



**Hongbin Sun**

Professor with the Department of Electrical Engineering and Director of Energy Management and Control Research Center at Tsinghua University

**Seminar Speaker**

Monday, July 24<sup>th</sup>  
10:00-11:30am  
WEB 236C

**Transmission-Distribution Coordinated Energy Management with Its Distributed Methods**

**Abstract:** With a rapid development of distributed energy resources, conventionally “passive” distribution systems are turning into “active” distribution systems, and the current power system dispatch mode in which transmission systems and distribution systems are isolatedly dispatched is facing great challenges. To ensure safety and economy of future power system operation, it is necessary to study a new energy management methodology in which transmission and distribution systems are coordinately dispatched. That is defined as “transmission-distribution coordinated energy management”. In this presentation, we will introduce the recent development in the distributed transmission-distribution coordinated energy management, involving a generalized master-slave-splitting method and its applications on distributed power flow solution and contingency assessment, decentralized economic dispatch and optimal power flow.

**Bio Sketch:** Hongbin Sun received his double B.S. degrees from Tsinghua University in 1992, the Ph.D from Dept. of E.E., Tsinghua University in 1996. He is now ChangJiang Scholar Chair professor in Dept. of E.E. and director of energy management and control research center, Tsinghua University. As a faculty of Dept of E.E. of Tsinghua University since 1997, Hongbin Sun’s technical areas include electric power system operation and control with specific interests on the Energy Management System, System-wide Automatic Voltage Control, and Energy System Integration. In recent 20 years, he led a research group at Tsinghua University to develop an energy management system (EMS) which has been applied to over 70 electrical power control centers in China. He also has developed a system-wide automatic voltage control system (AVC) based on adaptive zone division, which has been put into operation in 5 regional electrical power control centers (5/6 of total China), 22 provincial electrical power control centers (2/3 of total China). Until the end of 2015, there have been a huge amount of generators with the total capacity of 755GW, about 56% total generating capacity of China, has been controlled by the innovative AVC. The AVC system has also been applied to six large wind bases, where a huge amount of WTGs with total wind power capacity of 48.7GW, about 37% of total wind generation capacity of China, had been controlled by the product. In 2011, the innovative AVC was implemented in EPCC of PJM Interconnection, the largest synchronized transmission system in North America, involving 13000+ nodes and 19000+ branches, and considering 5500+ complicated contingencies. He is currently IEEE senior member and IET Fellow. He also serves as the editor of the IEEE TSG, associate editor of IET RPG, and member of the Editorial Board of four international journals and several Chinese journals. He has published more than 400 peer-reviewed papers, within which over 70 are IEEE and IET journal papers, and 4 books. He has been authorized 5 US Patents of Invention and more than 100 Chinese Patents of Invention.