



航空学报 » 1991, Vol. 12 » Issue (6) :231-237 DOI:

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### YIDOYU及其在飞机设计中的应用

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### YIDOYU AND ITS APPLICATION AIRCRAFT DESIGN

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摘要

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**摘要** 本文介绍了飞机结构多约束优化设计系统(YIDOYU)的主要功能、特点和程序组织概况,并着重介绍了系统的应用情况。实例应用结果表明YIDOYU是一个实用的优化设计系统,显示了其解决不同结构优化设计问题的能力和效率。

**关键词:** 结构分析 优化设计 近似技术 约束导数

**Abstract:** YIDOYU is a multi-constraint optimization system for aircraft structures. It utilizes the mathematical programming techniques to optimize the structural design under a variety of constraints-stress, displacement, natural frequency, flutter speed, static aeroelasticity (control efficiencies, divergence speed) and minimum size constrain. It also has the following functions, displacement and stress analysis, natural vibration analysis, flutter analysis, static aeroelastic analysis and fully stressed design. It has been successfully used for several wing-type structures and its ability and efficiency to solve different structural optimization problems are already shown. It has now been integrated into a CAD/CAM software-the Computer Integrated Engineering and Manufacturing(CIEM)developed by CAE.

**Keywords:** structural analysis optimal design approximation technique constraint derivative

Received 1989-05-20; published 1991-06-25

引用本文:

孙宪学;龙其豪;潘丙辰;陈文浦. YIDOYU及其在飞机设计中的应用[J]. 航空学报, 1991, 12(6): 231-237.

Sun Xianxue;Long Qihao;Pan Bingchen;Chen Wenpu. YIDOYU AND ITS APPLICATION AIRCRAFT DESIGN[J]. Acta Aeronautica et Astronautica Sinica, 1991, 12 (6): 231-237.

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