

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Electric-field induced changes in the band structure of trilayer graphene: The effect of crystallographic stacking order ZHIQIANG LI, CHUN HUNG LUI, KIN FAI MAK, Columbia University, EMMANUELE CAPPELLUTI, Institute for Complex Systems, TONY F. HEINZ, Columbia University — We have studied by means of infrared spectroscopy the influence of a strong perpendicular electric-field on the band structure of graphene trilayers with two different types of crystallographic stacking: ABA (Bernal) and ABC (rhombohedral) stacking. The symmetries of the two crystallographic structures are different, the former having mirror symmetry and the latter inversion symmetry. Distinct infrared response was observed when breaking their respective symmetries by the application of the electric field. We observed an electrically tunable band gap of over 100 meV in ABC trilayers, while no band gap was found for ABA trilayers. Our results will be compared to the induction of a band gap in AB bilayer graphene [K. F. Mak *et al*, PRL **102**, 256405 (2009); Y. Zhang *et al*, Nature **459**, 820 (2009)]

Chun Hung Lui
Columbia University

Date submitted: 09 Dec 2010

Electronic form version 1.4