

Special Session
COMPUTATIONAL METHODS FOR ELECTRIC VEHICLES

Session Organizers:

- Aldo Sorniotti, University of Surrey, UK
e-mail: a.sorniotti@surrey.ac.uk
- Valentin Ivanov, Ilmenau University of Technology, Germany
e-mail: valentin.ivanov@tu-ilmenau.de

This session deals with the application of advanced computational methods to the design and optimization of Electric Vehicles (EVs) and their subsystems.

The session topics include, but are not limited to:

1. **Simulation-based design of electric powertrain components and implementation of the overall energy management system of the FEV.**
2. **Components and control systems optimization for enhanced brake regeneration.**
3. **Control systems design for the vehicle dynamics enhancement of FEVs with individually controlled powertrains at each wheel.**
4. **Optimization of components and control systems for failsafe and/or controlled shutdown procedures in case of failure or accident.**
5. **FEV drivability analysis and optimization.**
6. **Three-dimensional simulation and optimization of FEV components and subsystems.**

In this context, uncertainty, parameter identification and robust design in all their facets are of particular interest.

Special attention will be paid to contributions dealing with the simultaneous optimization of powertrain hardware and control. For example, this subject can include computational methodologies for the design of an energy storage unit consisting of a battery and a supercapacitor, together with its energy and thermal management system, or can include optimization algorithms for the selection of the optimal gear ratios and gearshift strategy for EVs with multiple-speed transmissions or multiple electric motors.

Also, this session will focus on the identification of the potential improvement of the cornering performance, comfort and fun-to-drive in steady-state and dynamic conditions, especially with consideration of the main non-linearities such as transmission losses, mechanical backlashes and tyre friction characteristics.

In the context of these topics, uncertainty, parameter identification and robust design in all their facets are of particular interest.

Potential speakers are invited to submit the full papers by 10.10.2012 through the web-site of the Symposium (submission will be opened in July 2012) or directly to the organizers.

Web-site of the Symposium: http://www.ntu.edu.sg/home/epsugan/index_files/SSCI2013/index.html