On the 5d Band Polarization in R_2A_{17} (A=Fe, Co or Ni) Compounds

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Band structure calculations were performed on R_2Ni_{17}, R_2Co_{17} and R_2Fe_{17} compounds where R is a heavy rare-earth. The R(5*d*) polarizations are determined by 4*f*-5*d* local exchange as well as by 5*d*-3*d* short range exchange interactions with neighboring transition metal atoms. The first contribution is proportional to the De Gennes factor while the second one is determined by the number of A neighboring atoms as well as their magnetic contributions. The exchange interactions in the above systems are analyzed. The transition metal moments are discussed in correlation with their local environments.

9.7 cm

13.4 cm

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