MESH GENERATION AND MESH ADAPTIVITY: METHODS AND APPLICATIONS

Organized by

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Recently, special effort is focused on adaptive meshing methods. Such methods alter the mesh in order to increase the accuracy of the numerical solution of the associated partial differential equation (PDE). Three main strategies for mesh adaptation have been proposed. In particular, the mesh may be adaptively refined in regions of the mesh in which the numerical solution of the associated PDE has small-scale features; similarly, the mesh may be adaptively coarsened in regions with large-scale PDE features. Another strategy is to apply local high-order approximation to the mesh in order to achieve greater solution accuracy. Finally, the mesh may be moved in response to a deforming geometric domain.

The goal of the minisymposium is to bring together researchers who develop original meshing techniques or novel adaptive meshing methods with those who apply adaptive meshing techniques to various sciences and engineering applications. The minisymposium will feature talks by mathematicians, computer scientists, scientists, and engineers who work in the field of adaptive meshing. Topics are (but not limited to)

- Structured, unstructured, Cartesian, and hybrid meshing techniques
- High-order finite elements, and mesh generation
- Optimal meshing, centroidal Voronoi tessellation
- Mesh adaptation, metrics, and anisotropy
- Mesh refinement, coarsening, smoothing, untangling, optimization and simplification
- Dynamic mesh modifications such as moving meshes, level set methods, and mesh morphing
- Parallel mesh data structure
- Mesh partitioning and coloring
- Parallel meshing, mesh streaming, and real time meshing techniques