Multiscale Methods for Composites and Heterogeneous Materials

Track 1000

Mini-symposium organized by:

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This symposium deals with multiscale methods for composites and materials with heterogeneous subscales involving arbitrary loading scenarios including multiphysics conditions. Multiscale approaches in this symposium encompass both semi concurrent procedures based on RVE and computational homogenization schemes, on the one hand, and concurrent methods, which horizontally couple problem subdomains that are resolved at different scales, on the other hand.

Topics of interest include:

- Semi concurrent and concurrent multiscale procedures;
- FEM, adaptive Poly-FEM, VEM, meshless and other discretization methods;
- Non-linear and dissipative material behavior;
- Continuous and porous media.;
- Coupled problems including thermo-hydro-mechanical failure;
- Strong discontinuities in brittle and ductile materials;
- Enriched finite element formulations to capture discontinuities, X-FEM, partition of unity methods and others;
- Discontinuous Galerkin technique and cohesive elements;
- Adaptive discretization methods;
- Regularization and strain localization techniques;
- Dynamic effects;
- Bio-, micro- and nano- mechanics;
- Crack tracking algorithms;