

## Distinguished Colloquium Series in Interdisciplinary & Applied Mathematics

Thursday, February 20, 2014

4:30-5:30 p.m., Davis Auditorium, CEPSR (Shapiro Center) Refreshments served at 4:00 p.m. in 200 SW Mudd

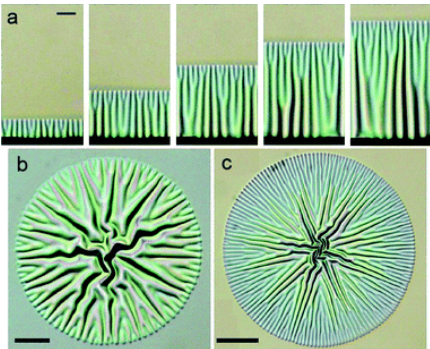


# Robert V. Kohn

Professor of Mathematics Courant Institute, New York University

"A Variational Perspective on Wrinkling Patterns in Thin Elastic Sheets"

**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 Jacob Bedrossian, Peter Bella, Jeremy Brandman, and Hoai-Minh Nguyen. Our goal is to identify the \*scaling law\* of the minimum elastic energy (with respect to the sheet thickness, and in some cases with respect to other small parameters). Success entails 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.**



*Robert V. Kohn has made major contributions to the theory and application of Partial Differential Equations. His work has had impact in fields ranging from Material Science (cloaking, coarsening, and wrinkling phenomena) to Fluid Dynamics. Professor Kohn, a Fellow of SIAM and the AMS, was awarded (jointly with L. Caffarelli and L. Nirenberg) the 2014 L.P. Steele Prize of the American Mathematical Society for seminal contributions to the study of the Navier Stokes equations of fluid dynamics.*

**For information, please contact Professor M.I. Weinstein, [miw2103@columbia.edu](mailto:miw2103@columbia.edu).**

Organizing Committee: D. Goldfarb (IEOR), E. Grinspun (Computer Science & APAM),  
I. Karatzas (Mathematics), M.I. Weinstein (APAM & Mathematics)