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Quantum Dynamics and Applications

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Message from the Guest Editors

Quantum technologies are a rapidly emerging field. Many countries and large corporations are ramping up their investment in quantum technology, particularly in quantum information processing. However, these systems require extremely fast and precise controls because, over time, quantum systems lose their “coherence”, which refers to the ability to make interference and superposition of states. Maintaining this “coherence” is at the heart of all the mechanisms utilized in quantum technology. Therefore, the key to the further advancement of quantum technology relies on fast and accurate quantum control protocols. However, finding an optimum temporal and spatial dependence of the control field for high-speed manipulations is extremely challenging because fast controls require a strong control field, which can easily cause undesirable perturbation to the system, thus, negating its useful superposition.

This Special Issue not only focuses on practical purposes, but also aims to deepen the understanding of the world from the perspective of high-fidelity quantum control.

Keywords: Fast and accurate quantum control; Quantum dynamics; Quantum technology



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Special Issue



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Message from the Editor-in-Chief

The multidisciplinary *Universe* journal is aiming to follow and, hopefully, to lead to the largest extent as possible the ever-self renovating threads which weave mathematical theories with our understanding of the magnificent natural world. On behalf of all the distinguished members of the editorial board, I extend my welcome to this new journal and look forward to hearing from the interested contributors and learning about their valuable research.

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