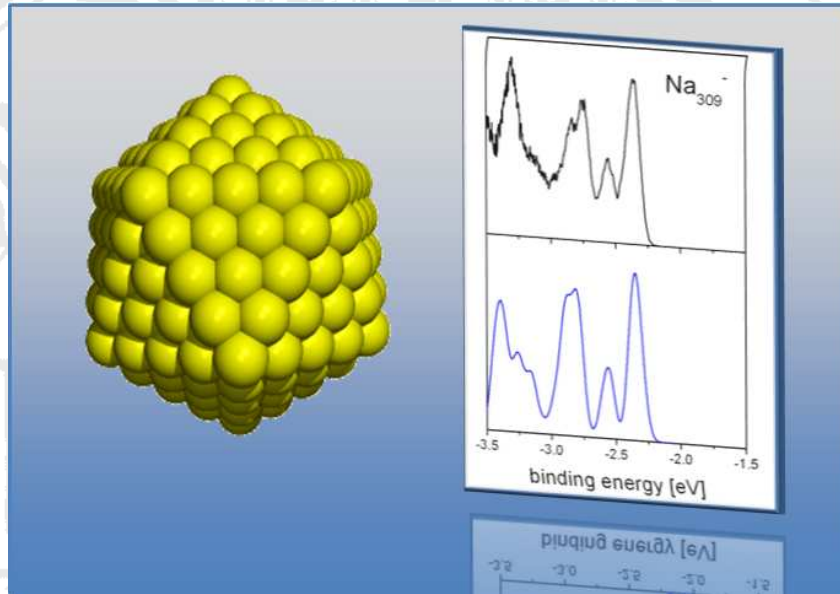


PHYSIKALISCHES KOLLOQUIUM

AM 11. NOVEMBER 2013 UM 17 UHR C.T.

IM GROßEN HÖRSAAL



SMALL IS BEAUTIFUL: STRUCTURE AND DYNAMICS OF ATOMIC AND MOLECULAR CLUSTERS

PROF. DR. BERND VON ISSENDORFF

INSTITUTE OF PHYSICS, UNIVERSITY OF FREIBURG

Clusters and nanoparticles often have properties rather different to those of the corresponding bulk material, which is due to the large surface-to-volume ratio and in general to quantum size effects, the discretization of otherwise continuous densities of states. Especially the latter effect makes them highly interesting candidates for the study of few to many particle physics. In my talk I will concentrate on two examples. First I will explain the intricate interplay between electronic and geometric structure in simple metal clusters, which has been clarified by a combination of photoelectron spectroscopy on free, size-selected alkali and noble metal clusters and DFT-calculations. Recently the use of angle-resolved photoelectron spectroscopy here even allowed obtaining direct information on the nature of the electronic wavefunctions in these particles. The second example will focus on the interplay of geometric structure and thermodynamical behavior. Here I will discuss the melting of water nanoparticles, which turns out to have much in common with the glass transition of amorphous ice. I will finish with an outlook on future developments in cluster science.