Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Morphologies of Elastic Membranes with Fluctuating Connectivity CHLOE FUNKHOUSER, RASTKO SKNEPNEK, MONICA OLVERA DE LA CRUZ, Northwestern University — We numerically investigate the effects of topological defects in single-component two-dimensional elastic membranes with spherical topology allowing changes in shape. The membrane is simulated as a closed, triangulated elastic surface in three dimensions, where the vertices are permitted to move in space and the connectivity of the triangulation is able to fluctuate. Fluctuations in connectivity allow the creation of topological defects. A Monte Carlo simulated annealing method is utilized to explore optimal shapes and connectivities. The familiar defect-driven buckling transition [Seung & Nelson, PRA 1988, 38:1005] from a sphere to an icosahedron is shifted as a result of the fluctuating connectivity.

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Date submitted: 19 Nov 2011 Electronic form version 1.4