

Abstract Submitted  
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**Interplay between density inhomogeneity and temperature in graphene transport**<sup>1</sup> QIUZI LI, EUYHEON HWANG, SANKAR DAS SARMA, Condensed Matter Theory Center, Department of Physics, University of Maryland, College Park, MD 20742 — Motivated by recent experimental measurements of the temperature-dependent resistivity in graphene, we study the transport properties in monolayer graphene in the presence of electron-hole puddles induced by charged impurities in the environment. We explain the apparent insulating behavior of temperature-dependent conductivity observed in low mobility samples using an analytic statistical theory, which takes into account the non-mean-field nature of transport in the highly inhomogeneous density and potential landscape. In particular, the existence of puddles allows local activation of carriers in low density samples, mimicking an insulating temperature dependence in graphene conductivity.

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Qiuzi Li  
Condensed Matter Theory Center, Department of Physics,  
University of Maryland, College Park, MD 20742

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