

Sommerfeld Special Theory Colloquium

Prof. Eugene Demler

Harvard University, USA

Strongly correlated systems of cold atoms

Recent experiments demonstrated remarkable possibilities for creating strongly correlated systems of cold atoms. In this talk I will review how one can use these systems to address some of the long standing questions in condensed matter physics, such as the origin of high temperature superconductivity, frustration in quantum magnetic systems and existence of spin liquid states. I will also discuss how such systems open new directions for studying effects of strong interactions in quantum systems, for example, far from equilibrium coherent dynamics or spin systems with long range anisotropic interactions. Finally I will discuss how one can probe novel quantum states experimentally by extracting correlation functions from the time of flight images or from interference experiments.

Monday, 30 January 06, 13.30 h , Room 348 / 349, Theresienstr. 37 / III