Abstract Submitted
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Revealing the Atomic Site-Dependent g Factor within a Single Magnetic Molecule via the Extended Kondo Effect[1] SHIXUAN DU, Institute of Physics, Chinese Academy of Sciences — Control over charge and spin states at the single molecule level is crucial not only for a fundamental understanding of charge and spin interactions but also represents a prerequisite for development of molecular electronics and spintronics. In this talk, I will talk about the extended spin distribution in space beyond the central Mn ion, and onto the non-magnetic constituent atoms of the MnPc molecule. This extended spin distribution results in an extended Kondo effect, which can be explained by spin polarization induced by symmetry breaking of the molecular framework, as confirmed by DFT calculations. Measuring the evolution of the Kondo splitting with applied magnetic fields at different atomic sites, we find a spatial variation of the g-factor within a single molecule for the first time. The existence of atomic site-dependent g-factors can be attributed to specific molecular orbitals distributed over the entire molecule. This work not only open up a new opportunity for quantum information recording, but also provide a new route to explore the internal electronic and spin structure of complex molecules, hard to achieve otherwise. (L.W. Liu et al., Phys. Rev. Lett. 2015, 114, 126601. In collaboration with Liwei Liu, Kai Yang, Yuhang Jiang, Li Gao, Qi Liu, Boqun Song, Wende Xiao, Haitao Zhou, Hongjun Gao in CAS, Min Ouyang in MU, and A.H. Castro Neto in SNU.)

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