

Colagrossi, Andrea; Landrini, Maurizio

Numerical simulation of interfacial flows by smoothed particle hydrodynamics. (English)

Zbl 1028.76039

J. Comput. Phys. 191, No. 2, 448-475 (2003).

Summary: An implementation of smoothed particle hydrodynamics method is presented to treat two-dimensional interfacial flows, that is, flow fields with different fluids separated by sharp interfaces. Test cases are presented to show that the present formulation remains stable for low density ratios. In particular, results are compared with those obtained by other solution techniques, showing a good agreement. The classical dam-break problem is studied by the present two-phase approach, and the effects of density-ratio variations are discussed. The influence of air entrapment on loads is discussed.

MSC:

76M28 Particle methods and lattice-gas methods

76T10 Liquid-gas two-phase flows, bubbly flows

Cited in **1** Review
Cited in **220** Documents

Keywords:

two-dimensional interfacial flows; multi-phase flows; fluid-structure interactions; sharp interfaces; low density ratios; air-cushion effect; smoothed particle hydrodynamics method; dam-break problem

Full Text: [DOI](#)

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