



Sommerfeld Theory Colloquium

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Real Time Imaging of Quantum and Thermal Fluctuations

Tremendous progresses have been achieved in the last decade in realising and manipulating stable and controllable quantum systems, and these made possible to experimentally study fundamental questions posed in the early days of quantum mechanics. We shall theoretical discuss recent cavity QED experiments on non-demolition quantum measurements. While they nicely illustrate postulates of quantum mechanics and the possibility to implement efficient quantum state manipulations, these experiments pose a few questions such as: What does it mean to observe a progressive wave function collapse in real time? How to describe it? What do we learn from them? Their analysis will allow us one hand to link these experiments to basics notions of probability or information theory, and on the other hand to touch upon notions of quantum noise. As an illustration, we shall look at quantum systems in contact with a heat bath subject to quantum transitions between energy levels upon absorption or emission of energy quanta. Isolating the two indispensable mechanisms in competition, we shall describe the main physical features of thermally activated quantum jumps.

Wednesday, 20 November 2013, 16:15h, Room A348/349, Theresienstr. 37/III

Prof. V. Mukhanov, Prof. G. Dvali, Prof. I. Sachs