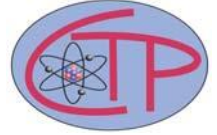




**NEW YORK CITY COLLEGE OF TECHNOLOGY**  
**Physics Department**  
**Center for Theoretical Physics**



# **Cluster degrees of freedom in fission of actinides**

***Presented by:***

**Dr. Anna Unzhakova**

**Saint Petersburg State University**

**Friday, November 18 at 11:00 AM**  
**Namm, Room 823**

Microscopic self-consistent and micro-macro shell correction descriptions of a complex decay, such as a nuclear fission, produce potential energy surfaces with multiple structures. The nuclear shape variables responsible for the collective motion in fission process are strongly connected with the properties of the potential. In this presentation, we consider a variety of possible fluctuations of the mass-asymmetry collective coordinate. Micro-macro shell correction calculations have been performed for a wide range of the actinide nuclei. We use Cassinian oval shape parameterization and a large deformation space to make cluster stabilization possible. The same shape parameterization was successfully applied for the description of scission neutrons and other scission properties as function of mass-asymmetry. Our calculations show that the organization of complex potential energy surface is comprised of several adiabatic paths to the scission, which are called fission valleys, and of the regions of the strong singularities as well.

***Light refreshments will be served***