KMI - Theory Seminar

Wednesday, Thursday, November 9, 2011

1:30 pm, KMI Science Symposia (ES-635)

“Quantum Hall States in Bilayer Graphene”

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Abstract:

Recently graphene has become one of the hottest topics in both theoretical and experimental condensed matter physics. In this talk, I will discuss a theory regarding the quantum Hall states (QHS) of the bilayer graphene. Using this theory, I will show that there exist two phases in the $\nu=0$ QHS of the bilayer: one spin-polarized phase and another layer-polarized phase. It is also shown that the phase separation line and energy gap in these phases scale linearly with the magnetic field B. I then extend the discussion to QHS of other filling factors $\nu=1,2,3$ and 4. These theoretical results are compared with currently known experiments in bilayer graphene and reasonable agreements are found. I will also try to explain some connection between this theory and theories originated from other fields of physics.