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COMPUTATIONAL DESIGN OF ARCHITECTED MATERIALS: FROM THEORETICAL ASPECTS TO APPLICATIONS

TRACK NUMBER 500- MATERIALS BY DESIGN

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ABSTRACT

Computational material design (CMD) is an emerging area of Computational Mechanics. The possibility of fabrication of parts, components and devices, made of computationally designed architected material to be manufactured via cutting edge fabrication techniques (e.g. additive manufacturing), opens new opportunities for applications of scientific, social and industrial relevance, and, in turn, to use classical and novel numerical tools for their design. By architected materials we mean those with optimized and engineered topologies, arrangements and morphologies at any of the material scales.

The MS aims at gathering researchers interested in computational design of these architected materials including issues ranging from the computational aspects to their connection with specific applications and the manufacture of the corresponding components. In particular

• Computational methods for optimal design of materials with applications to structural, acoustic, thermal, mechanical, biomechanical, electromagnetic etc., realms.

• Computational material design of metamaterials and their applications to fields of science and engineering

• Consideration of manufacturing techniques in computational material design

• Hierarchical and simultaneous design of material and components

• Multiscale computational material design

• Computational design of arrangement in composite materials