

Abstract Submitted
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Kondo effect of an adatom in graphene and metallic surface

HONG-GANG LUO, School of Physical Science and Technology, Lanzhou University, Lanzhou 730000, China — I will present the Kondo effect of a single magnetic adatom on the surface of graphene[1] and metal[2]. The unique linear dispersion relation near the Dirac points in graphene favors magnetic moment[3], which simply means that the Kondo resonance can be observed in a more wider parameter region than in the metallic host. Our work indicated that the Kondo resonance, whenever the chemical potential is tuned away from the Dirac points, indeed can form ranged from the Kondo regime, to the mixed valence, even to the empty orbital regime defined in the conventional metal host. Correspondingly, the Kondo resonance can exhibit as a sharp peak, a peak-dip or an anti-resonance in different regimes. These lineshapes result from the Fano resonance [4] due to the significant background leaded by dramatically broadening of the impurity level in graphene. The scanning tunneling microscopy (STM) spectra of the adatom are also showed and have obvious particle-hole asymmetry when the chemical potential is tuned by the gate voltages applied to the graphene. References: [1] L. Li et al., *New J. Phys.* 15, 053018 (2013). [2] H.-G. Luo et al., *Phys. Rev. Lett.* 92, 256602(2004); *ibid.*, 96, 019702 (2006). [3] B. Uchoa et al., *Phys. Rev. Lett.* 101, 026805(2008). [4] U. Fano, *Phys. Rev.* 124, 1866 (1961).

Hong-Gang Luo
School of Physical Science and Technology,
Lanzhou University, Lanzhou 730000, China

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