LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

ARNOLD SOMMERFELD CENTER FOR THEORETICAL PHYSICS

Sommerfeld Theory Colloquium

Dr. Martin Ammon

UCLA, Los Angeles

ASC-PhD-Colloquium:

Gauge/Gravity duality applied to Condensed Matter Systems

The AdS/CFT correspondence or in general Gauge/Gravity dualities relate strongly coupled d-dimensional gauge theories to gravity theories in weakly curved (d+1)-dimensional spacetime. Since the gravity theory is analytically tractable, it is possible to get insights into strongly coupled systems within the framework of gauge/gravity dualities.

In this talk I will review recent progress in gauge/gravity duality towards the description of strongly coupled systems near quantum critical points. The dynamics of interesting condensed matter systems, such as high temperature superconductors and heavy fermion compounds is controlled by quantum critical points. By using an explicit, string theory inspired realization of gauge/gravity dualities in terms of D-branes, the phase diagram of gauge theories is determined. In particular at large densities a new superconducting phase exists. Moreover we study fermions in this superconducting phase which show a non-Fermi liquid behaviour.

Wednesday, 15th December 10, 10:30 h, Room 348 / 349, Theresienstr. 37 / III

Prof. D. Lüst