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Field and Temperature Dependence of the Superconducting Anisotropy in Sr_2RuO_4[1] STEPHEN KUHN, W. MORGENLANDER, E. R. DE WAARD, M.R. ESKILDSEN, University of Notre Dame, C.D. DEWHURST, Institut Laue-Langevin, J. GAVILANO, Paul Scherrer Institut, Y. MAENO, Kyoto University — The superconductor Sr_2RuO_4 (SRO) has been well-studied for triplet pairing of electrons and an odd, p-wave order parameter symmetry. However, because of its complexity, questions remain about the superconducting state. To study this we measured the superconducting anisotropy (Γ_{ac}). Direct imaging of the vortex lattice (VL) anisotropy in SRO is possible with small-angle neutron scattering (SANS), with H applied close to the basal plane. The VL anisotropy reflects the intrinsic anisotropy of Γ_{ac}, and may differ significantly from the H_{c2} anisotropy ($\Gamma_{H_{c2}}$) as recently seen for intermediate fields [C. Rastovski *et al.*, Phys. Rev. Lett. **111**, 087003 (2013)]. For $H \to H_{c2}$, the VL anisotropy is found to exceed earlier results at intermediate fields. Our data, combined with new low field measurements, indicate a field dependent superconducting anisotropy in SRO, increasing as H approaches H_{c2}. This suggests a varying contribution of the different Fermi Surface bands on the Γ_{ac}. In contrast, the VL anisotropy is found to remain constant as the temperature is increased toward T_{c2}, while the $\Gamma_{H_{c2}}$ increases with increasing temperature.

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