

Abstract Submitted
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Resonant Impurity band induced by point defects in graphene¹

CHUNG-YU MOU, National Tsing Hua University, Taiwan, BOR-LUEN HUANG, National Taiwan Normal University, Taiwan — In this talk, we shall present our theory of point defects on graphene. In particular, we shall pointed out that point defects on graphene are strongly correlated and can not be treated as independent scatters. For large on-site defect potential and finite quasi-particle lifetime, we show that defects induce an impurity band with density of state characterized by the Wigner semi-circle law. By including long-range Coulomb interaction, we show that depending on, quasi-particle lifetime and defect density, the impurity band may support ferromagnetism. Furthermore, the impurity band can enhance the conductivity of graphene to the order of $4e^2/h$, in consistent with experimental observations.

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