Abstract Submitted
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Dynamical conductivity of graphene OSKAR VAFEK, FSU/MagnetLab — Frequency dependent conductivity of Coulomb interacting massless Dirac fermions coupled to random scalar and random vector potentials is found as a function of frequency in the regime controlled by a line of fixed points. Such model provides a low energy description of a weakly rippled suspended graphene. The main finding is that at the neutrality point the a.c. conductivity is not frequency independent and may either increase or decrease with decreasing frequency, depending on the values of the disorder variances Δ_ϕ, Δ_A and the Coulomb coupling $\alpha = e^2/(\epsilon v_F)$. The low frequency behavior is characterized by the values of two dimensionless parameters $\gamma = \Delta_\phi/\alpha^2$ and Δ_A which are RG invariants, and for small values of which the electron-hole "puddles" are effectively screened making the results asymptotically exact.

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