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Electron transport in graphene at extremely high carrier doping
DMITRI EFETOV, PHILIP KIM, Columbia University — Owing to the low dimensionality, carrier doping in graphene can be significantly changed by the electric field effect or the chemical adsorption of gaseous dopands. At extremely high doping levels, where carrier densities reach beyond 10^{14} cm^{-2} the electronic structure at the Fermi level of graphene is expected to be substantially modified, as higher band structure effects such as trigonal warping or Fermi surface renormalization due to electron-phonon coupling take place. In this presentation we will present electron transport of highly doped graphene samples. By employing a poly(ethylene oxide)-$LiClO_4$ electrolyte gate we achieve unpreceded carrier densities up to 4x10^{14} cm^{-2} in graphene single and bilayers, attaining a Fermi energy change of $\sim$ 2 eV away from the charge neutrality point. We will present resistivity, as well as Magneto-resistance and Hall measurements in this extreme carrier doping limit.

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