PHYSICAL MATHEMATICS SEMINAR

Geometry and Instabilities in Growing Shells

MATTEO PEZZULLA

Boston University

ABSTRACT:

Thin structures such as plates and shells take advantage of their slenderness to achieve large shape changes in response to rather small stimuli. These phenomena occur over a wide range of length scales, from biological membranes to solar sails. In particular, membranes change their shape in response to stimuli that induce a variation of the natural curvature. I will first discuss how initial curvature dramatically affects shape change by studying intrinsically flat geometries such as plates, cylinders, and cones. Then, I will study how growth can break multiple symmetries simultaneously through the buckling and snapping of spherical shell. Finally, I will show how the classical problem of the bistability of spherical shells can be revisited from a growth perspective.

TUESDAY, OCTOBER 4, 2016
2:30 PM
Building 4, Room 257

Reception following in Building 2, Room 290
(Math Dept. Common Room)

http://math.mit.edu/seminars/pms/

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