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PARTICLE-BASED METHODS IN COMPUTATIONAL MECHANICS

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ABSTRACT

This Thematic Session address both, the fundamental basis and the applicability of state of the art particle-based computational methods that can be effectively used for solving a variety of problems inside the scope of solid mechanics, thermal problems, fluid mechanics and fluid-structure interactions problems.

Significant advances have been made in discrete element method (DEM), smooth particle hydrodynamic method (SPH), particle finite element method (PFEM), material point method (MPM), moving particle semi-implicit method (MPS) and atomistic and quantum mechanics-based methods, among others. The coupling of these methods with standard numerical procedure such as finite element method (FEM), finite difference method (FDM) and also with meshless techniques are included in the scope of this Thematic Session.