Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Coarse-grain simulation studies of lipid vesicles[1] ROBIN SELINGER, JUN GENG, JONATHAN SELINGER, Liquid Crystal Institute, Kent State Univ. — We model the shape evolution of an initially spherical lipid vesicle when the lipid bilayer undergoes a transition from an untilted phase to a tilted phase. Our coarse-grain model is a generalization of an approach due to Lykotrafetis, Zhang, Suresh and Li [preprint], and is efficient enough to allow simulation of an entire vesicle in three dimensions. Topological defects are generated during the phase transformation with a total topological charge of +2 as required by the Gauss-Bonnet theorem. These defects couple to the curvature of the membrane. We explore the resulting complex shape evolution and compare to both theoretical predictions and experimental observations.

[1]Supported by NSF-DMR 0605889

Robin Selinger
Liquid Crystal Institute, Kent State Univ.

Date submitted: 20 Nov 2009 Electronic form version 1.4