

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Electron-Hole Asymmetry and Electron-Electron Interaction in Bilayer Graphene K. ZOU, X. HONG, J. ZHU, Department of Physics, The Pennsylvania State University — We report precision measurements of the effective mass m^* in high-quality bilayer graphene samples using the temperature dependence of Shubnikov-de Haas oscillation. In the measured density range of $0.7 \times 10^{12} / \text{cm}^2 < n < 4.1 \times 10^{12} / \text{cm}^2$, both the hole mass m_h^* and the electron mass m_e^* increase with increasing n , with m_h^* being roughly 20-30% larger than m_e^* at the same density. We compare our results to tight-binding calculations and provide an accurate determination of several hopping parameters. The measured m^* is substantially suppressed compared to non-interacting values, demonstrating the importance of electron-electron interaction in bilayer graphene.

K. Zou
Department of Physics, The Pennsylvania State University

Date submitted: 17 Nov 2010

Electronic form version 1.4