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Magnetic polarons in EuB_6 and other low carrier density ferromagnets.

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Magnetic polarons are formed in systems with low carrier density and large local exchange coupling between the spin background and the spin of the carrier. Magnetic polarons can be free, as in manganese pyrochlores, or bound by Coulomb interaction to impurities in the lattice, as in diluted magnetic semiconductors. EuB_6 is a likely candidate for the formation of magnetic polarons as revealed by spin flip Raman scattering and muon-spin rotation measurements. I will give a general perspective on magnetic polarons with special emphasis on the evaluation of the experimental evidence for magnetic polarons in EuB_6 [1]. This work was supported by Churchill College (University of Cambridge), LPS, and NSF.

[1] M.J. Calderon, L.G.L. Wegener, and P.B. Littlewood, Physical Review B 70, 092408 (2004).