



Sonderforschungsbereich 631
Festkörperbasierte Quanteninformationsverarbeitung



Condensed Matter Theory Seminar

Tuesday, June 12, 2007, 4 pm
Room 318, Theresienstr. 37, 3rd floor

Speaker: Jan Ivar **Korsbakken**
UC Berkeley

Title: *Lions or kittens? A measure of "size" for Schrödinger cat states*

Abstract:

Ongoing experiments claim to push the frontiers of quantum mechanics ever closer to the macroscopic realm by realizing "Schrödinger cat"-like superposition states in larger and larger systems. This has raised the question of how to define whether or not a quantum superposition state can be called a "large" cat state, and how to compare the macroscopicness of such states in different physical systems. In this talk I will discuss one such measure, based on what measurements are sufficient to collapse a superposition into one of its branches. I will give a brief overview over some experiments which claim to have realized larger-than-miniscule cat states, and describe a test case (bosons with attractive interactions trapped in a double-well potential) for which we have studied the behaviour of our measure analytically and numerically. Along the way, I will briefly discuss what cat states are (and what they are not), why they are interesting (and in what ways they are not), and why they are so notoriously difficult to observe.