

Abstract Submitted  
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**1/f noise as a probe to investigate the band structure of graphene**  
ATINDRA NATH PAL, ARINDAM GHOSH, Department of Physics, Indian Institute of Science, Bangalore 560012, India — The flicker noise or low frequency resistance fluctuations in graphene depend explicitly on its ability to screen external potential fluctuations and more sensitive compared to the conventional time average transport. Here we show that the flicker noise is a powerful probe to the band structure of graphene that vary differently with the carrier density for the linear and parabolic bands. We have used different types of graphene field effect devices in our experiments which include exfoliated single and multilayer graphene on oxide substrate, freely suspended single layer graphene, and chemical vapor deposition (CVD)-grown graphene on SiO<sub>2</sub>. We find this difference to be robust against disorder or existence of a substrate. Also, an analytical model has been developed to understand the mechanism of graphene field effect transistors. Our results reveal the microscopic mechanism of noise in Graphene Field Effect Transistors (GraFET), and outline a simple portable method to separate the single from multi layered graphene devices. References A. N. Pal and A Ghosh, Phys Rev. Lett 102, 126805 (2009). A. N. Pal and A. Ghosh, Appl. Phys. Lett., 95, 082105 (2009). A. N. Pal, A. A. Bol, and A. Ghosh, Appl. Phys. Lett. 97, 133504 (2010). A. N. Pal et al., arXiv: 1009.5832v2.

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