

Abstract Submitted
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Quantum Hall ferroelectrics and nematics in multivalley systems¹

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— We study broken symmetry states in multivalley quantum Hall systems whose low energy dispersions are anisotropic. Interactions tend to select states that are maximally valley polarized and have nematic character. Interestingly, in certain systems like the recently studied Bismuth (111) surfaces, the formation of these nematic states can be accompanied by appearance of an spontaneous dipole moment, leading to formation of a quantum Hall ferroelectric state. We study these states combining mean field calculations with state of the art DMRG numerical approach, and demonstrate that skyrmion-type charged excitations are extremely robust to the presence of nematic anisotropy.

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