

VORTRAGSEINLADUNG

im Rahmen des gemeinsamen Berufungsverfahrens
der Freien Universität Berlin und des Helmholtz-Zentrums Berlin
W1-Professur „Theorie des Quantenmagnetismus“

am 26.11.2013 11.30 Uhr
Helmholtz-Zentrum Berlin, Lise Meitner Campus,
Hahn-Meitner-Platz 1, 14109 Berlin Raum PT 104
(Bitte bringen Sie zum Zugang aufs Gelände Ihren Personalausweis mit!)

„Strongly correlated electrons in low dimensions“

Dr. Imke Schneider

University of Oxford, UK

Correlated electronic materials where strong interactions dominate the physical properties have attracted enormous interests during the last decades - not least due to their high relevance in modern technology. Yet, both realizing and understanding collective states of strongly correlated matter remains a major scientific challenge.

A possible route to understanding strong interaction effects is to study systems in low dimensions. Indeed, various intriguing effects such as high-temperature superconductivity in the cuprates, and the quantum Hall effect occur in systems where the effective spatial dimension is less than three. Correlation effects are particularly strong in one-dimensional systems leading to exotic behavior such as the remarkable fractionalization, in which the fundamental excitations at low energies consist of separate spin and charge density waves.

I will consider two examples of low-dimensional quantum systems - a generalization of the famous Kondo problem where an impurity spin is coupled to an otherwise non-interacting host and an interacting quantum wire - and show how strong interactions lead to qualitatively new physical features in these systems.