

1139-92-324

Peter R Kramer* (kramep@rpi.edu), Dept Mathematical Sciences, 110 8th Street, Rensselaer Polytechnic Institute, Troy, NY 12180, and **Abhishek Choudhary** and **Joe Klobusicky**. *Stochastic Spatial Models for Molecular Motors on Parallel Microtubule Networks*. Preliminary report.

Switched drift-diffusion models will be presented for the dynamics of a system of a cargo particle with one or two cooperative molecular motors attaching and detaching from a parallel network of microtubules. The dynamical equations include stochastic fluctuations in the spatial configuration of the motors and cargo, which affect the attachment and detachment processes. Models are developed and analyzed, neglecting steric effects, for both the case of closely spaced microtubules and widely spaced microtubules, with the latter involving a small target first passage time calculation for the effective attachment rate. These models relate parameters and functions governing the motor-cargo dynamics and the microtubule geometry to the effective transport rate of the cargo along the microtubule. (Received February 15, 2018)