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Magnetoexcitons in InSb Quantum Wells[1] WILLIAM GEMPEL, TAROSHANI KASTURIARACHCHI, RYAN DOEZEMA, MADHAVIE EDIRISOORIYA, TETSUYA MISHIMA, MICHAEL SANTOS, University of Oklahoma, GARY SANDERS, CHRISTOPHER STANTON, University of Florida — We report on an experimental and theoretical study of excitons in strained InSb quantum wells with $Al_xIn_{1-x}Sb$ barriers. Perpendicular magnetic fields of 0<B<8T are applied in far infrared transmission measurements at a temperature of 4.2K. We observe rich spectra of excitonic transitions between hole and electron subbands in square and parabolic wells. Strain and confinement lift the degeneracy between the light and heavy holes. These data are in the large B regime since the electron effective mass is small ($0.014m_o$) and the dielectric constant is large (18) in InSb. Spin splitting is well resolved due to the large g-factor (-51) for electrons in InSb. We use a modified Bauer-Ando theory to identify the magnetoexciton transitions and to explain observed anti-crossing behavior.

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