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Study of Two-Mode Squeezed Magnetopolarons

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Abstract: In this paper, we conduct an investigation into two-dimensional squeezed magnetopolarons. The Hamiltonian of magnetopolarons is dealt with two-mode squeezed states transformation, which is based on the Lee-Low-Pines and Huybrechts (LLP-H) canonical transformations. This method makes it possible to take account of the linear terms, bilinear ones of phonon operators, and the correlation between two longitudinal optical (LO) phonon modes. The energies of the ground state and excited states are evaluated by variational approach, and accurate results are obtained. Furthermore, the renormalized cyclotron masses for some possible transitions are discussed in detail.

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