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### 开放式气动力数值模拟系统研究

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#### DEVELOPMENT OF AN OPEN CFD NUMERICAL SIMULATION SYSTEM

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摘要

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**摘要** 气动力数值模拟系统是CFD流场解算技术、网格生成技术、数据可视化技术和网络技术相结合的产物。描述了一种运行于计算机网格环境下多任务、多用户、交互式的数值模拟软件环境—气动力数值模拟系统,该环境能计算模拟亚、跨、超音速绕流的气动力,也能方便地集成模拟不同复杂气动布局飞机流场的解算程序。介绍了其网格生成、数据可视化、系统接口等核心部分的结构和功能。

**关键词:** CFD 网格生成 接口技术 数据可视化

**Abstract:** CFD numerical simulation system is a combined technology of CFD flow solving, grid generation, data visualization and networking. This paper described an integrated interactive CFD simulation system for subsonic, transonic and supersonic flows, running in a network environment. This system can easily integrate various flow solvers for complex configurations, including panel method codes, potential flow codes, and codes for Euler and Navier Stokes equation through its unified data interface. This paper also described the development of the system architecture, the software structure, the pre processor for geometry and grid generation, the powerful flow field solvers, and the advanced data visualization subsystem.

**Keywords:** CFD grid generation data visualization data interface

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