Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Heat Transport in non-uniform superconductors CAROLINE RICHARD, ANTON B. VORONTSOV, Department of Physics, Montana State University, Bozeman, Montana — Thermal transport in superconductors is used as an experimental probe of both quasiparticles states and order parameter structure. Although thermal properties of uniform superconductors have been studied a lot, much less is known about details of the transport in non-uniform phases such as vortex states or the speculative Fulde-Ferrell-Larkin-Ovchinnikov state. Using the quasi-classical Keldysh technique, we theoretically investigate the heat transport in a inhomogeneous superconducting state where the order parameter contains a domain wall. We study the effect of Andreev states, bound to the domain wall, on thermal conductivity, and find the response to be strongly non-local. In linear response, we determine the density of states, impurity self-energy and the effective local temperature gradient required to sustain a stationary heat current through the sample.

Caroline Richard
Department of Physics, Montana State University, Bozeman, Montana

Date submitted: 10 Nov 2014 Electronic form version 1.4