

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Conductivity and Fano factor in disordered graphene EDUARDO

R. MUCCILOLO, Department of Physics, University of Central Florida, CAIO H. LEWENKOPF, Physics Department, Harvard University, and Departamento de Fisica Teorica, Universidade do Estado do Rio de Janeiro, Brazil , ANTONIO H. CASTRO NETO, Department of Physics, Boston University — Using the recursive Green's function method, we study the problem of electron transport in a disordered single-layer graphene sheet. The conductivity is of order e^2/h and its dependence on the carrier density has a scaling form that is controlled solely by the disorder strength and the ratio between the sample size and the correlation length of the disorder potential. The shot noise Fano factor is shown to have a narrow dip near the neutrality point for weak disorder and to develop a nearly doping independent behavior at strong disorder. Our results are in good qualitative and quantitative agreement with experiments and provide a way for extracting microscopic information about the magnitude of extrinsic disorder in graphene.

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Date submitted: 29 Nov 2007

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