

Abstract Submitted
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Small-angle neutron scattering study of the vortex lattice in PrOs₄Sb₁₂ ALEXANDRE DESILETS-BENOIT, ANDREA BIANCHI, University of Montreal, SIMON GERBER, NIKOLA EIGETENMEYER, JORGE GAVILANO, MICHEL KENZELMANN, Paul Scherrer Institut, CHRISTIAN PFLEIDERER, Technische Universitaet Muenchen, SEBASTIAN MUEHLBAUER, ETH Zurich, RYAN BAUMBACH, BRIAN MAPLE, University of California at San Diego — We carried out a small angle neutron scattering study of the vortex lattice in the Pr based heavy Fermion superconductor PrSb₄Os₁₂ with H applied along the *c*-axis. With a critical temperature T_c of 1.85 K and a H_{c2} of 2.5T, PrOs₄Sb₁₂ is the first Pr based heavy fermion superconductor (SC). Although PrOs₄Sb₁₂ crystallizes in a filled Skutterudite structure with a cubic lattice, this structure has a tetrahedral point group symmetry. In consequence, with the application of a magnetic field along the *c*-direction, the *a* and *b*-axis are no longer equivalent. Measurements of the angular dependence of the thermal conductivity in PrOs₄Sb₁₂ suggest a change of the superconducting order parameter deep inside the SC phase diagram from a two fold symmetry to a fourfold symmetry. Three ways of applying field were tested and wiggle field cooling was found to produce the highest intensity. We observed a twinned distorted hexagonal VL up to 1T of applied field which is consistent with *s*-wave superconductivity. We did not observe a field dependent phase transition associated with a change in symmetry of the VL. We found a rapidly decreasing form factor $\sim F^{-2}$ of the vortex lattice (VL) in PrOs₄Sb₁₂ with increasing field.

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