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Berry-Phase Oscillations of the Kondo Effect in Single-Molecule Magnets MICHAEL N. LEUENBERGER, NanoScience Technology Center and Department of Physics, University of Central Florida, EDUARDO R. MUCCIOLO, Department of Physics, University of Central Florida — We show that it is possible to topologically induce or quench the Kondo resonance in the conductance of a single-molecule magnet ($S > 1/2$) strongly coupled to metallic leads. This can be achieved by applying a magnetic field perpendicular to the molecule easy axis and works for both full- and half-integer spin cases. The effect is caused by the Berry-phase interference between two quantum tunneling paths of the molecule's spin. We have calculated the renormalized Berry-phase oscillations of the Kondo peaks as a function of the transverse magnetic field as well as the conductance of the molecule by means of the poor man's scaling method. We propose to use a new variety of the single-molecule magnet Ni_4 for the experimental observation of this phenomenon.
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