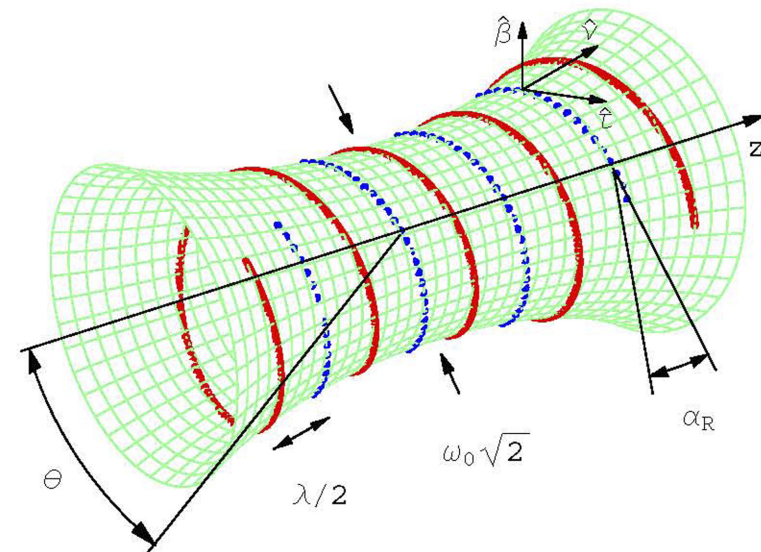


# Optomechanics With a Twist



## Professor Mishkat Bhattacharya

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3:00 pm Monday, Feb 13, 2012  
 Sloan Auditorium, Goergen 101  
 Refreshments served

Optical control of microscopic opto-mechanical oscillators will be described. Using the example of a Fabry-Perot cavity with a movable mirror I will show how optical sensing, cooling and entanglement of a linearly vibrating harmonic oscillator can be achieved and extended to a torsional oscillator.

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**Abstract:** The interaction of light with mechanical degrees of freedom of various forms of matter is a currently exploding area of research situated at the intersection of quantum optics, nanoscience, gravitational wave interferometry, atomic physics and even biology. Using the example of a Fabry-Perot cavity with a movable mirror I will show how optical sensing, cooling and entanglement of a linearly vibrating harmonic oscillator can be achieved. Then, replacing the plane mirrors by spiral phase plates and the Hermite-Gaussian modes by Laguerre-Gaussian beams I will discuss our proposal to achieve analogous effects for a torsional oscillator.

**Biography:** Mishkat Bhattacharya obtained his Ph.D. from the University of Rochester in 2005, and held postdoctoral positions at Georgia Tech., University of Arizona, and the University of Maryland, College Park, before joining the Rochester Institute of Technology in 2011.