SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
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Area: Power and Energy Systems

Host: Professor Dipti Srinivasan

Jointly organized by:
IEE Computational Intelligence Society,
IEEE Power & Energy Society,
Green Energy Management and Smart Grid Research Center

TOPIC	**:**	**Multi-Time-Scale Scheduling Strategy for Multi-Microgrids with Accelerated Alternating Direction Method of Multipliers**
SPEAKER	**:**	**Mr. Li Zhenlong** **Graduate Student, Beijing Jiaotong University**
DATE	**:**	**Friday, 12 August 2022**
TIME	**:**	**12:30PM to 1:00PM**
VENUE	**:**	**Join Zoom Meeting:** **https://nus-sg.zoom.us/j/85026133551?pwd=cXFHRDBRZ3FBb1BPSUZCZXdXdHlPZz09** **Meeting ID: 850 2613 3551** **Passcode: 413745**

ABSTRACT

The superiorities of renewable energy like wind and solar energy have promoted the development of microgrids (MGs) and multi-microgrids (MMGs). But how to coordinate the scheduling and transactions of MMGs with multi-time-scale is still an important issue. This paper presents a scheduling and trading strategy of MMGs with two time-scales: day-ahead and intra-day. In the day-ahead scheduling stage, a MMG system with peer-to-peer (P2P) connection is considered. Based on the idea of distributed updating parameters and adaptive selecting values in Alternating Direction Method of Multipliers (ADMM), an accelerated ADMM algorithm named improved adaptive accelerated ADMM (IAA-ADMM) is proposed, which is modeled and solved in a distributed manner. In the intra-day scheduling stage, based on the day-ahead scheduling, this paper utilizes the stochastic model predictive control (SMPC) to optimize the intra-day model, which helps address the uncertainties of wind, solar, and load forecasting. The effectiveness of the proposed approach is validated using numerical examples. The results show that the IAA-ADMM provides higher stability, faster convergence, and facilitates easier implementation. Meantime, the SMPC shows higher economic performance and has a higher application potentiality.

BIOGRAPHY

Zhen-Long Li is currently pursuing the Ph.D. degree in control science and engineering in Beijing Jiaotong University, Beijing, China. He is also a joint PhD student at NUS. His research interests include modeling and scheduling analysis of integrated energy systems, multi-microgrid dispatch and design of power system forecasting method.