

CEA - Saclay 91191 Gif-sur-yvette Cedex
Service de Physique de l'Etat Condensé
SÉMINAIRE

Mercredi 17 février 11h15

Orme des Merisiers SPEC Salle Itzykson, Bât.774

Decoherence and relaxation in quantum Hall edge channels

Pascal Degiovanni

Laboratoire de Physique ,
ENS de Lyon

A unified approach to decoherence and relaxation of electron excitations in Integer Quantum Hall edge channels is presented. Within the bosonization framework, relaxation and decoherence induced by interactions and capacitive coupling to an external linear circuit are computed. This provides a non perturbative solution to the quasi particle relaxation problem originally considered by Landau and provides an efficient framework to discuss the feasibility of "electron quantum optics" [1]. This approach can also be used to describe energy relaxation within a $\nu = 2$ quantum Hall edge system [2] recently studied by F. Pierre et al using a new spectroscopy technique [3].

[1] P. Degiovanni, Ch. Grenier and G. Fève, Phys. Rev. B 80, 241307(R) (2009)

[2] P. Degiovanni, Ch. Grenier, G. Fève, C. Altimiras, H. le Sueur and F. Pierre, arxiv:0910.2642

[3] C. Altimiras et al, Nature Physics 6, 34 (2010)

Un café sera servi à 11h00.

Contact : patrice.bertet@cea.fr/elisabeth.bouchaud@cea.fr - Tel : +33 1 69 08 55 29 / 41 03
<http://iramis.cea.fr/spec/>