

**A Symposium on**

# **Advanced Discretization Techniques in Structural Mechanics**

Promoted by

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**In Conjunction with**

## **IRF2016**

**5<sup>TH</sup> INTERNATIONAL CONFERENCE**

# **INTEGRITY - RELIABILITY - FAILURE**

**Porto, Portugal**  
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**(<http://paginas.fe.up.pt/clme/IRF2016/>)**

The limitations of conventional numerical methods, for solving new demanding problems, become more evident with the increase of phenomena to be simulated. Several industrial and academic interest problems cannot be easily analysed using classical numerical methods. The simulation of the extrusion or the material moulding, in which it is necessary to consider an excessively large deformation of the computational mesh, requires advance discretization techniques in order to avoid the locking phenomenon or a constant mesh rearrangement. The prediction of the crack propagation path, the simulation of interface dynamics in multiphase flows or the cellular growth in biomechanics, demand a flexible and mesh independent numerical technique. In addition, recent advance discretization techniques permit to reduce significantly the simulation computational cost, permitting the analysis of more realistic applications. Aiming to overcome the limitations of classical methods, several advanced discretization techniques have become very popular in the research community in the last decade, such as:

- Extended Finite Element Method (XFEM)
- Discrete Element Method (DEM)
- Lattice-Boltzmann-Method (LBM)
- Material Point Method (MPM)
- Meshless methods
- Molecular Dynamics (MD)
- Moving Particle Simulation (MPS)
- Particle Finite Element Method (PFEM)
- Smoothed Particles Hydrodynamics (SPH)

Extended abstracts of **two full pages** should be written in the same format as the full papers for the CD-ROM (no limitation in length for these):

<i>Paper Size:</i>	A4, single column
<i>Margins:</i>	Top page 3,0 cm; Bottom 2,5 cm, Left & Right 2,5 cm
<i>Font and line spacing:</i>	Times New Roman; single space
<i>First 3 lines:</i>	Should be left blank, size 10, reserved for the editors
<i>Title:</i>	Begins at the 4 <sup>th</sup> line, capital letters, size 14, bold, left alignment
<i>Authors Names:</i>	Size 10, left alignment, two lines interval from title above
<i>Authors affiliation:</i>	Size 10, left alignment, two lines interval from text below
<i>Main Text:</i>	Size 12, full justification, 6 pt space after paragraph, no indentation
<i>Headings:</i>	Capital letters, size 12, bold, one line interval from text above
<i>Legends (Figs &amp; Tables):</i>	Size 10, one line interval from text above and below
<i>References:</i>	References to cited literature should be identified in the text with author(s) name(s) and year of publication (ex: Mascarenhas, 1997). Full citations should be grouped at the end of the paper and in alphabetical order of first author's name. Always give inclusive page numbers for references to journal articles and a page range for books. Each reference must be cited in the text.

A sample abstract is available for download at:

[http://paginas.fe.up.pt/clme/IRF2016/abstract\\_sample.doc](http://paginas.fe.up.pt/clme/IRF2016/abstract_sample.doc)

which can also be used as template.

The *Extended Abstracts* are due by **11 JANUARY 2016**, and those accepted will appear in a book which will be made available to delegates of IRF 2016 during the event. Full papers will also be compiled in a CD-ROM, and improved versions of selected papers will be considered for publication in indexed International Journals on the conference main topics.

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