

Quantum Information Group

Sharif University of Technology

Presenter: Mahsa Karimi

Title: Simulation of X-states on IBM quantum computer

Abstract:

Two qubit density matrices which are of X-shape, are a natural generalization of Bell Diagonal States recently simulated on the IBM quantum device. We propose a quantum circuit for simulation of a general X-state on the same quantum device and study its properties for several values of the extended parameter space. We also show by specific measurements, that their X-shape is robust against noisy quantum gates. To further physically motivate this study, we invoke the two-spin Heisenberg XYZ system and show that for a wide class of initial states, it leads to dynamical density matrices which are X-states. Due to the symmetries of this Hamiltonian, we show that by only two qubits, one can simulate the dynamics of this system on the IBM quantum computer.

Place: <https://vc.sharif.edu/ch/sraeisi>

Date: Khordad 11 1400

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