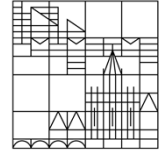


# Physikalisches Kolloquium

Universität  
Konstanz

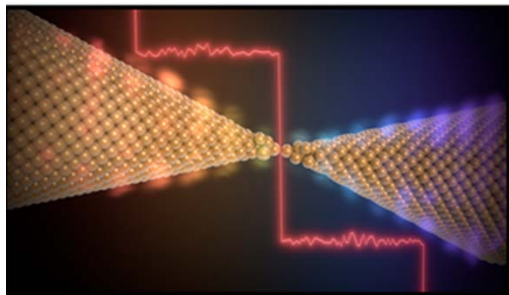


Di 28.11.17  
15:15 Uhr  
14:45 Uhr, Kaffee/Tee  
R 513



**Prof. Dr. Juan Carlos Cuevas**  
Universidad Autónoma de Madrid

## Nanoscale thermal transport: Electrons, phonons, and photons



With the advent of novel fabrication techniques in the 1980s and 1990s, it became possible to explore many physical phenomena at the nanoscale. Since then, a lot of progress has been done in the understanding of the electronic transport, mechanical, and optical properties of nanoscale devices. However, thermal transport in these systems has remained relatively unexplored because of the experimental difficulty to measure the flow of heat and energy at this small scale. In this talk, I will review our recent theoretical and experimental efforts to establish the fundamental laws that govern the thermal transport in a variety of nanoscale systems in which the heat flow is dominated by different carriers: electrons, phonons, and photons. In particular, I will discuss basic phenomena such as Joule heating and Peltier cooling in molecular junctions, the violation of Planck's law in nanoscale gaps, or the quantized thermal transport in atomic-size contacts.