

Abstract Submitted
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Orbital Analogue of the Quantum Anomalous Hall Effect in p-Band cold fermion Systems CONGJUN WU, Department of Physics, UCSD
— We investigate the topological insulating states of the p-band systems in optical lattices induced by the on site orbital angular momentum polarization, which exhibit gapless edge modes in the absence of Landau levels. This effect arises from the energy-level splitting between the on site $px+ipy$ and $px-ipy$ orbitals by rotating each optical lattice site around its own center. At large rotation angular velocities, this model naturally reduces to two copies of Haldane's quantum Hall model. The distribution of the Berry curvature in momentum space and the quantized Chern numbers are calculated. The experimental realization of this state is feasible.

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