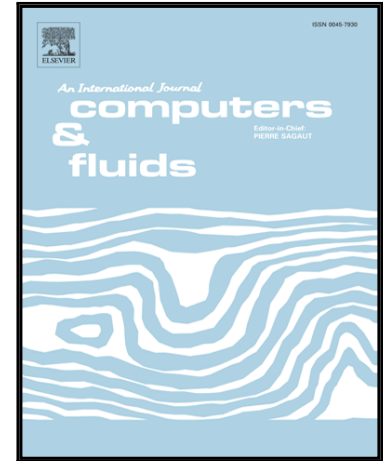


## Accepted Manuscript

A novel two-dimensional coupled lattice Boltzmann model for incompressible flow in application of turbulence Rayleigh-Taylor instability

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**Highlights**

- A novel coupled lattice Boltzmann model is developed for two-dimensional incompressible Rayleigh-Taylor instability.
- A modified equilibrium distribution function is proposed in this paper.
- A mesoscopic discrete force is in the modified equilibrium distribution function.
- Excellent agreement is demonstrated between the present results and the other numerical method or analytical solution.
- The present model is an efficient numerical method for Rayleigh-Taylor instability.

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