

Abstract Submitted
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Small Angle Neutron Scattering and the Vortex Lattice of UPt₃¹

W.J. GANNON, W.P. HALPERIN, J.A. SAULS, J.P. DAVIS, Northwestern University, IL, USA, K. SCHLESINGER, M.R. ESKILDSEN, University of Notre Dame, IN, USA, J. GAVILANO, ETH Zurich and Paul Scherrer Institute, Switzerland — UPt₃ is among the most well studied of the unconventional superconductors. However, there are still many unanswered questions, two of which are: understanding chirality in the superconducting B-phase and understanding the nature of the B-C transition. Central to theories describing both of these areas are predictions for unusual vortex structures. Small angle neutron scattering (SANS) provides a unique way to explore the bulk vortex lattice (VL) and thus can be used to investigate the bulk superconducting state without electronic surface scattering which complicates results from other probes. Ongoing SANS experiments on high quality single crystals in a novel geometry seek to explore the the relationship between field history and the VL in UPt₃. Preliminary results show well defined diffraction patterns and narrow rocking curves at fields well into the C-phase and interesting behavior for a variety of field histories. These results will shed new light on chirality, the B-C transition, and VL (meta)stability.

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