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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.

[1] L. DiCarlo, J. R. Williams, Y. Zhang, D. T. McClure, and C. M. Marcus. Phys. Rev. Lett. 100, 156801 (2008).
[2] S. Barraza-Lopez, M. Kindermann, and M.-Y. Chou. (Manuscript in preparation.)

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