

Séminaire du SPEC
Mercredi 22 novembre 2006, 11h00

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

Accueil café 15 minutes auparavant
**Measuring the quantum noise
of mesoscopic devices
with an on-chip detector**

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The measurement of current fluctuations is a powerful tool to probe electron dynamics in mesoscopic devices. In the quantum regime, when the frequency is of the order of or higher than the applied voltage or temperature, the question concerning what quantity is exactly measured is relevant : do the experiments probe the symmetrized or the non-symmetrized noise correlator, or, in other words, are the experiments able to distinguish between the emission and absorption part of the current fluctuations? We show experimentally that, when a superconductor-insulator-superconductor junction is used as a high frequency detector (by measuring the quasi-particle photo-assisted current through it), the non-symmetrized noise correlator is measured. This allows us to probe the asymmetry between emission and absorption of mesoscopic devices at high frequency. We present the case of a Josephson junction. With this technique, we also measured directly how the high-frequency emission due to the Josephson effect is affected when it competes with charging effect in the case of a single Cooper-pair transistor.

Invitant :

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