

1077-35-1729

John Gemmer* (jgemmer@math.arizona.edu) and **Shankar Venkataramani.** *Periodic Rippling in Hyperbolic Non-Euclidean Plates.*

Non-Euclidean plates are thin elastic sheets in which the preferred intrinsic geometry of the mid-surface corresponds to a surface with nonzero Gaussian curvature. These sheets model the complex geometries generated by locally growing or swelling soft tissue.

We present a study of free non-Euclidean discs with constant negative Gaussian curvature. The equilibrium configuration taken by these sheets are solutions to a modified version of the Föppl Von-Kàrmàn (FvK) equations in which strain is measured as the deviation of the surface from being a local isometric immersion of the hyperbolic plane. We show that solutions to the FvK equations with a periodic profile can be constructed. These solutions qualitatively resemble experimental results and correspond to local minimum of the free elastic energy. (Received September 20, 2011)