Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Order parameter suppression and structure of the surface states in non-centrosymmetric superconductors[1] ANTON VORONTSOV, University of Wisconsin-Madison, ILYA VEKHTER, Louisiana State University, MATTHIAS ESCHRIG, Universtitaet Karlsruhe — We consider the structure of the surface states at the pairbreaking boundaries of non-centrosymmetric superconductors. In the region of the order parameter suppression multiple Andreev reflections significantly modify the energy and the intragap density of states due to bound states. We elucidate the physics behind this modification by considering a simple model of gap suppression, and comparing it with a fully self- consistent microscopic calculation. We emphasize the experimentally relevant consequences of the lack of inversion symmetry for the surface states. As the discontinuity in the spin-orbit coupling at the boundary makes the interface spin-active, we analyse the resulting spin structure of the bound states.

[1]Supported by Louisiana Board of Regents and by I2CAM via NSF grant DMR 0645461

Ilya Vekhter
Louisiana State University

Date submitted: 27 Nov 2007 Electronic form version 1.4