Mechanics and Mathematics of (soft) Materials and Structures @ DISG

Eran Sharon

The Geometry and Mechanics of Growing Elastic Sheets

Mercoledì 12 aprile, ore 12:00

Abstract

Non uniform growth of thin sheets can lead to the formation of elaborate three-dimensional configurations and to induce non trivial shape transformations. In particular, complicated configurations appear in thin sheets when growth leads to geometrical frustration, as often occurs in biological tissues.

I will present examples of different types of systems and discus different types of self shaping principles, together with the theoretical framework of incompatible elasticity which is used to study such systems. Experimental methods for the construction of "programmed" responsive sheets will be reviewed and the connection of the topic to shape selection in chemical and biological systems, as well as to design and art, will be presented.

Short bio

Professor of Nonlinear Physics
Racah Institute of Physics
The Hebrew University of Jerusalem
Israel.

Awards

- Awards: The Kennedy-Leigh Prize for Ph.D. work, 2001.
- Fulbright scholarship for postdoctoral research, 2000.
- The Israeli Physics Society Prize, 1999.
- The "Clor" scholarship, 1997-2000.

Research Interests

- Experimental study of pattern formation in complex systems.
- Equilibrium configurations of thin sheets with curved metrics.
- The geometry of flowers and leaves.
- Turbulence in rotating systems.
- Relaxation of fractal clusters.

Funding

- Growth and shaping of soft tissue, ERC, 2009-2014.
- The role of mechanical instabilities in leaf development, FP6-EU, 2005-2008.

Per informazioni sull'evento contattare:
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