



Contribution ID: 25

Type: **not specified**

Entanglement in finite-temperature Rydberg atom arrays

Thursday, 31 October 2024 12:40 (20 minutes)

Tensor network methods are a family of numerical techniques that efficiently compress the information of quantum many-body systems while accurately capturing their important physical properties. Here, we present a tensor-network-based toolbox developed for constructing the quantum many-body states at thermal equilibrium. Using this framework, we probe classical correlations as well as entanglement monotones of a Rydberg atom array - a promising quantum simulation platform. By examining the entanglement of formation and entanglement negativity of a half-system bipartition, we numerically confirm that a conformal scaling law of entanglement extends from the zero-temperature critical points into the low-temperature regime.

Sessione

Simulazione

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Session Classification: Quantum Simulation