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عنوان مقاله:

Lattice Boltzmann Method With Ghost Flow Curve Boundary For Simulation Aerodynamic Force Around Airfoil

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خلاصه مقاله:

In this paper, a ghost flow in lattice Boltzmann method is developed to simulate aerodynamic flow around on airfoil for curved boundaries. A bilinear interpolation is developed to simulate for two-dimensional fluid flow around airfoil (NACA 0012). The results of the presented method are compared to those available in the literature from conventional numerical methods, and excellent agreement is observed. Curved boundary treatments have been suggested as a means of improving the accuracy of the stair-shaped approximation conventionally used in LBM simulations and the new scheme can capture the details of flow more accurately and more stable than the other schemes, at least in low-Reynolds-number flow. This method is presented to solve fluid dynamics based on the theory molecule kinetics; an extended Lattice Boltzmann equation is put forward to solve force in Reynolds number range that be applicative for (Micro-Air-Vehicles (MAVs.

کلمات کلیدی:

lattice Boltzmann, ghost fluid method, Curved boundary, Aerodynamic

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