

综述评论

纤维增强树脂基复合材料的疲劳剩余刚度研究进展

翟洪军, 姚卫星

南京航空航天大学飞行器系

收稿日期 修回日期 网络版发布日期 接受日期

摘要 回顾了过去二十年来公开发表的复合材料刚度退化的主要模型, 对这些模型做了分类和讨论. 按照模型的理论基础及研究方法将它们分为了理论模型、半经验模型和经验模型三类. 理论模型是指那些完全依赖于力学分析而得到的模型, 这类模型建立了材料的微观损伤机理与宏观刚度退化之间的关系. 经验模型通常不需要过多的力学分析, 仅对大量实验数据进行经验性拟合, 一般具有简单易用的形式. 半经验模型是理论与经验模型的结合-----在力学分析基础上的经验处理.

关键词 [纤维复合材料](#) [疲劳损伤](#) [刚度退化模型](#) [基体裂纹](#) [分层](#) [纤维断裂](#)

分类号

A SURVEY ON STIFFNESS REDUCTION MODELS OF FIBER REINFORCED PLASTICS UNDER CYCLIC LOADING

南京航空航天大学飞行器系

Abstract

Stiffness reduction models of fiber reinforced polymer composite laminates published in recent two decades were reviewed in the present paper. According to their methodologies, these models were classified as theoretical models, semi-empirical models and empirical models. The theoretical models are those entirely based on the mechanical analysis and include mainly shear-lag models, fracture models, elasticity mechanics models and etc. Theoretical models establish the relationships between micro damage mechanism and macro stiffness reduction of the laminates. The empirical models were established based on experimental data, so an empirical model is often simple and easy to understand and to apply. The semi-empirical models are those between the theoretical and the empirical ones.

Key words [fiber reinforced polymer composites](#) [fatigue damage](#) [stiffness reduction models](#) [matrix cracking](#) [delaminating](#) [fiber breakage](#)

DOI:

通讯作者

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(2336KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含“纤维复合材料”的相关文章](#)
- ▶ [本文作者相关文章](#)

- [翟洪军](#)
- [姚卫星](#)