Abstract Submitted
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Cross-Talk in Superconducting Transmon Quantum Computing Architecture[1] DAVID ABRAHAM, JERRY M. CHOW, ANTONIO CORCOLES, MARY BETH ROTHWELL, GEORGE KEEFE, JAY GAMBETTA, MATTHIAS STEFFEN, IBM T.J. Watson Research Center, IBM QUANTUM COMPUTING TEAM — Superconducting transmon quantum computing test structures often exhibit significant undesired cross-talk. For experiments with only a handful of qubits this cross-talk can be quantified and understood [1], and therefore corrected. As quantum computing circuits become more complex, and thereby contain increasing numbers of qubits and resonators, it becomes more vital that the inadvertent coupling between these elements is minimized. The task of accurately controlling each single qubit to the level of precision required throughout the realization of a quantum algorithm is difficult by itself, but coupled with the need of nulling out leakage signals from neighboring qubits or resonators would quickly become impossible. We discuss an approach to solve this critical problem.

[1] "Characterization of addressability by simultaneous randomized benchmarking," Jay M. Gambetta, et al., arXiv:1204.6308 [quant-ph].

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David W. Abraham
IBM T.J. Watson Research Center

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