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Fluctuating Lattice Boltzmann GOETZ KAEHLER, ALEXANDER WAGNER, North Dakota State University — Fluctuations are important for many hydrodynamic phenomena such as colloid diffusion or phase-separation near the critical point. However, the standard LB-schemes do not take fluctuations into account. Based on Ladd's [1] and later Adhikari's [2] work we explain how one can practically implement noise in Lattice Boltzmann algorithms for different dimensionality and base velocity sets. We also present a new velocity moment method for deriving the hydrodynamic equations from the underlying Multi Relaxation Time models [3,4]. This sets the foundation for formulating more general fluctuating lattice Boltzmann methods for energy conserving thermal systems and multi-component systems.

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