

Abstract Submitted
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A Lagrangian scheme based on characteristics theory for simulating two-dimensional flow on unstructured grids¹ LI TANG, YUTAO SUN, Institute of Applied Physics and Computational Mathematics — The paper presents a second order cell-centered finite volume method of 2D Lagrangian hydrodynamics based on semi-discrete framework. The velocity and pressure on the vertex of a cell are computed on the basis of the characteristics theory. Then, the two variables are used to compute the numerical flux through the cell interface by the trapezoidal integration rule. By combining with some reconstruction procedure, the method is extended to second order. An entropy modification strategy is proposed for simulating complex compressible flow. Several numerical experiments confirm good properties of convergence and symmetry of the method. The method permits large CFL number and can be applied on the structured and unstructured grids. It is also very robust in the multi-materials flow simulation.

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