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Temperature dependence of crystal field transitions in $PrOs_4Sb_{12}^{-1}$ RAYMOND OSBORN, Argonne National Laboratory, EUGENE GOREMY-CHKIN, Argonne National Laboratory, M. BRIAN MAPLE, University of California, San Diego, ERIC D. BAUER, Los Alamos National Laboratory, BRIAN D. RAINFORD, University of Southampton, UK — PrOs₄Sb₁₂ has attracted considerable attention as a heavy fermion superconductor, in which quadrupolar fluctuations play an important role in the pairing mechanism. Recently, we determined the crystal field potential using inelastic neutron scattering [Goremychkin et al Phys. Rev. Lett. 93, 157003 (2004)], and determined that the ground state is a a Γ_1 singlet. Although this does not favor quadrupolar Kondo models of the superconducting pairing, we have proposed that inelastic quadrupolar, or aspherical Coulomb, scattering of the conduction electrons by the 4f CF levels plays a significant role in enhancing T_c compared to the isoelectronic lanthanum compound. Comparison with the crystal field level scheme in $PrRu_4Sb_{12}$ [Goremychkin *et al* Physica B, in press], where T_c has been reduced by praseodymium substitution, is consistent with this model. We report on recent high resolution neutron measurements of the temperature dependence of the transition to the Γ_5 triplet at 0.63 meV, whose linewidth provides a probe of s-f interactions.

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