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Quasiparticle excitations of adsorbates on doped graphene JOHANNES LISCHNER, Imperial College London, SEBASTIAN WICKENBURG, DILLON WONG, CHRISTOPH KARRASCH, YANG WANG, JIONG LU, ARASH A. OMRANI, VICTOR BRAR, HSIN-ZON TSAI, QIONG WU, UC Berkeley, FABIANO CORSETTI, ARASH MOSTOFI, Imperial College London, ROLAND K. KAWAKAMI, UC Riverside, Ohio State University, JOEL MOORE, ALEX ZETTL, STEVEN G. LOUIE, MIKE CROMMIE, UC Berkeley — Adsorbed atoms and molecules can modify the electronic structure of graphene, but in turn it is also possible to control the properties of adsorbates via the graphene substrate. In my talk, I will discuss the electronic structure of F4-TCNQ molecules on doped graphene and present a first-principles based theory of quasiparticle excitations that captures the interplay of doping-dependent image charge interactions between substrate and adsorbate and electron-electron interaction effects on the molecule. The resulting doping-dependent quasiparticle energies will be compared to experimental scanning tunnelling spectra. Finally, I will also discuss the effects of charged adsorbates on the electronic structure of doped graphene.

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