



# Transport in High-Mobility Two-dimensional Electron Systems

Department of Physics Colloquium



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**T**wo dimensional (2D) electron systems show fascinating behavior in magnetic fields at low temperatures when the quantum nature of electron propagation plays a crucial role. During the last decade, a series of experiments explored properties of 2D systems far away from thermodynamic equilibrium. I will give an overview of the most exciting observed phenomena, which include a zero-resistance state and non-linear differential conductivity under illumination of 2D electrons by microwaves. A qualitative explanation of these phenomena will be given, based on the quantum description of 2D electron transport in the presence of a disordered impurity potential and strong applied electric fields.

