

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Period Fissioning and Other instabilities of stressed elastic membranes BENNY DAVIDOVITCH, Physics Dept., UMass Amherst — We study the shapes of elastic membranes under the simultaneous exertion of tensile and compressive forces when the translational symmetry along the tension direction is broken. We predict a multitude of novel morphological phases in various regimes of a 2-dimensional parameter space (ε, ν) , defined by the relevant mechanical and geometrical conditions. The parameters ε, ν are, respectively, the ratio between compression and tension, and the wavelength contrast along the tension direction. In particular, our theory associates the repetitive period fissioning pattern, recently observed on wrinkled membranes floating on liquid and subject to capillary forces (J. Huang *et al.*) to the morphology in the asymptotic regime ($\varepsilon \ll 1, \nu \gg 1$) where tension is dominant and the wavelength contrast is large.

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Date submitted: 30 Nov 2008

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