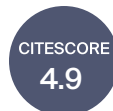




symmetry

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Quantum Algorithm Design in Symmetry

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Message from the Guest Editors

Dear Colleagues,

The development of quantum algorithms is pivotal for advancing classical computing capabilities, offering unique advantages over traditional methods. Embracing near-term quantum hybrid, quantum machine learning, and fault-tolerance algorithms marks a significant stride in accelerating problem-solving capacities. These advancements not only streamline processes but also enable the handling of increasingly intricate tasks with heightened efficiency.

This Special Issue aims to delve into the realm of quantum algorithms, exploring both near-term and fault-tolerant variations, along with quantum machine learning algorithms, from a quantum mechanics perspective. Through this lens, it seeks to unravel the distinctive symmetrical behaviors inherent in quantum algorithms or to solve problems with symmetric properties. By illuminating methodologies tailored for solving complex physical and chemical problems, as well as predicting symmetry-breaking phenomena, this endeavor promises to deepen our understanding of quantum algorithms and their practical applications.



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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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