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Localization and Conductivity of Graphene with Adsorbates DIDIER MAYOU, Institut Néel, CNRS, GUY TRAMBLY DE LAISSARDIERE, Cergy-Pontoise University — We compute the conductivity of graphene for two models of resonant and non resonant adsorbates. Away from the Dirac point the conductivity is well given by the semi-classical Drude formula and localization lengths are exponentially large. For some energies, near the Dirac point, the conductivity is well represented by $\sigma \simeq 4e^2/\pi h - \alpha \text{Log}(L_i/L_e)$ as a function of the inelastic scattering length L_i and the elastic mean free path $L_e < L_i$. This implies a magnetoconductivity that varies also linearly with $\text{Log}(B)$ where B is the magnetic field. Our results suggest that the divergence of the localization length which is expected close to the Dirac point affects only a narrow energy region.

Didier Mayou
Institut Néel, CNRS

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