Magnetoconductance of the Corbino disk in graphene

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Electron transport through the Corbino disk in graphene is studied in the presence of uniform magnetic fields. At the Dirac point, we observe conductance oscillations with the flux piercing the disk area Φ_d, characterized by the period Φ_0=(2h/e)\ln(R_o/R_i), where R_o (R_i) is the outer (inner) disk radius. The oscillations magnitude increase with the radii ratio and exceed 10% of the average conductance for $R_o/R_i \geq 5$ in the case of the normal Corbino setup, or for $R_o/R_i \geq 2.2$ in the case of the Andreev-Corbino setup. At a finite but weak doping, the oscillations still appear in a limited range of $|\Phi_d| \leq \Phi_d^{max}$, away from which the conductance is strongly suppressed. At large dopings and weak fields we identify the crossover to a normal ballistic transport regime.

[1] A. Rycerz, Phys. Rev. B **81**, 121404(R) (2010).