Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

A Model For Point Contacts Between A Normal Metal And A Superconductor In An Applied Magnetic Field CHARLES W. SMITH, University of Maine, PAUL J. DOLAN, JR., Northeastern Illinois University — The BTK model for charge transport in a normal metal/superconductor point contact, with elastic and inelastic quasiparticle scattering, is modified to include the effect of an applied magnetic field. A two channel model of the form $G_S(h, T) = h^a G_{NN} + (1 - h^a)\, G_{NS}(T)$ is assumed, where h is the reduced magnetic field, $G_S(h, T)$ is the contact conductance, G_{NN} is the normal channel contribution and $G_{NS}(T)$ is the superconducting channel contribution. The value of the field exponent, a, is obtained by first extracting the BTK parameters for the contact at zero applied field. Using these parameters, a is fit to the transport data as a function of applied field, at fixed temperature. Several case studies over a wide range of BTK parameters will be discussed. Best fits to the data indicate that within the assumptions of this model, a = 2.

Paul Dolan
Northeastern Illinois University

Date submitted: 07 Oct 2009 Electronic form version 1.4