

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Coherent oscillations and giant edge magnetoresistance in singly connected topological insulators RUI-LIN CHU, The University of Hong Kong, J. K. JAIN COLLABORATION, JIAN LI TEAM, SHUN-QING SHEN TEAM — A topological insulator has a pair of extended states at the edge in the bulk insulating regime. We study a geometry in which such edge states will manifest themselves in a qualitative manner through periodic oscillations in the magnetoconductance of a singly connected sample coupled to leads through narrow point contacts. Detailed calculations identify the parameters for which these oscillations are expected to be the strongest, and also show their robustness to disorder. Such oscillations can be used as a spectroscopic tool of the edge states. A large change in the device resistance at small B , termed giant edge magnetoresistance, can have potential for application.

Rui-lin Chu
The University of Hong Kong

Date submitted: 20 Nov 2009

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