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A spin-selective Kondo-insulator: Cooperation between Ferromagnetism and Kondo-effect ROBERT PETERS, NORIO KAWAKAMI, Kyoto University, THOMAS PRUSCHKE, University of Goettingen — Taking ferromagnetic heavy fermion compounds as motivation we analyze the mechanism stabilizing the ferromagnetic state in the antiferromagnetically coupled Kondo lattice model. We find that even for this ferromagnetic state Kondo screening plays an essential role in stabilizing the ferromagnetic state at zero temperature leading to very interesting properties: while the majority-spin electrons are metallic, the minority-spin electrons form an insulating state. We clarify that this state is due to partial Kondo screening, so that parts of the local moments are bound to the electrons, resulting in a dynamically-induced commensurability which is essential for producing the gap in the minority-spin electrons. We believe that the mechanism proposed here, the dynamically generated commensurability, is generic for the ferromagnetic phase in the antiferromagnetically coupled Kondo lattice model, thus providing new insights into the zero temperature physics for the Kondo lattice model.

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