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Crystal field of Yb3+ tetragonal centers in the YbRh 2Si2 intermetallic compound

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Abstract

The spectra of electron paramagnetic resonance and inelastic neutron scattering in crystals of the heavy-fermion intermetallic compound YbRh 2Si2 are interpreted. The phenomenological potentials of the crystal electric field of Yb3+ tetragonal centers and the parameter of the Hamiltonian for the spin-orbit interaction of electrons are determined from the experimental energy level schemes. A comparison of the results obtained from experimental data on electron paramagnetic resonance, inelastic neutron scattering, and Mössbauer spectroscopy shows that the most probable ground state of Yb3+ ions in the YbRh 2Si2 crystal is the Kramers doublet Γ t6 - . © 2007 Pleiades Publishing, Ltd.

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