MESHLESS METHODS
Métodos sem Malha
Método sin Malla

Organizers:

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Session description:

Over the past twenty years, meshless methods became one of the major interest focus in computational mechanics. Since then several meshless methods were developed and applied to various fields of computational mechanics, and as expected only the most stable and accurate prevailed. Nevertheless, even today there is room for innovation and improvement in the meshless methods field. Within the classical meshless approach, researchers seek daily for more efficient test functions, as well as new numeric integration schemes more stable and accurate. Everyday, due the highly geometric flexibility and the numeric stability, meshless techniques are applied to new science fields, such as the simulation of fluid flow and fluid/solid interaction in biomechanics or crack tip propagation modelling.
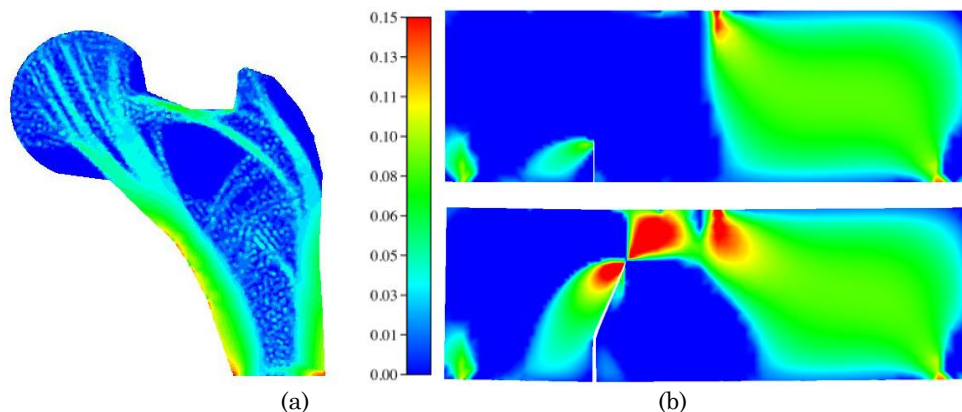

Figure 1 – Meshless methods in (a) bone tissue remodelling analysis and (b) crack propagation.

Nowadays meshless methods, using approximation or interpolation functions, collocations techniques and particle methods are used by the scientific community to solve several engineering problems, from fluid mechanics to biomechanics. The capability of handling efficiently large deformations of the computational mesh and the re-meshing low computational cost explain the variety of scientific fields covered by meshless techniques.

This session focuses in the recent development and improvement of existent meshless methods techniques, as well as in the presentation of new meshless approaches and application fields.

Organizers:
Carlos J. S. Alves and Vitor M. A. Leitão

Title: Meshless Methods

Affiliation: I.S.T.

Description:
Meshless methods consider the approximation of functions and partial differential equation solutions without the use of a classic mesh discretization of the domain or its boundary.