

Abstract Submitted  
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**Theoretically Simple Thermal Lattice Boltzmann Method and Its Application to a 2-D Shock Tube Simulation** JAE WAN SHIM — We propose a new approach to derive the thermal lattice Boltzmann method (LBM), and show its accuracy and stability by a 2-D shock tube simulation. The derivation is as simple as that of the isothermal LBM obtained by using Taylor expansion. We do not use Gauss-type quadratures because the results are inapplicable in regular lattices for thermal flows. The derivation enables us to simulate thermal flows with accuracy, stability, and use of regular lattices, simultaneously.

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