

Abstract Submitted
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Enhancement of Kondo effect through Rashba spin-orbit interactions¹ NANCY SANDLER, MEHDI ZAREA, SERGIO ULLOA, Ohio University — The role of Rashba spin-orbit (RSO) interactions on the Kondo regime has been a topic of debate since resistivity measurements on Pt doped Cu:Mn compounds were interpreted as evidence for suppression of the Kondo effect by SO scattering. Subsequent theoretical and experimental activity has yielded conflicting results. Thus, the question: what is the role of SO interactions in the Kondo regime? remains open. To provide a definite answer we obtain an exact solution of an Anderson magnetic impurity model in a two-dimensional metallic host with RSO interactions. We show that the Hamiltonian reduces to an effective two-band Anderson model coupled to a $S=1/2$ impurity. An appropriate Schrieffer-Wolff transformation produces an effective 2-channel Kondo model plus a Dzyaloshinski-Moriya (DM) interaction term. The exact solution reveals that the impurity couples to the bath with ferro- and antiferromagnetic couplings. DM interactions, that vanish at half-filling and at the Hubbard U -infinity limits, introduce an exponential increase in the value of the Kondo temperature.

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