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STUDY ON THE TRANSONIC DISTRIBUTED AERODYNAMIC CHARACTERISTICS OF LARGE LENGTH SLENDER RATIO AIRCRAFT

Abstract

In recent years, hyper-sonic aircraft has a tend to develop in the direction of large length-slenderness ratio and high thrust-to-weight ratio, that requires lighter mass and higher stiffness. This needs aero-elastic model to simulate in the aircraft design process. In this project, a future rocket is used as an example, using bidirectional fluid-structure interaction and spring smoothing method to simulate the the centralized aerodynamic and evaluate multi-physics characteristics. The aerodynamic parameters of aircraft under different Mach numbers and different attack angle is obtained. The simulation result is used to compare the results of experiment.