

Abstract Submitted  
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**Detecting evidence for chiral superconductivity in  $\text{Sr}_2\text{RuO}_4$  through the use of Josephson junctions** BRIAN ZAKRZEWSKI, Y. A. YING, XINXIN CAI, SHAUN MILLS, N. E. STALEY, Pennsylvania State University, Y. XIN, National High Magnetic Field Laboratory, DAVID FOBES, TIJIANG LIU, ZHI-QIANG MAO, Tulane University, YING LIU, Pennsylvania State University —  $\text{Sr}_2\text{RuO}_4$  is predicted to be an odd-parity, spin-triplet superconductor, possibly featuring a doubly degenerate chiral order parameter, which leads to the presence of chiral edge currents, domains, and domain walls. We fabricated Josephson junctions on ramps cut by focused ion beam as well as on naturally cleaved edges of micron thick crystals of  $\text{Sr}_2\text{RuO}_4$  using Al as the conventional superconductor electrode. The sensitivity of these Josephson junctions to a magnetic flux penetrating the junction and the domain dependent intrinsic phase of the superconducting order parameter make them a powerful tool for probing the effects of chiral superconductivity mentioned above. We will present the methodology as well as preliminary measurements and discuss the implications of our results.

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