

Charged Impurities in Epitaxial Graphene: Signatures of Disorder in the Photoemission Spectral Function

Christian R. Ast

Max-Planck-Institute for Solid State Research, Stuttgart, Germany

One of the hallmarks of graphene is its incredibly high electron mobility. However, defects, disorder, and impurities directly reduce the electron mobility deteriorating the performance of graphene transport devices. This has consequences for modifying the properties of graphene, such as tuning the position of the Fermi level by charge transfer doping of adatoms. At the same time, such adatoms are charged defects, i. e. long-range impurities, which degrade the electron mobility. In order to better understand the effects of disorder and defects on the electronic structure of graphene in general, we have performed angular resolved photoemission spectroscopy (ARPES) measurements on doped graphene to extract the spectral function and compare it with models of the self energy describing different kinds of disorder. In my talk, I will discuss the different kinds of disorder on the electronic structure of graphene as well as some consequences for charge transfer doping and graphene device performance.