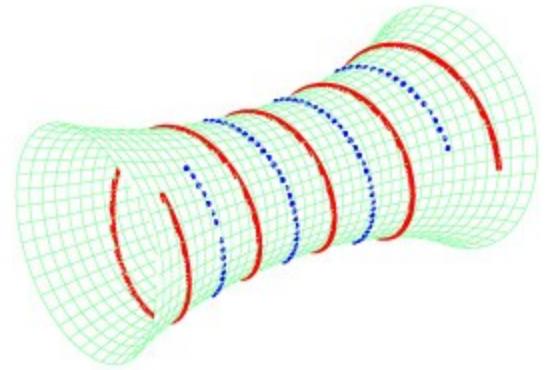


Optical Sensing of Mechanical Motion



Dr. Mishkat Bhattacharya

In everyday life we detect motion using our eyes. Optical motion sensors are also employed pervasively by modern technologies, such as in computer mice. However there exist even more sensitive detectors of motion : I will discuss how state-of-the-art optical resonators can measure the linear displacement of a meter-scale object to within the radius of a proton. I will then address the existence of a fundamental limit to the sensitivity of these `optomechanical' sensors, set by the laws of quantum mechanics. Lastly I will elucidate how a variation on the usual resonator design may lead to a sensor for angular displacements.

4PM, WEDNESDAY, NOVEMBER 30, 2011

Carlson Auditorium, Center for Imaging Science (Bldg. 76)