Abstract for an Invited Paper
for the MAR10 Meeting of
The American Physical Society

Spectroscopic and Transport Properties of Bilayer Graphene

JOHAN NILSSON, University of Gothenburg

We review our theoretical work on spectroscopic and transport properties of bilayer graphene [PRB 78, 045405 (2008)]. In particular we study the effects of short-range scattering centers on the electronic self-energy and the resulting experimental consequences for spectroscopy (ARPES) and conductivity measurements. This type of disorder is believed to be especially relevant for suspended samples where the amount of other types of scatterers have been minimized. We also consider effects of disorder in gapped graphene bilayers such as band gap smearing and creation of bound states whose binding energies and localization lengths depends on the externally applied bias (and hence the gap) between the two layers.