Abstract Submitted
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Investigations of the order parameter in UPt_3 single crystals[1] W.J. GANNON, J.P. DAVIS, W.P. HALPERIN, Department of Physics and Astronomy, Northwestern University, M.R. ESKILDSEN, Department of Physics, University of Notre Dame, J.D. STRAND, D.J. VAN HARLINGEN, Department of Physics, University of Illinois at Urbana-Champaign — Long the paradigm for unconventional superconductivity, UPt_3 has been studied with great interest for more than two decades. Although much is known about the nature of the superconducting order, there are still basic questions that remain unanswered. One of the most interesting and elusive has been whether or not the superconducting state is chiral. Small angle neutron scattering (SANS) from the Abrikosov vortex lattice provides a tool to examine the vortex structure and thus both chirality and the nature of the B-C superconducting transition. Our recent SANS results on a high quality crystal are encouraging, with narrow rocking curves in the C-phase. Additionally, striking new Josephson interference experiments have shed light on the nodal structure of the superconducting gap. These SANS and Josephson interference experiments share samples prepared by UHV crystal growth and post-growth processing techniques, and provide guidance to sample preparation for future work.

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