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Large enhancement of T_c of Sr_2RuO_4 under uni-axial strain

DANIEL O. BRODSKY, University of St Andrews, CLIFFORD W. HICKS, Max Planck Institute for Chemical Physics of Solids, EDWARD A. YELLAND, University of St Andrews, ALEXANDRA S. GIBBS, University of Tokyo, JAN A.N. BRUIN, High Field Magnet Laboratory, Radboud University Nijmegen, MARK E. BARBER, STEPHEN D. EDKINS, University of St Andrews, KEIGO NISHIMURA, SHINGO YONEZAWA, YOSHITERU MAENO, Kyoto University, ANDREW P. MACKENZIE, Max Planck Institute for Chemical Physics of Solids — We present AC magnetic susceptibility data taken on samples of the spin-triplet superconductor Sr_2RuO_4 under uni-axial strain. To do this, we built a probe that enables us to vary the strain applied to our samples continuously from compression to tension, whilst at cryogenic temperatures. We found that T_c changes dramatically with in-plane strain: strain along the crystallographic [100] direction leads to a strong strain-symmetric response of T_c , which is pushed up from 1.35 K to 1.9 K for 0.23% strain. Conversely, the response along the [110] direction is weak and mostly linear in strain. We discuss these results in the context of the predicted $p_x + ip_y$ topological order parameter.

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