1131-58-229 **Shankar C. Venkataramani*** (shankar@math.arizona.edu), 617 N Santa Rita Ave, Department of Mathematics, University of Arizona, Tucson, AZ 85721, and **Toby Shearman** (tshearman@math.arizona.edu), 617 N Santa Rita Ave, Department of Mathematics, Tucson, AZ 85721. *Non-euclidean elasticity, discrete differential geometry and a generalized Sine-Gordon equation.*

Leaves, flowers and torn plastic bags are all examples of thin objects that are conjectured to have no stress-free configurations in $\mathbb{R}^3$. Non-euclidean elasticity is the study of energy driven pattern formation in such objects. I will discuss some recent geometric and numerical approaches to this problem, and discuss some of the intriguing results including – (i) a generalization of the Sine-Gordon equation to describe "rough" hyperbolic surfaces with constant negative curvature, and (ii) the important role of regularity in quantitative versions of the Hilbert-Efimov theorem on the nonexistence of isometric immersions of the Hyperbolic plane into $\mathbb{R}^3$.

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