

Abstract Submitted  
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**Towards long coherence superconducting qubits** MATTHIAS STEFFEN, IBM, ANTONIO CORCOLES, JERRY CHOW, CHAD RIGETTI, MARK KETCHEN, MARY BETH ROTHWELL, GEORGE KEEFE, JIM ROZEN, MARK BORSTELMANN, JACK ROHRS, DAVID DIVINCENZO — The capacitively shunted flux qubit (CSFQ) has recently been shown to have coherence times of 1-2 microseconds repeatedly over many devices at typical qubit operating frequencies. Experiments in our group strongly suggest that losses associated with the shunting capacitor limit the current coherence times. As a result we propose novel approaches towards decreasing capacitive losses by employing geometric and/or materials developments. We show experimental data and compare these with theoretical predictions

Matthias Steffen  
IBM

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