

//// Panel Session 12 ////

Transient Voltage and Synchronization Stability Analysis of New Type Power System

○ INTRODUCTION AND TOPICS ○

Large-scale development of renewable energy is an important support for accelerating the construction of new power system. With the increasing proportion of renewable energy, the new type power system has the characteristics of insufficient voltage support capacity, multiple uncertainties and strong coupling between power electronic devices. The transient voltage and synchronization stability response characteristics are complex and the coordinated control is difficult.

The transient voltage and synchronization stability response characteristics are significantly different from those of traditional AC systems and have interactive effects. In the fault condition, the voltage and synchronization dynamic change and evolution process are interwoven, and the propagation path is not clear. This brings a serious challenge to transient voltage and synchronization stability analysis. In addition, the installed capacity of traditional generators in new type power grids is seriously insufficient due to the increase in the proportion of new energy and DC transmission capacity. As a result, the disturbance energy spreads fast and spreads widely. It is difficult to meet the demand of transient voltage stability control with traditional voltage regulation measures alone. It is urgent to improve and break through the key technical, which will contribute to the transient voltage stability assessment and control of the new type power grid with high penetration of renewable energy.

○ PANEL SESSION CHAIRS ○



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Wang changjiang, male, doctor, senior experimentalist, master tutor. He received his Master's and Doctor's degrees in electrical engineering from Northeast Electric Power University in Jilin Province, China in 2017 and 2021 respectively, and is currently an senior experimentalist in the School of Electrical Engineering Northeast Electric Power University. He has long been engaged in research on transient voltage stability analysis and control including large-scale new energy generation. He won 1 second prize of china electrotechnical society science and technology progress, won 1 national second prize of 7th national electrical and electronic basic course experimental teaching case design competition in 2020. As the reviewer of "Proceedings of the CSEE" and "IET Energy Systems Integration". He assume or participate 2 national natural science foundation, and 8 horizontal projects of science and technology projects of state grid corporation. He has published more than 20 SCI/EI journal papers, authorized 5 national invention patents, and published 1 excellent paper in "Electric Power Construction".



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Kai Hou received the Ph.D. degree in electrical engineering from Tianjin University, Tianjin, China, in June 2016. He is currently an Associate Professor with the School of Electrical and Information Engineering, Tianjin University, Tianjin, China. His research interests include reliability and resilience assessment of electric power and integrated energy systems. His main academic contribution can be summarized as follows:

Dr. Hou is focused on "reliability and resilience assessment of integrated energy systems," with a particular emphasis on two key technologies: 1) Reliability assessment methods for integrated energy system operation that consider multiple stochastic factors. 2) Fast resilience assessment methods for integrated energy systems and precise enhancement techniques.

Dr. Hou has published 27 SCI papers with first/corresponding authorship, including 1 hot paper, 3 ESI highly cited papers. He has authorized 16 national invention patents. He hosted 17 scientific research projects, including the General & Youth Programs of NFSC, the Special Founding & First-Class Programs of China Postdoctoral Science Foundation. He won 2 first prize of Provincial Science and Technology Awards, and has been supported by the Young Elite Scientists Sponsorship Program from CSEE.

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