航空动力学报
JASP Journal of Aerospace Power
中国航空学会主办

首页　本刊介绍　编委会　投稿须知　审稿编辑流程　期刊征订　广告征订　English　选择皮肤：

Hide Expanded Menus

Numerical simulation of airfoil flows with a turbulence model

投稿时间： 2013-03-21

DOI：10.13224/j.cnki.jasp.2014.02.029

中文关键词： turbulence　airfoil　incompressible　separation　openFOAM

英文关键词：turbulence　airfoil　incompressible　separation　openFOAM

基金项目：

作者	单位
GAO Lin	National Key Laboratory of Science and Technology on Aero-Engine Aero-thermodynamics, School of Energy and Power Engineering, Beijing University of Aeronautics and Astronautics, Beijing 100191, China
JIANG Li-jun	National Key Laboratory of Science and Technology on Aero-Engine Aero-thermodynamics, School of Energy and Power Engineering, Beijing University of Aeronautics and Astronautics, Beijing 100191, China
CUI Shu-xin	National Key Laboratory of Science and Technology on Aero-Engine Aero-thermodynamics, School of Energy and Power Engineering, Beijing University of Aeronautics and Astronautics, Beijing 100191, China
GAO Ge	National Key Laboratory of Science and Technology on Aero-Engine Aero-thermodynamics, School of Energy and Power Engineering, Beijing University of Aeronautics and Astronautics, Beijing 100191, China

中文摘要：
　　Turbulent flows over AS240 and NACA4412 airfoil were simulated numerically using a two-equation turbulence model named k-ξ model. The predictions of velocity profiles and the pressure coefficient of airfoil AS240 at 8°/19° attack angle and NACA4412 at 13.87° attack angle were calculated. The results were compared with those using k-ε and k-ω models, as well as experimental data. It indicates that the new k-ξ model offers more realistic prediction than the other two models. The main finding shows that the new k-ξ model is good at predicting separated flows around airfoils, and it captures the flow feature of pressure-induced separation adequately. All calculations are implemented as per openFOAM 1.7.1(open source field operation and manipulation).

英文摘要：
　　Turbulent flows over AS240 and NACA4412 airfoil were simulated numerically using a two-equation turbulence model named k-ξ model. The predictions of velocity profiles and the pressure coefficient of airfoil AS240 at 8°/19° attack angle and NACA4412 at 13.87° attack angle were calculated. The results were compared with those using k-ε and k-ω models, as well as experimental data. It indicates that the new k-ξ model offers more realistic prediction than the other two models. The main finding shows that the new k-ξ model is good at predicting separated flows around airfoils, and it captures the flow feature of pressure-induced separation adequately. All calculations are implemented as per openFOAM 1.7.1(open source field operation and manipulation).

查看全文　查看/发表评论　下载PDF阅读器

关闭