



Physics & Astronomy Colloquium

Fall 2010

Motion in Cytoskeletal Networks

Inside our cells molecular motors transport materials, enabling growth and other cellular functions. While transporting cargo these motors walk along filamentous tracks that act as roadways throughout the cell. The environment in which these motors walk is a robust mechanical system with stiffness similar to that of Jell-O. To help elucidate the effects of this complex cellular environment on the cargo transport process we investigate the response of a simple biopolymer network, entangled actin. Using magnetic tweezers, we quantify force-velocity curves for magnetic beads moving through entangled F-actin networks. We determine two distinct response regimes for the network, elastic at low forces, and viscous at high forces. This non-Newtonian force-velocity relationship suggests the local cytoskeletal environment is an important factor when considering cargo transport inside the cell.

Eliza J. Morris

***Sacramento State Alumna, Class of 2005
Doctoral Candidate, Harvard University***

**Thursday, November 18, 2010
4:00-5:20 PM - MND 1015**

Open & Free to all Students, Faculty & Public