Special Session XI

Special Session Basic Information:

专栏题目 **Session Title**	中文：新型配电系统规划与优化运行技术 英文：Planning and Optimization Technologies for New-type Distribution Systems

专栏介绍和征稿主题
Introduction and topics

中文：随着“双碳”目标的深入推进和新型电力系统建设的全面展开，配电系统作为连接能源生产与消费的关键枢纽，其形态与运行特性正经历深刻变革。高比例分布式光伏、储能、电动汽车充电设施以及多元化柔性负荷的广泛接入，使传统配电系统在规划方法与运行调控方面面临严峻挑战。为应对上述变革，亟需探索适应高渗透率分布式资源、具备高度灵活性与互动能力的新型配电系统规划理论与优化运行技术。本专栏聚焦新型配电系统在规划与运行领域的前沿研究与工程实践，旨在汇聚学术界的创新成果与工业界的先进经验。重点征集新型配电系统规划理论与方法、配电系统优化运行与调度技术、配电系统关键装备与数字化支撑技术、高渗透率分布式资源并网与消纳等方面的研究成果。专栏期望通过系统性的研究梳理与技术探讨，为推动配电系统向清洁、高效、灵活、可靠的方向演进提供理论支撑与技术参考。

英文：With the deepening advancement of the dual carbon goals and the full-scale development of next-generation power systems, distribution systems-as the key hubs connecting energy production and consumption-are undergoing profound transformations in their structure and operational characteristics. The widespread integration of high proportions of distributed photovoltaic power, energy storage, electric vehicle charging infrastructure, and diverse flexible loads poses severe challenges to traditional distribution systems in terms of planning methodologies and operational control. To address these changes, there is an urgent need to explore planning theories and optimized operation technologies for new distribution systems that can accommodate high penetration rates of distributed resources and possess high flexibility and interactivity. This session focuses on cutting-edge research and engineering practices in the planning and operation of new distribution systems, aiming to bring together innovative achievements from academia and advanced experience from industry. We are particularly seeking research contributions in the following areas: planning theories and methods for new distribution systems; optimization, operation, and dispatch technologies for distribution systems; key equipment and digital support technologies for distribution systems; and grid integration and absorption of high-penetration distributed resources. Through systematic research reviews and technical discussions, this session aims to provide theoretical support and technical references to advance the evolution of distribution systems toward clean, efficient, flexible, and reliable systems.

Special Session Chair(s):

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Organizer's Brief Biography

中文：杨贺钧，男，工学博士，合肥工业大学副教授，博士生导师，安徽省高端人才引育青年拔尖（青年学者）。2014 年毕业于重庆大学电气工程学院获工学博士学位，2012 年至 2013 年在台湾元智大学电机系进行博士生访学，2022 年至 2023 年在丹麦奥尔堡大学能源系进行国家公派访学。主持科研项目包括：国家自然科学基金（青年基金、面上项目）、安徽省自然科学基金（面上项目、联合基金重点项目）、国重实验室开放基金、校学术新人提升 B 计划、校科技创新培育重点专项及国家电网公司科技项目等多项，参与国家重点研发计划项目。在 IEEE、IET、IJEPES、电自等期刊和会议发表论文 80 余篇（含合作），授权（受理）发明专利 70 项。获得省级电网公司科技进步三等奖、安徽省教学成果一等奖、南瑞继保奖教金、远东奖教金、校讲课比赛三等奖、院级讲课比赛一等奖等奖项。担任 PCMP、《电力系统保护与控制》、《电力建设》、《电力科学与技术学报》、《南方能源建设》等期刊青年编委/编委。主要研究领域包括电力系统规划与可靠性、储能规划与运行技术、新型电力系统运行及商业模式等领域。

英文：Hejun Yang is an Associate Professor in the School of Electrical Engineering and Automation, Hefei University of Technology, China. He received the Ph.D. degree in Electrical Engineering from Chongqing University, Chongqing, China, in 2014. He ever visited Yuan Ze University in 2012-2013 and Aalborg University in 2022-2023. He has led some research projects including the national natural science foundation of China, Anhui provincial natural science foundation, funds of the state key laboratory, the fundamental research funds for the central universities of China, etc. He has published more than 70 papers in journals and conferences and authorized (applied) more than 60 patents. His main research interests focus on areas of power system planning and reliability, and energy storage planning and operations, new power electric distribution system operation and business models.

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Organizer's Brief Biography

中文：博士，副教授，博士生导师，IEEE Senior 会员，丹麦奥尔堡大学访问学者，IEEE PES 中国区青年专家委员会副秘书长，担任多个 SCI 国际学术期刊、国内电力行业相关期刊的审稿人。在《中国电机工程学报》、《CSEE Journal of Power and Energy Systems》、《IEEE Transactions on Sustainable Energy》、《电工技术学报》、《高电压技术》、《电网技术》等高水平期刊上发表论文 40 余篇，均被 SCI/EI 检索；发表在“IEEE Transactions on Sustainable Energy”的论文获得 ESI 全球排名前 1%高被引论文；参与编著书籍《固体电蓄热及可再生能源消纳技术》、《清洁能源工程技术原理与应用》2 部；申请发明专利 31 项；曾获得沈阳市科技进步一等奖 1 项，沈阳市自然科学学术成果奖 1 项，教育部国际合作优胜奖 IEEE PCCC Outstanding Young Engineer Award。

英文：Ning Yan is a Senior Member of IEEE and a high-level talent recognized by Shenyang, China. She was a visiting scholar at Aalborg University, Denmark. She serves as the Deputy Secretary-General of the IEEE PES China Young Professionals Committee and as a Young Editorial Board Member of Energy Storage Science and Technology. Her research focuses on battery lifetime estimation, state identification, safety assessment, and energy storage system control. She has led eight research projects funded by the National Natural Science Foundation of China, provincial agencies, and major regional programs. She has published over 40 papers in leading journals, including IEEE Transactions on Sustainable Energy and CSEE Journal of Power and Energy Systems, with one paper recognized as a Highly Cited Paper (top 1% ESI). She holds 31 invention patents and has received several awards, including first prizes in municipal and national academic competitions.

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Organizer's Brief Biography

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英文：Wenfa Kang received the Ph.D. degree in Electrical Engineering from Chongqing University, China, in 2023. He is currently a Postdoctoral Researcher with the Division of Electrical Engineering at Chalmers University of Technology, Sweden. From 2022 to 2025, he worked as a Research Assistant and Postdoctoral Researcher at the AAU Energy at Aalborg University, Denmark, and from January to July 2025, he was a Visiting Researcher at Imperial College London, U.K. He was awarded the Best Ph.D. Thesis Candidate Cultivation Prize at Chongqing University and the National Scholarship of China. His research mainly focuses on the modelling, control, and optimization of converter-dominated power systems with high penetration of renewable energy, including grid-forming/grid-following converter control, distributed optimization of active distribution networks, planning of microgrids and networked microgrids, and AI-assisted optimization for energy systems. He has led or served as a subtask leader in several EU-, U.K.-, and internationally funded collaborative projects. He has published more than 40 papers in journals and international conferences, including *Applied Energy*, *IEEE Transactions on Smart Grid*, and *IEEE Transactions on Sustainable Energy*, and has also served as a guest editor for special issues and as a reviewer for several international journals.