ENERGY-DRIVEN PATTERN FORMATION
A NEW FRONTIER FOR THE CALCULUS OF VARIATIONS

Speaker: Professor Robert V. Kohn
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Friday, April 15
3:35 - 4:30 p.m. - 101 Love
Refreshments served at 3 p.m. in 204-B Love

Abstract:
Energy-driven pattern formation examines how energy minimization leads to the formation of defects and microstructure in a variety of physical systems. Examples include the wrinkling of a stretched elastic membrane, the formation of domains in a magnetic material, and the twinning produced by martensitic phase transformation. These systems can be described by “Landau theories” -- essentially, nonconvex variational problems regularized by higher-order singular perturbations. I will show in various examples -- some old, some new -- how one can identify the scaling law of the minimum energy, and how this sheds light on the underlying patterns.