

Special Issue

Quantum Information and Quantum Simulation

Message from the Guest Editor

Quantum simulation is a founding idea of the field of quantum computation. Since its inception by Feynman, quantum simulation has grown to encompass simulation of condensed matter, quantum chemistry, and nuclear and high-energy physics. The power of quantum computation, when applied to the simulation of physical systems, means that a single set of techniques can be applied across disparate quantum systems. Advances in the mapping of different physical systems, to qubits and quantum gates, have been complemented by advances in simulation algorithms. Progress in experimental implementations of quantum computing have resulted in many demonstrations of quantum simulation on both analog simulators and NISQ devices. Quantum simulation is a major focus of commercial efforts to implement quantum computation and of publicly funded efforts such as the National Quantum Initiative. In this Special Issue, we wish to showcase work at the cutting edge of quantum simulation—from algorithms to software to experimentation.

Guest Editor

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Editor-in-Chief

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