THE COVALENT-BAND DESCRIPTION OF γ-RESONANCE IN 3*d*- AND 4*f*-FERROMETALS

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S u m m a r y

The hybridization of ns-shells with covalent and band electrons is calculated in the multielectronic operator spinors (MEOS) representation. The density of ns-electrons on a nucleus $\rho(0)$ is dependent on covalent bonds. The hyperfine field (HF) B_{HF} is expressed through the spin polarization of ns-electrons. The Hund exchange of an ion Fe^{57} gives $B_{HF} \sim S_T$, where S_T is the mean spin. In heavy rare earth metals (REM), the spin-orbital ns^-4f-contribution is added. It causes a large B_{HF} and the dependence on temperature T as $B_{HF}(T) \sim J_T$, where $J_T -$ angular moment of an RE ion. Chemical (covalent) bond fluctuations (CBF), responsible for Fe polymorphism, define a linear dependence on T for the chemical shift of a line of γ-resonance in α-Fe and iron compounds. The large energy gap in CBF spectra stabilizes the hcp lattice of heavy REM. The received results interpret experimental data.