

ADVANCED PARTICLE METHODS FOR CONTINUUM MECHANICS

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ABSTRACT

Meshfree and particle methods have been developed for continuum mechanics, such as, fluid dynamics, solid mechanics, etc. The topics include theoretical studies of the methods, spatial and temporal discretization, higher-order schemes, algorithms, boundary conditions, numerical stability, multi-resolution techniques, high-speed solvers, particle shifting, parallel computing, etc. Physical modeling for free surfaces, fluid-solid interaction, permeation, plasticity, fracture, non-Newtonian, visco-elasticity, rigid bodies, multi-phase flows, surface tension, wettability, phase change, heat transfer, chemical reaction, etc., is the subject of discussion. Application to benchmark problems, practical problems, large-scale problems, validation studies is equally important.