Special Session 10: Uncertainty Modeling, Management and Decision-Making of New-Type Power Systems

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Brief Description of the Session Thematic:

Building a new-type power system dominated by renewable energy sources is an important means to achieve carbon neutrality. Under the background of energy transition, uncertainties in the new-type power system increase. Renewable energy, electric vehicles, and distributed resources introduce uncertainties to the grid from multiple dimensions, making it difficult to operate the grid. Traditional deterministic operational decision-making methods are no longer applicable, leading to operational safety risks in the grid. Against the backdrop of rapid growth in the proportion of renewable energy and the continuous development of distributed flexible resources on the demand side, conducting research in the direction of uncertainty analysis, risk perception and modeling, probability optimization decision-making, and other aspects related to the operation of the power system is of great significance for the construction and development of the new-type power system.

Topics and Keywords:

1. Probabilistic Modeling and Prediction of Renewable Energy
2. Uncertainty Management Techniques in Power System Demand Response
3. Operational Decision-Making in New-Type Energy Power Systems with a High Proportion of Renewables Considering Uncertainty Risks
4. Risk Modeling and Prevention of Power Systems against Extreme Weather Disasters
5. Power Market Mechanisms to Cope with the Uncertainty of Renewable Energy
6. Advanced Artificial Intelligence Technologies in Uncertainty Modeling and Decision-Making of Power Systems