



Colloquium

October 26, 4:05 p.m. (9th Period)
(in the Atrium)

Speaker: Darby Smith

Title: Molecular Motors: Stochastic Equations of Motion

Abstract

Molecular motor proteins are responsible for transport of large organelles and vesicles to and from cell peripheries. Motors move along cytoskeletal tracks called microtubules. Most motors are directional and only transport cargo either towards or away from the nucleus, but not both. Classically, the movement of cargo was described through a tug-of-war model. This model was accepted until scientific advancement enabled the model to be tested. Once tested, it was revealed that tug-of-war modeling could not accurately describe the true nature of molecular motors. In 2014, several approaches were proposed to overcome the tug-of-war paradox. One of these was the microtubule tethering approach, where motors are provided the benefit of a tether to help with attachment to the microtubule. In this talk, we will develop the beginnings of a microtubule tethering model and search for evidence of the physical cost of a tether.