

Séminaire du SPEC
Lundi 30 avril 2007, 14h15

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

ATTENTION : jour et heure inhabituels

Séminaire exceptionnel

**Beyond bosons and fermions :
how to detect and use anyons**

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One of the key features of the quantum Hall effect (QHE) is the fractional charge and statistics of quasiparticles. Fractionally charged anyons accumulate non-trivial phases when they encircle each other. In some QHE systems an unusual type of particles, called non-Abelian anyons, is expected to exist. When one non-Abelian particle makes a circle around another anyon this changes not only the phase but even the direction of the quantum-state vector in the Hilbert space. This property makes non-Abelian anyons promising for fault-tolerant quantum computation. Shot noise experiments allowed a direct observation of fractional charges. Probing exchange statistics is more difficult and has not been accomplished for identical anyons so far. We propose a method of detecting fractional statistics based on the topologically non-trivial setup of the electronic Mach-Zehnder interferometer.

Invitant :

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