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2D electrons in a magnetic field. Linear responses to curvature and e/m fields ALEXANDER ABANOV, Stony Brook University and Simons Center for Geometry and Physics, ANDREY GROMOV, Stony Brook University — Two-dimensional electron gas in a quantizing magnetic field plays an important role in condensed matter physics. At the integer filling factor its linear responses to weak e/m fields are known as expansions in wave vectors and frequencies. We generalize these known results to gravitational and mixed responses considering the system in weakly curved background. Using the obtained expansions to all orders in wave vectors and frequencies we verify the exact relations between linear response functions following from the Galilean symmetry of the model [1-2] as well as phenomenological expressions derived in [3]. We present examples of the linear responses such as charge accumulation around a disclination defect (conic singularity), non-dissipative current perpendicular to the gradient of the scalar curvature, stress in the medium produced by the inhomogeneous e/m field, etc.

[1] C. Hoyos, D. T. Son: " Hall viscosity from electromagnetic response"
[2] B. Bradlyn, M. Goldstein, N. Read: "Kubo formulas for viscosity: Hall viscosity, Ward identities, and the relation with conductivity"
[3] A. Abanov: "On the effective hydrodynamics of FQHE"

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