

Abstract Submitted  
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**Hierarchy of fractional Chern insulators and competing compressible states** ANDREAS M. LÄUCHLI, Institut für Theoretische Physik, Universität Innsbruck, A-6020 Innsbruck, Austria, ZHAO LIU, Institute of Physics, Chinese Academy of Sciences, Beijing, 100190, China, EMIL J. BERGHOLTZ, Dahlem Center for Complex Quantum Systems and Institut für Theoretische Physik, Freie Universität Berlin, Arnimallee 14, 14195 Berlin, Germany, RODERICH MOESSNER, Max-Planck-Institut für Physik komplexer Systeme, Nöthnitzer Strasse 38, D-01187 Dresden, Germany — We study the phase diagram of interacting electrons in a dispersionless Chern band as a function of their filling. We find hierarchy multiplets of incompressible states at fillings  $\nu = 1/3, 2/5, 3/7, 4/9, 5/9, 4/7, 3/5$  as well as  $\nu = 1/5, 2/7$ . These are accounted for by an analogy to Haldane pseudopotentials extracted from an analysis of the two-particle problem. Important distinctions to standard fractional quantum Hall physics are striking: absent particle-hole symmetry in a single band, an interaction-induced single-hole dispersion appears, which perturbs and eventually destabilizes incompressible states as  $\nu$  increases. For this reason the nature of the state at  $\nu = 2/3$  is hard to pin down, while  $\nu = 5/7, 4/5$  do not seem to be incompressible in our system.

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