

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Electronic transport properties of epitaxial graphene buffer layer on Silicon Carbide** JEAN-PHILIPPE TURMAUD, JAMES PALMER, MING RUAN, DOGUKAN DENIZ, JAMEY GIGLIOTTI, YIRAN HU, YUE HU, Georgia Institute of Technology, School of Physics, VLADIMIR PRUDKOVSKIY, CNRS Institut Neel, CLAIRE BERGER, CNRS Institut Neel; Georgia Institute of Technology, School of Physics, WALT DE HEER, Georgia Institute of Technology, School of Physics — The confinement control sublimation is used to produce high quality epitaxial graphene on SiC for nanoelectronics. We report here on the experimental investigation of the first graphene layer grown on SiC(0001) (the buffer layer). The buffer layer is a semiconducting form of graphene, with a gap in the density of state previously probed by ARPES and STM measurements. We characterize our samples by Raman spectroscopy, photoemission spectroscopy, and atomic and lateral force microscopy to confirm their structural properties and produce electronic devices on single SiC terraces. The temperature and electric field dependence of the bulk conductivity of the buffer layer are investigated and the effects of contacts and gas adsorption are considered. The observed behavior seem to be related to the known structural periodicity of the buffer layer.

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Date submitted: 10 Nov 2016

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