

## Call for Papers for the Special Session on

### Advanced Control Techniques for Power Electronics Converters

#### Organizers and Co-chairs

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#### Technical Outline of the Session and Topics

The demand for high-quality electrical energy has increased considerably in recent years. Basically, the power electronics converters can be used in a wide range of applications that require electrical power conversion, conditioning, compensation, and active filtering using well-designed control methods which should meet the desired objectives set for each application. These applications involve the integration of renewable energy sources into the utility grid by means of appropriate converters, uninterruptible power supplies, power quality improvement, electrical vehicle charging, DC traction power systems, smart grids, and energy storage systems. This session is intended to provide insight into the latest advanced control techniques of various power converters employed in the applications mentioned above.

#### Topics of this Special Session Include but are not limited to

- Lyapunov-function based control of power converters.
- Sliding mode control (SMC) of power converters.
- Novel chattering reduction and fixed switching frequency-based methods in SMC.
- Finite control set model predictive control (MPC) of power converters.
- Continuous control set MPC of power converters.
- Novel cost function design and weighting factors tuning in MPC.
- Novel sensorless MPC for electrical machines.
- Repetitive control of power converters.
- Deep reinforcement learning control of power converters.
- Application to grid-connected inverters, power quality, microgrids, mega-watt range wind turbines, energy storage systems and electrical vehicle charging.

#### Timeline for Author

Deadline for submission of special session papers                      March 15, 2025

Notification of acceptance                                                              March 31, 2025

Deadline for submission of final manuscripts                                      April 15, 2025

All the instructions for paper submission are available on the conference website.

