Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Spectroscopy measurements of superconductor-graphene-normal metal junctions TRAVIS DIRKS, University of Illinois at Urbana-Champaign, YUNG-FU CHEN, University of Wisconsin-Madison, CESAR CHIALVO, BRUNO UCHOA, TAYLOR HUGHES, SIDDHARTHA LAL, PAUL GOLDBART, NADYA MASON, University of Illinois at Urbana-Champaign — We discuss results on single layer graphene junctions made by a graphene sheet in contact with a superconducting tunnel probe and a normal ohmic contact. The superconducting gap of the tunnel probes is well formed at 250 mK. However, we observe an additional conductance gap at smaller biases (a "subgap" feature), which is symmetric in bias voltage and oscillates as function of the applied backgate voltage. Even though no supercurrent flow is observed, due to the large spacing of the leads, the observed effects may be due to Andreev bound states. We discuss the possible role of Andreev bound states in determining the inner subgap features of the conductance, and potential spectroscopic signatures arising from the ballistic transport of normal electrons in graphene that travel between the superconducting and the normal contacts.

Travis Dirks
University of Illinois at Urbana-Champaign

Date submitted: 20 Nov 2009 Electronic form version 1.4