

Virtual Institute of Quantum Simulation

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Quantum simulation uses controllable quantum systems to investigate the properties of other complex quantum systems, and can tackle problems that are beyond the computational capability of any classical computer. Initial experimental and theoretical work has been mainly directed towards the quantum simulation of condensed matter systems, such as bosonic or fermionic particles in lattices, but more recent work also encompasses such diverse fields as quantum field theory, cosmology and high-energy physics.

The institute comprises worldwide efforts using experimental platforms like ultracold atomic and molecular quantum gases, ion traps, polariton condensates, circuit based cavity quantum electrodynamics and arrays of quantum dots or Josephson junctions and it aims to explore the potential of quantum simulations for different fields of science.

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