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Shortcuts to Adiabaticity

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Message from the Guest Editors

Shortcuts to adiabaticity (STA) are a set of techniques to get the same results as the adiabatic methods in a short time, allowing for some transient excitations. The main approaches are based on invariants, fast-forward or counterdiabatic driving, inverse engineering, and local adiabatic methods, possibly hybridized with optimal control theory, perturbative, iterative, Lie-algebraic, and variational methods. Most of these approaches produce families of parameter paths, which can be used to optimize resilience with respect to noise and perturbations.

Shortcuts play a very practical role, but also imply fundamental questions such as determining the trade-off relations and limits for process time, energy consumption, or information needed. This Special Issue will reflect the current, rich scenario of methods and applications of shortcuts to adiabaticity.

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Message from the Editor-in-Chief

The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

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