北京大学
Peking University

报告地点: 王克桢1003
时间: 11月21日 15:00 - 16: 30

COOL RESEARCH

系列报告第十五讲

报告人：Yue Chen (香港中文大学助理教授)

报告题目：Unlocking Demand-side Flexibility for Low-carbon Energy Systems

Control, Optimization, Operations research, and Learning（COOL）Research Seminar是由北大工学院相关领域的几位老师发起，旨在为国内外青年学者提供一个交流平台，分享和探讨最新最有趣的研究成果，促进领域内和跨领域沟通学习，推动前沿理论的发展。

北京大学 PEKING UNIVERSITY | COLEEGE. OF ENGINEERING 工学院

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Unlocking Demand-side Flexibility for Low-carbon Energy Systems

Abstract: The widespread deployment of distributed energy resources (DERs) is a promising pathway toward the global low-carbon energy transition. However, this also brings critical challenges to power distribution systems, including the difficulty of centralized resource management and the increased operational uncertainties. To address these challenges, we develop efficient, scalable algorithms to coordinate, aggregate and dispatch flexible DERs, which will be introduced in this talk. For DER coordination, we propose generalized Nash game-based energy sharing mechanisms, which are proven to have comparable efficiency and flexibility to centralized management methods. For DER aggregation, we develop flexibility characterization methods to evaluate the aggregate flexibility of DERs in offline and online manners. For DER dispatch, both exogenous and endogenous uncertainties are addressed by robust optimization algorithms with optimality and convergence guarantees. These works provide fundamental techniques for the economical and reliable operation of low-carbon energy systems.

Speaker: Yue Chen (香港中文大学助理教授)

Biography: Dr. Yue Chen is currently a Vice-Chancellor Assistant Professor at the Department of Mechanical and Automation Engineering, The Chinese University of Hong Kong. Prior to joining CUHK, she received her B.E. and Ph.D. degrees in Electrical Engineering from Tsinghua University in 2015 and 2020, respectively, and her B.S. degree in Economics from Peking University in 2017. Her research interests include optimization and game theory, with particular applications to electricity markets, power and transportation nexus, and cyber-physical-social systems. She is a recipient of multiple awards, including the Vice-Chancellor Early Career Professorship, the Dean's Exemplary Teaching Award, the Stanford Bits & Watts Postdoc Fellowship, the Outstanding Ph.D. Graduate Award of Tsinghua and Beijing Area, and the Excellent Ph.D. Thesis Award. She now serves as an Associate Editor for IEEE Transactions on Smart Grid, IEEE Power Engineering Letters, and IET Renewable Power Generation. She is also the Hong Kong Chapter Representative of IEEE PES Women in Power.

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