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Shortcuts to Adiabaticity with and without PT Symmetry Systems: Theory, Experiments and Applications

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Message from the Guest Editors

Shortcuts to adiabaticity are alternative fast processes which reproduce the same final state as the adiabatic process in a finite or even shorter time. In addition, shortcuts to adiabaticity are also fast routes to the final results of a system, where slow and adiabatic changes are produced by controlling the parameters of a system. In recent years, shortcuts to adiabaticity have been extended from Hermitian systems to non-Hermitian systems with non-Hermitian off-diagonal elements without parity–time (PT) symmetry. Because of their possible applications in quantum information processing and quantum control, shortcuts to adiabaticity with quantum open systems have attracted widespread attention. This Special Issue will attempt to cover the whole field of shortcuts to adiabaticity with quantum open systems in its widest sense, together with the related theory, experiments, and applications in various facets.



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Special Issue



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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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