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Special Session on

"Emerging techniques for grid-transportation interfacing towards more flexible energy transition"

Organized by

- **Zhongbao Wei**,
  Beijing Institute of Technology, China
  email: weizb@bit.edu.cn

- **Huazhen Fang**,
  University of Kansas, Lawrence, KS, USA
  email: fang@ku.edu

- **Fei Gao,**
  The University of Technology of Belfort-Montbéliard, France
  email: fei.gao@utbm.fr

Call for Papers

The emerging concerns over resource depletion, climate change and environmental pollution have led to a major transformation of energy system, witnessed by the proactive penetration of electric mobility and renewable energy sources. This leads to a highly flexible energy system incorporating the static power grid, intermittent renewables, and the electrified vehicles/vessels/aircrafts. The coordination of components with both power diversity and intermittency have posed challenges for the exploitation of advanced energy storage systems combining performance and cost merits, and associated management strategies for the pursuit of optimized energy utilization. This vision has also motivated the design and control of power electronics due to their enabling role in the integration of energy storage devices.

Topics of the Session:

The special session seeks to synergize knowledge about power electronics, energy storage, modelling, management and control, with special application in electric transportation, power grid, renewable sources, and the integration of them. Topics of interest include, but are not limited to:

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- Characterization and modeling of energy storage system.
- Management of energy storage system: state estimation, health prognostics, fault diagnostics, charge control, thermal management, etc.
- Hybrid energy system: architecture, sizing, energy management, etc.

- Power converter topologies for integration of energy storage devices.
- Optimized integration and interface of power electronics and energy storage devices.
- Energy storage enabled power system regulation.
- Cyber physics in complex energy system.
- Smart grid with large-scale EV penetration.