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Kondo effect in the electronic transport of magnetic atomic-size contacts M. REYES CALVO, JOAQUIN FERNANDEZ-ROSSIER, JUAN JOSE PALACIOS, Dept. Fisica Aplicada. Universidad de Alicante, DAVID JACOB, Dept. Physics and Astronomy. Rutgers University, DOUGLAS NATELSON, Dept. Physics and Astronomy. Rice University., CARLOS UNTIEDT, Dept. Fisica Aplicada. Universidad de Alicante — Low coordination alters dramatically the magnetic properties of materials at the nanoscale. Our results indicate that, in the case of atomic contacts of certain materials, a localized magnetic moment appears at the contact and is screened at low temperatures by means of the Kondo effect. We observe characteristic Fano-Kondo lineshapes in the spectroscopy of atomic contacts of typical ferromagnetic materials (Fe, Co and Ni). The parameters obtained from the fitting of these curves to the Fano equation show statistical distributions that agree with the Kondo theory. The Kondo origin of the measured resonances is confirmed by their temperature dependence and supported by our theoretical calculations. These results are surprising since ferromagnetism and Kondo effect are expected to compete. We have also observed a similar spectroscopy in atomic contacts of palladium and platinum monoatomic chains. In this case, the Kondo resonances would be the signature of an emergent magnetism that is ultimately screened. Partially funded by Spanish MEC (grant nr. MAT2007-65487 and CONSOLIDER CSD2007-0010) and EU (project nr. 211284)

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