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Quantum oscillations of nonlinear response in electron systems with variable density[1] SCOTT DIETRICH, SEAN BYRNES, Graduate Center at the City University of New York, SERGEY VITKALOV, City College of New York, D.V. DMITRIEV, A.V. GORAN, A.A. BYKOV, Institute of Semiconductor Physics, 630090 Novosibirsk, Russia — Oscillations of dissipative resistance of two-dimensional electrons in GaAs quantum wells are observed in response to an electric current and a strong magnetic field applied perpendicular to the two-dimensional systems. The period of the current-induced oscillations does not depend on the magnetic field and temperature. At a fixed current the oscillations are periodic in inverse magnetic fields with a period that does not depend on dc bias. Oscillations were also studied in GaAs quantum wells with variable two dimensional electron density. At a fixed magnetic field the period of the current induced oscillations depends linearly on the electron density. Both results corroborate the recently proposed model that considers the DC bias-induced spatial re-population of Landau levels as the origin of the resistance oscillations.

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