

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Landau Level Collapse in Gated Graphene Structures NAN GU, MIT, MARK RUDNER, Harvard, LEONID LEVITOV, MIT, ANDREA YOUNG, PHILIP KIM, Columbia — Electron cyclotron motion in solids can be changed in a variety of interesting ways by applying an external electric field. This talk will describe a new regime of magnetotransport, recently observed in measurements performed on lateral heterojunctions in graphene. The Landau levels, formed on top of a potential barrier imposed by external gates, are shown to undergo an abrupt collapse when the strength of magnetic field is reduced below a certain critical value. The threshold for collapse is determined by the competition between magnetic confinement and the strength of the barrier. Semiclassical analysis of the transformation of closed cyclotron orbits into open deconfined orbits is presented and is shown to agree well with experimental results.

Nan Gu
MIT

Date submitted: 27 Nov 2009

Electronic form version 1.4