

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Adiabatic continuity between Hofstadter and Chern insulator states¹ YINGHAI WU, JAINENDRA JAIN, Penn State University, KAI SUN, U of Maryland and U of Michigan — We show that the topologically nontrivial bands of Chern insulators are adiabatic cousins of the Landau bands of Hofstadter lattices. We demonstrate adiabatic connection also between several familiar fractional quantum Hall states on Hofstadter lattices and the fractional Chern insulator states in partially filled Chern bands, which implies that they are in fact different manifestations of the same phase. This adiabatic path provides a way of generating many more fractional Chern insulator states and helps clarify that nonuniformity in the distribution of the Berry curvature is responsible for weakening or altogether destroying fractional topological states.

¹JQI-NSF-PFC, DOE

Yinghai Wu
Penn State University

Date submitted: 08 Nov 2012

Electronic form version 1.4