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**Stochastic Molecular Transport on Microtubule Bundles with Structural Defects** M.W. GRAMLICH, Washington University School of Medicine in St. Louis, S.M. ALI TABEI, University of Northern Iowa — Intracellular transport involves complex coordination of multiple components such as: the cytoskeletal network and molecular motors. Perturbations in this process can amplify over time and space, thereby affecting transport. One little studied component of transport are structural defects in the cytoskeletal network. In this talk we will present a stochastic model of the interaction of the molecular motor, kinesin-1, and a bundled cystoskeletal network of microtubules, and explicitly explore the role of microtubule ends (a type of defect) on long-range transport. We will show how different types of end distributions can ultimately result in the same observed transport behavior for bundles. We compare transport on completely uniform bundles, found in the axon, to completely random bundles, found in dendrites. Because of the un-biased random bundle nature, defects affect transport on dendrite bundles more than on uniform bundles in the axon. Further, defects act as large spatial-scale traps that result in random wait-times which have been assumed in previous models.

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