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Topological phase transition in the Hofstadter-Hubbard model
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LEI WANG, MATTHIAS TROYER, Theoretische Physik, ETH — We study the interplay between topological and conventional long-range order of attractive fermions in a time-reversal-symmetric Hofstadter lattice using quantum Monte Carlo simulations, focusing on the case of one-third flux quantum per plaquette. At one-third filling, the noninteracting system is a topological insulator, and a nonzero critical interaction strength is needed to drive a transition from the quantum spin Hall insulator to a superfluid. We probe the topological signature of the phase transition by threading a magnetic flux through a cylinder and observe quantized topological charge pumping.

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