GOETHE UNIVERSITÄT FRANKFURT AM MAIN
Fachbereich Physik
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ASPECTS OF QUANTUM MATTER THEORY

Subject: **Non-equilibrium R-DMFT for correlated heterostructures**

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Date & time: **Friday, October 21st, 2016 at 3:15 p.m.**

Venue: **Seminar room 1.114**

The recent impressive experimental progress in tailoring different microscopically controlled quantum objects has prompted increasing interest in correlated systems out of equilibrium. Of particular importance are correlated heterostructures, quantum wires and quantum dots with atomic resolution. In this work we present results for the steady state spectral function and current-voltage characteristics for a system consisting of several correlated and non-correlated monoatomic layers, sandwiched between two metallic leads. The non-equilibrium situation is driven by applying a bias-voltage to the leads. We obtain that current, as a function of the bias voltage, has two maximums. One of them is due to the finite bandwidth of the leads, while other is due to the resonance effects. Here we concentrate on the latter maximum and investigate its origin in detail.

For this purpose we use recently introduced dynamical mean-field theory (DMFT) based theoretical scheme [1], which addresses the DMFT impurity problem within an auxiliary system consisting of a correlated impurity, a small number of uncorrelated bath sites and two Markovian environments described by a generalized Master equation [1,2,3]. For the multilayer case one needs to generalize it and take into account the spatial inhomogeneity of the layers [4,5].

References:

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