

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

**Quarter-Filled Honeycomb Lattice with a Quantized Hall Conductance**<sup>1</sup> EFRAT SHIMSHONI, Bar-Ilan University, GANPATHY MURTHY, University of Kentucky, RAMAMURTI SHANKAR, Yale University, HERBERT FERTIG, Indiana University, Bloomington — We study a generic two-dimensional hopping model on a honeycomb lattice with strong spin-orbit coupling, without the requirement that the half-filled lattice be a Topological Insulator. For quarter-(or three-quarter) filling, we show that a state with a quantized Hall conductance generically arises in the presence of a Zeeman field of sufficient strength. We discuss the influence of Hubbard interactions and argue that spontaneous ferromagnetism (which breaks time-reversal) will occur, leading to a quantized anomalous Hall effect. G. Murthy, E. Shimshoni, R. Shankar, and H. A. Fertig, arxiv:1108.2010[cond-mat.mes-hall]

<sup>1</sup>NSF and BSF

Ganpathy Murthy  
University of Kentucky

Date submitted: 10 Nov 2011

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