عنوان مقاله:

Verification and Validation of Common Derivative Terms Approximation in Meshfree Numerical Scheme

محل انتشار:

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خلاصه مقاله:

In order to improve the approximation of spatial derivatives without meshes, a set of meshfree numerical schemes for derivative terms is developed, which is compatible with the coordinates of Cartesian, cylindrical, and spherical. Based on the comparisons between numerical and theoretical solutions, errors and convergences are assessed by a posteriori method, which shows that the approximations for functions and derivatives are of the second accuracy order, and the scale of the support domain has some influences on numerical errors but not on accuracy orders. With a discrete scale h=0.01, the relative errors of the numerical simulation for the selected functions and their derivatives .are within 0.65%

کلمات کلیدی:

Meshfree method, Smoothed particle hydrodynamics, Physics evoked cloud method, Approximation of spatial derivative, Verification and validation