Abstract Submitted
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The metal-insulator transition of the half integer quantum-Hall effect in epitaxial graphene ADAM NEAL, TIAN SHEN, JIANGJIANG GU, MIN XU, MICHAEL BOLEN, MICHAEL CAPANO, LLOYD ENGEL, PEIDE YE, Purdue University — The observation of the half integer quantum-Hall effect (QHE) in Hall resistance along with the pronounced Shubnikov-de Haas (SdH) oscillations confirms that the electrical properties of epitaxial graphene on SiC share the same relativistic physics as those in exfoliated graphene films. The temperature-dependent half-width $\Delta B(T)$ of the SdH peaks and the maximum of the slope of the Hall resistance $\partial\rho_{xy}/\partial B$ of gated epitaxial graphene are investigated at temperatures between 0.4 K to 300K. The preliminary data shows $\Delta B(T)$ for the first Laudau level of electrons in epitaxial graphene on SiC (0001) display a power-law behavior with a scaling exponent $\kappa\approx0.43$, being consistent with the previously reported results from 2DES formed at AlGaAs/GaAs or InGaAs/InP heterojunctions [1,2] and the exfoliated graphene [3]. More detailed results on κ for high Laudau levels and the study of size-dependence of the quantum-Hall plateau-plateau transition in epitaxial graphene will also be presented. [1] H.P. Wei, D.C. Tsui, M.A. Paalanen, and A.M.M. Pruisken, Phys. Rev. Lett. 61, 1294 (1988). [2] S. Koch, R.J. Haug, K. von Klitzing, and K. Ploog, Phys. Rev. Lett. 67, 883 (1991). [3] A.J.M. Giesbers, U. Zeitler, L.A. Ponomarenko, R. Yang, K.S. Novoselov, A.K. Geim, and J.C. Maan, arXiv:0908.0461v1.

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