



Lecture series by

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**Quantum Stochastic Calculus,
QND Measurements and Adiabatic Theory**

Lecture 1 : "Quantum Nondemolition Measurements"

Thursday - November 13, 2014

10:00-11:30, Room 8.122

Abstract: The term quantum nondemolition (QND) measurement was coined by Braginsky et. al. in the `70s and the theory of QND measurements became influential both experimentally and as a toy model for the measurement process in quantum mechanics. A recent example of the former is the photon counting experiment of Haroche. In this lecture, I introduce time-discrete QND measurements and review recent progress in their study.

Lecture 2: "Introduction to Quantum Stochastic Calculus"

Thursday - November 13, 2014

15:45 – 17:15, Room 8.526

Abstract: I will give a short introduction to quantum stochastic calculus developed by Hudson and Parthasarathy in the `80s. A particular class of quantum stochastic evolution equations describes continuous time quantum nondemolition measurements. In this respect, the lecture is a loose continuation of the lecture on QND measurements.

Lecture 3: "Adiabatic Theory for Nondemolition Quantum Stochastic Equations"

Friday - November 14, 2014

13:30 – 15:00, Room 8.526

Abstract: I will discuss adiabatic theory for a class of quantum stochastic equations describing slowly driven dephasing processes. In particular I will derive statistics of tunneling out of the ground state during this process. The talk is based on my work <http://arxiv.org/pdf/1407.7127.pdf>.

