

Abstract Submitted  
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**Radially symmetric transmon with long lifetime** MARTIN SANDBERG, MICHAEL VISSERS, JIANSONG GAO, DAVID PAPPAS, National Institute of Standards and Technology — We present a radially symmetric design for a large pad transmon qubit. The symmetry reduces the dipole radiation by orders of magnitude relative to axial large pad qubits that are widely used for 3D-circuit QED experiments. The reduction in radiation allows for the use of large area structures that are needed to reduce the effects of interface losses. This enables long qubit lifetimes without the use of a high-Q cavity resonator. Energy relaxation and coherence times of up to 35 microseconds have been measured. The qubit can be implemented in a microstrip geometry. This gives the advantage of removing discontinuous ground planes that can cause stray resonances. In addition, this geometry is well suited for implementing and exploring circuits with direct qubit-qubit coupling.

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