

Numerical study of fluid-structure interaction with macro-scale particle methods

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ABSTRACT

The problems of fluid-structure interaction (FSI) are often encountered in different industries as well as the nature. The macro-scale particle methods are advantageous in the FSI simulations, which include smoothed particle hydrodynamics (SPH)^[1,2], macro-scale pseudo-particle modelling (MaPPM)^[3], and so forth. Compared with the grid-based numerical techniques, particle methods could provide the flow and/or deformation details without complex tracking of interfaces^[4,5]. The progress of FSI simulation of multiphase flows with rigid particles is presented, and some major findings about heterogeneous structures are stressed^[6,7]. Meanwhile, weakly compressible outflow from elastic tube is investigated, and some preliminary results of flow details are presented. The possible development of macro-scale particle methods in the FSI simulation is prospected finally.

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