NONLINEAR DYNAMICS OF THE DIPOLE MOMENTUM OF A TWO-LEVEL ATOM IN THE SEMICLASSICAL JAYNES–CUMMINGS MODEL

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S u m m a r y

The nonlinear dynamics of expectation values for observables in the integrable Jaynes–Cummings model has been studied. The model describes the interaction between a two-level atom and a single-mode classical electromagnetic field. Explicit formulas have been obtained for the evolution of transverse components of the atomic dipole momentum and the inverse population of atomic levels. A comparison between the solutions obtained in the quantum-mechanical and semiclassical versions of the Jaynes–Cummings model has been made.