Abstract Submitted
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Long-wavelength corrections to Hall conductivity in fractional quantum Hall fluids[1] BO YANG, F.D.M. HALDANE, Princeton University — Recent work by Hoyos and Son, then Bradlyn et al., has investigated the relation between the long-wavelength ($O(q^2)$) corrections to the Hall conductivity $\sigma_H(\mathbf{q})$ and the Hall viscosity of quantum Hall states. These works assume the presence of Galilean and rotational invariance. However, these are not generic symmetries of electrons in condensed matter. We identify translation and (2D) inversion symmetry as the only generic symmetries of an "ideal" quantum Hall liquid, as these are needed to guarantee the absence of any dissipationless ground state current density; then $\sigma_H(\mathbf{q}) = \sigma_H(-\mathbf{q})$ characterizes the dissipation less current that flows in response to a spatially-non-uniform electric field. We consider the general problem for fractional quantum Hall (FQH) states without Galilean or rotational invariance, when the guiding-center contribution to the Hall viscosity becomes a non-trivial tensor property related to an emergent geometry of the FQH state, (Bo Yang et,al (PRB 85,165318).

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