Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Precision of the quantum anomalous Hall effect in magnetic topological insulators KARIN EVERSCHOR-SITTE, MATTHIAS SITTE, ALLAN MACDONALD, Univ of Texas, Austin — The quantum Hall effect normally refers to quantized Hall conductivity due to Landau quantization, as observed in 2D electron systems. To produce a Hall effect, one has to break time-reversal symmetry which is conveniently accomplished by applying an external magnetic field. The precision of the quantized Hall effect which occurs near integer Landau level filling factors has been verified to more than 8 figures. There are no known limitations to the accurary of the effect in the limit of zero temperature. The internal magnetization of a system in combination with spin-orbit coupling can also break time-reversal symmetry *without* a magnetic field and can lead to a quantum anomalous Hall effect (QAHE). Recently, the QAHE has been observed experimentally in thin films of chromium-doped $(Bi,Sb)_2Te_3$, a magnetic topological insulator, where at zero magnetic field the Hall resistance reaches the predicted quantized value of h/e^2 [1]. We address the precision of the QAHE focussing on the role of quantum and thermal fluctuations of the magnetization.

[1] C. Chang *et al.*, Science **340**, 167–170 (2013).

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Date submitted: 14 Nov 2013 Electronic form version 1.4