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Ultra Low Temperature Conductance of Helical Edge States in InAs/GaSb 2D Topological Insulator[1] TINGXIN LI, XIAOYANG MU, XIAOXUE LIU, PENGJIE WANG, HAILONG FU, XI LIN, Peking Univ., KATE SCHREIBER, GABOR CSATHY, Purdue Univ., LINGJIE DU, Rice Univ., GERARD SULLIVAN, Teledyne Scientific, RUI-RUI DU, Rice Univ., and Peking Univ. — Inverted InAs/GaSb quantum wells have been shown to be a 2D topological insulator hosting helical edge states. For mesoscopic samples, quantized conductance plateaus of $2e^2/h$ have been observed. On the other hand, the longitudinal resistance in long samples increased linearly with device length, indicating certain scattering processes occurred in the helical edge. Moreover, edge states of InAs/GaSb system have a small Fermi velocity V_F, suggesting that interaction effects may play an important role in their electronic transport properties. We report work in progress for conductance measurements of InAs/GaSb helical edge states in ultra low temperatures. Experiments are performed in two millikelvin dilution refrigerators instrumented for fractional quantum Hall effect studies, one of them having attained 6mK electron temperature.

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