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Simulating Entanglement Dynamics of Singlet-Triplet Qubits Coupled to a Classical Transmission Line Resonator MICHAEL WOLFE, JASON KESTNER, Department of Physics, UMBC — Electrons confined in lateral quantum dots are promising candidates for scalable quantum bits. Particularly, singlet-triplet qubits can entangle electrostatically and offer long coherence times due to their weak interactions with the environment. However, fast two-qubit operations are challenging. We examine the dynamics of singlet triplet qubits capacitively coupled to a classical transmission line resonator driven near resonance. We numerically simulate the dynamics of the von Neumann entanglement entropy and investigate parameters of the coupling element that optimizes the operation time for the qubit.

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