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Cyclotron Resonance of Two-Dimensional Hole Systems in InSb Quantum Wells JAMES COKER, R. DOEZEMA, M. EDIRISOORIYA, T. MISHIMA, MIKE SANTOS, University of Oklahoma, X. PAN, G. SANDERS, C. STANTON, University of Florida, L. TUNG, Y.-J. WANG, NHMFL — In order to realize high-performance InSb CMOS circuits, p-type InSb QW transistors with a high room-temperature mobility are necessary. We report on an experimental study of cyclotron resonance in InSb QWs with $Al_{0.20}In_{0.80}Sb$ barriers doped with Be. Magnetic fields up to 17.5T were applied perpendicular to the QWs, at a temperature of 4.2K. At fields less than 4T, we deduce a hole effective mass of $0.05\sim0.1m_o$ for densities of $2\sim5\times10^{11}cm^{-2}$, which suggests that high hole mobilities are possible. At higher fields, we observe separate features for different spin-conserving transitions between neighboring Landau levels. The energies of the features depend on the levels' spin index and Landau level indices. The energies and intensities are explained by a modified Pidgeon-Brown model that explicitly incorporates pseudomorphic mechanical strain. This work was supported by the NSF under Grants DMR-0808086 and DMR-0520550.

James Coker
University of Oklahoma

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