Abstract Submitted
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Anisotropy of the Superconducting State in Sr_2RuO_4[1] M.R. ESKILDSEN, C. RASTOVSKI, University of Notre Dame, IN, USA, W.J. GANNON, Northwestern University, IL, USA, C.D. DEWHURST, Institut Laue-Langevin, France, D. PEETS, H. TAKATSU, Y. MAENO, Kyoto University, Japan — Multiple experimental and theoretical studies provide compelling support for triplet pairing of electrons and an odd, p-wave order parameter symmetry in superconducting Sr_2RuO_4. However, seemingly contradictory experimental results have left important questions concerning the detailed structure and coupling of the orbital and spin parts of the order parameter in this compound unresolved. We have used small-angle neutron scattering to study the vortex lattice in Sr_2RuO_4 in order to measure the intrinsic anisotropy (Γ_{ac}) of the superconducting state between the the c axis and the RuO basal plane. Up to fields of 1.2 T and temperature of 800 mK, we found no variation of $\Gamma_{ac} \approx 60$. This is consistent with the Fermi velocity anisotropy on the β Fermi-surface sheet, but greatly exceeds the upper critical field anisotropy $H_{c2}^{\perp c}/H_{c2}^{\parallel c} = 20$. This result poses significant constraints on the possible order parameter symmetry in Sr_2RuO_4.

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