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Crystal field and Kondo effect in CeMIn₅, M=Rh, Ir, and Co: a polarized soft XAS and neutron scattering study THOMAS WILLERS, ANDREA SEVERING, Institute of Physics II, University of Cologne, Germany, ERIC D. BAUER, Los Alamos National Laboratory, New Mexico, USA, ZHIWEI HU, LIU HAO TJENG, Institute of Physics II, University of Cologne, Germany — We have determined the crystal-field scheme and the 4f conduction electron interaction in CeMIn₅, M= Rh, Ir, and Co with linear polarized soft X-ray absorption and neutron scattering. Soft-x-ray absorption spectroscopy (XAS) at the Ce M_{4,5} edges can be used as a complementary technique to neutron scattering. XAS is highly sensitive to the symmetry of the initial state and through the polarization dependence direct information about the J_z admixtures of the ground state wave function can be obtained. Sensitivity to higher lying states is achieved by thermally populating those states. From soft XAS we find that the ground state wave functions of the CeMIn₅ have increasingly J_z=3/2 character when going from M=Rh, Ir and largest for Co, and we find from the neutron line widths and the 4f₀ contribution to the M_{4,5} edges that the 4f conduction electron interaction increases in the same sequence.

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