

Avviso di seminario



Giovedì 9 Luglio - ore 9:30

Aula 4, Edificio A
Dipartimento di Ingegneria e Scienze Applicate
sede di Dalmine (BG), viale Marconi 5

il

prof. Daniele A. Di Pietro
(Università di Montpellier)

terrà il seguente seminario

**An introduction to Hybrid High-Order (HHO)
finite element methods**

La partecipazione è aperta a tutti

Per informazioni: prof. Marco Savini - marco.savini@unibg.it - 0352052020

Abstract

Hybrid High-Order (HHO) methods are last generation discretization methods for PDE problems with a number of appealing features:

- the capability of handling general polyhedral meshes with a construction independent of the space dimension;
- the possibility of arbitrarily selecting the approximation order;
- the reproduction of desirable continuum properties at the discrete level (integration by parts formulas, operator kernels, symmetries, commuting properties, etc.);
- reduced computational cost.

HHO methods for diffusive problems rely upon two ingredients: a high-order reconstruction operator inside cells from the cell- and face-based unknowns, and a stabilization operator linking locally cell- and face-based unknowns while preserving the high order of the reconstruction. The discrete problem is assembled cell-wise as in standard finite elements, and cell-based unknowns can be eliminated by static condensation, leading to a symmetric, positive definite linear system coupling the face-based unknowns.

We provide here an introduction to HHO methods for model problems relevant in continuum mechanics, highlight the general ideas, and present a panel of theoretical results and numerical examples.