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Theory of Fano Resonances in Graphene: The Kondo effect probed by STM ALEXANDER LICHTENSTEIN, TIM WEHLING, University of Hamburg, HARI DAHAL, Los Alamos National Lab, MIKHAIL KATSNELSON, Radboud University of Nijmegen, HARI MAOHARAN, Stanford University, ALEXANDER BALATSKY, Los Alamos National lab — We consider the theory of Kondo effect and Fano factor energy dependence for magnetic impurity (Co) on graphene. We have performed a first principles calculation and find that the two dimensional E_1 representation made of d_xz, dyz orbital is likely to be responsible for the hybridization and ultimately Knodo screening for cobalt on graphene. There are few high symmetry sites where magnetic impurity atom can be adsorbed. For the case of Co atom in the middle of hexagon of carbon lattice we find anomalously large Fano q-factor and strongly suppressed coupling to conduction band. This anomaly is striking example of quantum mechanical interference related to the Berry phase inherent to graphene band structure.

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