In recent years, research and technology developments for high-speed trains (HSTs) have gained significant attention in both academia and industry. It is understood that the main complexities in the context of HSTs can be devoted to instrumentation installation, mechanical design, and integration of components in motion control objectives and performance indexes. For instance, the maximum designed speed for most new HSTs is up to 350 km/h. When the speed is relatively high, the traditional system design, traction control, noise, vibration, and harshness (NVH) should be improved to satisfy the requirements on safety, comfort, and economic aspects. With the growing demands of HSTs, it is time to develop more comfortable, and dynamically superior trains.

This special issue will focus on mechanical and electrical developments dealing with dynamical analysis, stability, and control of HSTs to fulfill the safety, comfort, and economic objectives. It is a peer-reviewed platform for both industry and academia to present survey, theoretical, and experimental results of HSTs. Potential topics include, but are not limited to:

- Aerodynamics and structural design of HSTs
- Model developments and identification techniques for HSTs
- Advanced control and synchronization methodologies for HSTs
- Eco-driving operations
- Sensors and actuators integration for HSTs
- Passive and active suspension control
- Pantograph modeling and control
- NVH of drive-line
- Fault diagnostics, fault isolation, fault tolerant control and prognostics for HSTs
- Health monitoring and control of HSTs
- Energy managements of HSTs
- Experimental study of HSTs

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