Quantum Statistical Properties of the Exciton in a Leaky Quasi-Mode Cavity

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Abstract: We have studied quantum statistical properties of the exciton in a leaky quasi-mode cavity. It is shown that when the exciton is initially in a squeezed coherent state whereas cavity initially in a vacuum state, there is energy exchange between the exciton and cavity. Both the exciton and cavity may exhibit sub-Poissonian distribution and exist quadrature squeezing. Calculation shows that correlation between the exciton and cavity is classical, which implies that there is not the violation of the Cauchy-Schwartz inequality.

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