Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Theory of integer quantum Hall effect in bi-layer graphene BITAN ROY, OSKAR VAFEK, National High Magnetic Field Laboratory and Department of Physics, Florida State University, Tallahassee, Florida 32306, USA — Bi-layer graphene in a quantizing external magnetic field exhibits plateaus of Hall conductivity at various integer fillings. Moreover, electron-electron interactions in suspended doubly gated bi-layer graphene appear sufficiently strong (and short-ranged) to result in a finite gap persisting down to zero magnetic field. In this talk we will demonstrate the competition of various orders within the zeroth Landau level and how their interplay is influenced by the filled Landau levels lying below the Fermi energy. Scaling behavior of the gap at the neutrality point will be discussed. Besides the splitting of the zeroth Landau level, degeneracy lifting of the rest of the Landau levels will be discussed.

Bitan Roy
National High Magnetic Field Laboratory and Department of Physics,
Florida State University, Tallahassee, Florida 32306, USA

Date submitted: 28 Nov 2011 Electronic form version 1.4