Variational methods and applications in solid mechanics

Organizers:

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In recent years, much attention has been devoted both to analytical studies and numerical simulations in order to confirm and allow for a better understanding of the experimental results in Solid Mechanics. In particular, because of the many applications to industry, biology and science, many topics show to be greatly relevant, such as the prediction of Fracture Propagation, the Theories of Dislocations and Structures Deformations in order to detect, at several scales, possible disarrangements of materials. Moreover, in order to propose a good description of samples composed by 'multi-materials', several optimal design problems and homogenization issues naturally appear. Very often these different problems may share some common features that we aim at enlightening with this meeting. Indeed, the mini-symposium is aimed to favor the interaction of specialists in the description and modeling of structures and materials, mainly focused to deal with elasto-plasticity problems, stratified materials, thin structures, and multiscale analysis. The target consists of sharing ideas, tools and skills from several backgrounds and viewpoints. The complexity of the topics requires a wide spectrum of mathematical and mechanical knowledge, theories, and techniques. The meeting will be the occasion to merge several approaches to similar problems, stimulate discussions and create synergies. We assume that the communicated results as well as shared open problems will offer the possibility, not only of disseminating knowledge, but to establish new scientific collaborations and improve existing ones among the invited scientists and all the others that would like to join or will be addressed by the Scientific committee. The talks will be focused on the following topics:

- Homogenization of multiscale problems under differential constrains
- Fracture: propagation of cracks in brittle materials.
- Mathematical models devoted to describe Hydraulic fracture
- Structured Deformation theory devoted to the analysis of polycrystals
- Analytical theories to model thin structures
- Dislocations
- Optimal design in Elasto-Plastic Materials

Speakers who already confirm their participation:

Ana Cristina Barroso[1], Roberto Citarella[2], Josè Matias[3], Marco Morandotti[4], David Owen[5], Roberto Paroni[6], Rodica Toader[7],

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