Seminarankündigung

Dienstag, 14. Mai 2013
17:15 Uhr

WSI, Seminarraum S 101

“Magnetoelectric spin control in nanostructures”

Atomic spin-orbit interactions (SOIs) result in interesting dynamical properties on electronic nanostructures. These systems, accessible experimentally on metallic surfaces, semiconducting heterostructures, and carbon nanotubes, to name a few, allow the exploration of symplectic symmetries on a number of *measurable* quantities. This talk will discuss how SOIs result in interesting *magnetoelectric effects* at the atomic scale when considering adatoms on surfaces. We will describe how quantum corrals made with magnetic atoms allow one to control the spectral properties of quantum systems located inside, via the application of moderate magnetic fields. The unique features of the electronic states in the corral allow for *tunable* Kondo screening effects, among other things. Similarly, we will discuss the ability to control the spin polarization of current (*without* magnetic fields) through carbon nanotubes wrapped helically with polar molecules, such as DNA. These properties provide powerful alternative tools for probing spintronic properties at the atomic scale.

Prof. Sergio E. Ulloa
Phenomena Institute, Ohio University, Athens, USA
and
Dahlem Center for Complex Quantum Systems
Freie Universität Berlin, Germany