Special Issue

Stability Analysis and Optimal Operation Strategy for Power Systems with High Renewable Energy Penetration

Message from the Guest Editors

The global transition toward low-carbon energy has led to a rapid increase in the penetration of renewable energy sources, such as wind and solar power, into power systems. These resources are typically interfaced to the grid through power electronic converters, which fundamentally alter the dynamic characteristics and operational behavior of modern power systems. As the proportion of power electronic-interfaced generation continues to grow, traditional assumptions regarding system inertia, damping, and stability no longer hold, posing significant challenges for secure and efficient power system operation. This Special Issue aims to provide a platform for researchers and practitioners to present the latest advances in the modeling, analysis, control, and optimization of power systems with high shares of power electronics. Topics of interest include both theoretical developments and practical implementations, covering small-signal and large-signal stability, frequency and voltage control, the coordinated operation of diverse converter-based resources, and grid-forming control strategies.

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Electronics is a multidisciplinary journal designed to appeal to a diverse audience of research scientists, practitioners, and developers in academia and industry. The journal is devoted to fast publication of latest technological breakthroughs, cutting-edge developments, and timely reviews of current and emerging technologies related to the broad field of electronics. Experimental and theoretical results are published as regular peer-reviewed articles or as articles within Special Issues guest-edited by leading experts in selected topics of interest.

Editor-in-Chief

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