

Quantum Entanglement and Thermalization in Superconducting Two-Qubit Systems

Authors : E. Karami, M. Bohloul, P. Najmadi

Abstract : The superconducting system is a suitable system for quantum computers. Quantum entanglement is a fundamental phenomenon that is key to the power of quantum computers. Quantum entanglement has been studied in different superconducting systems. In this paper, we are investigating a superconducting two-qubit system as a macroscopic system. These systems include two coupled Quasiparticle circuits. We calculate quantum entanglement and thermalization for system evolution and compare them. We observe, thermalization and entanglement have different behavior, and equilibrium thermal state has maximum entanglement.

Keywords : macroscopic system, quantum entanglement, thermalization, superconducting system

Conference Title : ICMQMS 2022 : International Conference on Macroscopic Quantum Mechanics and Superconductivity

Conference Location : Copenhagen, Denmark

Conference Dates : July 19-20, 2022