

Analysis of lattice Boltzmann initialization routines

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The appearance of initial layers is a phenomenon that can affect LB simulations. The reason is an inconsistent initialization of the discrete populations which leads, for example, to an incorrect initial pressure field that is not in accordance with the initial velocity.

We present an initialization routine proposed by Luo et al. which defines the initial pressure with second order accuracy. Using the asymptotic expansion technique, some features of the algorithm will be analyzed; in particular it will be shown how to improve the procedure regarding computational efficiency and accuracy.