Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Direct measurements of the current-phase relation in graphene Josephson junctions CHRISTOPHER ENGLISH, CIHAN KURTER, D.J. VAN HARLINGEN, NADYA MASON, University of Illinois at Urbana-Champaign — The current-phase relation (CPR) of a Josephson junction can provide key information about the microscopic processes and symmetries that influence the supercurrent. In this talk, we present CPR results on Josephson junctions containing single-layer graphene as a weak link. The measurements are based on a phase-sensitive SQUID technique in which we determine the supercurrent amplitude and phase as a function of both temperature and electrostatic doping (gate voltage). We present CPR measurements of narrow junctions (5 - 12 μm) in the diffusive regime spanning the temperature range of 25 - 800 mK. We compare these data with previous CPR measurements on wide junctions in the temperature range of 800 - 900 mK.

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Date submitted: 21 Nov 2011 Electronic form version 1.4