

Mesh adaptation and approximation tools in finite elements and spline-based methods

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This mini-symposium brings together recent developments in mesh adaptation and data approximation in the frame of finite elements, isogeometric analysis and related applications. The numerical approximation of PDEs goes through the discretization on a discrete finite element or (curved) isogeometric mesh. To manipulate data on such a structure, while preserving computational efficiency as well as robust approximation, few key challenges are in place. First, mesh refinement techniques, by means of subdivision, polynomial degree elevation, mesh adaptation which give rise to h – p – k – r –refinement approaches. Second, efficient approximation of data, which leads to the development of adapted projection and approximation methods, interpolation or quasi-interpolation schemes.

Speakers

- Mustapha Bahari, Inria, France, `mustapha.bahari@inria.fr`
Optimal Moving Mesh Solver for Parabolic Equations
- Ayoub Belhachmi, U. of Lorraine-CNRS, France, `ayoub.bel-hachmi@univ-lorraine.fr`
Anisotropic smoothing energy for geological data interpolation
- Cesare Bracco, U. of Florence, Italy, `cesare.bracco@unifi.it`
Hierarchical systems of generators of spline spaces for quasi interpolation
- Angelos Mantzaflaris, Inria, France, `angelos.mantzaflaris@inria.fr`
A Performance Comparison of r -and h -Adaptive Isogeometric Analysis
- Michelangelo Marsala, U. of Florence, Italy, `michelangelo.marsala@unifi.it`
Isogeometric analysis with hierarchical almost $C1$ biquadratic splines