

عنوان مقاله:

Flow Simulations with Ultra-Low Reynolds Numbers over Rigid and Flexible Airfoils Subject to Heaving and Flapping Motions

محل انتشار:

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خلاصه مقاله:

Numerical simulations of flow patterns at ultra-low Reynolds numbers over rigid and flexible airfoils are presented, and the influence of flexibility on main aerodynamic properties are discussed. Typical unsteady flights like heaving and flapping are, in terms of Reynolds and Strouhal numbers, reduced frequencies and FSI (Fluid Structure Interaction) factor, are valuated. It has been found that for some flexibility levels, the aerodynamic forces and propulsive efficiency are enhanced if compared with a rigid airfoil. The mathematical technical approach used to solve the laminar-incompressible flow equations coupled with structural algorithms, is described

کلمات کلیدی:

Aerodynamic wing sections, CFD, Fluid structure interaction, Low Reynolds, Flexible airfoil, Unsteady flows, Partitioned method, Finite element method

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