



FALL 2018

RENSSELAER POLYTECHNIC INSTITUTE

DEPARTMENT OF MATHEMATICAL SCIENCES COLLOQUIUM

“Applications of Renewal Theory to Intracellular Transport”

Abstract:

Intracellular transport, especially in axons, consists primarily of different molecular motors moving along microtubules with cargos in tow. Biochemical processes at the nanoscale control the dynamics of the motors. Changes in the behavior of the motors (speed, diffusivity, processivity, etc) can then alter the distribution and dynamics of the population of transported cargos at the scale of several microns. Therefore, an important element in understanding cellular regulation of transport is the interaction between these motor-level and cell-level scales.

In this talk, I will discuss how renewal and renewal-reward processes are used to build multi-scale models of cellular transport, connecting fine-scale biophysical models (typically Markovian) to coarse-scale models that are more relevant both for experimental observations and for understanding transport at the cell level.

John Fricks (Arizona State University)

Monday, October 15, 2018

4-5pm

Amos Eaton 214

Host: Peter Kramer

Refreshments served 3:30-4pm Amos Eaton 4th Floor Lounge

