

عنوان مقاله:

The Effect of Spatial Resolution on the Swirl Intensity and the Size of Vortical Structures

محل انتشار:

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خلاصه مقاله:

The effect of spatial resolution on the coherent structures in the outer region of a turbulent boundary layer which subjected to a strong adverse pressure gradient has been studied using particle image velocimetry (PIV). The experimental set-up is designed to achieve flow conditions corresponding to trailing-edge stall of an airfoil. Large sets of instantaneous velocity fields are acquired by PIV in streamwise-wall-normal planes at three different streamwise locations. The vortices are detected using λ_{ci} criteria. The essential features of the vortices and vortex packets are similar to those found in zero-pressure-gradient turbulent boundary layers. The vortices are however slightly more intense in the zero-pressure-gradient turbulent boundary layers. Some of the characteristics of the spanwise vortices are also documented.

کلمات کلیدی:

Spatial resolution, swirl intensity, spanwise vortices, vortex diameter, coherent structures

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