

MS- 7-4

Mini-symposium title

7-4 – Mechanics and Physics of Structures

Organisers

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Mini-symposium description

In recent years, there has been a renewed interest in solid mechanics from the physics community. Condensed-Matter Physicists, for example, are sometimes revisiting problems of Mechanics and Materials understood to be “classical” by Mechanical Engineers. Such an interest has brought a reinvigorating stimulus to the Solid Mechanics community in the area of geometrically non-linear problems of thin or slender structures, meta- and programmable materials and actuators, multi-physics interactions (surface tension, fluid-structure, magneto- or electrostatic coupling, responsive materials such as liquid-crystal elastomers), singularities and localization, deployable structures. An example is “Buckling”, which was often viewed as problematic for the operation of elastic structures but is now exploited in the design of structures that deliberately change shape while retaining structural integrity. Entertaining the notion of shape-change by itself has permitted intrigue beyond the mechanical world into ever-changing biological structures. Understanding Nature’s principles of growth and form has subsequently inspired the development of synthetic “soft matter” for broader applications and applied solutions where traditional methods had faltered. There is much to be discovered or “rediscovered” in bringing together, again, the research communities from Solid Mechanics and Physics. By themselves, they have their own approaches and paradigms, but they focus on the same pursuit of compact analytical models and the deep understanding of phenomena. Moreover, they gather around common tools, from nonlinear mathematics, precise desktop experiments, to computational software including finite element analysis and computer graphics. Our mini-symposium therefore encourages our colleagues and friends to celebrate structures and their remarkable performances in a broad range of settings and applications.

Please note that a mini-symposium of the Mechanics and Physics of Fracture is taking place in parallel, see MS 3-4