Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Influence of a Parallel Magnetic Field on the Microwave-Induced Resistance and Photovoltaic Oscillations CHI ZHANG, KRISTJAN STONE, RUI-RUI DU, Rice University, CHANGLI YANG, Institute of Physics, CAS, China, LOREN PFEIFFER, KEN WEST, Bell Labs, Alcatel-Lucent — Microwave induced photovoltaic (PV) and resistance oscillations (MIRO) were studied in high-mobility ($\mu > 8\times10^6$ cm^2/V s) 2D electron gas in GaAs/Al$_x$Ga$_{1-x}$As Hall bar samples employing a two-axis magnet system (perpendicular field B$_\perp$ and parallel field B//). Consistent with the previous results, strong MIRO were observed and were found to diminish under a B// $\sim$ 1 T. We observed two types of PV oscillations: 1) PV oscillations that are periodic in 1/B$_\perp$, with a periodicity similar to MIRO, but are anti-symmetric with respect to B$_\perp$ = 0; and, 2) PV oscillations due to edge magnetoplasmon modes, which are periodic in B$_\perp$ and are symmetric with respect to B$_\perp$ = 0. Characteristically, the 1/B$_\perp$ oscillations in PV were completely suppressed by a B// $\sim$ 1 T, whereas the B$_\perp$-periodic oscillations retain their main features even in B// = 2 T. Experimental data and a brief discussion will be presented. The work at Rice was supported by NSF DMR-0706634.

Chi Zhang
Rice University

Date submitted: 27 Nov 2007 Electronic form version 1.4