

Novel quantum dynamics with superconducting qubits

Wednesday 2 October 2024 11:00 (1 hour)

In recent years, superconducting qubits have emerged as one of the leading platforms for quantum computation and simulation. We utilize these Noisy Intermediate Scale Quantum (NISQ) processors to study quantum dynamics. I will present some of our recent works in studying robustness of bound states of photons [1], universality classes of dynamics in the 1D Heisenberg chain [2], and braiding of non-Abelian excitations [3]. These works point to the subtleties of non-equilibrium dynamics of highly entangled states in many-body systems; they provide evidence that in the absence of full-fledged quantum processors, the NISQ processors have challenged and guided our conventional wisdom.

[1] Morvan et al., Nature 612, 240–245 (2022)

[2] Rosenberg et al., Science 384, 48-53 (2024)

[3] Andersen et al., Nature 618, 264–269 (2023)

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