

عنوان مقاله:

Simulation of Non-Newtonian shear flow over a circular cylinder

محل انتشار:

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خلاصه مقاله:

In this study, shear flow over a circular cylinder has been investigated numerically using lattice Boltzmann method. Non-Newtonian behavior of fluid has been considered using power law model for non-Newtonian fluids. In particular, the effects of power law index ($0.4 \leq n \leq 1.8$) and shear rate ($0 \leq SR \leq 0.2$) on vortex pattern and flow induced forces parameters at a fixed Reynolds number ($Re=100$) are presented in detail. Results show that the vortex-shedding frequency significantly decreases with increasing the power-law index. Shear rate also plays the same role and reduces the Strouhal number as it grows. This effect becomes more evident as the shear rate gets bigger.

کلمات کلیدی:

Multiple-relaxation-time Lattice Boltzmann method; Power-law fluids; Drag coefficient; Lift coefficient; Shear circular cylinder

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