Conductance through two-terminal graphene junctions with wetting metal contacts

SALVADOR BARRAZA-LOPEZ, University of Arkansas, MARKUS KINDERMANN, MEI-YIN CHOU, Georgia Institute of Technology — Metallic contacts become a relevant factor for the behavior of nanoscale graphene devices. A thin layer of a wetting metal — a metal that forms covalent bonds to graphene — is customarily placed in between graphene and bulk leads. The most common choices for this wetting metal are Titanium, Chromium, and Palladium. We will present the equilibrium conductance through crystalline (defect- and impurity-free) two-terminal graphene junctions attached to normal, spin-unpolarized Titanium metal leads. In addition, we discuss the equilibrium potential profile across the junctions, and the presence of Fabry-Perot oscillations. The conductance shows pronounced noise, and the Fano factor near the Dirac point is seen to fluctuate, as in experiment [1]. The distribution of transmission eigenvalues is bimodal, indicating a disordered-metal-like charge transport through nanoscale two-terminal graphene junctions with wetting metals.