



航空学报 » 2006, Vol. 27 » Issue (1) :23-28 DOI:

论文

最新目录 | 下期目录 | 过刊浏览 | 高级检索

<< Previous Articles | Next Articles >>

### 锥形流乘波体优化设计研究

耿永兵, 刘宏, 姚文秀, 王发民

中国科学院力学研究所 高温气体动力学重点实验室, 北京 100080

### Viscous Optimized Design of Waverider Derived from Cone Flow

GENG Yong-bing, LIU Hong, YAO Wen-xiu, WANG Fa-min

Laboratory of High Temperature Gas Dynamics, Institute of Mechanics, Chinese Academy of Sciences, Beijing 100080, China

摘要

参考文献

相关文章

Download: PDF (423KB) HTML OKB Export: BibTeX or EndNote (RIS) Supporting Info

**摘要** 随着马赫数的升高,波阻和摩阻增加,形成升阻比“屏障”,而乘波构型飞行器是克服这一屏障的有效途径。本文在 $Ma_{\infty}=4.0\sim 20.0$ 、高度 $H=24.0\sim 52.0$  km、圆锥角 $\alpha_c=5^{\circ}\sim 10^{\circ}$ 的条件下,以升阻比为目标函数,进行了乘波体的优化设计,讨论了对乘波体优化外形的影响因素,并给出全马赫数范围的优化乘波体外形及其气动力结果。

**关键词:** 乘波体 优化设计 空气动力学 升阻比

**Abstract:** This paper is concerned with a method of generating the optimized waverider. Both the wave drag and the friction drag increase as the Mach number becomes higher for hypersonic flow; moreover, a technique difficult will appear which is called  $L/D$  barrier. The waverider aerodynamic configuration may be a way to overcome this barrier. A family of optimized hypersonic waverider is generated and studied and the detailed viscous effects are included within the optimization progress itself. The viscous optimized process is completed with maximum lift over drag ratio as optimized objections at the conditions of  $Ma_{\infty}=4.0\sim 20.0$ , attitudes of  $H=24.0\sim 52.0$  km, and cone angle differed from  $5^{\circ}$  to  $10^{\circ}$ . Shapes and aerodynamics of waveriders with Maximum  $L/D$  at different Mach numbers are obtained.

**Keywords:** waverider optimized design aerodynamics lift-drag ratio

Received 2005-03-02; published 2006-02-25

#### 引用本文:

耿永兵;刘宏;姚文秀;王发民. 锥形流乘波体优化设计研究[J]. 航空学报, 2006, 27(1): 23-28.

GENG Yong-bing; LIU Hong; YAO Wen-xiu; WANG Fa-min. Viscous Optimized Design of Waverider Derived from Cone Flow[J]. Acta Aeronautica et Astronautica Sinica, 2006, 27(1): 23-28.

#### Service

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ Email Alert
- ▶ RSS

#### 作者相关文章

- ▶ 耿永兵
- ▶ 刘宏
- ▶ 姚文秀
- ▶ 王发民