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Polaronic effects in a single modulation doped GaAs quantum well GERARD MARTINEZ, CLEMENT FAUGERAS, MILAN ORLITA, Laboratoire National des Champs Magnétiques Intenses, Grenoble, A. RIEDEL, R. REY, KLAUS FRIEDLAND, Paul Drude Institute, Berlin — Absolute magneto-optical transmission measurements have been performed in the far-infra-red range under magnetic fields up to 32 T and at a temperature of 1.8 K on a single modulation doped GaAs quantum well (QW) with a width dw = 13 nm. This QW is sandwiched between two GaAs/AlAs superlattices, the whole epilayer being lift-off from the GaAs substrate and deposited on a wedged Si substrate. The carrier concentration Ns= 3.8 10^{11} cm^{-2} and has a mobility exceeding 10^6 $cm^2/V/sec$ at low temperatures. Due to the absence of the GaAs substrate, the magneto-transmission of the sample, mainly governed by the cyclotron (CR) absorption line, can be followed continuously over the whole range of energies. It reveals a strong polaronic interaction with the LO GaAs-phonon: the results can be interpreted quantitatively using the FHIP model [1] and the related conductivity response [2].

[1] R.P. Feynman, R.W. Hellwarth, C.K. Iddings and P.M. Platzman, Phys. Rev., 127 , 1004 (1962.
[2] F.M. Peeters and J.T. Devreese, Phys. Rev. B, **28**, 6051 (1983).

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