Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Evidence for weak antilocalization in epitaxial graphene[1] XIAOSONG WU, XUEBIN LI, ZHIMIN SONG, CLAIRE BERGER, WALT A. DE HEER, School of Physics, Georgia Institute of Technology, Atlanta, GA 30332 — Transport in ultrathin graphite on silicon carbide is graphene-like and appears to be dominated by the electron-doped epitaxial graphene layer at the interface. Weak antilocalization in 2D samples manifests itself as a broad cusp-like depression in the longitudinal resistance for magnetic fields 10 mT $<$ B $<$ 5 T. An extremely sharp weak-localization resistance peak at B = 0 is also observed. These features quantitatively agree with recent graphene weak-localization theory. Scattering contributions from charges in the substrate and from trigonal warping due to the graphite layer are tentatively identified. The Shubnikov-de Haas oscillations show an anomalous Berry's phase. Their small amplitudes may be related to graphene scattering processes.

[1]Supported by NSF grant 0404084, U.S. Department of Energy grant DE-FG02-02ER45956, a grant from Intel Research Corporation, and a USA-France travel grant from CNRS.

Xiaosong Wu
School of Physics, Georgia Institute of Technology, Atlanta, GA 30332

Date submitted: 02 Dec 2006 Electronic form version 1.4