Particle movement in shear cavity flow for different Stokes number using lattice Boltzmann method

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ABSTRACT
In this paper, lattice Boltzmann scheme is used to simulate particle flow in a steady incompressible flow inside a square cavity. Numerical simulations are carried out for Reynolds number of 130, 400 and 860. Comparisons for three different Stokes number of Stokes number, St = 0.06, St = 0.21, St = 0.41 are carried out under Reynolds Number 400. The governing equation use is the double-population lattice Boltzmann formulation. Two-dimensional nine velocity model is used for the computation of velocity field. The results obtained by using compact visual FORTRAN are compared with the results found in the literature review. Present study found that lattice Boltzmann scheme is able to carry out equivalent results as conventional scheme.

KEYWORDS:
lattice Boltzmann scheme; Lid-driven square cavity

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