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# 学术报告会

**时间：2023年11月22日 14:00**
**地点：电信群楼2-410会议室**

## Multi-Agent Systems Based Distributed Control and Optimization in Smart Grids

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**摘要:**
With the widespread integration of renewable distributed energy sources such as wind generation, photovoltaic and solar panels, a traditional electrical network has been experiencing a huge revolution towards a smart grid in various terms of generation, transmission, distribution and usage, and so on. Such a revolution poses new theoretical and technical challenges in operation and management of smart grids. To address these challenges, a multi-agent system based strategy is developed to address control and optimization issues in smart grids, showcasing its strong ability in improving efficiency, reliability and scalability. In this Distinguished Lecture, some backgrounds on smart grids from the perspective of multi-agent systems are introduced. Second, a distributed secondary control scheme with an event-triggered communication mechanism is presented to ensure frequency regulation and active power sharing of AC islanded microgrids while significantly reducing the utilization of communication resources. Third, a multi-objective distributed optimization method is provided to address current sharing and voltage regulation in DC microgrids. Finally, some challenging issues are discussed for future investigation.

**简介:**
Professor Han is Pro Vice-Chancellor (Research Quality) and a Distinguished Professor at Swinburne University of Technology, Melbourne, Australia. He held various academic and management positions at Griffith University and Central Queensland University, Australia. He received the Ph.D. degree in Control Engineering from East China University of Science and Technology in 1997.
Professor Han was awarded The 2021 Norbert Wiener Award (the Highest Award in systems science and engineering, and cybernetics) and The 2021 M. A. Sargent Medal (the Highest Award of the Electrical College Board of Engineers Australia). He is a Highly Cited Researcher in both Engineering and Computer Science (Clarivate). He is one of Australia’s Top 5 Lifetime Achievers (Research Superstars) in the discipline area of Engineering and Computer Science by The Australian’s Research Magazine (2019-2020). He was the recipient of The IEEE Systems, Man, and Cybernetics Society Andrew P. Sage Best Transactions Paper Award in 2022, 2020, and 2019, respectively, The IEEE/CAA Journal of Automatica Sinica Norbert Wiener Review Award in 2020, and The IEEE Transactions on Industrial Informatics Outstanding Paper Award in 2020.
Professor Han is a Member of the Academia Europaea (The Academy of Europe). He is a Fellow of The Institute of Electrical and Electronic Engineers (IEEE), a Fellow of The International Federation of Automatic Control (FIFAC), a Fellow of The Institution of Engineers Australia (FIEAust), and a Fellow of Chinese Association of Automation (FCAA). He has served as an AdCom Member of IEEE Industrial Electronics Society (IES), a Member of IEEE IES Fellows Committee, a Member of IEEE IES Publications Committee, Chair of IEEE IES Technical Committee on Network-Based Control Systems and Applications, and a Member of CAA Fellows Committee. He is currently the Editor-in-Chief of IEEE/CAA Journal of Automatica Sinica, the Co-Editor-in-Chief of IEEE Transactions on Industrial Informatics, and the Co-Editor of Australian Journal of Electrical and Electronic Engineering.