上海交通大学自动化系
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Key Laboratory of System Control and Information Processing, Ministry of Education

学术报告会

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Towards Net-Zero: The Role of Generalized Energy Storage Systems

齐宁
Postdoc at Columbia University

摘要:

Generalized Energy Storage (GES) System encompasses battery energy storage, hydrogen energy storage, and virtual energy storage derived from demand response, etc. These diverse solutions effectively address extensive uncertainties in energy systems, enhancing flexibility and resilience to support the transition towards Net-Zero. To master the credible flexibility of GES and enable their reliable response, Dr. Qi will first present research on chance-constrained energy storage bid bounds aimed at maximizing social welfare while mitigating storage market power. Next, the discussion will focus on prediction-free online decision-making strategies for long-duration storage, addressing challenges related to seasonal non-anticipativity and long-term contracts. Finally, Dr. Qi will highlight research on the role of virtual energy storage in the reserve and capacity provision to mitigate the risks of decision-dependent uncertainties.

简介:

Ning Qi is a postdoctoral research scientist in Earth and Environmental Engineering at Columbia University, hosted by Prof. Bolun Xu. He received his Ph.D. degree in Electrical Engineering from Tsinghua University in 2023, supervised by Prof. Lin Cheng. Before joining Columbia, he was the postdoc at Digital Power System lab at Department of Electrical Engineering, Tsinghua University, hosted by Prof. Feng Liu. He was a visiting scholar at Technical University of Denmark in 2022, supervised by Prof. Pierre Pinson and Prof. Mads R. Almassalkhi. He received a B.E. degree in Electrical Engineering from Tianjin University in 2018, supervised by Prof. Yanxia Zhang. His current research focuses on flexibility modeling, optimization under uncertainty and market design for generalized energy storage.