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## Manipulating edge transport in quantum anomalous Hall insulators[1]

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The quantum anomalous Hall (QAH) effect provides a path to obtain dissipation-less, one-dimensional (1D) edge states at zero magnetic field. Its recent experimental realization in magnetic topological insulator thin films lies at the overlap of several areas of condensed matter physics: dilute magnetic semiconductors, low dimensional electron transport and topologically non-trivial material systems. In this talk, we demonstrate how careful compositional and electrical tuning of epitaxial films of Cr-doped $(Bi,Sb)_2Te_3$ enables access to a robust zero-field quantized Hall effect, despite sample roughness [1] and low carrier mobility. In samples that show near-dissipation-less transport, we manipulate the intermixing between edge states and dissipative channels via a tilted-field crossover from ballistic 1D edge transport to diffusive transport [2]. This crossover manifests in a gate-tunable giant anisotropic magneto-resistance effect that we use as a quantitative probe of dissipation in our systems. Finally, we discuss experiments with mesoscopic channels of QAH insulator thin films, and discuss the effect of their modified magnetic anisotropy on edge transport. This work was carried out in collaboration with A. Richardella, C-X Liu, M. Liu, W. Wang, N. P. Ong, and N. Samarth. [1] A. Richardella, A. Kandala et. al APL Materials 3 (8), 083303 (2015) [2] A. Kandala, A. Richardella et. al. Nature Commun. 6:7434 (2015)

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