Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Observation of Proximity Effect and Multiple Andreev Reflections in Graphene/Superconductor Junctions[1] XU DU, IVAN SKACHKO, EVA Y. ANDREI, Dept. of Physics, Rutgers University — Graphene, a single atomic layer of graphite, has attracted much interest recently both for its unique physical properties and for its potential in electronics applications. Due to the combined effects of a linear energy-momentum dispersion and internal degrees of freedom (pseudo-spin) associated with the honeycomb lattice, the low energy excitations in graphene are expected to behave like massless relativistic fermions. This leads to many novel and unusual physical properties. We will present experimental studies on a gate controlled superconductor/graphene hybrid device. Electric field dependent superconducting proximity effect and multiple Andreev reflections will be discussed. Results obtained for junctions fabricated on graphene and on multi-layer graphite films will be compared.

[1]Work supported by NSF-DMR-0456473 and by DOE DE-FG02-99ER45742

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Date submitted: 20 Nov 2006 Electronic form version 1.4