

//// Panel Session 10 ////

The Applications of Quantum Informatics in Power Systems

○ INTRODUCTION AND TOPICS ○

Quantum informatics is an emerging interdisciplinary field that combines quantum mechanics with classical information theory. It harnesses the unique properties of quantum mechanics to perform operations on information that are unattainable with classical methods, introducing novel forms of communication and computing. Quantum informatics has rapidly advanced in recent years, finding successful applications in areas like transportation systems, satellite communications, online transactions, and digital currencies.

Recently, quantum informatics has begun to be explored within the power systems, with both theoretical research and practical demonstrations gaining momentum. For example, Professor P. Zhang's team has investigated quantum applications in power flow analysis, unit commitment, and stability assessment. Meanwhile, Professor R. Eskandarpour has reviewed the potential of quantum computing in smart grid optimization, forecasting, and cybersecurity.

In response to these developments, this panel session is organized to discuss the applications of quantum computing in power systems. The session will also examine the potential roles of quantum communication and quantum precision measurement within the energy sector, aiming to uncover how quantum informatics can contribute to the future of power systems.

○ PANEL SESSION CHAIR ○



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Dr. Haipeng Xie is an Associate Professor and PhD supervisor at Xi'an Jiaotong University, specializing in power system planning and reliability, optimization of distribution networks, and the application of quantum information science in power systems. He has led two national-level projects and one task under the National Key R&D Program, along with over ten university-industry collaboration projects. Dr. Xie has published more than 30 papers in SCI and EI indexed journals as the first or corresponding author, and holds 9 granted national invention patents. His work has earned him several accolades, including the First Prize of the Shaanxi Provincial Science and Technology Progress Award in 2019, the Second Prize of the China Electric Power Science and Technology Progress Award in 2021, and recognition as a distinguished contributor to the 20th Zhan Tianyou Civil Engineering Award in 2023.

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