ADAPTIVE MESHING AND NON-CONVENTIONAL DISCRETIZATIONS

TRACK NUMBER : 700

BRUNO LEVY*, STEPHANE BORDAS†

* Inria Nancy Grand-Est
Rue du Jardin Botanique, 54600 Villers-lès-Nancy, FRANCE
Bruno.Levy@inria.fr https://members.loria.fr/BLevy/

† Luxembourg University
Maison du Nombre, 6 Avenue de la Fonte,
L-4364 Esch-sur-Alzette, Luxembourg
stephane.bordas@gmail.com
https://wwwfr.uni.lu/recherche/fstc/research_unit_in_engineering_sciences_rues/members/stephane_bordas

Key words: Discretization, interfaces, adaptive meshing, dynamic meshing

ABSTRACT

This minisymposium aims at gathering researchers in numerical simulation, mathematics and numerical geometry, with the goal of fostering new research approaches on adaptive meshing and non-conventional discretizations.

Accurately tracking interfaces and heterogeneities is a challenging issue in fluid dynamics (free surfaces, shocks), structural mechanics (cracks) and topological optimization. With this minisymposium, we take a multi-disciplinary approach to the problem, and aim at connecting researchers in numerical geometry, computational sciences and applied mathematics. In particular, we are interested in computer simulation with (generalized) Voronoi meshes [1], [2], [3], [6] and mesh-adaptation techniques based on error estimation and distance functions [4], [5]. In particular, we are very interested in discussing applications of Optimal Transport [2],[3],[7],[8] and encouraging scientific discussions on this topic, with potential interesting applications in adaptive meshing and efficient methods for tracking interfaces and hetereogeneities. We plan to invite contributions from the following research groups:

Semi-discrete optimal transport and fluid dynamics: Quentin Merigot/Thomas Gallouet

Topological optimization: Pascal Frey/Gregoire Allaire/Charles Dapogny

Mesh adaptation: Frederic Alauzet/Adrien Lozeille Boundary conditions: Franz Chouly

Voronoi-based fluid simulation and astrophysics: Roya Mohayaee/Volker Springel

Computer graphics: Fernando de Goes / Mathieu Desbrun / Chris Wojtan
REFERENCES


