

Abstract Submitted
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Dissipation and Criticality in the Lowest Landau Level of Graphene¹ PALLAB GOSWAMI, Rice University, XUN JIA, SUDIP CHAKRAVARTY, UCLA — The lowest Landau level of graphene is studied numerically by considering a tight-binding Hamiltonian with disorder. The Hall conductance σ_{xy} and the longitudinal conductance σ_{xx} are computed. We demonstrate that bond disorder can produce a plateaulike feature centered at $\nu = 0$, while the longitudinal conductance is nonzero in the same region, reflecting a band of extended states between $\pm E_c$, whose magnitude depends on the disorder strength. The critical exponent corresponding to the localization length at the edges of this band is found to be 2.47 ± 0.04 . When both bond disorder and a finite mass term exist the localization length exponent varies continuously between ~ 1.0 and $\sim 7/3$.

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