Special Issue

Simulation of Open Quantum Systems

Message from the Guest Editors

Open quantum systems, which interact with their surrounding environment, play a crucial role in various areas of quantum science and technology. The importance of simulating open quantum systems is growing for the following two main reasons: first, to enhance our understanding of the fundamental physics governing these systems in complex scenarios, including, for instance, many-body open systems or structured quantum systems, such as networks of superconducting qubits; second, improving our comprehension of noise in quantum computation, which can be described as an open system of many qubits, is particularly relevant in the near-term quantum computation era with tens or hundreds of qubits. Submissions to this issue are broadly solicited on the simulation of open quantum systems using both classical and quantum methods. While our focus is predominantly on Markovian dynamics due to its widespread use and simplicity, manuscripts addressing the simulation of non-Markovian open systems are also welcome.

Guest Editors

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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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Editor-in-Chief

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