Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Electron-electron Interactions in ABC-stacked Multilayer Graphene[1] FAN ZHANG, ALLAN MACDONALD, Department of Physics, University of Texas at Austin — The electronic band structures of ABC-stacked multilayer graphene systems are obtained by the tight-binding calculation and the density function theory. We predict that the electron- electron interactions drive the neutral graphene multilayer systems to pseudospin magnets in which the charge density contribution spontaneously shifts to either the top or the bottom layers, based on the HF and PRG calculations. We show that the spin and valley degrees of freedom enhance the instabilities. We investigate the influence on the broken symmetry phase by the trigonal warping, the external electric field and the number of coupled graphene layers.

[1]This work has been supported by the Welch Foundation and by the SWAN program.

Fan Zhang
Department of Physics, University of Texas at Austin

Date submitted: 19 Nov 2009 Electronic form version 1.4