

MAGNETIC FORM FACTORS AND COMPTON PROFILES OF FERROMAGNETIC GADOLINIUM

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Gadolinium is a rare-earth metals which crystallizes in hexagonal close-packed structure. It reveals ferromagnetic ordering with the main contribution from $4f$ electrons. Localization of minority spin band near the Fermi energy, while majority one is rather deep, causes that calculations of the electronic structure of gadolinium is difficult, so e.g. reports about Fermi surface are still inconsistent. Theoretical calculations have been carried out with use of ab initio spin-polarized calculations. The full potential linearized augmented plane waves with local orbitals method, implemented in Wien2k code, was used. An influence of different directions of magnetic moment (along that c axis and parallel to the base plane) on magnetic form factors and Compton profiles was discussed. Our results are in very good agreement with experimental ones got by Moon et al. [1]

[1] R.M. Moon, W.C. Koehler, J.W. Cable and H.R. Child, Phys. Rev. B **5** (1972) 997

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