Service de Physique de l'Etat Condensé (SPEC)
Département de Recherche sur l'Etat Condensé, les Atomes et les Molécules
Direction des Sciences de la Matière
Commissariat à l'Energie Atomique

Séminaire du SPEC

Mercredi 26 septembre 2007, 11h00

Bt. 774 - Salle Claude ITZYKSON
Centre d'Etudes de Saclay, Orme des Merisiers
91191 Gif-sur-Yvette

Interaction Effects and Disorder in Two-Dimensional Electron Systems

Matthias Baenninger
(Cavendish Laboratory, Cambridge University)

I will present the results of an extensive study of transport in the localised regime of mesoscopic two-dimensional electron systems (2DES) in modulation doped GaAs/AlGaAs heterojunctions. Disorder and interaction effects have been investigated by looking at the regime of low electron densities while systematically changing the strength of background disorder. The main focus will be on the observation of a low-temperature breakdown of the insulating phase in these systems. As the temperature decreases, a transition from insulating to metallic transport behaviour occurs, which persists even when the resistivity of the system greatly exceeds the quantum of resistivity h/e^2.

Furthermore, I will present results of magnetoresistance of hopping transport, where it was found that the average hopping distance was only determined by the average electron-electron separation, independent of the background disorder. Finally, a new kind of resistance oscillations will be discussed, which occur as a function of electron density and are induced by strong magnetic fields perpendicular to the 2DES.

Invitant : WAINTAL Xavier, 0169089488, waintal@spec.saclay.cea.fr
Organisateurs des séminaires :
Myriam PANNETIER tel : 01 6908 7410 email : myriam.pannetier@cea.fr
Xavier WAINTAL tel : 01 6908 9488 email : xavier.waintal@cea.fr
Pour recevoir ces annonces par courrier électronique : semspec@dsm-mail.saclay.cea.fr
http ://www-drecam.cea.fr/drecam/spec/Agenda/