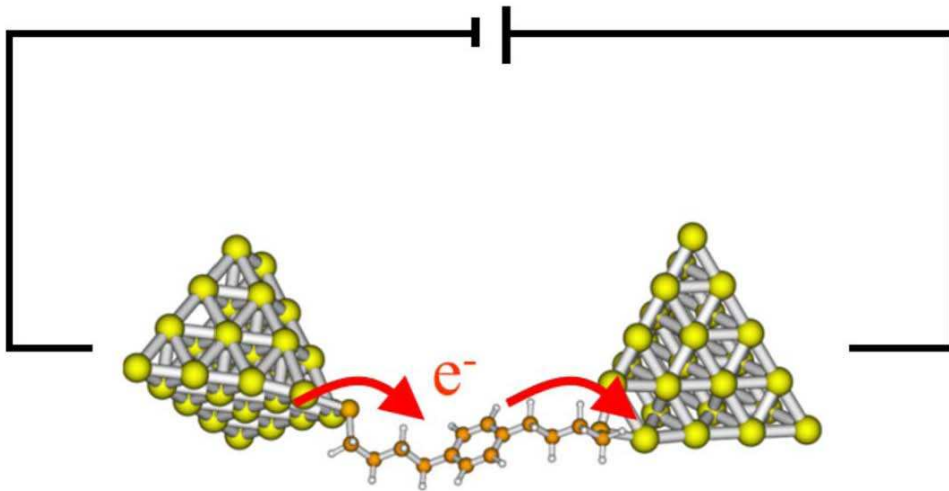


PHYSIKALISCHES KOLLOQUIUM

AM 21. MAI 2012 UM 17 UHR C.T.

IM GROßEN HÖRSAAL



ELECTRON TRANSPORT AT THE MOLECULAR SCALE

PROF. DR. MICHAEL THOSS

INSTITUT FÜR THEORETISCHE PHYSIK

UNIVERSITÄT ERLANGEN

Molecular junctions, consisting of a single molecule that is bound to electrodes, are among the smallest electrical circuits. They offer the possibility to investigate nonequilibrium quantum transport processes at the nanoscale and are of interest for applications in the field of molecular electronics. Recent experimental and theoretical studies of electron transport in molecular junctions have revealed a wealth of interesting phenomena. In this talk, mechanisms that determine electron transport at the molecular scale are discussed. This includes tunneling and resonant transport processes, quantum interference and decoherence as well as the interaction between the transmitted electrons and the vibrational degrees of freedom of the molecular bridge, an aspect that distinguishes molecular conductors from mesoscopic devices.