

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Zoology of Fractional Chern Insulators YANG-LE WU,
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Normale Supérieure, CNRS — We study four different models of Chern
insulators in the presence of strong electronic repulsion at partial fillings.
We observe that all cases exhibit a Laughlin-like phase at filling fraction
 $1/3$. We provide evidence of such a strongly correlated topological phase
by studying both the energy and the entanglement spectra. In order to
identify the key ingredients of the emergence of Laughlin physics in
these systems, we show how they are affected when tuning the band
structure. We also address the question of the relevance of the Berry
curvature flatness in this problem. Using three-body interactions, we
show that some models can also host a topological phase reminiscent of
the $\nu = 1/2$ Pfaffian Moore-Read state. Additionally, we identify the
structures indicating cluster correlations in the entanglement spectra.

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Date submitted: 07 Nov 2011

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