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Deterministic Single-Photon Generation by Cavity QED

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Abstract: Deterministic generation of single photons is an essential ingredient for quantum information experiments. Controlled emission of single photons into a cavity mode with high efficiency is proposed using a coupled system of an atom and a cavity. This paper reports theoretical discussions on single-photon generation by cavity quantum electrodynamics (Cavity QED) as well as recent progress in experiments with atoms and ions.

Key Words: Quantum information, Single photon, Cavity QED, Adiabatic passage, Quantum network

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