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Phase Distribution of the Output of Jaynes-Cummings Model with the Superposition of Squeezed Displaced Fock States

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**Abstract:** The Wigner quasi-probability function for the superposition of squeezed displaced Fock states (SDFS's) is reviewed. The interaction of these states with a two-level atom in cavity with the presence of additional Kerr medium is studied. Exact general matrix elements of the time-dependent operators of a Jaynes-Cummings model (JCM), in the presence of a Kerr medium, with these states are derived. We have obtained the phase distribution by two different ways: one is by Pegg-Barnett formalism, the second is by integration of the Wigner function over the radial variable. Results of these two approaches are compared. The Wigner phase distributions for some values of parameters are illustrated. The behaviors of the distributions have been shown as a function of the squeeze parameter in JCM.

**Key Words:** Non-classical field states; squeezed displaced Fock states; Wigner quasi-probability function; phase distribution, JCM.

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