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Experimental and Numerical Simulation Investigation of Flow Over a Cavity Using Multi-Relaxation Time Lattice Boltzmann Method

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Abstract: *This article provides experimentally and numerically study of the multi-relaxation time lattice Boltzmann method (LBM) for computes the flow structure characteristics inside a rectangular cavity. The inlet fluid flow has been applied from the left inlet of the channel with various Reynolds number (Re) which are 100 and 400 at consistent Aspect Ratio (AR) 4 for investigate the fluids flow structure characteristic between the both findings of experimental and numerical study. The results were compared with the conventional single-relaxation time lattice Boltzmann scheme and benchmark solution for such flow configuration. The results of the experimental and numerical simulation indicate that multi-relaxation time lattice Boltzmann scheme demonstrated good agreement, which supports its validity in computing fluid flow problem.*

Keywords: Lattice Boltzmann Method; Multi Relaxation Time; Reynolds Number; Aspect Ratio.