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An Investigation of Flow Control Method to Improve Cavity Flow and Store Separation Characteristics

Shuai Liu，Dun Li

China Academy of Aerospace Aerodynamics， China

A static fence is installed at the leading edge of the cavity to disturb the cavity flow field. The effective of the flow control for the store separation characteristics is Investigated through a CFD study using three dimensional viscous Cartesian grid witch can adapt complex configurations well. Viscous flow is simulated using MUSCL finite volume unstructured Cartesian grid, least square method of constrained boundary condition is presented, and LU-SGS scheme is used for time integration. Static pressure is obtained on the cavity floor to determine the effects of flow control on cavity flow characteristics. Forces and moments on the store are computed to determine the effects of the flow control method on store separation characteristics. From the conclusion, we see the flow control can improve store separation characteristics effectively and enhance the stability of the store when the store is at different position in the cavity.

Key words: cavity, store, flow control