

Protecting quantum superpositions in superconducting circuits

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Can we prolong the coherence of a two-state manifold in a complex quantum system beyond the coherence of its longest-lived component? This question is the starting point in the construction of a scalable quantum computer. It translates into the search for processes that operate as some sort of Maxwell's demon, reliably correcting the errors resulting from the coupling between qubits and their environment. The presentation will review recent experiments that tested the dynamical protection, by Josephson circuits, of a logical qubit memory based on superpositions of particular coherent states of a superconducting resonator.