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**Probing the configuration and dynamics of order parameter domains in  $\text{Sr}_2\text{RuO}_4$  by Josephson interferometry** FRANCOISE KIDWINGIRA, JOEL STRAND, DALE VAN HARLINGEN, University of Illinois at Urbana-Champaign, YOSHITERU MAENO, Kyoto University, Kyoto, Japan — We observe anomalous features in the magnetic field dependence of the critical current of Josephson junctions formed between conventional superconductors and the ruthenate superconductor  $\text{Sr}_2\text{RuO}_4$ , including magnetic hysteresis, switching noise, and a wide variation of qualitatively different diffraction pattern shapes. All of this behavior can be explained by assuming a complex p-wave order parameter of the form  $p_x+ip_y$  that supports a dynamical structure of domains of different chirality and orientation. To test this hypothesis, we are studying the effects of magnetic field cooling on the junction critical current. We find a substantial enhancement of the critical current in field cooled samples, consistent with chiral domains that couple to an applied magnetic field.

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