Electronic properties of graphene on Ir(111)

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Epitaxial graphene on Ir(111) prepared in excellent structural quality[1] appears to be an attractive model system for the investigation of intrinsic electronic properties of graphene modified by weak interactions with a supporting surface[2]. Angle resolved photoemission spectroscopy (ARPES) clearly displays a Dirac cone, a hallmark of the unusual band structure of graphene[3], with the Dirac point shifted only slightly above the Fermi level which indicates marginal substrate induced doping. The Moiré structure resulting from the overlaid graphene and Ir(111) surface lattices imposes a superperiodic potential giving rise to opening of minigaps in the band structure. ARPES of the electron doped graphene reveals a whole variety of many body interactions[4]. The π^* band of potassium intercalated graphene showed noticeable renormalization within the wide energy range. Near the Fermi level the renormalization is induced by electron-phonon interactions while the change of disipersion at higher binding energies is induced by the hole-plasmon interaction.

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