

Abstract Submitted
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Extending quantum coherence of superconducting flux¹ FEI YAN, ARCHANA KAMAL, TERRY ORLANDO, SIMON GUSTAVSSON, Massachusetts Inst of Tech-MIT, WILLIAM OLIVER, Massachusetts Inst of Tech-MIT, Lincoln Laboratory, ENGINEERING QUANTUM SYSTEMS, MIT TEAM — We present the design of a superconducting qubit with multiple Josephson junctions. The design starts with a capacitively shunted flux qubit, and it incorporates particular junction parameter choices for the purpose of simultaneously optimizing over transition frequency, anharmonicity, flux- and charge-noise sensitivity around flux degeneracy. By studying the scaling properties with design parameters, we identify directions to extend coherence substantially.

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Fei Yan
Massachusetts Inst of Tech-MIT

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