

Abstract Submitted  
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**Bending and stretching of two-dimensional fluids and solids**

JAMES HANNA, Virginia Polytechnic Institute and State University — Soap films, lipid membranes, and elastic sheets are often analyzed with similar (idealized) models that emphasize the geometric features of these surfaces. If deformations of these surfaces are area-preserving, simple and elegant expressions may be used to describe surface and bending energies and the corresponding equations of equilibrium. However, in general, one should make a distinction between geometric energies, as measured per unit area, and elastic energies, as measured per unit mass. I will discuss some of the differences between these types of energies, and the resulting potential difficulties and inelegancies in their mathematical descriptions.

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