# 中国科技核心期刊

《万方数据一数字化期刊群》全文上网期刊 CNKI《中国学术期刊(网络版)》全文收录期刊 《中文科技期刊数据库》(维普网)全文收录期刊 日本JST中文数据库来源期刊

美国《乌利希期刊指南(网络版)》(Ulrichsweb)收录

ISSN 1673-1379 CODEN HHGAAM





Hangtianqi Huanjing Gongcheng

SPACECRAFT ENVIRONMENT ENGINEERING



主办及协办单位:

北京卫星环境工程研究所

可靠性与环境工程技术重点实验室

中国航天 中国宇航学会结构强度与环境工程专业委员会

2020

第37卷



# 航天器环境工程

双月刊

HANGTIANQI HUANJING GONGCHENG

第 37 卷第 2 期 (总第 174 期)

1984 年创刊

2020年4月25日出版

## 目 次

#### 空间观测

基于WHU甚低频探测系统的大气噪声监测

...... 陈 隆,顾旭东,程 雯,唐新月,罗 凡,彭 锐,庞 鸿,冉铃民,杨可欣,倪彬彬,赵正予 (107)

#### 理论分析

微重力条件下上面级贮箱液体推进剂自由界面变形数值模拟研究…… 肖立明,李 欣,胡声超,刘 畅,周炳红(115) 热噪声试验中平板温度边界层对近壁面声压分布影响数值分析…… 陈雅曦,王明杰,齐江龙(120) 空间柔性充气密封舱用新型填充防护结构碎片撞击计算分析与实验研究…… 古青波,从 强,常 洁,王 巍(125) 卫星星敏感器结构强电磁耦合效应仿真及实验研究…… 陈 卓,杨晓宁,杨 勇(131) 基于性能退化的失效阈值变化速率对产品可靠性的影响…… 王新刚,马瑞敏,黄小凯,常苗鑫(137)

#### 技术实践

#### 地面试验

充气式再入与减速系统用柔性热防护材料高焓风洞试验研究…………………………………………………………… 曹 旭,黄明星(184) 基于数据匹配的机载外挂装备部件振动试验优化设计方案

...... 王东升, 李 翀, 李 健, 欧阳智江, 吴连军, 刘青林, 蒋华兵 (191)

#### 其他

封二: 编委会主任寄语

封三: 中国科技核心期刊收录证书

期刊基本参数: CN 11-5333/V \* 1984 \* b \* 16 \* 102 \* zh \* P \* \frac{\pma}{3}0.00 \* 1200 \* 17 \* 2020-04

# SPACECRAFT ENVIRONMENT ENGINEERING

Vol. 37 No. 2 (Cumulative 174) Apr. 25, 2020

Bimonthly

### **CONTENTS**

Space Observations
Monitoring of atmospheric noise based upon data obtained by WHU VLF detection system
TANG Xinyue, LUO Fan, PENG Rui, PANG Hong, RAN Lingmin, YANG Kexin, NI Binbin, ZHAO Zhengyu (10'
Theoretical Analysis
·
Numerical simulation of free interface deformation of liquid propellant in upper stage tank under microgravity condition XIAO Liming, LI Xin, HU Shengchao, LIU Chang, ZHOU Binghong (115)
Numerical simulation of temperature boundary layer of a flat panel on the near-wall sound pressure distributions in thermal-acoustic test
Impact limit calculation and experimental study of a novel preventive filled structure used in space flexible inflatable sealed cabin
GU Qingbo, CONG Qiang, CHANG Jie, WANG Wei (125
Effects of strong electromagnetic coupling on the structure of satellite star tracker
Effect of failure threshold change rate on the anlysis of product reliability based on performance degradation
Technical Practice
Design and realization of a space vector control structure for the α particle micro-propulsion  XU Fei, XIA Yan, HE Shiyi, XIAO Wenlei, LIU Guoqing (143)
Investigation of combined heat flux simulation method for spacecraft thermal test
Structural optimization design and analysis of triaxial vibration fixture based on multi-objective genetic algorithm
WANG Haidong, LI Guilin, WANG Zhaoxi, LI Jing, LIU Shaojie, QIU Yuanying (154 ARC method for measuring thermal properties of lithium fluorocarbon batteries to be used in Mars probes
Design and application of a temperature control platform used for rapid heating and cooling in thermal vacuum test
LIU Chun, LIN Boying, WU Fei, ZOU Shijie, LIU Zhe (166
Mass optimization of thermal management system for lunar rover
GAO Xiao, DONG Guangbo, ZHANG Xiangrong (179
Ground Test Study
High enthalpy wind tunnel test of flexible thermal protection system for inflatable reentry and descent vehicle
Optimized vibration test scheme for airborne plug-in equipment component test based on data matching
WANG Dongsheng, LI Chong, LI Jian, OUYANG Zhijiang, WU Lianjun, LIU Qinglin, JIANG Huabing (19)
Others
Effect of ion implantation on bonding properties of PTFE copper clad laminate
PANG Pan, OU Yixiang, LUO Jun, CHEN Lin, JIANG Qili, LIAO Bin, LIU Yuanyuan (197
Genetic analysis of stress corrosion cracking in spacecraft structure: engineering practice and enlightenment