NONCLASSICAL STATES OF THE JAYNES–CUMMINGS MODEL AND ITS EXCITATION

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S u m m a r y

The nonclassical squeezed states of the Jaynes–Cummings (JC) model are built, and the problem of their excitation in parametric processes is considered. The statistical properties of a field oscillator are analyzed in these states. The presence of an interaction between the field oscillator and an atom results in the appearance of slow changes of the statistical average values of dynamical magnitudes with time. There are two basically different cases. When only one of the two modes of the JC model is excited, a change of the average value of a coordinate with time is determined by the mode anharmonism. In the case where both modes of JC model are excited with near frequencies, these changes represent the collapse and revival of Rabi oscillations with the frequency $2k\sqrt{n+1}$ where k is the parameter of the atom-field interaction and n is the number of photons. The built squeezed vacuum states are not two-photon states since the probability of obtaining an odd number of photons is not equal to zero and changes with time.