

Quantum critical Kondo screening in graphene

Matthias Vojta

(Institut für Theoretische Physik, Universität Köln, Germany)

Magnetic impurities in neutral graphene provide a realization of the pseudogap Kondo model, which displays a quantum phase transition between phases with screened and unscreened impurity moment. In this talk, I discuss the physics of the pseudogap Kondo model with finite chemical potential μ . While carrier doping restores conventional Kondo screening at lowest energies, properties of the quantum critical fixed point turn out to influence the behavior over a large parameter range. Most importantly, the Kondo temperature T_K shows an extreme asymmetry between electron and hole doping. At criticality, depending on the sign of μ , T_K follows either the scaling prediction $T_K \propto |\mu|$ with a *universal* prefactor, or $T_K \propto |\mu|^x$ with $x \approx 2.6$. This asymmetry between electron and hole doping extends well outside the quantum critical regime and also implies a qualitative difference in the shape of the tunneling spectra for both signs of μ .

[1] M. Vojta, L. Fritz, and R. Bulla, EPL **90**, 27006 (2010)