论文　　　　　　　　最新目录 ｜下期目录 ｜过刊浏览 ｜高级检索　　　　<< Previous Articles | Next Articles >>

旋转状态下叶片振动应力的断口反推法

李海燕[1], 张学仁[1], 阎晓军[1], 聂景旭[1], 陶春虎[2]

1. 北京航空航天大学动力系405 教研室, 北京　100083; 2. 北京航空材料研究院, 北京　100095

REVERSE EDUCING METHOD TO ESTIMATE THE BLADE'S VIBRATION STRESS UNDER ROTATING STATE

LI Hai-yan[1], ZHANG Xue-ren[1], YAN Xiao-jun[1], NIE Jing-xu[1], TAO Chun-hu[2]

1. Department of Jet Propulsion, Beijing University of Aeronautics and Astronautics, Beijing 100083, China; 2. Beijing Institute of Aeronautic Material, Beijing 100095, China

摘要	参考文献	相关文章

Download: PDF (185KB)　　HTML 0KB　Export: BibTeX or EndNote (RIS)　　Supporting Info

摘要 提出了一种确定航空发动机叶片振动应力的新方法——断口反推法。该方法依据断裂力学的基本原理,从叶片实际断口测得裂纹疲劳扩展速率 da/dN 值,并利用材料的裂纹扩展速率 da/dN 同裂纹应力强度因子幅值 ΔK 之间的关系,确定出叶片在振动应力作用下的振动应力强度因子;然后采用有限元数值计算方法对叶片进行静力分析、模态分析及裂纹应力强度因子计算,最后反推出叶片在旋转状态下振动应力值的大小。该方法根据叶片的实际断口情况计算出叶片在断裂之前的振动应力值,对于叶片的故障分析及故障排除将具有重要的意义

关键词： 叶片　振动应力　应力强度因子　有限元法

Abstract： A new method - reverse educing method is put forward in t his paper, which is to estimate the vibration stress of aeroengine blade un der rotating state. Based on the fracture mechanics theory, the vibration stress intensity factor K_v of the blade can be worked out by t he value of crack's growth ratio da/dN, which is gotten from the actual fracture section, and the relationship between da/dN and the stress intensity factor amplitude ΔK. Through static, modal and crack stress intensity factor analysis, the vibration stress of blade under rotating state before fracture can b e calculated out finally. The results will be very significant for trouble diagnosing and shooting of aeroengine blades.

Keywords： blade　v ibrat ion str ess　stress intensity factor　finite elem ent a nalysis met ho d

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
- 李海燕
- 张学仁
- 阎晓军
- 聂景旭
- 陶春虎

引用本文:

李海燕;张学仁;阎晓军;聂景旭;陶春虎. 旋转状态下叶片振动应力的断口反推法[J]. 航空学报, 2001, 22(4): 303-307.

LI Hai-yan;ZHANG Xue-ren;YAN Xiao-jun;NIE Jing-xu;TAO Chun-hu. REVERSE EDUCING METHOD TO ESTIMATE THE BLADE'S VIBRATION STRESS UNDER ROTATING STATE[J]. Acta Aeronautica et Astronautica Sinica, 2001, 22(4): 303-307.