Abstract Submitted
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For Improving Superconducting Qubits.[1] RAYMOND W. SIMMONDS, M.S. ALLMAN, F. ALTOMARE, K. CICAK, K.D. OSBORN, A.J. SIROIS, J.A. STRONG, J.D. WHITTAKER, NIST, Boulder — Josephson junction-based superconducting qubits are still a very promising platform for creating quantum computers of the future. We have created a strategy to improve the coherence of superconducting phase qubits, through the removal of unwanted two-level system defects known to be a significant source of decoherence. Through creating dielectric free fabrication techniques and vaccum gap capacitors, we can remove a considerable amount of troublesome defects in the construction of phase qubits. Here, we discuss some results and obstacles still facing the design and fabrication of phase qubits.

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