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Electron transport in semiconductor heterostructures with strong spin orbit coupling ANDREI GARCIA, DENNIS LO, DAVID GOLDHABER-GORDON, Stanford University, JASON STEPHENS, SHAWN MACK, DAVID AWSCHALOM, UC Santa Barbara — GaAs/AlGaAs two dimensional electron gases (2DEGs) have been studied extensively in the context of mesoscopic transport through devices such as quantum point contacts and quantum dots. 2DEGs in heterostructures based on InGaAs or InAs instead of GaAs provide testbeds to study similar phenomena in systems with much larger intrinsic spin-orbit coupling. Stronger spin orbit coupling provides greater ease of control of the electron spin degree of freedom, leading to applications in spintronics as well as the possibility of observing novel quantum Hall states. We present some preliminary electronic transport data on gated InGaAs 2DEGs and discuss directions for possible further experiments on nanostructures in this material.

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