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Photon heralded entanglement between radiatively mismatched matter qubits ZHEXUAN GONG, LUMING DUAN,
Department of Physics and MCTP, University of Michigan — Photon heralded entanglement usually requires well matched radiative characteristics of two matter-based qubits. In practice, we may want to entangle two solid-state or atomic qubits with different radiative lifetime, or to entangle a solid-state qubit with an atomic qubit that has significant mismatch in lifetime and transition frequency. We propose a protocol that can effectively shape the emitted photon pulses of two matter qubits to a common analytically known function by simply tuning the classical laser fields applied to each qubit. Entanglement fidelity and success rates are found to be promising under current experimental conditions.

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