

Abstract Submitted
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Dephasing-induced Leakage in Superconducting Qubits FREDERICK STRAUCH, Williams College — Superconducting quantum devices such as the transmon or xmon are described as weakly anharmonic oscillators with multiple energy levels, the lowest two of which constitute a qubit. Quantum logic operations using these devices typically involve states outside of the qubit subspace; residual population in such states is known as leakage. While control methods are known to eliminate leakage from ideal devices, I will show that dephasing limits the effectiveness of these methods and discuss the implications of this dephasing-induced leakage for quantum information processing.

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