Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Hierarchical Stress Focusing in Elastic Ridge LEE WALSH, BENNY DAVIDOVITCH, University of Massachusetts — A crumpled or confined elastic sheet contains many stress-focusing structures and singularities, primarily ridges and vertices, which may contain much of the strain. We seek to determine the degree and quality of stress focusing within the geometry of a single ridge. Previous work on the ridge assumes the asymptotic limit of infinitely sharp vertices. However, in a physically realistic sheet any vertex or intersection of ridges will naturally have a finite radius of curvature greater than the sheet's thickness. We simulate these more physically realistic boundary conditions in a ridge using Surface Evolver.

Lee Walsh
University of Massachusetts

Date submitted: 10 Nov 2011 Electronic form version 1.4