Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Non-linear Resistivity of a Two-Dimensional Electron Gas in a Magnetic Field MAXIM G VAVILOV, University of Wisconsin , IGOR L. ALEINER, Columbia University, LEONID I. GLAZMAN, University of Minnesota — We develop a theory of nonlinear response to an electric field of a two-dimensional electron gas (2DEG) placed in a classically strong magnetic field. The latter leads to a non-linear current-voltage characteristic at a relatively weak electric field. The origin of the non-linearity is two-fold: the formation of a non-equilibrium electron distribution function, and the geometrical resonance in the inter-Landau-levels transitions rates. We find the dependence of the current-voltage characteristics on the electron relaxation rates in the 2DEG. Our results can be applied for analysis of measurements at low [1] and high [2,3] current densities. [1] J. Zhang, S. Vitkalov, A. A. Bykov, A. K. Kalagin and A. K. Bakarov, cond-mat/0607741. [2] C. L. Yang, J. Zhang, R. R. Du, J. A. Simmons and J. L. Reno, Phys. Rev. Lett. 89, 076801 (2002). [3] W. Zhang, H. -S. Chiang, M. A. Zudov, L. N. Pfeiffer and K. W. West, cond-mat/0608727.

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Date submitted: 19 Nov 2006 Electronic form version 1.4