## Abstract Submitted for the MAR10 Meeting of The American Physical Society

Rotational Stacking Order in C-Face Epitaxial Graphene<sup>1</sup> JEREMY HICKS, M. SPRINKLE, Y. HU, H. TINKEY, M. CLARK, Georgia Institute of Technology, A. TEJEDA, A. TALEB-IBRAHIMI, P. LE FÈVRE, F. BERTRAN, Synchrotron SOLEIL, C. BERGER, Georgia Institute of Technology, CNRS/Institut Neel, W.A. DE HEER, E.H. CONRAD, Georgia Institute of Technology — Multilayer epitaxial graphene (MEG) grown on the (0001) face of SiC is comprised of a high density of rotational (non-AB-stacked) graphene sheets that each retain the special electronic properties of an isolated graphene layer. Transport measurements indicate that the AB planes in the film can themselves be considered as low density faults but the actual density of AB planes is not known. We present a combination of surface x-ray diffraction (SXRD) and angle resolved photoemission spectroscopy (ARPES) experiments that can measure the AB fraction. Although x-rays can penetrate the entire films, they only give averaged stacking information. As we will show, both the density of the rotational planes and their stacking order are important to calculate the AB fraction. By combining ARPES with the SXRD data, we can give a relatively accurate density and distribution of AB planes in MEG films.

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