



# TRR 80 Sonderseminar

Am Dienstag, den 12. Juni um 16:00 Uhr

spricht

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über das Thema

## ***Charge redistribution in correlated heterostructures within nonequilibrium real-space dynamical mean-field theory***

We consider a system consisting of several correlated monoatomic layers sandwiched between two metallic leads. In addition to the local Hubbard interaction we also take the long-range Coulomb interaction into account, which causes electronic charge reconstruction in the correlated layers, as well as in the leads. The non-equilibrium situation is driven by applying a bias voltage to the leads. We investigate the steady-state behavior of the system for different parameters (bias voltage, interaction strength, hybridization strength between leads and the correlated heterostructure).

In particular, we present results for the steady-state current, spectral functions, and electronic charge reconstruction. Depending on the particular parameters we either observe a capacitor-like behavior or one dominated by charge transport. Furthermore, the Hubbard interaction has significant effect on the charge reconstruction. In order to investigate steady-state properties we use real-space dynamical mean-field theory (R-DMFT) [1, 2, 3, 4] combined with the Poisson equation, both solved in a self-consistent fashion. To account for the charge reconstruction in the leads we include some lead layers explicitly in R-DMFT in addition to the correlated layers. As impurity solver for R-DMFT we use the recently developed auxiliary master equation approach (AMEA), 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. [3, 5, 6, 7]

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- [2] J.K. Freericks, Phys. Rev. B 70, 195342 (2004).
- [3] E. Arrigoni, M. Knap, and W. von der Linden, Phys. Rev. Lett 110, 086403 (2013).
- [4] M. Snoek, I. Titvinidze, C. Toke, K. Byczuk, W. Hofstetter, New J. Phys. 10, 093008 (2008).
- [5] A. Dorda et al., Phys. Rev. B 89, 165105 (2014)
- [6] I. Titvinidze et al., Phys. Rev. B 92, 245125 (2015)
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Gäste sind herzlich willkommen.

Der Vortrag findet im Seminarraum S-288, Institut für Physik,  
Universität Augsburg statt.

Gastgeber: Prof. Dr. Ulrich Eckern  
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