TEMPLE UNIVERSITY MATHEMATICS COLLOQUIUM

Jay Newby

Ohio State University

will speak on

Stochastic modeling of cellular processes

ABSTRACT: The intricate machinery of a living cell must function even when subjected to thermal fluctuations. The effect of thermal fluctuations on a molecule is best described as random time dependent perturbations. Cellular processes are modeled by stochastic processes. While thermal fluctuations can be disruptive, it is more often the case that a cell uses the resulting randomness to its advantage. One example is Brownian motion, or diffusion, used to transport small molecules throughout the cell. The central motivation of my research is to understand how cells harness their intrinsic stochasticity. I will present an overview of my research, and I will select a few representative examples to discuss in more detail, including (i) active transport in neurons and its role in learning and memory; and (ii) spontaneous neural activity and what it tells us about how small a functional brain can be.

THURSDAY, JANUARY 15, 2015
LECTURE AT 3:00 PM
COFFEE, TEA, AND REFRESHMENTS FROM 2:45 PM
ROOM 617, WACHMAN HALL
DEPARTMENT OF MATHEMATICS