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A two-phase lattice Boltzmann study on injection filling of cavities with arbitrary shapes

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Highlights:

- The numerical model is capable of simulating multiphase flows at relatively large density ratios and low viscosities with thermodynamic consistency.
- Two filling regimes namely steady and splashing are identified.
- The threshold Re number for onset of splashing is investigated.
- A good agreement is observed between the present LBM results with those of the SPH method reported in the literature.
- The filling sequence of the branches in multi-branch header cavity is different for low and relatively high Re numbers.

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