

## MESHFREE AND PARTICLE METHODS: RECENT ADVANCES IN THEORY AND APPLICATION

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### ABSTRACT

Particle methods have many valuable computational and theoretical properties that make them attractive across multiple science and engineering disciplines. For instance, approximation and discretization performed without the need for an underlying mesh offers significant advantages for problems where it is either computationally prohibitive to maintain a high-quality mesh, or the evolution of a mesh under Lagrangian motion leads to degenerate cells. Examples include high-velocity impact, biomedical applications, and material science.

Although development and applications of particle methods have made great strides in the past decade, their wider utilization and adoption still faces numerous theoretical and practical challenges. The purpose of this minisymposium is to bring together researchers working on a representative cross section of theory and application of modern particle and meshfree methods. The speakers will present recent work developing and applying techniques with a specific focus toward conservation properties, rigorous approximation and stability theory, and large-scale implementation.