

Models / Features

- Various 2D/3D stencils
- Moment-based methods (MRT)
 - Efficient SRT and TRT implementations
 - Moment based construction
 - Various equilibria
 - Forcing approaches
- Different collision spaces: central/cumulant
- Entropic stabilisation
- Locally varying relaxation rates, e.g. to include in turbulence models
- Coupling of multiple kernels (e.g. thermal simulations)

Hardware / Optimisations

- GPU / CUDA and OpenCL support
- Guided or manual vectorisation (AVX2, AVX512, Neon, SVE, VSX)
- Inner loop splitting to improve prefetching due to a lower number of load/store streams
- Sparse (list-based) kernels for domains with many boundary cells
- Data layout: simple two grid stream collide, AA-pattern, EsoTwist
- Generation of boundary treatment in the LBM update rule