Abstract Submitted
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"Hall viscosity", edge-state dipole moments and incompressibility of FQHE fluids[1] F.D.M. HALDANE, Princeton University — The dissipationless "Hall viscosity" described for the inte- ger QHE by Avron *et al.* (1995) and for the FQHE by Read (2009) describes the stress-tensor response to the gradient of the electric field, and is distinct from the Hall conductivity. Previous work assumed rotational invariance and an extrinsic metric; removing this unnecessary assumption (broken by "tilting" B) clarifies the relations between Hall viscosity and incompressibility. New properties of FQHE fluids emerge:(1) they have no hydrostatic pressure; (2) (unreconstructed) edges have a universal electric dipole moment given by the Hall viscosity, which (3) has *two* distinct sources, the "smearing" of electron density relative to guiding center density and non-trivial behavior of guiding-center occupations near an edge. (4) The second term vanishes in the integer QHE, is odd under particle-hole symmetry, and is expressed in terms of a modified "shift" (per flux, as opposed to per particle, as in Read 2009), plus (5) an intrinsic metric that arises from incompressibility itself. (6) Its absolute value provides a lower bound to the coefficient of Q^4 behavior of the the guiding-center structure function as $Q \to 0$, (and is an equality for model states such as Laughlin, Moore-Read.) These properties are related through the $SO(2,1)$ algebra of guiding-center deformations.

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