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Special Session on

"Advances in Battery Charging Techniques for Electric Vehicles"

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Call for Papers

In the past few years there has been a rapid increase in adoption of electric vehicles for personal transportation, and electrification of commercial vehicles – both medium and heavy duty – appears imminent. In order to support the growing fleets of EVs, a robust and widespread network of chargers is necessary. These chargers must provide high power capacity for fast charging on par with fossil fuel refuelling times, while maintaining high power density, reliability and efficiency. In addition, due to the large power draw, these chargers must also be grid-interactive, to mitigate grid power quality issues during load changes; and potentially providing ancillary services to the grid such as virtual inertia, reactive power support, and V2G services. End-user safety is a paramount concern – effected through isolation, grounding, etc.

This session will be a deep dive into the design, protection, control, and modelling aspects of power converter configurations and auxiliary circuits including grid interfaces for EV applications. Prospective authors are invited to present cutting-edge ideas that can help advance the state of the art in this field.

Topics of the Session:

Topics of interest include, but are not limited to:

- Ultra-fast battery chargers for Electric vehicles (EV)
- High efficiency power converter configurations for on-board and off-board EV chargers
- Power factor correction/ front-end converters/ power quality improvement/ Vehicle to grid (V2G) systems and control
- Integrated battery chargers and electric machine topologies
- Multi-level converters for EV applications
- Wireless chargers for EVs (Capacitive/inductive coupled)
- Minimization of passive components (high power-density) in EV chargers
- Utilization of wide-bandgap devices (high power density/efficiency) in EV chargers.
- Safety aspects and fault tolerant operation of EV chargers
- EMI issues in EV chargers
- Auxiliary circuits and systems for EV chargers
- EVSE Connectors and impact on charger topologies