

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

The Quantum Hall Effect with electron-boson interaction is not exact KARIN EVERSCHOR-SITTE, MATTHIAS SITTE, ALLAN MACDONALD, Univ of Texas, Austin — The quantum Hall effect (QHE) normally refers to quantized Hall conductivity due to Landau quantization, as observed in 2D electron systems. The precision of the QHE which occurs near integer Landau level filling factors has been verified to more than 8 figures. There are no known limitations to the accuracy of the QHE in the limit of zero temperature. Here, we show explicitly within a toy model that electron-boson interactions can sometimes lead to corrections to the exact quantization of the Hall conductivity. This is in particular relevant for the QAHE, which has been realized experimentally in topological insulators in 2013 [1]. In these systems interactions between surface-state electrons and magnons provide a possible mechanism for corrections to the quantum Hall effect.

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

Karin Everschor-Sitte
Univ of Texas, Austin

Date submitted: 14 Nov 2014

Electronic form version 1.4