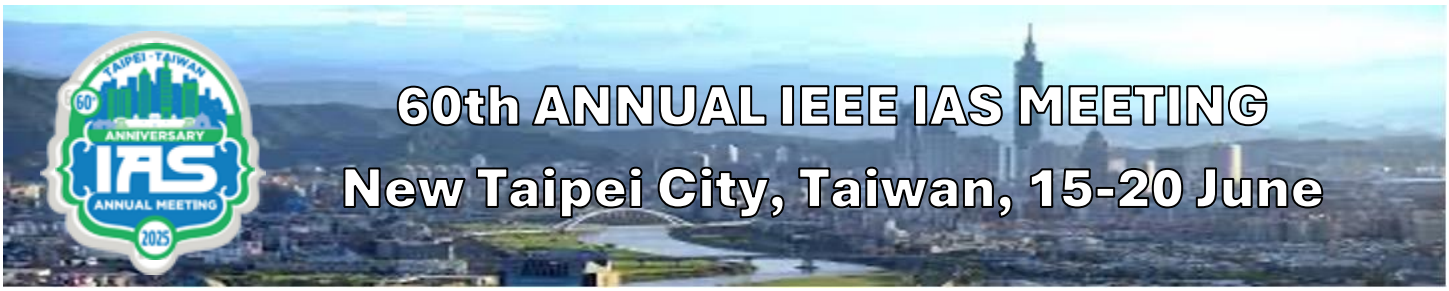

Special Session on

From Smart Homes to Smart Grids: Challenges in Renewable Integration, Cybersecurity, and Power Quality

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Technical Outline of the Session and Topics:

The integration of renewable energy sources and modern monitoring systems into power systems, including smart grids, microgrids, and smart homes, presents challenges in stability, power quality, cybersecurity, reliability, and protection. Addressing these requires advanced control strategies, robust cybersecurity frameworks, and effective energy management systems to handle variable renewables, energy storage, and complex grid dynamics. This special session highlights innovative approaches and research in real-time energy management, cybersecurity, system operation, and advanced control techniques for renewable-powered systems.

The scope of this Special Session includes, but is not limited to, the following topics:

1. **Cybersecurity Challenges from Smart Homes to Smart Grids**
2. **Reliable Connection of Renewable Sources to the Power System Through Optimal Grid Impedance Estimation**
3. **Volt-Var Control Studies for Offshore Wind Farms Grid Connection**
4. **Optimal Management Strategies in Hybrid AC and DC Systems**
5. **AI-Driven Strategies in Inertia Studies for Renewable Power Systems**

Submission of papers: The deadline follows the deadline for the regular papers. All the instructions for paper submission are included on the conference website: https://ias-am.ieee.org/2025/