

SAE 2009 Noise and Vibration Conference and Exhibition Technical Session Schedule

As of 05/25/2009 07:40 pm

Monday, May 18

Acoustical Materials Workshop

Session Code: NVCWK1

Room Salon III, IV

Session Time: 7:00 p.m.

This workshop has traditionally been the kickoff event for the SAE Noise and Vibration Conference. In the past, the workshop was directed mainly toward those new to the field of automotive noise and vibration control materials. To appeal to a broader audience this year, the workshop will take a deeper look at various damping test methodologies, followed by a presentation on acoustical material modeling parameters for sound absorption and insulation applications and then conclude with a presentation on how damping, absorption and insulation test data and/or material models are combined into complete vehicle acoustical models. The workshop speakers will also be available for direct one-on-one conversations at the reception following the workshop.

Organizers - Michael Dinsmore, Acoustical Consulting Services

Time	Paper No.	Title
7:00 p.m.	ORAL ONLY	Welcome by 2009 Conference General Chairperson Gregory M. Goetchius, Materials Sciences Corp.
7:02 p.m.	ORAL ONLY	Introduction to SAE Acoustical Materials Committee by Committee Chairperson Barry Wyerman, Janesville Acoustics
7:07 p.m.	ORAL ONLY	Introduction of Workshop Speakers by Workshop Organizer Michael Dinsmore, Acoustical Consulting Services
7:10 p.m.	ORAL ONLY	Damping Test Methodologies Charles T. Moritz, Blachford Inc.
7:35 p.m.	ORAL ONLY	Acoustical Material Modeling Parameter Sensitivities Michael Dinsmore, Acoustical Consulting Services
8:00 p.m.	ORAL ONLY	Vehicle Acoustical System Simulations Claudio Bertolini, Rieter Automotive Management AG
8:25 p.m.	ORAL ONLY	Closing Remarks Michael Dinsmore, Acoustical Consulting Services

Tuesday, May 19

Materials (Part 1 of 2)

Session Code: NVC300

Room Amphitheatre

Session Time: 10:00 a.m.

This session will cover materials used to solve noise and vibration problems in vehicles. Topics covered will include new and traditional NVH materials, materials with unique or special NVH properties, case studies covering applications of NVH materials to solve specific vehicle problems, modeling of materials, manufacturing or processing of NVH materials, and engineering and design principles for the use of NVH materials.

Organizers - Barry Wyerman, Janesville Acoustics; Jason T. Kunio, Brüel & Kjær North America Inc.; Jian Pan, Rieter Automotive North America Inc.; David B. Reed, Janesville Acoustics; Pranab Saha, Kolano and Saha Engineers Inc.; Steven R. Sorenson, Chrysler LLC

Time	Paper No.	Title
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10:00 a.m.	2009-01-2141	Thoughts behind Developing SAE Standard J2883 - Random Incidence Sound Absorption Tests Using a Small Reverberation Room <i>Pranab Saha, Kolano and Saha Engineers Inc.; Jian Pan, Rieter Automotive North America Inc; Jerry Veen, Johnson Controls Inc</i>
10:20 a.m.	2009-01-2135	Review of Test Methods for Material Properties of Elastic Porous Materials <i>Jian Pan, Rieter Automotive North America Inc.; Peter R. Jackson, American Acoustical Products Inc</i>
10:40 a.m.	2009-01-2137	Optimization of Sound Absorbers Using Resistive Facings <i>Michael Dinsmore, Acoustical Consulting Services; Barry Wyerman, Janesville Acoustics; Richard Bliton, Precision Fabrics Group Inc</i>
11:00 a.m.	2009-01-2142	In Situ PU Surface Impedance Measurements for Quality Control in an Assembly Line <i>Emiel Tijs, Microflown Technologies BV</i>
11:20 a.m.	2009-01-2133	The Effect of Composite Material Attachment Configuration on SAE J1400 Transmission Loss Test Results <i>Steven M. Brown, Dan LaForgia, The Soundcoat Company Inc.</i>
11:40 a.m.	2009-01-2138	Lightweight Acoustic-Grade PVB Windshield to Reduce Vehicle Interior Noise <i>Jun Lu, Solutia Inc.</i>

Tuesday, May 19

Materials (Part 2 of 2)

Session Code: NVC300

Room Amphitheatre

Session Time: 2:30 p.m.

This session will cover materials used to solve noise and vibration problems in vehicles. Topics covered will include new and traditional NVH materials, materials with unique or special NVH properties, case studies covering applications of NVH materials to solve specific vehicle problems, modeling of materials, manufacturing or processing of NVH materials, and engineering and design principles for the use of NVH materials.

Organizers - *Barry Wyerman, Janesville Acoustics; Jason T. Kunio, Brüel & Kjær North America Inc.; Jian Pan, Rieter Automotive North America Inc.; David B. Reed, Janesville Acoustics; Pranab Saha, Kolano and Saha Engineers Inc.; Steven R. Sorenson, Chrysler LLC*

Time	Paper No.	Title
2:50 p.m.	2009-01-2136	Generalized Light-Weight Concepts: Improving the Acoustic Performance of Less than 2500 G/M² Insulators <i>Arnaud Duval, Jean-Francois Rondeau, Guillaume Deshayes, Lars Bischoff, Ludovic Dejaeger, Faurecia Acoustics And Soft Trim Div.</i>
3:10 p.m.	2009-01-2134	A Correlation between Oberst Bar and Center Point Damping Results <i>Jon Dowling, Pranab Saha, Kolano and Saha Engineers Inc.</i>
	2009-01-2143	Application of dual density light weight dash acoustic insulators in SUVs (Written Only -- No Oral Presentation) <i>Sajith Edathute, Mahindra & Mahindra, Ltd.; Thulasi ram Nalla, Rajesh Bhangale, Mansinh Kumbhar, Mahindra & Mahindra Ltd</i>

Tuesday, May 19

Product Development Process

Session Code: NVC501

Room Amphitheatre

Session Time: 4:20 p.m.

This session focuses on the development process used to achieve NVH goals and includes topics such as benchmarking, target setting, target cascading, the role and timing of simulation methods and test methods and cross functional coordination and optimization. Papers in this session will also explore the relevance and timing of component, subsystem and full system analysis and testing

Organizers - Robert E. Powell, Exa Corp.; Alan V. Parrett, General Motors Corp.

Time	Paper No.	Title
4:20 p.m.	2009-01-2179	Vehicle-to-Vehicle NVH Performance Variance <i>Robert Shaver, Kuang-Jen Liu, Michael Hardy, Chrysler LLC</i>
4:40 p.m.	2009-01-2177	V6-SUV Engine Sound Development <i>Naoki Hirate, Masashi Komada, Toyota Motor Corp.; Takayoshi Yoshioka, Toyota Motor Engineering & Manufacturing North America, Inc.; Siegmund Thomann, Franz Brandl, AVL LIST GmbH</i>
5:00 p.m.	2009-01-2178	How Advances in On-Road NVH Simulator Technology Have Enabled Firm Targets and a Clear Strategy for Delivery at the Concept Phase <i>David Quinn, Nissan Technical Centre Europe; Paul Speed-Andrews, Nissan Technical Center; Mark Allman-Ward, Thorsten Heinz, NoViSim Ltd.</i>

Tuesday, May 19

Sound Quality Workshop

Session Code: NVCWK2

Room Amphitheatre

Session Time: 6:30 p.m.

The Sound Quality Workshop provides working information for connecting objective acoustic and vibration measurements with human perceptions of the multiple aspects of transportation-product-related sound quality. It discusses what Sound Quality is, the capabilities and challenges of multidimensional human perception, and provides both general and specific guidelines for engineers and technicians dealing with sound quality issues and designs.

A psychoacoustics and signal processing overview is included, guiding practitioners through critical listening methods, the selection of appropriate analytic methods, and sound design approaches. Special attention will be paid to transient, tonal and modulation techniques and some advanced methods considering human signal processing and sound pattern sensitivity.

Organizers - Wade R. Bray, HEAD Acoustics Inc.

Tuesday, May 19

Sound Source Identification (Part 1 of 2)

Session Code: NVC402

Room Broadway A&B

Session Time: 10:00 a.m.

This session covers sound source identification and localization, acoustical holography, sound generation mechanisms, measurement techniques related to the sound source and noise propagation, and visualization techniques for sound pressure levels, sound radiation patterns, frequency content, and intensity. Also included are prediction and modeling methods related to the sound source.

Organizers - Gary Newton, Brüel & Kjær North America Inc.; Gabriella Cerrato-Jay, Sound Answers Inc.; Saeed Siavoshani, Dow Automotive

Time	Paper No.	Title
10:00 a.m.	2009-01-2171	Panel Contribution Analysis in a Vehicle Cabin Using a Dual Layer Handheld Array with Integrated Position Measurement <i>Jakob Mørkholt, Jørgen Hald, Brüel & Kjær Sound/Vib Meas A/S</i>

10:20 a.m.	2009-01-2170	Measurement of Absorption Coefficient, Surface Admittance, Radiated Intensity and Absorbed Intensity on the Panels of a Vehicle Cabin using a Dual Layer Array with Integrated Position Measurement Jakob Morkholt, Jorgen Hald, Bruel & Kjaer Sound/Vib A/S
10:40 a.m.	2009-01-2172	Development of Sound Source Search Technology for High Frequency Noise in Vehicle Interiors Masahiko Yamanouchi, Koji tsurumura, Toyota Motor Corporation; Takayoshi Yoshioka, Toyota Motor Engineering & Manufacturing North America, Inc.; Yutaka Ishii, Brüel & Kjær Japan
11:00 a.m.	2009-01-2169	DRE NVH Contribution Analysis of Vehicle Cavity Fillers - NVH Target Setting Process Saeed Siavoshani, Dow Automotive
11:20 a.m.	2009-01-2168	Use of Combustion Sound Level (CSL) Analysis for Powertrain NVH Development and Benchmarking Todd Tousignant, Thomas Wellmann, Kiran Govindswamy, FEV Inc.; Stefan Heuer, FEV Motorentechnik GmbH; Michael Workings, Chrysler Engineering
11:40 a.m.	2009-01-2174	Model Order Reduction Using Basis Expansions for Nearfield Acoustic Holography Tariq M. Khan, Pradeep Ramuhalli, Michigan State Univ.; S. T. Raveendra, Weiguo Zhang, Comet Technology Corp.

Tuesday, May 19

Sound Source Identification (Part 2 of 2)

Session Code: NVC402

Room Broadway A&B

Session Time: 2:30 p.m.

This session covers sound source identification and localization, accoustical holography, sound generation mechanisms, measurement techniques related to the sound source and noise propagation, and visualization techniques for sound pressure levels, sound radiation patterns, frequency content, and intensity. Also included are prediction and modeling methods related to the sound source.

Organizers - Gary Newton, Brüel & Kjær North America Inc.; Gabriella Cerrato-Jay, Sound Answers Inc.; Saeed Siavoshani, Dow Automotive

Time	Paper No.	Title
2:50 p.m.	2009-01-2175	Mapping 3 D Sound Intensity Streamlines in a Car Interior Emiel Tijs, Microflown Technologies BV
3:10 p.m.	2009-01-2173	A New Method of Powertrain Noise Source Identification using a Particle Velocity Probe for Acoustic Intensity Measurement Alastair William Brown, Simon Gregory, Ricardo UK, Ltd.
	2009-01-2166	Procedure to Asses the Vibroacoustic Quality of a Diesel Engine in Assembly Workshop (Written Only -- No Oral Presentation) Jose A. Calvo, Universidad Carlos III de Madrid
	2009-01-2167	Measurement and Analysis of Cam Chain Noise for Source Identification and Mitigation (Written Only -- No Oral Presentation) Kumaraswamy Shivashankaraiah, NV Dynamics India
	2009-01-2176	Sound Intensity Visualization with a Rigid Spherical Microphone Array in a Vehicle Cabin (Written Only -- No Oral Presentation) Kazuhiro Takashima, Hiroshi Nakagawa, Nittobo Acoustic Engineering Co., Ltd.; Earl Williams, Naval Research Laboratory

Tuesday, May 19

Science Fair

Session Code: NVCSF

Room Exhibition, Mega Center

Session Time:

Theme: Sound Engineering -The Science of Acoustics - The Science Fair will feature hands-on displays, video demonstrations, and collections of acoustical materials and testing equipment. From damping to sound barriers, absorbers, sealing, isolation and more, the fair will provide a sound learning experience. The displays will be open Tuesday, May 19 9:30 a.m. - 12:00 p.m. and 1:30 - 6:00 p.m., Wednesday, May 20 9:30 a.m. - 12:00 p.m. and 1:30 - 5:00 p.m., Thursday, May 21 9:30 a.m. - 2:00 p.m.

Organizers - David B. Reed, Janesville Acoustics

Time

Paper No.

Title

ORAL ONLY **Treating Enclosures - The Benefits of Acoustical Materials and Baffles**

Robert Marsh, Polymer Technologies

ORAL ONLY **Boundary Conditions in Acoustic Material Applications**

Andrea Frey, Roush Industries Inc.

ORAL ONLY **Open Cavity Demonstration**

Marie Coverdale, 3M Acoustic Solutions

ORAL ONLY **Insulation of Acoustic Material**

Art Ingraham, Rieter Automotive North America Inc.; Brandon Wichmann, Rieter Automotive

ORAL ONLY **History of Noise and Vibration**

Jian Pan, Rieter Automotive North America Inc.

ORAL ONLY **Absorption of Acoustic Material**

Jian Pan, Rieter Automotive North America Inc.

ORAL ONLY **Good Vibrations**

Mick Camella, Janesville Acoustics

Tuesday, May 19

Student Poster Competition

Session Code: NVCSPC

Room Exhibition, Mega Center

Session Time:

Organizers - Crystal Byrd, Cummins; Victoria R. McDonald, Marquette Univ.; Chadwyck Musser, Cambridge Collaborative Inc.

Time

Paper No.

Title

ORAL ONLY **Accelerated Life Testing**

Ashwini Pothula, Northern Illinois University

ORAL ONLY **Active Noise Cancellation**

Rachel Wheeler, Mississippi State Univ.

ORAL ONLY **Damping Estimation**

Deepak Malogi, Northern Illinois University

Tuesday, May 19

Structural Analysis: Engine/Powertrain/Driveline

Session Code: NVC100

10:00 a.m.

Room Marsalis I, II

Session Time:

The focus of the Structural Analysis session is to share experiences on analyzing, testing, and developing solutions to structural noise and vibration problems from powertrain sources. Analytical modeling, experimental testing and predictive correlation are just a few of the tools used in this endeavor.

Organizers - Deane B. Jaeger, Harley-Davidson Motor Co.; Robert F. Hand, Redbud Technology Group; Christopher Morgan, Polysonics Corp.

Chairpersons - Kenneth Kicinski, Harley-Davidson Motor Co.

Time	Paper No.	Title
10:00 a.m.	2009-01-2032	Idle Combustion Smoothness Joseph L. Stout, Ford Motor Co.
10:20 a.m.	2009-01-2034	Vibration Analysis of Powertrain Mounting System with a Combination of Active and Passive Isolators with Spectrally-varying Properties Jae-Yeol Park, Rajendra Singh, Ohio State Univ.
10:40 a.m.	2009-01-2030	Development of a Procedure for Multi-axial Road Load Reproductions on an Exhaust Test Rig Filip De Coninck, Kuleuven Belgium; Paul Sas, Wim Desmet, Katholieke Universiteit Leuven; Luk Dedene, Eric Hansenne, Bernard Lehaen, Bosal Research NV
11:00 a.m.	2009-01-2031	Boundary Conditions Affecting Gear Whine of a Gearbox Housing Acting as a Structural Member Brian K. Wilson, Romax Technology Inc.; Edmund Stilwell, NACCO Material Handling Group; Riza Jamaluddin, Romax Technology Ltd

Tuesday, May 19

Brakes

Session Code: NVC201

Room Marsalis I, II

Session Time: 2:30 p.m.

This session provides a good overview of current issues and problem-solving activities in vehicle braking system noise. Braking noise is one of the highest dollars cost warranty issues for the automakers, and therefore, gets considerable attention. The papers of this session will describe both experimental and analytical programs of investigations related to this issue.

Organizers - James K. Thompson, Bruel & Kjaer North America Inc.; Mohamed Khalid Abdelhamid, Bosch Corp.

Time	Paper No.	Title
2:50 p.m.	2009-01-2103	Braking Systems Creep Groan Noise: Detection and Evaluation Mohamed Khalid Abdelhamid, Robert Bosch LLC; Wade R. Bray, HEAD Acoustics Inc.
	2009-01-2100	A Study of Effects of Brake Contact Interfaces on Brake Squeal (Written Only -- No Oral Presentation) Yan Yue, Bosch Chassis Systems
	2009-01-2101	Complex Mode Analysis on Disk Brake Squeal and Design Improvement (Written Only -- No Oral Presentation) Jun Hou, Xuexun Guo, Gangfeng Tan, Wuhan Univ. of Technology

2009-01-2102 **High Frequency Brake Squeal Prediction Index for Disc In-plane Mode (Written Only -- No Oral Presentation)**
Sang-Don Joo, Ji-Hoon Han, Jeong-Tae Kim, Kyung-Hwan park, Hyundai Mobis

Tuesday, May 19

Vibro Acoustic Analysis (Part 1 of 5)

Session Code: NVC602

Room Marsalis I, II

Session Time: 4:20 p.m.

This session covers the relationships between vibration and noise that can be generated throughout the vehicle. Included in this session are modal vibration studies related to noise, vibration transfer paths throughout the vehicle, and coupling of vibration and acoustical modes. Both experimental and analytical approaches are included in this session.

Organizers - Taner Onsay, Chrysler LLC; Jay H. Kim, Univ. of Cincinnati; Y Charles Lu, Univ. of Kentucky; Patty Manning, Cambridge Collaborative Inc.

Time	Paper No.	Title
4:20 p.m.	2009-01-2209	Reconstruction of a Vibration Field from Acoustical Measurements: A New Inverse Method Based on the Concept of «Pellicular Acoustic Modes» Gregory Lielens, Bernard Van Antwerpen, Jean-Pierre Coyette, Jean-Louis Migeot, Free Field Technologies
4:40 p.m.	2009-01-2210	Vibro-Acoustic Modeling of the APAMAT II Test System Ignatius Vaz, ESI North America; Jian Pan, Rieter Automotive North America Inc

Tuesday, May 19

Active Noise and Vibration

Session Code: NVC302

Room New Orleans Ballroom

Session Time: 10:00 a.m.

This session addresses the strategies and methods for implementing active noise and vibration control in a vehicle. It will cover sensors and transducers, feedback systems, control algorithms, software for active control, noise and vibration cancellation devices, noise and vibration measurement systems, and case studies.

Organizers - Mohamad S. Qatu, Mississippi State Univ.; Mohamed Khalid Abdelhamid, Bosch Corp.; Thomas L. Lagö, Axiom Edu Tech. Inc.; Luc Mongeau, McGill Univ.

Time	Paper No.	Title
10:00 a.m.	2009-01-2145	Active Control of Powertrain Noise Using a Frequency Domain Filtered-X LMS Algorithm Jie Duan, Mingfeng Li, Teik C. Lim, Univ. of Cincinnati; Ming-Ran Lee, Wayne VanHaaften, Ming-Te Cheng, Takeshi Abe, Ford Motor Co.
10:20 a.m.	2009-01-2144	Use of an Electromagnetic Damper for Active Suspension System of a Road Vehicle Ashok Rangnath Mache, Vishwakarma Institute of Information Technology
10:40 a.m.	2009-01-2148	Plug-In Hybrid Vehicle Induction Motor Aerodynamic Noise Evaluation Ahmed A. A. Saad, Helwan Univ.

- 11:00 a.m. 2009-01-2149 **Design of a New VSSS-Adaptive Filter for a Potential Application of Active Noise Control to Intake System**
Euiyoul Kim, Sang Kwon Lee, Eun-woo Na, Ho-Wuk Kim, Inha Univ.
- 2009-01-2147 **Finite Element Analysis of Composite Box Structure Containing Piezoelectric Actuators and Sensors for Active Vibration Control (Written Only -- No Oral Presentation)**
Ramkumar Kandasamy, Chandran Subramani, Satyam venture engineering services Ltd.; N Ganesan, Indian Institute of Technology

Tuesday, May 19

Body Structure / Chassis (Part 1 of 3)

Session Code: *NVC200*

Room *New Orleans Ballroom*

Session Time: *2:30 p.m.*

This session covers static and dynamic issues in the body and chassis that contribute to noise and vibration problems in vehicles. Included in this session are modal studies, measurement and analysis methods, transfer path analysis, design guidelines, and recommended practices for noise and vibration control of the body and chassis.

Organizers - *Gregory W. Hopton, AVL Instrumentation & Test System Inc.; Christian M. Fernholz, Ford Motor Co.*

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
<i>2:30 p.m.</i>	<i>2009-01-2090</i>	<i>A Test-Based Procedure for the Identification of Rack and Pinion Steering System Parameters for use in CAE Ride-Comfort Simulations</i> <i>Paola Diglio, LMS International; Jianmin Gu, Ford Motor Co; Greg Falbo, LMS North America</i>
<i>2:50 p.m.</i>	<i>2009-01-2095</i>	<i>Steering Grunt Noise Robustness Improvement</i> <i>John McWilliams, Daniel Bleitz, Jim Wei, Ford Motor Co.</i>
<i>3:10 p.m.</i>	<i>2009-01-2088</i>	<i>Reciprocal Transfer Functions Synthesis Method for Rolling Noise and NVH Floor Treatment Investigations</i> <i>Johan Grebert, Luca Mazzarella, Rieter Automotive Management AG</i>
<i>3:20 p.m.</i>	<i>2009-01-2092</i>	<i>Road Noise TPA Simplification for Improving Vehicle Sensitivity to Tire Cavity Resonance Using Helium Gas</i> <i>Andrew Stephen Waisanen, Hyundai-Kia America Technical Center Inc.; Jason R. Blough, Michigan Technological Univ.</i>

Tuesday, May 19

Body Structure / Chassis (Part 2 of 3)

Session Code: *NVC200*

Room *New Orleans Ballroom*

Session Time: *4:20 p.m.*

This session covers static and dynamic issues in the body and chassis that contribute to noise and vibration problems in vehicles. Included in this session are modal studies, measurement and analysis methods, transfer path analysis, design guidelines, and recommended practices for noise and vibration control of the body and chassis.

Organizers - *Gregory W. Hopton, AVL Instrumentation & Test System Inc.; Christian M. Fernholz, Ford Motor Co.*

<i>Time</i>	<i>Paper No.</i>	<i>Title</i>
<i>4:20 p.m.</i>	<i>2009-01-2086</i>	<i>An Innovative Method of Simulating Tire Non-Uniformity Forces for Vehicle Vibration Sensitivity Measurements</i> <i>Perry Gu; Michael McKee, Ford Motor Co.</i>

4:40 p.m.	2009-01-2087	Optimizing R&H and VNH Performances Early in the Design Process via Multi Body Simulation <i>Jaimin Bai, Ford Motor Co; Paolo di Carlo, LMS International</i>
5:00 p.m.	2009-01-2091	Noise Path Analysis Process Evaluation of Automotive Shock Absorber Transient Noise <i>David Bogema, Brüel & Kjær North America Inc; Paul R. Goodes, Sound Answers Inc.; Chahe Apelian, Hyundai Kia America Technical Center Inc.; Michael Csakan, Hyundai-Kia America Technical Center Inc.</i>

Tuesday, May 19

SEA Workshop

Session Code: NVCWK3

Room New Orleans Ballroom

Session Time: 6:30 p.m.

This workshop will present a practical introduction to SEA Modeling and their use in vehicle applications. Topics to be discussed include: Introduction to SEA, a SEA vehicle modeling example, machinery example and an aerospace example. This workshop is structured as an introduction to SEA especially for those with limited experience in vehicle acoustics modeling. It also provides an opportunity to establish technical contacts for continuing working relationships.

Organizers - Mark Moeller, Spirit AeroSystems Inc.; Chadwyck Musser, Cambridge Collaborative Inc.; Richard DeJong, Calvin Engineering

Time	Paper No.	Title
6:30 p.m.	ORAL ONLY	Introduction to SEA & Master of Ceremonies <i>Richard DeJong, Calvin Engineering</i>
6:45 p.m.	ORAL ONLY	Aerospace Case Study <i>Mark Moeller, Spirit AeroSystems Inc.</i>
7:05 p.m.	ORAL ONLY	Heavy Trucks Case Study <i>Craig A. Birkett, Daimler Trucks North America LLC</i>
7:25 p.m.	ORAL ONLY	Automotive Case Study <i>Xianli Huang, Ford Motor Co.</i>
7:45 p.m.	ORAL ONLY	Round Table Discussion <i>Audience Q&A with All Presenters</i>

Tuesday, May 19

Structural Analysis: Numerical Methods (Part 1 of 2)

Session Code: NVC600

Room Salon I, III, IV

Session Time: 2:30 p.m.

This session focuses on the development and application of analytical methods for characterizing the dynamic behavior of structural systems. Analysis methods for all structural components, subsystems and complete systems found in automotive vehicles will be considered, except for powertrain and driveline which are covered in Powertrain Structural Analysis session. Examples include (but are not limited to) body structure, chassis structure, seats and interior structures.

Organizers - Gregory M. Goetchius, Materials Sciences Corp.; Christopher E. Shaw, Visteon Corp.

Time	Paper No.	Title
2:30 p.m.	2009-01-2194	Flexural Vibration of Free Square Plate by the Method of Superposition Using the Ritz Function and Comparison with Experimental Whole-Field Interferometry for Transverse Vibration of Plates <i>Babak Soltannia, National Technical Univ. of Ukraine</i>

2:50 p.m.	2009-01-2193	Prediction of Low Frequency Vibration Caused by Power Train Using Multi Body Dynamics <i>Hiroshi Sugimura, Yasushi Donoue, Masayuki Takei, Hiroo Yamaoka, Toyota Motor Corp.</i>
3:10 p.m.	2009-01-2197	A Measures Planning Method by Analysis of Contribution of the Vibration Transfer Path <i>Yukio Nakamura, Doshisha</i>

Tuesday, May 19

Structural Analysis: Numerical Methods (Part 2 of 2)

Session Code: NVC600

Room Salon I, III, IV

Session Time: 4:20 p.m.

This session focuses on the development and application of analytical methods for characterizing the dynamic behavior of structural systems. Analysis methods for all structural components, subsystems and complete systems found in automotive vehicles will be considered, except for powertrain and driveline which are covered in Powertrain Structural Analysis session. Examples include (but are not limited to) body structure, chassis structure, seats and interior structures.

Organizers - Gregory M. Goetchius, *Materials Sciences Corp.*; Christopher E. Shaw, *Visteon Corp.*

Time	Paper No.	Title
4:20 p.m.	2009-01-2196	Structure-Borne Vehicle Analysis Using a Hybrid Finite Element Method <i>Nickolas Vlahopoulos, Univ. of Michigan; Aimin Wang, Ricardo Sbragio, Michigan Engineering Services; Davide Caprioli, Claudio Bertolini, Rieter Automotive Management AG</i>
4:40 p.m.	2009-01-2195	A New Tool for Ship-Marine Machinery Noise Analysis <i>Leo Lu, Northrup Grumman</i>

Tuesday, May 19

Driveline (Part 1 of 4)

Session Code: NVC103

Room Salon II

Session Time: 2:30 p.m.

This session deals with analytical, computational and experimental studies of the dynamic response including noise and vibration of automotive driveline system and components. Typical topics of interests include, but not limited to, torque converters, gear noise, axle noise driveline system dynamics, transmission noise and vibrations, powertrain dynamics, transient dynamic response and propshaft balancing.

Organizers - Teik C. Lim, *Univ. of Cincinnati*; Kiran Govindswamy, *FEV Inc.*; Mohamad S. Qatu, *Mississippi State Univ.*; Joseph L. Stout, *Ford Motor Co.*; In-Soo Suh, *The Suh Consulting LLC*

Time	Paper No.	Title
2:30 p.m.	2009-01-2064	Optimization of Gear Whine, Efficiency and Durability of a Manual Transaxle <i>Brian K. Wilson, Kurt Sheridan, Romax Technology Inc.</i>
2:50 p.m.	2009-01-2071	Design and Conduct of Precision Planetary Gear Vibration Experiments <i>Tristan Ericson, Robert Parker, Ohio State Univ.</i>
3:10 p.m.	2009-01-2067	Vibration of Three Piece Shaft System <i>Mohamad S. Qatu, Mississippi State Univ.</i>

3:20 p.m. **2009-01-2063** **Characterizing the Onset of Manual Transmission Gear Rattle - Part I: Experimental Results**
Darrell Robinette, Randall S Beikmann, Michael Powell, Paul Piorkowski, General Motors Powertrain

Tuesday, May 19

Driveline (Part 2 or 4)

Session Code: **NVC103**

Room Salon II

Session Time: **4:20 p.m.**

This session deals with analytical, computational and experimental studies of the dynamic response including noise and vibration of automotive driveline system and components. Typical topics of interests include, but not limited to, torque converters, gear noise, axle noise driveline system dynamics, transmission noise and vibrations, powertrain dynamics, transient dynamic response and propshaft balancing.

Organizers - *Teik C. Lim, Univ. of Cincinnati; Kiran Govindswamy, FEV Inc.; Mohamad S. Qatu, Mississippi State Univ.; Joseph L. Stout, Ford Motor Co.; In-Soo Suh, The Suh Consulting LLC*

Time	Paper No.	Title
4:20 p.m.	2009-01-2070	Influence of Rotor Gyroscopic Effect on Hypoid and Bevel Geared System Dynamics <i>Tao Peng, Teik C. Lim, Univ. of Cincinnati</i>
4:40 p.m.	2009-01-2068	The Influence of Key Parameters on the Nonlinear Resonances in Loaded Driveline Rattle <i>Ashley Crowther, Chris Halse, Zhiwei Zhang, Romax Technology Ltd.</i>
5:00 p.m.	2009-01-2069	Characterizing the Onset of Manual Transmission Gear Rattle - Part II: Analytical Results <i>Darrell Robinette, Randall S Beikmann, Michael Powell, Paul Piorkowski, General Motors Powertrain</i>

Tuesday, May 19

Instrumentation Systems, Sensors and Methods (Part 1 of 4)

Session Code: **NVC401**

Room Salon V

Session Time: **2:30 p.m.**

This session covers instrumentation sensors, systems and methods used in the measurement and analysis of noise and vibration. Analysis of methods internal to instrumentation will also be covered.

Organizers - *Wade R. Bray, HEAD Acoustics Inc.; James M. Nieters, HGL Dynamics, Inc.*

Time	Paper No.	Title
2:30 p.m.	2009-01-2156	Measuring the Sound Power of a Standard Reference Source Using Sound-Intensity <i>Robert Hickling, Sonometrics Inc.</i>
2:50 p.m.	2009-01-2163	Calibrating and Protecting Microphones to Allow Acoustic Measurements in Hazardous Environments <i>Chad Michael Walber, Carl Anderson, Mark Johnson, Jason R. Blough, Michigan Technological Univ.</i>
3:10 p.m.	2009-01-2155	Using Acoustic Particle Velocity Sensors for End of Line Control <i>Hans-Elias De Bree, Microflow Technologies BV</i>

Tuesday, May 19

Instrumentation Systems, Sensors and Methods (Part 2 of 4)

Session Code: NVC401

Room Salon V

Session Time: 4:20 p.m.

This session covers instrumentation sensors, systems and methods used in the measurement and analysis of noise and vibration. Analysis of methods internal to instrumentation will also be covered.

Organizers - Wade R. Bray, HEAD Acoustics Inc.; James M. Nieters, HGL Dynamics, Inc.

Time	Paper No.	Title
4:20 p.m.	2009-01-2159	Ultrasound Techniques for Leak Detection Chris Moon, Sound Answers, Inc.; Warren Brown, QuadraScan Technologies LLC; Scott Mellen, Weldmation; Eric R Frenz, Brüel & Kjær North America Inc; DJ Pickering, Sound Answers, Inc.
4:40 p.m.	2009-01-2164	Advanced Signal Processing Algorithms for Sound and Vibration Beyond the FFT Kurt Veggeberg, National Instruments
5:00 p.m.	2009-01-2157	Understanding Order Tracking Algorithm Limitations Jason R. Blough, Michigan Technological Univ.

Tuesday, May 19

Drive-By-Noise (Part 1 of 2)

Session Code: NVC700

Room Salon VI

Session Time: 2:30 p.m.

This session covers noise sources, measurement techniques, noise attenuation strategies, case studies, prediction and modeling methods, and community regulations related to drive-by noise.

Organizers - Paul R. Donovan, Illingworth & Rodkin Inc.; Deane B. Jaeger, Harley-Davidson Motor Co.; Richard F. Schumacher, RS Beratung LLC; Steven R. Sorenson, Chrysler LLC

Time	Paper No.	Title
2:30 p.m.	2009-01-2226	Evaluation of Different Tyre Noise Models for Vehicle Pass-By Sound Synthesis Dries Berckmans, Peter Kindt, Paul Sas, Wim Desmet, Katholieke Universiteit Leuven
2:50 p.m.	2009-01-2227	Correlation Study between On-Road Pass-By Noise and Reverberation Room Body Transparency Tests Yuksel Gur, Ford Motor Co.; Timothy Mouch, Ford Advanced Vehicle Technology; Sung-Ping Cheng, Ford Motor Co.
3:10 p.m.	2009-01-2230	Component Noise Source Ranking of a Medium Duty Diesel Truck during Pass-by Hans-Peter Keller, Pelzer Consult GmbH; Christopher Conklin, Daniel Faylor, Navistar Inc.
3:20 p.m.	2009-01-2232	Localization of Truck Noise Sources under Passby Conditions Using Acoustic Beamforming Methods Paul R. Donovan, Illingworth & Rodkin Inc.

Tuesday, May 19

Drive-By-Noise (Part 2 of 2)

Session Code: NVC700

4:20 p.m.

Room Salon VI

Session Time:

This session covers noise sources, measurement techniques, noise attenuation strategies, case studies, prediction and modeling methods, and community regulations related to drive-by noise.

Organizers - Paul R. Donovan, Illingworth & Rodkin Inc.; Deane B. Jaeger, Harley-Davidson Motor Co.; Richard F. Schumacher, RS Beratung LLC; Steven R. Sorenson, Chrysler LLC

Time	Paper No.	Title
4:20 p.m.	2009-01-2231	Sound Quality Jury Analysis versus Sound Pressure Measurement in Snowmobiles <i>James Knittel, HEAD Acoustics Inc.; Jay Meldrum, Michigan Technological Univ.</i>
4:40 p.m.	2009-01-2229	Realization of Ground Effects on Snowmobile Pass-by Noise Testing <i>Brandon Dilworth, Jason R. Blough, Michigan Technological Univ.</i>
5:00 p.m.	2009-01-2228	Determination of Source Contribution in Snowmobile Pass-by Noise Testing <i>Brandon Dilworth, Jason R. Blough, Michigan Technological Univ.</i>

Tuesday, May 19

Welcome, Opening Remarks by Conference Chair, Greg Goetchius and Tribute to Ralph K. Hillquist - Keynote Speakers: Professor Bernard J. Challen, Shoreham Services and Richard F. Schumacher, RS Beratung LLC

Session Code: NVCK1

Room St. Charles Ballroom

Session Time: 8:30 a.m.

This session will be a tribute to Ralph K. Hillquist, SAE Noise and Vibration Conference founder and namesake of the Ralph K. Hillquist Honorary SAE Scholarship, who passed away in 2008. Bernard will make some observations on Ralph Hillquist and his contributions, based on their 30 years of friendship and collaboration. From a technical meeting at GM in 1977, in connection with a US Government noise program, through to the popular international success of the SAE N&V Meeting, Ralph's unique clear views marked him out as a valuable engineer and a kind person. Dick will relate some of the events that shaped Ralph's career at GM with input from long time colleagues. He will also include some long forgotten pictures and quotes from the various participants.

Presenters - Bernard J. Challen, Shoreham Services; Richard F. Schumacher, RS Beratung LLC

Tuesday, May 19

Keynote Luncheon - "The Physics of Music and Musical Instruments" - Professor Steve Errede, Univ. of Illinois at Urbana-Champaign

Session Code: NVCK2

Room St. Charles Ballroom

Session Time: 12:00 p.m.

Music throughout the millennia appears to have been of profound evolutionary benefit for our own human species - which appears to be unique amongst all of the living creatures on this planet. Why? There are various other animals - e.g. whales, birds, frogs, coyotes, etc. for which their own music/song is important to them also. It is no accident that the musical instruments we humans have developed over the ages mimic (some more so than others) the human voice and/or our own internal human rhythms. The acoustical nature of the human voice, coupled with the biological/neural physics of how our ears work is also directly connected to our perception of consonant/dissonant sounds, as well as the development of our musical scale(s), and hence our own music. If intelligent life exists elsewhere in the universe, would these beings also have their own music? What would it sound like?

Presenters - Steven M. Errede, Univ. of Illinois at Urbana-Champaign

Wednesday, May 20

Diesel (Part 1 of 2)

Session Code: NVC104

Room Amphitheatre

Session Time: 8:30 a.m.

The diesel NVH session is focused on issues related to making diesel engines achieve better NVH characteristics. Topics include both analytical and experimental techniques for developing low noise diesel engines and components. Related topics covered in this session include linear and torsional vibration of diesel engines, as well as features intended to reduce diesel specific intake and exhaust noise problems, such as turbocharger whine.

Organizers - Thomas Reinhart, Southwest Research Institute; Kalyan Singh Bagga, Navistar Inc.; Gregory W. Hopton, AVL Instrumentation & Test System Inc.; Christopher E. Shaw, Visteon Corp.

Chairpersons - Thomas Reinhart, Southwest Research Institute

Time	Paper No.	Title
8:30 a.m.	2009-01-2078	A Method for NVH Quality Rating of Diesel Combustion Noise Using Typical Driving Modes Till Papenfus, HEAD acoustics GmbH; Insoo Jung, Koo-Tae Kang, Hyundai Motor Co.; Klaus Genuit, HEAD acoustics GmbH; Jaemin Jin, Hyundai Motor Co.; Peter Blaschke, HEAD acoustics GmbH
8:50 a.m.	2009-01-2079	In-Cylinder Pressure Analysis through Accelerometer Signal Processing for Diesel Engine Combustion Optimization Ornella Chiavola, Univ. ROMA TRE; Stefano Manelli, Luigi Arnone, Lombardini S R L; Giancarlo Chiatti, Univ. ROMA TRE
9:10 a.m.	2009-01-2080	Diesel Combustion Mode Switching - A Substantial NVH Challenge Thomas Reinhart, Southwest Research Institute

Wednesday, May 20

Diesel (Part 2 of 2)

Session Code: NVC104

Room Amphitheatre

Session Time: 10:00 a.m.

The diesel NVH session is focused on issues related to making diesel engines achieve better NVH characteristics. Topics include both analytical and experimental techniques for developing low noise diesel engines and components. Related topics covered in this session include linear and torsional vibration of diesel engines, as well as features intended to reduce diesel specific intake and exhaust noise problems, such as turbocharger whine.

Organizers - Thomas Reinhart, Southwest Research Institute; Kalyan Singh Bagga, Navistar Inc.; Gregory W. Hopton, AVL North America Inc.; Christopher E. Shaw, Visteon Corp.

Time	Paper No.	Title
10:20 a.m.	2009-01-2082	Optimization of the High Frequency Noise for the Passenger Car Diesel Engine Jungyel Hwang, Hyundai-Kia R&D Center
10:40 a.m.	2009-01-2083	Development of Self-Contained Engine Skid for NVH Troubleshooting and Testing of Diesel Engines Dhanesh Madhukar Purekar, David Moenssen, Cummins Technical Center
	2009-01-2077	Combustion Noise Prediction of a Light Duty Diesel Engine and Numerical Optimization through the Employment of Modefrontier Software (Written Only -- No Oral Presentation) Daniela Siano, Istituto Motori CNR; Fabio Bozza, Universita di Napoli
	2009-01-2081	Noise Optimization of Diesel Engines with New Combustion System (Written Only -- No Oral Presentation) Shanjin Wang, Renault SAS

Wednesday, May 20

Heavy Duty Truck / Off-Highway

Session Code: NVC800

Room Amphitheatre

Session Time: 2:30 p.m.

This session covers noise and vibration in heavy trucks and buses and all other off-road vehicles. Special attention will be focused on the noise and vibration problems found in these vehicles, as opposed to passenger cars and light trucks, and to the engineering solutions required to solve these problems. Included in the session are discussions of special measurement methods, modeling specifically directed to these vehicles, and NVH materials with special properties to address unique problems.

Organizers - Craig A. Birkett, Daimler Trucks North America LLC; Peter A. Jackson, American Acoustical Products Inc.; Charles T. Moritz, Blachford Inc.; Pranab Saha, Kolano and Saha Engineers Inc.

Time	Paper No.	Title
2:30 p.m.	2009-01-2239	Modeling Interior Noise in Off-Highway Trucks using Statistical Energy Analysis <i>Rohit Gujarathi, David Copley, Richard Romick, Caterpillar Inc.; Mohan Rao, Michigan Technological Univ</i>
2:50 p.m.	2009-01-2240	Truck Interior Noise Correlation using the SAE Road Load Method in the Commissioning of the E-A-R(TM) Acoustic Technology Center <i>Steven Jorro, E-A-R, Thermal/Acoustic Systems; Keith Thompson, Burke E. Porter; Andrew Smith, Daimler Trucks</i>
3:10 p.m.	2009-01-2241	Optimization of Sound Packages for Commercial Vehicles using Panel Contribution Analysis <i>Manuel Sanchez Castillo, E-A-R, Aearo Technologies, a 3M company; Andreas Schuhmacher, Brüel & Kjær</i>
	2009-01-2243	Virtual Transfer Path Analysis at Daimler Trucks (Written Only -- No Oral Presentation) <i>Rene Visser, Daimler AG</i>

Wednesday, May 20

Power Sport Vehicles

Session Code: NVC801

Room Amphitheatre

Session Time: 4:20 p.m.

This session covers noise and vibration including test, analysis, treatment and validation techniques for power sport vehicles including motorcycles, snowmobiles, ATVs, jet skis, pleasure craft, and ultralight or microlight aircraft.

Organizers - Kenneth Kicinski, Deane B. Jaeger, Harley-Davidson Motor Co.

Time	Paper No.	Title
4:20 p.m.	2009-01-2244	Acceptability of OHM and ATV Noise - Case Studies of Environmental Noise Produced by OHM and ATV Riding Areas <i>Richard G. Pierson, Harley-Davidson Motor Co.</i>
4:40 p.m.	2009-01-2245	Zoning Without Permitted Uses - Case Study of Wisconsin Supreme Court Ruling: Town of Rhine versus Bizzell / Manitowoc Area Off-Highway Vehicle Association <i>Alexander Bub, Harley-Davidson Inc.</i>

Wednesday, May 20

SEA (Statistical Energy Analysis) Design (Part 1 of 2)

Session Code: NVC601

8:30 a.m.

Room Broadway A&B

Session Time:

This session provides a good overview of recent innovations to SEA modeling techniques. SEA models can be used alone or together with hybrid analytical or experimental techniques to establish good comparative NVH predictions at the earliest stage of the vehicle design process. The papers of this session will describe recent advances and / or validations of SEA theory, applications, or use in conjunction with hybrid techniques for high- and mid-frequency NVH predictions.

Organizers - Chadwyck T. Musser, Jerome E. Manning, Cambridge Collaborative Inc.; Mark Moeller, Spirit AeroSystems Inc.; Jian Pan, Rieter Automotive North America Inc.; Alan V. Parrett, General Motors Corp.

Time	Paper No.	Title
8:30 a.m.	2009-01-2200	Validation of SEA Predicted Vehicle Noise Reduction via Exterior Loading Created by Fast Multipole BEM Terence Connelly, Julio Cordioli, ESI Group; Kent Fung, International Automotive Components Grp
8:50 a.m.	2009-01-2203	A CFD/SEA Approach for Prediction of Vehicle Interior Noise due to Wind Noise Philippe Moron, Robert E. Powell, David Freed, Franck Perot, Bernd Crouse, Barbara Neuhierl, Exa Corp.; Frank Ullrich, BMW Technik GmbH; Michael Hoell, Artur Waibl, Cornelia Fertl, BMW AG

Wednesday, May 20

SEA (Statistical Energy Analysis) Design (Part 2 of 2)

Session Code: NVC601

Room Broadway A&B

Session Time: 10:00 a.m.

This session provides a good overview of recent innovations to SEA modeling techniques. SEA models can be used alone or together with hybrid analytical or experimental techniques to establish good comparative NVH predictions at the earliest stage of the vehicle design process. The papers of this session will describe recent advances and / or validations of SEA theory, applications, or use in conjunction with hybrid techniques for high- and mid-frequency NVH predictions.

Organizers - Chadwyck T. Musser, Jerome E. Manning, Cambridge Collaborative Inc.; Mark Moeller, Spirit AeroSystems Inc.; Jian Pan, Rieter Automotive North America Inc.; Alan V. Parrett, General Motors Corp.

Time	Paper No.	Title
10:00 a.m.	2009-01-2201	A Statistical Regression-Based Energy Method for Estimating Vehicle Interior Noise in Early Vehicle Design Shung H. Sung, Donald J. Nefske, GM R&D Center
10:20 a.m.	2009-01-2206	Use of SEA to Support Sound Package Design Studies and Vehicle Target Setting Tom Teknos, Ford Motor Co.; Chadwyck T. Musser, Cambridge Collaborative Inc.; Wei Liu, Ford Motor Co.
10:40 a.m.	2009-01-2202	Effect of Damping on Sound Transmission Loss Through Automotive Body Panels Avinash R. Patil, MSC Engineered Materials & Solutions
11:00 a.m.	2009-01-2205	Refined Models of Seals and Slits for Airborne SEA Predictions Julio Cordioli, Vincent Cotoni, Phil Shorter, ESI Group
11:20 a.m.	2009-01-2199	Validation of Hybrid FE-SEA Model of a Trimmed Full Vehicle for Reduction of Structure Borne Noise in the Mid-frequency Range Arnaud Charpentier, ESI North America; Kazuki Fukui, Nissan Motor Co Ltd; Prasanth Sreedhar, Bryce Gardner, ESI North America

11:40 a.m. 2009-01-2198 **Engaging Energy based Structural-Acoustic Simulations in Multi-Discipline Design**
Nickolas Vlahopoulos, Univ. of Michigan; Aimin Wang, Geng Zhang ,
Michigan Engineering Services

Wednesday, May 20

Components / Accessories (Part 1 of 2)

Session Code: NVC102

Room Broadway A&B

Session Time: 2:30 p.m.

This session is focused on base engine, mounts, accessories, fuel injection system, combustion system, transmission related design or development noise and vibration topics. The papers of this session will have both experimental and analytical approaches to problem solving.

Organizers - Kalyan Singh Bagga, Navistar Inc.; Tom Mitchell, LMS North America; In-Soo Suh, The Suh Consulting LLC; Prakash T. Thawani, A1 Noise & Vibration Consultants; Joachim Wolschendorf, FEV Inc.

Time	Paper No.	Title
2:30 p.m.	2009-01-2049	Weight Reduction Feasibility of Engine Components Concerning Noise and Vibration Characteristics Ming Une Jen, Ming-Hung Lu, Industrial Technology Research Institute
2:50 p.m.	2009-01-2060	NVH Development of Lightweight Polymer Oil Pans for Gasoline Engines Abdelkrim Zouani, Thomas Smith, Frank Valencia, Mamta Sabharwal, Changshen Gan, Ford Motor Co.; Chul Lee, Ankur Bhosale, Prasanna Kondapalli, BASF Engineering Plastics
3:10 p.m.	2009-01-2057	Vibro-Acoustic Simulations of Diesel Injection Ducts Jean-Luc Bourachot, Jean-Pascal Leandre, Alain Walbott, Benoit Bouvier, Renault SAS; Bernard Van Antwerpen, Diego d'Udekem, Free Field Technologies
3:30 p.m.	2009-01-2053	Investigation of Compressor Surge Noise in Automotive Turbochargers Charlie Teng, Steve Homco, Ford Motor Co.

Wednesday, May 20

Components / Accessories (Part 2 of 2)

Session Code: NVC102

Room Broadway A&B

Session Time: 4:20 p.m.

This session is focused on base engine, mounts, accessories, fuel injection system, combustion system, transmission related design or development noise and vibration topics. The papers of this session will have both experimental and analytical approaches to problem solving.

Organizers - Kalyan Singh Bagga, Navistar Inc.; Tom Mitchell, LMS North America; In-Soo Suh, The Suh Consulting LLC; Prakash T. Thawani, A1 Noise & Vibration Consultants; Joachim Wolschendorf, FEV Inc.

Time	Paper No.	Title
4:20 p.m.	2009-01-2052	Use Crankshaft Position Sensor Signal to Evaluate Engine Combustion Performance Longxin Zhen, Yanshan Univ.; Qiang Li, Hebei Univ. of Science and Technology; Baocheng Wang, Zijun An, Yanshan Univ.

4:40 p.m.	2009-01-2055	Modeling, Validation and Analysis of the Fuel Supply and Injection System for NVH Improvement <i>Nicolas Orand, Raphael Rhoté-Vaney, LMS North America</i>
5:00 p.m.	2009-01-2056	On Board Recognition of different Fuels Feeding SI Engines with the use of Dimensional and Nondimensional Vibration Signal Parameters - Part 1 <i>Bartosz Flekiewicz, Auto Gaz Slask; Marek Flekiewicz, Pawel Fabis, Politechnika Slaska</i>
	2009-01-2054	A/C Moan - Its Diagnostics and Resolution (Written Only -- No Oral Presentation) <i>Prakash T. Thawani, A1 Noise and Vibration Control, LLC; Zhengyu Liu, Ford Motor Co</i>

Wednesday, May 20

Vibro Acoustic Analysis (Part 2 of 5)

Session Code: NVC602

Room Marsalis I, II

Session Time: 8:30 a.m.

This session covers the relationships between vibration and noise that can be generated throughout the vehicle. Included in this session are modal vibration studies related to noise, vibration transfer paths throughout the vehicle, and coupling of vibration and acoustical modes. Both experimental and analytical approaches are included in this session.

Organizers - *Taner Onsay, Chrysler LLC; Jay H. Kim, Univ. of Cincinnati; Y Charles Lu, Univ. of Kentucky; Patty Manning, Cambridge Collaborative Inc.*

Time	Paper No.	Title
8:30 a.m.	2009-01-2211	Application of the Wave Based Technique to Predict the Engine Noise Radiation under Anechoic Conditions <i>Achim Hepberger, Hans H. Priebisch, Virtual Vehicle (VIF); Franz Diwoky, Harald Pramberger, AVL List GmbH</i>
8:50 a.m.	2009-01-2212	Vibro-Acoustic Simulation of Mechanical Components Excited by Distributed Random Loads <i>Jean-Pierre Coyette, Yves Detandt, Gregory Lielens, Benoit Van den Nieuwenhof, Free Field Technologies</i>
9:10 a.m.	2009-01-2213	FEM System Development for Dynamic Response Analysis of Acoustic Trim <i>Norimasa Kobayashi, Masami Habuchi, Hiroo Yamaoka, Toyota Motor Corp.</i>

Wednesday, May 20

Vibro Acoustic Analysis (Part 3 of 5)

Session Code: NVC602

Room Marsalis I, II

Session Time: 10:00 a.m.

This session covers the relationships between vibration and noise that can be generated throughout the vehicle. Included in this session are modal vibration studies related to noise, vibration transfer paths throughout the vehicle, and coupling of vibration and acoustical modes. Both experimental and analytical approaches are included in this session.

Organizers - *Taner Onsay, Chrysler LLC; Jay H. Kim, Univ. of Cincinnati; Y Charles Lu, Univ. of Kentucky; Patty Manning, Cambridge Collaborative Inc.*

Time	Paper No.	Title
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10:00 a.m.	2009-01-2218	SONVERT: An Original Hybrid Traffic Noise Simulation Approach Jean-Francois Rondeau, Arnaud Duval, Christian Morgenstern , Faurecia Acoustic and Soft Trim Division; Gérard Borello, Interac; Slaheddine Frikha , Alexandre Gallet , ESI GROUP; Philippe Jean , Nicolas Noe , CSTB
10:20 a.m.	2009-01-2216	Treasuri2/FE: A Tool for the FE Simulation of Sound Package Parts Fully Integrated in Nastran Claudio Bertolini, Luca Guj , Rieter Automotive Management AG; Francesca Avenati Bassi , Rieter Automotive Fimit SpA; Kazuhito Misaji, Fumihiko Ide, Honda R&D Co Ltd.
10:40 a.m.	2009-01-2215	The Application of the Vincent Circle to Vibro-Acoustic and Duct Acoustic Applications David W. Herrin, Jinghao Liu, Univ. of Kentucky
11:00 a.m.	2009-01-2214	A Hybrid Wave Based - Modally Reduced Finite Element Method for the Efficient Analysis of Low- and Mid-Frequency Car Cavity Acoustics Bert Van Genechten, Bert Pluymers , Dirk Vandepitte, Wim Desmet, Katholieke Universiteit Leuven

Wednesday, May 20

Vibro Acoustic Analysis (Part 4 of 5)

Session Code: NVC602

Room Marsalis I, II

Session Time: 2:30 p.m.

This session covers the relationships between vibration and noise that can be generated throughout the vehicle. Included in this session are modal vibration studies related to noise, vibration transfer paths throughout the vehicle, and coupling of vibration and acoustical modes. Both experimental and analytical approaches are included in this session.

Organizers - Taner Onsay, Chrysler LLC; Jay H. Kim, Univ. of Cincinnati; Y Charles Lu, Univ. of Kentucky; Patty Manning, Cambridge Collaborative Inc.

Time	Paper No.	Title
2:30 p.m.	2009-01-2222	Vehicle Airborne Noise Analysis using Boundary Element and Finite Element Energy Based Methods Nickolas Vlahopoulos, Univ. of Michigan; Jim He , Geng Zhang, Michigan Engineering Services
2:50 p.m.	2009-01-2221	Sound-Insulation Layers Low-Frequency Modeling, using the Fuzzy Structure Theory charles fernandez, PSA Peugeot Citroën; Laurent Gagliardini, PSA; Christian Soize, Université Paris Est
3:10 p.m.	2009-01-2220	Guidelines for Calculation of Automotive Exterior Acoustic Loads at Mid and High Frequencies with Fast Multipole BEM Vincent Cotoni, ESI Group
3:30 p.m.	2009-01-2219	Energy Density Field Approach for Low- and Medium-Frequency Vibroacoustic Analysis of a Car Body Using a Statistical Computational Model Morad Kassem, Laurent Gagliardini, Christian Soize, PSA Peugeot Citroën

Wednesday, May 20

Vibro Acoustic Analysis (Part 5 of 5)

Session Code: NVC602

Room Marsalis I, II

Session Time: 4:20 p.m.

This session covers the relationships between vibration and noise that can be generated throughout the vehicle. Included in this session are modal vibration studies related to noise, vibration transfer paths throughout the vehicle, and coupling of vibration and acoustical modes. Both experimental and analytical approaches are included in this session.

Organizers - *Taner Onsay, Chrysler LLC; Jay H. Kim, Univ. of Cincinnati; Y Charles Lu, Univ. of Kentucky; Patty Manning, Cambridge Collaborative Inc.*

Time	Paper No.	Title
4:20 p.m.	2009-01-2225	BEM Modeling of Mufflers with Diesel Particulate Filters and Catalytic Converters <i>Tim Wu, Univ. of Kentucky</i>
4:40 p.m.	2009-01-2223	Performance Improvement Algorithm for Mode-Based Frequency Response Analysis <i>Andrzej Bajer, Dassault Systemes Simulia Corp.</i>

Wednesday, May 20

Body Structure / Chassis (Part 3 of 3)

Session Code: *NVC200*

Room *New Orleans Ballroom*

Session Time: *8:30 a.m.*

This session covers static and dynamic issues in the body and chassis that contribute to noise and vibration problems in vehicles. Included in this session are modal studies, measurement and analysis methods, transfer path analysis, design guidelines, and recommended practices for noise and vibration control of the body and chassis.

Organizers - *Gregory W. Hopton, AVL Instrumentation & Test System Inc.; Christian M. Fernholz, Ford Motor Co.*

Time	Paper No.	Title
8:30 a.m.	2009-01-2097	A Study of Front Subframe System Optimization for Improving Vehicle NVH Performance <i>Sang Young Park, Hyundai & Kia Corp.</i>
8:50 a.m.	2009-01-2094	Noise Reduction of Electrically Powered Mass Rapid Train by Improving the Contact Conditions between the Rubbing Plates and the Friction Blocks <i>Hsiu-Ying Hwang, National Taipei Univ. of Technology</i>
	2009-01-2093	Improving Vehicle Vibrational Behavior via Structural Modification with Random Road Input (Written Only -- No Oral Presentation) <i>Mir Arash Keshavarz, Mohsen Bayani Khaknejad, Shahram Azadi, K. N. Toosi Univ. of Technology</i>

Wednesday, May 20

Intake / Exhaust (Part 1 of 3)

Session Code: *NVC101*

Room *New Orleans Ballroom*

Session Time: *10:00 a.m.*

This session covers experimental, computational, and analytical efforts related to the basic mechanisms and control techniques of noise and vibration in the breathing system (induction, combustion chamber, and exhaust) of engines. Noise sources include airborne, flow, flow-acoustic and flow-structure coupling.

Organizers - *Ahmet Selamet, Ohio State Univ.; Norman T. Huff, Owens Corning; Christopher E. Shaw, Visteon Corp.*

Time	Paper No.	Title
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10:00 a.m.	2009-01-2039	A High Performance Passive Muffler Valve William E. Hill, Tenneco Inc.
10:20 a.m.	2009-01-2048	A Multi-Chamber Silencer for Turbocharger Noise Iljae Lee, Chonbuk National Univ.; Ahmet Selamet, Ohio State Univ; Taechung kim , Juin Kim, Hyundai-Kia Motors
10:40 a.m.	2009-01-2045	Experimental Determination of Sound Transmission in Turbo-Compressors Hans Rammal, KTH CICERO CENTRE; Mats Abom, KTH Kungliga Tekniska Hogskolan
11:00 a.m.	2009-01-2043	The Acoustic Impedance of a Wide Side Branch Orifice: Experimental Determination Using Three Port Methodology Mikael K. Karlsson, KTH, MWL
11:20 a.m.	2009-01-2042	Prediction of Muffler Insertion Loss by a Hybrid FE Acoustic-SEA Model Steven Mattson, David Labyak, Jeff Pruetz, Great Lakes Sound & Vibration Inc; Terence Connelly, ESI Group
11:40 a.m.	2009-01-2037	Micro-Perforated Plates for Vehicle Applications Sabry Allam, Mats Abom, Kungliga Tekniska Hogskolan

Wednesday, May 20

Intake / Exhaust (Part 2 of 3)

Session Code: NVC101

Room New Orleans Ballroom

Session Time: 2:30 p.m.

This session covers experimental, computational, and analytical efforts related to the basic mechanisms and control techniques of noise and vibration in the breathing system (induction, combustion chamber, and exhaust) of engines. Noise sources include airborne, flow, flow-acoustic and flow-structure coupling.

Organizers - Ahmet Selamet, Ohio State Univ.; Norman T. Huff, Owens Corning; Christopher E. Shaw, Visteon Corp.

Time	Paper No.	Title
2:30 p.m.	2009-01-2041	Load Effect on the Source Impedance Measurement Accuracy Jinghao Liu, David W. Herrin, Univ. of Kentucky
2:50 p.m.	2009-01-2040	Scattering Matrix Evaluation with CFD for Components in Low Mach Number Flow Ducts Axel Kierkegaard, MWL, KTH
3:10 p.m.	2009-01-2038	Predicting Shell Vibration and Implosion Issues in Automotive Muffler Design Chulho Yang, Oklahoma State Univ.; John George, Tom Wahl, Hao Jin, Emcon Technologies
3:30 p.m.	2009-01-2035	Transmission Loss Measurement with and without an Anechoic Termination Shi Zheng, Chris Kleinfeld, Tenneco Inc.

Wednesday, May 20

Intake / Exhaust (Part 3 of 3)

Session Code: NVC101

Room New Orleans Ballroom

Session Time: 4:20 p.m.

This session covers experimental, computational, and analytical efforts related to the basic mechanisms and control techniques of noise and vibration in the breathing system (induction, combustion chamber, and exhaust) of engines. Noise sources include airborne, flow, flow-acoustic and flow-structure coupling.

Organizers - *Ahmet Selamet, Ohio State Univ.; Norman T. Huff, Owens Corning; Christopher E. Shaw, Visteon Corp.*

Time	Paper No.	Title
4:20 p.m.	2009-01-2044	<i>An Investigation and Validation of Tailpipe Noise Contribution to Vehicle Cabin via Transfer Path Analysis Concept</i> <i>Chuanxi Ju, Sung Yoo, Tenneco Inc.</i>
4:40 p.m.	2009-01-2047	<i>Modeling and Validation of an Exhaust Muffler for a Commercial Telehandler</i> <i>Ketan Kshirsagar, Michigan Tech. Unvi.</i>

Wednesday, May 20

Structure Borne NVH Workshop

Session Code: **NVCWK4**

Room *New Orleans Ballroom*

Session Time: **6:30 p.m.**

The Structure Borne NVH workshop covers the fundamental concepts of the vibratory motion of automotive structures that result in tactile and acoustic response. A new format this year consists of 50% basic theory followed by 50% noise demo and example applications. The basic theory includes, 1. source-path-receiver principles, 2. response in the low frequency vibration region up to around 100 Hz (where structural motion is "felt"), 3. response at higher frequencies up to around 500 Hz (where structural motion is "heard"), 4. strategies for assuring NVH performance up front in the design process along with common countermeasures when issues arise. A live demonstration of structure borne noise concepts will be conducted midway between the lecture topics. Lastly, some recent application examples will be discussed.

Organizers - *Alan E. Duncan, Automotive Analytics; Gregory M. Goetchius, Materials Sciences Corp.; Jianmin Guan, Altair Engineering Inc.*

Wednesday, May 20

Aerospace

Session Code: **NVC802**

Room *Salon I, III, IV*

Session Time: **2:30 p.m.**

This session is devoted to NVH issues arising within the aeronautical and aerospace industries, such as community noise, aircraft interior noise, aerospace vibro-acoustics, noise prediction, modeling and modal analysis.

Organizers - *Christian M. Fernholz, Ford Motor Co.*

Time	Paper No.	Title
2:50 p.m.	2009-01-2247	<i>Acoustics inside the Space Shuttle Orbiter and the International Space Station</i> <i>Jerry R. Goodman, NASA Johnson Space Center</i>
3:10 p.m.	2009-01-2248	<i>Interior Noise Aircraft Computations due to TBL Excitation using the Energy Finite Element Analysis</i> <i>Nickolas Vlahopoulos, Univ. of Michigan; Washington de Lima, Cessna Aircraft Company; Ricardo Sbragio, Jim He, Michigan Engineering Services</i>

2009-01-2246

Evaluation of Methods for Developing Active Vibration Control in Aircraft Trim Panels

(Written Only -- No Oral Presentation)

Andrea Vigliotti, Italian Aerospace Research Centre

Wednesday, May 20

Driveline (Part 3 of 4)

Session Code: NVC103

Room Salon II

Session Time: 8:30 a.m.

This session deals with analytical, computational and experimental studies of the dynamic response including noise and vibration of automotive driveline system and components. Typical topics of interests include, but not limited to, torque converters, gear noise, axle noise driveline system dynamics, transmission noise and vibrations, powertrain dynamics, transient dynamic response and propshaft balancing.

Organizers - Teik C. Lim, Univ. of Cincinnati; Kiran Govindswamy, FEV Inc.; Mohamad S. Qatu, Mississippi State Univ.; Joseph L. Stout, Ford Motor Co.; In-Soo Suh, The Suh Consulting LLC

Time	Paper No.	Title
8:30 a.m.	2009-01-2073	Development of a Multi-Body Systems Approach for Analysis of Launch Shudder in Rear Wheel Driven Vehicles Thomas Wellmann, Kiran Govindswamy, FEV Inc.
8:50 a.m.	2009-01-2062	Study on Natural Torsional Vibration Characteristics of Dual Mass Flywheel - Radial Spring Type Torsional Vibration Damper Jianjun Hu, Qin datong, Zhao Yusheng, Liu Yonggang, Chongqing Univ.
	2009-01-2061	Separation of Transmission and Driveline Imbalances and Its Application (Written Only -- No Oral Presentation) Scott Yu, Robert Higley, Ford Motor Co.

Wednesday, May 20

Driveline (Part 4 of 4)

Session Code: NVC103

Room Salon II

Session Time: 2:30 p.m.

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Organizers - Teik C. Lim, Univ. of Cincinnati; Kiran Govindswamy, FEV Inc.; Mohamad S. Qatu, Mississippi State Univ.; Joseph L. Stout, Ford Motor Co.; In-Soo Suh, The Suh Consulting LLC

Time	Paper No.	Title
2:30 p.m.	2009-01-2085	Aspects of NVH Integration in Hybrid Vehicles Kiran Govindswamy, Thomas Wellmann, FEV Inc.; Georg Eisele, FEV Motorentechnik
2:50 p.m.	2009-01-2066	Vibration Analysis of a Composite Shaft Javed Iqbal, Ford Motor Co; Mohamad S. Qatu, Mississippi State University
3:10 p.m.	2009-01-2072	Power Train Model Characteristics for Vibration Analyses - Conflicting Demands in Offline and HiL Environments Josef Girstmair, Franz Reich, Virtual Vehicle (VIF); Duzko Prezel, AVL List GmbH; Hans H. Priebsch, Virtual Vehicle (VIF)

3:30 p.m. **2009-01-2065** **Shearplate - A New Innovative Approach To Reduce Powertrain Noise**
Erik Gustavsson, Trelleborg Rubore Inc.; Claire Chaufour, PSA Peugeot Citroen; Arvid Norberg, Trelleborg Rubore AB

Wednesday, May 20

Instrumentation Systems, Sensors and Methods (Part 3 of 4)

Session Code: **NVC401**

Room Salon V

Session Time: **8:30 a.m.**

This session covers instrumentation sensors, systems and methods used in the measurement and analysis of noise and vibration. Analysis of methods internal to instrumentation will also be covered.

Organizers - *Wade R. Bray, HEAD Acoustics Inc.; James M. Nieters, HGL Dynamics, Inc.*

Time	Paper No.	Title
8:30 a.m.	2009-01-2165	A Novel TPA Method Using Parametric Load Models: Validation on Experimental and Industrial Cases <i>Peter Gajdatsy, Ludo Gielen, Peter Mas, Karl Janssens, Herman Van der Auweraer, LMS International; Wim Desmet, Katholieke Universiteit Leuven</i>
8:50 a.m.	2009-01-2153	Modeling Engine Roughness <i>Roland Sottek, HEAD acoustics GmbH</i>
9:10 a.m.	2009-01-2162	Monitoring and Improving Acoustical Measurement Quality Using Control Charts <i>Nikolina Samardzic; Jian Pan, Rieter Automotive North America Inc</i>

Wednesday, May 20

Instrumentation Systems, Sensors and Methods (Part 4 of 4)

Session Code: **NVC401**

Room Salon V

Session Time: **2:30 p.m.**

This session covers instrumentation sensors, systems and methods used in the measurement and analysis of noise and vibration. Analysis of methods internal to instrumentation will also be covered.

Organizers - *Wade R. Bray, HEAD Acoustics Inc.; James M. Nieters, HGL Dynamics, Inc.*

Time	Paper No.	Title
2:30 p.m.	2009-01-2158	Transporting NV Standardized Testing From the Lab to the Production Environment <i>Glenn Pietila, Paul R. Goodes, Sound Answers Inc.</i>
	2009-01-2152	A Method for Torsional Damper Tuning Based on Baseline Frequency Response Functions (Written Only -- No Oral Presentation) <i>C.Q. Liu, Chrysler Corp.</i>
	2009-01-2160	Experimental Estimation of On-Vehicle Wheel-End Force and Application to Tire Flat-Spotting Effect (Written Only -- No Oral Presentation) <i>Joonhyung Park, Timothy Mouch, Michael McKee, Ford Motor Co.</i>

Wednesday, May 20

Keynote Luncheon: "Sound's Important" - Frank Markus, Technical Director, Motor Trend

Magazine

Session Code: NVCK3

Room St. Charles Ballroom

Session Time: 12:00 p.m.

In an especially tough market, buyers realize they can afford to be choosy, and first impressions gathered on a test drive become especially important to closing a new-vehicle sale. Mainstream automotive journalists spend their careers gathering first impressions of every vehicle on the market, and this 18-year veteran will discuss how noise, vibration, and harshness help color his opinions of a vehicle's quality, solidity, value and comfort. We'll discuss sound quality versus quantity, challenges presented by falling ambient noise levels, the effectiveness of NVH "cheats," and conclude with a car-scribbler's wish list for future NVH development.

Presenters - Frank Markus, Motor Trend

Thursday, May 21

Mounts and Shock Absorbers (Part 1 of 2)

Session Code: NVC206

Room Amphitheatre

Session Time: 8:30 a.m.

This session includes papers in the areas of static, dynamic, and fatigue characterization of elastomers, bushings, mounts and shock absorbers used in the mobility industry. Particular emphasis is given to new and innovative analysis and testing methodologies to quantify the non-linear properties of these systems in addition to the effects of temperature, frequency, and aging. Papers dealing with specific applications and case studies of existing methodologies are also welcome.

Organizers - Mohan Rao, Michigan Technological Univ.; Mohamad S. Qatu, Mississippi State Univ.

Time	Paper No.	Title
8:30 a.m.	2009-01-2128	Dynamic Properties of Styrene-Butadiene Rubber for Automotive Applications <i>Turgay Bengisu, General Motors Corp.; Hejie Lin, Zissimos Mourelatos, Oakland Univ.</i>
8:50 a.m.	2009-01-2130	Charge Air Cooler Decoupling using Short Rubber Hoses <i>ivan Chapelier, PSA Peugeot Citroën</i>
9:10 a.m.	2009-01-2132	Investigation into Qualitative Dynamic Characteristics Analysis of Hydraulically Damped Rubber Mount for Vehicle Engine <i>Lirong Wang, Tokyo Institute of Technology</i>

Thursday, May 21

Mounts and Shock Absorbers (Part 2 of 2)

Session Code: NVC206

Room Amphitheatre

Session Time: 10:00 a.m.

This session includes papers in the areas of static, dynamic, and fatigue characterization of elastomers, bushings, mounts and shock absorbers used in the mobility industry. Particular emphasis is given to new and innovative analysis and testing methodologies to quantify the non-linear properties of these systems in addition to the effects of temperature, frequency, and aging. Papers dealing with specific applications and case studies of existing methodologies are also welcome.

Organizers - Mohan Rao, Michigan Technological Univ.; Mohamad S. Qatu, Mississippi State Univ.

Time	Paper No.	Title
10:00 a.m.	2009-01-2131	The Characteristics of the SAM Combined with WLF Equation <i>Kastriot Shaska, Visteon Corp.</i>
10:20 a.m.	2009-01-2127	Design of Shape for Visco-elastic Vibration Isolation Elements by Topological and Shape Optimization Methods <i>Hwan-Youp Oh, Kwang-joon Kim, Korea Advanced Inst of Science & Tech</i>

2009-01-2126 **Application of Hydraulic Body Mounts to Reduce the Freeway Hop Shake of Pickup Trucks**

(Written Only -- No Oral Presentation)

Ping Lee, Jeff Vogt, Shizhong Han, General Motors Corp.

Thursday, May 21

Facilities

Session Code: **NVC400**

Room *Broadway A&B*

Session Time: **10:00 a.m.**

This session is focused on the development and application of facilities to conduct noise and vibration measurements. The intent is to provide practical information on the engineering challenges to consider in the construction and/or adaptation of a facility to the specialized noise and vibration requirements.

Organizers - *Richard F. Schumacher, RS Beratung LLC; Christopher Morgan, Polysonics Corp.; James K. Thompson, Brüel & Kjær North America Inc.*

Time	Paper No.	Title
10:00 a.m.	2009-01-2150	Design and Performance of the Acoustic Technology Center at E-A-R <i>Manuel Sanchez, Steven R. Sorenson, E-A-R Thermal/Acoustic Systems; Michael Dinsmore, Acoustical Consulting Services; Randy Rozema, ACS</i>
10:20 a.m.	2009-01-2151	Measurement Accuracy for Qualification Testing of Anechoic and Hemi Anechoic Chambers Using the Continuous Draw Method <i>Darren J. Brown, Kolano and Saha Engineers Inc.</i>

Thursday, May 21

Subjective Response (Part 1 of 2)

Session Code: **NVC503**

Room *New Orleans*

Session Time: **8:30 a.m.**

This session covers subjective testing and analysis related to automotive noise and vibration, usually referred to as sound quality and vibration quality. The focus is on both subjective and objective tools and methods that can be used either to design sound or vibration quality into the automotive product, or to characterize and eliminate undesired sounds or vibrations.

Organizers - *Scott A. Lake, General Motors Corp.; Michael Blommer, Ford Motor Co.; Peter Laux, Johnson Controls Inc.; Steven R. Sorenson, Chrysler LLC*

Time	Paper No.	Title
8:30 a.m.	2009-01-2183	Characteristics of the Luxury Sound Quality of a Premium Class Passenger Car <i>Kyoung Hoon Lee, Hyundai Motor Co; Sang Kwon Lee, Inha Univ.; Dong Chul Park, Hyundai Motor Co</i>
8:50 a.m.	2009-01-2184	Approach to a Design of Experiments for Sound Quality Evaluations of Car Interior Adjusting Noises <i>Philipp Scheibner, BMW Group; Andreas Wendemuth, Otto-von-Guericke-Univ. Magdeburg</i>
9:10 a.m.	2009-01-2189	Investigation into the Detection of a Quiet Vehicle by the Blind Community and the Application of an External Noise Emitting System <i>Paul R. Goodes, Sound Answers Inc.; Everett Meyer, Yun Bai, Enhanced Vehicle Acoustics</i>

Thursday, May 21

Subjective Response (Part 2 of 2)

Session Code: NVC503

Room New Orleans

Session Time: 10:00 a.m.

This session covers subjective testing and analysis related to automotive noise and vibration, usually referred to as sound quality and vibration quality. The focus is on both subjective and objective tools and methods that can be used either to design sound or vibration quality into the automotive product, or to characterize and eliminate undesired sounds or vibrations.

Organizers - Scott A. Lake, General Motors Corp.; Michael Blommer, Ford Motor Co.; Peter Laux, Johnson Controls Inc.; Steven R. Sorenson, Chrysler LLC

Chairpersons - Paul R. Goodes, Sound Answers Inc.

Time	Paper No.	Title
10:00 a.m.	2009-01-2190	An Efficient Approach to Improving Vehicle Acceleration Sound Quality Using an NVH Simulator Farokh Kavarana, Nissan Technical Center NA Inc.; Todd Schiller, Gene Taschuk, Nissan Technical Center NA Inc; David Bogema, Brüel & Kjær North America Inc
10:20 a.m.	2009-01-2191	Sound Simulation and NVH Tuning of a Multi-Mode Engine David Bogema, Brüel & Kjær North America Inc.; Mark Clapper, Brian Schabel, Ford Motor Co; Mark Allman-Ward, Roger Williams, Sound Evaluations Ltd
10:40 a.m.	2009-01-2187	Understanding Opinion Forming Processes During On-Road Evaluations of Whole Vehicle Sound Quality Sebastiano Giudice, Paul Jennings, Louise Humphreys, Rebecca Cain, Univ. of Warwick; Mark Allman-Ward, Sound Evaluations Ltd; Garry Dunne, Jaguar Cars Ltd
11:00 a.m.	2009-01-2188	Vehicle Alternator Electromagnetic Noise Characteristics Determination Ahmed A. A. Saad, Helwan Univ.
	2009-01-2186	Quantifying the Visual Motion of an Automotive Seat Back (Written Only -- No Oral Presentation) Scott A. Amman, Joseph Mark, Timothy Mouch, Mike kwasnik, Ford Motor Co.

Thursday, May 21

Interior Noise and Vibration Sources (Part 1 of 2)

Session Code: NVC205

Room Salon I, III, IV

Session Time: 8:30 a.m.

This session covers noise and vibration sources and paths within a vehicle (automobiles, trucks and recreational vehicles). Example of noise sources included are HVAC system, electric motor powered mechanisms and door closure and example of vibration sources are road and engine. Also included are Whole Body and Hand Arm Vibration experienced by professional drivers as well as acoustical design factors of audio, infotainment, and hands free devices.

Organizers - Gabriella Cerrato-Jay, Sound Answers Inc.; Thomas L. Lagö, Axiom Edu Tech. Inc.; Prakash T. Thawani, A1 Noise & Vibration Consultants

Time	Paper No.	Title
8:30 a.m.	2009-01-2115	Prediction of Interior Noise Based on Hybrid TPA

Sungjong Kim, Haein Yang, Sang Kwon Lee, Inha Univ.

8:50 a.m.	2009-01-2123	A PU Probe Array based Panel Noise Contribution Analysis whilst Driving <i>Hans-Elias De Bree, Microflown Technologies BV</i>
9:10 a.m.	2009-01-2125	Application of Tuned Mass Damper to Address Discrete Excitation away from Primary Resonance of a Structure <i>Parimal Tathavadekar, Kuang-Jen Liu, Chrysler LLC</i>

Thursday, May 21

Interior Noise and Vibration Sources (Part 2 of 2)

Session Code: NVC205

Room Salon I, III, IV

Session Time: 10:00 a.m.

This session covers noise and vibration sources and paths within a vehicle (automobiles, trucks and recreational vehicles). Example of noise sources included are HVAC system, electric motor powered mechanisms and door closure and example of vibration sources are road and engine. Also included are Whole Body and Hand Arm Vibration experienced by professional drivers as well as acoustical design factors of audio, infotainment, and hands free devices.

Organizers - Gabriella Cerrato-Jay, Sound Answers Inc.; Thomas L. Lagö, Axiom Edu Tech. Inc.; Prakash T. Thawani, A1 Noise & Vibration Consultants

Time	Paper No.	Title
10:00 a.m.	2009-01-2117	Correlating HVAC Vehicle Interior Noise to Sub-system Measurements <i>Niranjan Humbad, Gunnar Schlinke, Stefan Scherer, Behr America Inc.</i>
10:20 a.m.	2009-01-2119	Analytical and Experimental Approach to Acoustic Package Design <i>Todd Freeman, DJ Pickering, Sound Answers, Inc.</i>
10:40 a.m.	2009-01-2121	Reduction of Interior Booming Noise for a Small Diesel Engine Vehicle without Balance Shaft Module <i>Cheol-hyun Hwang, Hyundai Motor Co.</i>
11:00 a.m.	2009-01-2122	Attenuation of Vehicle Noise using Acoustically Tuned Trunk Material <i>Barry Wyerman, Janesville Acoustics; Terence Connelly, ESI Group</i>
	2009-01-2124	Application of NVH Countermeasures for Interior Booming Noise using Elastomeric Tuned Mass Damper (Written Only -- No Oral Presentation) <i>Xiaocheng Duan, Xing Huang, Baojun Shen, Xiaoyong Pan, Ningbo Tuopu vibro-acoustics technology Co., Ltd; Zhi Huang, Liangyong He, South China University of Technology</i>

Thursday, May 21

Buzz, Squeak and Rattle

Session Code: NVC204

Room Salon II

Session Time: 10:00 a.m.

This session is focused on the vehicle body interior noise issues caused by friction and/or impact due to the vibration of interfacing components. The papers in this session will investigate those issues through the best practice of analytical and experimental applications.

Organizers - Ivanna G. Malinow, TRW Occupant Safety Systems Inc.; Luc Mongeau, McGill Univ.

Chairpersons - Ivanna G. Malinow, TRW Occupant Safety Systems Inc

Time	Paper No.	Title
10:00 a.m.	2009-01-2113	Design and Analysis of a Gear Rattle Test Rig <i>Ashley Crowther, Romax Technology Limited</i>

10:20 a.m.	2009-01-2111	Detection Algorithm for Squeak and Rattle <i>Unnikrishnan Kuttan Chandrika, Jay H. Kim, Univ of Cincinnati</i>
10:40 a.m.	2009-01-2114	Spherical Beamforming and Buzz, Squeak and Rattle (BSR) Testing <i>Valerie Cook, Ahad Ali, Lawrence Technological Univ.</i>
11:00 a.m.	2009-01-2110	A Study on the Optimization of Body Structure for Rattle Noise by Exciting Woofer Speaker <i>Ki-Chang Kim, Hyundai Motor Co.; Chan-Mook Kim, Kookmin Univ; JIN-TAEK KIM PhD, Chonbuk National Univ</i>
11:20 a.m.	2009-01-2112	Simple Test Method for Squeak & Rattle Evaluation Of Door Trim By Using Statically Repeated Loading Robot Arm <i>Hyunchul Lee, HAN IL E HWA; Hyunmin Park, Hyunghyun Na, Han Il E Hwa; Jongsoo Kim, HANIL E-WHA; Oh-Hwan Jeon, Ikkeun Jang, Han Il E Hwa</i>

Thursday, May 21

Tires

Session Code: NVC202

Room Salon V

Session Time: 10:00 a.m.

This session includes papers regarding vehicle exterior or interior tire/pavement noise.

Organizers - Paul R. Donavan, Illingworth & Rodkin Inc.; Richard F. Schumacher, RS Beratung LLC; Saeed Siavoshani, Dow Automotive

Time	Paper No.	Title
10:00 a.m.	2009-01-2104	Modeling and Experimental Investigation of Tire Cavity Noise Generation Mechanisms for a Rolling Tire <i>Frank Feng, Univ of Missouri; Perry Gu; Yongjian Chen, Zongbao Li, Ford Motor Co.</i>
10:20 a.m.	2009-01-2105	A Three-Dimensional Ring-Based Structural Tyre Model: Development and Validation <i>Peter Kindt, Filip De Coninck, Paul Sas, Wim Desmet, Katholieke Universiteit Leuven</i>
10:40 a.m.	2009-01-2109	Investigation of Tire Road Noise with Special Consideration for Airborne Noise Transmission <i>Gregor Koners, Daimler AG</i>
11:00 a.m.	2009-01-2106	A Comparison of Fiber Wheel Liners on Two Different Vehicles <i>Barry Wyerman, Janesville Acoustics; Gabriella Cerrato Jay, Eric Frank, Sound Answers Inc.</i>
11:20 a.m.	2009-01-2108	Use of the ASTM Standard Reference Test Tire as a Benchmark for On-Bound Tire/Pavement Noise Measurement <i>Paul R. Donavan, Illingworth & Rodkin Inc.; Dana M. Lodico, Lodico Acoustics LLC</i>
11:40 a.m.	2009-01-2107	Prediction of the Spindle Force Using Measured Road Force on Rolling Tire <i>Masami Matsubara, Doshisha Univ.</i>

Thursday, May 21

Windnoise and Aeroacoustics

Session Code: NVC701

10:00 a.m.

Room Salon VI

Session Time:

This session is to present numerical and experimental work pertaining to noise due to flow around the vehicle body, such as flow-induced interior noise, flow over protrusions, sunroofs, windows, noise from ventilation systems, or flow noise in exhaust system. Papers on aerodynamics alone without sound are excluded. Numerical studies may include new models or models based on existing theory as long as they are adequately supported by experimental or theoretical verifications.

Organizers - Luc Mongeau, McGill Univ.; Robert E. Powell, Exa Corp.

Time	Paper No.	Title
10:00 a.m.	2009-01-2237	Aero-Acoustic Predictions of Automotive Instrument Panel Ducts Stephane Détry, Visteon Interior Systems; Yves Detandt, Diego d'Udekem, Julien Manera, Free Field Technologies
10:20 a.m.	2009-01-2236	Numerical Simulations and Measurements of Mirror-Induced Wind Noise David J. Lepley, Nissan Technical Center North America Inc.; Tony Frazer, Brüel & Kjær North America Inc; Sivapalan Senthoooran, Dena Hendriana, Exa Corp.
11:00 a.m.	2009-01-2235	A Note on Equilibrium Turbulent Boundary Layer Wall Pressure Models Teresa Miller, Mark Moeller, Spirit AeroSystems Inc
11:20 a.m.	2009-01-2233	Investigation of Gap Deflector Efficiency for Reduction of Sunroof Buffeting Bernd Crouse, Ganapathi Balasubramanian, Sivapalan Senthoooran, David Freed, Exa Corporation; Kang-Duck Ih, Hyundai Motor Co; Seong Ryong Shin, Hyundai Motor Co & KIA Motors Corp
11:40 a.m.	2009-01-2238	Effects of Notches on Surface Pressure Fluctuations Downstream of a Leading Edge Spoiler Jong Beom Park, McGill Univ.; Paloma Mejia, Purdue Univ.; Luc Mongeau, McGill Univ.
	2009-01-2234	Correlated Beamforming Method for Relevant Aeroacoustic Sources Identification (Written Only -- No Oral Presentation) Jean-luc Adam, Denis Ricot, Renault SAS; arnaud menoret, Christophe lambourg, Signal Developpement

Thursday, May 21

Written Only

Session Code: NVC999

Room Written Only Papers

Session Time:

Time	Paper No.	Title
	2009-01-2192	Recent Advances in Powertrain Sound Quality Hardware Tuning Devices and Perspectives on Future Advances (Written Only -- No Oral Presentation) Garry Dunne, Jaguar Cars, Ltd.
	951375 *	Application of Noise Control and Heat Insulation Materials and Devices in the Automotive Industry (Written Only -- No Oral Presentation) Timothy Hirabayashi, General Motors Corp.; David J. McCaa, Certain-Teed Products Corp; Bob Rebandt, Ford Motor Co; Phillip A. Rusch, Harley-Davidson Inc; Pranab Saha, Kolano & Saha Engineers Inc;

* Previously published and/or presented at the Noise & Vibration Conference & Exposition

