

A VARIATIONAL PERSPECTIVE ON WRINKLING PATTERNS IN THIN ELASTIC FILMS

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Thin sheets exhibit a daunting array of patterns. A key difficulty in their analysis is that while we have many examples, we have no classification of the possible "patterns." I have explored an alternative viewpoint in a series of recent projects with Peter Bella, Hoai-Minh Nguyen, and others. Our goal is to identify the *scaling law* of the minimum elastic energy (with respect to the sheet thickness, and the other parameters of the problem). Success requires proving upper bounds and lower bounds that scale the same way. The upper bounds are usually easier, since nature gives us a hint. The lower bounds are more subtle, since they must be ansatz-independent. In many cases, the arguments used to prove the lower bounds help explain "why" we see particular patterns. My talk will give an overview of this activity, and details of some examples