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Special Session on

"Advanced Modelling and Control of Intelligent Electrified Vehicles"

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Call for Papers

Ground mobility is undergoing a paradigm shift towards efficient, green and intelligent transportation. Electrification and automation constitute two of the most important technological frontiers in this regard. Intelligent electrified vehicles (iEVs) represent a combination of these two promising technologies and have become a hot research area. The development of iEVs is tightly conjoined, coordinated, and integrated with human and social characteristics, and this has been steadily growing to become an emerging research focus. It requires sufficient research and development at a system engineering level to allow global optimization of iEVs that balances safety, mobility, economy, and ride comfort. Considering the development and limitations of current iEVs, innovative research concepts, significant theoretical findings, and application case studies with an emphasis on advanced modelling and controls for iEVs are required. Advanced multi-disciplinary techniques such as data-driven modelling, mechatronics design, automatic control, machine learning, and human-machine interactions will enable the development of next-generation iEVs. This special session aims to provide up-to date research concepts, theoretical findings and practical solutions that could contribute to the electrification and automation of modern vehicles.

Potential topics include, but are not limited to:

- Advanced modelling, control and optimization of iEVs

- Electrified vehicle dynamics and control
- Design optimization and control of mechatronic subsystems for iEVs
- Fault detection and fault tolerant control of EV systems
- Advanced energy management systems for iEVs
- Driver-vehicle interactions and human factors
- Machine learning methods for iEVs state estimation and prediction
- Integration of EVs with Intelligent Transportation Systems and/or smart grids
- Testing, verification, and evaluation for iEVs applications
- Perception, sensing, decision-making and planning of automated vehicles
- Advanced driver assistance systems
- Connected and automated vehicle technologies