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A Compressible Lattice Boltzmann Finite Volume Model for High Subsonic and Transonic Flows on Regular Lattices

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**Highlights**

- A lattice Boltzmann finite volume model is developed for compressible flows.
- LB equation is discretized by an asymptotic preserving finite volume scheme.
- The micro-velocities discretization is adopted on regular low-symmetry lattice.
- The model is validated by Sod shock tube and two-dimensional Riemann problem.

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