

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Local probing of Quantum Spin Hall edge states MARKUS KÖNIG, ANDREI GARCIA, MATTHIAS BAENNINGER, Stanford University, CHRISTOPH BRÜNE, HARTMUT BUHMANN, LAURENS MOLENKAMP, University of Wuerzburg, DAVID GOLDHABER-GORDON, Stanford University — Since their recent experimental discovery, topological insulators have attracted a lot of interest. The two-dimensional manifestation of a topological insulator, the Quantum Spin Hall (QSH) state, is characterized by counter-propagating edge states with opposite spin-polarization, while the bulk is insulating. We use Scanning Gate Microscopy to demonstrate the edge state nature of transport in the QSH state. Utilizing the high spatial resolution of this technique, we gain insight into the spatial properties of the edge states. Furthermore, the experiments can yield information regarding the sensitivity of the QSH edge states to local perturbations, which can be useful for future applications.

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Date submitted: 21 Nov 2010

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