Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Electron transmission through the stacking domain boundary on multilayer graphene NAM NGUYEN, MIKITO KOSHINO, Tohoku Univ — We present a theoretical study on the electron transmission through the AB-BA stacking boundary in bilayer trilayer and tetralayer graphene. Using the Green function method, we calculate the electron transmission probability through the stacking faults as the electron Fermi energy. In AB-BA bilayer boundary, the system is almost insulating at the low energy, while the transmission sharply rises as the Fermi energy increases to higher energy. This suggests that the stacking fault crucially suppresses the electron transmission in the intrinsic graphene bilayer at the charge neutral. We also study the effect of the perpendicular electric field which opens an energy gap, and find that the gap-opening and the Mexican-hat band deformation significantly enhance the electron transmission at the low-electron density. For the ABA-ABC domain boundary in trilayer graphene, we notice a similar behavior of electron transmission to the bilayer case, but in the tetralayer case (ABAB-ABAC boundary), the low-energy transmission is not much suppressed unlike in bilayer and trilayer cases.

Nam Nguyen
Tohoku Univ

Date submitted: 12 Nov 2014 Electronic form version 1.4