Special Session IX

Special Session Basic Information:

专栏题目 Session Title	中文：能源-信息-社会融合下的新能源电力系统运行与控制 英文：Operation and Control of Renewable Energy Power Systems under Energy-Cyber-Society Integration

专栏介绍和征稿主题
Introduction and topics

中文：

随着全球对减少碳排放和应对气候变化的关注日益增加，新能源电力系统正逐渐成为未来能源结构的重要组成部分。新能源电力系统将能源系统、信息系统和社会因素高度融合形成了能源信息社会系统(Energy-Cyber-Social Systems，ECSS)。ECSS 通过能源设施、信息传感和社会需求的互动，显著提升了电力系统智能化、自动化与协同能力，实现电力的高效、安全、可靠供应。然而，对于信息技术的依赖使得 ECSS 面临信息网络安全问题。同时，高比例新能源接入以及高比例电力电子装备的广泛应用，给 ECSS 的安全运行与稳定控制带来了进一步的挑战。为此，本次特别会议聚焦能源-信息-社会融合下的新能源电力系统运行与控制，旨在为新能源电力系统的发展提供技术支撑。

本次会议主题包括但不限于：

1、能源-信息-社会融合下的新能源电力系统建模与耦合分析
2、能源-信息-社会融合下的新能源电力系统安全评估与防御
3、能源-信息-社会融合下的新能源电力系统韧性评估与提升
4、能源-信息-社会融合下的新能源电力系统多阶段协调优化
5、能源-信息-社会融合下的新能源电力系统社会行为分析与协调
6、能源-信息-社会融合下的新能源电力系统稳定性分析与控制
7、能源-信息-社会融合下的新能源发电系统优化控制
8、能源-信息-社会融合下的分布式能源资源建模与协调控制
9、能源-信息-社会融合下的储能优化配置与控制
10、能源-信息-社会融合下人工智能在电力系统中的应用

英文：

With the increasing global focus on reducing carbon emissions and addressing climate change, renewable energy power system (REPS) is gradually becoming an important part of the future energy resources. The REPS highly integrates the energy system, cyber system and social factors to form the energy-cyber-social systems (ECSS). Through the interaction between energy facilities, information sensing and social needs, ECSS has significantly improved the intelligence, automation, and coordination capabilities of power system, and realized the efficient, safe, and reliable supply of electricity. However, ECSS's reliance on information technology makes it face information network security problems. At the same time, the high proportion of new energy integration and the wide application of high penetration of power electronic devices have brought further challenges to the safe operation and stability control of ECSS. To this end, this special session focuses on the operation and control of REPS, aiming to provide technical support for the development of power system.

The topics of this special session include, but are not limited to:

- Modeling and coupling analysis of REPS under energy-cyber-society integration
- Security assessment and defense of REPS under energy-cyber-society integration
- Resilience assessment and improvement of REPS under energy-cyber-society integration
- Multi-stage coordination and optimization of REPS under energy-cyber-society integration
- Social behavior analysis and coordination of REPS under energy-cyber-society integration
- Stability analysis and control of REPS under energy-cyber-society integration
- Optimal control of renewable energy power generation system under energy-cyber-society integration

- Modeling and coordinated control of DERs under energy-cyber-society integration
- Optimal configuration and control of energy storage under energy-cyber-society integration
- Application of artificial intelligence in power systems under energy-cyber-society integration

Special Session Chair(s):

姓名 Name	夏侯凯顺 Kaishun Xiahou
称谓 Prefix	副教授 Associate Professor
部门 Department	华南理工大学 South China University of Technology
单位 Organization	电力学院 School of Electric Power Engineering
城市/地区 City/Region	广州市/广东省 Guangzhou City/ Guangdong Province

Organizer's Brief Biography

中文：

夏侯凯顺，华南理工大学电力学院副教授，硕士生导师，主要从事新能源电力系统与交直流电网的安全与控制研究，已发表 SCI 论文 20 余篇，主持国家自然科学基金、中国电机工程学会“青年人才托举工程”、广东省/广州市基础与应用基础研究、国家重点实验室开放基金等项目，参与国家自然科学基金重点项目、广东省重点领域研发计划项目等研究课题。《Protection and Control of Modern Power Systems》、《电力信息与通信技术》等期刊的青年编辑/编委。

英文：

Kaishun Xiahou is now an Associate Professor at School of Electric Power Engineering, South China University of Technology. His research interests include cyber-physical security and resilient control of power systems with renewable energy. Dr. Xiahou is the principal investigator of young elite scientist sponsorship program by Chinese Society for Electrical Engineering (CSEE), National Natural Science Foundation of China, and Guangdong Basic and Applied Basic Research Foundation. He has published more than 20 SCI papers and he is the young editor of Protection and Control of Modern Power Systems, and Electric Power Information and Communication Technology.

姓名 Name	郑杰辉 Jiehui Zheng
称谓 Prefix	副教授 Associate Professor
部门 Department	华南理工大学 South China University of Technology
单位 Organization	电力学院 School of Electric Power Engineering
城市/地区 City/Region	广州市/广东省 Guangzhou City/ Guangdong Province

Organizer's Brief Biography

中文：

郑杰辉副教授入选中国电机工程学会“青年人才托举工程”，主持国家级项目 2 项（青年基金和面上基金）、广东省自然科学基金面上项目 2 项、省部级项目 11 项，作为主要执行人参与项目三十余项。已发表 SCI/EI 检索论文 100 余篇，其中第一作者/通讯作者 SCI 论文 50 余篇，ESI 高被引论文 2 篇，通过 Springer Nature 出版英文专著 1 本，授权国家发明专利 8 项。担任《Applied Energy》、《中国电力》、《发电技术》等知名学术期刊青年编委。

英文：

Dr. Jiehui Zheng obtained his B.E. degree in electrical engineering and its automation of Huazhong University of Science and Technology (HUST) in 2012, and his Ph.D. degree in power system and its automation of South China

University of Technology (SCUT) in 2017. Dr. Zheng has been selected in “Lifting Project for Young Talents of CSEE” in 2021. He has participated in more than ten projects as a main researcher. He has published more than 100 SCI/EI indexed papers, including 50 SCI papers as the first author/corresponding author, 2 ESI highly cited paper, 1 English monograph published by Springer Nature, and 8 Chinese patents. Dr. Zheng is an Associate Professor in SCUT, focusing on the research areas of equivalent modeling, planning and operation of integrated energy systems.