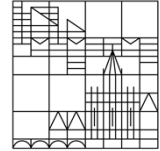


# Physikalisches Kolloquium

Universität  
Konstanz

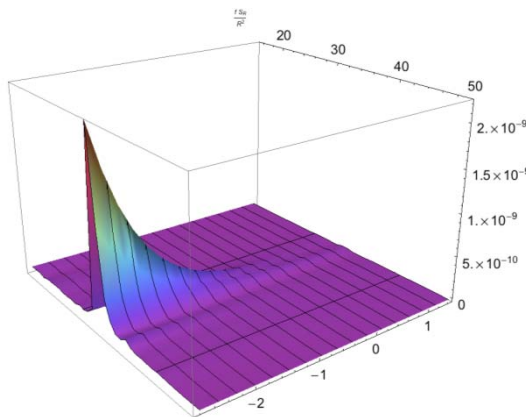


Di 17.12.19  
15:15 Uhr  
14:45 Uhr, Kaffee/Tee  
R 513



**Prof. Dr. Jens Müller**  
Johann Wolfgang Goethe-Universität  
Frankfurt am Main

## Fluctuation Spectroscopy of Correlated Electrons in Molecular Conductors



So-called  $1/f$ -type fluctuations are ubiquitous in nature, and can be found in such diverse contexts as light curves of quasars, the human heartbeat, earthquakes, road traffic or classical music. In this colloquium, we aim to give an overview of such fluctuation phenomena in condensed-matter systems and discuss how ‘noise can be turned into a signal’ by the method of fluctuation spectroscopy.

We first give an example where understanding the microscopic origin of the fluctuations in semiconductor-based Hall sensors helps to improve the signal-to-noise ratio and hence the device performance significantly. In the main part of the talk we then will discuss recent results on the low-frequency dynamics of strongly correlated electrons in low-dimensional molecular metals, which may be considered model systems for studying the Mott metal-insulator transition, a key phenomenon in many-body physics. Our findings range from glassy structural dynamics, nano-scale phase separation and percolation caused by competing interactions, critical slowing down of charge fluctuations, and a recently found novel charge-glass state.