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扰流片快速张开诱发的非定常流动研究

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Unsteady Flow Around Airfoil with a Rapidly Deploying Spoiler

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摘要 通过数值求解二维非定常可压N-S方程,研究了二维翼型上扰流片快速张开诱发的复杂非定常流动问题。利用动态重叠网格方法处理扰流片和主翼相对移动,分析了扰流片快速张开诱发的升力过冲现象及其形成机理。着重探讨了来流迎角、扰流片高度以及快速张开速率对过冲量的影响。

关键词： 计算流体力学　非定常　扰流片　重叠网格

Abstract： Transient aerodynamic response of an airfoil to a rapidly deploying spoiler is numerically investigated by solving two-dimensional unsteady compressible Navier-Stokes equations. The spoiler moving relative to a stationary airfoil is treated by a dynamic overset grid method. The mechanism of the adverse lift caused by the rapidly deploying spoiler is analyzed. Also, the effects of angle of attack, height of spoiler and rapidly deploying rate on the adverse lift are investigated.

Keywords： CFD　unsteady　spoiler　overset grid

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