

# *Kent State University*

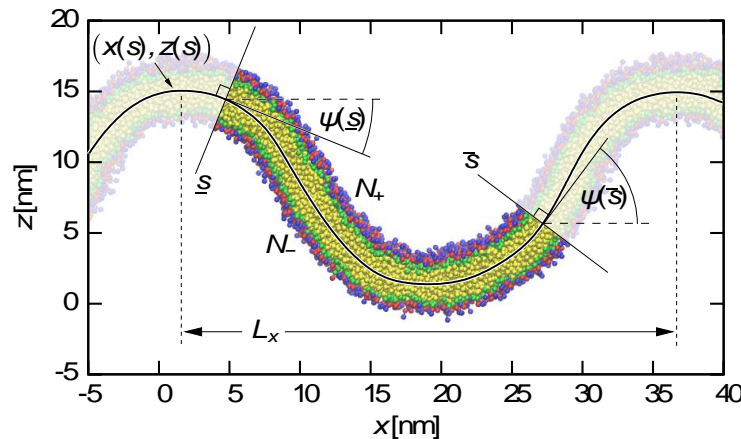
## *Physics Colloquium*

**PROFESSOR MARKUS DESERNO**

**DEPARTMENT OF PHYSICS**

**CARNEGIE MELLON UNIVERSITY**

### **UNDER PRESSURE: WHAT LIPID MEMBRANES TELL YOU UNDER FORCE**



#### **Abstract**

Lipid membranes resist shape changes because they possess an intrinsic curvature rigidity. From the earliest days of membrane science it has been known that the associated bending modulus can be (and then has been) measured indirectly by monitoring a membrane's fluctuation spectrum. Hence, it is maybe quite surprising that the more obvious method of actually deforming a membrane and measuring how it resists is a much more recent invention. The most widely applicable deformation that has been proposed is membrane buckling, and in this talk I will first revisit how this permits a clean measurement of a membrane's bending modulus. However, it turns out that from buckling membranes we can learn a lot more than just their rigidity. The possibility of accurately controlling a shape that has not just curvature but curvature gradients enables access to (at least) two more very interesting observables: first, the position of the pivotal plane; and second, the tilt modulus of lipids. I will explain what these two other observables are, why they matter, and how to extract them from a careful investigation of the lipid distribution in buckled membranes.

**THURSDAY, DECEMBER 3, 2015**

**1:30 PM**

**SMITH HALL 111**

**REFRESHMENTS: 1:15- PM – SMITH HALL 111**