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The 52nd Annual Conference of the IEEE Industrial Electronics Society

Call for Papers for the Special Session on

RECENT ADVANCES OF MODEL PREDICTIVE CONTROL FOR POWER ELECTRONICS

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Technical Outline of the Session and Topics

The rapid advancement of modern microcontrollers revolutionized power converter control, enabling the development and implementation of new intelligent control and modulation strategies. Among these, Model Predictive Control (MPC) has emerged as a powerful and versatile alternative, gaining significant attention from academia and industry. MPC offers numerous advantages over classical linear controllers, including intuitive design and seamless integration of nonlinearities and constraints into the control law. These features make MPC a highly promising solution for complex control challenges in various areas of power electronics. This SS will address the latest advancements and trends in MPC for power electronics, highlighting its practical benefits and potential for widespread industrial adoption.

Topics of the session include, but are not limited to:

- Predictive control for power converters and variable speed drives.
- Challenges of MPC: prediction horizon, cost function selection, weighting factor design, delay compensation, parameter mismatches, variable switching frequency, etc.
- MPC with machine learning, artificial intelligence, etc.
- Model Free MPC.
- Applications of MPC: Predictive control in drives, electric vehicles, more electric aircraft, renewable energy systems, battery energy storage systems, microgrids and power systems.
- Stability of MPC.

Timeline for Authors

All the instructions for paper submission are available on the conference website. Please visit www.iecon2026.org or scan the QR code for the timeline.