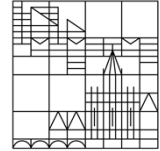


Physikalisches Kolloquium

Universität
Konstanz



Antrittsvorlesung

Di 25.10.16

15:15 Uhr

14:45 Uhr, Kaffee/Tee

R 513



PD Dr. Markus Ternes
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The Detection of Classical and Quantum Correlations in Coupled Spin Systems using Scanning Tunneling Experiments

In recent years inelastic spin-flip spectroscopy using low-temperature scanning tunneling microscopes has been a very successful tool for studying not only individual spins but also complex coupled systems. When these systems interact with the electrons of the supporting electrodes correlated many-particle states can emerge, making them ideal prototypical quantum systems. In this lecture I will show how the controlled coupling of individual spin systems can lead not only to an energy shift of the eigenstates reminiscent of an externally applied field, but also to a bias asymmetry in the differential conductance. Using $S = 1$ and $S = 1/2$ model systems of CoH_x on a $h\text{-BN/Rh}(111)$ substrate [1] in conjunction with model Hamiltonians [2] which takes the coupling and correlation to the environment explicitly into account enables to precisely determine and control the emergence of correlations between the two subsystems on tip and sample [3].

[1] P. Jacobson et al., Nature Communications 6, 8536 (2015).

[2] M. Ternes, New J. Phys. 17, 063016 (2015).

[3] M. Muenks, et. al., arXiv:1605.02798 [cond-mat.mes-hall] (2016).

