Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Scanning magnetic imaging of strontium ruthenate (Sr_2RuO_4)[1]
CLIFFORD HICKS, Department of Applied Physics, Stanford University, YOSHITERU MAENO, Department of Physics, Kyoto University, KATHRYN MOLER, Department of Applied Physics, Stanford University — Strontium ruthenate is a spin-triplet superconductor with, very likely, a time-reversal symmetry breaking $p_x \pm ip_y$ orbital order parameter. This is suggested by several experiments, including recent observation of a Kerr effect that develops when Sr2RuO4 becomes superconducting. Such an order parameter should result in spontaneous edge and domain wall currents which would generate a real-space magnetic signal, but this field yet to be observed. Currently it is estimated that, within the sample and near an edge (in the bulk it is Meissner screened), the field should peak at about 6G. We believe the spontaneous edge field may actually be significantly smaller. We discuss its observability through scanning magnetic probe microscopy and describe current experimental efforts to image and measure this field.

[1]Work supported by the Department of Energy DE-AC02-76SF00515

Clifford Hicks
Stanford University

Date submitted: 20 Nov 2006 Electronic form version 1.4