

Squeezing States of Magnons in a Ferromagnet

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(Received: 2005-7-21; Revised:)

Abstract: In this paper, we conduct an investigation into magnon self-squeezing states in a ferromagnet. In these states, the quantum fluctuations of the spin components can be lower than the zero-point quantum fluctuations of the coherent states. Through calculating the expectation values of spin fluctuations we gain the condition of achieving magnon self-squeezing. We introduce the mean-field theory for dealing with the nonlinear interaction term of Hamiltonian of magnon system.

PACS: 75.10.-b, 75.30.Ds, 76.30.Da

Key words: self-squeezing state, spin wave, magnon, quantum fluctuation

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