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**Electronic Structure of Suspended Bilayer Graphene<sup>1</sup>**

PO-CHUN YEH, KEVIN KNOX, WENCAN JIN, JERRY DADAP, PHILIP KIM, RICHARD M. OSGOOD, Columbia University, ALEXEI BARINOV, ELETTRA TRIESTE — Bilayer graphene is an important medium for achieving band-gap tuning for graphene applications in digital electronics, such as in graphene nanoribbon FETs. ARPES is an important tool for measuring the electronic structure of crystals in the vicinity of the Dirac point. While accurate measurements have been made on the bilayer graphene band-structure on SiC, similar effort on free-standing graphene has not yet been reported. In this paper, we describe measurements of the band-structure of a  $\sim 650 \mu\text{m}^2$  sample of exfoliated bilayer graphene suspended over  $5\text{-}\mu\text{m}$ -diameter wells formed in  $\text{SiO}_2$  on a Si substrate. The measurements, performed at the Spectromicroscopy Beamline at ELETTRA with photon energy of  $27\text{eV}$ , show that this material is essentially undoped and we compare its band structure with that expected from tight-binding calculations.

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