

Analog quantum simulation of bosonic lattices and lattice gauge theories (25+5)

Monday, January 13, 2025 5:00 PM (30 minutes)

Analog quantum simulators are purpose-built devices that imitate the behavior of complex quantum systems. Compared to universal error-corrected digital quantum computers, they are expected to have less stringent requirements, and are capable of natively representing the degrees of freedom and interactions in the target system with reduced overhead. In this talk, I will present our recent work on hardware-efficient analog quantum simulation using superconducting circuits in the Engineered Quantum Systems Lab. I will discuss our simulation of bosonic lattices in synthetic dimensions using multimode cavities, as well as our implementation of native three-qubit interactions for simulating lattice gauge theories.

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