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Conductance of the Quantum Spin Hall Edge in HgTe Quantum Wells VIVEK VENKATACHALAM, SEAN HART, Harvard University, MATHIAS MÜHLBAUER, CHRISTOPH BRÜNE, LAURENS MOLENKAMP, Wurzburg University, AMIR YACOBY, Harvard University — A two-dimensional electron system with band inversion due to spin-orbit interactions can support counterpropagating edge channels, each with one unit of conductance. Unlike the conventional quantum Hall effect, however, these channels can back scatter into each other in the presence of magnetic impurities (or other time-reversal breaking scattering sources). With topgates, we can create 1 um edges of these QSH states and characterize their transmission. In some regions, we are able to see the quantized conductance that is expected of the QSH effect. In other regions, we see a higher resistance corresponding to a nonzero amount of scattering in the channel.

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