

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Symmetry properties and residual transport in superconducting $\text{PrOs}_4\text{Sb}_{12}$ ¹ TAYSEER ABU ALRUB, STEPHANIE CURNOE, Memorial University — We identify a three-component order parameter in the triplet channel as the most probable candidate for superconductivity in $\text{PrOs}_4\text{Sb}_{12}$. Two different superconducting phases have been observed in $\text{PrOs}_4\text{Sb}_{12}$; the lower temperature ‘B phase’ occupies the bulk of the phase diagram and breaks time reversal symmetry while the higher temperature ‘A phase’ is found in a narrow region below H_{c2} , and possibly does not exist at all. The gap function in the A phase is unitary and has two nodes in the [001] direction. In the B phase, the gap function is nonunitary and the lower branch has four cusp nodes in the $[\pm\alpha, \pm\beta, 0]$ directions. The conductivity tensor, due to isotropic impurity scattering, has inequivalent diagonal components due to the off-axis nodal positions of the B phase.

¹This work was supported by NSERC of Canada

Tayseer Abu Alrub
Memorial University

Date submitted: 22 Nov 2007

Electronic form version 1.4