

目 次

光电系统与工程

- 某光电装置光轴一致性改进分析 ..... 段红建, 王健军, 胡 博, 孟海江, 左晓舟, 马优恒, 史雷蕾 (239)
- 40 $\times$  大变倍比宽波段连续变焦光学系统设计 ..... 王美钦, 潘海俊, 刘 斌 (246)
- 航天器中远距仅测角导航硬件在环测试的光学模拟器设计 ..... 杜荣华, 廖文和, 张 翔 (253)
- 微小球面显微光学系统设计与照明分析 ..... 刘晓茵, 杨 磊, 杨 童, 苏晓琴, 谢洪波 (262)
- 水下光场的蒙特卡罗法求解 ..... 何大华, 程 朴, 李阳阳 (268)
- 物光复合调制的数字全息散斑去噪方法 ..... 王春阳, 孔 勇, 李 欢, 吴 虎, 张 贺, 王 梦 (275)
- 舰船尾迹和海面红外仿真成像 ..... 黄子亮, 张昊春, 王 琦 (286)

光电信息获取与处理

- 光子计数集成成像的压缩与重构 ..... 崔玉敏, 尹丽菊, 隋立国, 周 辉, 邓玉林 (295)
- 低慢小飞行物实时检测原理与实验研究 ..... 于凯洋, 张 磊, 王克逸 (307)
- 基于 DCGANs 的半片光伏组件电致发光图像增强技术 ..... 何 翔 (314)
- 基于卷积神经网络与特征融合的天气识别方法 ..... 侯晓明, 邱亚峰 (323)
- 一种基于三维形状上下文特征的点云配准算法 ..... 周子翔, 黄丹丹, 刘 智 (330)
- 多局部残差连接注意网络的图像去模糊 ..... 陈清江, 王巧莹 (337)
- 基于自适应阈值的齿轮干涉图像前景区域提取方法 ..... 赵逸超, 王 颀, 焦明星 (345)
- 一种基于嵌入式全景视频流影像数据实时拼接方法  
..... 王娇颖, 李良福, 何 曦, 黄西莹, 王 洁, 周国良, 曹玉举, 张旭辉 (354)

光学计量与测试

- 指向精度对光学姿态测量精度的影响分析  
..... 胡小丽, 唐明刚, 蔡文泽, 张玉伦, 张思琪, 张三喜 (365)
- 基于平面互补靶标的线结构光标定系统  
..... 翟玉生, 杨 犇, 张志峰, 王 瑞, 奚海祁, 李上上, 耿利杰, 张瑞亮, 匡翠方 (371)
- 测量大口径光学元件反射率用精密扫描系统误差分析  
..... 张 彪, 张金玉, 吉 晓, 段园园, 吴 磊, 黎高平, 于东钰, 阴万宏 (380)

视场角和定位误差在光谱辐射亮度测量中的影响

..... 何思捷,代彩虹,程秋桐,吴志峰,李玲,王彦飞(386)

30℃~420℃黑体温度控制及自整定研究

..... 胡铁力,王红红,李四维,曹锋,胡心漪,范喆,杨毓鑫,郭健,尤越,  
杨科,李辉,俞洋(392)

散斑自相关分辨率测量和修正..... 罗诗淇,刘京宙,陈炫辉,谢向生(398)

枪口焰烟光学特性测试研究..... 骆延令,王希骋,王律,高蒙,王曼,程洪亮(406)

基于透视变换的直升机桨根扭转角测量方法... 崔帅华,余磊,朱俊卿,姚天,熊邦书,欧巧凤(412)

基于光谱图像的森林病虫害自动检测方法..... 周晓丽,周立君,伊力塔,刘宇(420)

### 激光技术

多色分图层激光扫描自聚焦投影技术..... 杨帆,牟达,侯茂盛,杨嘉亮,王文博,刘洋(427)

半外腔Nd:YAG和Nd:YVO<sub>4</sub>微片固体激光器的腔调谐特性研究..... 陈伟光,邓勇,张书练(437)

全反射棱镜式激光陀螺标度因数补偿技术..... 黄月锐涵,马家君,张子鹏,刘健宁,蒋军彪(444)

一种大功率宽波段激光束散角的校准测试方法

..... 段园园,吉晓,阴万宏,于东钰,张金玉,张彪,宋一兵,黎高平(450)

### 光纤传感与光通信

孤子分子/类噪声脉冲可切换的混合锁模光纤激光器..... 赵铭,王天枢(456)

基于少模-无芯-少模光纤结构的高灵敏度折射率传感器..... 张静,李永倩(462)

广 告 《应用光学》征稿/广告简则(封二) 国防科技工业光学一级计量站(彩插1~4) 第24届中国国际光电博览会(封三) 慕尼黑上海光博会(封四)

本期责任编辑:王丽

期刊基本参数: CN 61-1171/O4 \* 1980 \* b \* A4 \* 230 \* zh \* P \* ¥50.00 \* 1500 \* 30 \* 2023-03

**Contents**

**OE SYSTEM AND ENGINEERING**

Improvement and analysis of optical axis consistency of an electro-optical device  
..... DUAN Hongjian, WANG Jianjun, HU Bo, et al. (239)

Design of wide-band continuous zoom optical system with 40<sup>x</sup> large zoom ratio  
..... WANG Meiqin, PAN Haijun, LIU Bin (246)

Optical simulator design for hardware in loop testing of medium and long range angles-only navigation of spacecraft ..... DU Ronghua, LIAO Wenhe, ZHANG Xiang (253)

Design and illumination analysis of tiny-spherical microscopic optical system  
..... LIU Xiaoyin, YANG Lei, YANG Tong, et al. (262)

Monte Carlo method for solving underwater light field ..... HE Dahua, CHENG Pu, LI Yangyang (268)

Digital holographic speckle denoising method based on compound modulation of object light  
..... WANG Chunyang, KONG Yong, LI Huan, et al. (275)

Infrared simulation imaging of ship wakes and sea surface  
..... HUANG Ziliang, ZHANG Haochun, WANG Qi (286)

**OE INFORMATION ACQUISITION AND PROCESSING**

Compression and reconstruction of photon counting integral imaging  
..... CUI Yumin, YIN Liju, SUI Liguo, et al. (295)

Real-time detection principle and experimental study of low and slow small flying objects  
..... YU Kaiyang, ZHANG Lei, WANG Keyi (307)

Electroluminescence image enhancement technology of half-cut photovoltaic module based on DCGANs  
..... HE Xiang (314)

Weather recognition method based on convolutional neural network and feature fusion  
..... HOU Xiaoming, QIU Yafeng (323)

Point cloud registration algorithm based on 3D shape context features  
..... ZHOU Zixiang, HUANG Dandan, LIU Zhi (330)

Image deblurring based on multiple local residual connection attention network  
..... CHEN Qingjiang, WANG Qiaoying (337)

Extraction method of gear interference image foreground region based on adaptive threshold  
..... ZHAO Yichao, WANG Xian, JIAO Mingxing (345)

Real-time splicing method of image data based on embedded panoramic video stream  
..... WANG Jiaoying, LI Liangfu, HE Xi, et al. (354)

## **OPTICAL METROLOGY AND MEASUREMENT**

- Influence of optical axis pointing error on optical pose measurement accuracy  
..... HU Xiaoli, TANG Minggang, CAI WENZE, et al. (365)
- Line structured light calibration system based on planar complementary target  
..... ZHAI Yusheng, YANG Ben, ZHANG Zhifeng, et al. (371)
- Error analysis of precision scanning system for measuring reflectivity of large-aperture optical elements  
..... ZHANG Biao, ZHANG Jinyu, JI Xiao, et al. (380)
- Influence of field of view angle and positioning error on spectral radiance measurement  
..... HE Sijie, DAI Caihong, CHENG QIUTONG, et al. (386)
- Research on temperature control and self-tuning for 30 °C~420 °C blackbody  
..... HU Tieli, WANG Honghong, LI Siwei, et al. (392)
- Speckle autocorrelation resolution measurement and correction  
..... LUO Shiqi, LIU Jingzhou, CHEN Xuanhui, et al. (398)
- Measurement for optical properties of gun flame and smoke  
..... LUO Yanling, WANG XICHENG, WANG LYU, et al. (406)
- Measurement method of helicopter blade root torsion angle based on perspective transformation  
..... CUI Shuaihua, YU Lei, ZHU Junqing, et al. (412)
- Automatic detection method of forest diseases and insect pests based on spectral images  
..... ZHOU Xiaoli, ZHOU Lijun, YI Lita, et al. (420)

## **LASER TECHNOLOGY**

- Multi-color layer laser scanning and auto-focus projection technology  
..... YANG Fan, MU Da, HOU Maosheng, et al. (427)
- Characteristics of cavity tuning of half-external cavity Nd:YAG and Nd:YVO<sub>4</sub> microchip solid-state lasers  
..... CHEN Weiguang, DENG Yong, ZHANG Shulian (437)
- Scale factor compensation technology of laser gyro with total reflection prism  
..... HUANG Yueruihan, MA Jiajun, ZHANG Zipeng, et al. (444)
- Calibration method for high-power and wide-band laser beam divergence angle  
..... DUAN Yuanyuan, JI Xiao, YIN Wanhong, et al. (450)

## **FIBER SENSING AND OPTICAL COMMUNICATION**

- Switchable soliton molecules and noise-like pulses in hybrid mode-locking fiber laser  
..... ZHAO Ming, WANG Tianshu (456)
- High-sensitivity refractive index sensor based on FMF-CLF-FMF optical fiber structure  
..... ZHANG Jing, LI Yongqian (462)