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Seminaires du LPTM , Universite de Cergy Pontoise

Jeudi 15 Octobre 2015, 14 :00
LPTM, 4.13 St Martin II
Domaines : math-ph

Titre : *Quantum jumps from continuous quantum trajectories*

Orateur : **Antoine Tilloy (LPT ENS Paris)**

Résumé : *When a quantum system is subjected to a continuous measurement, its evolution becomes stochastic and in a proper limit, it can be described by a continuous equation with Gaussian noise. On the other hand, it is known since Bohr that a quantum system subjected to successive von Neumann measurements undergoes rare quantum jumps. The objective of this talk is to show how this simple jumpy behavior can be obtained as a limit of the finer continuous picture. Starting from repeated interaction schemes, my first objective will be to introduce smoothly the formalism of quantum trajectories to explain what a continuous measurement even means in a quantum context. Then I will show, numerically, heuristically and perhaps even analytically that when the measurement rate increases, the evolution of a continuously monitored quantum system becomes "jumpy". I will show how the jump rates can be computed from the system parameters in the general case and I will finally demonstrate on an example that the continuous picture is much finer than what the naive quantum jump limit would suggest even in the infinitely strong measurement limit.*