The Kondo effect in a single-molecule magnet coupled to a superconductor

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We study transport properties of a single-molecule magnet embedded between two ferromagnetic leads and proximized by the third, superconducting electrode. The emphasis is put on the Kondo physics in the regime of strong magnet-leads coupling and large superconductor gap. The conductance of the device is analyzed as a function of temperature and detuning from the particle-hole symmetry point. The role of the coupling to the superconducting lead is determined in the wide range of the relevant coupling strength. The cases of *easy-axis* and *easy-plane* magnetic anisotropy, both realizable experimentally [1,2], are discussed. The calculations are performed with the aid of the numerical renormalization group procedure. We show that in general the transport properties of the device stem from subtle interplay between different types of correlations: the Kondo effect, the induced dipolar and the quadrupolar exchange fields, the intra-molecular exchange, and the superconductor-originated pairing.

References:

[1] M. Misiorny *et al.*, Phys. Rev. B **91**, 035442 (2015).
[2] B. W. Heinrich *et al.*, Nat. Phys. **9**, 765 (2013).

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