Abstract Submitted
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Probe spectrum and photon statistics of multilevel atoms in a resonant two-mode cavity JAMES CLEMENS, Miami University — We calculate the probe spectrum and photon statistics for a collection of atoms with a degenerate multilevel structure such as the $F = 3$ to $F' = 4$ transition in ^{85}Rb coupled to a resonant cavity supporting two modes with orthogonal polarization. We numerically simulate the photon counting statistics and calculate the normalized second order intensity auto- and cross-correlations for the two cavity modes and the spontaneous emission from the side of the cavity using quantum trajectory theory. We compare our results with those for simplified three- and four-level atomic models which have been solved analytically in the limit of weak driving.

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