

移動邊界下向量推力之觀測

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摘要

The boundary layer thickness growth is proportional to the frequency of deflectors in a two-dimensional nozzle. The high frequency attenuation of the later thrust was visualized to confirm the previous dynamic transfer function. The high lateral thrust loss of a two-dimensional nozzle for turning angle beyond 30 degree as well as high frequency operation limits the implementation of fly control. On the other hands, an axisymmetric thrust-vectoring nozzle provides a much wider turning angle with a milder thrust loss. The dynamic performance of a modeled axisymmetric nozzle with 80 percent efficiency of thrust at 90 degree of turning was evaluated. The boundary layer thickness becomes less sensitive to instantaneous geometry of the nozzle for a high frequency operation. No high frequency attenuation was found on the lateral thrust. Instead, an averaged thrust is produced between the defined turning angles. The axisymmetric nozzle is more feasible than a two-dimensional one for a fast and severe maneuvering.

關鍵字：two-dimensional nozzles, axisymmetric nozzles, frequency bandwidth