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Magnetotransport in a two-dimensional electron system in DC electric fields¹ WENHAO ZHANG, HUNG-SHENG CHIANG, MICHAEL ZUDOV, University of Minnesota, LOREN PFEIFFER, KEN WEST, Bell Laboratories, Lucent Technologies — We report on non-equilibrium transport measurements in a high-mobility 2D electron system subject to weak magnetic and strong DC electric fields. Detailed study of DC-induced magneto-oscillations, first observed by Yang *et al*, reveals a resonant condition which is qualitatively different from that reported earlier. In addition, we explore new experimental regime of separated Landau levels and observe dramatic reduction of resistance induced by a relatively weak DC field. These results demonstrate similarity of transport phenomena in DC-driven and microwave-driven systems and have important implications for experiments on quenching of microwave-induced zero-resistance states by a DC current.

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