Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

**Electron-electron interaction effects in monolayer graphene**[1] EDWIN BARNES, University of Maryland — Electron-electron interactions are expected to play an important role in graphene due to the absence of screening near the charge neutrality point, potentially leading to strong deviations from the Fermi liquid description. While such deviations have yet to be observed, there is experimental evidence of significant Dirac cone squeezing, a phenomenon which is consistent with renormalization of the Fermi velocity due to interaction effects. We show that while a first-order renormalization group analysis gives qualitative agreement with experimental observations of graphene both on substrates and in vacuum, a second-order analysis reveals an interacting critical point in suspended graphene, signifying either a quantum phase transition or a breakdown of the renormalization group approach.

[1]Work supported by LPS-CMTC and US-ONR

Edwin Barnes
University of Maryland

Date submitted: 14 Nov 2013 Electronic form version 1.4