

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Measurement of the electronic compressibility of bilayer graphene¹ E. A. HENRIKSEN, J. P. EISENSTEIN, California Institute of Technology — We report on recent measurements of the electronic compressibility in bilayer graphene. The devices consist of a mechanically exfoliated bilayer graphene flake in a dual-gated configuration, having a global back gate from the underlying Si substrate and a lithographically defined top gate. With suitable shielding, an oscillating voltage applied to the back gate will generate corresponding signals in the top gate only via electric fields which penetrate the graphene, thereby allowing a direct measurement of the compressibility of the bilayer [1]. In our experiments, we map this quantity as a function of the back and top gate bias voltages and compare it to similar maps of the graphene sheet resistivity and capacitance. We discuss our results in light of numerical calculations of the underlying band structure as well as recent theoretical predictions. [1] J. P. Eisenstein, L. N. Pfeiffer, K. W. West, Phys. Rev. B 50, 1760 (1994).

¹Funded by the NSF under DMR-0552270.

E. A. Henriksen
California Institute of Technology

Date submitted: 18 Nov 2009

Electronic form version 1.4