Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Elementary formula for the Hall conductivity of interacting systems TITUS NEUPERT, Paul Scherrer Insitute, LUIZ SANTOS, Perimeter Institute, CLAUDIO CHAMON, Boston Univeristy, CHRISTOPHER MUDRY, Paul Scherrer Insitute — We proof a formula for the Hall conductivity of interacting electrons under the assumption that the ground state manifold has finite degeneracy and discrete translation symmetry is neither explicitly nor spontaneously broken. Via an algebraic regularization, our derivation makes use of the noncommutative relations obeyed by the components of the position and density operators in topological band structures. We discuss the implications of our result in the context of fractional Chern insulators.

Titus Neupert
Paul Scherrer Insitute

Date submitted: 06 Nov 2012 Electronic form version 1.4