MULTISCALE DIRECT AND INVERSE PROBLEMS IN ELASTICITY: ANALYSIS AND APPLICATIONS TRACK NUMBER 300

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ABSTRACT

Multiscale methods play an extremely relevant role in computational mechanics, and the usage of multiscale approaches has been demonstrated to be effective across many fields, such as Micro-Mechanics, Composite Materials, Biomechanics, Smart Materials, Fracture Mechanics, Thin Structures, Porous media, among others.

The use of computational methods to resolve problems on different scales, and their mutual interaction, has produced an avalanche of novel challenges, numerical methods, and ideas, leading to different techniques that make possible the understanding of mechanical effects from mesoscale to macroscale.

Although a considerable experience on the potential of these techniques has been acquired over the last years, these methodologies still lack unified consensus within the scientific community and engineers. This topic is wide and its applications in diverse areas of science and industry are requiring novel results.

The goal of this minisymposium is to gather together experts in the area of multiscale elasticity, interested in the analysis and application of multiscale methods both for the solution of direct and inverse problems. Topics of the Minisymposium will include, but are not limited to, periodic, stochastic, full, small amplitude and numerical homogenization methods, multiscale data assimilation problems, topology optimization, and microstructure estimation. In particular, we encourage submissions that provide different points of view around this subject, from theoretical results to specific industrial applications. We aim to foster interdisciplinary collaboration, understanding each other challenges, and discussing the definition of possible benchmark problems suitable for the community.