

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

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**Mercredi 03 février 11h15**

**Orme des Merisiers SPEC Salle Itzykson, Bât.774**

**Shot noise suppression and hopping conduction in graphene nanoribbons**

**Romain Danneau**

Institute of NanoTechnology,  
Karlsruhe Institute of Technology (Germany)

This talk will be focused on current fluctuations, also called shot noise, experiments performed in etched graphene nanoribbons (GNRs). After a general introduction to the physics of graphene and on shot noise, the electronic properties of GNRs will be described. Recent results on shot noise in GNRs will be presented and analyzed. While a gate dependent Fano factor of  $1/3$  was found in large and short graphene strips [1], a much smaller Fano factor is measured in GNR, quasi-independent of the charge carrier density. In addition to this, an analysis the GNR conductance based on variable range hopping will explain the observation of a strong shot noise reduction. Indeed, the etched GNR conductance and noise are strongly dominated by disorder arising from the rough edges and the appearance of an energy gap cannot be solely explained by the formation of a series of quantum dots in these systems [2].

[1] R. Danneau, F. Wu, M.F. Craciun, S. Russo, M.Y. Tomi, J. Salmilehto, A.F. Morpurgo, and P.J. Hakonen, Phys. Rev. Lett. 100, 196802 (2008); J. Low. Temp. Phys. 153, 374 (2008); Solid State Commun. 149, 1050 (2009).

[2] R. Danneau, F. Wu, M.Y. Tomi, J.B. Oostinga, A.F. Morpurgo and P.J. Hakonen, submitted.

Un café sera servi à 11h00.

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