

Abstract Submitted
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Aligning chiral order parameter domains in Sr₂RuO₄: Josephson interferometry measurements FRANCOISE KIDWINGIRA, J.D. STRAND, D.J. VAN HARLINGEN, University of Illinois at Urbana-Champaign, Y. MAENO, Kyoto University — There is compelling evidence that the ruthenate superconductor Sr₂RuO₄ forms chiral order parameters of the form $px+ipy$ and $px-ipy$. In zero magnetic field, these states are degenerate and result in the formation of a dynamical domain structure that has been detected by Josephson interferometry experiments [1]. However, the degeneracy between the order parameters can be lifted by applying a magnetic field while cooling the system through the superconducting transition. We present Josephson interferometry measurements on field-cooled Josephson junctions that show evidence for domain alignment, manifested by the enhancement of the critical current and qualitative changes of the critical current modulation pattern in applied magnetic field. We also report evidence for memory effects in the domain chirality. [1] Françoise Kidwingira *et al.*, *Science*, October 26 2006 (10.1126/science.1133239).

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