Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Monte-Carlo Study of Axonal Transport in a Neuron[1] UTTAM SHRESTHA, CLARE YU, ZHIYUAN JIA, ROBERT ERICKSON, STEVEN GROSS, University of California, Irvine — A living cell has an infrastructure much like that of a city. A key component is the transportation system that consists of roads (filaments) and molecular motors (proteins) that haul cargo along these roads. We will present a Monte Carlo simulation of intracellular transport inside an axon in which motor proteins carry cargos along microtubules and are able to switch from one microtubule to another. The breakdown of intracellular transport in neurons has been associated with neurodegenerative diseases such as Alzheimer's, Lou Gehig's disease (ALS), and Huntingdon's disease.

[1]This work was supported by NIGMS grant number 5R01GM79156.

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Date submitted: 18 Nov 2010 Electronic form version 1.4