

Experimental Investigation of Boundary Layer Instability and Transition on a Rotating Parabola in Axial Flow

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Abstract : In this paper the boundary layer instability and transition on a rotating parabola which is sheathed shape on a rotating 30 degrees total apex angle cone have been study by smoke visualization. The rotating cone especially 30 degrees total apex angle is a well-established subject in some previous novel works and also in our previous works. But in this paper a stabilizing effect is detected by the bluntness of nose and also surface curvature. A parabola model which is satisfying those conditions (sheathed parabola of the 30 degrees cone) has been built and studied in the wind tunnel. The results are shown that the boundary layer transition occurs at higher rotational Reynolds number in comparison by the cone. The results are shown in the visualization pictures and also are compared graphically.

Keywords : transitional Reynolds number, wind tunnel, smoke visualization, rotating parabola

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