

Asymptotic Investigation of Lattice-Boltzmann Methods and Grid Coupling

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The classical Lattice-Boltzmann method can only be used on uniform grids. In order to permit also local grid refinements, grid patches with different mesh size have to be coupled. New algorithms for the grid-coupling are considered, which are designed for the diffusively scaled Lattice-Boltzmann equation. The underlying ideas come out of a direct asymptotic analysis. Examples with different Lattice-Boltzmann models will be provided for illustration.