

乘波飞行器构型方法研究

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摘要 高超声速飞行中, 随着马赫数的升高, 波阻和摩阻增加, 就会形成升阻比“屏障”, 而乘波飞行器构型是克服这一升阻比屏障的有效方法. 本文提出了一种变楔角楔/椭圆锥乘波体构型方法, 并基于前体/进气道一体化设计思想, 生成了高超声速乘波飞行器构型. 经数值计算与实验验证, 与传统锥形流场生成的乘波体相比, 该方法生成的乘波体不仅具有高升阻比, 而且能为发动机提供所需的高温高压均匀来流.

关键词 [乘波飞行器, 变楔角楔/椭圆锥乘波体, 气动力, 升阻比](#)

分类号

Research on waverider configuration method

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Abstract

In hypersonic flow, as the increase of Mach number, the wave drag and friction drag also enlarge, and this will form a hypersonic L/D "barrier". But waverider can efficiently overcome this "barrier". In this paper we develop a wedge-elliptical cone waverider configuration method, study on front body-scrumjet engine integration design, and create a hypersonic waverider. In terms of numerical result and wind test data, it is different from traditional waveriders that this waverider can offer not only high L/D ratio, but also the uniform flow field with high temperature and high press which is required by scrumjet engine.

Key words [waverider](#) [wedge-elliptical cone waverider](#) [aerodynamic](#) [lift-drag ratio](#)

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