

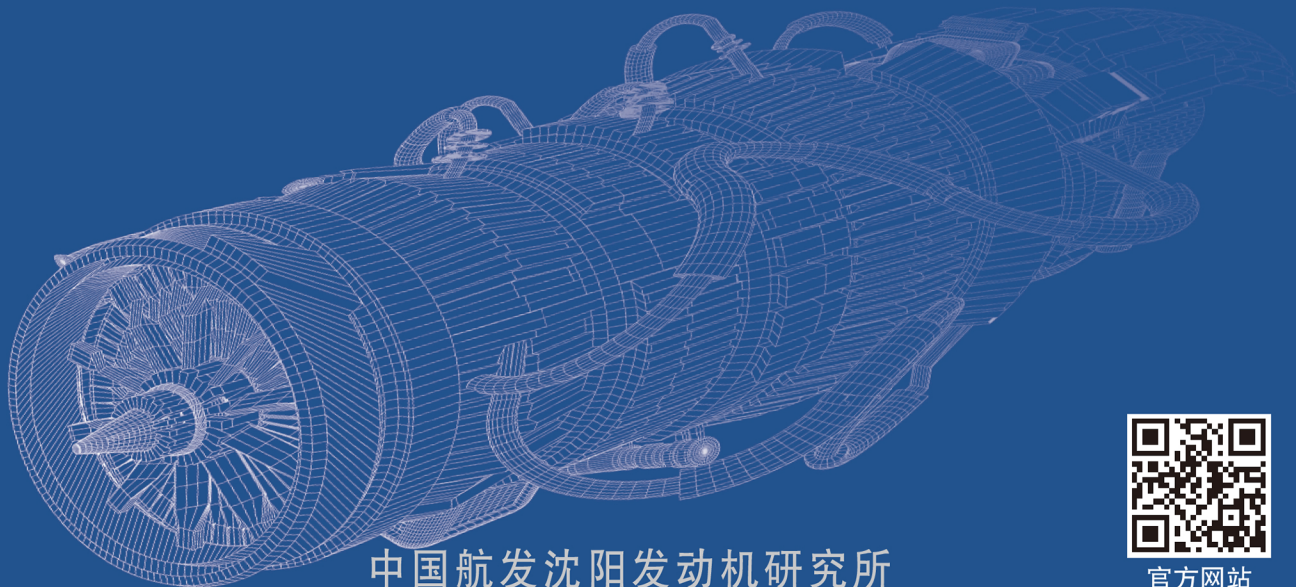
中文核心期刊 中国科技核心期刊

# 航空发动机

— Aeroengine —

封面文章

负荷系数 0.5 的高负荷单级  
轴流压气机设计及试验研究



中国航发沈阳发动机研究所



官方网站

# 航空发动机

2022年第48卷第5期

2022年10月

## 目次

### 封面文章

负荷系数 0.5 的高负荷单级轴流压气机设计及试验研究

..... 刘太秋,赵月振,王咏梅,张志博,刘德龙,江建玲(1)

### 总体设计与气动热力学

基于特征增维和近邻成分分析的民航发动机故障分类方法 ..... 孔祥兴,刘凯伟,莫李平,王奕首,卿新林(40)

基于内容统计分析的数字孪生定义研究 ..... 孙明霞,桓明姣,刘超,梁春华,潘若痴,蔚夺魁(45)

航空发动机消喘措施试验验证 ..... 崔金辉,韩鹏江(58)

### 叶轮机械

尾迹对低压涡轮吸力面附面层流动的影响 ..... 曹惠玲,吴兴爽,谭天荣,宋立旗,刘福林(65)

前缘缺口型损伤风扇转子叶栅流动特性分析 ..... 史磊,林文俊,黄晨雷,马龙,于满(73)

基于系统工程的高压涡轮叶片内腔渗层正向设计 ..... 刘国库,尤宏德,周丽敏,迟庆新(80)

涡扇发动机压缩系统部件特性与匹配数值仿真 ..... 张耀光,马庆岩,陈雷,杨琳,史文斌(88)

叶轮机气弹耦合方程求解的时间推进方法评估 ..... 曹琳婷,王丁喜,黄秀全(94)

### 燃烧、传热、传质

液态燃料旋转爆轰技术研究进展 ..... 冯子轩(101)

### 结构、强度、振动

基于遗传算法的榫槽部位模拟件设计方法 ..... 艾兴,叶璇,李坚,张志佺,王佰智,张峻峰(111)

薄壁结构干摩擦阻尼减振设计分析 ..... 高世民,王延荣,叶航(116)

碰摩引起的双转子系统弯扭耦合振动数值仿真 ..... 李文扩,李舜酩,王艳丰,滕光蓉(124)

### 控制技术

航空发动机地面试车台加温加压进气控制系统设计 ..... 周易,黄猛,陶国云,罗振伟,王晓宇(130)

基于 GA 优化 BP 算法的滑油状态监测 ..... 周良,王华伟,许珊珊,王清薇(137)

基于需用功率预测的直升机 / 发动机综合控制方法 ..... 杜紫岩,彭晔榕,宋劼,汪勇,张海波(143)

### 试验与测试

模拟板全尺寸吹风试验技术 ..... 张鑫,高超,马庆岩,张宝华,刘德权,王靖宇,杨闯(149)

燃油柱塞泵性能试验台测试结果稳健性影响因素分析 ..... 王京川,朱汉银,盛世伟(155)

一种进气道 / 发动机地面匹配试验方法 ..... 冯文梁,姚皆可,周伟(161)

电阻应变计敏感栅结构参数对其测量精度的影响 ..... 王崇武,艾延廷,李成刚,宋瑞如,张岩松,王志(167)

基于高斯混合模型的发动机稳态数据特征值提取方法 ..... 哈圣,徐昊,唐震,朱赤洲(173)

### 材料与工艺

封严环配合止口等离子喷涂再制造工艺 ..... 王洪明(180)

航空发动机 0Cr18Ni9 不锈钢导管数控弯曲回弹规律 ..... 潘林,王睿乾,张林嘉,夏方科,周华博,刘伟(185)

《航空发动机》编辑委员会 ..... 封二

《航空发动机》征稿简则 ..... 封三

本期责任编辑:刘亮

本期总编辑:李华文

期刊基本参数:

CN21-1359/V\*1975\*b\*A4\*190\*zh\*P\*¥ 10.00\*1200\*23\*2022-10

声明:

本刊已许可波兰“哥白尼索引”、美国“乌利希国际期刊指南”,中国学术期刊(光盘版)电子杂志社、北京万方数据股份有限公司、重庆维普资讯有限公司在其网络平台 and 系列数据库产品中传播本刊全文。著作权使用费与本刊稿酬一并支付。作者向本刊提交文章发表的行为即视为同意上述声明。

# AEROENGINE

Vol. 48 No. 5 Oct. 2022

---

---

## Contents

### Cover Paper

Design and Experimental Investigation of a Highly Loaded Single-stage Axial Compressor with Loading Coefficient of 0.5  
..... LIU Tai-qiu, ZHAO Yue-zhen, WANG Yong-mei, ZHANG Zhi-bo, LIU De-long, JIANG Jian-ling (1)

### Aeroengine Design and Aerothermodynamics

Aeroengine Fault Classification Method Based on Feature Expand and Neighbourhood Components Analysis  
..... KONG Xiang-xin, LIU Kai-wei, MO Li-ping, WANG Yi-shou, QING Xin-lin (40)  
The Investigation of Digital Twin Definition Based on Text Statistical Analysis  
..... SUN Ming-xia, HUAN Ming-jiao, LIU Chao, LIANG Chun-hua, PAN Ruo-chi, YU Duo-kui (45)  
Experimental Verification of Surge Suppression Actions for Aeroengine ..... CUI Jin-hui, HAN Peng-jiang (58)

### Turbomachinery

Influence of the Wakes on the Suction Surface Boundary Layer of Low Pressure Turbine  
..... CAO Hui-ling, WU Xing-shuang, TAN Tian-rong, SONG Li-qi, LIU Fu-lin (65)  
Analysis of Flow Characteristics of Fan Rotor Cascade with Leading Edge Notch Damage  
..... SHI Lei, LIN Wen-jun, Huang Chen-lei, MA Long, YU Man (73)  
Design of Inner Cavity Infiltration Layer of High-pressure Turbine Blade Based on System Engineering Theory  
..... LIU Guo-ku, YOU Hong-de, ZHOU Li-min, CHI Qing-xin (80)  
Numerical Simulation on Component Characteristics and Matching of Compression System for Turbofan Engine  
..... ZHANG Yao-guang, MA Qing-yan, CHEN Lei, YANG Lin, SHI Wen-bin (88)  
Evaluation of Time-marching Method for Solving Aeroelastic Coupled Equations of Turbomachinery  
CAO Lin-ting, WANG Ding-xi, HUANG Xiu-quan (94)

### Combustion, Heat and Mass Transfer

Progress in the Research of Liquid Fuel Rotating Detonation Technology ..... FENG Zi-xuan (101)

### Structure, Strength and Vibration

Design Method of Simulation Specimen of Disc Slot Based on Genetic Algorithm  
..... AI Xing, YE Xuan, LI Jian, ZHANG Zhi-yi, WANG Bai-zhi, ZHANG Jun-feng (111)  
Design Analysis for Dry Friction Damping Vibration Suppression of Thin-walled Structures  
..... GAO Shi-min, WANG Yan-rong, YE Hang (116)  
Numerical Simulation of Bending-torsional Coupling Vibration of Double-rotor System Caused by Rub-impact  
..... LI Wen-kuo, LI Shun-ming, WANG Yan-feng, TENG Guang-rong (124)

### Sensor and Control Technology

Heating and Pressurizing Air Intake Control System Design of Aeroengine Ground Test-bed  
..... ZHOU Yi, HUANG Meng, TAO Guo-yun, LUO Zhen-wei, WANG Xiao-yu (130)  
Lubricating Oil Condition Monitoring Based on Genetic Algorithm Optimized Back Propagation Algorithm  
..... ZHOU Liang, WANG Hua-wei, XU Shan-shan, WANG Qing-wei (137)  
Helicopter / Engine Integrated Control Method Based on Required Power Prediction  
..... DU Zi-yan, PENG Ye-rong, SONG Jie, WANG Yong, ZHANG Hai-bo (143)

### Test Technology

Air Intake Test Technology of Full-scale Simulating Plates  
ZHANG Xin, GAO Chao, MA Qing-yan, ZHANG Bao-hua, LIU De-quan, WANG Jing-yu, YANG Chuang (149)  
Analysis on Influencing Factors of Test Results Robustness of the Fuel Plunger Pump Performance Test-bench  
..... WANG Jing-chuan, ZHU Han-yin, SHENG Shi-wei (155)  
A Testing Method for Matching Characteristics of Intake and Engine on the Ground  
..... FENG Wen-liang, YAO Jie-ke, ZHOU Wei (161)  
Influences of Sensitive Grid Structural Parameters of Resistance Strain Gauge on its Measurement Accuracy  
..... WANG Chong-wu, AI Yan-ting, LI Cheng-gang, SONG Rui-ru, ZHANG Yan-song, WANG Zhi (167)  
Eigenvalue Extraction Method for Engine Steady-state Data Based on Gaussian Mixture Model  
..... HA Sheng, XU Hao, TANG Zhen, ZHU Chi-zhou (173)

### Material and Process

Remanufacturing Process of Sealing Ring Rabbet by Plasma Spraying ..... WANG Hong-ming (180)  
Research on the Computer Numerical Controlled Bending Springback Law of 0Cr18Ni9 Stainless Steel Pipes for Aeroengine External Pipeline  
..... PAN Lin, WANG Rui-qian, ZHANG Lin-jia, XIA Fang-ke, ZHOU Hua-bo, LIU Wei (185)