

Lattice Boltzmann numerical prediction of fluid flow in various shapes of shear driven cavity

Abstract :

Lattice Boltzmann numerical method was employed to simulate an incompressible fluid flow in enclosure. Thorough derivation of macroscopic hydrodynamics equations from the continuous Boltzmann equation is performed. After showing how the formulation of the mesoscale particle dynamics fits in to the framework of lattice Boltzmann simulations, numerical results of lid-driven flow inside square and triangular cavities are presented to highlight the applicability of the approach.