

Approximated boundary methods: modelling, mathematical analysis and simulations

Organizers: Michel Duprez¹, Vanessa Lleras², Alexei Lozinski³, and Guglielmo Scovazzi⁴

¹University of Strasbourg, France, michel.duprez@inria.fr

²University of Montpellier, France, vanessa.lleras@umontpellier.fr

³University of Franche Comté, France, alexei.lozinski@univ-fcomte.fr

⁴Duke University, United States, guglielmo.scovazzi@duke.edu

Short Description

In this mini-symposium, we will focus on different approximated boundary finite element methods (fictitious domain methods, immersed boundary methods, XFEM, cutFEM, ϕ -fem, shifted boundary methods. . .) introduced in order to avoid the generation of meshes conforming to the boundary or to the interfaces of the considered simulation domain. These methods have been attracting ever increasing attention during the past fifteen years and are mainly used for evolution problems and complex geometries. Speakers will address modelling aspects, mathematical analysis of numerical schemes, stabilization and preconditioning of variational formulations, integration of cut cells, adaptivity of meshes, and implementational issues when dealing with complex engineering problems. The goal is to bring together experts from academia and industry to discuss the most recent advances and emerging research directions in this field.