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【409】Dynamics towards multistable inverted states of an open three-level Dicke model

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We consider a V-shaped three-level system coupled to orthogonal quadratures of a dissipative cavity field, and observe a significant multistability of states with inverted atomic population. The stability of these inverted states are closely related to properties of dark states, and is a combined result of the cavity dissipation and the underlying SU(3) symmetry of the atomic subsystem. The multistability can be probed due to three factors: the stability of the normal state is significantly suppressed; the system trajectories and final states of dynamical evolutions are highly sensitive to ramping scheme; and different inverted states have their own characteristic cavity fluctuations.

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