

Abstract Submitted
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Performance of a quantum teleportation protocol based on spontaneous emission from a pair of atoms JAMES CLEMENS, Miami University — Recently a quantum teleportation protocol has been proposed by Chen, et al. in *New Journal of Physics* **7**, 172 (2005) which is based on the collective spontaneous emission of a photon from a pair of atoms. If one can successfully distinguish between the superradiant and subradiant emission channels then one can teleport the state of the second atom onto a cavity field mode with which the first atom has previously interacted. One can employ temporal resolution, spatial resolution, or both in combination, of the emitted photon in order to distinguish superradiant from subradiant emission on the basis of a single detected photon. Using a quantum trajectory unraveling of the superradiance master equation developed previously [*Phys. Rev. A* **68**, 023809 (2003)] we calculate the overall success probability and the fidelity of the teleportation protocol under all three detection strategies. We investigate the performance of the protocol, optimizing with respect to the spacing of the two atoms.

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