

Abstract Submitted  
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**Landau Level Spectrum in  $\text{In}_{0.53}\text{Ga}_{0.47}\text{As}/\text{InP}$  Heterostructures**

CHI ZHANG, YANHUA DAI, KRISTJAN STONE, RUI-RUI DU, Rice University — We report on magnetotransport results from a high-quality Rashba two-dimensional electron gas (2DEG) formed in undoped  $\text{In}_{0.53}\text{Ga}_{0.47}\text{As}/\text{InP}$  heterostructures, which were MOCVD grown on (100) InP substrate. The 2DEG has a density of  $n_e \sim 1.1 \times 10^{11}/\text{cm}^2$  and a mobility of  $\mu \sim 2 \times 10^5 \text{ cm}^2/\text{Vs}$  at  $T = 300 \text{ mK}$ , and with illumination from a light-emitting diode, the  $n_e$  can be tuned to  $1.5 \times 10^{11}/\text{cm}^2$ . A systematic pattern in  $R_{xx}$  and  $R_{xy}$ , corresponding to the opening and closing of the integer quantum Hall gaps, was observed as a function of  $n_e$ , as well as a function of tilt angle in tilted field experiments. We are interested in the possible observation of resonant spin Hall conductance in this system. Experimental data and a brief discussion will be presented. The work at Rice was supported by NSF DMR-0706634.

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