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复合材料飞机结构设计许用值及其确定原则

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DESIGN ALLOWABLES OF COMPOSITE AIRCRAFT STRUCTURES AND THEIR DETERMINATION PRINCIPLES

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摘要

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摘要 阐明了复合材料许用值和结构设计许用值的关系和区别,给出了它们更明确的定义。回顾了国内外在确定设计许用值方面的研究概况,介绍了复合材料飞机结构完整性方面的补充要求,给出了设计许用值的确定原则和进一步提高设计许用值的研究方向。

关键词:

Abstract: The relationship and difference between the allowables and the structural design allowables of composites are presented and their new definitions are given out. A review is completed on the development of determination methodology of the structural design allowables in the past more than twenty years. The additional requirements on the structural integrity of composite aircraft are described, particularly damage tolerance requirements. According to the additional requirements and the experimental study of the effects of various factors (impact damage, hot/wet, holes, delamination, fatigue and so on) on strength and fatigue life, the principles of determination methodology of the design allowables are introduced. In order to increase design allowables, several innovative structural design concepts (for example, textile composite preforms and RTM or RFI) are presented.

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