Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

New approach to electronic structure of graphene studied by ARPES W. S. JUNG, CHUL KIM, C. S. LEEM, SEUNG RYONG PARK, Y. K. KIM, Y. Y. KOH, CHANGYOUNG KIM, Institute of Physics and Applied Physics, E. ROTENBERG, Advanced Light Source, Lawrence Berkeley National Laboratory — ARPES has traditionally considered as a tool of electronic structural studies in the momentum space. One may speculate that the spectroscopic data obtained in the real and momentum spaces can be converted from one to the other as wave functions in real and momentum spaces are converted from one to the other through the fourier transform. In scanning tunneling spectroscopy (STS), the spectroscopic data obtain in the real space is fourier transformed to produced electronic structure in real space. However there is no exact analogy between the STS and ARPES cases. We try to transform the graphene ARPES spectra to real space by using atomic orbital of tight binding calculation. From this analysis, we can extract the information of phase which is lost in ARPES measurements. Additionally, we can plot the distribution of electrons in real space. We will discuss about the meaning of phase which is related to pseudospin in graphene.

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Date submitted: 20 Nov 2009 Electronic form version 1.4