

Abstract Submitted
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Electron-Phonon Interactions in a single modulation doped Ga_{0.24}In_{0.76}As/InP Quantum Well GERARD MARTINEZ, MILAN ORLITA, CLEMENT FAUGERAS, LNCMI, CNRS, Grenoble, SERGEI STUDENIKIN, PHILIP POOLE, GEOFF AERS, IMS, NRC, Ottawa — A series of Ga_{0.24}In_{0.76}As/InP modulation doped single quantum well (QW) structures have been investigated using cyclotron resonance experiments. The far-infrared magneto-transmission experiments are analyzed with a multidielctric model allowing the extraction of the imaginary part of the response function, revealing strong interactions with the different phonon energies of the mixed compound. For carrier densities n_S higher than about $3.4 \times 10^{11} \text{ cm}^{-2}$ the only observed interaction is with the TO modes of the system whereas for lower densities, in addition to this interaction, a clear polaronic interaction with the LO phonons develops and increases as n_S decreases. Due to the specific dielectric character of this compound these different types of interaction can be clearly indentified and even quantified.

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