Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

A minimal model for protein coat dynamics in intracellular vesicular transport RANJAN MUKHOPADHYAY, Clark University, HUI WANG, Lehigh University, GREG HUBER, University of Connecticut Health Center — Within eukaryotic cells, proteins are transported by vesicles formed from coated regions of membranes. The assembly of coat proteins deforms the membrane patch and drives vesicle formation. Once the vesicle has pinched off, the protein coat rapidly disassembles. Motivated by recent experimental results, we propose a minimal model for the dynamics of coat assembly and disassembly and study the spatio-temporal behavior of the system. We will show that for a range of parameters, our model can robustly generate a steady state distribution of protein clusters with characteristic sizes and will obtain the scaling behavior of average cluster size with the parameters of the model. We will also discuss the coupling of coat dynamics to sorting of cargo proteins.

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Date submitted: 27 Nov 2007 Electronic form version 1.4