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Hall viscosity of hierarchical quantum Hall states MIKAEL FREMLING, THORS HANS HANSSON, Stockholm University, JUHA SUORSA, Nordita — We construct model wave functions on a torus for all chiral states in the abelian quantum Hall hierarchy. These functions have no variational parameters, and they transform under the modular group in the same way as the multicomponent generalizations of the Laughlin wave functions. Assuming the absence of Berry phases upon adiabatic variations of the modular parameter τ, we calculate the quantum Hall viscosity and find it to be in agreement with the formula, given by Read, which relates the viscosity to the average orbital spin of the electrons. For the filling factor $\nu = 2/5$ Jain state, which is at the second level in the hierarchy, we compare our model wave function with the numerically obtained ground state of the Coulomb interaction Hamiltonian in the lowest Landau level, and find very good agreement in a large region of the complex τ-plane. For the same example, we also numerically compute the Hall viscosity and find good agreement with the analytical result for both the model wave function and the numerically obtained Coulomb wave function. We argue that this supports the notion of a generalized plasma analogy that would ensure that wave functions obtained using conformal field theory methods do not acquire Berry phases upon adiabatic evolution.

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