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Special Issue Reprint

New Power System and Symmetry

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This Reprint presents a curated collection of cutting-edge research on the stability, control, and symmetry principles of modern power systems with high renewable energy penetration. Originating from a successful Special Issue of the journal *Symmetry*, this volume brings together eight peer-reviewed articles and an Editorial that explore critical challenges in maintaining power balance and dynamic symmetry. The Reprint covers a diverse range of topics, including heterogeneous nodal frequency response modeling, data-driven emergency load shedding optimization, self-adaptive virtual synchronous generator control using neural network approaches, and renewable energy consumption capacity assessment. Further contributions explore typical scenario construction with spatiotemporal correlations, optimal flexibility dispatching of multi-pumped hydro storage stations, and dynamic security partition assessment based on symmetrical electrical distance matrices. This Reprint is an essential resource for researchers, engineers, and graduate students in electrical engineering, power system operations, and renewable energy integration, combining theoretical insights with practical case studies to advance the development of smarter and more resilient power grids.

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