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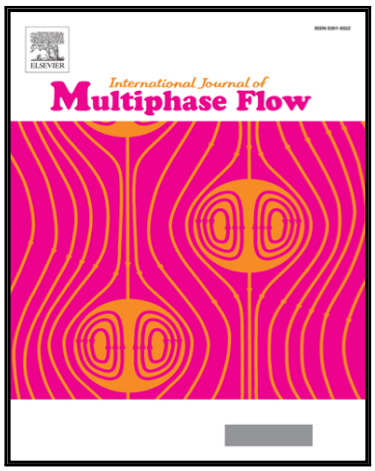

An approach to couple velocity/pressure/void fraction in two-phase flows with incompressible liquid and compressible bubbles

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Highlights

- A stable numerical scheme for velocity/pressure/void fraction coupling in bubbly flows is presented.
- Bubble compressibility is incorporated into a two-phase solver with incompressible liquid.
- Pressure waves can be simulated for void fractions in the range 0.001 to 0.99.
- Tests and demonstrations are presented for 1D, 2D and 3D cases, including a ship hydrodynamics problem with complex geometry and overset grids.
- First time the two phase flow around the research vessel Athena could be simulated for high speed.

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