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**Photoconductivity oscillations in a 2D electron gas and the mobility threshold for zero resistance states.**[1] MANUEL TORRES, Instituto de Fisica, Universidad Nacional Autonoma de Mexico, ALEJANDRO KUNOLD , Departamento de Ciencias Basicas, Universidad Autonoma Metropolitana-Azcapotzalco — We present a model for the photoconductivity of a two dimensional electron system subjected to a magnetic field. The model includes the microwave and Landau contributions in a non-perturbative exact way, impurity scattering effects are treated perturbatively. Based on this formalism, we provide a Kubo-like formula that takes into account the oscillatory Floquet structure of the problem. We study the effects of both short-range and long-range disorder on the photoconductivity. Our calculation yields a magnetoresistance oscillatory behavior with the correct period and phase. It is found that, in agreement with experiment, negative dissipation can only be induced in very high mobility samples, an expression for the mobility threshold is provided. We analyze the dependence of the results on the microwave power and polarization. For high-intensity radiation multi-photon processes take place predicting new negative-resistance states centered at $\omega/\omega_c = 1/2$, and $\omega/\omega_c = 3/2$.

- M. Torres, A. Kunold, *cond-mat/0407468, cond-mat/0409588.*

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