

目次

装备理论与装备技术

基于 FAHP 的修理分队力量编组能力模糊综合评估  
枪械综合寿命试验方案改进研究  
一种基于拉格朗日乘法法的反舰导弹目标捕获概率快速判断方法  
导弹尾翼多目标优化设计研究  
三种典型同心筒热发射流场及载荷特性对比研究  
基于 AHP-TOPSIS 的战场雷达目标威胁评估  
火箭弹尾翼外形选型研究  
基于快速建模技术的舰载武器射界仿真计算软件的实现研究  
两级推进单轨火箭橇结构与弹道设计  
无线电近炸引信抗干扰试验关键参数设计  
基于双电机驱动的防爆车辆转矩主动分配差速技术研究  
基于喷液推进的单兵筒式武器内弹道分析  
活性破片战斗部反雷达目标毁伤增强效应研究  
基于未来空域窗的多炮协同射击序列仿真  
机载导弹发射装置安全拉索流场及气动性能研究  
基于 PCA 方法的涡扇发动机加力接通和稳定工作能力研究  
基于无人车发射平台的高精度激光末制导火箭弹控制系统设计  
弹载并行组合扩频载波快速精确估计方法  
一种差分 GNSS 动态定位精度的检测方法  
翼身融合体导弹火箭橇试验平台气动外形设计  
战时机场道面抢修机械配置与抢修策略研究  
机载自卫告警系统威胁评估方法研究  
背覆水对聚能装药侵彻砖砌体影响特性研究  
基于项目管理的装备检验流程优化探究  
巡飞弹靶机动力及发射装置设计  
高速射流成型及侵彻披挂反应装甲行为研究  
基于时频分析的单脉冲雷达多目标分辨  
利用组合方法预测火箭弹飞行坐标的精度分析

曾拥华,王海燕,武婷婷,王清,柏林元(1)  
单永海,高亢,高显明,丁述宇,葛欣鑫(7)  
魏海光(12)  
刘显为,杨洋,贺祥锋,贺川川,黄魏银(17)  
杨风波,周宏平,茹煜,陈青,成锋娜(22)  
石静苑,孙艺聪,杨涛,翟越(29)  
李真,吴晶,张志倩,曾凡桥,王小兵,芮亮(35)  
陶益,孙森,孙晗彦(40)  
夏有财,李俊耀,张浩,刘奎显(46)  
韦卓,李超,杜剑英,王建(50)  
常映辉(53)  
张竹伟,寒秉宇,高为(59)  
杜传通,陆盼盼,刘子航,于立焯,徐鹏(64)  
邱磊,卢发兴(69)  
张全力,杨建江,冯建春,李娟,张焕好(75)  
高莎莎,杨雄,刘涛(81)  
胡俊香,王彦涛,王维保,汪嗣良(87)  
王志强,丁丹,杨柳(91)  
黄土顺,蔡萌,胡滨,常伟(95)  
张晨辉,贺祥锋,付良,解珍珍(100)  
侯永乐,李建阳,宋世鹏,宁宁,卢振宇(105)  
张颜伟,刘玉柱,蔡猛,周德召(110)  
杜志鑫,刘润涛,刘培元(115)  
寇玺,安富涛,孙拓,宋向迎(122)  
郭芝宏,孙寒晓,郭彪(127)  
陆盼盼,于立焯,姜昊,徐鹏,康宝(133)  
雷红,吕海东,郭丰(137)  
田珂,常华俊,段鹏伟(142)

信息科学与控制工程

基于变分模态分解的备件需求组合预测模型研究  
模块化电动车辆靶标系统构建  
基于 FPGA 控制的超声信号采集电路的设计  
基于改进 ACS 算法的复杂环境多目标路径规划研究  
基于注意力机制的 SSA-TCN-GRU 的网络安全态势预测  
基于 PSO 优化的函数链接自适应滤波器非线性自干扰消除  
基于 Nanson 群决策算法的多机协同空战机动决策  
物流无人机安全路径规划  
基于轻量化改进的 YOLOX 的仪表检测方法

陈桂明,魏增基,李惟(151)  
钱礼华,穆高超,申晓敏,张洁,侯川玉,段晨(160)  
凡丽梅,董方旭,周浩,张璘(164)  
刘健,沈芸亦,邱锦,罗亚松(169)  
李成海,孙隽丰(178)  
韩宇宸,余志勇,曹俊杰,韩佳,刘荣(186)  
周思羽,石瑜,杨文奇,王子健,高丽,高艳丽(191)  
王红星,刘群洁,岳哲(199)  
侯卓成,欧阳华,胡鑫,尹洋(205)

领域知识驱动的航天测控仿真系统构建方法  
基于改进 A\* 算法的飞行器航迹规划方法  
基于元数据的航材管理信息系统数据质量评价  
基于飞参数据的飞机故障诊断专家系统研究  
面向无人机平台视觉任务的基于 ViT 的轻量型目标检测方法  
无人机成像侦察段航路规划算法  
基于时分复用的轻量型自适应调度算法  
基于物联网的自然环境加速试验装置管控技术  
高落速条件下红外窗口气动热特性预测研究

## 基础理论与应用研究

基于时间累积图模型的空间信息网络建模方法研究  
热结构改进对 ADN 基发动机推力性能的影响研究  
带药缠绕复合壳体分解 NOL 环拉伸破坏性能研究  
基于麻雀搜索算法优化 PNN 的核动力装置运行工况异常识别研究  
城轨列车晚点情况的运行调整研究  
基于改进模糊层次分析的导弹输送伴随保障能力评估  
基于多层动态累积模型的空间信息网络抗毁性分析方法研究  
基于改进遗传算法的物资预置地优化选址  
基于 ANN 的舰船功率预测及性能恶化分析  
基于动态规划的阵地工程伪装作业方案优化方法  
基于互相关时延估计的多目标测距算法研究  
联合双晶探头在小直径圆钢探伤中的应用研究

## 机械制造与检测技术

基于 SCADA 的筒弹自动化装填测量方法研究  
炮用观瞄仪器单双目测角校准装置研究  
水雷保险器智能水压检测装置设计  
基于深度学习的蒙皮表面缺陷检测研究  
高压水下环境球壳结构应力测试技术研究  
基于超声原理管件识别与典型缺陷分析  
支承臂后倒回弹过程动力学仿真研究

## 综述

国外微小型精确制导炸弹现状及发展趋势  
基于大数据谱系的枪械质量数据管理及监测

## 光学工程与电子技术

图像纹理自适应分数阶全变分重构算法  
基于摩尔斯编码的智能物联网系统研究

## 化学工程与材料科学

有机硅耐热漆发红现象的工艺研究  
基于 RTM 方法制备的硅氧纤维基复合材料的组织及性能分析

李婉钰,尹 斌,同兰娟,郝 静,李莎莎,裴胜男(213)  
夏 铭,安文斗,赵恩娇,杨中贵(222)  
黄俊超,胡 勇,徐启丰,赵春林(227)  
邓印凯,范 增,陈善敏,刘文剑,雷 博(234)  
高一博,杨传栋,陈 栋(241)  
顾子侣,刘 宇,孙文邦,刘少兵,田浩楠(247)  
王海生,赵梓旭,魏 健,张豫南(252)  
陈星昊,杨万均,李念林,李鸿飞,刘 群,杨昊雨(261)  
孟 奇,陈 栋,连细南(266)

赵忠文,李国栋,卢 迪,王文卓(272)  
王 梦,陈 阳,马彦峰,陈 健,姚兆普,杨 蕊,刘旭辉(279)  
江 真,王志新,林天一,潘科玮,郑 庆(285)  
王雯珩,于 雷,王晓龙,郝建立(291)  
殷瑞忠,岳镇霖,何 流(297)  
宋 欢,舒健生,周于翔,赖晓昌(302)  
李国栋,赵忠文,卢 迪(309)  
陈长鑫,黄大山,刘海亮,陈 诚(319)  
刘成明,程 飞,庞 浩(326)  
李晨光,许卫东,李良涛,刘朝畅(333)  
周 扬,焦义文,陈雨迪(337)  
朱 勋,姜广涛,张永伟,马 胜,杜 彬(343)

李光保,高 栋,路 勇,平 昊,周愿愿(346)  
任淑红,王林安,赵艺凡,李英豪(352)  
李志华,周开华,李 荣(356)  
丁文浩,羊昌燕,陈善敏(361)  
陈前昆,周 琦,刘 勇,冯彩红,吕鑫豪(368)  
王怀江,孙晨号,张天俭,刘 帅,徐 泉(375)  
周彦均,张雁思,徐 铮,黎定仕(380)

李浩成,黄 波,向绍进,牛 卉(387)  
王宪升,胡 瑶,姜黎明,郝 佳,孙嘉伟,张小石(392)

田磊源,张廷华,李迎春,丛宝海(399)  
刘 为,刘颖,冉 冉,周大鹏,王立谦,胡 非(405)

卢培超,黄 锋,郝小石,陈 夷,秦 东(411)  
弓艳飞,林冰涛,徐竹孟,陈东杰(415)

# JOURNAL OF ORDNANCE EQUIPMENT ENGINEERING

Vol. 43      Dec. 2022

## CONTENTS

Fuzzy comprehensive evaluation of force formation capability of FAHP-based repair detachments	ZENG Yonghua, WANG Haiyan, WU Tingting, et al(1)
Study on improvement of the comprehensive life test scheme of firearms	SHAN Yonghai, GAO Kang, GAO Xianming, et al(7)
A Fast judgment method of target acquisition probability of anti-ship missiles based on Lagrange multiplier method	WEI Haiguang(12)
Multi-objective optimization design of missile tails	LIU Xianwei, YANG Yang, HE Xiangfeng, et al(17)
Comparative study on thermal emission flow field and load characteristics of three typical concentric canisters	YANG Fengbo, ZHOU Hongping, RU Yu, et al(22)
Battlefield radar target threat assessment based on AHP-TOPSIS	SHI Jingyuan, SUN Yicong, YANG Tao, et al(29)
Study on shape selection of rocket tails	LI Zhen, WU Jing, ZHANG Zhiqian, ZENG Fanqiao, et al(35)
Implementation research of the simulation software of shipborne weapon firing boundary based on fast modeling technology	TAO Yi, SUN Miao, SUN Hanyan(40)
Structure and trajectory design of two-stage monorail rocket sleds	XIA Youcai, LI Junyao, ZHANG Hao, et al(46)
Design of key parameters for anti-jamming tests of radio proximity fuze	WEI Zhuo, LI Chao, DU Jianying, et al(50)
Research on differential torque active distribution technology of explosion-proof vehicles based on dual motor drive	CHANG Yinghui(53)
Study on interior ballistics of individual tube-shape weapons based on liquid injection propulsion	ZHANG Zhuwei, HAN Bingyu, GAO Wei(59)
Study on damage enhancement effect of active fragment warhead on anti-radar target	DU Chuantong, LU Panpan, LIU Zihang, et al(64)
Simulation of multi-gun cooperative firing sequence based on future airspace window	QIU Lei, LU Faxing(69)
Study on the flow field and aerodynamic performance of the safety cable of an airborne missile launcher	ZHANG Quanli, YANG Jianjian, FENG Jianchun, et al(75)
Study on afterburner connection and stable working ability of a turbofan engine based on PCA	GAO Shasha, YANG Xiong, LIU Tao(81)
Design of high-precision laser terminal fuse rocket control system based on an unmanned vehicle launch platform	HU Junxiang, WANG Yantao, WANG Weibao, et al(87)
Fast and accurate estimation method of missile-borne parallel combined spread spectrum carrier	WANG Zhiqiang, DING Dan, YANG Liu(91)
An appraisal method for dynamic positioning accuracy of differential GNSS	HUANG Tushun, CAI Meng, HU Bin, et al(95)
Pneumatic shape design of a rocket sled test platform for wing-body fusion missiles	ZHANG Chenhui, HE Xiangfeng, FU Liang, et al(100)
Research on emergency repair machinery configuration and rush-repair strategy of airfield pavement in wartime	HOU Yongle, LI Jianyang, SONG Shipeng, et al(105)
Research on threat assessment method of airborne self-defense alarm system	ZHANG Yanwei, LIU Yuzhu, CAI Meng, et al(110)
Research on the influence of backing water on shaped charge penetration of brick masonry	DU Zhixin, LIU Runtao, LIU Peiyuan(115)
Research on optimization of equipment inspection and acceptance process based on project management	KOU Xi, AN Futao, SUN Tuo, et al(122)
Design of power and the launching device for loitering munition target drones	GUO Zhihong, SUN Hanxiao, GUO Biao(127)
Study on the actions of high-speed jet forming and penetration and hanging of reactive armors	LU Panpan, YU Liyao, JIANG Hao, et al(133)
Multi-target resolution of monopulse radar based on time-frequency analysis	LEI Hong, LYU Haidong, GUO Feng(137)
Accuracy analysis of rocket flight coordinate prediction using a combined model	TIAN Ke, CHANG Huajun, DUAN Pengwei(142)
Research on a combination forecasting model of spare parts demand based on variational modal decomposition	CHEN Guiming, WEI Zengji, LI Wei(151)
Construction of modular electric vehicle target system	QIAN Lihua, MU Gaochao, SHEN Xiaomin, et al(160)
Design of an ultrasonic signal acquisition circuit based on FPGA control	FAN Limei, DONG Fangxu, ZHOU Hao, et al(164)
Research on multi-objective path planning in complex environment based on improved ACS algorithm	LIU Jian, SHEN Yunyi, QIU Jin, et al(169)
Network security situation prediction of SSA-TCN-GRU based on attention mechanism	LI Chenghai, SUN Junfeng(178)
Nonlinear self-interference elimination of a functional link adaptive filter based on PSO optimization	HAN Yuchen, YU Zhiyong, CAO Junjie, et al(186)
Multi-aircraft cooperative air combat maneuvering decisions based on Nanson group decision algorithm	ZHOU Siyu, SHI Yu, YANG Wenqi, et al(191)
A safety path planning of logistics drones	WANG Hongxing, LIU Qunjie, YUE Zhe(199)
Instrument detection method based on lightweight improved YOLOX	HOU Zhuocheng, OUYANG Hua, HU Xin, et al(205)

# JOURNAL OF ORDNANCE EQUIPMENT ENGINEERING

Vol. 43      Dec. 2022

Construction method of space TT&C simulation system driven by domain knowledge .....	LI Wanyu, YIN Bin, TONG Lanjuan, et al(213)
Flight path planning method of aircrafts based on improved A* algorithm .....	XIA Ming, AN Wendou, ZHAO Enjiao, et al(222)
Data quality evaluation of the aviation material management information system based on metadata .....	HUANG Junchao, HU Yong, XU Qifeng, et al(227)
Research on the expert system of aircraft fault diagnosis based on flight parameter data .....	DENG Yinkai, FAN Zeng, CHEN Shanmin, et al(234)
A ViT-based lightweight target detection method for UAV platform visual tasks .....	GAO Yibo, YANG Chuandong, CHEN Dong(241)
Route planning algorithm of UAV imaging reconnaissance sections .....	GU Zilyu, LIU Yu, SUN Wenbang, et al(247)
A lightweight adaptive scheduling algorithm based on TDM .....	WANG Haisheng, ZHAO Zixu, WEI Jian, et al(252)
Control technology of devices of reinforced natural environmental tests based on the Internet of things .....	CHEN Xinghao, YANG Wanjun, LI Nianlin, et al(261)
Prediction of aerodynamic thermal characteristics of the infrared window at a high falling velocity .....	MENG Qi, CHEN Dong, LIAN Xinan(266)
Research on modeling method of spatial information network based on a time cumulative graph model .....	ZHAO Zhongwen, LI Guodong, LU Di, et al(272)
The impact study of improved thermal structure on thrust performance of an ADN-based liquid space engine .....	WANG Meng, CHEN Yang, MA Yanfeng, et al(279)
Tension failure analysis of a decomposed NOL ring of a composite shell wound with propellants .....	JIANG Zhen, WANG Zhixin, LIN Tianyi, et al(285)
Research on abnormal identification of operating conditions of nuclear power plants based on sparrow search algorithm to optimize PNN .....	WANG Wenheng, YU Lei, WANG Xiaolong, et al(291)
Research on the operation adjustment of a urban rail train under delay conditions .....	YIN Ruizhong, YUE Zhenlin, HE Liu(297)
Evaluation of accompanying support capability of missile transportation based on improved fuzzy analytic hierarchy process .....	SONG Huan, SHU Jiansheng, ZHOU Yuxiang, et al(302)
Research on damage resistance analysis method of spatial information network based on multi-layer dynamic cumulative model .....	LI Guodong, ZHAO Zhongwen, LU Di(309)
Optimized material pre-positioning site selection based on improved genetic algorithm .....	CHEN Changxin, HUANG Dashan, LIU Hailiang, et al(319)
Ship power prediction and performance deterioration analysis based on artificial neural network .....	LIU Chengming, CHENG Fei, PANG Hao(326)
Optimization method of the camouflage operation scheme of position engineering based on dynamic programming .....	LI Chenguang, XU Weidong, LI Liangtao, et al(333)
Research on multi-target ranging algorithm based on cross-correlation time delay estimation .....	ZHOU Yang, JIAO Yiwen, CHEN Yudi(337)
Research on the application of combined dual element probe in small diameter round steel flaw detection .....	ZHU Xun, LOU Guangtao, ZHANG Yongwei, et al(343)
Research on automatic loading measurement method of barrel ammunition based on SCADA .....	LI Guangbao, GAO Dong, LU Yong, et al(346)
Research on single and double visual angle calibration device of gun sighting instrument .....	REN Shuhong, WANG Lin'an, ZHAO Yifan, et al(352)
Design of intelligent water pressure detection devices for mine safety devices .....	LI Zhihua, ZHOU Kaihua, LI Rong(356)
Research on detection of aircraft skin defects based on deep learning .....	DING Wenhao, YANG Changyan, CHEN Shanmin(361)
Research on stress measurement technology of the spherical shell structure in high-pressure underwater environment .....	CHEN Qiankun, ZHOU Qi, LIU Yong, et al(368)
Pipe fitting identification and typical defect analysis based on ultrasonic principles .....	WANG Huaijiang, SUN Chenhao, ZHANG Tianjian, et al(375)
Study on dynamic simulation of fall-back and rebound of a support arm .....	ZHOU Yanjun, ZHANG Yansi, XU Zheng, et al(380)
Present situation and development trend of foreign microminiature precision guided bombs .....	LI Haocheng, HUANG Bo, XIANG Shaojin, et al(387)
Gun quality data management and monitoring based on big data pedigree .....	WANG Xiansheng, HU Yao, JIANG Liming, et al(392)
Adaptive fractional order total variational reconstruction algorithm for image textures .....	TIAN Leiyan, ZHANG Tinghua, LI Yingchun, et al(399)
Research on the intelligent Internet of things system based on Morse code .....	LIU Wei, LIU Ying, RAN Ran, et al(405)
Process study on redness of silicone heat-resistant paint .....	LU Peichao, HUANG Feng, HAO Xiaoshi, et al(411)
Microstructure and property analysis of silicone fiber matrix composites prepared by RTM method .....	GONG Yanfei, LIN Bingtao, XU Zhumeng, et al(415)