

## MESHFREE METHODS: NEW DEVELOPMENTS AND APPLICATIONS

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### ABSTRACT

Over the last three decades, a number of 'mesh free' or 'particle' methods have appeared in the literature and in the references cited in them. The interest in these methods stems from two main lines of reasoning:

- Even though mesh generation has progressed rapidly over the last decade, it is difficult to generate volume filling grids for problems characterized by complex geometries and/or complex physics. The generation of points instead of a mesh is seen as an easier and faster task.
- The construction of higher-order schemes on unstructured grids has encountered severe obstacles in the areas of stability, operation count and storage. The use of gridless schemes should facilitate the construction of efficient higher order discretizations.

The objective of this mini-symposium is to be a meeting place to present, analyze and discuss new developments and challenges present in use of these approximation techniques for solving partial differential equations. The main topics of interest that are to be addressed in this mini-symposium include, among others:

- Analysis of the shape functions and weight functions
- Strategies for constructing interpolation subdomains, and domains of integration
- Convergence, consistency and error analysis
- Adaptive techniques for meshless methods
- Advantages and disadvantages of meshfree methods based on weak, strong and mixed formulations
- Applications of meshfree methods to new areas of science and engineering

We invite all researchers working in meshfree or related methods to present recent developments and applications.