinash Kumar Agarwal, IIT Kanpur
	2021-01-0383	Improvement of Knock Onset Determination Based on Supervised Deep Learning Using Data Filtering Jihwan Park, Seoul National University; Sangyul Lee, Hansung University; Seokwon Cho, University of Minnesota-Twin Cities; Seunghyup Shin, Seoul National University; Minjae Kim, Myong Ji University; Chiheon Song, Tenergy; Kyoungdoug Min, Seoul National University
	2021-01-0384	Experimental and 0D Numerical Investigation of Ultra-Lean Combustion Concept to Improve the Efficiency of SI Engine Vincenzo De Bellis, Enrica Malfi, Fabio Bozza, University of Naples Federico II; Deepak KUMAR, David Serrano, Alessio Dulbecco, Jean-Marc Zaccardi, IFP Energies Nouvelles, Ins. Carnot IFPEN Transports Energie
	2021-01-0385	Efficiency Potential of SI Engines with Gasoline and Methanol: A 0D/1D Investigation Feyyaz Negüs, University of Stuttgart; Michael Grill, FKFS; Michael Bargende, University of Stuttgart
	2021-01-0386	Semi-Predictive Modeling of Diluted Ethanol and Methanol Combustion in Conventional Spark Ignition Operation Senthil Krishnan Mahendar, Anders Christiansen Erlandsson, KTH Royal Institute of Technology

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, and also Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: 0-D and 1-D Modeling and Numerics - Cooling/Lub/Inject

Session Code PFL113

Room TBD

Session

Separate sub-sessions cover zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:44 PM

Organizers - Federico Millo, Politecnico di Torino

Time	Paper No.	Title
	2021-01-0387	Reduced Piston Oil Cooling for Improved Heavy-Duty Vehicle Fuel Economy Andrew Morris, Daniel Christopher Bitsis, Southwest Research Institute
	2021-01-0388	On the Design of Heat Exchangers for Altitude Simulators Alberto Broatch, Pablo Olmeda, Jorge Garcia-Tiscar, Ferran Roig, Universitat Politècnica de València
	2021-01-0389	Accurately Simulating the Performance of Gasoline-Like Fuels in 1-D Hydraulic Injection System Models Operating at High Pressures Tom Tzanetakakis, Alexander K. Voice, Michael Traver, Aramco Research Center - Detroit
	2021-01-0390	Development and Validation of an Accurate 1D Model for Pressure Drop in Complex Coolant Piping Systems of Hybrid and Electric Vehicles Paulo Lucena Kreppel Paes, Dig Vijay, Yousef Kanani, Nils-Henning Framke, Shawn Harnish, Mihail Spasov, Gamma Technologies LLC

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: 0-D and 1-D Modeling and Numerics - General Thermodynamic

Session Code PFL114

Room TBD

Session

Separate sub-sessions cover zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

Organizers - Navin Fogla, Gamma Technologies LLC; Kevin Hoag, Southwest Research Institute; Federico Millo, Politecnico di Torino

Time	Paper No.	Title
	2021-01-0391	Numerical Study on Flammability Limit and Performance of Compression-Ignition Argon Power Cycle Engine with Fuel of Hydrogen Kaïen Xie, Jun Deng, Shaoye Jin, Liguang Li, Tongji University

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:44 PM

Tuesday, April 13

On-Demand: 0-D and 1-D Modeling and Numerics - Control

Session Code PFL115

Room TBD Session

Separate sub-sessions cover zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

Organizers - Jakob Andert, RWTH Aachen Univ.; Federico Millo, Politecnico di Torino; Per Tunestal, Lund University

Time	Paper No.	Title
	2021-01-0392	Nonlinear System Identification of Variable Oil Pump for Model-Based Controls and Diagnostics Yongsoon Yoon, Oakland University; Avra Brahma, Cummins
	2021-01-0394	A Real-Time Control-Oriented Mean Value Engine Model Including Manifold Gas Dynamics and Engine Thermals with Parameter Identification for a Toyota Prius Amer Keblawi, John McPhee, University of Waterloo

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: 0-D and 1-D Modeling and Numerics - Vehicle/Drive Cycle

Session Code PFL116

Room TBD Session

This session will cover topics related to 0D/1D vehicle-level simulation for evaluation of fuel economy, range, performance and emissions.

Organizers - Federico Millo, Politecnico di Torino; Jonathan Zeman, Gamma Technologies LLC

Time	Paper No.	Title
	2021-01-0395	A Deterministic Multivariate Hierarchical Clustering Method For Drive Cycle Generation From in use Vehicle Data Eric Miller, National Renewable Energy Laboratory; Adam Duran, Quantitative Scientific Solutions
	2021-01-0396	Dualhybrid-Cold Start Performance Study for a HEV with Two Combustion Engines Hongyang Zhang, Olaf Toedter, Georg Blesinger, Thomas Koch, Karlsruhe Institute of Technology

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:44 PM

Tuesday, April 13

On-Demand: 0-D and 1-D Modeling and Numerics - Air Flow

Session Code PFL117

Room TBD Session

Separate sub-sessions cover zero-dimensional, one-dimensional, and quasi-dimensional models for simulation of SI and CI engines with respect to: engine breathing, boosting, and acoustics; SI combustion and emissions; CI combustion and emissions; fundamentals of engine thermodynamics; numerical modeling of gas dynamics; thermal management; mechanical and lubrication systems; system level models for controls; system level models for vehicle fuel economy and emissions predictions.

Organizers - Vincenzo De Bellis, Univ. of Naples; Federico Millo, Politecnico di Torino

Time	Paper No.	Title
	2021-01-0397	Reed Valve Evaluation and Selection for the Compressor Cylinder in Double Compression Expansion Engine (DCEE) Concept Kevin Moreno Cabezas, Harsh Goyal, King Abdullah University of Science & Technology; Arne Andersson, Volvo Global Truck Tech Powertrain Eng; Bengt Johansson, King Abdullah University of Science & Technology
	2021-01-0398	A Performance Design of Constant Pressure Type Exhaust Brake Kee-Young Yang, Hyeonchae moon, SangWeol han, JAE SEOL CHO, Hyundai Motor Company

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Multi-Dimensional Engine Modeling

Session Code PFL120

Room TBD Session

The spectrum of papers solicited for this session reflect the truly multi-disciplinary nature of the field of Multi-Dimensional Engine Modeling. The session covers advances in the development and application of models and tools involved in multi-dimensional engine modeling. This includes advances in chemical kinetics, combustion and spray modeling, turbulence, heat transfer, mesh generation, and approaches targeting improved computational efficiency. Papers employing multi-dimensional modeling to gain a deeper understanding of processes related to turbulent transport, transient phenomena, and chemically reacting, two-phase flows are also encouraged.

Organizers - Hardo Barths, General Motors LLC; Anand Nageswaran Bharath, Cummins Inc.; Gianluca D'Errico, Politecnico di Milano; Stefano Fontanesi, Universita di Modena e Reggio Emilia; Yuanjiang Pei, Aramco Research Center

Time	Paper No.	Title
	2021-01-0399	Validation of a LES Spark-Ignition Model (GLIM) for Highly-Diluted Mixtures in a Closed Volume Combustion Vessel Clara Iacovano, Universita di Modena e Reggio Emilia; Yangbing Zeng, Muniappan Anbarasu, General Motors LLC; Stefano Fontanesi, Alessandro D'Adamo, Universita di Modena e Reggio Emilia
	2021-01-0400	Three-Dimensional CFD Investigation of Pre-Spark Heat Release in a Boosted SI Engine Hengjie Guo, Roberto Torelli, Argonne National Laboratory; James Szybist, Oak Ridge National Laboratory; Sibendu Som, Argonne National Laboratory

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Time	Paper No.	Title
	2021-01-0401	<p>Numerical Parametric Study of a Six-Stroke Gasoline Compression Ignition (6S-GCI) Engine Combustion - Part III</p> <p>Oudumbar Rajput, Youngchul Ra, Ashwin Karthik Purushothaman, Michigan Technological University; Kyoung-Pyo Ha, Hyundai Motor Co</p>
	2021-01-0402	<p>An Automated Workflow for Efficient Conjugate Heat Transfer Analysis of a Diesel Engine</p> <p>Edison Chukwuemeka, Louisiana State University; Giuliana Litrico, Karthik Puduppakkam, Tony Garratt, Cheng Wang, Yue Wang, Oleg Chernukhin, Sulipi Desai, Ellen Meeks, ANSYS Inc</p>
	2021-01-0404	<p>Numerical Investigation of the Impact of Fuel Injection Strategies on Combustion and Performance of a Gasoline Compression Ignition Engine</p> <p>Srinivasa Krishna Addepalli, Michael Pamminger, Riccardo Scarcelli, Buyu Wang, Thomas Wallner, Argonne National Laboratory</p>
	2021-01-0405	<p>Multi-Dimensional Spark Ignition Model with Distributed Energy Input and Integrated Circuit Model</p> <p>Kyeongmin Kim, Corey Tambasco, Matthew Hall, Ron Matthews, University of Texas at Austin; Sachin Joshi, Douglas L. Sprunger, Daniel O'Connor, Cummins Inc</p>
	2021-01-0407	<p>Analysis and Interpretation of Data-Driven Closure Models for Large Eddy Simulation of Internal Combustion Engine</p> <p>Peetak Mitra, Majid Haghshenas, University of Massachusetts-Amherst; Niccolò Dal Santo, MathWorks, Inc.; Mateus Dias Ribeiro, German Research Center for AI; Shounak Mitra, Conor Daly, MathWorks, Inc.; David Schmidt, University of Massachusetts-Amherst</p>
	2021-01-0408	<p>The Study of the Fundamental Characteristics of Tumble in a Spark-Ignition Engine via Numerical Analysis</p> <p>Myoungsoo Kim, Han Ho Song, Seoul National University</p>
	2021-01-0409	<p>CFD Modeling of Reacting Diesel Sprays with Primary Reference Fuel</p> <p>Qiyang Zhou, Shanghai Jiao Tong University; Tommaso Lucchini, Gianluca D'Errico, Politecnico di Milano; Ricardo Novella, Jose M Garcia-Oliver, Universitat Politecnica de Valencia; Xingcai Lu, Shanghai Jiao Tong University</p>
	2021-01-0410	<p>Numerical Evaluation of Spark Assisted Cold Idle Operation in a Heavy-Duty Gasoline Compression Ignition Engine</p> <p>Le Zhao, Argonne National Laboratory; Yu Zhang, Yuanjiang Pei, Anqi Zhang, Michael Traver, Aramco Research Center; Muhsin Ameen, Argonne National Laboratory</p>
	2021-01-0411	<p>Cold Flow Simulation of a Dual-Fuel Engine for Diesel-Natural Gas and Diesel-Methanol Fuelling Conditions</p> <p>Gilles Decan, Bert De Buyzerie, Ghent University; Tommaso Lucchini, Gianluca D'Errico, Politecnico di Milano; Sebastian Verhelst, Ghent University</p>
	2021-01-0412	<p>Parallel Load Balancing Strategies for Mesh-Independent Spray Vaporization and Collision Models</p> <p>Federico Perini, Wisconsin Engine Research Consultants; Stephen Busch, Sandia National Laboratories; Rolf Reitz, University of Wisconsin-Madison; Angela Wu, Sandia National Laboratories</p>
	2021-01-0413	<p>Development of a Novel Numerical Methodology for the Assessment of Insulating Coating Performance in Internal Combustion Engines</p> <p>Xandra Margot, Johan Escalona, Universitat Politecnica de Valencia; Andrea Bianco, Powertech Engineering SRL</p>

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Time	Paper No.	Title
	2021-01-0414	Prediction of Engine-Out Emissions Using Deep Convolutional Neural Networks Alok Warey, Jian Gao, Ronald Grover, General Motors LLC
	2021-01-0415	Impact of Grid Density and Turbulence Model on the Simulation of In-Cylinder Turbulent Flow Structures - Application to the Darmstadt Engine Alessio Barbato, Universita degli Studi di Modena; Stefano Fontanesi, Alessandro D'Adamo, Universita di Modena e Reggio Emilia
	2021-01-0416	Numerical Investigation of Turbulence Anisotropy of In-Cylinder Flows with Multi-Cycle Large Eddy Simulation Rajat Soni, Clemens Gößnitzer, Gerhard Pirker, LEC GmbH; Andreas Wimmer, Graz University of Technology
	ORAL ONLY	CFD optimization of Pre-Chamber geometry using design of experiment, genetic algorithm, and machine learning Haiwen Ge, Texas Tech. University; Ahmad Bakir, Siva Parameswaran, Texas Tech University; Peng Zhao, Oakland University
	ORAL ONLY	Multi-physics modeling of spark discharges in high cross flow ignition environments Vivek Subramaniam, Anand Karpatne, Esgee Technologies; Laxminarayan Raja, University of Texas at Austin; Douglas Breden, Esgee Technologies; Naveen Raj, Samspra Aerospace

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008 and SUB-TP-Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Control System Design, Calibration, and Optimization

Session Code PFL130

Room TBD

Session

This session focuses on powertrain control system design, calibration, and optimization. Examples of topics include control-oriented modeling, model based or machine learning driven calibration\control\estimation, optimization of the powertrain system and subsystems such as engine, transmission, motor, battery etc.

Organizers - Yichao Guo, FCA US LLC; Sankar Rengarajan, Southwest Research Institute; Zhe Wang, Ford Motor Company

Time	Paper No.	Title
	2021-01-0417	Hardware-in-the-Loop Based Virtual Emission Calibration for a Gasoline Engine Frank Dorscheidt, Marc Düzgün, Johannes Claßen, Sascha Krysmon, Stefan Pischinger, VKA der RWTH Aachen; Michael Görgen, Christian Dönitz, Martin Nijs, FEV Europe GmbH
	2021-01-0418	Sensor Fusion Approach for Dynamic Torque Estimation with Low Cost Sensors for Boosted 4-Cylinder Engine Cooper Heyne Minehart, Jeffrey Naber, Jason Blough, Michigan Technological University; Xin Wang, Chris Glugla, Chad Archer, Ford Motor Company

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Time	Paper No.	Title
	2021-01-0419	Optimum Engine Power Point Determination Method to Maximize Fuel Economy in Hybrid Vehicles Omkar Rane, S M Mortuza, Sachin Bhide, FCA US LLC
	2021-01-0420	Electrified Deceleration Cylinder Cutoff Engine Control Benefits and Strategies Mark Wilcutts, Benjamin Wolk, Xiaojian Yang, Robert Wang, Tula Technology Inc.
	2021-01-0422	Torque Converter Launch and Lock with Multi-Input Multi-Output Control Yang Xu, Edward Dai, Weitian Chen, Stuart Ford, Pinzhi Liu, Bret Keller, Hong Jiang, Ford Motor Company
	2021-01-0423	Optimal Sensor Placement for High Pressure and Low Pressure EGR Estimation Jose Lujan, Benjamin Pla, Pau Bares, Alexandra Aramburu, Universitat Politecnica de Valencia
	2021-01-0424	Proof of Concept for Hardware-in-the-Loop Based Knock Detection Calibration Matteo Meli, Stefan Pischinger, RWTH Aachen University; Jaykumar kansagara, Christian Dönitz, Norman Liberda, Martin Nijs, FEV Europe GmbH
	2021-01-0425	Hybridizing Unsupervised Clustering Methods for In-Cylinder Vortex Motion Analysis under Different Swirl Ratio Conditions Fengnian Zhao, Mengqi Liu, Weihang Fan, Jiajin Wu, Junxiang Zhang, David Hung, UM-SJTU JI - Shanghai Jiao Tong University

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Engine Flows and Combustion Diagnostics

Session Code PFL140

Room TBD Session

This session features papers that focus on extending and improving various sensors and diagnostic methods that can be employed to examine the flow and combustion processes in both production engines and research environments. Examples of diagnostics of interest include, but are not limited to: PIV, LIF, pressure sensors, ion probes, exhaust gas composition sensors, and various spectroscopic optical techniques.

Organizers - Oivind Andersson, Lund University; Matthew Hall, Univ. of Texas-Austin; Ben Petersen, Ford Motor Company

Time	Paper No.	Title
	2021-01-0426	Two-Colour Pyrometry Measurements of Low-Temperature Combustion using Borescopic Imaging Asish K Sarangi, Indian Institute of Technology Bombay; Gordon McTaggart-Cowan, Simon Fraser University; Martin H. Davy, University of Oxford; Patrick Kirchen, University of British Columbia; Colin P. Garner, Loughborough University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Time	Paper No.	Title
	2021-01-0427	Luminosity and Thermal Energy Measurement and Comparison of a Dielectric Barrier Discharge in an Optical Pressure-Based Calorimeter at Engine Relevant Conditions Federico Ricci, Valentino Cruccolini, Gabriele Discepoli, Luca Petrucci, Carlo Grimaldi, Universita degli Studi di Perugia; Stefano Papi, Federal-Mogul
	2021-01-0428	Correction of Beam Steering for Optical Measurements in Turbulent Reactive Flows Ke Zhou, Lin Ma, University of Virginia

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Powertrain Adaptation for Connectivity and Automation

Session Code PFL150

Room TBD

Session

This session will cover technologies that use connectivity and automation to optimize vehicle dynamics and powertrain systems operations, with the goal of reducing energy consumption. Contributions may include vehicle dynamics and powertrain control technologies, implemented on single vehicles or across a cohort of cooperating vehicles, showing potential to significantly improve individual vehicle energy efficiency. Concepts and technologies supported by experimental studies are welcome.

Organizers - Marcello Canova, Ohio State University; Yichao Guo, FCA US LLC; Bharatkumar Hegde, General Motors LLC; Scott Hotz, Southwest Research Institute; Stephanie Stockar, Penn State University

Time	Paper No.	Title
	2021-01-0429	Advancing Platooning with ADAS Control Integration and Assessment Test Results Hoseinali Borhan, Cummins Inc.; Michael Lammert, Kenneth Kelly, Chen Zhang, National Renewable Energy Laboratory; Nathan Brady, Chia-Siung YU, Jingxuan Liu, Cummins Inc.
	2021-01-0430	In-Vehicle Test Results for Advanced Propulsion and Vehicle System Controls Using Connected and Automated Vehicle Information Shreshtha Rajakumar Deshpande, Shobhit Gupta, Dennis Kibalama, Nicola Pivaro, Marcello Canova, Giorgio Rizzoni, The Ohio State University; Karim Aggoune, Pete Olin, BorgWarner Inc.; John Kirwan, Stoneridge Inc.
	2021-01-0431	Forecasting Short to Mid-Length Speed Trajectories of Preceding Vehicle Using V2X Connectivity for Eco-Driving of Electric Vehicles Eunjeong Hyeon, University of Michigan / Argonne National Laboratory; Daliang Shen, Dominik Karbowski, Aymeric Rousseau, Argonne National Laboratory
	2021-01-0432	In-Vehicle Validation of Heavy-Duty Vehicle Fuel Savings via a Hierarchical Predictive Online Controller Evan Pelletier, Wushuang Bai, Pennsylvania State University; Miguel Alvarez Tiburcio, University of Maryland; John Borek, UNC Charlotte; Stephen Boyle, Ohio State University; Christian Earnhardt, North Carolina State University; Liming Gao, Pennsylvania State University; Stephen Geyer, Volvo Group North America; Christopher Graham, Heron Systems Inc; Ben Groelke, North Carolina State University; Mark Magee, Kyle Palmeto, Volvo Group North America; Manuel Rodriguez, Chu Xu, Hosam Fathy, University of Maryland; Mohammad Naghnaeian, Clemson University; Stephanie Stockar, Ohio State University; Christopher Vermillion, North Carolina State University; Sean

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Time	Paper No.	Title
		Brennan, Pennsylvania State University
	2021-01-0433	Engine On/Off Optimization for an xHEV during Charge Sustaining Operation on Real World Driving Routes Using Connectivity Data Pruthwiraj Santhosh, Darrell Robinette, Michigan Technological University
	2021-01-0434	A Real-Time Intelligent Speed Optimization Planner Using Reinforcement Learning Woong Lee, Jihun Han, Yaozhong Zhang, Dominik Karbowski, Aymeric Rousseau, Argonne National Laboratory; Namwook Kim, Hanyang University
	2021-01-0435	Experimental Validation of Eco-Driving and Eco-Heating Strategies for Connected and Automated HEVs Mohammad Reza Amini, Qiuhaohu, University of Michigan; Hao Wang, Ford Motor Company; Yiheng Feng, Purdue University; Ilya Kolmanovsky, Jing Sun, University of Michigan
	2021-01-0436	Real-World Driving Features for Identifying Intelligent Driver Model Parameters Bharatkumar Hegde, General Motors LLC; Michael O'Keefe, National Renewable Energy Laboratory; Steven Muldoon, General Motors LLC; Jeffery Gonder, National Renewable Energy Laboratory; Chen-Fang Chang, General Motors LLC
	ORAL ONLY	Demonstration and Validation of Energy-Efficient Automated Driving Controls: from Simulation to On-Track Testing Jongryeol JEONG, Dominik Karbowski, Jihun Han, Aymeric Rousseau, Argonne National Laboratory

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00687, and also Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: On-board Diagnostics (OBD)

Session Code PFL160

Room TBD Session

This technical session focuses on the updates of Worldwide on-board diagnostic (OBD) regulations, updates of SAE OBD standards, the OBD challenges that all OEMs are facing, OBD sensor and algorithm design and development, OBD monitor calibration and validation, for prognosis and maintenance, and promote the development of OBD for powertrain applications in motorcycle, automotive, heavy duty on and off road applications.

Organizers - Sumanth Reddy Dadam, Ford Motor Company; Mark Monohon, MJM & Associates Consulting

Time	Paper No.	Title
	2021-01-0437	Pre-ignition Detection Followed by Immediate Damage Mitigation in a Spark-Ignited Engine Eshan Singh, Robert Dibble, King Abdullah University of Science & Technology
	2021-01-0439	On the Expansion of On-Board Diagnostics (OBD) to Electric Propulsion Systems in Battery Electric Vehicles

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Time	Paper No.	Title
		Yichao Guo, FCA US LLC

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: High Efficiency IC Engines Concepts

Session Code PFL170

Room TBD

Session

This session focuses on technologies that have to potential for improving the efficiency of internal combustion engines such as advanced combustion, cooled EGR boosting, ignition and direct injection technologies, pressure boosting, intelligent combustion, thermal management, fully variable valvetrains, alternative or modified engine cycles, Variable Compression Ratio, and other new and developing technologies. Papers focused on waste heat recovery are located in sessions HX102 or HX103.

Organizers - Pingen Chen, Tennessee Technological Univ.; Asim Iqbal, FCA US LLC; Vasudha Patri, Navistar Inc.; David Roth, Roth Engine Science LLC; Wei Zeng, General Motors; Yu Zhang, Aramco Services Co.

Time	Paper No.	Title
	2021-01-0440	Parametric Study to Optimize Gasoline Compression Ignition Operation under Low Load Condition Using CFD Jihad Badra, Alma Alhussaini, Jaeheon Sim, Yoann Violette, Amer Amer, Saudi Aramco
	2021-01-0441	Determination of Efficiency Losses in Entry Ignition Engines Vikram Mittal, Brian Novoselich, US Military Academy
	2021-01-0442	Continuously Variable Displacement Drive for Engines Part 1, Performance Simulation Steven Arnold, Engine Systems Innovation Inc.; Brad Tillock, EngSim Corporation
	2021-01-0443	Downsized Boosted Dilute Combustion, Exhaust Compounded (DBDC+EC) Experimental Engine Design, Thermodynamic Model Comparison, and Performance Potential Predictions Peter Andruskiewicz, Russell Durrett, Paul Najt, General Motors LLC
	2021-01-0444	A Simulation Study to Understand the Efficiency Analysis of Multiple Injectors for the Double Compression Expansion Engine (DCEE) Concept Harsh Goyal, Gustav Nyrenstedt, Kevin Moreno Cabezas, Niraj Panthi, Hong Im, King Abdullah University of Science & Technology; Arne Andersson, Volvo Global Truck Tech Powertrain Eng; Bengt Johansson, King Abdullah University of Science & Technology
	2021-01-0445	Modeling of a Methanol Fueled Direct-Injection Spark-Ignition Engine with Reformed-Exhaust Gas Recirculation Duc-Khanh Nguyen, Freevalve AB; Ward Suijs, Louis Sileghem, Sebastian Verhelst, Ghent University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Time	Paper No.	Title
	2021-01-0446	Controls and Hardware Development of Multi-Level Miller Cycle Dynamic Skip Fire (mDSF) Technology Elliott Ortiz-Soto, Xiaojian Yang, Joel Van Ess, Shahaboddin Owlia, Abhishek Joshi, Matthew Younkins, Tula Technology Inc
	2021-01-0447	Thermodynamic and Chemical Analysis of the Effect of Working Substances on the Argon Power Cycle Shaoye Jin, Jun Deng, Liguang Li, Tongji University
	2021-01-0448	Testing the Rotating Liner Engine: Over 30% Reduction in Diesel Engine Fuel Consumption at Idle Conditions Dimitrios Dardalis, RSET Inc.; Matthew Hall, Ron Matthews, Amiyo Basu, Zheng Yan Ching, University of Texas-Austin
	2021-01-0449	A Hybrid Heavy-Duty Diesel Power System for Off-Road Applications - Concept Definition Chad Koci, Jay Steffen, Rich Kruiswyk, Fang Guo, Tim Bazyn, Robert McDavid, Caterpillar Inc.; Radoslav Ivanov, R-Flow Ltd.; Dheeraj Sirimalla, Volt Management Corp.
	2021-01-0450	Application of Dynamic Skip Fire for NO _x and CO ₂ Emissions Reduction of Diesel Powertrains Vijay Srinivasan, Benjamin Wolk, Xiaoping Cai, Tula Technology Inc; Lars Henrichsen, Justin Lee, Devyani Patil, Cummins Inc
	2021-01-0451	Continuously Variable Displacement Drive for Engines Part 2, Design, Analysis, and Test Steve Arnold, Engine Systems Innovation Inc.; Dave Riesland, MSC Software Corp.
	2021-01-0452	Experimental Comparison of Low-Load Piston Compounding Deactivation for the DBDC+EC Engine Architecture Peter Andruskiewicz, Russell Durrett, Paul Najt, General Motors LLC
	2021-01-0453	A Novel Piston Insulation Technique to Simultaneously Improve Both Heat Loss and Thermal Efficiency for Diesel Engines Fumihiko Kawaharazuka, Noboru Uchida, New Ace Inst Co Ltd; Hideaki Osada, Hino Motors Ltd
	2021-01-0454	PWI and DWI Systems in Modern GDI Engines: Optimization and Comparison Part II: Reacting Flow Analysis Stefania Falfari, Gian Marco Bianchi, Leonardo Pulga, University of Bologna; Claudio Forte, NAIS SRL
	2021-01-0455	Comparison of Excess Air (Lean) vs EGR Diluted Operation in a Pre-Chamber Air/Fuel Scavenged Dual Mode, Turbulent Jet Ignition Engine at High Dilution Rate (~40%) Cyrus Atis, Harold Schock, Michigan State University
	2021-01-0456	Assessment of In-Cylinder Thermal Barrier Coatings over a Full Vehicle Drive Cycle George Koutsakis, University of Wisconsin-Madison; Scott Miles, John Deere Power Systems; Jaal Ghandhi, University of Wisconsin-Madison
	2021-01-0457	Lean-Stratified Combustion System with Miller Cycle for Downsized Boosted Application - Part 2

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Time	Paper No.	Title
		Paul Battiston, Jennifer Wheeler, Arun Solomon, General Motors LLC; David Sczomak, General Motors LLC (retired)
	2021-01-0458	Lean-Stratified Combustion System with Miller Cycle for Downsized Boosted Application - Part I Arun Solomon, Paul Battiston, General Motors LLC; David Sczomak, General Motors LLC (retired)
	2021-01-0459	Evaluation of New High Efficiency Engine Concept with Atkinson Cycle, Cooled EGR and Dynamic Skip Fire Stephen Bowyer, AVL Powertrain Engineering, Inc.; Elliott Ortiz-Soto, Matthew Younkins, Tula Technology Inc; Venkatesh VENKADASAMY, AVL North America Inc
	2021-01-0460	Parametric Study to Optimize Gasoline Compression Ignition Operation under Medium Load-Conditions Vallinayagam Raman, Yoann Viollet, Jaeheon Sim, Jihad Badra, Junseok Chang, Saudi Aramco
	2021-01-0461	PWI and DWI Systems in Modern GDI Engines: Optimization and Comparison Part I: Non-Reacting Flow Analysis Stefania Falfari, Giulio Cazzoli, Matteo Ricci, University of Bologna; Claudio Forte, NAIS SRL
	2021-01-0462	The Impact of Advanced Fuels and Lubricants on Thermal Efficiency in a Highly Dilute Engine Michael Bunce, Nathan Peters, Sai Krishna Pothuraju Subramanyam, Hugh Blaxill, MAHLE Powertrain LLC; Jason Gao, Eugene Choi, ExxonMobil Research & Engineering Co
	ORAL ONLY	Achieving ultralow NOx emissions with a heavy duty diesel engine Laurence Fromm, Achates Power Inc.
	ORAL ONLY	intelliGEN: A free piston engine technology platform for next generation hybrid vehicle powertrains Sam Cockerill
	ORAL ONLY	A Breakthrough Core Piston Engine Operation Technology Christopher L. Cook, Efficient-V Inc.
	ORAL ONLY	Study on the Application of High Reactivity Gasoline Compression Ignition Fuels in a High Efficiency, High Compression Ratio Engine Norifumi Mizushima, Pavlos Dimitriou, Shuhei Chinone, Taku Tsujimura, Mitsuharu Oguma, National Institute of AIST; Hidefumi Fujimoto, Toshihide Yamamoto, Mazda Motor Corp; Jihad Badra, Jaeheon Sim, Emre Cenker, Junseok Chang, Saudi Aramco

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00688, SUB-TP-Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Tuesday, April 13

On-Demand: Recent Developments in China and U.S. Propulsion Systems Technologies

Session Code PFL180

Room TBD Session

Technical presentation, review and investigation focusing on China and U.S. market, including powertrain technology roadmap, regulation review, product development and localization, off road applications, new technology evaluation etc., covering both conventional and alternative vehicle propulsion systems technologies.

Organizers - Xin He, Aramco Services Co.; Shan Jia, Tenneco Inc.; Wei Jing, FCA US LLC; Chuanli Liu, General Motors Corporation; Qilong Lu, Southwest Research Institute; Jianan Ma, AVL Michigan Holding Corporation; Lifeng Xu, Spmc Corp.; Yu Zhang, Aramco Services Co.

Time	Paper No.	Title
	ORAL ONLY	Reducing the Carbon Footprint of Transportation
		<p>Global energy demand continues to rapidly increase with growth in population and increased access to energy. Transportation accounts for 20% of the global energy consumption with significant growth anticipated, specifically, with over 40% additional vehicles expected in the world by 2040. The global car parc of internal combustion engine (ICE) vehicles will continue to increase for the next decades, where these vehicles constitute the largest share of transport energy demand through 2050. Reducing carbon emissions through further improving engine fuel efficiency along with reducing pollutant emissions is key toward significantly reducing emissions in transportation. Specific technologies for spark-ignition and compression ignition engines will be examined, demonstrating opportunities to achieve carbon competitive ICE solutions in transportation.</p>

David Cleary, Aramco

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Time	Paper No.	Title
	ORAL ONLY	<p>Life Cycle Analysis of Transportation Fuels in China and the Implication on Vehicle Fleet</p> <p>The continuous growth of vehicle population and energy demand creates great challenges on the sustainable development and emission reductions of China's on-road transportation sector. In this presentation, we introduce Argonne National Laboratory's research efforts on the life-cycle analysis (LCA) of transportation fuels in China and the energy and environmental impact analysis of the growth of the Chinese vehicle fleet. To analyze the life cycle energy use and emissions for different transportation fuels and vehicle technologies, a China version of the Greenhouse gases, Regulated Emissions, and Energy use in Transportation (GREET) model is developed. The model includes multiple sub-modules that cover major transportation fuel pathways in China from feedstock extraction, feedstock transportation, fuel production, fuel transportation to refueling stations, and consumed ultimately in vehicles. The presentation focuses on researches carbon footprint of global natural gas supplies to China, regional electricity GHG intensities, and comparison of life-cycle GHG emissions among different vehicle technologies in China. Interacting with the China-GREET model, China Vehicle Fleet Model is further developed to evaluate the long-term life-cycle energy and environmental implication of the penetration of advanced vehicle technologies and alternative fuels in the growing Chinese on-road vehicle fleet. Projections of vehicle stock, energy demand, and GHG emissions of the entire vehicle fleet are presented under various socioeconomic and vehicle market penetration scenarios.</p> <p>Yu Gan, Argonne National Laboratory</p>
	ORAL ONLY	<p>Fuel Cell System Challenges and AVL Technology Solutions</p> <p>Fuel cells are a promising solution to zero emission mobility both for passenger and commercial vehicles due to the quick refueling and the high gravimetric energy density of hydrogen. However, to bring these advantages into mainstream powertrains several challenges need yet to be solved. Passenger cars struggle with the fuel cell powertrain cost which is driven by the fuel cell stack, tank, air compressor and DC-DC converter. In addition, the form factor of current H2 storage technologies require modifications to the mainstream vehicle platforms which are additional costs for the OEMs. For commercial vehicles, the TCO is still far from the target costs due to hydrogen costs and the average fuel cell system efficiency for typical drive cycle. The packaging of hydrogen tanks presents one of the biggest challenges, specially in Europe where regulations regarding the truck length limit the size of tanks that can be packaged behind the sleeping cabin. Not only the tanks but packaging of large fuel cell systems with powers above 300KW require also new solutions. Durability for commercial vehicles is a key aspect of the business case and based on the expected lifetime, fuel cells still need to demonstrate that they can achieve more than 20,000 h of durability. For both passenger car and trucks, the cooling of the fuel cell presents major issues, especially for hill climb conditions and hot conditions. AVL has been working for the last years on several technologies to solve these major problems and has developed a portfolio of solutions that can help the industry move forward.</p>

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Time	Paper No.	Title
		John Kasab, AVL; Falko Berg, AVL GmbH
	ORAL ONLY	<p>How Batteries Are Changing the World!</p> <p>Batteries have become an integral part of our society to the point it appears invisible to us in our daily living. The reason for this is that battery technology has enabled devices and infra-structure we use as part of our normal daily lives to the point we don't even realize it is there, until we have to charge it. Many of these devices didn't even exist in the last century. The world has become a different place due to the ability of battery technology to make energy dispatchable in so many ways. This presentation takes us on a historical journey through the past of batteries, while demonstrating many of the technologies of present time, and provides bold predictions for the future.</p> <p>Robert Galyen, Contemporary Amperex Technology Limited</p>
	ORAL ONLY	<p>China VII Proposed Regulations and Solutions for the CO2 and NOX Challenge</p> <p>Cylinder deactivation (CDA) has been in production on spark ignited engines for almost 40 years, since 1981. CDA has successfully been applied to series-production programs in North America, Europe, and Japan. In this presentation we will introduce dynamic cylinder deactivation, also known as Dynamic Skip Fire (DSF®) into the world market. DSF is a fully mature, CO2 reduction strategy for the modern internal combustion engine with class-leading cost per benefit. DSF can overcome the challenges of 2 mode, CDA implementations with cylinder cycle to cycle response. The first series-production of DSF-equipped vehicles arrived in the 2019 GM Chevrolet Silverado V8, which achieves 15% fuel economy improvement compared to operation without cylinder deactivation.</p> <p>Steven Carlson, Tula Technology Inc.</p>
	ORAL ONLY	<p>The two-cylinder two-stroke range extend dedicated engine development</p> <p>This report presented Geely's work on two-stroke range extend engine development. The two cylinder two stroke engine is small ,light weight compared to four stroke engine with similar ouput, and has better sound characteristics. The traditional problem of the two stroke engine are emission, oil consumption and low efficiency. This article describes the development of two-cylinder two-stroke range extend dedicated engine in Geely. To meet strict emission target, the lambda is 1 over all of engine operating range. The oil lubrication system is similar to the four stroke engine to control the lubrication oil consumption. The 0.8L engine outputs 40kw at 4000 engine rpm, with maximum thermal efficiency of 36%.</p> <p>Shuangqing Li, Geely Automobile Research Institute</p>

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Time	Paper No.	Title
	ORAL ONLY	<p>A Comparative Study on Performances and Combustion Characteristics of a Miller-Cycle TGDI Engine Fueled with Gasoline and E30</p> <p>Turbocharged gasoline direct injection (TGDI) engines with a Miller cycle achieved with early intake valve closing (EIVC) have been considered as an approach to improve the thermal efficiency. The Miller engine has a short intake cam in comparison to an Otto-cycle engine, and allows it to govern the effective cylinder displacement with EIVC, which also allows the engine to have a higher geometric compression ratio. EIVC may result in an internal EGR during the valve overlap during the gas exchanger, if the exhaust pressure is greater than the intake pressure. This leads to a disadvantage of the Miller engine in the boost mode, because the hot internal EGR slows the ignition kinetics, and increases the tendency for the engine knocking. Thus, the Miller engine requires a fuel with a higher octane in order to achieve a better performance. A comparative study was conducted on performances of a 1.5L Miller-cycle TGDI engine fueled with RON93 gasoline and a gasoline-ethanol mixture with 30% ethanol by volume, known as E30. E30's RON number is about 100. As an oxygenated fuel, E30 contains 11wt% fuel oxygen and with a higher latent heat than gasoline, and thus tolerates more internal EGR than gasoline. These properties make E30 more suitable to the Miller engine. However, E30's high oxygen content results in its lower heating value only 89% of gasoline, and thus, 11% more fuel mass must be injected to achieve the same fuel energy, leading to more fuel dilution of the engine crankcase oil than gasoline. Detailed experimental comparisons of the engine performances and combustion characteristics for the two fuels will be reported in the presentation.</p>

Xuwei Luo, Jiangling Motors Co., Ltd.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:45 PM

Time	Paper No.	Title
	ORAL ONLY	<p>Lubricant, Particulates and Aftertreatment System</p> <p>Nowadays, synthetic base oil instead of mineral oil were used and also many different kinds of additives to modify the property and improve the performance of oils had been added. Generally speaking, base oil occupies about 80% in total, the additives make up the rest part. What makes the modern oil more complex is that all these different oil additives have different physical and chemical properties. Lubricants affects the diesel particulate emissions by involving into the combustion chamber through the evaporation or other ways. When base oil and additives are involved in combustion, the emission of nuclear particulate matter is significantly increased. The aggregation mode of particulate matter is changed, and more porous spatial structure is formed. Particles from base oil and additives exhibit disorder nanostructure with a shorter fringe length, larger separation distance, and tortuosity. The relative content of defect peak in the internal structure of particles increases, which reduces the degree of graphitization. Lubricants participates in combustion and increases volatile components of particulate matter, especially low volatile components and the content of oxygen-containing functional groups. Many emission control policies like using alternative fuels or low sulfur diesel, changing the injection modes or the low temperature combustion mode, also integration of many different aftertreatment systems like DOC+DPF. However, we neglect the contributes of oil somehow in the past. As mentioned in other literature, aftertreatment system is more and more popular now, and research works show that oil additives lead to different DPF pressure drop performance due to the changes of the soot regeneration. We also focus on the influences of lubricants on the diesel soot oxidation reactivity and oxidation process. Soot oxidation reactivity analyses showed that soot generated from base oil had lower characteristic temperatures, higher oxidation rate and lower activation energy, which means higher oxidation reactivity. In the lubricating oil additive, the metal element participates in the ash generated by the combustion, and promotes the oxidation of the particulate matter to different degrees. Besides, the graphitization degree and relative amounts of aliphatic C-H group exhibited a clear correlation with soot oxidation reactivity.</p>

Xingyu Liang, Tianjin Univ.

Planned by General Powertrain Development / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Basic SI Combustion and Emissions

Session Code PFL211

Room TBD Session

This session focuses on basic SI combustion processes including studies of mixture formation, engine efficiency, flame propagation, and emissions formation. Papers cover both 4-stroke and 2-stroke engines characterized by 1) ignition by an external energy source that serves to control combustion phasing, and 2) a combustion rate that is limited by flame propagation.

Organizers - Vincent Costanzo, Aramco Research Center; Richard Davis, Michigan Technological Univ.; Justin Ketterer, General Motors LLC; Simona Silvia Merola, Istituto Motori CNR

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:46 PM

Time	Paper No.	Title
	2021-01-0463	Analysis of the Correlation between Flow and Combustion Characteristics in Spark-Ignited Engine Seungil Lee, Insuk Ko, Woojae Kim, SeJin Song, Kyoungdoug Min, Seoul National University; Jonghyeok Lee, Heechang Oh, Jinwook Son, Youngnam Kim, Hyundai Motor Company
	2021-01-0464	Assessing the Predictabilities in Cyclic Combustion and Emission Variations in SI Engines for Their Modelling and Control: A Literature Review Ajay Singh, Rakesh Kumar Maurya, Indian Institute of Technology Ropar
	2021-01-0465	Numerical Investigation of Water Injection Effects on Flame Wrinkling and Combustion Development in a GDI Spark Ignition Optical Engine Jacopo Zembi, Francesco Mariani, Michele Battistoni, Università degli Studi di Perugia; Adrian Irimescu, Simona Merola, Istituto Motori CNR
	2021-01-0466	Experimental Investigation on the Effects of Design and Control Factors on the Performance and Emissions Characteristics of a Boosted GDI Engine Using Taguchi Method Cyrus Atis, Michigan State University; Andrew Huisjen, Kenneth Hardman, FCA US LLC; Harold Schock, Michigan State University
	2021-01-0467	Investigation of Flash Boiling Spray and Combustion in SIDI Engine under Low-Speed Homogeneous Lean Operation Zhe Sun, Xuesong Li, Mohamed Nour, Min Xu, Shanghai Jiao Tong University
	2021-01-0468	Thermodynamic Influences of the Top Land Volume on the Late Combustion Phase - A New Research Approach Markus Koch, University of Stuttgart IFS; Frank Altenschmidt, Mercedes-Benz AG; Oliver Dingel, IAV GmbH; Hans-Juergen Berner, FKFS; Michael Bargende, University of Stuttgart IFS
	ORAL ONLY	SIMULATION AND ANALYSIS OF WATER INJECTION STRATEGY IN SI ENGINES FOR IMPROVED AND OPTIMIZED ENGINE PERFORMANCE Yash Lethwala, Research Scholar

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, and also Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Abnormal SI Combustion (Knock)

Session Code PFL213

Room TBD Session

This session addresses abnormal SI combustion processes with a focus on spark knock. Papers cover both 4-stroke and 2-stroke engines characterized by 1) ignition by an external energy source that serves to control combustion phasing, and 2) a combustion rate that is limited by flame propagation.

Organizers - Alessandro D'Adamo, Università di Modena e Reggio Emilia; Richard Davis, Michigan Technological Univ.; John O. Waldman, General Motors LLC

Time	Paper No.	Title
------	-----------	-------

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:46 PM

Time	Paper No.	Title
	2021-01-0469	Defining the Boundary Conditions of the CFR Engine under MON Conditions, and Evaluating Chemical Kinetic Predictions at RON and MON for PRFs Anvesh Reddy Vallapureddy, Haochuan Zhuang, Jiaqi Li, Dan DeIvescovo, Oakland University; Christopher P. Kolodziej, Alexander Hoth, Argonne National Laboratory
	2021-01-0470	Increasing the Effective AKI of Fuels Using Port Water Injection (Part I) Siddharth Gopujkar, Jeremy Worm, Michigan Technological University; Sam Barros, Cord Christensen, Nostrum Energy LLC
	2021-01-0471	Methods to Increase the Relevancy of the Octane Number Tests Vikram Mittal, US Military Academy; Rajesh Shah, Koehler Instrument Co

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Alternative Fuel and Fuel Additive Effects on SI Combustion Processes

Session Code PFL214

Room TBD Session

This session focuses on the impact of conventional and alternative fuels as well as fuel additives on the operation, performance and emissions of SI engines. Papers focus on the impact of bio-derived fuels (ethanol, butanol and others) on engine design and performance as well as gasoline properties and additives, and their impact.

Organizers - Richard Davis, Michigan Technological Univ.; Andrew Mansfield, Eastern Michigan Univ.; James Turner, University Of Bath

Time	Paper No.	Title
	2021-01-0472	Combustion and Emissions Improved by Using Flash Boiling Sprays and High-Energy Ignition Technologies in an Ethanol-Gasoline Optical Engine Yadong Fan, Kaixiang Li, Chang Ye, Qifan Gu, Xuesong Li, Min Xu, Shanghai Jiao Tong University
	2021-01-0473	A Comprehensive Experimental Study to Measure Laminar and Turbulent Burning Velocity of Haltermann Gasoline with Ternary Additives (O ₃ , H ₂ , and CO) Farha Khan, Ayman Elbaz, Amit Katoch, King Abdullah University of Science & Technology; Jihad Badra, Saudi Aramco; Vincent Costanzo, Aramco Research Center; William Roberts, King Abdullah University of Science & Technology

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:46 PM

Tuesday, April 13

On-Demand: SI Combustion Ignition

Session Code PFL215

Room TBD

Session

This session focuses on the SI combustion ignition process and advanced ignition systems. Papers cover both 4-stroke and 2-stroke engines characterized by 1) ignition by an external energy source that serves to control combustion phasing, and 2) a combustion rate that is limited by flame propagation.

Organizers - William Attard, Fiat Chrysler Automobiles; Matthew Bresler, FCA US LLC; Richard Davis, Michigan Technological Univ.; Adrian Irimescu, Istituto Motori CNR; Anand Karpatne, Esgee Technologies

Time	Paper No.	Title
	2021-01-0474	Analysis of Fuel Properties on Combustion Characteristics in a Narrow-Throat Pre-Chamber Engine Ponnya Hlaing, Manuel Echeverri Marquez, Paula Burgos, King Abdullah University of Science & Technology; Emre Cenker, Saudi Aramco; Moez Ben Houidi, Bengt Johansson, King Abdullah University of Science & Technology
	2021-01-0476	Performance of Spark Energy Distribution Strategy on a Production Engine under Lean-Burn Conditions Xiao Yu, Simon Leblanc, University of Windsor; Mengzhu Liu, Tongxin Auto Parts Ltd; Jimi Tjong, Ming Zheng, University of Windsor
	2021-01-0477	Knock Mitigation Benefits Achieved through the Application of Passive MAHLE Jet Ignition Enabling Increased Output under Stoichiometric Operation Adrian Cooper, Anthony Harrington, Michael Bassett, David Pates, Mahle Powertrain Ltd
	2021-01-0478	Effect of Spark Discharge Duration and Timing on the Combustion Initiation in a Lean Burn SI Engine Navjot Singh Sandhu, Hua Zhu, Simon Leblanc, Xiao Yu, University of Windsor; Huimu Yang, Zhuzhou Torch Spark Plug Co., Ltd.; David Ting, Ming Zheng, University of Windsor
	2021-01-0479	The Impact of Pre-Chamber Design on Part Load Efficiency and Emissions of a Miller Cycle Light Duty Gasoline Engine Xin Yu, Anqi Zhang, Andrew Baur, Nayan Engineer, Aramco Research Center
	2021-01-0480	Experimental and Modeling Study of Spark Plug Electrode Heat Transfer and Thermal Energy Deposition Kyeongmin Kim, Corey Tambasco, Matthew Hall, Ron Matthews, University of Texas at Austin
	2021-01-0482	Investigation of Flame Detachment Effect during Early Flame Development in a Swirl Flow Field Hua Zhu, Linyan Wang, Zhenyi Yang, Li Liang, Graham Reader, University of Windsor; Xiaoshuang Chen, Torch Spark Plug Co, LTD; Ming Zheng, University of Windsor
	ORAL ONLY	EGR dilution tolerance for stoichiometric operation in a pre-chamber ignited GDI engines Johannes Rohwer, Toby Rockstroh, Ashish Shah, Taehoon Han, Argonne National Laboratory

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, and also Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:46 PM

Tuesday, April 13

On-Demand: Dilute SI Combustion (Stratified Charge, EGR)

Session Code PFL216

Room TBD Session

This session focuses on the dilute SI combustion processes including lean, stratified, and EGR operation. Papers cover both 4-stroke and 2-stroke engines characterized by 1) ignition by an external energy source that serves to control combustion phasing, and 2) a combustion rate that is limited by flame propagation.

Organizers - Thomas Briggs, Southwest Research Institute; Richard Davis, Michigan Technological Univ.; Brian Kaul, Oak Ridge National Laboratory

Time	Paper No.	Title
	2021-01-0483	EGR Dilution and Fuel Property Effects on High-Efficiency Spark-Ignition Flames
		Flavio Dal Forno Chuahy, Derek Splitter, Martin Wissink, Vicente Boronat Colomer, Oak Ridge National Laboratory

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, and also Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Abnormal SI Combustion (Preignition & SPI / LSPI)

Session Code PFL217

Room TBD Session

This session addresses abnormal SI combustion processes with a focus on preignition, including low-speed, stochastic preignition on boosted engines. Papers cover both 4-stroke and 2-stroke engines characterized by 1) ignition by an external energy source that serves to control combustion phasing, and 2) a combustion rate that is limited by flame propagation.

Organizers - Richard Davis, Michigan Technological Univ.; Cinzia Tornatore, Istituto Motori CNR

Time	Paper No.	Title
	2021-01-0487	Market Fuel Effects on Low Speed Pre-Ignition
		Andre Swarts, Vickey Kalaskar, Southwest Research Institute
	2021-01-0488	Fuel Effects on the Propensity to Establish Propagating Flames at SPI-Relevant Engine Conditions
		Vincent Costanzo, Xin Yu, Aramco Research Center; Elana Chapman, General Motors LLC; Richard Davis, Michigan Technological University
	2021-01-0489	In Situ Laser Induced Florescence Measurements of Fuel Dilution from Low Load to Stochastic Pre Ignition Prone Conditions
		Derek Splitter, Vicente Boronat Colomer, Sneha Neupane, Flavio Dal Forno Chuahy, William Partridge, Oak Ridge National Laboratory
	2021-01-0490	Impact of Fuel Detergent Type and Concentration on the Rate and Severity of Stochastic Preignition in a Turbocharged Spark Ignition Direct Injection Gasoline Engine

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:46 PM

Time	Paper No.	Title
		Elana Chapman, William Studzinski, Rebecca Monroe, General Motors LLC; Ati Tolou, Mangrish Wagle, Joseph Ciaravino, Dean Tomazic, FEV North America Inc

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, and also Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Combustion in Compression-Ignition Engines

Session Code PFL220

Room TBD

Session

Classical diesel engine combustion with relatively short ignition delay, including papers dealing with low CR and high EGR calibrations. Papers describing experiments and test data, simulation results focused on applications, fuel/additive effects, combustion control, and mode change are invited and will be placed in appropriate sub-sessions. Papers with an emphasis on the modeling aspects of combustion are located in sessions PFL110 or PFL120.

Organizers - Raul Payri, Universitat Politecnica de Valencia; Stephen Busch, Sandia National Laboratories; Jose M Garcia-Oliver, Universitat Politecnica de Valencia; Chad Koci, Yongli Qi, Caterpillar Inc.; John Wright, Cummins Inc.; Ming Zheng, Univ. of Windsor

Time	Paper No.	Title
	2021-01-0492	Numerical Predictions of In-Cylinder Phenomenon in Methanol Fueled Locomotive Engine Using High Pressure Direct Injection Technique Dhananjay Kumar, Hardikk Valera, Avinash Kumar Agarwal, IIT Kanpur
	2021-01-0493	Investigation of Gasoline Compression Ignition in a Heavy-Duty Diesel Engine Using Computational Fluid Dynamics Ahmed Abdul Moiz, Khanh Cung, Thomas Briggs, Daniel Christopher Bitsis, Southwest Research Institute
	2021-01-0494	Efficacy Study of Polynomial Based Parametric Mapping in an RCCI Engine for Possible Control Applications Chinmaya Mishra, P M V Subbarao, IIT Delhi
	2021-01-0495	Investigation of Gasoline Compression Ignition (GCI) Combustion in a High Compression-Ratio Heavy-duty Single-Cylinder Diesel Engine Khanh Cung, Daniel Christopher Bitsis, Jason Miwa, Edward Smith, Thomas Briggs, Andrew Morris, Alexander Michlberger, Ahmed Abdul Moiz, Southwest Research Institute
	2021-01-0496	Hybrid Physical and Machine Learning-Oriented Modeling Approach to Predict Emissions in a Diesel Compression Ignition Engine Aran Mohammad, Reza Rezaei, Christopher Hayduk, Thaddaeus O. Delebinski, IAV GmbH; Saeid Shahpouri, Mahdi Shahbakhti, University of Alberta
	2021-01-0497	Impacts of Biofuel Blending on MCCI Ignition Delay with Review of Methods for Defining Cycle-by-Cycle Ignition Points from Noisy Cylinder Pressure Data Jonathan Martin, Jonathan Burton, Jon Luecke, Robert McCormick, National Renewable Energy Laboratory

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:46 PM

Time	Paper No.	Title
	2021-01-0498	<p>Thermal Management Concept for the Exhaust Aftertreatment of Commercial Vehicle Diesel Engines Using Variable Mixtures of Diesel Fuel and Rapeseed Oil</p> <p>Matthias Thees, Michael Guenther, Florian Mueller, University of Kaiserslautern</p>
	2021-01-0499	<p>Effects of an Annular Piston Bowl-Rim Cavity on In-Cylinder and Engine-Out Soot of a Heavy-Duty Optical Diesel Engine</p> <p>Rajavasanth Rajasegar, Sandia National Laboratories; Ted Lind, Lund University; Zheming Li, Greg Roberts, Sandia National Laboratories; Oivind Andersson, Lund University; Mark Musculus, Ales Srna, Sandia National Laboratories</p>
	2021-01-0500	<p>Signal Reconstruction of Two-Color Pyrometry Technique Using CFD and a Detailed Spectral Radiation Model in a Marine Diesel Engine Setup</p> <p>Stefan Geringer, ETH Zurich; Daniel Haworth, Penn State University; Konstantinos Boulouchos, ETH Zurich; Beat von Rotz, Winterthur Gas And Diesel; Michele Bolla, ETH Zurich; Marco Mazzetta, Winterthur Gas And Diesel</p>
	2021-01-0504	<p>Emissions Evaluation and Modeling of PM Emissions under Real-World Driving of an Ultra-Low NOx Tier 3 Light-Duty Diesel Vehicle</p> <p>Rick Huang, Awty International School; Ron Matthews, University of Texas-Austin</p>
	2021-01-0505	<p>Fuel Property Effects of a Broad Range of Potential Biofuels on Mixing Control Compression Ignition Engine Performance and Emissions</p> <p>Jonathan L. Burton, Jonathan A. Martin, Gina M. Fioroni, Teresa L. Alleman, Cameron K. Hays, Matthew A. Ratcliff, National Renewable Energy Laboratory; Michael R. Thorson, Andrew J. Schmidt, Richard T. Hallen, Todd R. Hart, Justin M. Billing, Samuel Fox, Daniel J. Gaspar, Pacific Northwest National Laboratory; Junqing Zhu, Camille Kima, Lisa D. Pfefferle, Charles S. McEnally, Yale University; Robert L. McCormick, National Renewable Energy Laboratory</p>
	2021-01-0506	<p>Numerical Investigation on NO to NO₂ Conversion in a Low-Temperature Combustion CI Engine</p> <p>Nupur Gupta, Xiao Yu, Nick Eaves, Meiping Wang, Ming Zheng, University of Windsor</p>
	2021-01-0508	<p>Predicting the Combustion Behavior in a Small-Bore Diesel Engine</p> <p>Giuliana Litrico, Karthik Puduppakkam, Long Liang, Ellen Meeks, ANSYS Inc.</p>
	2021-01-0509	<p>Effect of Piston Geometry on In-Cylinder Fluid Mechanics, Heat Transfer, and Ignition Delay in Rapid Compression Machines</p> <p>Rohan Biwalkar, Nicholas Desmornes, Carnegie Mellon University; Dereck Dasrath, William Northrop, University of Minnesota-Twin Cities; Satbir Singh, Carnegie Mellon University</p>
	ORAL ONLY	<p>Ducted fuel injection geometry effects: Investigating the effects of duct length and diameter in a compression-ignition engine</p> <p>Christopher Nilsen, Drummond Biles, Sandia National Laboratories; Brady Wilmer, University of Minnesota; Charles Mueller, Sandia National Laboratories</p>
	ORAL ONLY	<p>A System to Enable Mixing Controlled Combustion with High Octane Fuels Using a Prechamber and High-Pressure Direct Injector</p> <p>Adam Dempsey, Jared Zeman, Martin Wall, Marquette University</p>

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:46 PM

Time	Paper No.	Title
	ORAL ONLY	Investigation of Solid Particulate Mass and Number from Ducted Fuel Injection in an Optically Accessible Diesel Engine Brady Wilmer, University of Minnesota-Twin Cities; Christopher Nilsen, Drummond Biles, Charles Mueller, Sandia National Laboratories; William Northrop, Univ of Minnesota-Twin Cities
	ORAL ONLY	High-output Diesel Engine Instantaneous Spatially Averaged Heat Transfer Correlation Eric Gingrich, Michael Tess, Vamshi Korivi, US Army GVSC; Jaal Ghandhi, Univ of Wisconsin Madison

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00009 and SUB-TP-Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Homogeneous Charge Compression Ignition, HCCI

Session Code PFL230

Room TBD

Session

Classical HCCI combustion with temperature controlling combustion onset and only a modest effect of fuel injection. Papers describing experiments and test data, simulation results focused on applications, fuel/additive effects, combustion control, and mode change are invited and will be placed in appropriate sub-sessions. Papers with an emphasis on the modeling aspects of combustion are in sessions PFL 110 or PFL120.

Organizers - Mark Hoffman, Auburn Univ.; Vickey Kalaskar, Southwest Research Institute; Darko Kozarac, Univ. of Zagreb

Time	Paper No.	Title
	2021-01-0510	Effect of Intake Temperature and Engine Speed on the Auto-Ignition Reactivity of the Fuels for HCCI Fuel Rating Muhammad Umer Waqas, Alexander Hoth, Argonne National Laboratory; Brian Gainey, Clemson University; Bengt Johansson, Chalmers University of Technology; Christopher P. Kolodziej, Argonne National Laboratory
	2021-01-0511	High Temperature HCCI Critical Compression Ratio of the C1-C4 Alcohol Fuels Brian Gainey, Clemson University; Alexander Hoth, Muhammad Waqas, Argonne National Laboratory; Benjamin Lawler, Clemson University; Christopher Kolodziej, Argonne National Laboratory
	2021-01-0512	An Experimental Study on a Six-Stroke Gasoline Homogeneous Charge Compression Ignition (HCCI) Engine with Continuously Variable Valve Duration (CVVD) Woojae Shin, Myoungsoo Kim, Sechul Oh, ChongHoh Lee, Huiji Hwang, Han Ho Song, Seoul National University; Hyeon Woo Kim, Baek Sik Kim, Kyoung Pyo Ha, Hyundai Motor Company
	2021-01-0513	Mixture Stratification for CA50 Control of LTGC Engines with Reactivity-Enhanced and Non-Additized Gasoline Dario Lopez Pintor, Gerald Gentz, John Dec, Sandia National Laboratories
	ORAL ONLY	Understanding the performance of OI in LTGC engines from beyond MON to beyond RON

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:46 PM

Time	Paper No.	Title
		Dario Lopez Pintor, John Dec, Sandia National Laboratories
	ORAL ONLY	Low-Temperature Gasoline Combustion (LTGC) for Significantly Improved Efficiency in Medium- and Heavy-Duty Engines John E. Dec, Dario Lopez Pintor, Sandia National Laboratories

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Partially Premixed Compression Ignition, PCCI

Session Code PFL250

Room TBD

Session

Mixed mode with auto ignition but inhomogeneous charge. Injection-controlled but with EOI before SOC. Papers describing experiments and test data, simulation results focused on applications, fuel/additive effects, combustion control, and PPC injection strategies are invited and will be placed in appropriate sub-sessions. Papers with an emphasis on the modeling aspects of combustion are located in sessions PFL110 or PFL120 .

Organizers - Adam Dempsey, Marquette University; Antonio Garcia, Universitat Politecnica de Valencia; Gerald Micklow, Florida Institute of Technology

Time	Paper No.	Title
	2021-01-0514	A Computational Investigation of PPCI-Diffusion Combustion Strategy at Full Load in a Light-Duty GCI Engine Yu Zhang, Mark Sellnau, Aramco Research Center
	2021-01-0515	EGR System Optimization for Light-Duty Gasoline Compression Ignition (GCI) Engine Praveen Kumar, Mark Sellnau, Aramco Research Center
	2021-01-0516	Air-System and Variable Valve Actuation Recipe for High Load Gasoline Compression Ignition Operation in a Heavy-Duty Diesel Engine Praveen Kumar, Yu Zhang, Michael Traver, Aramco Research Center; John Watson, BorgWarner Turbo Systems
	2021-01-0517	Analysis of the Effects of Injection Pressure Variation in Gasoline Partially Premixed Combustion Federico Stola, Marelli Europe SpA - Powertrain BU; Vittorio Ravaglioli, Giacomo Silvagni, Fabrizio Ponti, University of Bologna; Matteo De Cesare, Marelli Europe SpA - Powertrain BU
	2021-01-0518	Demonstration of Better than Diesel Efficiency and Soot Emissions using Gasoline Compression Ignition in a Light Duty Engine with a Fuel Pressure Limitation Antowan Zyada, Jeffrey Hollowell, Mark Shirley, Nicholas Fantin, Shengrong Zhu, Nahm Roh Joo, Philip Zoldak, Hyundai-Kia America Technical Center Inc
	ORAL ONLY	Investigation on Combining Partially Premixed Compression Ignition and Diffusion Combustion for Gasoline Compression Ignition: Compression Ratio and Piston Bowl Geometry Effects

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:46 PM

Time	Paper No.	Title
		Yu Zhang, Kukwon Cho, Mark Sellnau, Aramco Research Center - Detroit

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00009, and also Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Dual Fuel Combustion

Session Code PFL260

Room TBD Session

Mixed mode using more than one fuel not fully mixed before combustion. Most often with auto ignition of spray injected late. Papers describing experiments and test data, simulation results focused on applications, fuel/additive effects, and RCCI (Reactivity-Controlled Compression Ignition) are invited and will be placed in appropriate sub-sessions. Papers with an emphasis on the modeling aspects of combustion are encouraged to be submitted into PFL110 or PFL120 modeling sessions.

Organizers - Andrew Ickes, Chevron Energy Technology Company; Luca Marchitto, Istituto Motori CNR; Javier Monsalve-Serrano, Universitat Politecnica de Valencia

Time	Paper No.	Title
	2021-01-0519	On-Line Optimization of Dual-Fuel Combustion Operation by Extremum Seeking Techniques Benjamin Pla, Pau Bares, Alvin Barbier, Carlos Guardiola, Universitat Politecnica de Valencia
	2021-01-0520	Residual Cooking Oil Biodiesel and Hexanol as Alternatives to Petroleum-Based Fuel in Low-Temperature Combustion: Parametric Study Justin Jacob Thomas, Govindan Nagarajan, Sabu VR, Anna University, Chennai; Vikas Sharma, Aston University, UK
	2021-01-0521	Evaluation of the Ethanol-Diesel Spray Interaction during Ignition in a Dual-Fuel DICI Engine Using an Experimentally Validated CFD Model Nicola Giramondi, KTH Royal Institute of Technology; Dennis Konstanzer, Cummins Scania XPI Engineering; Anders Erlandsson, KTH Royal Institute of Technology

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Combustion in Gaseous-Fueled Engines

Session Code PFL270

Room TBD Session

This session focuses on fuel injection, combustion, controls, performance and emissions of SI engines fueled with gaseous fuels such as methane, natural gas (NG), biogas, producer gas, coke oven gas, hydrogen, or hydrogen-NG blends. Papers on Diesel-NG or diesel-hydrogen dual-fuel engines will also be accepted in this session.

Organizers - Gordon McTaggart-Cowan, Simon Fraser University; Victor Salazar, GE Global Research Center; Riccardo Scarcelli, Ashish Shah, Argonne National Laboratory

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:46 PM

Time	Paper No.	Title
	2021-01-0523	A Computational Investigation of Fuel Enrichment in the Pre-Chamber on the Ignition of the Main Chamber Charge Mickael Silva, Sangeeth Sanal, Ponnya Hlaing, King Abdullah University of Science & Technology; Emre Cenker, Saudi Aramco; Bengt Johansson, Hong G. Im, King Abdullah University of Science & Technology
	2021-01-0524	An Experimental Study of the Effects of n-iso-Butanes and Pentanes on the Methane Number of Natural Gas Mixtures Ulf Kühne, Marius Betz, Christian Meier, Peter Eilts, Technische Universität Braunschweig
	2021-01-0525	Spatio-Temporal Progression of Two-Stage Autoignition for Diesel Sprays in a Low-Reactivity Ambient: n-Heptane Pilot-Ignited Premixed Natural Gas Rajavasanth Rajasegar, Sandia National Laboratories; Yoichi Niki, NIMPAT; Jose M Garcia-Oliver, Universitat Politecnica de Valencia; Zheming Li, Mark Musculus, Sandia National Laboratories
	2021-01-0526	A Numerical Investigation of Mixture Formation and Combustion Characteristics of a Hydrogen-Diesel Dual Direct Injection Engine Ye Wang, Annabelle Evans, Ales Srna, Armin Wehrfritz, Evatt Hawkes, Xinyu Liu, Sanghoon Kook, Qing Nian Chan, University of New South Wales
	2021-01-0527	Mechanisms of NO _x Production and Heat Loss in a Dual-Fuel Hydrogen Compression Ignition Engine Annabelle Evans, Ye Wang, Armin Wehrfritz, Ales Srna, Evatt Hawkes, Xinyu Liu, Sanghoon Kook, Qing Nian Chan, University of New South Wales
	2021-01-0528	Optical Diagnostics of Pre-Chamber Combustion with Flat and Bowl-In Piston Combustion Chamber Manuel Echeverri Marquez, Ponnya Hlaing, Moez Ben Houidi, Gaetano Magnotti, Bengt Johansson, King Abdullah University of Science & Technology; Emre Cenker, Saudi Aramco
	2021-01-0529	A Support-Vector Machine Model to Predict the Dynamic Performance of a Heavy-Duty Natural Gas Spark Ignition Engine Jinlong Liu, Qiao Huang, Christopher Ulishney, Cosmin Dumitrescu, West Virginia University

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, SUB-TP-Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Combustion Control and Optimization

Session Code PFL280

Room TBD Session

This session covers engine combustion control and optimization techniques. Topics include engine combustion diagnostics as specialized for control, control methodologies and algorithms, optimization, related combustion sensing, etc.

Organizers - Benjamin Lawler, Clemson University; Jaime Martin, Universitat Politecnica de Valencia; MICHAEL Prucka, FCA US LLC; Robert Prucka, Clemson Univ.

Time	Paper No.	Title
------	-----------	-------

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:47 PM

Time	Paper No.	Title
	2021-01-0530	A Comparison Study on the Performance of the Multi-Stroke Cycle SI Engine under Low Load Zhuoxiao Yao, Tao Chen, Yifang Feng, Weipeng Lin, Yu Wang, Tianjin University; Hua Zhao, Brunel University
	2021-01-0531	Stochastic Set-Point Optimization for In-Cycle Closed-Loop Combustion Control Operation Carlos Jorques Moreno, Ola Stenlaas, Scania CV AB; Per Tunestal, Lund University
	2021-01-0532	Effects of Fuel Injection Strategy during Negative Valve Overlap on HCCI Combustion and Ion Current Characteristics Xinke Miao, Shushu Chen, Jinqiu Wang, Denghao Zhu, Jun Deng, Liguang Li, Tongji University
	2021-01-0533	An Analysis and Optimization Method for Engine Combustion: Chemical Reaction Analogy Method (CRAM) Wanyu Sun, Lei Guo, Niancheng Guo, Shanheng Yan, Yourui Hu, Yuanjing Hou, CNHTC R&D Center
	2021-01-0534	Dilute Combustion Control Using Spiking Neural Networks Bryan P. Maldonado, Brian C. Kaul, Catherine D. Schuman, Steven R. Young, J. Parker Mitchell, Oak Ridge National Laboratory
ORAL ONLY		Study and Analysis of Piston Temperature Distribution during Combustion Yash Lethwala, Research Scholar
ORAL ONLY		Closed-loop predictive control of a multi-mode engine including HCCI, PPCI and RCCI combustion modes Sadaf Batool, Michigan Technological Univ.; Jeffrey Naber, Michigan Technological Univ; Mahdi Shahbakhti, Univ of Alberta
ORAL ONLY		Machine learning approach for identification of heat release shapes of a low temperature combustion (LTC) engine Radhika Sitaraman, Cummins; Mahdi Shahbakhti, Univ of Alberta; Jeffrey Naber, Michigan Technological Univ; Hoseinali Borhan, Cummins Inc; Javad Mohammadpour Velni, Univ of Georgia; Aditya Basina, KCM technical

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Cold Start and Transient Emissions Control

Session Code PFL290

Room TBD

Session

This session focuses on both SI and CI combustion and the emissions generated during engine start, catalyst heating and transient engine operation. Example topics include combustion system and exhaust system design, calibration and control as it applies to cold start capability, catalyst heating and feedgas emissions (NO_x, PM/PN, HC, CO and CO₂) including the impact of fuel injection equipment, gas exchange, heat flux and heat losses in the exhaust.

Organizers - Eric Curtis, Ford Motor Company; Ouafae El Ganaoui-Mourlan; Peter Moilanen, Ford Motor Company; Hamid Servati, ServoTech. Industries

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:47 PM

Time	Paper No.	Title
	2021-01-0535	An Experimental Study on NOx Emissions of a Heavy-Duty Diesel Engine during Cold Start and Idling Shouvik Dev, Hongsheng Guo, Brian Liko, Simon Lafrance, National Research Council Canada; Aaron Conde, Transport Canada
	2021-01-0536	Quantitative Analysis of Gasoline Direct Injection Engine Emissions for the First 5 Firing Cycles of Cold Start Jinghu Hu, Matthew Hall, Ron Matthews, University of Texas - Austin; Peter Moilanen, Steven Wooldridge, Jianwen Yi, Ford Motor Company
	2021-01-0537	Requirements and Strategies for Diesel Cold-Start Catalyst Warmup for Low NOx Regulations Avra Brahma, Cummins
	ORAL ONLY	Dynamic Skip Fire Catalyst Light-off Strategy Xi Luo, Tula Technology Inc.; Elliott Ortiz-Soto, Tula Technology Inc

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Fuel and Additive Effects on Engine Systems

Session Code PFL310

Room TBD Session

Topics include the effects of fuel and additives on deposit formation, intake system cleanliness, friction, wear, corrosion, and elastomer compatibility. Also covered are effects of fuel specification on drivability, on evaporative emissions, and on the relationship between emissions and drive cycle.

Organizers - Elana Chapman, General Motors LLC; Thomas Dubois, Total Acs; Andrew Ickes, Chevron Energy Technology Company; Antonino La Rocca, University of Nottingham; Luca Marchitto, Istituto Motori CNR; Paul Richards

Time	Paper No.	Title
	2021-01-0538	Fuel Effects on Engine-out Emissions Part 2 - Fuel Properties Correlations Alexander Voice, Aramco; Ripudaman Singh, Robert Bosch LLC; Robert Levy, Aramco; Mohammad Fatouraie, Robert Bosch LLC
	2021-01-0539	A Holistic Overview of Diesel Fuel Filter Selection Methodologies and Multi-Level Robust Testing and Validation Strategy Mohammad Saifullah Khan, John Deere & Co.; Krishnat M Patil, John Deere India Private, Ltd.
	2021-01-0540	Influence of Ethanol and MTBE Proportion in China VIB Gasoline on Vehicle Particulate Emissions Huanyu Tian, Lu Han, Xin Guo, Sinopec RIPP; Pat Geng, General Motors LLC; Wen Sun, DONGFENG Motor Corporation; Susan Zhang, Pan Asia Technical Automotive Center Co; Haitao Zhou, Xiaoshuang Kong, China FAW Group CO., Ltd; Ni Zhang, DONGFENG Motor Corporation

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:47 PM

Time	Paper No.	Title
	2021-01-0541	Fuel Effects on Engine-out Emissions Part 1 - Comparing Certification and Market Gasoline Fuels Ripudaman Singh, Robert Bosch LLC; Alexander Voice, Aramco; Mohammad Fatouraie, Robert Bosch LLC; Robert Levy, Aramco
	2021-01-0542	Effects of Oxygenates and Aromatics in Gasoline on Vehicle Particulate Emissions Lu Han, Huayu Tian, Sinopec RIPP; Susan Zhang, Pan Asia Technical Automotive Center Co; Pat Geng, General Motors LLC; Xin Guo, Bo Li, Yu Zheng, Na Li, Shuntao Liu, Zhiping Tao, Jianrong Zhang, Han Zhou, Sinopec RIPP

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Fuel Injection and Sprays

Session Code PFL320

Room TBD

Session

This session is devoted to experimental and computational work in the area of fuel injection systems and sprays. Topics include: spray characterization, cavitation, multi-phase jet modeling, CFD models for spray processes, wall films and impingement, hydraulic circuit analysis, and dissolved gas effects. Studies of both gasoline and diesel fuel sprays and fuel injection equipment are encouraged.

Organizers - Tarek Abdel-Salam, East Carolina University; Michele Battistoni, Universita degli Studi di Perugia; Mebougna Drabo, Alabama A & M University; Essam El-Hannouny, Argonne National Laboratory; Felix Leach, University of Oxford; Luca Marchitto, Istituto Motori CNR; Gerald Micklow, Florida Institute of Technology; Alessandro Montanaro, Istituto Motori - CNR

Time	Paper No.	Title
	2021-01-0543	A Numerical Study for the Effect of Liquid Film on Soot Formation of Impinged Spray Combustion Zhihao Zhao, Xiucheng Zhu, Le Zhao, Meng Tang, Seong-Young Lee, Michigan Technological University
	2021-01-0544	Effects of Injection Timing and Duration on Fuel-Spray Collapse and Wall-Wetting in a Stratified Charge SI Engine Namho Kim, David Vuilleumier, Magnus Sjoberg, Sandia National Laboratories
	2021-01-0545	Research on Multi-Parameter Interaction Influence Law and Multi-Objective Optimization of Common Rail Injector Jiasheng Zhou, Liyun Fan, Yunpeng Wei, Yun Bai, Harbin Engineering University
	2021-01-0546	Effect of Liquid Break-Up Model Selection on Simulated Diesel Spray and Combustion Characteristics Louis Nicholson, Martin Davy, University of Oxford; Joseph Camm, Canterbury Christ Church University; Sridhar Ayyapureddi, Jaguar Land Rover
	2021-01-0547	Effect of Fuel Temperature on the Performance of a Heavy-Duty Diesel Injector Operating with Gasoline Roberto Torelli, Argonne National Laboratory; Yuanjiang Pei, Yu Zhang, Michael Traver, Mark Sellnau, Aramco Research Center; Sibendu Som, Argonne National Laboratory

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:47 PM

Time	Paper No.	Title
	2021-01-0548	Mixture Model Approach for the Study of the Inner Flow Dynamics of an AdBlue Dosing System and the Characterization of the Near-Field Spray Raul Payri, Gabriela Bracho, Pedro Marti-Aldaravi, Javier Marco-Gimeno, Universitat Politecnica de Valencia
	2021-01-0549	Gasohol Sprays Simulations of a Multi-Hole GDI Injector in Engine-Like Conditions Ankur Kalwar, Sam Chintagunti, Avinash Kumar Agarwal, Indian Institute of Technology - Kanpur
	2021-01-0550	Accelerating the Generation of Static Coupling Injection Maps Using a Data-Driven Emulator Sudeepta Mondal, Roberto Torelli, Bethany Lusch, Argonne National Laboratory; Petro Junior Milan, Georgia Institute of Technology; Gina M. Magnotti, Argonne National Laboratory
	2021-01-0551	The Effect of Droplet Temperature Model Choice on Gasoline Droplet and Spray Simulation Joseph Camm, Canterbury Christ Church University
	2021-01-0552	A Data-Driven Approach to Determine the Single Droplet Post-Impingement Pattern on a Dry Wall Using Statistical Machine Learning Classification Methods Jiachen Zhai, Seong-Young Lee, Michigan Technological University
	ORAL ONLY	Effects of needle geometry on a gaseous fuel injector: a numerical study Benjamin Lee, Texas Tech University; Haiwen Ge, Texas Tech. University
	ORAL ONLY	Development and application of a drop-wall interaction model at high ambient pressure conditions Sheikh Ahamed, Iowa State Univ.
	ORAL ONLY	Ducted Fuel Injection: a numerical soot-targeted duct geometry optimization Federico Millo, Andrea Piano, Benedetta Peiretti Paradisi, Cristiano Segatori, Politecnico di Torino; Lucio Postrioti, Luca Pieracci, Universita' degli Studi di Perugia; Andrea Bianco, Powertech Engineering SRL; Francesco Pesce, Alberto Vassallo, PUNCH Torino
	ORAL ONLY	Modeling Transcritical Fuel Sprays with a Diffuse Interface Method and Real Fluid Thermo Physics: study of n-dodecane and dimethyl-ether injection at diesel-like conditions Faniry Rahantamialisoa, Michele Battistoni, B M Ningegowda, Universita degli Studi di Perugia

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00009, and also Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:47 PM

Tuesday, April 13

On-Demand: Alternative and Advanced Fuels

Session Code PFL330

Room TBD Session

This session focuses on work pertaining to the production and fundamental properties of new fuels and methods for assessing their performance as well as combustion properties in spark and compression ignition engines. This will include work related to the issues of fuel stability, storage and transportation. Examples include diesel fuel stability, lubricity, cold weather issues, and environmental and toxicological impacts.

Organizers - Mebougna Drabo, Alabama A & M University; E. Robert Fanick, Southwest Research Institute; George Karavalakis, University Of California Riverside; Svitlana Kroll, Southwest Research Institute; Luca Marchitto, Istituto Motori CNR; A S Ramadhas, Indian Oil Corp., Ltd.; Toby Rockstroh, Argonne National Laboratory; Cinzia Tornatore, Istituto Motori CNR; Elisa Toulson, Michigan State University

Time	Paper No.	Title
	2021-01-0554	A Rapid Compression Machine Study on Ignition Delay Times of Gasoline Mixtures and their Multicomponent Surrogate Fuels under Diluted and Undiluted Conditions Prasanna Chinnathambi, Chaitanya Wadkar, Michigan State University; Soumya Gudiyella, Amit Shrestha, FCA US LLC; Elisa Toulson, Michigan State University
	2021-01-0555	Experimental Investigation of Viscosity and Combustion Characteristics of N-Butanol/Diesel Blends Jinlin Han, Yu Wang, Bart Somers, Eindhoven University Of Technology
	2021-01-0556	Investigation of the Emission Reduction Potential of HVO-OME Fuel Blends in a Single-Cylinder Diesel Engine Alexander Holzer, Michael Guenther, University of Kaiserslautern
	2021-01-0557	Optical Investigations of an Oxygenated Alternative Fuel in a Single Cylinder DISI Light Vehicle Gasoline Engine Markus Mülhthaler, Sebastian Blochum, Andreas Stadler, Martin Härtl, Georg Wachtmeister, Technical University of Munich; Akiyasu MIYAMOTO, Henning Sauerland, Hitachi Europe GmbH
	2021-01-0558	A Qualitative Comparison of the Macroscopic Spray Characteristics of Gasoline Mixtures and their Multi-Component Surrogates Using a Rapid Compression Machine Chaitanya Wadkar, Prasanna Chinnathambi, Michigan State University; Soumya Gudiyella, Lurun Zhong, FCA US LLC; Elisa Toulson, Michigan State University
	2021-01-0560	Effect of Injection Strategy and EGR on Particle Emissions from a CI Engine Fueled with an Oxygenated Fuel Blend and HVO Josefine Preuss, Karin Munch, Ingemar Denbratt, Chalmers University of Technology
	2021-01-0561	Potential Analysis of a DMC/MeFo Mixture in a DISI Single and Multi-Cylinder Light Vehicle Gasoline Engine Sebastian Blochum, Technical University of Munich; Bartosch Gadowski, Mario Retzlaff, Fabian Thamm, Tenneco; Christoph Kraus, Martin Härtl, Technical University of Munich; Ralf Gelhausen, Steffen Hoppe, Tenneco; Georg Wachtmeister, Technical University of Munich

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:47 PM

Time	Paper No.	Title
	2021-01-0564	Investigation on the Ignition Properties of 1-Propanol and 1-Butanol under Fuel-Lean Conditions Qi Wang, Tongji University; Alejandro García Laguna, Xiaoyu He, Bo Shu, Physikalisch-Technische Bundesanstalt; Liguang Li, Tongji University
	2021-01-0565	Utilization of Plastic Oil and Biobutanol as Fuel for variable Compression Ignition Engine with Modified Fuel Injection Timing and Nozzle Opening Pressure to Replace Diesel Prabakaran B, Hindustan Institute of Tech. Sci.
	ORAL ONLY	Onboard Ethanol-Gasoline Separation System for Octane-on-Demand Vehicle Hiroshi Chishima, Honda R&D Co. Inc.

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00012, and also Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Automotive Gasoline Engine Lubricants

Session Code PFL340

Room TBD Session

The industry continues to work on understanding the interaction of lubricating fluids with engine hardware in order to improve vehicle efficiency, durability, and performance. The Engine Lubricants Session presents a variety of papers dealing with advances in engine oils and their relationship to improved hardware performance.

Organizers - Richard Butcher, BP Castrol; Antonino La Rocca, University of Nottingham; Alexander Michlberger, Southwest Research Institute; Simon Tung

Time	Paper No.	Title
	2021-01-0566	Study on Fuel-Saving Durability of Ultra-Low Viscosity 0W-8 Gasoline Engine Oil Takumaru Sagawa, Sachiko Okuda, Nissan Motor Co Ltd; Yukiko Takeuchi, Takahiro Yamazaki, Shigenori Hidan, Japan Lubricating Oil Society; Masabumi Masuko, Tokyo Institute of Technology
	2021-01-0567	Investigation on Relationship between LSPI and Lube Oil Consumption and Its Countermeasure Yasuo Moriyoshi, Tatsuya Kuboyama, Tomoya Takaki, Chiba University; Hideshi Hitosugi, Nippon Piston Ring CO.,LTD

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:47 PM

Tuesday, April 13

On-Demand: Heavy Duty Diesel Lubricants

Session Code PFL350

Room TBD Session

This session reviews advancements in heavy-duty engine oil technology and test methodology, focusing on achieving future emissions, durability and fuel efficiency expectations both in North America and Europe.

Organizers - Jason Andersen, PACCAR Inc.; Ewa Bardasz, Energetics; Michael Kass, Oak Ridge National Laboratory; Simon Tung

Time	Paper No.	Title
	2021-01-0568	Understanding the Challenges Associated with Soot-in-Oil from Diesel Engines: A Review Paper Andrea Pacino, Ephraim Haffner-Staton, Antonino La Rocca, The University of Nottingham; Joshua Smith, Infineum UK Ltd; Mark Fowell, Volvo Group Trucks Technology

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Driveline Lubricants

Session Code PFL360

Room TBD Session

Driveline hardware continues to rapidly evolve as automobile manufactures continue to pursue efficiency gains and emission reductions in smaller architectures. Electrification adds even more diversification. Concurrently, there is continuing work to understand the interaction of lubricants to these new and changing environments to assure correct performance. Also, to identify what new lubricant characteristics should be pursued to enable future hardware. In this session are presented a variety of papers dealing with different applications where the interaction of driveline fluids with equipment is important.

Organizers - Jason Bares, BorgWarner Automotive; Timothy Newcomb, Lubrizol Corp.; Simon Tung

Time	Paper No.	Title
	2021-01-0569	Transient Thermal Modeling of an Automotive Rear-Axle Srisudarshan K S, Harman Singh Bal, Prashant Modi, FCA US LLC
	ORAL ONLY	Understanding Conducting Layer Deposits: A New Corrosion Concern for Hybrid and Electric Vehicles Gregory Hunt, Lubrizol Corp.
	ORAL ONLY	Determining the Propensity for the Conductive Layer Deposit Formation: The Development of an Effective and Repeatable Test for Hybrid and Electric Vehicles Gregory Miiller, Savant Group
	ORAL ONLY	A New System For Developing Global Fluid Specifications

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:47 PM

Time	Paper No.	Title
		Teri Kowalski, Toyota Technical Center USA Inc.

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Holistic Session on Fuel Consumption and Fuel Economy

Session Code PFL370

Room TBD Session

The focus of the session will be the performance of the integrated vehicle systems (i.e., they meet other system requirements such as drivability, criteria pollutants, safety, NVH, etc.) as well as the influence of driving styles and drive cycles. Keywords: Transmission/Driveline, Parasitics (e.g., A/C, power steering, EE loads), Aerodynamics, Tires, Weight, Brakes/Hubs, Drive cycles (regulated, customer, Consumer Reports, etc.) Vehicle energy, Overall energy conversion efficiency.

Organizers - Ewa Bardasz, Energetics; Matt Blanks, Thomas Briggs, Southwest Research Institute; Sumanth Reddy Dadam, Patrick Philips, Ford Motor Company; NEERAJ SHIDORE, General Motors LLC; Jenny Sigelko, Volkswagen Group of America Inc.; Ati Tolou, FEV North America Inc.; Kevin Whitney, Southwest Research Institute

Time	Paper No.	Title
	2021-01-0570	Application of the Power-Based Fuel Consumption Model to Commercial Vehicles
		Mrudula Orpe, Thomas Megli, William Ruona, Patrick Philips, Ford Motor Company

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Exhaust Emissions Control - New Developments

Session Code PFL410

Room TBD Session

Papers are invited on technology developments and the integration of these technologies into new emission control systems. Topics include the integration of various diesel particulate matter (PM) and diesel Nitrogen Oxide (NOx) reduction technologies plus analogous technologies for the growing population of direct injection gasoline engines. Novel developments in sensors and control systems will also be considered.

Organizers - Holmes Ahari, FCA USA LLC; Cornelius N. Opris, FCA US LLC; Ron Silver, Caterpillar Inc.; Anand Srinivasan, Cummins Inc.; Doug UMMEL, Umicore Autocat USA Inc.; Roger Van Sickle, FEV North America Inc.

Time	Paper No.	Title
	2021-01-0571	Deposit Mitigation in SCR Aftertreatment Systems by Deposition of LotusFlo® Superhydrophobic Coatings on Exhaust Pipe Surfaces
		Ryan Hartley, Michael Miller, Alon Yeshayahu Kirschner, Shekhar Vats, Southwest Research Institute

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:47 PM

Time	Paper No.	Title
	2021-01-0572	Effects of Electrically Preheating Catalysts on Reducing High-Power Cold-Start Emissions Ben Bargman, SooHyun Jang, Jan Kramer, Ihab Soliman, Abhid Akram Abubeckar Mohamed Sahul, Vitesco Technologies
	2021-01-0573	Three-Way Catalytic Reaction in an Electric Field for Exhaust Emission Control Application Toru Uenishi, Toyota Motor Corp.; Ayaka Shigemoto, Yuki Omori, Takuma Higo, Shuhei Ogo, Yasushi Sekine, Waseda University
	2021-01-0574	An Unconventional Application of a HC Trap to Meet SULEV20 David H. Moser, Sanket Nipunage, John Nunan, Ryan Day, Chad Alltizer, Umicore Autocat USA, Inc.
	ORAL ONLY	Updating Emissions Regulations in China Reggie Zhan, Shanghai Jiao Tong Univ.; He Lin
	ORAL ONLY	Evaluation of Advanced Pm and/or NOx Aftertreatment for Small Off Road Diesel Engines Tom Durbin, Kent Johnson, George Karavalakis, University of California Riverside

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00010, and also Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

Tuesday, April 13

On-Demand: Exhaust Emission Control Systems

Session Code PFL420

Room TBD Session

Multiple sub-sessions cover the following exhaust emissions control topics: System integration and durability, advances in catalyst substrates, advances in particulate filter substrates, advances in NOx reduction technology, and on-board measurement and control.

Organizers - Brad Adelman, Navistar Inc.; Kirby Baumgard, John Deere; Rasto Brezny, Manufacturers of Emission Controls Assoc.; Sumanth Reddy Dadam, Ford Motor Company; Cary Henry, Southwest Research Institute; Krishna Kamasamudram, Cummins Inc.; Shouxian Ren

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

Tuesday, April 13

On-Demand: System Integration And Durability

Session Code PFL421

Room TBD Session

Organizers - Cary Henry, Southwest Research Institute; Vitaly Prikhodko, Oak Ridge National Laboratory

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:48 PM

Time	Paper No.	Title
	2021-01-0576	Sulfur Poisoning of a Cu-SSZ-13 SCR Catalyst under Simulated Diesel Engine Operating Conditions Yuanzhou Xi, Nathan Ottinger, Changsheng Su, Z. Gerald Liu, Cummins Emission Solutions
	2021-01-0577	Impact of Water Vapor on the Performance of a Cu-SSZ-13 Catalyst under Simulated Diesel Exhaust Conditions Nathan Ottinger, Cummins Inc.; Yuanzhou Xi, Christopher Keturakis, Cummins Emission Solutions; Z. Gerald Liu, Cummins Inc.
	2021-01-0578	Oil Consumption Pathway Impact on SCR-on-Filter Functional Performance and Lubricant Derived Ash Characteristics Bryan Zavala, Scott Eakle, Cary Henry, Southwest Research Institute
	2021-01-0579	Potential of Pre-Turbo Exhaust Gas Aftertreatment Systems in Electrified Powertrains Martin Angerbauer, Universität Stuttgart; Ferhat Inci, Technische Universität Berlin; Michael Grill, FKFS; Michael Bargende, Universität Stuttgart

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

Tuesday, April 13

On-Demand: Advanced Catalyst Substrates

Session Code PFL422

Room TBD Session

Presentations in this session cover the systems engineering experiences required to achieve ultra-low emission levels on gasoline light-duty vehicles. Emission system component topics for this session include the development of advanced three-way catalysts, low mass ceramic substrates, and the application of SCR catalysts for NOx control on a gasoline engine.

Organizers - Douglas Ball; Rasto Brezny, Michael Geller, Manufacturers of Emission Controls Assoc.; Ronald Heck, RMH Consulting; Joseph Kubsh

Time	Paper No.	Title
	2021-01-0580	Secondary Emission Control towards Post China 6 Legislation Zhao Lei, Jun Zhang, Min Zhou, Umicore Autocat (China) Co Ltd; Carolin Braun, Marcus Schmidt, Joerg Michael Richter, Sonja Batke, Umicore AG & Co KG
	2021-01-0581	Cost Effective Catalyst Solutions with Application of Low Mass Substrate to Meet China 6b Regulation Requirement Jian Chen, Chunbo Li, Tinghong Tao, Haixu Liu, Xiangyu Feng, Qiang li, Corning Inc; Xinbo Yuan, Bing Lu, Tingting Zheng, Shaojing Gu, Wenzheng Xia, Kunming Sino-Platinum Metals Catalyst Co; Heng Lu, Guodong Wang, Gaojian Li, SAIC-GM-Wuling Automobile Co.,Ltd
	ORAL ONLY	Aging of Cu-exchanged Zeolite SCR Catalysts Under Lean, Stoichiometric, and Rich Gas Compositions Relevant to Gasoline Applications Calvin Thomas, Todd Toops, Vitaly Prikhodko, Josh Pihl, Oak Ridge National Laboratory

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:48 PM

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

Tuesday, April 13

On-Demand: Advances in Particulate Filter Substrates

Session Code PFL423

Room TBD

Session

Organizers - Kirby Baumgard, John Deere; Ameya Joshi, Corning Inc.; Gongshin Qi, General Motors LLC; Julian Tan, FCA LLC; Yuesen Wang, Massachusetts Institute of Technology

Time	Paper No.	Title
	2021-01-0582	Evolution of Tailpipe Particulate Emissions from a GTDI Mild-Hybrid SUV with a Gasoline Particulate Filter Sanket Nipunage, David H. Moser, Umicore Autocat USA Inc.; Jason Warkins, Angus Craig, Tinghong Tao, Corning Inc.
	2021-01-0584	Next Generation Gasoline Particulate Filters for Uncatalyzed Applications and Lowest Particulate Emissions Thorsten Boger, Corning Inc.; Thomas Glasson, Corning European Technology Center; Dominik Rose, Corning GmbH; Roychelle Ingram-Ogunwumi, Corning Inc; Huiqing Wu, Corning Research Center China
	2021-01-0585	Anhydrous Gypsum as Diesel Ash Surrogate and Sensitivity to Ash Particle Size in Accelerated Ash Loading Studies Sandeep Viswanathan, Sam George, Achim Heibel, Natarajan Gunasekaran, Corning Inc.
	2021-01-0586	Experimental Study on the Impact of Lubricant Ash on CN6 After-Treatment System Performance of GDI Vehicle Jinchong Pan, Lun Hua, Yansong Lin, Sheng Liu, Tsinghua University Suzhou Automotive; Jun Zhang, Lei Zhao, Umicore Autocat (China) Co Ltd; Joerg Michael Richter, Susanne Kunert, Jan Schoenhaber, Juergen Gieshoff, Umicore AG & Co KG
	2021-01-0587	Advantages of Coated Gasoline Particulate Filters in the CC2 Position for China 6B Gu Weiwei, Umicore Autocat (China) Co Ltd; Douglas Ball, Umicore Autocat USA Inc; Chen Yang, Xiangwei Meng, Lei Zhao, Umicore Autocat (China) Co Ltd
	2021-01-0588	PN Emission Measurements and Real-Driving-Emissions (RDE) Simulation on China 6 Light-Duty Gasoline Vehicles Haixu Liu, Chunbo Li, Tinghong Tao, Suhao He, Xiangyu Feng, Qiang Li, Weiwei Li, Corning Inc.
	ORAL ONLY	Crankcase Ventilation (CCV) Systems: Are Your Materials Limiting Your Safety and Sustainability Performance? Judith Sebastian, Porex Filtration Group

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00010, and also

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:48 PM

Tuesday, April 13

On-Demand: Advances in Nox Reduction Technology

Session Code PFL424

Room TBD Session

Organizers - Rahul Mital, General Motors LLC; Brad Adelman, Navistar Inc.; Danan Dou, Deere & Company; Galen Fisher, University of Michigan; Krishna Kamasamudram, Cummins Inc.; Magdi Khair, Magdiesel Technologies; Rachel Muncrief, International Council On Clean Transport; Shyam Santhanam, Navistar Inc.

Time	Paper No.	Title
	2021-01-0589	CARB Low NOX Stage 3 Program - Final Results and Summary Christopher Sharp, Gary Neely, Bryan Zavala, Sandesh Rao, Southwest Research Institute
	2021-01-0590	Predictions of Urea Deposit Formation with CFD Using Autonomous Meshing and Detailed Urea Decomposition Pengze Yang, Scott Drennan, Convergent Science Inc.
	2021-01-0591	Improvement of HC-SCR Performance by Fuel Reforming Using a Low Temperature Oxidation Iku Saito, Shinya Sato, Hino Motors, Ltd.; Hiroshi Nomura, Yusuke Suganuma, Haruka Misaka, Nihon University
	2021-01-0592	Investigation of High Internal Residual Gas Rates in Rich Operating Mode for Diesel Lean NOx Trap Regeneration Michael Brotz, Markus Maul, University of Stuttgart, IFS; Hans-Juergen Berner, FKFS; Michael Bargende, University of Stuttgart, IFS
	ORAL ONLY	Low temperature emissions reduction with zeolite-based adsorbers and Pd/Pt based oxidation catalysts Todd Toops, Pranaw Kunal, Oak Ridge National Laboratory

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

Tuesday, April 13

On-Demand: On-board Measurement and Control

Session Code PFL425

Room TBD Session

This SAE session presents and discusses the latest development of vehicle on-board measurement and control techniques, such as the performance and operating principle of different sensors, challenges of sensor measurement accuracy for meeting future more stringent emissions regulations, as well as any emissions control related topics using a given sensor.

Organizers - Ron Silver, Caterpillar Inc.

Time	Paper No.	Title
------	-----------	-------

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:48 PM

Time	Paper No.	Title
	2021-01-0593	Real World NOx Sensor Accuracy Assessment and Implications for REAL NOx Tracking Sarah Funk, General Motors LLC

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

Tuesday, April 13

On-Demand: Emission Control Modeling

Session Code PFL430

Room TBD

Session

Papers are invited for engine exhaust aftertreatment system models, as well as their validation and application. Technologies covered include oxidation catalysts, hydrocarbon traps, diesel/gasoline particulate filters, lean NOx traps, selective catalytic reduction, ammonia oxidation catalysts, three-way catalysts, hybrid or combined catalysts, electrically assisted catalysts, urea-water solution spray dynamics, and mixture non-uniformity. Modeling aspects range from fundamental, 3-D models of individual components to system level simulation, optimization, and control.

Organizers - Christopher Depcik, Univ. of Kansas; Jian Gong, Cummins Inc.; Vincenzo Mulone, Univ. Of Roma Tor Vergata; Achuth Munnannur, Cummins Inc.; Manish Sharma, BASF

Time	Paper No.	Title
	2021-01-0594	A Study of the Effect of Light-Off Temperatures and Light-Off Curve Shape on the Cumulative Emissions Performance of 3-Way Catalytic Converters Liam Mc Grane, Catagen Limited; Roy Douglas, Queen's University Belfast; Kurtis Irwin, Jonathan Stewart, Andrew Woods, Catagen Limited; Fabian Muehlstaedt, KTM
	2021-01-0595	Modeling and Analysis on Emission Characteristics of Light-Duty Diesel Engine After-Treatment System Based on Neural Network Diming Lou, Yinghua Zhao, Yunhua Zhang, Yuze Sun, Tongji university
	2021-01-0596	Experimental and Numerical Investigations of Sprays in Crossflow in Aftertreatment Systems Achuth Munnannur, Matthew Blessinger, Z. Gerald Liu, Cummins Emission Solutions
	2021-01-0597	A Control-Oriented Spatially Resolved Thermal Model of the Three-Way-Catalyst Jonathan Lock, Kristoffer Clasen, Jonas Sjoblom, Tomas McKelvey, Chalmers University of Technology
	2021-01-0598	Creation of OBD Limit Motorcycle Catalysts Using Different Ageing Methods Liam Mc Grane, Catagen Limited; Roy Douglas, Queen's University Belfast; Kurtis Irwin, Andrew Pedlow, Jonathan Stewart, Andrew Woods, Catagen Limited; Fabian Muehlstaedt, KTM
	2021-01-0599	Investigation and 1D Modelling Approach on Scavenging Air Post-Oxidation inside the Exhaust Manifold of a DISI Engine Jan Przewlocki, Rodolfo Tromellini, Universität Stuttgart; Michael Grill, Marco Chiodi, FKFS; Michael Bargende, Universität Stuttgart

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:48 PM

Time	Paper No.	Title
	2021-01-0600	Model Based Calibration Generation for Gasoline Particulate Filter Regeneration Adhyarth Varia, General Motors LLC; Thiyagarajan Paramadhayalan, Tata Consultancy Services; Anil Yadav, General Motors Technical Center India; Rajesh Kannan, Tata Consultancy Services; Rafat Hattar, Yong Miao, Ming Chan, General Motors LLC
ORAL ONLY		Impact of Choice of Spray Inputs on Simulations of Urea-based Selective Catalytic Reduction Systems Apoorv Kalyankar, Matthew Blessinger, Achuth Munnannur, Z. Gerald Liu, Cummins Emission Solutions
ORAL ONLY		Development of models for NH3 SCR storage and the impacts of hydrothermal aging Austin Ladshaw, Research
ORAL ONLY		Effects of Hydrocarbon Structure on Adsorption Energetics on Beta Zeolite Calvin Thomas, Josh Pihl, Oak Ridge National Laboratory
ORAL ONLY		Improved Pressure Drop Modeling During Regeneration of Particulate Filters Using Soot Cake with Variable Porosity Wen Wang, Robert Brydon, Edward Bissett, Syed Wahiduzzaman, Gamma Technologies LLC

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00685, and also Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

Tuesday, April 13

On-Demand: Emissions Measurement and Testing

Session Code PFL440

Room TBD

Session

Sub-sessions cover emissions measuring techniques and testing regimes. This includes new analysis techniques and the novel application of existing techniques, the comparison of existing and proposed testing regimes with real world experience, including modeling.

Organizers - Michael Akard, Horiba, Ltd.; Sumanth Reddy Dadam, Ford Motor Company; Svitlana Kroll, Southwest Research Institute; J. Felipe Rodriguez, INTERNATIONAL COUNCIL ON CLEAN TRANS; Mahmoud K. Yassine, FCA US LLC; Mert Zorlu, Cummins Inc.

Time	Paper No.	Title
	2021-01-0601	Analysis on Emission Characteristics of Urban Buses Based on Remote Online Monitoring Qian Feng, Kai Zhen, CATARC; Yang Lu, BJMEMC; Xingzi Yang, CATARC; Yanyan Yang, Baoxian Liu, BJMEMC; Mengliang Li, CATARC; Zhijun Li, Tianjin University
	2021-01-0602	Condensation of Real-World Drive Cycle into Synthetic Drive Cycle - An Innovative Method to Predict Real Driving Emissions Sangeetha RT, Anshuman Bose, Mohamed Ibrahim, Mahindra & Mahindra Limited

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:48 PM

Time	Paper No.	Title
	2021-01-0603	<p>Numerical Analysis and Modeling for the Exhaust Pulsating Flow around a Prism Inserted in a Pipe</p> <p>Hiroataka Iseki, Makoto Nagaoka, Shuntaro Yokoi, HORIBA, Ltd.; Naoto Horibe, Hiroshi Kawanabe, Kyoto University</p>
	2021-01-0604	<p>Formaldehydes Measurement Using Laser Spectroscopic Gas Analyzer</p> <p>Kenji Hara, Kyoji Shibuya, Naoki Nagura, Takaaki Hanada, Kazuya Tsurumi, HORIBA, Ltd.</p>
	2021-01-0605	<p>Exhaust Emissions from Two Euro 6d-Compliant Plug-In Hybrid Vehicles: Laboratory and On-Road Testing</p> <p>Joseph Woodburn, Piotr Bielaczyc, BOSMAL Automotive R&D Institute Ltd; Jacek Pielecha, Jerzy Merkisz, Poznan University of Technology; Andrzej Szalek, Toyota Motor Poland Co. Ltd</p>
	2021-01-0606	<p>An Investigation of Emission Species over a Diesel Oxidation Catalyst Using Flow Reversal Strategy</p> <p>Cavan Hesketh, Li Liang, Navjot Singh Sandhu, Xiaoye Han, Meiping Wang, Ming Zheng, University of Windsor</p>
	2021-01-0607	<p>The Increasing Importance of Particles, Volatile Organic Compounds and Ammonia in Future Air Quality Policy</p> <p>Nick Molden Hobday, Emissions Analytics</p>
	2021-01-0608	<p>Real Driving Emissions Procedure Development for Brazilians Conditions: FTP-75, Ethanol and Others</p> <p>Andre Forcetto, Rui de Abrantes, Rodrigo Vieira, CETESB</p>
	2021-01-0609	<p>Analysis on Factors Affecting Leak Detection of Vehicle Fuel Evaporative System</p> <p>Ren He, Lang Mao, Jiangsu University</p>
	2021-01-0610	<p>Development of On-Board NH₃ and N₂O Analyzer Utilizing Mid-Infrared Laser Absorption Spectroscopy</p> <p>Yusuke Onishi, Shota Hamauchi, Kyoji Shibuya, Keegan McWilliams-Ward, Masanobu Akita, Kazuya Tsurumi, HORIBA, Ltd.</p>
	2021-01-0611	<p>Comparison of Emissions Measurement Methods based on Chassis Dynamometer Testing</p> <p>Joseph Vais, Volvo Group Trucks Technology; Suresh Iyer, The Pennsylvania State University</p>
	2021-01-0612	<p>A Low Temperature Coolant Conditioning Cart for Testing DEF Thawing Systems</p> <p>Ezio N. Vermiglio, PACCAR Technical Center; Rupert De Salis, Kent Clark, MAHLE Powertrain LLC</p>
	2021-01-0613	<p>Spindt-Based AFR Sensitivities to Exhaust Emissions Measurement Accuracy for GDI Internal Combustion Engines</p> <p>Tommaso Benvenuti, Mattia Francesco Maffioletti, Giuseppe Guerrini, HPE-COXA</p>
	2021-01-0614	<p>Case Study of Diesel Catalyst Performance Sensitivity and Degradation due to Alkali Metal Poisoning from Suspicious Use of Unregulated Fuel</p> <p>Homayoun Ahari, Ramesh Andra, FCA US LLC; Thomas Pauly, Umicore Autocat USA Inc</p>

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:48 PM

Time	Paper No.	Title
	2021-01-0615	Development and Characterization of Aerosol Conditioning Devices for Solid Ultrafine Particle Measurement from Diesel Engines: A Review Sahil Rana, Mohit Raj Saxena, Rakesh Kumar Maurya, Indian Institute of Technology Ropar
	2021-01-0616	Exhaust Emissions from an SUV with a Spark-Ignition Engine Tested Using EU and US Legislative Driving Cycles and EU RDE Procedures Piotr Bielaczyc, Joseph Woodburn, BOSMAL Automotive R&D Institute Ltd
	ORAL ONLY	In-Use Emissions Testing and Fuel Usage Profile of On-Road Heavy-Duty Vehicles – 200 Vehicle Study Tom Durbin, Kent Johnson, George Karavalakis, University of California Riverside; Hanwei Zhu, University Of California Riverside
	ORAL ONLY	Development and Application of A Micro-PEMS System for Onboard Sensing, Analysis, and Reporting Tom Durbin, Kent Johnson, George Karavalakis, University of California Riverside
	ORAL ONLY	Analysis of Exhaust Emissions from On-road Driving Diesel Passenger Vehicle and Emission Prediction Utilizing by Deep Learning Susumu Sato, Ryo Himeno, Seiya Abe, Tsuyoshi Nagasawa, Hidenori Kosaka, Tokyo Institute of Technology; Takeshi Tange, NGK Spark Plug Co Ltd; Kotaro Tanaka, Ibaraki University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00685 and SUB-Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

Tuesday, April 13

On-Demand: Particle Emissions from Combustion Sources

Session Code PFL450

Room TBD

Session

Papers are invited for this session on particle emissions from combustion engines, including measurement and testing methods, and the effects of changes in fuel composition. Papers are also invited on the topics of the environmental and health effects of elemental carbon and organic carbon that constitutes solid cored particles plus the environmental and health effects of secondary organic aerosol emissions. This includes particulate emissions from both gasoline and diesel engines.

Organizers - Jose M. Herreros, Univ. of Birmingham; Imad Khalek, Southwest Research Institute; Antonino La Rocca, University of Nottingham; Ezio Mancaruso, Istituto Motori CNR; Andrea Strzelec, University of Wisconsin-Madison; Yujun Wang, Cummins Inc.

Time	Paper No.	Title
	2021-01-0617	A Review of Toxicity Analysis of Particulate Emissions from Conventional and Low-Temperature Combustion Engines Neeraj Kumar Yadav, Mohit Raj Saxena, Rakesh Kumar Maurya, Indian Institute of Technology Ropar
	2021-01-0618	Validation Studies of a Detailed Soot Chemistry for Gasoline and Diesel Engines Karthik V. Puduppakkam, Chitralkumar V. Naik, Ellen Meeks, ANSYS Inc.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:48 PM

Time	Paper No.	Title
	2021-01-0619	Comparison of Two Dilution and Conditioning Systems for Particle Number Measurements along the Exhaust After-Treatment System of an HD Diesel Engine Arun Prasath K, Hanna Bernemyr, Anders Erlandsson, KTH Royal Institute of Technology
	2021-01-0620	Detailed Characterization of Particle Emissions from Advanced Internal Combustion Engines Vinay Premnath, Bryan Zavala, Imad Khalek, Scott Eakle, Cary Henry, Southwest Research Institute
	2021-01-0621	Gap Analysis and Future Needs of Tyre Wear Particles Ye Liu, Haibo Chen, Jianbin Gao, Kaushali Dave, Junyan Chen, University of Leeds
	2021-01-0622	Soot Sources in Warm-Up Conditions in a GDI Engine Sreelekha Etikyala, Petter Dahlander, Chalmers University of Technology
	2021-01-0623	Global Market Gasoline Quality Review: Five Year Trends in Particulate Emission Indices Elana Chapman, Pat Geng, General Motors LLC; Anke Konzack, SGS Germany GmbH
	2021-01-0624	Impact of Selective Catalytic Reduction Process on Nonvolatile Particle Emissions Adithya Legala, Vinay Premnath, Michael Chadwell, Phillip Weber, Imad Khalek, Southwest Research Institute
	2021-01-0625	Identification of In-Cylinder Aerosol Flow Induced Emissions due to Piston Ring Design in a DISI Single Cylinder LV Engine Using Oxygenated Synthetic Fuels Sebastian Blochum, Technical University of Munich; Fabian H. Ruch, Technical University of Munich / Tenneco; Thomas Bastuck, Tenneco; Martin Härtl, Technical University of Munich; Richard Mittler, Tenneco; Georg Wachtmeister, Technical University of Munich
	2021-01-0626	Measurement of Sub-23 nm Particulate Emissions from GDI Engines: A Comparison of Processing Methods Sebastian A. Pfau, Ephraim Haffner-Staton, Antonino La Rocca, University of Nottingham
	2021-01-0627	Solid Particle Emissions from a Diesel Fuel Based Burner Platform Nishant Thakral, Vinay Premnath, Imad Khalek, Mir Seliman Waez, Scott Eakle, Southwest Research Institute
	2021-01-0628	Effect of Injection Parameters on Particulate Matter Emission in a Direct Injection Gasoline Engine Diming Lou, Tong Wang, Liang Fang, Tongji University; Zheng Xu, Chuanhui Cheng, ShaoMing Wang, YaJun Zhang, SAIC Motor Corporation Limited
	2021-01-0629	Undiluted Measurement of sub 10 nm Non-Volatile and Volatile Particle Emissions from a DISI Engine Fueled with Gasoline and Ethanol Tara Larsson, Arun Prasath K, Ulf Olofsson, Anders Erlandsson, KTH Royal Institute of Technology

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:48 PM

Time	Paper No.	Title
	2021-01-0630	Particulates from a CNG DI SI Engine during Warm-Up
		Mindaugas Melaika, Sreelekha Etikyala, Petter Dahlander, Chalmers University of Technology
	ORAL ONLY	A review of particulate matter indices linking fuel composition to particulate emissions from gasoline engines
		Felix Leach, University of Oxford; Jeff Jetter, Honda R&D Americas, LLC; Gina Fioroni, Earl Christensen, Peter St John, Robert McCormick, National Renewable Energy Laboratory

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00008, SUB-TP-Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

Tuesday, April 13

On-Demand: Gaseous Engine Emissions

Session Code PFL460

Room TBD

Session

Papers for this session on the general topic of combustion engine gaseous emissions (regulated and non-regulated). This includes hydrocarbon species production over aftertreatment devices as a result of changes in fuel specification and the inclusion of bio-derived components, specific NOx species production over catalytic devices, well-to-wheels CO2 production for alternative technologies and consideration of secondary emissions production (slip) as a result of aftertreatment.

Organizers - Carlo Beatrice, Istituto Motori CNR; Santhosh Reddy Gundlapally, Gamma Technologies LLC; Josh Pihl, Oak Ridge National Laboratory

Chairperson - Santhosh Gundlapally, Gamma Technologies LLC

Time	Paper No.	Title
	2021-01-0631	Characterization of Methane Emissions from a Natural Gas-Fuelled Marine Vessel under Transient Operation
		David Cohen Sacal, University of British Columbia; Joel Corbin, Stéphanie Gagné, National Research Council Canada; Harly Penner, Seaspan Ferries Corporation; Patrick Kirchen, University of British Columbia
	2021-01-0632	The Influence of eFuel Formulation on Post Oxidation and Cold Start Emissions
		Jonas Villforth, André Casal Kulzer, Andreas Weißhaar, Hans-Peter Deeg, Porsche AG; Michael Bargende, Universität Stuttgart
	2021-01-0633	Fuel Consumption Modelling of a TFSI Gasoline Engine with Embedded Prior Knowledge
		Hongyang Zhang, Sergej Koch, Yu Han, Olaf Toedter, Heiko Kubach, Thomas Koch, Karlsruhe Institute of Technology
	2021-01-0634	Detailed Characterization of Gaseous Emissions from Advanced Internal Combustion Engines
		Bryan Zavala, Cary Henry, Svitlana Kroll, Southwest Research Institute
	ORAL ONLY	Engine Out hydrocarbon emission characterization during de-soot regeneration

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:48 PM

Time	Paper No.	Title
		Anand Srinivasan, Cummins Inc.; Rama Krishna Dadi, Michael Cunningham, Cummins Inc; Christopher Sharp, Southwest Research Institute
	ORAL ONLY	Detailed Emissions Characterization for Off-Road Applications: A DPF and non-DPF Engine Comparison Bryan Zavala, E. Robert Fanick, Christopher Sharp, Svitlana Kroll, Vinay Premnath, Southwest Research Institute
	ORAL ONLY	Detailed hydrocarbon speciation of GDI cold-start exhaust emissions on current light-duty trucks Melanie Moses-DeBusk, Oak Ridge National Laboratory
	ORAL ONLY	Reactivity of Novel High-performance Fuels on a Commercial Three-way Catalyst for SI/ACI Engine Emissions Control Sreshtha Sinha Majumdar, Josh Pihl, Oak Ridge National Laboratory

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

Tuesday, April 13

On-Demand: New CI & SI Engines and Components

Session Code PFL510

Room TBD Session

This session covers topics regarding new CI and SI engines and components. This includes analytical, experimental, and computational studies covering hardware development as well as design and analysis techniques.

Organizers - Daniel Mather, Digital-Engines LLC; Jeffrey Naber, Michigan Technological Univ.; Cinzia Tornatore, Istituto Motori CNR; Bryon Wasacz, Fiat Chrysler Automobiles

Time	Paper No.	Title
	2021-01-0635	Future Diesel-Powertrain in LCV and SUV-Electrified, Modular Platform with Focus on Emission, Efficiency and Cost Wolfgang Schoeffmann, Michael Howlett, Bernhard Enzi, Christoph Sams, Michael Weissbaeck, AVL LIST GmbH
	2021-01-0636	Turbocompounding the Opposed-Piston 2-Stroke Engine Alexander Young, James Turner, Robert Head, University Of Bath
	2021-01-0637	A New Generation Lean Gasoline Engine for Premium Vehicle CO ₂ Reduction Richard Osborne, Andrew Lane, Ricardo UK Ltd.; Niall Turner, John Geddes, Jaguar Land Rover; Penny Atkins, University Of Brighton; Ludek Pohorelsky, Garrett Motion; Jeremy Gidney, Jason Cleeton, Johnson Matthey Clean Air
	2021-01-0638	Further Investigations into the Benefits and Challenges of Eliminating Port Overlap in Wankel Rotary Engines James Turner, Matthew Turner, Reza Islam, Xuankun Shen, University of Bath; Aaron Costall, University Of Bath

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0639	Experimental Investigation of a Control Strategy Based on Combustion Stability and Combustion Phasing for a Multi-Cylinder Engine with Fueled Pre-Chambers and Cylinder Pressure Transducers Simon Haertl, Josef Kainz, Weihenstephan-Triesdorf University; Harry Schuele, Vitesco Technologies GmbH; Matthias Gaderer, Technical University of Munich
	2021-01-0640	Pneumatic Power Unit for a Wheeled Vehicle Dmitry Nikolaevich Leontiev, Oleksandr Voronkov, Igor Nikitchenko, Kharkov National Auto and Highway University; Nikolay Sklyarov, The National Guard of Ukraine; Artem Nazarov, Kharkov National Auto and Highway University
	ORAL ONLY	Numerical Investigation on Mixture Formation and Combustion Process of Innovative Piston Bowl Geometries in a Swirl-Supported Light-Duty Diesel Engine Federico Millo, Andrea Piano, Salvatore Roggio, Politecnico di Torino; Andrea Bianco, Powertech Engineering SRL; Francesco Pesce, Alberto Vassallo, PUNCH Torino

Planned by New Engines and Components / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Engine Boosting Systems

Session Code PFL520

Room TBD Session

This session addresses advanced boosting systems for increasingly downsized, hybridized, and electrified engines, to achieve enhanced power density, better fuel economy, and reduced emissions. Contributions cover model-based and experimental studies on topics ranging from components (e.g. turbocharger turbines and compressors) to systems integration, optimization and control.

Organizers - Marcello Canova, Ohio State University; Aaron Costall, University of Bath; Eric Krivitzky, Thermofluid Research Laboratory

Time	Paper No.	Title
	2021-01-0642	Analysis of a Turbocharged Single-Cylinder Two-Stroke SI Engine Concept Lennarth Zander, Scania CV AB; Petter Dahlander, Chalmers University of Technology
	2021-01-0643	Development of Next Generation Variable Geometry Turbocharger for Commercial Vehicles Bipin Gupta, Toru Hoshi, Shinji Ogawa, Masaki Osako, Hiroaki Yoshizawa, Noriyuki Inoue, Mitsubishi Heavy Industries Ltd.

Planned by New Engines and Components / Powertrain Fuels and Lubricants Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Tuesday, April 13

On-Demand: CI & SI Power Cylinder Systems

Session Code PFL530

Room TBD Session

This session covers the Power Cylinder: piston, piston rings, piston pins, and connecting rods. The papers include information on reducing friction and increasing fuel economy, improving durability by understanding wear, and decreasing oil consumption and blow-by.

Organizers - Ali Kharazmi, William McNulty, Cummins Inc.; Dan Richardson, Cummins

Time	Paper No.	Title
	2021-01-0645	The Effect of Ring-Groove Geometry on Engine Cylinder-Kit Assembly Using Three-Dimensional Multiphase Physics-Based Modeling Methodology - Part II Sadiyah Sabah Chowdhury, Harold Schock, Ali Kharazmi, Michigan State University
	2021-01-0647	Effect of Swirl Ratio and Piston Geometry on the Late-Compression Mean Air-Flow in a Diesel Engine Ashutosh Jena, Harsimran Singh, Avinash Kumar Agarwal, Indian Institute of Technology Kanpur
	2021-01-0648	Development of Piston Ring Surface Treatment on Next-Generation Engines Naoki Iijima, Yuji Shima, Masaharu Hasei, Riken Corporation
	2021-01-0649	Measurement Approaches for Variable Compression Ratio Systems Mirko Plettenberg, Norbert Mayrhofer, Christoph Priestner, Robert St John, AVL LIST GmbH; Heino Beermann, AVL SCHRICK GmbH; Mario Theissl, Graz University of Technology
	2021-01-0650	Predictive Piston Cylinder Unit Simulation - Part I: Novel Findings on Cyclic Inter-Ring Pressure Measurements and Piston Ring Dynamic Simulation Validation Philipp S. Koeser, Frank Berbig, Rolls-Royce Power Systems AG; Florian Pohlmann-Tasche, Henning Pasligh, Friedrich Dinkelacker, Leibniz University Hannover

Planned by New Engines and Components / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Small Engine Technology

Session Code PFL540

Room TBD Session

In this session, research and development of small engine technology will be covered. Topics include all vehicles equipped with small engines such as Motorcycle, Personal Mobility Vehicle, Recreational Vehicle, Utility Vehicle and Unmanned Vehicle, etc.. Internal combustion engines and new energy sources such as Hybrid Drive, Electric Drive, Fuel Cells and Solar Cells are considered.

Organizers - Adrian Irimescu, Simona Silvia Merola, Istituto Motori CNR

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0651	Research on Performance of Pulsed Twin-Fluid Injector and Its Application on a Spark Ignition UAV Engine Hao Wu, Fujun Zhang, Zhenyu Zhang, Huasheng Cui, Beijing Institute of Technology
	2021-01-0652	The Effect of Homogeneous Lean Combustion on Efficiency and Emissions Trends in Natural Gas-Fueled Small Engines Nathan Peters, Sai Krishna Pothuraju Subramanyam, Michael Bunce, Hugh Blaxill, MAHLE Powertrain LLC; Nathan Beilke, Kohler Engines; David Tew, Advanced Research Projects Agency-Energy; Gokul Vishwanathan, Propane Education & Research Council
	2021-01-0653	Development Work on the Synthesis of a Variable Stroke Slider-Crank Mechanism for a Variable Compression Ratio Combustion Engine Edison de Jesús Henao Castañeda, Carlos Alberto Romero, Hector Fabio Quintero, Universidad Tecnologica de Pereira

Planned by New Engines and Components / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Powertrain NVH

Session Code PFL550

Room TBD

Session

This session sets out to reflect the recent advances on the research, development and practices of Powertrain NVH treatment. The technical papers are of interest to powertrain system designers, testing specialists, NVH experts, and other individuals who evaluate and develop technologies to control powertrain NVH. The coverage includes: engine, engine subsystem and components noise and vibration; powertrain systems noise measurement and instrumentation; powertrain systems noise analysis.

Organizers - Sanjib Chowdhury, Cummins Inc.; Vignesh Jayakumar, Caterpillar Inc.

Time	Paper No.	Title
	2021-01-0654	Modelling of High-Frequency Dynamic Stiffness of Double-Isolation Rubber Isolators Bida Bao, YaWei Zheng, South China University of Technology
	2021-01-0655	The Analytical Method for Calculating the Hysteretic Behavior of an Asymmetry Tensioner Zheng Deng, South China University of Technology; Ran Zhen, Ruilong Li, Shandong Meichen Industry Group Co., Ltd; Yi Sun, Wen-Bin Shangguan, South China University of Technology
	2021-01-0656	Modeling and Analysis for Dynamic Performances of a Two-Layer Engine Front End Accessory Drive System with an Overrunning Alternator Decoupler Yi Sun, Liping Li, Wen-Bin Shangguan, South China University of Technology
	2021-01-0657	Prediction of Amplitude-Sensitive Dynamic Characteristics of Hydraulic Engine Mount and Experimental Verification Zhibin Wang, South China University of Technology; Ran Zhen, Ruilong Li, Shandong Meichen Industry Group Co; Wen-Bin Shangguan, South China University of Technology

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0658	Calculation and Optimization Methods for the Dynamic Performances of a Power-Train-Subframe Mounting System Zhiyuan Fang, South China University of Technology; Ran Zhen, Ruilong Li, Shandong Meichen Industry Group Co
	2021-01-0660	Analysis and Optimization of the Idle Sound Quality Based on RBF Prediction Model Yuan Maorong, Wei Jingsi, Bi Rong, Guangzhou Automobile Group Co.,Ltd
	2021-01-0661	Mitigating Vibration for a Heavy-Duty Diesel Cylinder Deactivation Truck Matthew Pieczko, James McCarthy, Jr., Eaton; Jesse Hamler, Truck Vibration Technology LLC
	2021-01-0662	Modeling and Testing Analysis Method of Noise of Hydraulic Engine Mount Zhibin Wang, South China University of Technology; Ran Zhen, Ruilong Li, Shandong Meichen Industry Group Co; Wenbin Shangguan, South China University of Technology
	2021-01-0663	Simulation and Optimization Method of High Frequency Dynamic Characteristics of Rubber Mount Jie Peng, South China University of Technology; Minghui Wang, Yongfeng Jiang, Shandong Meichen Industry Group Co., Ltd; Wen-Bin Shangguan, South China University of Technology
	2021-01-0664	Vibration Analysis of an Electric Vehicle Mounting System under Transient Shock Conditions Bing Xiao, South China University of Technology; Minghui Wang, Yongfeng Jiang, Shandong Meichen Industry Group Co., Ltd; Yingzi Kang, South China University of Technology
	2021-01-0666	Identification of Damping Parameters of Hydraulic Engine Mount by Volterra Series Theory ZhongZheng Gao, Dong Zhen, Xiao-Ang Liu, Hebei University of Technology
	2021-01-0667	Active Launch Vibration Control of Power-Split Hybrid Electric Vehicle Considering Nonlinear Backlash Rong Guo, Xiaoyue Liu, Tongji University
	2021-01-0668	Comparison between Different Modelling Methods of Secondary Path to Maximize Control Effect for Active Engine Mounts Ziwei Zhou, Rong Guo, Shuheng Xu, Tongji University
	2021-01-0669	An Optimized Design of Multi-Chamber Perforated Resonators to Attenuate Turbocharged Intake System Noise Rong Guo, Rui Luo, Tongji University
	2021-01-0670	Methods for Estimating Dynamic Stiffness at High-Frequency Ranges of Rubber Mounts with Second-Stage Isolators Bida Bao, Wenbin Shangguan, South China University of Technology
	2021-01-0671	Acoustic Optimization of Mechatronic Direct Injection Systems and Analysis of the Effects on Robustness in System Operation

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
		Christian Mühlbauer, Hans-Peter Rabl, OTH Regensburg; Hermann Rottengruber, Otto-Von-Guericke University Magdeburg
	2021-01-0672	An Approximate Estimation Method for Transmission Loss Peak Frequency of Membrane-Type Acoustic Metamaterials Li Yongsheng, Xinxing Xie, South China University of Technology; Qu Zhang, Tuopu Group; Wen-Bin Shangguan, South China University of Technology
	2021-01-0673	Lead Mismatch Calculation of a Helical Gear System Mounted on Balance Shafts Sanjib Chowdhury, Anoop Vasu, Jerry Chung, Yogesh Mehta, American Axle & Mfg Inc
	2021-01-0674	Sound Quality Evaluation Method for Engine Combustion Noise in an Engine Acoustic Test Cell Kenji Torii, Honda Motor Co Ltd; Kousuke Noumura, Masaya Miyazawa, Honda R & D Co Ltd; Takashi Kondo, Honda Motor Co Ltd
	2021-01-0676	Nonlinear Modeling and Characteristic Analysis of Engine Shake Considering Air Engine Mount Rong Guo, Shuheng Xu, Ziwei Zhou, Tongji University
	2021-01-0677	Analysis of Influencing Factors of Secondary Torque of Automotive Ball-Type Universal Joint Shengming Li, Xihui Wang, South China University of Technology; Ran Zhen, Ruilong Li, Shandong Meichen Industry Group Co.,Ltd.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00689 and SUB-Planned by New Engines and Components / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Powertrain Actuators and Sensors

Session Code PFL560

Room TBD Session

Topics cover actuator and sensor mechanisms, devices, and systems; and the impact and control of such actuation and sensing systems on Powertrain thermodynamics, combustion, fuel economy, emissions, and performance.

Organizers - Anand Nageswaran Bharath, Cummins Inc.; Sumanth Reddy Dadam, Ford Motor Company; Simona Silvia Merola, Istituto Motori CNR; Mahdi Shahbakhti, Univ. of Alberta

Time	Paper No.	Title
	2021-01-0678	Response Characteristics of an Amperometric NOx-O2 Sensor at Non diffusion-Rate-Determining Conditions Masoud Aliramezani, Charles Koch, University of Alberta
	2021-01-0679	Research of the Inductive Sensor of the Electropneumatic Clutch Control System for the Mechanical Transmission at Change of Ambient Temperature Mykola Grygorovych Mikhalevich, Dziubenko Oleksandr, Dmitry Leontiev, Viktor Bogomolov, Valeriy Klimenko, Alexandr Yarita, Olena Chevychelova, Kharkov National Auto and Highway University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0680	Numerical Approach to Solve Mobile Reservoir Design Nitin Dewangan, John Deere India Private, Ltd.
	2021-01-0681	Assessment of Exhaust Actuator Control at Low Ambient Temperature Conditions Sumanth Reddy Dadam, Vinod Ravi, Robert Jentz, Vivek Kumar, Sanyam Sharma, Ford Motor Company
	ORAL ONLY	Control-oriented Modeling of Maximum Pressure Rise Rate in RCCI Engines Behrouz Khoshbakht Irdmousa, Michigan Technological Univ; Mahdi Shahbakhti, Univ of Alberta; Jeffrey Naber, Michigan Technological Univ; Javad Mohammadpour Velni, Univ of Georgia; Hoseinali Borhan, Cummins Inc; Aditya Basina Laxmi Narayana, Michigan Technological Univ.
	ORAL ONLY	Machine Learning-Based Diesel Engine-Out Emissions Model and Control Using the Learning-Based Control Technique Armin Norouzi Yengeje, Mahdi Shahbakhti, Charles R. Koch, Univ. of Alberta

Planned by New Engines and Components / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Valvetrain, Including VVA

Session Code PFL570

Room TBD

Session

The design, development, and testing of Valve Train and Variable Valve Actuation mechanisms, devices, and systems; and the impact and control of such systems on thermodynamics, combustion, fuel economy, emissions, noise and vibration, and performance.

Organizers - Scott Fisher, FCA US LLC; Tim Kunz, BorgWarner; David Rutledge, Cummins Inc.

Time	Paper No.	Title
	2021-01-0682	Dynamic Cylinder Deactivation of ICE - Simulation Methodology Ondrej Bolehovsky, Oldrich Vitek, Czech Technical University
	2021-01-0683	Construction of New MBD Process for Valve Train That Realizes Multi-Functional and High-Performance Optimal Design in a Short Time Yuki Sano, Yuji Akai, Takumi Takahashi, Keisuke Ishii, Takeo Kobayashi, Kichinosuke Fukuhara, Honda Motor Co., Ltd; Koji Shimoyama, Tohoku University
	2021-01-0684	Methodology for the Geometric Layout of a Mechanically Fully Variable Valve Train with Two Synchronously Rotating Cam Disks Matthias Kohr, David Woike, Michael Guenther, University of Kaiserslautern

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Planned by New Engines and Components / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Engine Block, Cylinder Heads, Oil & Water Pumps, Intake & Exhaust Systems

Session Code PFL580

Room TBD Session

This session describes the design, modeling and performance validation of cylinder heads, lubrication systems and pumps, coolant systems and pumps, intake manifolds, exhaust manifolds, crankshaft and bearing systems and engine block structures.

Organizers - Anand Nageswaran Bharath, Cummins Inc.; Sujan Dhar, Simerics Inc.; Mikhail A. Ejakov, Ford Motor Company

Time	Paper No.	Title
	2021-01-0685	Experimental Study of Bismuth Alloy Overlays for Automotive Engine Bearing Yi Zhang, Rizwan Bajwa, Yuma Haneda, Manabu Izumida, Daido Metal Co., Ltd.
	2021-01-0686	Innovative Approach of Reducing Vibration Stress in High Pressure Fuel Injection Pipe and Fuel Injector Using Vibration Dampers in Two Cylinder Diesel Engine K U Syed Taj Yaser, K Sasikumar, Mahindra Research Valley
	2021-01-0687	Numerical Analysis of the Effect of an Idler Disk on Centrifugal Pump Performance Naseer Hadi, Badih Jawad, Munther Hermez, Hossam Metwally, Liping Liu, Lawrence Technological University

Planned by New Engines and Components / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Transmission Systems/Drive Unit

Session Code PFL610

Room TBD Session

This session is seeking papers on the automotive transmissions of different types. It includes development of new transmission concepts, transmission enhancements and the advancement of the state of the art of transmission system design & integration with the objective of improving the transmission efficiency, NVH, durability and shift pleaseability.

Organizers - Pradeep Attibele, FCA US LLC; Hong Jiang, Ford Motor Company; Berthold Martin, FCA US LLC; Wiley McCoy, McLaren Engineering; Azadeh Narimissa, General Motors LLC; Tejinder Singh, Geely Automobile Holdings, Ltd.

Time	Paper No.	Title
	2021-01-0688	Practical Approach to Enhance Gear Shift Quality in Automatic Transmissions Abhijeet Khatakalle, Onkar Gangvekar, Manoj Patil, Srinivasa Rao Muvvala, Tata Motors, Ltd.; Srinivas Dyavanur, Tata Technologies

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0690	Modular Vehicle Electrification with a Torque Converter Matt Adam Payne, Schaeffler Group USA Inc.
	2021-01-0691	Experimental Study on Drivability of Passenger Car with DCT Based on the Data-Driven Objective Evaluation Model Jialei Xia, The Technology Centre of Dongfeng Motor; Xuexun Guo, Wei Zhou, Chengcai Zhang, Xiaofei Pei, Wuhan University of Technology; Jun Yan, The Technology Centre of Dongfeng Motor
	2021-01-0692	A Novel Strategy for Sizing the Mechanical Pump in a Passenger Car Automatic Transmission Hesam Abbassi, Andrew Kraemer, FCA US LLC
	ORAL ONLY	Optimizing Electric Propulsion with Low-Loss Multi-speed Drive Unit Keith Martin, BorgWarner Inc.; Xinqian Xiang, BorgWarner

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00003, and also Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: AWD/4WD

Session Code PFL620

Room TBD

Session

This session will present papers on an innovative designs, analysis and models of driveline components. This includes AWD / 4WD units, drive shafts, axles, rear drive units, axle disconnect systems, etc..

Organizers - John Collins, FCA US LLC; Megan Gould, Ford Motor Co.; Mark Levine, FCA US LLC

Time	Paper No.	Title
	2021-01-0693	A Study of Influence of Suspension on Driveline Torque and Evaluation of Vehicle Anti-Squat/Dive Characteristics Using a Planar Vehicle Dynamics Model Prashant Sondkar, Anand Jammulamadaka, FCA US LLC
	2021-01-0694	A Comprehensive Real-Time Thermal Management of All-Wheel-Drive (AWD) Clutches for Active Torque Control Bangalore Lingaraj Yashwanth, Anand Ankala, Keith A. Honkala, Alexy Kolesnikov, Yogesh Mehta, American Axle & Manufacturing
	ORAL ONLY	Study on The Cooling of Electric Vehicle In-wheel Motor ling tao chen

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: IVT/CVT

Session Code PFL630

Room TBD Session

This Session presents papers on IVT/CVT systems and related topics.

Organizers - Joel Gunderson, Farzad Samie, General Motors LLC; Robert A. Smithson, Dana Holding Corp.

Time	Paper No.	Title
	2021-01-0695	Tractor CVT Cruise Control for Full Load and Velocity Range
		Wolfgang Hollerweger, Dieter Gruebl, AVL Commercial Driveline & Tractor Eng.

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Driveline Controls

Session Code PFL640

Room TBD Session

This session is seeking papers on transmission and driveline controls. This includes topics related to controls hardware, controls software, and controls integration.

Organizers - Gang Chen; Hussein Dourra, Magna Global IT Canada; Dongxu Li, Paul Otanez, General Motors LLC; Darrell Robinette, Michigan Technological Univ.; Zhe Xie, FCA US LLC

Time	Paper No.	Title
	2021-01-0697	Automatic Transmission Upshift Control Using a Linearized Reduced-Order Model-Based LQR Approach
		Jure Soldo, Ivan Cvok, Josko Deur, University of Zagreb; Vladimir Ivanovic, Yijing Zhang, Yuji Fujii, Ford Motor Company
	2021-01-0698	Development of a Gear Shift Controller for an Optimized 2-Speed eDrive of an Electric Delivery Vehicle Using Model Based Design Approach
		Priyanka Dani, Raunak Praveen More, Vivek Singh Negi, Aniruddha Dorle, Dorle Controls
	ORAL ONLY	Model predictive control of an automotive driveline for optimal torque delivery with minimal oscillations during torque converter slipping conditions
		Syed Ahmad Nadeem, Prithvi Reddy, Michigan Technological University; Mahdi Shahbakhti, Univ of Alberta; Maruthi Ravichandran, Ford Motor Co; Jeff Doering, Ford Motor Company

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Launch Devices

Session Code PFL650

Room TBD Session

This is session seeking papers on torque converter, launch devices and related modeling.

Organizers - Michael Fingerman, FCA US LLC; James Hendrickson, General Motors LLC; Brandon Otulakowski, FCA; Darrell Robinette, Michigan Technological Univ.

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Driveline NVH and Launch Devices

Session Code PFL660

Room TBD Session

This session is seeking papers on transmission noise, vibration, rattle issues and design solutions.

Organizers - Michael Fingerman, FCA US LLC; James Hendrickson, General Motors LLC; Brandon Otulakowski, FCA; Darrell Robinette, Michigan Technological Univ.

Time	Paper No.	Title
	2021-01-0699	Tooth Mesh Modeling of Spur Gears with Tooth Root Crack Damage Using a Finite Element/Contact Mechanics Approach Christopher Cooley, Oakland University; Adrian Hood, US Army Aberdeen Proving Ground; Yaosen Wang, Oakland University
	2021-01-0700	Investigation of the Interaction between the Vehicle Vertical Vibration and Driveline Torsional Vibration Using A Hydro-Pneumatic Limited Bandwidth Active Suspension System Mahmoud Atef Aly, Eid Ouda Awad, Helwan University
	2021-01-0701	Design and Research on Vibration Reduction of Automobile Transmission Shaft Intermediate Support Yancheng Lu, Wenbin Shangguan, South China University of Technology; Xiang Chen, Liuzhou Rigao Automobile Vibration Damping
	2021-01-0702	Research on Manual Transmission Rattle Noise Experiment Technique Hui Gao, CATARC, Beijing Institute of Technology; Huihua Feng, Beijing Institute of Technology; Yongchao Wang, CATARC
	2021-01-0703	Structural Vibration Analysis and NVH Trouble Shooting for an Electric Drive System Yong Xu, Jiangxi Jiangling Chassis Co., Ltd.; Xueran Zhang, Jiangling Chassis Co., Ltd.; Guoxiang Xu, Jiangxi Jiangling Chassis Co., Ltd.
	2021-01-0704	Torque Converter Lockup Clutch Slip Modeling in NVH Simulation

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
		Vijayakumar Velayudham, Valeo North America Inc.; Senthilkumar Ravichandran, Valeo India Private Limited

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00003, and also Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Driveline Components / Subsystems

Session Code PFL670

Room TBD Session

This session is seeking papers on the full array of transmission and driveline related components.

Organizers - Patrick Robert Darmstadt, Boeing Co.; Chunhao Lee, General Motors LLC; Thomas Wellmann, FEV Group GmbH

Time	Paper No.	Title
	2021-01-0705	Transmission Efficiency Analysis of High-Efficiency Constant Velocity Joint XinLei Yu, South China University of Technology; Qiufeng Hou, Zhejiang XiangLong; Ran Zhen, Shandong Meichen Industry Group Co.,Ltd.; Wenbin Shangguan, South China University of Technology
	2021-01-0706	The Breaking Torsion Test and Quasi-Static Finite Element Simulations of the Rzeppa Type Constant Velocity Joint under a Large Joint Angle Weiming Chen, South China University of Technology; Qiufeng Hou, Zhejiang Xianglong Manufacturing Co., Ltd; Xuezhi Zhao, Wenbin Shangguan, South China University of Technology
	2021-01-0708	A Modeling and Analysis Method of Dynamic Contact Stress Inside an Automotive Ball Joint Huayuan Feng, South China University of Technology; Li Xihua, JI HUA Laboratory
	2021-01-0709	A Component Level Test Methodology to Validate Hydraulic Clutch Slave Cylinder Devanshu Kathrecha, Abhirup Chakraborty, Jobin Sebastian, Bhaskar Jha, Sudhan M, Mahindra & Mahindra Ltd.

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Driveline Modeling

Session Code PFL680

Room TBD Session

This session is seeking papers focusing on transmission and driveline modeling, including topics related to transmission hardware, software, and system integration.

Organizers - Pradeep Attibele, FCA US LLC; Dongxu Li, General Motors LLC; David Popejoy, Ford Motor Company; Darrell Robinette, Michigan Technological Univ.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0710	Evaluation Index System and Empire Analysis of Drivability for Passenger Car Powertrain Wei Zhou, Xuexun Guo, Chengcai Zhang, Wuhan University of Technology; Jialei Xia, Jun Yan, The Technology Centre of Dongfeng Motor
	2021-01-0712	Machine Learning Approach for Constructing Wet Clutch Torque Transfer Function Huanyi Shui, Yijing Zhang, Ford Motor Company; Hang Yang, University of Michigan; Devesh Upadhyay, Yuji Fujii, Ford Motor Company
	2021-01-0713	Modelling and Co-Simulation of a Two-Speed Transmission for a Three-Wheel Electric Delivery Vehicle Raunak Praveen More, Priyanka Dani, Vivek Singh negi, Aniruddha Dorle, Dorle Controls
	2021-01-0714	Methodology Development for Multibody Simulation to Understand Shift Shock Behaviour VIKRAM SINGH RATHORE, Mahindra & Mahindra, Ltd.; vadivazhagan Gandhi, Mahindra & Mahindra Ltd
	2021-01-0716	Evaluation of Objective Drivability for Passenger Cars Based on Hierarchical Mixture Model: A Case Study of Downshift Condition Wei Zhou, Xuexun Guo, Chengcai Zhang, Xiaofei Pei, Wuhan University of Technology; Jun Yan, Jialei Xia, The Technology Centre of Dongfeng Motor

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00003, and also Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand:Advanced Hybrid and Electric Vehicle Powertrains

Session Code PFL710

Room TBD Session

This session covers new production and near-production hybrid propulsion, hybrid architecture, testing, analysis and new concepts.

Organizers - Qadeer Ahmed, Ohio State Univ.; Norman Bucknor, General Motors LLC; Sumanth Reddy Dadam, Ford Motor Company; Michael Duoba, US Dept. of Energy; Saeed Siavoshani, Eaton; Ian Beattie Smith, Southwest Research Institute

Time	Paper No.	Title
	2021-01-0717	Opportunities for Medium and Heavy Duty Vehicle Fuel Economy Improvements through Hybridization Daniela Nieto Prada, Ram Vijayagopal, Argonne National Laboratory; Vincent Costanzo, Aramco Research Center
	2021-01-0718	Fast Engine Torque Variation Compensation for HEVs Using Permanent Magnet Synchronous Motor and Explicit MPC Qilun Zhu, Gokhan Ozkan, Payam Badr, Yasha Parvini, Christopher Edrington, Robert Prucka, Clemson University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0719	Electrified Heavy-Duty 4-cylinder Engine Concept for Class 8 Trucks Edward M. Smith, Southwest Research Institute
	2021-01-0720	Evaluation of 48V and High Voltage Parallel Hybrid Diesel Powertrain Architectures for Class 6-7 Medium Heavy-Duty Vehicles Mufaddel Dahodwala, Satyum Joshi, FNU Dhanraj, Nitisha Ahuja, Erik Koehler, Michael Franke, Dean Tomazic, FEV North America Inc.
	2021-01-0721	Study of Flywheel Energy Storage in a Pure EV Powertrain in a Parallel Hybrid Setup and Development of a Novel Flywheel Design for Regeneration Efficiency Improvement Pawan Seshadri Venkatesh, Vishnu Chandran, Sreeram Anil, CUSAT Kochi
	2021-01-0722	A Rule-Based Energy Management Strategy for a Light-Duty Commercial P2 Hybrid Electric Vehicle Optimized by Dynamic Programming Xueqing Fu, CATARC;Tianjin University; Baosen Wang, Jianjun Yang, Shuangxi Liu, Haiyang Gao, CATARC; Bang-Quan He, Tianjin University; Hua Zhao, Brunel University
	2021-01-0723	Evaluation of Hybrid, Electric and Fuel Cell Powertrain Solutions for Class 6-7 Medium Heavy-Duty Vehicles Satyum Joshi, Mufaddel Dahodwala, Nitisha Ahuja, FNU Dhanraj, Erik Koehler, Michael Franke, Dean Tomazic, FEV North America Inc.
	2021-01-0724	A Multi-Objective Power Component Optimal Sizing Model for Battery Electric Vehicles Akash Shinde, Kunal Kshirsagar, Saad Bin Arshad, Unmesh Patil, Jiangfeng Zhang, Clemson University
	2021-01-0725	Development of FCV Transaxle KOICHI NAKAMURA, Toyota Motor Corporation
	2021-01-0726	Novel Research for Energy Management of Plug-In Hybrid Electric Vehicles with Dual Motors Based on Pontryagin's Minimum Principle Optimized by Reinforcement Learning Rong Guo, Ziyi Sun, Tongji University
	2021-01-0727	New Fuel-Cell Hybrid Architecture for Heavy-Duty Trucks Applications Ouafae El Ganaoui-Mourlan, El Hadj Miliani, IFPEN; Roy Saber, Luiz Afonso Ditzel Filho, Emmanouil Parastatidis, Alfonso Jose Peñin Garcia, IFP School
	ORAL ONLY	Multiphysics Design and Analysis of Electric Vehicles Kaushik Illa, Siemens PLM Software; Warren Seeley, Frederick Ross, Siemens Digital Industries Software; Markus Anders, Siemens Corporation; Kiran Vonna, Siemens Industry Software
	ORAL ONLY	A Methodology for the Reverse Engineering of a PHEV Energy Management Strategy Federico Millo, Luca Pulvirenti, Giuseppe DiPierro, Luciano Rolando, Politecnico di Torino

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Planned by Hybrid and Electric Propulsions Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Advanced Fuel Cell Vehicle Applications

Session Code PFL720

Room TBD

Session

This session covers advancements in PEM fuel cell applications in vehicles including, but not limited to: advanced materials for cell or stack components, balance of plant (BOP) components, stack or system design, control strategies, modeling, testing, diagnostics and lifetime monitoring, hydrogen safety, durability, economics/cost reduction, and system integration/optimization. These topics can be addressed at the cell, stack, system or vehicle levels. A special focus on durability of stack and BOP components is also planned and topics covering accelerated tests and operating strategies to improve durability are encouraged.

Organizers - Di Zhu, Ford Motor Company; Jesse Schneider, ZEV Station; Henning Lohse-Busch; Anita Chaudhari, Ford Motor Company

Time	Paper No.	Title
	2021-01-0728	A Comparative Study of Fuel Cell Prediction Models Based on Relevance Vector Machines with Different Kernel Functions Weilun Geng, Yongping Hou, Tongji University; Hao Lan, CATARC
	2021-01-0729	Design and Structural Parameters Analysis of the Turbine Rotor in Fuel Cell Vehicle Haoyu Mao, Yuemeng Zhang, Sichuan Xu, Tongji University
	2021-01-0730	Distribution Impedance Measurement and Research of Proton Exchange Membrane Fuel Cell Xiangfeng Wu
	2021-01-0731	Experimental Research on Voltage Uniformity of a PEMFC Stack under Dynamic Step Loading Pengcheng Liu, Baitao Zhang, Sichuan Xu, Tongji university
	2021-01-0733	Aerodynamic Performance Modeling of the Centrifugal Compressor and Stability Analysis of the Compression System for Fuel Cell Vehicles Siyue Chen, Shuguang Zuo, Zhipeng Wu, Tongji University
	2021-01-0734	Design and Modelling of the Powertrain of a Hybrid Fuel Cell Electric Vehicle Massimiliana Carello, Henrique de Carvalho Pinheiro, Leonardo Longega, Luca Di Napoli, Politecnico di Torino
	2021-01-0735	Review on State of Health Definition in Relation to Proton Exchange Membrane Fuel Cells in Fuel Cell Electric Vehicles Xiao Hu, Tong Zhang, Tongji University
	2021-01-0736	Experimental Investigation of Control Strategies on Voltage Inconsistency for Proton Exchange Membrane Fuel Cells Baitao Zhang, Dapeng Gong, Xuhui Wang, Pengcheng Liu, Sichuan Xu, Tongji University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0737	Investigating the Effect of Water and Oxygen Distributions on Consistency of Current Density Using a Quasi-Three-Dimensional Model of a PEM Fuel Cell Xuhui Wang, Yikang Lu, Baitao Zhang, Sichuan Xu, Tongji University
	2021-01-0738	Investigation on Cold Start for Proton Exchange Membrane Fuel Cell Stack Jiaxing Fu, Xingyu Liu, Sichuan Xu, Tongji University
	2021-01-0739	A Data Driven Fuel Cell Life-Prediction Model for a Fuel Cell Electric City Bus Lu Zheng, Yongping Hou, Wenqi Li, Tongji University; Dong Hao, CATARC
	2021-01-0740	Development of High-Performance FC Stack for the New MIRAI Tomoo Yoshizumi, Hideki Kubo, Masao Okumura, Toyota Motor Corporation
	2021-01-0741	Development of High-Pressure Hydrogen Storage System for New FCV Hiroki Yahashi, Akira Yamashita, Nozomu Shigemitsu, Sogo Goto, Koji Kida, Takashi Inou, Toyota Motor Corporation
	2021-01-0742	Development of Air Supply Controller for FCV Based on Model-Based Development Approach Naoki Tomi, Shigeki Hasegawa, Toyota Motor Corporation; Jared Farnsworth, Toyota Motor North America; Hiroyuki Imanishi, Yoshihiro Ikogi, Kenichiro Sato, Toyota Motor Corporation
	2021-01-0743	Control Strategies for Prevention of PEMFC Oxygen Starvation: A Review Dapeng Gong, Sichuan Xu, Baitao Zhang, Tongji University
	2021-01-0744	Techno-Economic Modelling of Sustainable-Hydrogen Filling of Fuel Cell Cars Sami Karaki, Chafic Labaki, American University of Beirut
	2021-01-0746	Study on the Constant Voltage, Current and Current Ramping Cold Start Modes of Proton Exchange Membrane Fuel Cell Jianjian Tao, Xuezhe Wei, Haifeng Dai, Tongji University
	ORAL ONLY	Intake Air Conditioning for Fuel Cell Systems Robert Holmgren, Freudenberg Filtration Technologies LP

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00690, and also Planned by Hybrid and Electric Propulsions Committee / Powertrain Fuels and Lubricants Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Tuesday, April 13

On-Demand: Battery Technologies

Session Code PFL730

Room TBD Session

This session provides a forum for both theory-oriented and application-oriented manuscripts that address state-of-art battery technologies at the cell, array, pack or vehicle levels. Typical domains encompass, but not limited to: materials, chemistries, modeling, simulations, testing, diagnosis, prognosis, safety, reliability, durability, battery economics/cost reduction, battery charging, battery thermal management, battery management systems and controls and system integration/optimization. (For Chargers and Charging Electronics Architecture/Design see AE600)

Organizers - Tony Thampan, Ground Vehicle Systems Center; Di Zhu, Ford Motor Company; Xianke Lin, University Of Ontario Institute; Yi Ding, Ground Vehicle Systems Center; Matilde D'Arpino, Ohio State University; James Miller, Argonne National Laboratory; Bapiraju Surampudi, Southwest Research Institute

Time	Paper No.	Title
	2021-01-0747	Research on Effect of Dynamic Working Condition on Electrochemical Impedance Xiaoman Wang, Tongji University
	2021-01-0748	A Comprehensive Numerical Approach to Predict Thermal Runaway in Li-Ion Battery Packs Bapiraju Surampudi, Bansal Shah, Mickey Argo Jr, Southwest Research Institute
	2021-01-0749	Development of an In-Situ Diagnostic to Detect Lithium Plating in Commercial Automotive Battery Cells Bapiraju Surampudi, Kevin Jones, Shuvodeep Bhattacharyya, Southwest Research Institute
	2021-01-0750	Modeling and Predicting Mechanically Induced Internal Short Circuits in Lithium Ion Battery Packs Matthew Hoffmeyer, Bapiraju Surampudi, Southwest Research Institute
	2021-01-0752	Research on Heat Management Performance of Heat Pipe-Fin Based on Optimal Design Changxi Li, Wuhan University of Technology; Gangfeng Tan, Suizhou-WUT Industry Research Institute; Hongwei Ling, Li Liu, ZhiQiang Liu, Zujie Yang, Wuhan University of Technology
	2021-01-0753	Development of High Frequency Response Battery and Enhancement of Power Density for Inverter Daiki Komatsu, Takeshi Inoue, Shin Yamauchi, Hitachi, Ltd.
	2021-01-0754	New Leak Detection Methodology to Protect against Microscopic Leaks and Water Ingress in Battery Cells, Battery Packs and ADAS Sensors Marc Blaufuss, Daniel Wetzig, Inficon GmbH
	2021-01-0755	Mechanical Anisotropy and Strain-Rate Dependency of a Large Format Lithium-Ion Battery Cell: Experiments and Simulations Lingxiao Zhu, Yulong Ge, Tsinghua University; Lin Wang, Lei Zhang, Guangzhou Automobile Group Co., LTD; Yuanjie Liu, Yong Xia, Tsinghua University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0756	<p>A Study on Parameter Variation of Cells Effects on Battery Groups with Different Topologies and Load Profiles</p> <p>Kong Lingzhao, Runfeng Lee, Tsinghua University</p>
	2021-01-0757	<p>Battery Thermal Management Simulation - 1D+1D Electrochemical Battery and 3D Module Modeling on Vehicle System Level</p> <p>Johann C. Wurzenberger, AVL LIST GmbH; Mario Jelovic, Mate Šimundi, AVL-AST d.o.o.; Igor Mele, Tomaz Katrasnik, University of Ljubljana</p>
	2021-01-0758	<p>Computational Design of Cathode Coating Materials for All-Solid-State Lithium-Ion Batteries</p> <p>Koutarou Aoyagi, Toyota Motor Corporation; Chuhong Wang, Johns Hopkins University; Takuya Matsuyama, Prime Planet Energy & Solutions, Inc.; Tim Mueller, Johns Hopkins University; Jun Yoshida, Prime Planet Energy & Solutions, Inc.</p>
	2021-01-0759	<p>Comparative Study between Equivalent Circuit and Recurrent Neural Network Battery Voltage Models</p> <p>Mina Naguib, Carlos Vidal, Phillip Kollmeyer, McMaster University; Pawel Malysz, Oliver Gross, FCA US LLC; Ali Emadi, McMaster University</p>
	2021-01-0760	<p>Electrochemical Analysis of High Capacity Li-Ion Pouch Cell for Automotive Applications</p> <p>Luigi Sacchetti, Ofelia Jianu, Gian Favero, University of Windsor</p>
	2021-01-0761	<p>Validation of a Lumped Electro-Thermal Model of a 14S1P Battery Module with 3D CFD Results</p> <p>Omkar Champhekar, Xiao Hu, Anil Wakale, Ansys Inc.</p>
	2021-01-0762	<p>Systematic Modelling and Design of a Battery Pack for Formula Electric Vehicles</p> <p>Chayban Ghabech, Apurv Kumar Yadav, Alireza Khaligh, Chanaka Singhabahu, Reece Roehsler, University of Maryland</p>
	2021-01-0763	<p>Aging Simulation of Electric Vehicle Battery Cell Using Experimental Data</p> <p>Yiqun Liu, Y. Gene Liao, Ming-Chia Lai, Wayne State University</p>
	2021-01-0764	<p>Using Virtual Product Development with Design of Experiments to Design Battery Packs for Electrified Powertrain</p> <p>Ran Bao, Ricardo UK Ltd.; Nikolaos Fotias, Paul McGahan, Ricardo Prague s.r.o.</p>
	2021-01-0765	<p>Bayesian Optimization of Active Materials for Lithium-Ion Batteries</p> <p>Homero Valladares, Tianyi Li, Purdue University; Likun Zhu, Hazim El-Mounayri, Indiana University Purdue University Indianapolis; Ahmed Hashem, Ashraf E. Abdel-Ghany, National Research Centre, Egypt; Andres Tovar, Indiana University Purdue University Indianapolis</p>
	2021-01-0766	<p>Modal Analysis Correlation of Battery Components and Battery Module</p> <p>Charles Prabhakaran M, Lala Ram Patel, Tata Consultancy Services; Michael D. Nienhuis, Hari Krishna Ketha, General Motors LLC</p>

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0767	Impact of Power Profile on the Estimation of Second Life Batteries Remaining Useful Life Daniele Battaglia, Università degli studi di Cagliari; Matilde D'Arpino, Sai Vinayak Ganesh, Joseph Carlson, Ohio State University
	2021-01-0768	3beLiEVe: Towards Delivering the Next Generation of LMNO Li-Ion Battery Cells and Packs Fit for Electric Vehicle Applications of 2025 and Beyond Michele De Gennaro, Boschidar Ganev, Marcus Jahn, Austrian Institute of Technology GmbH; Marine Reynaud, Marcus Fehse, Laida Otaegui, Marta Cabello, CIC energiGUNE-BRTA; Simone Mannori, ENEA; Omid Rahbari, Avesta Battery & Energy Engineering
	ORAL ONLY	Safety issues and risk analysis of defective batteries: Experiment and Modelling Yikai Jia, Jun Xu, UNC Charlotte Motorsports Engineering
	ORAL ONLY	Generalized separator failure criteria for internal short circuit of lithium-ion battery Chunhao Yuan, Jun Xu, UNC Charlotte Motorsports Engineering
	ORAL ONLY	Developing Reduced-order Physical Based Model to Estimate the SOC of Li-Ion Batteries Zhibang Xu; Xia Wang, Zissimos Mourelatos, Oakland University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00691, and also Planned by Hybrid and Electric Propulsions Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Electric Motor & Power Electronics

Session Code PFL740

Room TBD Session

Power electronics and electric motors are essential for improving vehicle efficiency through drivetrain electrification. Technologies that support high efficiency, high power density, and low cost motors and power modules are required for the success of vehicle electrification. (For Chargers and Charging Electronics Architecture/Design see AE600)

Organizers - Yilun Luo, Southwest Research Institute; Saeed Siavoshani, Eaton; Serdar Yonak, Ford Motor Company

Time	Paper No.	Title
	2021-01-0769	Analytical Modeling and Calculation of Electromagnetic Torque of Interior Permanent Magnet Synchronous Motor Considering Ripple Characteristics Zhipeng Wu, Shuguang Zuo, Siyue Chen, Tongji University
	2021-01-0770	A Novel Time - Efficient Method for PMSM Efficiency Maps Calculation Pablo Oliveros, Ahmet Yeksan, DEP; Jacob Arabbo, Sandeep Makam, FCA US LLC

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0771	New Equivalent Model and Modal Analysis of Permanent Magnet Motor Stator System Yongchao Wang, Hui Gao, Daliang Chen, CATARC
	2021-01-0772	Multi-physics Modeling of Electromagnetically Excited Acoustic Noise of Induction Motor Xiaorui Hu, Shuguang Zuo, Fan Li, Tongji University
	2021-01-0773	Modeling Synchronous and Induction Machine with Wireless Rotor Sergey Gladyshev, University of Michigan-Dearborn; Pavel Gladyshev, University College Dublin; Irina Okrainskaya, South Ural State University
	2021-01-0774	Dynamic Modelling of Multiphase Machines Based on the VSD Transformation Joshua Taylor, FCA US LLC; Diego Fernando Valencia Garcia, Wesam Taha, McMaster University; Mustafa Mohamadian, Daniel Luedtke, FCA US LLC; Babak Nahid-Mobarakeh, Berker Bilgin, Ali Emadi, McMaster University
	2021-01-0775	Drive modelling and performance estimation of IPM motor using SVPWM and Six-step Control Strategy Sujana Dasara, Yihui Li, Berker Bilgin, Ali Emadi, McMaster University
	2021-01-0776	Evaluation of Model Predictive Control for IPMSM Using High-Fidelity Electro-Thermal Model of Inverter for Electric Vehicle Applications Assel Zhaksylyk, Abdul-Mannan Rauf, Sajib Chakraborty, Mohamed El Baghdadi, Thomas Geury, Vrije Universiteit Brussel; Stanko Ciglaric, Elaphe Propulsion Technologies, Ltd.; Omar Hegazy, Vrije Universiteit Brussel
	2021-01-0777	Integrated Busbar Design for Stray Inductance and Volume Reduction in a High-Power SiC Traction Inverter Yicheng Wang, Jigar Mistry, Peter Azer, Berker Bilgin, McMaster University
	2021-01-0778	Magnetic Form Which Applied C Shaped Magnet for Hybrid Electric Vehicle Shingo Soma, HONDA Motor Co., Ltd.; Yoshihisa Kubota, HONDA R&D Co., Ltd.; Tatsuya Ohzu, Tsuyoshi Kamata, HONDA Motor Co., Ltd.

Planned by Hybrid and Electric Propulsions Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Controls for Hybrids and Electric Powertrains

Session Code PFL750

Room TBD

Session

This session covers propulsion control processes related to achieving stringent market fuel economy, emissions, performance, reliability, and quality demands of hybrid and electric powertrains. Topics include the control, calibration, and diagnostics of the engine, powertrain, and supporting electromechanical subsystems related to energy management. (For Chargers and Charging Electronics Architecture/Design see AE600)

Organizers - Xiaoqing Cao, Daimler Corp.; Paul Chambon, Southwest Research Institute; Sumanth Reddy Dadam, Sara Dadras, Ford Motor Company; Xianke Lin, University Of Ontario Institute; Bryon Wasacz, Fiat Chrysler Automobiles; Bin Wu, Vitesco Technologies USA LLC

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0779	A Study on Adaptive Power Split Strategy of HEV Using Nonlinear System Identification Shiyu Zhao, Ricardo UK, Ltd.
	2021-01-0780	Eco-Driving Control of Connected and Automated Hybrid Electric Vehicles on Multi-lane Roads Using Model Predictive Control Kavian Khosravinia, Siyang Wang, Xianke Lin, Ontario Tech University
	2021-01-0781	xEV Propulsion System Control-Overview and Current Trends Dwarakanath Simili, Caleb Secrest, BorgWarner
	2021-01-0782	Optimization of Speed Fluctuation of Internal Combustion Engine Range Extender by a Dual Closed-Loop Control Strategy Minglong Li, Weiqi Ding, Xingyu Zeng, Zaimin Zhong, Zongjie Hu, Dengke Yuan, Liguang Li, Tongji University
	2021-01-0783	Energy-Efficient Braking Torque Distribution Strategy of Rear-Axle Drive Commercial EV Based on Fuzzy Neural Network Guoxue Ge, Tao Wang, Yiheng Lv, Nanjing University of Science & Technology; Xiaojun Zou, Wei Song, Guofang Zhang, Nanjing Iveco Automobile Co., Ltd.
	2021-01-0784	The Effect of Tuning PMSM Torque to Track Engine Torque on Speed Fluctuation of Range Extender Weiqi Ding, Minglong Li, Xingyu Zeng, Dengke Yuan, Zongjie Hu, Liguang Li, Tongji University
	2021-01-0785	The Control Strategy for 4WD Hybrid Vehicle Based on Wavelet Transform Yiran Qiao, Tongji University; Liang Chu, Jilin University; Xinbo Chen, Tongji University; Chong Guo, Jilin University; Xiang Xu, Tongji University
	ORAL ONLY	Motor Control with Position Error Correction of Permanent Magnet Synchronous Motor for Electric Vehicle Lubricant Testing Yilun Luo, Kyle Jonson, Michael C. Gross, Southwest Research Institute

Planned by Hybrid and Electric Propulsions Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Propulsion Domain Controlled Architecture

Session Code PFL780

Room TBD

Session

This session focuses on Propulsion Domain Control being the central Strategic Controls Architectural Element of a Propulsion and/or Vehicle Control System, for all Propulsion System topologies. Topics include all aspects of Domain Control related to Propulsion, Vehicle, and Autonomous Vehicle control including Controls Functional Architecture, E/E Hardware Architecture, SW Architecture, inter-module communication, fault tolerance, fail-safe, diagnostics, as well as the impacts of implementing a Domain Controlled Architecture. (For Chargers and Charging Electronics Architecture/Design see AE600)

Organizers - Qadeer Ahmed, Ohio State Univ.; Bryon Wasacz, Fiat Chrysler Automobiles

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
	2021-01-0786	A Domain-Centralized Automotive Powertrain E/E Architecture
		Victor Bandur, Vera Pantelic, Matthew Dawson, Alexander Schaap, McMaster University; Bryon Wasacz, FCA US LLC; Mark Lawford, McMaster University

Planned by Hybrid and Electric Propulsions Committee / Powertrain Fuels and Lubricants Activity

Tuesday, April 13

On-Demand: Sustainable Development for Automotive Industry

Session Code SDP100

Room TBD Session

This session is seeking submissions that focus on Life-cycle Analysis: Materials Production, Manufacturing, Use and End-of-Life; Circular Economy; Smart Manufacturing; Advances in Alternative Energy sources; Vehicle Electrification Strategies; and Corporate Programs.

Organizers - Tarek Abdel-Salam, East Carolina University; Darnell Jones, Fiat Chrysler Automobiles; Katie Soulliere, Univ. of Windsor; Ronald L. Williams

Time	Paper No.	Title
	2021-01-0787	The Analysis of Dual-Credit Regulation Based on the Dynamic Game Theory
		Chen Pengyu, Guan Lin, Chongqing University; Zhenfei Zhan, Chongqing Jiaotong University; Yunlei Yin, Chongqing University
	2021-01-0788	EV Penetration for Minimizing Power System Emissions
		Bradly Pfeiffer, Md Shahin Alam, Seyed Ali Arefifar, Oakland University
	2021-01-0789	Light Duty Vehicle Life Cycle Analysis
		Longyu Zhang, Graham Conway, Daniel Christopher Bitsis, Ian Smith, Paul Chambon, Southwest Research Institute
	2021-01-0790	Pathway to Sustainable Carbon Free Energy and Transportation: Part 2
		Frank Jamerson
	2021-01-0791	Climate Modeling and Extremes of Climate - Impact on the Auto Industry
		Joe D'Aleo, WeatherBELL Analytics LLC
	2021-01-0792	Team AVERERA's Alterno V4.0 - A Hyper Energy-Efficient Electric Prototype Vehicle for Shell Eco-Marathon
		Ankit Rajendrakumar Verma, Akash Chaurasia, Somesh Sunil Jaiswal, Lakshya Bhonde, Rishav Guha, Himanshu Sahu, Saurabh Patel, Sweekar Banthiya, Shashank Maddeshiya, Sushrut Mirzapure, Tejas Chavan, IIT (BHU)
	2021-01-0793	Influence of Pyrolised Waste Engine Oil into Bioethanol and Biobutanol on the Performance of a Variable Compression Ratio Engine on the Performance- An Experimental Study

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:49 PM

Time	Paper No.	Title
		Prabakaran B, Hindustan Institute of Technology and Science
	2021-01-0794	Downsizing the ICE in Commercial Series Hybrids with Known Routes Using a Modular Energy Storage Approach Kelsey Farr, Peter Bauer, University of Notre Dame
	ORAL ONLY	Projecting Technology and Policy Needs for Achieving 70% PEV Sales in China by 2050 Shiqi(Shawn) Ou, Zhenhong Lin, Oak Ridge National Laboratory

Planned by Sustainable Development Committee / Integrated Design and Manufacturing Activity

Tuesday, April 13

On-Demand: Body Engineering and Design

Session Code SS100

Room TBD

Session

Body Engineering & Design covers several important areas that are related to vehicle body, including its components such as instrument panel, steering column and wheel, seats, hood, decklid, transmission cross-member, hard mounted chassis, CRFM, etc. Topics included are: Novel concepts, Analysis, Design, Testing, Predictions of strength, stiffness, and fatigue life, welding methods, vehicle body quality, durability, reliability, safety, ride & handling, NVH, aerodynamics, mass reduction, as well as fuel economy.

Organizers - Mallikarjuna Bennur, General Motors LLC; Raghu Echempati, Kettering Univ.; Ramakrishna Koganti, University Of Texas System; Vesna Savic, General Motors LLC

Time	Paper No.	Title
	2021-01-0795	Structural Design and Analysis of Battery Protection Device for Electric Truck Puchun Zeng, Wuhan University of Technology; Kekui Fang, Suizhou Product Qual Supervision and Inspection Institute; Changxi Li, Hongwei Ling, Wuhan University of Technology; Xuejin Ren, Suizhou Product Qual Supervision and Inspection Institute
	2021-01-0796	Prediction of Clamp Loss for Sunroof Mountings under Vehicle Operating Conditions Sabarinathan Srinivasan, Roshan N Mahadule, Ramesh Koduri, FCA Engineering India Pvt., Ltd.; Ramesh Palamalai, Einnel Technologies
	2021-01-0797	Body Cross-Sectional Stiffness Criteria for the Optimal Development of the BIW Weight and Torsional Stiffness Taekyoung Uhm, Hyundai Motor Company
	2021-01-0798	Robust and Optimum Design for Body in White Roof Structure Using DFSS Techniques Sabarinathan Srinivasan, Roshan N Mahadule, Ananta Pankaj, Ahamed Fahir, FCA Engineering India Pvt., Ltd.
	2021-01-0799	Analysis of Discretization for Transient Impact Loads on Door Closing Zhe Liu, Yunkai Gao, Xiang Xu, Chao Ma, Jiaju Chen, Tongji University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:50 PM

Time	Paper No.	Title
	2021-01-0836	Impact of Powertrain Dimensional Variation on Buzz, Squeak and Rattle Noise for Cradle Type Electric Vehicle Sandip Hazra, Tata Motors, Ltd.; Janardhan Reddy K, VIT University
	2021-01-0837	Modular Approach to Developing Platform Solutions across Multiple Brands and Segments Amol Gulve, Volvo Group North America

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: CAD/CAM/CAE Technology

Session Code SS101

Room TBD

Session

This session publishes papers and presentations advancing the knowledge in product design, manufacturing processes, and engineering analysis using the state-of-the-art computer technology. The scope includes such areas as CFD, manufacturing and assembly simulation, crash-worthiness, computational mechanics, mold flow, ride simulation, ergonomic design, NVH, reverse engineering, etc. Developments in numerical methods applicable to automotive engineering problems will also be considered.

Organizers - Randy Gu, Oakland University; Shuxin Gu, Ford Motor Company; Yu Teng, BAIC Motor Corporation, Ltd.; Arpit Tiwari, Gamma Technologies LLC

Time	Paper No.	Title
	2021-01-0800	Effect of Casting Process on Strength Behaviour of Automotive Alloy Wheel Gurumoorthy S, FCA Engineering India Pvt., Ltd.; Thomas Oery, FCA US LLC; Sreshti grandhi, FCA Engineering India Pvt., Ltd.; Karthikraja A, Klaus IT Solutions Pvt., Ltd.
	2021-01-0801	Data Driven Model to Predict Cylinder Head Fatigue Failure Aditya Pingale, Cherng-Chi Chang, James Perander, General Motors LLC
	2021-01-0803	Systems Level Trade Studies with CAE Data Ilya Tolchinsky, Phoenix Integration Inc.
	2021-01-0804	Numerical Investigation of the Static Characteristics of Solenoid Valve in Decoupled Brake-by-Wire System liping wan, South China University of Technology; Minghui Wang, Yongfeng Jiang, Shandong Meichen Industry Group Co., Ltd.; Xuezhi Zhao, South China University of Technology
	2021-01-0805	Simulation Method for Automotive Remote Keyless application Jeyavendeesh Kumar S, TCS; Hongguang Sun, General Motors Canada, Ltd.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:50 PM

Time	Paper No.	Title
	2021-01-0806	<p>Numerical Investigation of Solenoid Valve Flow Field in Decoupled Brake-by-Wire System</p> <p>liping wan, South China University of Technology; Minghui Wang, Yongfeng Jiang, Shandong Meichen Industry Group Co., Ltd.; Xuezhi Zhao, South China University of Technology</p>
	2021-01-0807	<p>Numerical Calculation and Experimental Research on the Slip of Silicone Oil Fan Clutch</p> <p>Qiu Hao, South China University of Technology; Ran Zhen, Ruilong Li, Shandong Meichen Industry Group Co., Ltd.; Xuezhi Zhao, South China University of Technology</p>
	2021-01-0808	<p>Vehicle Suspension Misuse Assessment with Simplified Virtual Model</p> <p>Amit Jadhav, Sameer Thakare, FCA Engineering India Pvt., Ltd.</p>
	2021-01-0809	<p>Design, Aerodynamic Analysis, and Fabrication of Agricultural Drone</p> <p>Devaiah Malkapuram, Chucharita Pothula, Shaik Jaweed, Geethanjali College of Engineering and Technology</p>
	2021-01-0810	<p>Brake Pad Wear Prediction Using Finite Element Techniques</p> <p>Gurumoorthy S, Sreshti Grandhi, FCA Engineering India Pvt., Ltd.; Sridhar S, Satyam Venture Engineering Services Pvt.</p>
	2021-01-0811	<p>Prediction of Brake Moan Noise Using CAE Techniques</p> <p>Gurumoorthy S, Sreshti Grandhi, FCA Engineering India Pvt., Ltd.; Srikanth Reddy Allipur, HCL Technologies, Ltd.</p>
	2021-01-0812	<p>Multi-Joint Topology Optimization: A Method for Considering Joining in Multi-Material Design</p> <p>Benjamin Shiff, Stephen Roper, Queen's University; Manish Pamwar, Balbir Sangha, General Motors Canada, Ltd.; Il Yong Kim, Queen's University</p>
	2021-01-0813	<p>Numerical Study of Oil Liquid Sloshing Characteristics Based on Different Baffle Structures and Placements in Automobile Fuel Tank</p> <p>Enhui Zhang, Huaming Jin, Inner Mongolia University of Science and Technology; Lihe Wang, Inner Mongolia Agricultural University</p>
	2021-01-0815	<p>Research on Mid-Low Frequency Noise Reduction Material and Its Structure Design</p> <p>Xianghe Jiao, Xiao-Ang Liu, Hebei University of Technology; Wen-Bin Shangguan, South China University of Technology; Qu Zhang, Ningbo Tuopu Group Co., Ltd.</p>
	2021-01-0816	<p>The Design and Realization of Steam Turbine Blade CAD/CAM System</p> <p>Philip Kwabena Agyeman, Justice Alex Frimpong, Gangfeng Tan, Ding Yufeng, Wuhan University of Technology; Prince Owusu-ansah, Kumasi Technical University; Jamshid Valiev, Wuhan University of Technology</p>
	2021-01-0819	<p>Numerical Analysis of Nano Particle-Based Coolants in Automobile Radiator</p> <p>Ravishankar Sathyamurthy, KPR Institute of Engineering and Technology; Prasad Chandran, N Prakash, Hindustan Institute of Technology and Science; Vishnu Kumar Kaliappan, KPR Institute of Engineering and Technology</p>

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:50 PM

Time	Paper No.	Title
	2021-01-0820	Suitability Assessment of an Uncalibrated Body Force Based Fan Modeling Approach to Predict Automotive Underhood Airflows Palak Saini, Jeffrey Defoe, University of Windsor; Erin Farbar, FCA Canada, Inc.
	2021-01-0821	Engine Roll and Its Impact on Powertrain Battery Cable Structural Design Rajesh Jeba Thankaraj, Roshan N Mahadule, FCA Engineering India Pvt., Ltd.; Vignesh Kandasamy, ALTEN India Pvt., Ltd.
	2021-01-0822	Air Bind Effect on Door Slam Durability Performance Roshan N Mahadule, Keyur Rege, Samruddhi Gaikwad, FCA Engineering India Pvt., Ltd.
	2021-01-0825	Roof Thermal Management Simulation under Solar Load Juan Carlos Martinez Laurent, Oscar Saavedra, Ford Motor Company de Mexico
	2021-01-0826	Control Arm Design Utilizing Multi-Material Topology Optimization Cameron Forward, Vishrut Shah, Kiarash Kashanian, Queen's University; Manish Pamwar, Balbir Sangha, General Motors Canada, Ltd.; Il Yong Kim, Queen's University
	2021-01-0827	A Comprehensive Study on the Design and Development Methodology of Automotive Steel Wheel Rims Undergoing Highly Transient Cornering Events Anandraj G, Varun Chaudhari, Suhas Kangde, Mahindra & Mahindra Ltd.
	2021-01-0828	Positive Displacement Gear Lube Pump CFD Analysis Srinivas Goud Goda, Mukesh Kumar, Vitthal K. Khandagale, Cummins Technologies India Pvt., Ltd.; Leons Antony Lawrence, Ansys India
	2021-01-0829	Structural Performance Evaluation of Voltage Stabilizer Module Bracket in Instrument Panel Karkuvelraj Thangarajan, Sathish Kumar Pandi, Kumaran Babu Kuttin Harimoorthy, FCA Engineering India Pvt., Ltd.
	2021-01-0830	Influence of Inner Panel Structure in Overall Liftgate Performance Liliana Alonso, Ezequiel Alvarez, Juan Carlos Martinez Laurent, Ford Motor Company de Mexico
	2021-01-0831	Dynamic Transient Simulation to Predict Durability Loads from Road Load Profile under Linear Assumptions Ananta Vijaya Pankaj, Sabarinathan Srinivasan, FCA Engineering India Pvt., Ltd.; Sachin Kamble, Fugenic Engineering Services India
	2021-01-0832	Design and Analysis of an Acrylic Front of a Novel Mechanical Highway Billboard Xiyun Wang, Oakland University; Hugo Pimentel, Paul Angott, Innovative Billboards, LLC; Randy Gu, Oakland University
	2021-01-0833	Cameo Excel Importing Tool Options Matthew Pownall, INVENSITY Inc.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:50 PM

Time	Paper No.	Title
	2021-01-0834	EURO-NCAP MPDB Compatibility Impact Model Assessment Using a Virtual Barrier Deformation Tracker Sae Park, Hassan Hor, FCA US LLC
	2021-01-0835	Study of Incremental Forming Process of Polycarbonate Sheets Irina Besliu Bancescu, Ioan Tamasag, University Stefan cel Mare from Suceava; Laurentiu Slatineanu, Gheorghe Asachi Technical University; Delia Cerlinca, University Stefan cel Mare from Suceava
	ORAL ONLY	CIM - CAD , CAM , CAE A Technological Approach of Product Design & Mfg.in Future factory. Amit Subhash Vaidya, MIT Academy of Engineering
	ORAL ONLY	Methodology development for virtual analysis of alloy rims subjected to cornering events Suhaz Kangde, Mahindra & Mahindra, Ltd.
	ORAL ONLY	Virtual Modelling of Hood Fluttering due to Aerodynamic Interactions between Vehicles Venkata Ramana Eaga, Roger Almenar, Armando Pena, ESI Group

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Simulator Aided Engineering

Session Code SS102

Room TBD

Session

This session will focus on the use of all types of simulators and playback devices that give NVH and Vehicle Dynamics context to critical engineering decision making as a part of the full vehicle, sub system and/or product development process. Also discussed will be implementation of tools, applications for simulators, the role simulators can play for HIL/SIL scenarios, future trends and the latest ground breaking simulator technology. Discussions around all types of simulators are welcome.

Organizers - Gary Newton, Nadja Hausner, VI-grade

Time	Paper No.	Title
	ORAL ONLY	Global Comfort Assessment in CAVs: An Experimental Approach using the IDIADA Driving Simulation Facilities Javier Gutierrez, Applus Idiada USA; Guido Tosolin, James Douglas Jackson, IDIADA Automotive Technology SA; Ivan Mula, Applus Idiada USA; Guido Bairati, VI-Grade
	ORAL ONLY	Using Simulation and Simulators with Embedded Production Tools to Decrease Time to Production for Sound Design Antonio Spagnuolo, VI-Grade

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:50 PM

Time	Paper No.	Title
	ORAL ONLY	Introducing A High-Resolution Graphic Environment For Accelerated Vehicle Development Roberto De Vecchi, VI-Grade
	ORAL ONLY	Vehicle Dynamics and NVH - Multi-attribute Simulators David Bogema, VI-grade
	ORAL ONLY	Multisensorial Harmonized Perception as Key Design Target for Driving Simulators Diego Minen, Vi-grade s.r.l.
	ORAL ONLY	Innovative Tire Development thanks to Driving Simulators Mathieu Grob, Vi-grade s.r.l.

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Design Optimization - Methods and Applications

Session Code SS103

Room TBD Session

Design Optimization Methods and Application session features papers on new and improved optimization techniques and on application of different optimization methods in component and vehicle design. Methods include deterministic and stochastic optimization techniques. Applications range from noise pressure optimization and vehicle dynamic response optimization to sub-system topology and shape and full vehicle gage and topology optimization.

Organizers - Mallikarjuna Bennur, General Motors LLC; Raghu Echempati, Kettering Univ.; Chandan Mozumder, Vesna Savic, General Motors LLC; Di Zhu, Ford Motor Company

Time	Paper No.	Title
	2021-01-0838	Development of Coated Gasoline Particulate Filter Design Method Combining Simulation and Multi-Objective Optimization Yuki Ota, Hiroaki Takahasi, Ryosuke Maekawa, Toyota Motor Corporation
	2021-01-0839	Robust Design Optimization for the Mechanical Claw of Novel Intelligent Sanitation Vehicles Xiang Xu, Xinbo Chen, Zhe Liu, Jiawei Chen, Jian Zhong, Yan Li, Yiran Qiao, Yunkai Gao, Tongji University
	2021-01-0841	Comparison of Direct and Metamodel Based Optimization in the Coolant Jacket Design of an IC Engine Pallavi Annabattula, Surendra Gaikwad, FCA US LLC
	2021-01-0842	Multi-Material Topology Optimization Considering Draw Direction Constraints

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:50 PM

Time	Paper No.	Title
		Vishrut Shah, Kiarash Kashanian, Queen's University; Manish Pamwar, Balbir Sangha, General Motors Canada Ltd; Il Yong Kim, Queen's University
	2021-01-0843	Optimizing Design of the Bolted T-Joint Part of the Steel-Aluminum Body Frame of an Electric Bus
		Li Zou, Xiujian Yang, Shengbin Zhang, Kunming University of Science & Technology; Yi Song, Transportation Bureau of Songming
	2021-01-0844	Implementation of Thermomechanical Multiphysics in a Large-Scale Three-Dimensional Topology Optimization Code
		Joel Najmon, Purdue University; Tong Wu, Siemens PLM; Andres Tovar, Indiana University Purdue University-Indianapolis
	2021-01-0845	Parameter Optimization of Steering Trapezoid Mechanism Based on Hybrid Genetic Algorithm
		Kailang Chen, Gangfeng Tan, Wuhan University of Technology; Yong Yang, Suizhou Product Qual Supervision and Inspection Inst; Hanyu Zhang, Haoyu Wang, Xin Huang, Wuhan University of Technology
	2021-01-0846	Electric Bus Frame Optimization for Side-Impact Safety and Mass Reduction Based on the Surrogate Model Method
		Rongxiao Dai, Xiujian Yang, Shize Shi, Xiangji Wu, Kunming University of Science & Technology
	ORAL ONLY	Structural Optimization Methods to Design Independent Parts and Common Parts across Multiple Vehicle Platforms
		Juan Pablo Leiva, Vanderplaats R & D

Planned by Body Engineering Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Fire Safety

Session Code SS200

Room TBD

Session

The fire safety session will focus on current developments in the fields of vehicle fire science, statistics, risks, assessment and mitigation. Papers addressing vehicle design, live-fire tests and fire investigation issues applicable to traditional, electric and alternatively fueled vehicles will be presented.

Organizers - Brad Galgoci, Manoj Modi, General Motors LLC

Time	Paper No.	Title
	2021-01-0847	Firefighting of Li-Ion Traction Batteries - An Update
		Markus Egelhaaf, Peter Ruecker, DEKRA Automobil GmbH; Tim Heyne, Georg-August University of Göttingen

Planned by Fire Safety Committee / Automobile Body, Chassis, Safety, and Structures Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:50 PM

Tuesday, April 13

On-Demand: Automotive Lighting Technology

Session Code SS300

Room TBD Session

These papers highlight the interaction of driver vision - which is itself characterized by complexity, flexibility, and high levels of performance—with ever more sophisticated vision technologies to support driver vision. In particular, LED technology continued to advance in the past year, leading to broader lighting applications. Topics covered include lighting design strategy, lighting thermal management, driver fields of view, and characteristics of camera/display systems.

Organizers - Joseph Jaklic, Osram; Jianzhong Jiao, JZJ Consulting

Time	Paper No.	Title
	2021-01-0848	A Mathematical Description of Water Vapor Mass Transfer for a Vented Automotive Lamp Joseph Bielecki, Thomas Poorman, Chin-Jung Chen, North American Lighting, Inc.
	2021-01-0849	Analysis of Human Intra- and Interpersonal Aiming Accuracy of Cutoff Lines Using Different Adjustment Methods Christian Hinterwaelder, Michael Hamm, Audi AG
	2021-01-0850	A Development of the Driver IC in LED Rear Combination Lamp for Circuit Standardization Choong Seob Park, Hyundai Motor Company
	2021-01-0852	Investigation of the Impairment on Road Traffic through Animation and Sequential Activation Michael Hamm, Christian Hinterwaelder, Jonas Kobbert, Audi AG

Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Human Factors in Driver Vision and Lighting

Session Code SS301

Room TBD Session

Driver vision continues to be a critical aspect of overall driver performance, and the extreme variations in lighting that are encountered within normal driving conditions are perhaps the most fundamental influence on driver vision. This session covers innovative methods for evaluation of how well drivers can see under a wide range of natural conditions.

Organizers - Michael Flannagan, Univ. of Michigan-Ann Arbor

Time	Paper No.	Title
	2021-01-0854	Video Based Simulation of Daytime and Nighttime Rain Affecting Driver Visibility William T. Neale, James Marr, David Hessel, Robert Gillihan, Kineticorp LLC

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:50 PM

Time	Paper No.	Title
	2021-01-0856	Visualization of Driver and Pedestrian Visibility in Virtual Reality Environments
		William T. Neale, Toby Terpstra, Nathan Mckelvey, Tomas Owens, Kineticorp LLC

Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Human Factors in Driving and Automotive Telematics

Session Code SS302

Room TBD Session

As information and entertainment to and from the vehicle (Telematics) become more prolific it is critical to increase our understanding of how the driver understands and uses Telematics functions. Equally critical is how those functions impact the driver. This session will address those issues.

Organizers - Derek F. Fraser, General Motors; Kristin Kolodge, JD Power And Associates; Shantha Kumari Rajendran, General Motors Canada, Ltd.; Daniel Selke, Mercedes-Benz USA LLC

Time	Paper No.	Title
	2021-01-0861	Vehicle Automation Emergency Scenario: Using a Driving Simulator to Assess the Impact of Hand and Foot Placement on Reaction Time
		Helen S. Loeb, Children's Hospital of Philadelphia; Elizabeth Vo-Phamhi, University of Pennsylvania; Thomas Seacrist, Jalaj Maheshwari, Children's Hospital of Philadelphia; Christopher Yang, Drexel University

Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Human Factors in Seating Comfort

Session Code SS303

Room TBD Session

Designing vehicles with good ergonomics is one of the many factors needed to achieve high customer satisfaction. A basic source for comfort (or discomfort) lies in the vehicle's seats. To design for seat comfort requires knowledge of the size of the driver, the structure of the seat, the position of the seat in the vehicle and the trip duration. Papers offers in this session could include topics such as seat back angle, vehicle packaging and trip duration.

Organizers - Henry Hojnacki, Woodbridge Group; Bonita Thomas, General Motors

Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Active and Automated Driving System Safety

Session Code SS400

Room TBD Session

This session will focus on how Advanced Driver Assistance Systems, Active Safety and Automated Driving Systems can yield significant safety benefits from the deployment of existing and proposed systems in the fleet. Topics will include the technologies used in these systems, field effectiveness assessment, safety benefits for projected systems, driver state monitoring, regulatory testing, consumer

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:50 PM

acceptance, market demand for these systems, and the performance of onboard sensors and vision systems in active and automated driving safety systems. Systems of interest include, but are not limited to, automatic emergency braking, automatic emergency steering, forward collision warning, lane departure warning, lane keeping assist, left turn assist, blind spot monitoring, and detection / avoidance of vulnerable road users.

Organizers - Clay Gabler, Virginia Tech.; John M. Scanlon, Waymo; Rini Sherony, Toyota Motor Corp.; Grace C. Wusk

Time	Paper No.	Title
	2021-01-0864	Lateral Controllability for Automated Driving (SAE Level 2 and Level 3 Automated Driving Systems) Neil Garbacik, Constantine Mastory, Hung Nguyen, Shashikant Yadav, FCA US LLC; Robert Llaneras, Robert McCall, Virginia Tech Transportation Institute
	2021-01-0865	A Simulation Tool for Virtual Validation and Verification of Advanced Driver Assistance Systems Punit Tulpule, Shawn Midlam-Mohler, Aditya Karumanchi, Yishen Jin, Ohio State University
	2021-01-0866	Revealing Right-Turn Behavior of Human Drivers as a Model for Autonomous Vehicles Abtine Tavassoli, Danielle King, Christodoulos Xiouris, David Krauss, Exponent, Inc.
	2021-01-0867	Road-Shoulder Scanning Using Multi-Sensor Kalman Filter for Minimum Risk Maneuver Guoguang Zhang, Tanto Sugiarto, Pardis Khayyer, Aptiv
	2021-01-0868	Evaluation of Operational Safety Assessment (OSA) Metrics for Automated Vehicles in Simulation Maria Soledad Elli, Intel Corp.; Jeffrey Wishart, Exponent Inc.; Steven Como, Siddhaarthan Dhakshinamoorthy, Arizona State University; Jack Weast, Intel Corp.
	2021-01-0869	Effectiveness of Advanced Driver Assistance Systems in Preventing System-Relevant Crashes Rebecca Spicer, Amin Vahabghaie, Dennis Murakhovsky, George Bahouth, Becca Drayer, Impact Research, LLC; Schuyler St. Lawrence, Toyota Motor North America Inc.
	2021-01-0870	Automated Test Case Generation and Virtual Assessment Framework for UN Regulation on Automated Lane Keeping Systems Jianbo Tao, Florian Klueck, Hermann Felbinger, Mihai Nica, Franz Zieher, Christoph Wolf, AVL LIST GmbH; Cheng Wang, Geely Automobile Research Institute
	2021-01-0871	Predictive long-horizon collision avoidance logic for Autonomous Vehicles
	ORAL ONLY	
		Karina Meneses Cime, Ohio State Univ.; Archak Mittal, Ford Motor Company; James Fishelson, Ford Motor Co
	2021-01-0872	Crash Factor Analysis in Intersection-Related Crashes Using SHRP 2 Naturalistic Driving Study Data Bingrui Jia, Dennis Guenther, Ohio State University; Gary Heydinger, SEA Ltd.
	2021-01-0873	A Methodology for Threat Assessment in Cut-in Vehicle Scenarios SeHwan Kim, Ohio State University; Junmin Wang, University of Texas at Austin; Kamel Salaani, Sughosh Rao, Transportation Research Center; Gary Heydinger, Dennis Guenther, Ohio State University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:50 PM

Time	Paper No.	Title
	2021-01-0874	Do Driver Characteristics and Crash Conditions Modify the Effectiveness of Automatic Emergency Braking? Rebecca Spicer, Amin Vahabaghiaie, Dennis Murakhovsky, Impact Research, LLC; Schuyler St. Lawrence, Toyota Motor North America Inc; Becca Drayer, George Bahouth, Impact Research LLC
	2021-01-0875	To Err Is Human: The Role of Human Derived Safety Metrics in an Age of Automated Vehicles Jack Weast, Maria Elli, Ignacio Alvarez, Intel Corp
	ORAL ONLY	Current Activities and Future Plans of the V&V Task Force of the SAE On-Road Automated Driving Committee Jeffrey Wishart, Exponent Inc.

Tuesday, April 13

On-Demand: Occupant Protection: Accident Reconstruction

Session Code SS500

Room TBD

Session

We will be discussing sources of evidence that are not common knowledge in the broader accident reconstruction community but can be used to reconstruct an incident. We will be drawing from authors that have revealed these evidence sources through diligent investigation and then published their findings. The session will be broken into three (3) keynote addresses followed by a Question and Response (Q&R) at the end.

Organizers - Christopher Armstrong, Mecanica Scientific Svcs Corp.; Alan Asay, Asay Engineering; Dean Beaumont, TRL; Jarrod Carter, Origin Forensics LLC; Neal Carter, Luminous Forensics LLC; Edward Fatzinger, Momentum Engineering Corp.

Time	Paper No.	Title
	2021-01-0879	Stationary and Moving Camera Video Analysis Compared to Known Reference System Daniel Simacek, Jose Tovar, Nicholas Famiglietti, Vladimir Shkolkin, Ryan Hoang, Momentum Engineering Corp.
	2021-01-0880	Vehicle-Specific Headlamp Mapping for Nighttime Visibility Charles Funk, Karla Petroskey, Steve Arndt, Adriano Voza, Explico Engineering Co.
	2021-01-0881	Pedestrian Impact Analysis of Side-Swipe and Minor Overlap Conditions William T. Neale, David Danaher, Andrew Donaldson, Tegan Smith, Kineticorp LLC
	2021-01-0883	The Accuracy of Vehicle Modeling When Using an Inversely Calibrated Camera in PhotoModeler Joseph Neal, Explico Engineering Co.; Charles Funk, David Sproule, Explico Engineering Co
	2021-01-0885	Testing and Analysis of Lane Departure Warning and Lane Keeping Assist System Response

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:50 PM

Time	Paper No.	Title
		Benjamin Nguyen, Nicholas Famiglietti, Omar Khan, Ryan Hoang, Omair Siddiqui, Jon Landerville, Momentum Engineering Corp.
	2021-01-0886	An Optimized Method for Mapping Headlamp Illumination Patterns Charles Funk, Adriano Voza, Karla Petroskey, Explico Engineering Co.
	2021-01-0887	Speed Analysis from Video: A Method for Determining a Range in the Calculations Gray Beauchamp, David Pentecost, Daniel Koch, Alireza Hashemian, James Marr, Rheana Cordero, Kineticcorp LLC
	2021-01-0889	Typical Acceleration Profiles for Left-Turn Maneuvers Based on SHRP2 Naturalistic Driving Data Thomas I. Flynn, Arianna J. McAllister, Craig Wilkinson, Gunter P. Siegmund, MEA Forensic Engineers & Scientists
	2021-01-0890	Factors that Influence Drivers' Responses to Slower-Moving or Stopped Lead Vehicles Jeffrey Muttart, Crash Safety Research Center, LLC; Michael Kuzel, 4M Consulting Group, LLC; Swaroop Dinakar, Suntasy Gernhard - Macha, Darlene E. Edewaard, Stephanie Appow, Connor Dickson, Crash Safety Research Center, LLC
	2021-01-0892	Reconstructing Vehicle and Occupant Motion from EDR Data in High Yaw Velocity Crashes Gregory C. Smith, Collision Safety Engineering LC
	2021-01-0894	Performance of the Ford Pre-Collision Assist with Automatic Emergency Braking System in Instrumented Tests Wesley Vandiver, Collision Forensics, Inc.; Robert Anderson, Biomechanics Analysis
	2021-01-0896	Pycrash: An Open-Source Tool for Accident Reconstruction Joe Cormier, James Funk, Biocore LLC; Gray Beauchamp, David Pentecost, Kineticcorp LLC
	2021-01-0898	Drivers' Responses to Lead Vehicles: Thresholds for Triggering an Emergency Response, Age Differences, Crash Risks, and Influence of Secondary Task Engagement Jeffrey Muttart, Swaroop Dinakar, Darlene Edewaard, Crash Safety Research
	2021-01-0899	The Effect of Using the Same Tire Friction for Both Vehicles in Impact Speed Reconstructions Bradley E. Heinrichs, Dwayne Toscano, MEA Forensic Engineers & Scientists

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00681 and SUB-Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:50 PM

Tuesday, April 13

On-Demand: Occupant Protection: Biomechanics

Session Code SS501

Room TBD Session

The Biomechanics session presents new research on automotive occupant kinematics, human injury biomechanics, and human tolerance in an automotive environment. This includes new methodologies in the study of human injury, studies of human interaction with occupant protection systems, technological advances in physical and virtual anthropomorphic test devices, and other experimental, analytical and modeling studies on the biomechanics of human injury.

Organizers - Devon Albert, Virginia Tech.; Kerry Danelson, Wake Forest Univ. School of Medicine; Jacob Fisher, Exponent Inc.; Warren Hardy, Virginia Tech.; Elizabeth McNeil, Walter Reed Army Inst. Res.

Time	Paper No.	Title
	2021-01-0900	Incidence and Mechanisms of Head, Cervical Spine, Lumbar Spine, and Lower Extremity Injuries for Occupants in Low- to Moderate-Speed Rear-End Collisions M. Davis, C. Mkandawire, T. Brown, S. Pasquesi, Exponent Inc
	2021-01-0902	Incidence and Mechanism of Head, Cervical Spine, Lumbar Spine, and Lower Extremity Injuries for Occupants in Low- to Moderate-Speed Frontal Collisions M. Davis, C. Mkandawire, T. Brown, S. Pasquesi, Exponent Inc

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Occupant Protection: Event Data Recorders (EDR)

Session Code SS502

Room TBD Session

This session includes the latest research on Event Data Recorders (EDRs) equipped in passenger cars, light trucks, and commercial vehicles (heavy trucks and motorcoaches). Emphasis is placed on the application, interpretation and use of EDRs in the investigation of motor vehicle crashes.

Organizers - David Plant, D P Plant & Associates; John Sprague; John C. Steiner, Mecanica Scientific Svcs Corp.; James White, Exponent Inc.; Craig Wilkinson, MEA Forensic Engineers & Scientists

Time	Paper No.	Title
	2021-01-0903	Analysis of Vehicle GPS and Derived Speed Data from Ford SYNC Generation 3, Version 2 Systems Acquired with Berla iVe Wesley Vandiver, Collision Forensics, Inc.; Robert Anderson, Biomechanics Analysis
	2021-01-0904	Study of the Measurement of Generation 2 Toyota Event Data Recorders in Low-Speed Side Impacts Scott Swinford, Brian Jones, Justin Brink, American Bio Engineers; Christopher Furbish, Judson Welcher, Biomechanical Research & Testing; Robert Anderson, Biomechanics Analysis

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:51 PM

Time	Paper No.	Title
	2021-01-0905	Analysis of Crash Data from a 2012 Hyundai Genesis Coupe Event Data Recorder Wesley Vandiver, Collision Forensics, Inc.; Robert Anderson, Biomechanics Analysis
	2021-01-0906	Analysis of Vehicle GPS and Derived Speed Data from BMW NBT Evo Systems Acquired with Berla iVe Wesley Vandiver, Collision Forensics, Inc.; Robert Anderson, Biomechanics Analysis
	2021-01-0907	Validation of EEPROM Chip Removal and Reinstallation for Retrieval of Electronic Crash Data - Destructive and Non-Destructive Methods Jason P. Zeitler, Jacob Palmer, Connor Smith, Luminous Forensics
	2021-01-0908	Accuracy and Validation of Geotab GPS Fleet Tracking Devices Roberto C. Morales, Jason Gamboa, Benjamin Nguyen, Omair Siddiqui, Jeffrey Bonsall, Momentum Engineering Corp.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00682 and SUB-Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Occupant Protection: Integrated Safety Systems

Session Code SS503

Room TBD

Session

This session calls for abstracts/papers covering all aspects of integrated active and passive safety systems for enhancing occupant/pedestrian safety in motor-vehicle crashes. Topics include, but are not limited to: Testing, modeling and optimization methods for integrated safety systems; Effects of driver assist and crash avoidance technologies on occupant protection; Occupant-state technologies detecting driver distraction, drowsiness, drunk driving, etc.; Integrated safety designs toward highly automated vehicles; Restraint and vehicle structure designs adapting to active safety features; and Integrated sensing algorithms or systems.

Organizers - Clifford Chou, Wayne State University; Francis S. Gayzik, Wake Forest Univ. School of Medicine; Jingwen Hu, Univ. of Michigan-Ann Arbor; Lingxi Li, Indiana Univ. Purdue Univ. Indianapolis

Time	Paper No.	Title
	2021-01-0909	Prediction of Driver Drowsiness Level Using Recurrent Neural Networks and Multi-Time-Scale Fusion Xunfei Zhou, Subrata Kundu, Hitachi America, Ltd.
	2021-01-0910	Prediction of Road Slope Ahead of Vehicles Based on Data Fusion and Data Mining Meng Sun, Wuhan University of Technology; Gangfeng Tan, Suizhou-WUT Industry Research Institute; Li Liu, Zhongpeng Tian, Lingtao Chen, Wuhan University of Technology
	2021-01-0911	Path Planning Algorithm of Automatic Perpendicular Parking in Constrained Parking Space Fei Ye, Hui Lu, Cheng Qi, SAIC Motor Passenger Vehicle Company

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00682, and also

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:51 PM

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Occupant Protection: Occupant Restraints (Air Bags, Seat Belts, Knee Bolsters, Child Seats, etc.)

Session Code SS504

Room TBD

Session

The Occupant Restraints Session invites papers that document new research on the restraint topics of airbags, seat belts, inflatable bolsters/seat belts, knee bolsters, Child Restraint Systems (CRS) and other related areas. These papers could include several of the following: technology description, occupant performance considerations, field data studies, development/validation methodology / results, CAE/Finite Element methods/results, packaging, and implementation / performance challenges.

Organizers - Aditya Belwadi, Children's Hospital of Philadelphia; Julie Mansfield, Ohio State University; Scott Thomas, General Motors LLC; Chris A. Van Ee, Design Research Engineering

Time	Paper No.	Title
	2021-01-0912	The Role of Seat Belt Restraint System Components in Rear-End Collisions Megan Toney-Bolger, Jeffrey Croteau, Alan Dibb, Exponent Inc; Paul Weber, Charles Stankewich, William Van Arsdell, Engineering Principles LLC
	2021-01-0913	Field Data Study of the Effect of Knee Airbags on Lower Extremity Injury in Frontal Crashes Michelle A. Schafman, Michael Meitzner, Derek Baker, MaryAnn Beebe, Jill Bentz, Hamed Sadrnia, General Motors LLC; Julie Kleinert, Stewart Wang, University of Michigan
	2021-01-0914	Effect of ATD Size, Vehicle Interior and Restraint Misuse on Second-Row Occupant Kinematics in Frontal Sled Tests Chantal Parenteau, Exponent Inc.; Roger Burnett, Ford Motor Company; Sri Sai Kameshwari Danthurthi, Christopher Andreovich, Exponent Inc.
	2021-01-0915	Child Restraint Systems (CRS) with Minor Installation Incompatibilities in Far Side Impacts Julie Mansfield, Ohio State University; HyunJung Kwon, Transportation Research Center Inc.; Yun Seok Kang, Ohio State University
	ORAL ONLY	A Novel Liquid Nanofoam Load Limiter with Ultra-Fast Response and High Tunability Mingzhe Li, Michigan State University; Robert McCoy, Dean Jaradi, Ford Motor Company; Weiyi Lu, Michigan State University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00682, SUB-TP-

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Occupant Protection: Pedestrian and Cyclist Safety

Session Code SS505

Room TBD

Session

The pedestrian and cyclist safety session focuses on research and development efforts aimed at protecting pedestrians and cyclists in the event of vehicle impact. Papers on injury biomechanics, vehicle design, dummy and impactor development, computational modeling, regulations and consumer assessment testing, active safety and collision avoidance are accepted for this session.

Organizers - Jason Forman, Jason Kerrigan, Univ. of Virginia; Rebecca Mueller, Insurance Institute for Highway Safety; Bingbing Nie, Tsinghua Univ.; David Poulard, C.E.E.S.A.R.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:51 PM

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Occupant Protection: Rear Impact, Side Impact and Rollover

Session Code SS506

Room TBD

Session

This session will have presentations that address advancing the science of occupant safety in vehicle rear impact, side impact, and rollover collisions.

Organizers - Jarrod Carter, Origin Forensics LLC; Jason Jenkins, Rakshit Ramachandra, Transportation Research Center Inc.

Time	Paper No.	Title
	2021-01-0916	Seat Performance in Rear Impacts: Seatback Deflection and Energy Dissipation Samuel White, Collision Research & Analysis Inc; Chantal Parenteau, Exponent Inc.; Roger Burnett, Ford Motor Company
	2021-01-0917	Dual-Recliner ABTS Seats in Severe Rear Sled Testswith the 5th, 50th and 95th Hybrid III David Viano, ProBiomechanics LLC; Roger Burnett, Ford Motor Company; Samuel White, Gregory Stephens, Collision Research & Analysis Inc; Chantal Parenteau, Exponent Inc.
	2021-01-0918	Effect of Occupant Weight and Initial Position in Low-to-High Speed Rear Sled Tests with Older and Modern Seats Chantal Parenteau, Exponent Inc.; Roger Burnett, Ford Motor Company; David Viano, ProBiomechanics Inc.; Samuel White, Collision Research & Analysis Inc
	2021-01-0919	Assessment of the 50th Hybrid III Responses in Blunt Rear Impacts to the Torso Jennifer L. Buckman, Ford Motor Company; Chantal S. Parenteau, Exponent Inc.; Roger Burnett, Ford Motor Company; David C. Viano, ProBiomechanics LLC; Christopher Andreovich, Exponent Inc.
	2021-01-0920	Effect of Seat Back Restriction on Head, Neck and Torso Responses of Front Seat Occupants When Subjected to a Moderate Speed Rear-Impact Rakshit Ramachandra, Vikram Pradhan, Yun Seok Kang, The Ohio State University; Russell Davidson, Mladen Humer, Jianmin Zhang, Lear Corporation

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00682, SUB-TP-
Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Occupant Protection: Safety Test and Simulation Methods and Applications

Session Code SS508

Room TBD

Session

This session calls for papers dealing with advances of safety-related state-of-the-art experimental and computer modeling methods towards (1) occupant protection in all impact test modes at full/subsystem/component levels, and weight reductions, and (2) autonomous vehicles. Topics dealing with designs of new vehicle concepts; new vehicle products; occupant counter-measures development; applications of advanced CAE and optimization techniques; characterization and utilization of light-weight materials, and active safety test methods are also welcome.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:51 PM

Organizers - Clifford Chou, Wayne State University; Anindya Deb, Indian Institute of Science; Binhui Jiang, Hunan University; P. Miller, MGA Research Corp.; Feng Zhu, Johns Hopkins Univ.

Time	Paper No.	Title
	2021-01-0921	Machine Learning Based Design of Open Cell Foams for Crash Energy Absorption - A Pilot Study Feng Zhu, Runzhou Zhou, Johns Hopkins University; Zaihan Yang, Suffolk University
	2021-01-0922	Development and Calibration of the Large Omnidirectional Child ATD Head Finite Element Model Divya Reddy Katangoori, Peiyu Yang, Scott Noll, Ohio State University; Jason Stammen, NHTSA; Brian Suntay, Michael Carlson, Transportation Research Center Inc.; Kevin Moorhouse, NHTSA
	2021-01-0923	A Data-Based Modeling Approach for the Prediction of Front Impact (NCAP) Safety Performance of a Passenger Vehicle Ragav Krishna, Anindya Deb, Sanketh Ramachandra, Indian Institute of Science; Clifford Chou, Wayne State University
	2021-01-0925	Crashworthiness Optimization of Hydraulic Excavator Cab Roof Rail and Safety Prediction: Finite Element Analysis and Experimental Validation Chao Ma, Zhe Liu, Yuexing Duan, Yunkai Gao, Tongji University
	ORAL ONLY	A new data mining method for the crashworthiness design of a 3D S-shaped beam with uncertainty in design variables Xianping Du, Embry-Riddle Aeronautical Univ.; Hongyi Xu, University of Connecticut; Feng Zhu, Johns Hopkins University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00682, and also Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Occupant Protection: Structural Crashworthiness and Occupant Safety

Session Code SS510

Room TBD

Session

Presentations will cover critical issues in advancing the science of occupant safety in vehicle collisions.

Organizers - Saeed Barbat, Jamel Belwafa, Ford Motor Company

Time	Paper No.	Title
	2021-01-0926	Applications of a DOE-Based MDO in Full Vehicle Crash Safety and NVH Design Fanlin Zeng, Wei Li, Hao Zheng, Xuanquan Peng, Jie Zheng, GAC R&D Center
	2021-01-0927	Seat Design Parameters and Its Influence on Performance Metrics of FMVSS 202a Back Set Retention Test Ravi Purnoo Munuswamy, Ford Motor Co., Ltd.; Ramasubba Reddy Thamnapudil, HCL Technologies, Ltd.; Seenuvasan Shanmugam, HCL Technologies Ltd.; Arunachalam Muthupandian, Prabhu Holur, Ford Motor

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:51 PM

Time	Paper No.	Title Co., Ltd.
	2021-01-0928	The Correction Scheme of Enhanced Response Surface Method to Support Full Vehicle MDO Design Jun Ouyang, Yi-yuan Xiao, Chang Shu, Dong Su, GAC R&D Center
	ORAL ONLY	Crashworthiness of Liquid Nanofoam Filled Thin-Walled Tubes Mingzhe Li, Michigan State University; Saeed Barbat, Ridha Baccouche, Jamel Belwafa, Ford Motor Company; Weiyi Lu, Michigan State University
	ORAL ONLY	Enhanced Crashworthiness of Defective Thin-Walled Tubes by Liquid Nanofoam Filler Mingzhe Li, Fuming Yang, Weiyi Lu, Michigan State University
	ORAL ONLY	Virtual Validation & Pre-Certification of Commercial Vehicle Seats for FMVSS 210 Ramesh Dwarampudi, Megha Seshadri, ESI Group
	ORAL ONLY	Beyond standard Crash Tests of four Electric Vehicles and comparison of Rescue Methods Markus Egelhaaf, Peter Ruecker, DEKRA Automobil GmbH; Tim Heyne, Georg-August-University Göttingen

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00682, and also Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Steering and Suspension Technology Symposium: Suspension Topics

Session Code SS600

Room TBD Session

The purpose of this session is to provide a forum for presentations on suspension related topics as it applies to ground vehicles. Papers for this session should address new approaches as well as advances in application of suspension and related technologies.

Organizers - Robert Ackley, Ford Motor Company

Time	Paper No.	Title
	2021-01-0929	Multi-Link Torsion Axle (MLTA) - A New Rear Axle Concept for Battery Electric Vehicles Tobias Niessing, Jens Olschewski, Xiangfan Fang, University of Siegen
	2021-01-0933	Suspension Optimization Based on Evolutionary Algorithms for Four-Wheel Drive and Four-Wheel Steered Vehicles Manuel Schwartz, Lukas Luithle, Sören Hohmann, Karlsruhe Institute of Technology

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:51 PM

Time	Paper No.	Title
	ORAL ONLY	The Optimization of Automotive Suspension and Steering System For Kinematic and Compliance Analysis Considering Multiload Cases Design Requirements
		Gurdeep Singh Pahwa, Mahindra Automotive North America; Apurva Gokhale, Esteco North America Inc.

Planned by Steering and Suspension Committee / Automobile Body, Chassis, Safety, and Structures

Tuesday, April 13

On-Demand: Steering and Suspension Technology Symposium: Steering Topics

Session Code SS600

Room TBD Session

The purpose of this session is to provide a forum for presentations on steering related topics as it applies to ground vehicles. Papers for this session should address new approaches in the design, control, testing and simulation of steering systems, as well as integration of the aforementioned in to drivers assistance and autonomous vehicle systems.

Organizers - Timothy Drotar, Ford Motor Company

Time	Paper No.	Title
	2021-01-0930	A Fail-Operational Assessment for Controllability and Comfortability of Steer-by-Wire Systems Taeyun KOO, Dohwan Kim, Seongho Ham, Seokil Hong, Yadunandan Kasu, Kyung Lae Kim, Mando Corp.; Ramakrishnan Rajavenkitasubramony, Halla Mechatronics Tech Center
	2021-01-0931	A Solution for a Fail-Operational Control of Steer-by-Wire System without Mechanical Backup Connection Hossam Almasri, Brian Siskoy, General Motors LLC; Scott Kloess, Kloess Engineering LLC; Ibrahim Badiru, General Motors LLC; Silviu Popescu, General Motors Canada, Ltd.
	2021-01-0932	Impact of Electric Motor Drive Dynamics on Performance and Stability of Electric Power Steering Systems Prerit Pramod, Priyanka Mendon, Chethan Narayanaswamy, Fischer Klein, Nexteer Automotive Corporation

Planned by Steering and Suspension Committee / Automobile Body, Chassis, Safety, and Structures

Tuesday, April 13

On-Demand: Tire and Wheel Technology

Session Code SS700

Room TBD Session

The aim of this session is to provide a forum to bring together researchers do discuss and disseminate the research on tire and wheel technology. Examples of topics to this session include (but are not limited to) nonlinear behavior of tires and wheels, static/dynamic stress analysis, nonlinear material modeling, contact stress, impact, noise, vibration, traction, hydroplaning, effect of tires on vehicle performance, rolling resistance, and durability.

Organizers - Volker Hildebrand, Continental Tire North America Inc.; David Howland, General Motors LLC; Neel Mani, Bridgestone Americas Inc.; Timothy A. Marantis, Bridgestone Americas Tire Operations LLC; William Schnaidt, General Motors LLC; Jan Terziyski, Nexen Tire Corp.; Peter

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:51 PM

Thomas Tkacik, Univ. of North Carolina Charlotte

Time	Paper No.	Title
	2021-01-0934	Effect of Steel Wheel Disc Hat Profile and Vent Hole Shape on Fatigue Life in Cornering Test Sarath Chand Myneni, Mahindra & Mahindra, Ltd.; Durga Prasad Mohapatra, Suhas Kangde, Mahindra & Mahindra Ltd.
	2021-01-0935	Evaluation of Accurate Tire Models for Vehicle Handling and Ride Comfort Simulations Lingadalu Ganesh, Balaramakrishna N, Mahindra & Mahindra, Ltd.
	2021-01-0936	An Approach for Evaluating Rolling Resistance in Kart Racing Tires Philipp Eder, University of Technology Graz; Thomas Gerstorfer, U.A.S. Joanneum; Marcel Schander, Reifenwerk Heidenau GmbH&Co.KG; Cornelia Lex, Graz University of Technology
	2021-01-0937	Efficient Conceptual Tire Model and Parameter Identification for NVH Applications Domenico Minervini, Marc Brughmans, Siemens Digital Industries Software
	2021-01-0938	Tire Cost of Ownership Relative to Vehicle Energy Cost, Route, and Tread Depth Brian D. Steenwyk, Erik F. Knuth, Neel Mani, Prashanta Gautam, Bridgestone Americas Inc.

Planned by Tire and Wheel Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Vehicle Aerodynamics: Wheel & Tire Aerodynamics

Session Code SS800

Room TBD

Session

Paper offers on the following topics are welcome: test facilities, unsteady aerodynamics, fuel economy, cooling airflow, fundamental aerodynamics and aerodynamics development.

Organizers - Chen Fu, Chip Ganassi Racing; Adrian P. Gaylard, Jaguar Land Rover; Arturo Guzman, FCA US LLC; Kurt Zielinski, Honda R & D Americas Inc.; Timo Kuthada, FKFS

Time	Paper No.	Title
	2021-01-0956	Blockage Ratio and Reynolds Number Effects on the CFD Prediction of Flow over an Isolated Tire Model Ponnappa Meederira, Gregory Fadler, FCA US LLC; Mesbah Uddin, University of North Carolina
	2021-01-0961	Effects of Domain Boundary Conditions on the CFD Prediction of Flow over an Isolated Tire Model Ponnappa Meederira, Gregory Fadler, FCA US LLC; Mesbah Uddin, University of North Carolina

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:51 PM

Time	Paper No.	Title
	ORAL ONLY	Research on The Cooling of Drum Brake for Commercial Vehicle
		ling tao chen

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

Tuesday, April 13

On-Demand: Vehicle Aerodynamics: Platooning

Session Code SS800

Room TBD Session

Paper offers on the following topics are welcome: test facilities, unsteady aerodynamics, fuel economy, cooling airflow, fundamental aerodynamics and aerodynamics development. This session relates specifically to the subject of vehicle platooning and the effects on aerodynamics. Platooning is when multiple vehicles interact on the road, often in a manner favorable to aerodynamic drag.

Organizers - Edward Duell, Jacobs; Todd Lounsberry, FCA US LLC; Sivapalan Senthoooran, Dassault Systemes; Mesbah Uddin, Univ. of North Carolina; Kurt Zielinski, Honda R & D Americas Inc.; Timo Kuthada, FKFS

Time	Paper No.	Title
	2021-01-0941	Track-Based Aerodynamic Testing of a Two-Truck Platoon Brian McAuliffe, National Research Council Canada; Patrick Smith, Auburn University; Arash Raeesi, National Research Council Canada; Mark Hoffman, David M. Bevly, Auburn University
	2021-01-0942	Experimental Investigation of the Aerodynamic Benefits of Truck Platooning: Two- and Four-Vehicle Platoons Jason Ortega, Kambiz Salari, Lawrence Livermore National Laboratory
	2021-01-0949	Near-to-Far Wake Characteristics of Road Vehicles Part 2: Influence of Cross Winds and Free-Stream Turbulence Brian McAuliffe, National Research Council Canada; Bhargav Sowmianarayanan, Dassault Systemes; Hali Barber, National Research Council Canada
	2021-01-0952	An Investigation of Aerodynamic Characteristics of Three Bluff Bodies in Close Longitudinal Proximity - Part 2 Geoffrey Le Good, Matthew Self, Peter Boardman, Max Resnick, Coventry University
	2021-01-0953	Analysis of the Unsteady Wakes of Heavy Trucks in Platoon Formation and Their Potential Influence on Energy Savings Karen Ficenec, National Renewable Energy Laboratory; Brian McAuliffe, National Research Council Canada; Michael Lammert, Jacob Holden, National Renewable Energy Laboratory
	2021-01-0957	Near-to-Far Wake Characteristics of Road Vehicles Part 1: Influence of Ground Motion and Vehicle Shape Brian McAuliffe, National Research Council Canada; Bhargav Sowmianarayanan, Dassault Systemes; Hali Barber, National Research Council Canada

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:51 PM

Time	Paper No.	Title
	2021-01-0959	Near-to-Far Wake Characteristics of Road Vehicles Part 3: Influence of Multi-Vehicle Interactions Brian McAuliffe, National Research Council Canada; Bhargav Sowmianarayanan, Dassault Systemes; Hali Barber, National Research Council Canada

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

Tuesday, April 13

On-Demand: Vehicle Aerodynamics: CFD Methods

Session Code SS800

Room TBD

Session

Paper offers on the following topics are welcome: test facilities, unsteady aerodynamics, fuel economy, cooling airflow, fundamental aerodynamics and aerodynamics development.

Organizers - Naethan Eagles, TotalSim LLC; Nicholas Oettle, Jaguar Land Rover; Taeyoung Han, General Motors LLC; Jonathan Jilesen, Dassault Systemes; Arpit Tiwari, Gamma Technologies LLC; Kurt Zielinski, Honda R & D Americas Inc.; Timo Kuthada, FKFS

Time	Paper No.	Title
	2021-01-0939	Experimental and Numerical Investigations on Time-Resolved Flow Field Data of a Full-Scale Open-Jet Automotive Wind Tunnel Jonas Sebald, Jan Reiss, Technical University of Munich; Marco Kiewat, AUDI AG; Thomas Indinger, Technical University of Munich
	2021-01-0944	Vehicle Aerodynamic Development Using a Novel Reduced Turn-Around Time Approach Yan Jiang, FAW-Volkswagen Automotive Co., Ltd.; Joaquin Gargoloff, Dassault Systemes Simulia Corp; Qiming Chi, FAW-Volkswagen Automotive Co., Ltd.; Richard Shock, Dassault Systemes Simulia Corp; Weiliang Xie, Dassault Systemes (Shanghai) Info Tech Co.
	2021-01-0946	Simulating Bonnet Flutter - Unsteady Aerodynamics and Its Structural Response Adrian P. Gaylard, Jaguar Land Rover; Joaquin Gargoloff, Jonathan Jilesen, Dassault Systemes; Jonathan Arata, Dassault Systemes SIMULIA
	2021-01-0960	Improvement for the Validation of the Aerodynamic Simulation and Wind Tunnel Test for the FAW-VW T-ROC Yan Jiang, Yuanxiao Chen, FAW-Volkswagen Automotive Co., Ltd.; Weiliang Xie, Dassault Systemes (Shanghai) Info Tech. Co.; Heinz Friz, Dassault Systemes
	2021-01-0965	On the Effects of Parallelization on the Flow Prediction around a Fastback DrivAer Model at Different Attitudes Adit Sunil Misar, Charles Bounds, Hamed Ahani, Muhammad Usman Zafar, Mesbah Uddin, University of North Carolina Charlotte

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:52 PM

Tuesday, April 13

On-Demand: Vehicle Aerodynamics: Fundamental Aerodynamics

Session Code SS800

Room TBD Session

Paper offers on the following topics are welcome: test facilities, unsteady aerodynamics, fuel economy, cooling airflow, fundamental aerodynamics and aerodynamics development.

Organizers - Gary Elfstrom, Ace Climatic Wind Tunnel; Mark Gleason; Bahram Khalighi, General Motors LLC; H. Robert (Bob) Welge; Kurt Zielinski, Honda R & D Americas Inc.; Timo Kuthada, FKFS

Time	Paper No.	Title
	2021-01-0943	New Results from the Evaluation of Drag Reduction Technologies for Light-Duty Vehicles Fenella de Souza, Arash Raeesi, National Research Council Canada; Marc Belzile, Transport Canada; Cheryl Caffrey, US EPA; Andreas Schmitt, Röchling Automotive
	2021-01-0954	A Wind Tunnel Study of the Windsor Body with a Streamlined Tail Jeff Howell, Max Varney, Eleanor Rajaratnam, Martin Passmore, Loughborough University
	2021-01-0962	Development of Aerodynamic Drag Reduction around Rear Wheel Hirotaka Higuchi, Hidekazu Hirabayashi, Tadashi Kondo, Toyota Motor Corporation
	2021-01-0963	Experimental and Numerical Investigation of a Full-Sized Aerodynamic Vehicle Model in Relation to Its Production Car Philipp Renz, Mercedes-Benz AG; Ewald Krämer, University of Stuttgart
	2021-01-0964	Numerical Investigations of Transient Wind Shear from Passing Vehicles near a Road Structure Hamid Rahai, Assma Begum, California State University-Long Beach

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

Tuesday, April 13

On-Demand: Vehicle Aerodynamics: Experimental Technologies & Correlation

Session Code SS800

Room TBD Session

Paper offers on the following topics are welcome: test facilities, unsteady aerodynamics, fuel economy, cooling airflow, fundamental aerodynamics and aerodynamics development.

Organizers - James T. McKillen, Honda R & D Americas Inc.; David Sims-Williams, Durham Univ.; Felix Wittmeier, FKFS; Kurt Zielinski, Honda R & D Americas Inc.; Timo Kuthada, FKFS

Time	Paper No.	Title
------	-----------	-------

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:52 PM

Time	Paper No.	Title
	2021-01-0940	Large-Scale Vehicle-Wake Characterization Using a Novel, Single-Camera Particle Tracking Technique Jianfeng Hou, Frieder Kaiser, Queen's University Kingston; Brian McAuliffe, National Research Council Canada; David Rival, Queen's University Kingston
	2021-01-0950	A Detailed Aerodynamics Investigation of Three Variants of the Generic Truck Utility Kevin Howard, Paul Norman, Ford Motor Company; Sudesh Woodiga; Neil Lewington, Ford Motor Co of Australia Ltd; Burkhard Hupertz, Ford Motor Company

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

Tuesday, April 13

On-Demand: Vehicle Dynamics, Stability and Control

Session Code SS900

Room TBD

Session

This session is focused on vehicle dynamics and controls using modeling and simulation, and experimental analysis of passenger cars, heavy trucks, and wheeled military vehicles. This session addresses active and passive safety systems affecting the yaw, pitch and roll of the vehicle; driving simulators and hardware-in-the-loop systems; suspension kinematics and compliance; steering dynamics, advanced active suspension technologies; and tire force and moment mechanics.

Organizers - Timothy Drotar, Ford Motor Company; W. Riley Garrott; Gary Heydinger, SEA, Ltd.; Bin Li, Aptiv PLC; Giampiero Mastinu, POLITECNICO DI MILANO; David Mikesell, Ohio Northern Univ.; M. Kamel Salaani, State of Ohio; Jian Jun Zhu, General Motors LLC

Time	Paper No.	Title
	2021-01-0966	Robust Control of Commercial Vehicle's Speed Using Disturbance Observer Kyungjoo Bang, Seunghyun Kim, Donghyuk KIM, Ilhwan KIM, Hyundai Motor Company
	2021-01-0967	Investigation of Different Parameter Based Control Strategies for Active Independent Front Steering (AIFS) System Mohab Bahnasy, Helwan University.; Walid Oraby, Helwan University (currently EAEAT); Mahmoud Atef Aly, Helwan University
	2021-01-0968	Front Loading Vehicle Dynamics Requirements during Basic Architecture Definition Using Virtual Simulation Visweswara Lenka., Baskar Anthonysamy, Balaramakrishna N, Mahindra & Mahindra, Ltd.
	2021-01-0969	Energy Efficiency of Distributed-Drive Articulated Vehicle by Differential Steering Yanhua Shen, Zixiang Liu, University of Science & Technology.Beijing
	2021-01-0970	Measured Vehicle Inertial Parameters - NHTSA's Data through August 2020 Scott Zagorski, Gary Heydinger, Jon Coyle, Mahendranauth Jebode, SEA, Ltd.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:52 PM

Time	Paper No.	Title
	2021-01-0971	<p>Coordinated Control Strategy of Electromagnetic and Regenerative-Friction Combined Braking for In-Wheel Motor Electric Vehicles</p> <p>Ren He, Jiangsu University</p>
	2021-01-0972	<p>Tire and Brake Interaction - A New Test Rig to Study Wheel Locking</p> <p>Carlo Cantoni, Brembo SpA; Massimiliano Gobbi, Giampiero Mastinu, Politecnico di Milano; Andrea Meschini, Brembo SpA; Stefano Vicchi, Politecnico di Milano</p>
	2021-01-0973	<p>Research on Braking Safety of Parallel Hybrid Electric Buses on Long Downhill Based on Gradient and Speed Change</p> <p>Xin Huang, Wuhan University of Technology; Jingning Tang, National AQSI Center for Dedicated Equipment; Haoyu Wang, Jiaming Feng, Chaoqi Zhu, Kailang Chen, Wuhan University of Technology</p>
	2021-01-0974	<p>Integrated Control of In-Wheel Motor and Electronic Limited Slip Differential for Lateral Stability and Maneuverability</p> <p>Hyunsoo Cha, Eunhyek Joa, Kwanwoo Park, Kyongsu Yi, Seoul National University; Jaeyong Park, Hyundai Motor Company</p>
	2021-01-0975	<p>A Passenger Car Brake Pedal Feel Analysis Model Based on Integrated Brake by Wire System</p> <p>Faguo Yin, South China University of Technology; Minghui Wang, Shandong Meichen Industry Group Co., Ltd; Yongfeng Jiang, Shandong Meichen Industry Group Co., Ltd.; Yingzi Kang, South China University of Technology</p>
	2021-01-0976	<p>Effects of Anti-Sway Bar Separation on the Handling Characteristics of a SUV</p> <p>Ashley Dunn, SEA, Ltd.; Dennis Guenther, Ohio State University; Michael Arnett, SEA, Ltd.</p>
	2021-01-0977	<p>A Research on Autonomous Vehicle Control in Track Beyond Its Limits of Handling</p> <p>Jaeyong Park, Hyundai Motor Company; Youngil Koh, Eunhyek Joa, Seoul National University</p>
	2021-01-0978	<p>Safety Speed Warning System for Tank Truck against Rollover</p> <p>Jiaming Feng, Gangfeng Tan, Meng Ye, Kailang Chen, Xin Huang, Wuhan University of Technology</p>
	2021-01-0979	<p>Experimental Study on Hydraulic Pressure Feedforward and Feedback PID Control of I-EHB System with Friction Disturbance</p> <p>Sijie Zhao, Wenlong Chu, Wen-Bin Shangguan, South China University of Technology</p>
	2021-01-0980	<p>Study on the Influence of Air Suspension Levelling Valve Charging and Discharging Characteristics on Heavy Truck Roll Stability</p> <p>Kang Yin, Yu Huang, Wenbin Shangguan, South China University of Technology; Ran Zhen, Minghui Wang, Yongfeng Jiang, Shandong Meichen Industry Group Co.Ltd.</p>
	ORAL ONLY	<p>On the development of an Extended Kalman Filter framework based on a Rational tyre model for vehicle sideslip estimation</p> <p>Basilio Lenzo, Sheffield Hallam University; Feliciano Di Biase, Francesco Timpone, Università di Napoli; Xudong Zhang, Beijing Institute of Technology; Ye Zhuang, Jilin University</p>

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:52 PM

Time	Paper No.	Title
	ORAL ONLY	Using Model-Based Design for Vehicle Dynamics Simulation
		Bennett Norley, Cooper Tire & Rubber Co.; Siddarth Kashyap Attravanam, Cooper Tire & Rubber Co

Planned by Vehicle Dynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Tuesday, April 13

On-Demand: Electric Vehicle Drivetrain Dynamics

Session Code SS901

Room TBD

Session

This session deals with the analytical and experimental studies of vehicles with electric drives or any non-conventional concepts that stretch the vehicle dynamics/mobility performance using intelligent technologies such as in-wheel motors, torque-vectoring controls, multi-wheel steer-by-wire, etc.

Organizers - Riccardo Groppo, Ideas & Motion; Valentin Ivanov, Technische Universitat Ilmenau

Time	Paper No.	Title
	2021-01-0981	Torque Ripples in Electric Vehicle Drive Quality in Open and Closed Loop Control Environments Hyung-Joo Hong, Xing Xing, Robert Morris, General Motors LLC
	2021-01-0982	Effect of Driveshaft Angle on Turning Noise in Electric Vehicles and Solution Development Approach Sandip Hazra, Tata Motors, Ltd.; Janardhan Reddy K, VIT Universtity
	2021-01-0983	Fail-Safe Study on Brake Blending Control Christoph Lehne, Klaus Augsburg, Valentin Ivanov, Vincenzo Ricciardi, Florian Büchner, Viktor Schreiber, Technische Universitat Ilmenau
	2021-01-0984	E-Mobility-Opportunities and Challenges of Integrated Corner Solutions Eric Armengaud, Stefan Eitzinger, Hannes Pirker, AVL LIST GmbH; Joze Buh, ELAPHE Propulsion Technologies; Sebastian Gramstat, Stefan Heimann, Audi AG; Chiara Chen, JAC-Italy Design Center S.r.l.; Valentin Ivanov, Marius Heydrich, Technische Universitat Ilmenau; Aldo Sorniotti, Patrick Gruber, Davide Tavernini, University of Surrey
	2021-01-0985	Three-Dimensional Design and Optimization of the Liquid Cooling System for the FITGEN E-Axle James H. Page, Michele De Gennaro, AIT Austrian Institute of Technology; Andreas Müller, Michael Kerschbaumer, Tobias Wellerdieck, BRUSA Elektronik AG
	ORAL ONLY	Electrical Axle Sizing for the Conversion of A Conventional Production Vehicle to A Prototype Battery Electric Vehicle Yucheng Liu, Mississippi State University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:52 PM

Time	Paper No.	Title
	ORAL ONLY	Modeling and Simulation of An Electric Vehicle with Independent Rear Motors to Estimate the Fuel Economy during EPA Drive Cycles Yucheng Liu, Mississippi State University
	ORAL ONLY	Performance Data of Zero and Near-Zero Emissions Vehicles and Equipment Tom Durbin, Kent Johnson, George Karavalakis, University of California Riverside

Planned by Vehicle Dynamics Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 14

Live: AD/ADAS Path Planning and Control

Session Code AE192

Room 1 Session 9:00 a.m.

This session targets topics related to automated vehicles motion planning and control with various levels of automation (SAE automation levels 1 to 5). Examples of such topics include, but are not limited to; behavioral planning, control techniques supporting active and passive safety and mobility systems, end to end and other machine learning supported planning and cooperative planning. The session content is of interest to robotics engineers, control engineers, connected and automated vehicles engineers as well as general public interested in automated vehicles motion planning and control. Learn more about the Chairpersons

Organizers - Amit Choudhury, Visteon Corp.; Samer Rajab, Lear Corporation

Chairperson - Amit Choudhury, Visteon Corp.; Samer Rajab, Lear Corporation

Time	Paper No.	Title
9:00 a.m.	2021-01-0094	Interactive Lane Change with Adaptive Vehicle Speed Hamzeh Alzu'bi, Elizabeth Taylor, Sherif Matta, Tom Tasky, FEV North America Inc.
9:30 a.m.	2021-01-0096	Time-Optimal Trajectory Planning for Multi-Vehicle Coordinated Left-Turn Condition at an Unsignalized Intersection Chen Chen, Lijun Qian, Bing Wu, Hefei University of Technology
10:00 a.m.	2021-01-0102	Speed Limiter Using Disturbance Observer Huiun Son, Kyuhwan Jo, Sangjoon Kim, Jinkyoom Cho, Sungbae Jeon, Hyundai Motor Co.

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:52 PM

Wednesday, April 14

Live: Engine-Fuel Co-Optimization - Panel Discussion

Session Code PFL293

Room 1 Session 11:00 a.m.

The goal of this panel is to discuss near-term and long-term opportunities and challenges related to co-optimizing the engine and fuel to provide an overall improved solution. Brief presentations will be made by representatives from national laboratories, fuels manufacturers, and engine manufacturers. The presentations will be followed by a panel discussion.

Organizers - Vincent Costanzo, Aramco Research Center; Scott Curran, ORNL; Justin Ketterer, General Motors LLC; Christopher Kolodziej, Argonne National Laboratory; Antowan Zyada, Hyundai Motor Group

Moderators - Vincent Costanzo, Aramco Research Center; Scott Curran, ORNL; Christopher Kolodziej, Argonne National Laboratory

Panelists - Stephen Ciatti, PACCAR Inc.; David Cleary, Aramco; Roger Cracknell, Shell; Robert McCormick, National Renewable Energy Laboratory; Jim Szybist, Oak Ridge National Laboratory; Philip Zoldak, Hyundai America Technical Center;

Time	Paper No.	Title
	ORAL ONLY	Learn More About the Panelists

Roger Cracknell, Shell; Robert McCormick, National Renewable Energy Laboratory; Jim Szybist, Oak Ridge National Laboratory; Antowan Zyada, Hyundai Motor Group; Philip Zoldak, Hyundai America Technical Center; Stephen Ciatti, PACCAR Inc.; David Cleary, Aramco

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

Wednesday, April 14

Live: Leadership Summit: Public-Private Partnerships: The Road to Smart Cities and Smart Transportation?

Session Code LS400

Room 1 Session 1:15 p.m.

In order to deploy innovations in technology and mobility that will truly transform cities and transportation to Smart Cities and Smart Transportation, we should envision and put to practice models of deployment. This panel, comprised of cutting-edge thinkers in the enterprise of transportation, cuts across public and private sectors and have breathed to life ideas in innovation. The central thesis of this conversation is that innovation cuts across technologies and into the enterprise of making cities and transportation truly smart. Each speaker has a unique perspective, and the sum of their views will give us insight into how to build a smart future. Sponsored by [Click here for additional recorded webcasts featuring subject matter experts addressing Urban Mobility from the perspective of municipalities, discrete product developers, OEMs and Tier Suppliers.](#) [Urban Mobility Series: Profitability vs. Societal Benefits](https://www.youtube.com/watch?v=JfECVq_9lI4&t=5s) [Urban Mobility Series: Smart City Planning Strategies](https://www.youtube.com/watch?v=OzMxQG0pIB4&t=6s) [Urban Mobility Series: The Future of Urban Mobility](https://www.youtube.com/watch?v=bxDGdcqJHdA) [Learn more about the Roundtable Participants](https://www.sae.org/servlets/techSession?REQUEST_TYPE=AUTHOR_BIO&saetkn=ERPTop4gdC&PROD_CD=21ANNUA-0004&PRESENTATION_TITLE=Learn+more+about+the+Roundtable+Participants&SCHED_NUM=)

Moderators - Jim Misener, Senior Director Product Management, Qualcomm Technologies Inc.

Panelists - Sanjay Aggarwal, American Tower Corporation; Sue Bai, Chief Engineer, Honda R&D Americas Inc.; Blaine Leonard, Utah - DOT; Trevor Pawl, Chief Mobility Officer, State of Michigan; Amanda Roraff, Ford Motor Company;

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:52 PM

Planned by WCX Technical Advisory Group (TAG) / Ground Vehicle Advisory Group

Wednesday, April 14

Live: Leadership Summit: Using Advanced Manufacturing to Drive Product Development

Session Code LS800

Room 1 Session 2:45 p.m.

Manufacturing is not often deemed essential in customer acceptance of technology. However, with advanced technology, it can be a critical factor in understanding the consumers engagement with a component's function that will drive more valued products from the design teams. When done properly, the factory of today flows data and communication from the consumer in order to create the product of tomorrow. This roundtable explores the connected factory and its impacts in developing the next generation of vehicles. Experts will explore how best in class factories are changing the way design and product engineers look at the development of mobility by integrate the consumer through connected vehicles. Discussion will be on industrial internet of things (IIoT), industry 4.0, the digital thread, artificial intelligence, blockchain, and JIT vehicle diagnostics/prognostics so the audience can learn how their relationship with manufacturing needs to be more engaged in order to create products of tomorrow that consumers value while further optimizing the manufacturing and supply chain processes allowing manufacturers to increase margins through higher revenue and lower operating costs. Sponsored by Learn more about the Roundtable Participants

Moderators - Monika Minarcin, Accenture

Panelists - Raj Batra, President, Digital Industries, Siemens USA; Mark Friesen, Boeing Co.; Lawrence Geise, Honda Motor Co., Ltd.; Michael Mikula, Chief Engineer, Ford Motor Co.; Lorrie Sivich, PhD Research Engineer, Boeing Co.; Craig Sutton, VP Industry 4.0, Eaton Corporation;

Planned by WCX Technical Advisory Group (TAG) / Ground Vehicle Advisory Group

Wednesday, April 14

Live: Leadership Summit: How are Executives Driving Innovation and Transformation

Session Code LS500

Room 1 Session 4:15 p.m.

CTOs and similar technical executives are face numerous challenges. The largest of these is how to balance their technology portfolio to meet customers' current needs, making business cases for future needs based upon unknown technology advancements, global regulation, and consumer acceptance. Come hear executives from the mobility ecosystem discuss how they look at both internal and external influences to create technology and allocate their company's technical resources. Discussions will focus on how they allocate time for development of future mobility technology and continue utilizing resources in advancing current technologies. Sponsored by Learn more about the Roundtable Participants

Moderators - Kenneth Washington, Chief Technology Officer, Ford Motor Company

Panelists - Bill Dally, NVIDIA; Roger Nielsen, Daimler Trucks North America LLC; Stephen Rober, FCA US LLC; Matthew Tsien, General Motors LLC;

Planned by WCX Technical Advisory Group (TAG) / Ground Vehicle Advisory Group

Wednesday, April 14

Live: What Does the Future Hold for Hybrid Electric Vehicles? - Panel Discussion

Session Code PFL790

Room 10 Session 9:00 a.m.

This panel will discuss future technical challenges and a market outlook for hybrid electric vehicles, including mild, full, and plug-in hybrids for both passenger car and commercial transport applications. Panelists will give brief presentations that provide perspectives on market drivers, needs, challenges, and paths forward for various sectors, followed by an open discussion of related topics. Learn more about the Panel Participants

Organizers - Vincent Costanzo, Aramco Research Center; Michael Duoba, US Dept. of Energy; Wiley McCoy, McLaren Performance Technologies; Saeed Siavoshani, Eaton; Ram Vijayagopal, Argonne National Laboratory

Moderators - Vincent Costanzo, Aramco Research Center; Michael Duoba, US Dept. of Energy; Wiley McCoy, McLaren Performance Technologies; Saeed Siavoshani, Eaton; Ram Vijayagopal, Argonne National Laboratory

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:52 PM

Panelists - Christopher Atkinson, Ohio State University; James Martin, IHS Markit; Michael McDonald, UPS; Manik Narula, Cummins Inc.; Tom Stricker, Toyota Motor North America Inc.;

Planned by Hybrid and Electric Propulsions Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 14

Live: Autonomous Vehicle Technologies Transformation Challenges and Opportunities

Session Code IDM902

Room 10 Session 11:00 a.m.

There has been a significant interest in autonomous vehicles technology in automotive industry. All the automakers are working towards to produce Level 5 autonomous vehicles and many of them are at Level 2 and Level 3. In this session, speakers will talk about the challenges in autonomous vehicles technology and transformation to achieve fully autonomous vehicles

Organizers - Ramakrishna Koganti, University Of Texas System

Chairperson - Ramakrishna Koganti, University Of Texas System

Time	Paper No.	Title
11:00 a.m.	ORAL ONLY	Keynote Presentation: Autonomous Vehicles: Common Sense Reasoning in Autonomous Driving Gopal Gupta, University of Texas at Dallas
11:45 a.m.	ORAL ONLY	Keynote Presentation: Vehicle Technologies Transformation Challenges and Opportunities Monika Minarcin, Accenture

Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

Wednesday, April 14

Live: AI and Machine Learning

Session Code AE599

Room 2 Session 9:00 a.m.

This session will feature three invited technical keynotes followed by a Q&A session. Topics to include real-world and theoretical methods and advanced algorithms in AI, machine learning and related technologies for both inside and outside the Vehicle. Take this opportunity to ask your questions of these 3 subject matter experts.

Organizers - Prakash Peranandam, GM; Ramesh S, GM R&D Center

Chairperson - Prakash Peranandam, GM; Ramesh S, GM R&D Center

Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	Using Eliminative Argumentation to Establish Confidence in the Adequacy of V&V for ML-based Functionality Dr. Jeffrey Joyce, President, Critical Systems Labs Inc.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:52 PM

Time	Paper No.	Title
9:20 a.m.	ORAL ONLY	Safety Performance Indicators for Self Driving Cars Philip Koopman, Ph.D., Carnegie Mellon University
9:40 a.m.	ORAL ONLY	Scientific Machine Learning for Accelerating Energy Storage Systems Venkat Viswanathan, Carnegie Mellon Univ.
10:00 a.m.	ORAL ONLY	Q&A with Presenters ...

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Wednesday, April 14

Live: Technology Roadmap: Fuel Cell & Battery Electric Powertrains - Panel Discussion

Session Code PFL791

Room 2 Session 11:00 a.m.

With the accelerated shift in the automotive industry from internal combustion engine (ICE) based powertrains to electrified powertrains, there are many new opportunities and challenges for powertrain components in battery and fuel cell electric vehicles. In addition, the technology shift for propulsion systems promotes new ideas for future powertrain components. In this panel session, you will hear from domain-specific experts (inverter, motor, battery, charger, etc.) on the opportunities for performance improvements and innovation of these components as well as the challenges for full-system integration and the interplay between the various domains. Learn more about the Panel Participants

Organizers - Michelle Bogen, BMW of North America LLC; Sumanth Reddy Dadam, Ford Motor Company; Yi Ding, Ground Vehicle Systems Center; Vincent Molina, Bayerische Motoren Werke AG; Tony Thampan, Ground Vehicle Systems Center; Di Zhu, Ford Motor Company

Moderators - Tony Thampan, Ground Vehicle Systems Center

Panelists - Shinichi Hirano, Ford Motor Company; Iqbal Husain, North Carolina State Univ.; Jason Lai, Virginia Tech.; James McKinney, BMW Group;

Planned by Hybrid and Electric Propulsions Committee / Powertrain Fuels and Lubricants Activity

Wednesday, April 14

Live: Occupant Protection - What is the Future of Event Data Recorders and AR

Session Code SS594

Room 3 Session 9:00 a.m.

This session will feature three technical presentations followed by a "chat with experts" based upon audience questions. Points of emphasis will focus on what is new in SAE regarding the development of J-documents, what is the potential for future of regulatory decisions and their impact on industry as well as how we use that data from the manufacturers for the investigation of motor vehicle crashes.

Organizers - David Plant, D P Plant & Associates; John Steiner, Mecanica Scientific Svcs Corp

Chairperson - David Plant, D P Plant & Associates; John Christopher Steiner, Mecanica Scientific Svcs Corp.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:53 PM

Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	SAE EDR J-Documents; Updates to Address New Technologies Daniel Mikat, Toyota Motor Corp.
9:15 a.m.	ORAL ONLY	SAE response to proposed change to EDR pre-crash data recording time Donald Floyd, General Motors LLC
9:30 a.m.	ORAL ONLY	Update on SAE J2728 Jason Stone, Volvo Trucks North America
9:45 a.m.	ORAL ONLY	China EDR and UN EDR Drew Kresmery, FCA US LLC
9:45 a.m.	Panel	Chat with the Experts Moderators - David Plant, D P Plant & Associates Panelists - Donald Floyd, General Motors LLC; Drew Kresmery, FCA US LLC; Daniel Mikat, Toyota Motor Corp.; Jason Stone, Volvo Trucks North America;

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 14

Live: ITS Smart Transportation and Infrastructure

Session Code AE492

Room 3 Session 11:00 a.m.

This session will feature 1 Keynote presentation followed by 3 technical keynotes from the manuscript submissions received and approved for publication. Topics to include Edge Computing, Simulation-based evaluation of cooperative maneuver coordination and its impact on traffic and access to jobs shared by autonomous vehicles.

Organizers - Jan-Mou Li, Metropolitan Washington Council of Governments

Chairperson - Jan-Mou Li, Metropolitan Washington Council of Governments

Time	Paper No.	Title
11:00 a.m.	ORAL ONLY	Keynote Presentation: Edge Computing in ITS Roger Berg, DENSO Corporation
11:30 a.m.	2021-01-0175	Infrastructure-Based Sensor Data Capture Systems for Measurement of Operational Safety Assessment (OSA) Metrics

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:53 PM

Time	Paper No.	Title
11:50 a.m.	2021-01-0163	Niraj Altekar, The University of Arizona; Steven Como, Duo Lu, Arizona State University; Jeffrey Wishart, Exponent Inc.; Donald Bruyere, The University of Arizona; Faisal Saleem, Maricopa County Department of Transportation; K. Larry Head, The University of Arizona Assessing the Access to Jobs by Shared Autonomous Vehicles in Marysville, Ohio: Modeling, Simulating and Validating
12:10 p.m.	2021-01-0171	Karina Meneses Cime, Mustafa Ridvan Cantas, Pedro Fernandez, Bilin Aksun Guvenc, Levent Guvenc, The Ohio State University; Adit Joshi, James Fishelson, Archak Mittal, Ford Motor Company Simulation-Based Evaluation of Cooperative Maneuver Coordination and Its Impact on Traffic Quality Viktor Lizenberg, Daniel Bischoff, Youssef Haridy, Ulrich Eberle, Opel Automobile GmbH; Steffen Knapp, Saarland University of Applied Sciences; Frank Koester, German Aerospace Center

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Wednesday, April 14

Live: Vehicle Aerodynamics - CFD

Session Code SS892

Room 4 Session 9:00 a.m.

Organizers of the Aerodynamics committee have invited a technical keynote and selected two experts selected based on their technical manuscript merit to present their work for this session. Each presentation includes Q&A. Please take this opportunity to ask your questions of these subject matter experts.

Organizers - Timo Kuthada, Institut Fuer Kraeffahrwesen; Kurt Zielinski, Honda R & D Americas Inc.

Chairperson - Kurt Zielinski, Honda R & D Americas Inc.

Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	Keynote: The Role of Cloud and Machine Learning in Next-Generation CFD for Vehicle Aerodynamicists Neil Ashton, Amazon Web Services
9:45 a.m.	2021-01-0951	Automated Design Optimization of Side View Mirror Geometries for Improved Autonomous Sensor and Vehicle Soiling Performance Aaron Godfrey, Peter Altmann, Mani Johannesson, Frederick Ross, Siemens Digital Industries Software; Torbjörn Virdung, Volvo Cars
10:05 a.m.	2021-01-0945	Multi-Objective Aerodynamic Optimization of Vehicle Shape Using Adjoint Approach Based on Steady-State and Transient Flow Solutions Hua Zhou, Chao Ren, Haibo Wu, Qian Chen, SAIC-Volkswagen; Tushar Jadhav, ANSYS Inc.

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:53 PM

Wednesday, April 14

Live: Energy Implications of Connected and Automated Vehicles

Session Code AE999

Room 4 Session 11:00 a.m.

The introduction of connected and automated vehicles (CAVs) holds significant promise for reducing accidents and traffic related injuries with substantial R&D efforts focused on functionality and safety of advanced driver assistance system (ADAS) and automated driving system (ADS) features. However, large-scale adoption of CAVs could also dramatically impact the energy consumption of the transportation sector. Vast uncertainties exist as to the net benefit or detriment to energy consumption with changes in vehicle miles traveled, driving transients, traffic patterns, efficient routing, etc. enabled by automation and V2X communication. This session seeks to highlight the key factors impacting the energy consumption of CAVs from experimental studies as well as large-scale simulation efforts and evaluate opportunities to ensure that energy implications of ADAS and ADS features are captured accurately and consistently.

Organizers - Thomas Wallner, Argonne National Laboratory

Chairperson - Thomas Wallner, Argonne National Laboratory

Time	Paper No.	Title
11:00 a.m.	ORAL ONLY	Keynote Presentation: Highlighting Recently Finished and Ongoing Projects David Anderson, Department of Energy
11:20 a.m.	ORAL ONLY	Keynote Presentation: CAV Energy Opportunities (and Challenges) In the Light-Duty Sector and SAE Standard's Work Chris McCarthy, Ford Motor Company
11:40 a.m.	ORAL ONLY	Keynote Presentation: Saving Energy with Connected and Automated Heavy-Duty Trucks Michael Gerty, PACCAR Technical Center
12:00 p.m.	ORAL ONLY	Q&A with Presenters ...

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Wednesday, April 14

Live: Occupant Protection: Accident Reconstruction - LIDAR AND PHOTOGRAMMETRY

Session Code SS593

Room 5 Session 11:00 a.m.

Lidar and photogrammetry continue to play key roles in accident reconstruction. Continuous developments and validations are key to helping practitioners feel comfortable with the technology so that they can rely on it. In this session, we will be exploring three papers that introduce us to a new lidar tool and to validations of photogrammetry for specific use cases.

Chairperson - Dean Beaumont, TRL; Neal Carter, Luminous Forensics Llc

Time	Paper No.	Title
------	-----------	-------

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:53 PM

Time	Paper No.	Title
11:00 a.m.	2021-01-0891	Bias and Repeatability of Measurements from 3D Scans Made Using iOS-Based Lidar Bradley E. Heinrichs, Mike Yang, MEA Forensic Engineers & Scientists
11:30 a.m.	2021-01-0888	Accuracies in Single Image Camera Matching Photogrammetry Toby Terpstra, Alireza Hashemian, Robert Gillihan, Eric King, Seth Miller, William Neale, Kineticorp LLC
12:00 p.m.	2021-01-0877	Validation of Vehicle Speed Analysis Utilizing the iINPUT-ACE Camera Match Overlay Tool Michael Jorgensen, Scott Swinford, Brian Jones, American Bio Engineers

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00006, and also Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 14

Live: Climate Control and Thermal Performance

Session Code HX191

Room 6 Session 9:00 a.m.

The climate control system is critical to customer satisfaction and a defining vehicle attribute. While its primary objective is to deliver thermal comfort and occupant safety with low energy consumption, it often has strong design interaction with myriad other vehicle systems. Discussions center on HVAC energy savings and defog performance, air purification innovation, HVAC noise mitigation, and airborne virus mitigation.

Organizers - Jeffrey Bozeman, General Motors LLC

Moderators - Jeffrey Bozeman, General Motors LLC

Time	Paper No.	Title
9:00 a.m.	2021-01-0214	COVID Killing Air Purifier Based on UV & Titanium Dioxide Based Photocatalysis System Gursaran Mathur, Calsonic Kansei North America Inc.
9:30 a.m.	2021-01-0212	Partial Recirc/Two Layer Flow HVAC Energy Savings and Defog Performance in Electric Vehicles Lingyan Jiang, Edward Wolfe, MAHLE Behr USA Inc.,
10:00 a.m.	2021-01-0204	A Novel Methodology to Characterize the Thermal Behavior of Automotive Seats Mark Hepokoski, Timothy Viola, Jon Juskiewicz, Lauren Tetzloff, Corey Packard, Allen Curran, ThermoAnalytics, Inc.; James Gebbie, John Elson, Ford Motor Company; Rick Burke, Thermetrics LLC; Robert Smith, U.S. Army; Jason Blough, Michigan Technological University

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:53 PM

Wednesday, April 14

Live: Human Factors in Driving and Automotive Telematics

Session Code SS391

Room 6 Session 11:00 a.m.

Organizers of the Human Factors Committee have invited three authors to present their papers in this session following the traditional format of twenty minutes for each presentation, followed by a 30 minute audience Q&A session with all three presenters. They have been selected based on technical merit.

Organizers - Derek F. Fraser, General Motors; Kristin Kolodge, JD Power And Associates; Shantha Kumari Rajendran, General Motors Canada, Ltd.

Chairperson - Derek F. Fraser, General Motors; Kristin Kolodge, JD Power And Associates; Shantha Kumari Rajendran, General Motors Canada, Ltd.

Time	Paper No.	Title
11:00 a.m.	2021-01-0857	Effects of Situational Urgency on the Perception and Response Time to Lateral Collision Hazards Fabian Erazo, Adam Campbell, 30 Forensic Engineering
11:30 a.m.	2021-01-0858	A Study on Functional Safety, SOTIF and RSS from the Perspective of Human-Automation Interaction You Zhang, SAIC Motor Corporation Limited; Gavan Lintern, Monash University; Liping Gao, Zhao Zhang, SAIC Motor Corporation Limited
12:00 p.m.	2021-01-0859	Analysis of Alcohol-Impaired Driving on Vehicle Dynamic Control of Steering, Braking and Acceleration Behaviors in Female Drivers Justice Alex Frimpong, Wuhan University of Technology; Bin Luo, Hubei Public Security Department; Gangfeng Tan, Suizhou-WUT Industry Research Institute; Philip Agyeman, Wuhan University of Technology; Prince Owusu-ansah, Kumasi Technical University

Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

Wednesday, April 14

Live: Magnesium Technologies

Session Code M191

Room 7 Session 9:00 a.m.

The interest in Magnesium alloys in the automotive market for new and existing applications is primarily due to their mass reduction potential. Application of magnesium alloys and their processing methods, and enabling developments in durability, corrosion and joining technologies continue to receive strong interest. The presentations in this session reflect these new developments in magnesium technologies focusing on an OEM perspective.

Organizers - Mark Kozdras, CanmetMATERIALS; Jonathan Weiler, Meridian Lightweight Technologies

Chairperson - Mark Kozdras, CanmetMATERIALS; Jonathan Weiler, Meridian Lightweight Technologies

Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	Lightweighting with Magnesium Sheets: Material, Process and Component Development David Klaumuenzer, Volkswagen AG

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:53 PM

Time	Paper No.	Title
9:30 a.m.	2021-01-0278	FCA US LLC-Magnesium Closures Development Christopher Joseph Duke, FCA US LLC
10:00 a.m.	ORAL ONLY	LIGHTWEIGHTING WITH MAGNESIUM The Intersection of Design and Processing Anil K. Sachdev, General Motors LLC

Planned by Metallic Materials Committee / Materials Engineering Activity

Wednesday, April 14

Live: Graphene Tutorial: How Advanced Materials Are Helping to Tackle New Mobility Challenges

Session Code M999

Room 7 Session 11:00 a.m.

Graphene and other advanced materials are enabling engineers and designers to approach an extremely broad array of mobility challenges, from light-weighting to energy storage, from the increasing use of sensors to improving coatings, and from thermal management solutions to improving the driver and passenger experience. In this session you will hear from The Graphene Council and leading companies in the sector about how graphene is being used today in the automotive sector and applications that are in the prototyping and development stage. Learn how graphene allows you to tackle your performance goals and solve engineering challenges.

Organizers - Terrance Barkan, The Graphene Council

Moderators - Terrance Barkan, The Graphene Council

Panelists - Leroy Magwood, XG Sciences Inc.; Dave Vanek, Graphene One and Kyorene;

Wednesday, April 14

Live: Use of Blockchain to Re-imagine Supply Chain Panel Discussion

Session Code IDM899

Room 8 Session 9:00 a.m.

The emergence of blockchain has promised many improvements in product acquisition and management, security, purchasing, and shipping in many industries from Automotive, Energy, Retail, Banking to Information Technology. Supply chain experts share their insights into how blockchain can improve supply chain processes. Learn more about the Panel Participants

Organizers - Atul Kalia, SN Group

Moderators - Atul Kalia, SN Group

Panelists - Jaspreet Singh, DTE Energy; Prasun Singh, Hitachi America, Ltd.;

Planned by Integrated Design and Manufacturing Activity / Ground Vehicle Advisory Group

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:53 PM

Wednesday, April 14

Live: Plastics and Polymer Composites for Future Mobility

Session Code M991

Room 8 Session 11:00 a.m.

The American Chemistry Council discusses how the emerging trends in personal mobility are driving requirements that need new material solutions. The ACC will share its roadmap for future mobility as well as how the transition toward a more circular economy will allow the automotive plastics and composites industry to better serve the automotive community.

Time	Paper No.	Title
11:00 a.m.	ORAL ONLY	The ACCESS Framework & Transitioning toward a Circular Economy for Automotive Plastics and Polymer Composites Jose Chirino, Lanxess Corp.
11:30 a.m.	ORAL ONLY	Open Discussion Roundtable Jose Chirino, Lanxess Corp.; Gina Oliver, American Chemistry Council
12:00 p.m.	ORAL ONLY	The ACCESS Framework & Transitioning toward a Circular Economy for Automotive Plastics and Polymer Composites Jose Chirino, Lanxess Corp.

Wednesday, April 14

Live: Advanced Ignition Concepts: Technical Challenges and Opportunities - Roundtable Discussion

Session Code PFL291

Room 9 Session 9:00 a.m.

Topic: This panel discussion will focus on technical barriers and future opportunities for advanced ignition systems for internal combustion engines. A major focus will be put on recent developments and opportunities consistent with the development of future engine technologies. Performance needed by automakers and strategies from suppliers to address such performance will be discussed. Layout: Brief presentations will be provided by representatives from automotive engine OEMs as well as advanced ignition system suppliers. The presentations will be followed by an open discussion. Learn more about the Roundtable Participants

- Organizers - Vincent Costanzo, Aramco Research Center; Isaac Ekoto, Sandia National Laboratories; Riccardo Scarcelli, Argonne National Laboratory; Xin Yu, Aramco Research Center
- Moderators - Vincent Costanzo, Aramco Research Center; Isaac Ekoto, Sandia National Laboratories; Riccardo Scarcelli, Argonne National Laboratory; Xin Yu, Aramco Research Center
- Panelists - Matthew Bresler, Stellantis NV; Thomas Briggs, Southwest Research Institute; Mike Bunce, Mahle Powertrain, Ltd.; Alexander Hettinger, Robert Bosch GmbH; Cherian Idicheria, General Motors LLC; Yuji Ikeda, i-Lab. Inc.; Sachin Joshi, Cummins Inc.; Hans J. Lipp, Tenneco Inc.; Kristopher Mixell, Tenneco Inc.; Marc Sens, IAV GmbH; Dan Singleton, Transient Plasma Systems;

Planned by Engine Combustion / Powertrain Fuels and Lubricants Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:53 PM

Wednesday, April 14

Live: NeXtgeneration Automotive Aluminum Technologies (Part 2 of 2)

Session Code M194

Room 9 Session 11:00 a.m.

The metallics committee has selected a group of subject matter experts to give their insight on NeXtgeneration Aluminum technologies based upon the expertise. Specific presenters were selected based upon the results of their submitted manuscript. Each presentation will include an opportunity to ask questions of the speaker.

Organizers - Theresa MacFarlane, Novelis Global Research & Tech. Ctr.; Rahul Kulkarni, Novelis Corporation

Chairperson - Rahul Kulkarni, Novelis Corporation; Theresa E. MacFarlane, Novelis Global Research & Tech. Ctr.

Time	Paper No.	Title
11:00 a.m.	ORAL ONLY	Aluminum Sheet's Role in GM's Vision of Zero Crashes, Zero Emissions, and Zero Congestion Michael Bugeaud, General Motor Company
11:30 a.m.	ORAL ONLY	Aluminium Products for Automotive Applications - Challenges And Solutions P. A. Rometsch, L. R. Pan, F. Breton, N. C. Parson, J. Colbert, J. Fourmann, Rio Tinto Aluminium
12:00 p.m.	ORAL ONLY	Impacts of U.S. Department of Energy Lightweighting Target on Energy Consumption Benefits & Material Supply Ehsan Sabri Islam, Argonne National Laboratory

Planned by Metallic Materials Committee / Materials Engineering Activity

Thursday, April 15

Live: ADAS/AVS - Perception

Session Code AE193

Room 1 Session 9:00 a.m.

This session will feature 4 keynote presentations from the session authors, followed by a short Q&A on the latest research on object detection and tracking methodologies for ADAS and AVS. The areas include detection of static (curbs, lanes, potholes) and dynamic objects in complex real-life scenarios and in difficult weather conditions, using camera, radar and LiDAR sensors. Advanced sensor fusion and Simultaneous Localization and Mapping (SLAM) techniques will be discussed in this context.

Organizers - Vivek Jaikamal, AVL North America Inc.

Chairperson - Vivek Jaikamal, AVL Test Systems Inc.

Time	Paper No.	Title
9:00 a.m.	2021-01-0092	DA-IVE: MLP Based Data Association Method for Instantaneous Velocity Estimation Using Multi-Radar: An Experimental Validation Study Bahareh Shakibajahromi, Anirudh Sarathy Krishnan, Dilip Ati, Amirhossein Jabalameli, Steven Kanzler, Saeed Shayestehmanesh, ZF North America Inc.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:54 PM

Time	Paper No.	Title
9:15 a.m.	2021-01-0085	Stereo Vision Based Pothole Detection System for Improved Ride Quality Naveen Kumar Bangalore Ramaiah, Subrata Kundu, Hitachi America, Ltd.
9:30 a.m.	2021-01-0086	3D-3D Self-Calibration of Sensors Using Point Cloud Data Pradeep Anand Ravindranath, Kutluhan Buyukburc, Ali Hasnain, Curium Pte, Ltd.
9:45 a.m.	2021-01-0088	Predicting Desired Temporal Waypoints from Camera and Route Planner Images using End-To-Mid Imitation Learning Aravind Chandradoss Arul Doss, Levent Guvenc, The Ohio State University
10:00 a.m.	ORAL ONLY	Q&A with the Presenters .. .

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Thursday, April 15

Live: Transmission & Driveline Committee - Best Of, Part 2

Session Code PFL691

Room 1 Session 11:00 a.m.

Organizers of the Transmission & Driveline Committee have invited three authors to present their papers in this session following the traditional format of twenty minutes for presentation, followed by 10 minutes for Q&A. They have been selected based on technical merit.

Organizers - Pradeep Attibele, Michael Fingerman, FCA US LLC; James Hendrickson, Chunhao Lee, Dongxu Li, General Motors LLC; Brandon Otulakowski, FCA; David Popejoy, Ford Motor Company; Darrell Robinette, Michigan Technological Univ.; Thomas Wellmann, FEV North America Inc.

Moderators - Pradeep Attibele, FCA US LLC

Time	Paper No.	Title
11:00 a.m.	2021-01-0711	A Methodology for Modelling of Driveline Dynamics in Electrified Vehicles Lucas Bruck, Ali Emadi, McMaster University
11:30 a.m.	2021-01-0707	A Fresh Perspective on Hypoid Duty Cycle Severity Avinash Jonnalagadda, FCA US LLC; Ryan Monroe, Oakland University; Vincent Schrand, Venkat Ramakrishnan, FCA US LLC
12:00 p.m.	2021-01-0715	Real-Time Hydro-Mechanical Transmission System Simulations for Model-Guided Assessment of Complex Shift Sequence Yifeng Tang, Jason Rodgers, The MathWorks, Inc.; James McCallum, Yijing Zhang, Yuji Fujii, Ford Motor Company

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:54 PM

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 15

Live: Leadership Summit: EVs – Customer Choice or Forced by Legislation?

Session Code LS200

Room 1 Session 1:15 p.m.

What are the business and technology challenges that industry is going to face in the next 10 years? What impact will regulation, consumer acceptance, executive action, and continued low fuel prices have on the goal line for when industry moves to a minimum of all hybrid vehicle platforms. Come hear executives from new players and technology developers discuss when we will see that mass deployment and what regulatory, business and technology impacts need to occur in order to make that happen. Learn more about the Roundtable Participants

Moderators - Lindsay Brooke, Editor-in-Chief, SAE International

Panelists - Emad Dlala, Senior Director, Efficiency and Energy Technology, Lucid USA Inc.; Timothy Frazier, Executive Director Advanced Engineering, Cummins Inc.; Sean Gouda, DTE Energy; Kiran Govindswamy, Vice President – Drivetrain and Vehicle Engineering FEV North America Inc.; Nisarg A. Modi, Head of World Wide Business Development, Connected & Autonomous Vehicles, Amazon Web Services; Daniel Nicholson, Vice President of Electrification, Controls, Software & Electronics, General Motors;

Planned by WCX Technical Advisory Group (TAG) / Ground Vehicle Advisory Group

Thursday, April 15

Live: Leadership Summit: The Criticality of a Systems Approach to Today's Propulsion Environment

Session Code LS300

Room 1 Session 2:45 p.m.

Powertrain/Propulsion has historically been very independent from overall vehicle development. Yet the transition to electrified propulsion systems has greatly increased the interface complexity between vehicle systems. An integrated Systems Engineering approach is needed, leading some to move Powertrain into the heart of the vehicle development organization. Systems practices will enable vehicle design that balances the requirements of thermal management, power management, compute power, and functional safety. The system tradeoffs must be done at a vehicle level not just for a single domain. This panel of executives will talk about their experiences navigating this unprecedented automotive industry transformation. Learn firsthand about the challenges and trade-offs that these leaders are exploring. Sponsored by Learn more about the Roundtable Participants

Moderators - Anne O'Neil, Systems Catalyst & Strategist, Anne O'Neil Consultants LLC

Panelists - Denise Gray, President, LG Energy Solution Michigan, Inc.; Mazen Hammoud, Director Powertrain Strategy & Planning, Ford Motor Company; Stefan Koidl, Robert Bosch LLC; Joaquin Nuno-Whelan, VP Hardware, Motional, Inc.; Stephan Tarnutzer, President, AVL;

Planned by WCX Technical Advisory Group (TAG) / Ground Vehicle Advisory Group

Thursday, April 15

Live: Next-Generation Safety Performance: Safety is the New Horsepower

Session Code LS900

Room 1 Session 4:15 p.m.

Advanced vehicle technologies are changing how cars are designed, developed, manufactured, customized, sold, serviced and owned. We are witnessing one of the most fundamental shifts in the history of the automotive industry. Advanced driver assistance, automated and autonomous system, combined with demographic, regulatory, social and environmental pressures are driving the shift to increased vehicle connectivity and safety performance. Today's Advanced Driver Assistance Systems are the gateway to many of the advanced vehicle technologies being deployed by automakers as well as the foundation for next-generation safety performance. Understanding how active safety technologies, software, digital vehicle architectures and sensors function is an integral component for the future of successful, complete and safe collision repairs, aftermarket installations, upgrades and vehicle builds. This session will include an overview of the latest cross-industry research and insights of the new SAE Edge Report on ADAS Sensor Calibration and SAE Active Safety Task Forces. Learn more about the Roundtable Participants

Moderators - John Waraniak, Have Blue LLC

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:54 PM

Panelists - Chris Cook, Mobile Electronics Association; Brian Daugherty, Motor and Equipment Mfrs Association; Michael McSweeney, President and General Manager, Fox Factory Vehicles; Hon. David L. Strickland, Commerce and Technology Director, United States Senate;

Planned by WCX Technical Advisory Group (TAG) / Ground Vehicle Advisory Group

Thursday, April 15

Live: Challenges & Opportunities for New Engines in Electrified Vehicles - Panel Discussion

Session Code PFL590

Room 10 Session 9:00 a.m.

We stand at the beginning of the electrified transport era, and though the end of the internal combustion engine has been widely publicized, implementing the goal of net zero carbon emissions can only be accelerated by optimizing engine efficiency. And in this regard, electrification has much to offer the conventional IC engine. New research into novel engine cycles and configurations targeting hybrid electric vehicles, as well as the electrification of engine subsystems and components, demonstrates the synergies between the IC engine and electrified vehicles, but has yet to be fully developed and deployed. Synthetic hydrocarbons produced using renewable electricity offer the exciting potential of net zero carbon replacement fuels, but their use with current engine technology is unlikely to be optimal. This raises some important questions: • What are the new engine, component, actuator and sensor technologies that will ensure engines will not only survive, but thrive in an electrified future? • Where should OEMs, and their suppliers and partners, target their research and development activities? • What skills and expertise should the future automotive engineer possess? Join us to hear from a panel of technology leaders and stakeholders from across industry, regulatory agencies, and academia in a live panel session at the SAE 2021 WCX Digital Summit dedicated to exploring the outlook for engines in an electrified mobility landscape.

Organizers - Wei Chen, Borg Warner; Aaron Costall, University Of Bath; Eric Krivitzky, Thermofluid Research Laboratory; Jeffrey Naber, Michigan Technological Univ.

Moderators - Jeffrey Naber, Michigan Technological Univ.

Panelists - Richard Osborne, Ricardo UK, Ltd.; Carsten Weber, Ford-Werke GmbH; John Zagone, BorgWarner Turbo Systems; Reggie Zhan, Shanghai Jiao Tong Univ.;

Planned by New Engines and Components / Powertrain Fuels and Lubricants Activity

Thursday, April 15

Live: Automotive Interior Coatings – Adding Value and Addressing New Challenges Panel

Session Code M499

Room 10 Session 11:00 a.m.

The panel will discuss how the aesthetics and functions of automotive interior coatings can justify their added cost and environmental impact and how they can help to address the unique challenges resulting from evolving consumer expectations. Learn more about the Panel Participants

Organizers - Rasheeda Daanyal, FCA US LLC; Jim Keller, Mankiewicz Coatings LLC; Daniel Wright, BASF Corp.

Moderators - Rasheeda Daanyal, FCA; Jim Keller, Mankiewicz Coatings LLC; Daniel Wright, BASF Corp.

Panelists - Jamil Baghdachi, Eastern Michigan Univ.; Jeff B. Crist, Ford Motor Company; Nello Li Pira, Stellantis; Janet Robincheck, GM; Rose A. Ryntz, Ryntz & Associates;

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Thursday, April 15

Live: The Road to Nationwide SPaT and MAP message deployment

Session Code AE491

Room 2 Session 9:00 a.m.

The road to achieving a nationwide deployment of interoperable connected vehicles has resulted in over forty early connected vehicle deployments. The USDOT sponsored Connected Intersection project has used this experience and a broad base of stakeholders, including automotive manufacturers and the infrastructure community, to identify needs, resolve ambiguities and provide best practices to allow connected vehicles to seamlessly operate city to city and region to region. An evaluation of this work is currently being performed by

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:54 PM

multiple infrastructure owner operators across the country. This panel, made up of key contributors to this effort, will discuss the challenges encountered and the contributions of the stakeholders that they represent. Learn more about the Panel Participants

- Organizers - Roy Goudy, Nissan Motor Co., Ltd.
- Moderators - Roy Goudy, Nissan Motor Co Ltd; Siva Narla, Institute Of Transportation Engineers
- Panelists - Eric Raamot, Econolite Group Inc.; Robert G. Rausch, Transcore LP; Randy Roebuck, Omniair Consortium Inc.; Michael Shulman, Ford Motor Company; Ray Starr, MINNESOTA DEPT OF TRANSPORTATION; William Whyte, Qualcomm Technologies Inc.;

Thursday, April 15

Live: New Engines and Components Committee - Best Of

Session Code PFL591

Room 2 Session 11:00 a.m.

The organizers of this committee have invited three authors to give presentations and follow the traditional format of twenty minutes of talk, followed by 10 minutes for Q&A. The papers were selected based on technical merit.

- Organizers - Anand Nageswaran Bharath, Cummins Inc.; Aaron Costall, University Of Bath; Sumanth Reddy Dadam, Ford Motor Company; Eric Krivitzky, Thermofluid Research Laboratory; Dan Richardson, Cummins

- Moderators - Anand Nageswaran Bharath, Cummins Inc.; Dan Richardson, Cummins

Time	Paper No.	Title
	2021-01-0644	Investigation of the Relative Performance of Vaned and Vaneless Mixed Flow Turbines for Medium and Heavy-Duty Diesel Engine Applications with Pulse Exhaust Systems Rich Kruiwyk, Christopher Lusardi, Caterpillar Inc.; Andrew Gardner, Garrett Motion
	2021-01-0646	Investigation of the Piston Pin Movement, Rotation and Oil Filling Ratio of the Piston Boss Maria Denise Branciforti, IFS University of Stuttgart; Michael Bargende, Universitat Stuttgart
	ORAL ONLY	Performance Evaluation of a Heavy-Duty Diesel Truck Retrofitted with Waste Heat Recovery and Hybrid Electric Systems This is an oral presentation of a paper originally published in the SAE International Journal of Electrified Vehicles, paper number: 14-09-01-0004 Manfredi Villani, Ohio State Univ.; Simone Lombardi, Laura Tribioli, University of Rome Niccolò Cusano

Planned by New Engines and Components / Powertrain Fuels and Lubricants Activity

Thursday, April 15

Live: Occupant Protection: Toward Future Integrated Safety Systems - Challenges and Opportunities

Session Code SS592

Room 3 Session 9:00 a.m.

The rapid advancement of vehicle ADS has introduced new challenges and opportunities for occupant protection. This session will discuss several aspects of future vehicle safety problems and potential solutions through integrated safety systems. Three 20-min presentations will be provided first to cover different aspects of this problem, including but not limited to, injury biomechanics, human behavior, restraint

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:54 PM

system designs, and active safety technologies. 30 Minute audience Q&A following. Learn more about the Chairpersons

Organizers - Clifford Chou, Wayne State University; Jingwen Hu, Univ. of Michigan-Ann Arbor

Chairperson - Scott Gayzik, Elemance LLC; Jingwen Hu, Univ. of Michigan-Ann Arbor; Lingxi Li, Indiana Univ. Purdue Univ. Indianapolis

Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	<p>Technical Keynote: Biomechanics Considerations for Future Mobility - Resetting the Occupant Protection Paradigm</p> <p>Increasingly automated vehicles are likely to bring new challenges in occupant restraint, such as widening the posture envelope and changing the types of crashes that may occur. As a field, however, it is pertinent to consider not just the challenges that automation may bring, but also how we can leverage this drive in new occupant protection research and safety system development to address problems that exist today. In this presentation we discuss several aspects of contemporary automobile safety research, and the potential for interplay with vehicle automation through an integrated safety approach.</p> <p>Jason Forman, University of Virginia</p>
9:20 a.m.	ORAL ONLY	<p>Keynote Presentation: Integrated (Active and Passive) Safety System (ISS) Benefit Estimation for 2025 and beyond</p> <p>This talk will focus on simulation based estimated benefit of Integrated Safety Systems (ISS) for light vehicles in terms of crash and MAIS2+F injury reduction after all active and passive safety systems (Integrated Safety System ISS) are implemented in 2025 and beyond. The estimation is done based on several system penetration projection from 2025 and beyond including 100% penetration. In addition the residual safety problem in terms of remaining crashes and injury will also be discussed.</p> <p>Rini Sherony, Toyota Motor North America Inc.</p>
9:40 a.m.	ORAL ONLY	<p>Keynote Presentation: Integrated safety from a Vision Zero perspective</p> <p>Rikard Fredriksson, Swedish Transport Administration</p>
10:00 a.m.	ORAL ONLY	<p>Q&A with the Presenters</p> <p>...</p>

Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 15

Live: Automotive Embedded Software and Systems: Testing and Validation

Session Code AE299

Room 3 Session 11:00 a.m.

Organizers have invited three authors to present their papers in this session following the traditional format of twenty minutes for presentation, followed by a group Q&A session. They have been selected based on technical merit.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:54 PM

Organizers - Mahendra Muli, dSPACE Inc.; Vince Socci

Chairperson - Vince Socci

Time	Paper No.	Title
11:00 a.m.	ORAL ONLY	Automotive Software and Embedded Systems – Testing and Validation Florian Rohde, iProcess LLC
11:20 a.m.	ORAL ONLY	Functional Safety Compliance - what do I really have to do? Steven Neemeh, LHP Engineering Solutions
11:40 a.m.	ORAL ONLY	How to optimize the process to validate AV software and systems Jace Allen, dSPACE Inc.
12:00 p.m.	ORAL ONLY	Q&A with the Presenters ...

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Thursday, April 15

Live: Vehicle Aerodynamics - Platooning

Session Code SS893

Room 4 Session 9:00 a.m.

Organizers of the Aerodynamics committee have invited 2 experts to give extended presentations to share their opinions and work regarding the criticality of vehicle aerodynamics in platooning. This will be followed by a short Q&A.

Organizers - Timo Kuthada, Institut Fuer Kraftfahrwesen; Kurt Zielinski, Honda R & D Americas Inc.

Chairperson - Kurt Zielinski, Honda R & D Americas Inc.

Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	Keynote Presentation: Vehicle Wake Interactions, Soiling and Bonnet Flutter Adrian P. Gaylard, Jaguar Land Rover
9:45 a.m.	ORAL ONLY	From Vehicle Design to Traffic Optimization: The Consideration for Wake Effects Brian McAuliffe, National Research Council Canada

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:54 PM

Planned by Vehicle Aerodynamics Committee / Automobile Body, Chassis, Safety, and Structures

Thursday, April 15

Live: EV Chargers and Charging Electronics Architecture/Design

Session Code AE699

Room 4 Session 11:00 a.m.

Smart Charging and Charging EMC/EMI needs to be concerned with issues and impacts to the Grid. The panel addresses EV charging using a cost effective, large scale charging infrastructure utilizing existing power grid connections being grid friendly. Charge as fast as necessary, not as fast as possible. Additional topics include: harmonic distortion impact to the power grid and mitigation techniques to eliminate the harmonics and minimize EV's adverse impacts on power grid. Questions welcome .Learn more about the Panelist Participants

Organizers - Eugene Saltzberg; Sumit Bhargava, Mahle Aftermarket Inc.

Moderators - Eugene Saltzberg

Panelists - Sebastian Ewert, Mahle GmbH; Abdullah Hamadi, Oakland University; Gokhan Ozkan, Clemson University;

Planned by Automobile Electronics Activity / Ground Vehicle Advisory Group

Thursday, April 15

Live: Transmission & Driveline Committee - Best Of, Part 1

Session Code PFL690

Room 5 Session 9:00 a.m.

Organizers of the Transmission & Driveline Committee have invited three authors to present their papers in this session following the traditional format of twenty minutes for presentation, followed by 10 minutes for Q&A. They have been selected based on technical merit.

Organizers - Pradeep Attibele, FCA US LLC; Gang Chen; John Collins, FCA US LLC; Hussein Dourra, Magna Global IT Canada; Megan Gould, Ford Motor Co.; Joel Gunderson, General Motors LLC; Hong Jiang, Ford Motor Company; Mark Levine, Stellantis NV; Dongxu Li, General Motors LLC; Berthold Martin, FCA US LLC; Wiley McCoy, McLaren Performance Technologies; Azadeh Narimissa, Paul Otanez, General Motors LLC; Darrell Robinette, Michigan Technological Univ.; Farzad Samie, General Motors LLC; Tejinder Singh, Geely Automobile Holdings, Ltd.; Zhe Xie, FCA US LLC

Moderators - Joel Gunderson, General Motors LLC

Time	Paper No.	Title
9:00 a.m.	2021-01-0689	A Large Scale Interface Approach to Speed-up Transmission Calculations Carlo Locci; Warren Seeley, David Mann, Siemens Digital Industries Software
9:30 a.m.	ORAL ONLY	Scaling the Functionality of a DCT-Based DHT to Segment-Specific Requirements – The New High Torque DHTPlus Sebastian Idler, Magna Powertrain
10:00 a.m.	2021-01-0696	Coordinated Torque, Energy and Clutch Control Strategy for Downshifts in P2 Parallel xHEV Powertrains Darrell Robinette, Michigan Technological University

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:54 PM

Planned by Transmission and Driveline Committee / Powertrain Fuels and Lubricants Activity

Thursday, April 15

Live: Occupant Protection: Accident Reconstruction - Motorcycles and Snowmobiles

Session Code SS591

Room 5 Session 11:00 a.m.

Motorcycle and snowmobile crashes represent a rare event type for most reconstruction practitioners. We are always excited to see developments for these crash types, as they help to demystify them for the broader reconstruction discipline. In this session, we will be exploring methods of modeling motorcycle crashes and take a look at the performance of snowmobiles in narrow-object-type pole crashes. Learn more about the Chairpersons

Chairperson - Alan Asay, Asay Engineering; Edward Fatzinger, Momentum Engineering Corp.

Time	Paper No.	Title
11:00 a.m.	2021-01-0895	An Examination of Equations Relating Motorcycle Impact Speed to Struck Vehicle Post-Impact Rotational Displacement Nathan Rose, Neal Carter, Luminous Forensics LLC
11:30 a.m.	2021-01-0893	Validation of a PC-Crash Multibody Sport Bike Motorcycle Model Edward Fatzinger, Jon Landerville, Jose Tovar, Benjamin Nguyen, Momentum Engineering Corp.
12:00 p.m.	2021-01-0876	Snowmobile Pole Crash Tests Mark Paquette, Harrison Griffiths, Derek Wong, 30 Forensic Engineering; Steve Anderson, Mark Wright, Ontario Provincial Police

The papers in this session are available in SAE Technical Paper Collection, SUB-TP-00006, and also Planned by Occupant Protection Committee / Automobile Body, Chassis, Safety, and Structures Activity

Thursday, April 15

Live: New Developments in Emission Controls

Session Code PFL490

Room 6 Session 9:00 a.m.

Ameya Joshi to present annual talk on the state of emission controls including new emission regulations, engine developments, and recent aftertreatment work for all types of mobile vehicles.

Organizers - Ron Silver, Caterpillar Inc.; Andrea Strzelec, University of Wisconsin-Madison

Time	Paper No.	Title
	2021-01-0575	Review of Vehicle Engine Efficiency and Emissions Ameya Joshi, Corning Inc.

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:55 PM

Time	Paper No.	Title
	ORAL ONLY	Learn More About the Participants!
		Ameya Joshi, Corning Inc.; Navtej Singh, Navistar Inc.; Changho Jung, Hyundai Motor Company; Ron Silver, Caterpillar Inc.
	Panel	Expert Panel Discussion: New Developments in Emission Controls
		Moderators - Ron Silver, Caterpillar Inc.; Andrea Strzelec, University of Wisconsin-Madison
		Panelists - Ameya Joshi, Corning Inc.; Changho Jung, Hyundai Motor Company; Navtej Singh, Navistar Inc.;

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

Thursday, April 15

Live: Human Factors in Driver Vision and Lighting

Session Code SS392

Room 6 Session 11:00 a.m.

Organizers of the Human Factors Committee have invited 3 authors to present the result of their papers. They have been selected based on the technical merit of their manuscript. each talk will be 30 minutes including Q&A. Please come prepared with any questions you have.

Organizers - Joseph Jaklic, Osram

Chairperson - Joseph Jaklic, Osram

Time	Paper No.	Title
11:00 a.m.	2021-01-0855	Calibrating Digital Imagery in Limited Time Conditions of Dawn, Dusk and Twilight
		James Marr, William Neale, Steven Beier, Alireza Hashemian, Nathan Mckelvey, Kineticorp LLC
11:30 a.m.	2021-01-0853	Systematic Degradation of Retroreflective Materials for Testing and Research
		Swaroop Dinakar, Crash Safety Research; Jeffrey Suway, Js Forensic Consulting LLC; Jeffrey Muttart, Darlene Edewaard, Suntasy Gernhard - Macha, Crash Safety Research
12:00 p.m.	2021-01-0851	Intelligent Vehicle Lighting: Impacts on Visual Perception of Drivers Varying in Age
		John D. Bullough, Rensselaer Polytechnic Institute

Planned by Human Factors Committee / Automobile Body, Chassis, Safety, and Structures Activity

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:55 PM

Thursday, April 15

Live: Technical Expert Panel Discussion: Light Weighting with Polymers, Plastics, and Composites

Session Code M391

Room 7 Session 9:00 a.m.

Panelists will discuss various light weighting strategies using structural and non-structural polymers, plastics, and composites. Material development, processing, and manufacturing techniques will be explored along with how the various material properties align with design and application needs. Learn more about the Panel Participants

Organizers - Emile Homsy, Croda

Moderators - Emile Homsy, Croda

Panelists - Curtis Collar, DuPont Co.; Kipp Grumm, BASF Corp.; Youness Hssaini, SABIC Innovative Plastics; Holger Warth, Aliaxis;

Planned by Polymers and Coatings Committee / Materials Engineering Activity

Thursday, April 15

Live: Challenges in Meeting the HD Ultra-Low NOx Standard

Session Code PFL491

Room 7 Session 11:00 a.m.

Up-to-date discussion of the status and challenges in meeting the heavy-duty, ultra-low NOx standard for 2027 by representatives of regulatory bodies, OEMs, catalyst suppliers, and researchers in the field.

Organizers - Galen Fisher, University of Michigan; Josh Pihl, Oak Ridge National Laboratory

Moderators - Galen Fisher, University of Michigan; Josh Pihl, Oak Ridge National Laboratory

Panelists - William Robertson, California Air Resources Board; Rachel Muncrief, International Council On Clean Transport; Lisa Farrell, Cummins Inc.; Christopher Sharp, Southwest Research Institute; Thomas Pauly, Umicore Autocat USA Inc.;

Planned by Exhaust Aftertreatment and Emissions Committee / Powertrain Fuels and Lubricants

Thursday, April 15

Live: Vehicle Internet of Things

Session Code IOT901

Room 8 Session 9:00 a.m.

This session will be comprised of an invited keynote of 30 minutes focusing on the evolving technologies to connect vehicle network to cloud and everything in-between to fulfil the dream of car as a smart mobility device. This will be followed by an 1hr long panel discussion with critical subject matter experts exploring the new developments in cloud services, in-vehicle compute, over-the-air (OTA) update capability, cybersecurity that are foundations for the future software defined vehicle.

Organizers - Sumit Bhargava, Mahle Aftermarket Inc.; Jacques Fluet, Telecommunications Industry Association; Partha Goswami, General Motors LLC; Jan-Mou Li, Metropolitan Washington Council of Governments; Raj Paul, Microsoft

Chairperson - Partha Goswami, General Motors LLC

Time	Paper No.	Title
------	-----------	-------

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:55 PM

Time	Paper No.	Title
9:00 a.m.	ORAL ONLY	<p>Keynote Presentation: Connected Car & IoT: Exploring vehicle as a node in IoT Eco-system</p> <p>The keynote will focus on the evolving technologies and vision to connect vehicle network to cloud and everything in-between to fulfil the dream of car as a smart mobility device.</p> <p>Hemant Sikaria, Sibros Technologies Inc.</p>
9:30 a.m.	Panel	<p>Panel Discussion: End-to-end Connectivity & Evolution of CASE</p> <p>Learn more about the Panel Participants</p> <p>Moderators - Partha Goswami, General Motors LLC</p> <p>Panelists - Brian G. Carlson, NXP Semiconductors; Simon Hartley, CIS Mobile; Heiko Huettel, Microsoft Corporation; Andrew Poliak, Panasonic Automotive System of America; Hemant Sikaria, Sibros Technologies Inc.;</p>

Planned by Vehicle Internet of Things Program Committee / Ground Vehicle Advisory Group

Thursday, April 15

Live: Optimizing Thermal Management to Boost Efficiency and Reduce Risk

Session Code HX192

Room 8 Session 11:00 a.m.

Effective thermal management involves a delicate balance of heating and cooling to key and critical vehicle areas, systems, and components. Industry experts discuss advances in thermal management that help better ensure thermal systems operate as designed, no component operation is at risk due to excessive or extreme temperatures, integrate well with other vehicle systems, contribute to overall energy efficiency.

Moderators - Gursaran Mathur, Calsonic Kansei North America Inc.; Ronald Semel, Ford Motor Company

Time	Paper No.	Title
11:00 a.m.	2021-01-0230	<p>Power and Efficiency Characteristics of a Hybrid Electrochemical-ICE Cycle</p> <p>David Diskin; Leonid Tartakovsky, Technion Israel Institute of Technology</p>
11:30 a.m.	2021-01-0202	<p>Experimental Investigation of the Pressure Drop during Water Condensation inside Charge Air Coolers</p> <p>Irina Basler, University of Stuttgart; Heinrich Reister, Rainer Rossmann, Daimler AG; Bernhard Weigand, University of Stuttgart</p>
12:00 p.m.	2021-01-0211	<p>Fast Diesel Aftertreatment Heat-up Using CDA and an Electrical Heater</p> <p>Andrew Matheaus, Gary Neely, Christopher Sharp, Southwest Research Institute; Justin Hopkins, James McCarthy, Jr., Eaton Corporation</p>

Planned by Thermal Management Activity / Ground Vehicle Advisory Group

SAE WCX Digital Summit

Technical Session Schedule

As of April 15, 2021 19:40:55 PM

Thursday, April 15

Live: Wet Clutch Friction in Evolving Automotive Powertrains - Panel Discussion

Session Code PFL390

Room 9 Session 9:00 a.m.

The key attribute enabling the automotive powertrain to smoothly transfer power from the motor (engine or electric motor) to the wheels is friction. In this special session a panel of industry experts will discuss why friction is so important. We will describe the types of clutch materials and lubricants used to create the proper friction properties and the types of bench tests used to confirm clutch performance. We will offer some insights into how automotive engineers successfully combine these complex elements across a variety of powertrain architectures.

Organizers - Rashid Farahati, Schaeffler Group Automotive; Timothy Newcomb, Lubrizol Corp.

Moderators - Timothy Newcomb, Lubrizol Corp.

Panelists - Larry Diemer, FCA; Feng Dong, BorgWarner Inc.; Rashid Farahati, Schaeffler Group Automotive; Joe Noles, Infineum International, Ltd.; David Whitticar, Lubrizol Corp.;

Planned by Fuels and Lubricants / Powertrain Fuels and Lubricants Activity

Thursday, April 15

Live: Materials Characterization, Measurement, and Modeling

Session Code M291

Room 9 Session 11:00 a.m.

Materials are very important for vehicle design and performance. From the traditional combustion engines to electrified powertrain systems and battery, material challenges occur in almost every design step. This session focuses on material characterization, optical measurement, and modeling technique already or potentially involved in automobile industry.

Organizers - Ke An, Oak Ridge National Laboratory; Hamid Jahed, University of Waterloo; Yi Liu, FCA US LLC; Qigui Wang, General Motors LLC; Lianxiang Yang, Oakland University

Chairperson - Yi Liu, FCA US LLC

Time	Paper No.	Title
	2021-01-0303	High-Speed 3D Optical Sensing and Information Processing for Automotive Industry Song Zhang, Purdue University
	ORAL ONLY	Battery Degradation Modeling and Machine Learning for Battery Optimization Wei Lu, University of Michigan
	ORAL ONLY	Technical Keynote: Integrated Computational Materials Engineering (ICME) for Automotive Lightweighting Alan Luo, Ohio State University

Planned by Materials Modeling and Testing Committee / Materials Engineering Activity