

载人航天

MANNED SPACEFLIGHT

2023年 第2期（双月刊）

第29卷（总第112期）

航天员健康与生命保障专题

Special Articles on Astronaut Health and Life Support Technology



中国载人航天工程办公室 主办
CMS China Manned Space Agency

目次

航天员健康与生命保障专题

- 基于深度学习目标识别的航天员训练场景理解技术 陈 炜, 孙庆伟, 胡福超, 晁建刚(143)
- 登月返回再入人体卧姿和躺姿超重生理效应研究 孙 浩, 马红磊, 肖艳华, 王健全, 邓金辉, 王惠娟, 任 逸, 祝 郁(150)
- 典型返回再入过载下姿态差异对猕猴生理反应的影响研究 任 逸, 祝 郁, 肖艳华, 王健全, 孙 浩, 马博涵, 郭玉琴, 刘炳坤, 阚广悍, 肇 海, 李富柱, 马红磊(157)
- 尾吊模拟失重对小鼠过敏性哮喘的影响及其机制研究 甄 珍, 宋锦苹, 李悠悠, 杜锐凯, 凌树宽, 胡利明, 李英贤(164)
- 听觉失匹配负波在模拟飞行多任务不同脑力负荷下的变化研究 李文斌, 康 阳, 任泽胜, 史克东, 常耀明(170)
- 基于 fNIRS 和 ECG 的大脑警觉度客观检测研究 王璐琪, 姜 劲, 孙子恒, 代艳莹, 曹 勇, 焦学军, 周 鹏(177)
- 舱外航天服头部空间主动降噪技术研究 黄 云, 何双亮, 徐海涛, 薛长斌, 李鹏伟(186)
- 下肢微重力模拟外骨骼系统的研究 吴岳桥, 梁国星, 李志利, 戴小倩, 李文炯, 刘书娟, 张剑峰(192)

基础研究

- 基于嫦娥二号数据的月球极区光照计算 郭洁榕, 彭祺肇, 王慎泉, 李 欣, 徐 波(200)
- Kilopower 空间堆燃料低浓化方案研究 安伟健, 郭 键, 胡 古, 葛攀和, 高 剑(210)
- 热处理对激光选区熔化 Al-Mg-Sc-Zr 合金组织及性能影响 李敬洋, 刘 贺, 祁俊峰, 王 哲, 高战蛟, 巩维艳, 姜 坤(215)
- 冲压发动机试验面内小位移高精度摄影测量方法 高 林(223)
- 基于部件级模型修正的某发动机整机动态特性计算 张 帆, 叶莺樱, 耿斌斌, 王 慧, 邹宜霖(229)

工程技术

- 基于 SysML 的载人航天故障模式分析及建模方法 胡云鹏, 张亚男, 彭祺肇, 武新峰, 叶东明, 周建平(238)
- 载人航天逃逸安控系统优化设计 王志生, 李 塘, 汤 达(247)
- 一种高转速小排量伺服电机泵性能研究 孙东宁, 董春雷, 李红岩, 王 伟, 王德志, 高诗程, 冯 伟(251)
- 图论模型与算法在航天器下行数据故障诊断知识循环依赖缺陷检测中的应用 王 蕊, 沈 星, 吴 伟, 潘顺良(258)

综述

- 月面六足机器人机构设计与行走控制方法综述 ... 王小涛, 张 震, 崔宇新, 王卫军, 韩亮亮, 张崇峰(264)
- 共享心智模型及其对人机团队绩效的影响 吴 桐, 张宜静(276)

MANNED SPACEFLIGHT

Vol. 29 No. 2 (Sum 112) 2023

CONTENTS

SPECIAL ARTICLES ON ASTRONAUT HEALTH AND LIFE SUPPORT TECHNOLOGY

- Scene Understanding Technology for Astronaut Training Based on Deep Learning Object Detection CHEN Wei, SUN Qingwei, HU Fuchao, CHAO Jiangang(143)
- Study on Human Physiological Effects of Hypergravity in Supine or Lying Position during Lunar Spacecraft Reentry SUN Hao, MA Honglei, XIAO Yanhua, WANG Jianquan, DENG Jinhui, WANG Huijuan, REN Yi, ZHU Yu(150)
- Effects of Posture on Physiological Reaction of Macaques under Typical Reentry Overload REN Yi, ZHU Yu, XIAO Yanhua, WANG Jianquan, SUN Hao, MA Bohan, GUO Yuqin, LIU Bingkun, KAN Guanghan, ZHAO Hai, LI Fuzhu, MA Honglei(157)
- Effects of Tail-suspension Simulated Weightlessness on Allergic Asthma in Mice and Its Mechanism ZHEN Zhen, SONG Jinping, LI Youyou, DU Ruikai, LING Shukuan, HU Liming, LI Yingxian(164)
- Study on Changes of Auditory Mismatch Negativity during Different Mental Workload of Multitasking in Simulated Flight LI Wenbin, KANG Yang, REN Zesheng, SHI Kedong, CHANG Yaoming(170)
- Objective Detection of Brain Vigilance Based on fNIRS and ECG WANG Luqi, JIANG Jin, SUN Ziheng, DAI Yanying, CAO Yong, JIAO Xuejun, ZHOU Peng(177)
- Research on Active Noise Control in Head Space of EVA Spacesuit HUANG Yun, HE Shuangliang, XU Haitao, XUE Changbin, LI Pengwei(186)
- Research on Exoskeleton System for Lower Limb Low Gravity Simulation WU Yueqiao, LIANG Guoxing, LI Zhili, DAI Xiaoqian, LI Wenjiong, LIU Shujuan, ZHANG Jianfeng(192)

BASIC RESEARCH

- Illumination Calculation of Lunar Polar Region Based on Chang'e-2 Data GUO Jierong, PENG Qibo, WANG Shenquan, LI Xin, XU Bo(200)
- Study on LEU Core Scheme for Kilopower Space Reactor AN Weijian, GUO Jian, HU Gu, GE Panhe, GAO Jian(210)
- The Effect of Heat Treatment on Microstructure and Properties of Laser Selective Melting Al-Mg-Sc-Zr Alloy LI Jingyang, LIU He, QI Junfeng, WANG Zhe, GAO Zhanjiao, GONG Weiyan, JIANG Kun(215)
- High Precision Photogrammetry Method for Small Displacement in Plane of Ramjet Test GAO Lin(223)
- Calculation of Engine Dynamic Characteristics Based on Component-level Model Correction ZHANG Fan, YE Yingying, GENG Binbin, WANG Hui, ZOU Yilin(229)

ENGINEERING TECHNOLOGY

- SysML Based Failure Analysis and Modeling Method for Manned Space Project HU Yunpeng, ZHANG Yanan, PENG Qibo, WU Xinfeng, YE Dongming, ZHOU Jianping(238)
- Optimization Design of Escape and Safety Control System in Manned Space Project WANG Zhisheng, LI Tang, TANG Da(247)
- Research on performance of a Servo Motor Pump with High Rotating Speed and Small Displacement SUN Dongning, DONG Chunlei, LI Hongyan, WANG Wei, WANG Dezhi, GAO Shicheng, FENG Wei(251)
- Application of Graph Theoretic Model and Algorithm in Circular Dependency Knowledge Defect Detection of Spacecraft Downlink Data Fault Diagnosis System WANG Rui, SHEN Xing, WU Wei, PAN Shunliang(258)

REVIEW

- Review on Mechanism Design and Walking Control Method of Lunar Hexapod Robot WANG Xiaotao, ZHANG Zhen, CUI Yuxin, WANG Weijun, HAN Liangliang, ZHANG Chongfeng(264)
- Shared Mental Model and its Impact on Human-Agent/Robot Team Performance WU Tong, ZHANG Yijing(276)