

## No H theorems for some lattice Boltzmann models

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In this talk, I will present a rigorous explanation why there is no H theorems for many well-known lattice Boltzmann equations widely used in practice. These include 2-dimensional and 3-dimensional athermal and thermal models. The proof also shows that some models satisfy H theorems but only for sufficiently small Mach numbers. Thus, we clarify a long-standing speculation about the stability of the lattice Boltzmann method.

This talk is based on joint works with Li-Shi Luo, one of which is [1].

### References

- [1] W.-A. YONG & L.-S. LUO, *Nonexistence of H theorems for athermal lattice Boltzmann models with polynomial equilibria*, Phys. Rev. E **67**, 051105 (2003).