

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Quantized Anomalous Hall Insulator in a Nanopatterned Two-Dimensional Electron Gas** YONGPING ZHANG, CHUANWEI ZHANG, Department of Physics and Astronomy, Washington State University — We propose that a quantum anomalous Hall insulator (QAHI) can be realized in a nanopatterned two-dimensional electron gas (2DEG) with an in-plane magnetic field. The Berry curvatures originating from the in-plane magnetic field and Rashba and Dresselhaus spin-orbit coupling, in combination with a nanoscale honeycomb lattice potential modulation, lead to topologically nontrivial insulating states in the 2DEG. In the bulk insulating gaps, the anomalous Hall conductivity is quantized  $-e^2/h$ , corresponding to a finite Chern number -1. There exists one gapless chiral edge state on each edge of a finite size 2DEG.

Yongping Zhang  
Department of Physics and Astronomy, Washington State University

Date submitted: 23 Nov 2010

Electronic form version 1.4