



光学学报

GUANGXUE XUEBAO

(月刊, 1981年1月创刊)

第38卷 第10期 (总第439期) 2018年10月10日

主管单位 中国科学技术协会

主办单位 中国科学院上海光学精密机械研究所

中国光学学会

协办单位 华东理工大学理学院

主 编 曹健林

出 版 《中国激光》杂志社有限公司

(上海市嘉定区清河路390号, 邮编 201800)

电 话 021-69916837

电子邮箱 aos@siom.ac.cn

网 址 <http://aos.opticsjournal.net>

印 刷 上海贝叶图书有限公司

发行范围 公开

国内发行 中国邮政集团公司上海市分公司

国内订阅 中国邮政集团公司

国外发行 中国国际图书贸易集团有限公司

国内邮发代号 4-293

国外发行代号 M483

广告经营许可证号 3101420050004



EI核心期刊

SCOPUS、CA、INSPEC、AJ、CSCD等收录

中国百强报刊

百种中国杰出学术期刊

中国精品科技期刊

中国国际影响力优秀学术期刊

华东地区优秀期刊

中文核心期刊

中国科技核心期刊



ACTA OPTICA SINICA

(Monthly, First Published in 1981)

Vol. 38, No. 10, (Series No. 439) October 10, 2018

Managed by China Association for Science and Technology

Sponsored by Shanghai Institute of Optics and Fine Mechanics,
Chinese Academy of Sciences
Chinese Optical Society

Cosponsored by School of Science,
East China University of Science and Technology

Editor-in-Chief Cao Jianlin

Published by Chinese Laser Press
(No. 390, Qinghe Rd., Jiading, Shanghai 201800)

Tel 021-69916837

E-mail aos@siom.ac.cn

Website <http://aos.opticsjournal.net>

Printed by Shanghai Pattra Publishing Company

Distributed by Shanghai Branch of China Post Group

Domestic China Post Group

Foreign China International Book Trading Corporation

《
中国激光
》
杂志
社



《
光学
学报
》
官
方
网
站



责任编辑: 何卓铭 (021-69916837)

广 告: 高福海 (021-69918011)

发 行: 陈 青 (021-69918691)

中国标准连续出版物号: ISSN 0253 - 2239
CN 31 - 1252/O4

定价: 190 元/册



《光学学报》第六届

编辑委员会委员名单

顾 问

干福熹 王之江 徐至展 王润文

主 编

曹健林

执行主编

赵建林

副 主 编

邵建达 许京军 胡丽丽 韩申生

常务编委 (按姓氏笔画为序)

王涌天	刘树田	李志远	吴重庆
张志刚	张淳民	陈良尧	陈险峰
房建成	俞 信	饶瑞中	倪国强
陶绪堂	龚尚庆	崔一平	彭 翔
曾和平			

编 委 (按姓氏笔画为序)

丁大军	王启明	王雪华	庄松林
刘 旭	刘颂豪	杨国桢	张 荣
张以謨	张维岩	陆启生	陈德应
林祥棣	金国藩	姜文汉	龚知本
彭堃墀			

光学学报

第38卷 第10期 2018年10月
(总第439期)

目 次

· 大气光学与海洋光学 ·

- 准直光束上行传输稳态热晕的全局敏感性分析 陈小威, 李学彬, 魏合理 等 1001001
转塔气动光学效应时空特性 董航, 徐明 1001002
非均匀水体光学隐蔽深度模型建立与验证 朱海荣, 朱海, 蔡鹏 等 1001003
基于散射比值的粒子特性提取 杨东, 徐文清, 徐青山 等 1001004
基于时域荧光寿命的水体溶解氧浓度检测方法 涂梦迪, 殷高方, 赵南京 等 1001005

· 原子与分子物理学 ·

- 铷原子蒸气中超精细基态的双光子相干操控 王晓晨, 蒋小军, 赵子豪 等 1002001

· 衍射与光栅 ·

- 衍射拼接主镜厚度误差分析及分辨率增强实验 李韬杰, 汪岳峰, 杨正 等 1005001
正六边形多孔阵列的涡旋光衍射 李润泉, 王智, 崔聚 等 1005002

· 光纤光学与光通信 ·

- 窄线宽全光纤环形滤波器特性研究 秦晓琼, 方祖捷, 应康 等 1006001
空芯反谐振光纤与单模光纤的低损耗熔接研究 李晓倩, 高寿飞, 汪滢莹 等 1006002
掺铒光纤动态光栅与光纤 Bragg 光栅 Fabry-Perot 腔特性研究 孟瑜, 苏雪梅, 庞妍 1006003
基于光纤 Sagnac 传感技术的结构冲击定位 程竹明, 曾捷, 常晨 等 1006004
纳米膜修饰长周期光纤光栅生物传感特性研究 齐跃峰, 贾翠, 刘磊 等 1006005
近红外 S-C-L 超宽波带低噪声 PbS 量子点掺杂光纤放大器 程成, 吴昌斌 1006006
基于免疫算法的高精度室内可见光三维定位系统 王鹏飞, 关伟鹏, 文尚胜 等 1006007
基于量子点和倏逝波的汞离子检测光纤传感器 刘婷, 王文琪, 刘志群 等 1006008

· 图像处理 ·

- 基于改进栈式稀疏去噪自编码器的自适应图像去噪 马红强, 马时平, 许悦雷 等 1010001
基于双通道卷积神经网络的深度图超分辨研究 李素梅, 雷国庆, 范如 1010002
联合深度去噪先验图像盲去模糊 杨爱萍, 王金斌, 杨炳旺 等 1010003
基于深度特征的快速人脸图像检索方法 李振东, 钟勇, 陈蔓 等 1010004
基于 l^p 空间力学模型的三维点云配准算法 赵敏, 舒勤, 陈蔚 等 1010005
基于低通滤波和多特征联合优化的夜间图像去雾(封面文章) 杨爱萍, 赵美琪, 王海新 等 1010006

· 成像系统 ·

- 非相干探测模式下啁啾调幅关联成像影响因素研究 潘龙, 邓陈进, 龚文林 等 1011001

· 仪器, 测量与计量 ·

- 不同视场下太阳透射比值的快速测量与云检测 杨东, 李建玉, 徐文清 等 1012001
一种弱化莫尔条纹的狭缝光栅屏裸眼 3D 显示器 胡建青, 赵悟翔, 马晓莉 等 1012002

· 激光器与激光光学 ·

- 外延叠层多有源区激光器的结构优化设计 侯继达, 熊聪, 祁琼 等 1014001

激光冲击强化 H62 黄铜摩擦磨损性能研究	段海峰, 罗开玉, 鲁金忠 等 1014002
非线性调制影响束匀滑相位板离焦性能的研究	田玉婷, 邬融, 孙明营 等 1014003
小时间抖动、高重复频率 Nd: YAG/Cr ⁴⁺ : YAG 被动调 Q 微型激光器	王煜, 姜梦华, 惠勇凌 等 1014004
· 机器视觉 ·	
基于方向可靠性的互补跟踪算法	宋日成, 何小海, 王正勇 1015001
稳健的双模型自适应切换实时跟踪算法	熊昌镇, 车满强, 王润玲 等 1015002
基于自适应分块编码 SVM 的车道导向箭头多分类方法	杜恩宇, 张宁, 李艳荻 1015003
· 医用光学与生物技术 ·	
基于空间信息改进聚类的切伦科夫荧光图像去噪算法	贺小伟, 孙怡, 卫潇 等 1017001
基于分组主成分分析的光学相干图像降斑算法	方敬, 滕树云, 牛四杰 等 1017002
基于低秩矩阵填充的背景荧光噪声抑制方法	王晓东, 耿国华, 易黄建 等 1017003
· 非线性光学 ·	
脉冲内四波混频与四分量超慢光孤子	王苗, 杭超 1019001
· 光学设计与制造 ·	
基于同心透镜的超广角手机镜头设计	王洋, 孟祥月, 张磊 等 1022001
射流抛光中生成高斯型去除函数的数学建模方法	王中显, 张连新, 孙鹏飞 等 1022002
一种辅助船舶入港的发光二极管导航系统设计与实现	张佳斌, 郭文平, 夏珉 等 1022003
光刻机照明系统的多自由度均匀性校正方法	程伟林, 张方, 林栋梁 等 1022004
· 表面光学 ·	
不同宽度双狭缝复合光栅多频相位共振特性	周凤麒, 高恩多, 张镇斌 等 1024001
单挡板 MDM 波导耦合圆盘腔的 Fano 共振双模式特性研究	韩帅涛, 陈颖, 邱远见 等 1024002
· 物理光学 ·	
典型卫星表面材料可见光偏振特性分析	陈伟力, 李军伟, 孙仲秋 等 1026001
· 量子光学 ·	
基于双电子自旋与纳米机械谐振子强耦合的纠缠态制备	芦瑞琪, 任韧, 胡晓蕊 等 1027001
泡沫覆盖不规则海面的空-水量子密钥分发	王激, 周媛媛, 周学军 等 1027002
量子光频梳产生实验研究	王少锋, 项晓, 董瑞芳 等 1027003
· 遥感与传感器 ·	
基于 VG-DBSCAN 算法的大场景散乱点云去噪	赵凯, 徐友春, 李永乐 等 1028001
动态阈值云检测算法改进及在高分辨率卫星上的应用	王权, 孙林, 韦晶 等 1028002
· 散射 ·	
加工表面双向反射分布函数的测量与建模	史卫朝, 郑建明, 李言 等 1029001
· 光谱学 ·	
基于竞争适应重加权采样算法耦合机器学习的土壤含水量估算	葛翔宇, 丁建丽, 王敬哲 等 1030001
· 薄膜 ·	
溶液法制备氧化锡薄膜及光学特性研究	王佳良, 刘贤哲, 邓宇熹 等 1031001
· 快报 ·	
基于硬件 SURF 算法的自校准双目测距系统	蒋晓东, 于纪言, 朱立坤 等 1036001

本文电子版彩色效果请详见中国光学期刊网 www.opticsjournal.net

ACTA OPTICA SINICA

Vol.38, No.10 (Series No.439) October 2018

CONTENTS

Atmospheric Optics and Oceanic Optics

Global Sensitivity Analysis of Uplink Steady-State Thermal Blooming for a Collimated Beam	Chen Xiaowei, Li Xuebin, Wei Heli et al. 1001001
Space-Time Characteristics of the Aero-Optical Effect Around Turrets	Dong Hang, Xu Ming 1001002
Establishment and Verification of the Optical Concealment Depth Model for Layered Water	Zhu Hairong, Zhu Hai, Cai Peng et al. 1001003
Particle-Property Extraction Based on Scattering Ratio	Yang Dong, Xu Wenqing, Xu Qingshan et al. 1001004
Detection Method of Dissolved Oxygen Concentration in Water Based on Time-Domain Fluorescence Lifetime	Tu Mengdi, Yin Gaofang, Zhao Nanjing et al. 1001005

Atomic and Molecular Physics

Two-Photon Coherent Manipulation of Hyperfine Ground States in Rubidium Vapor	Wang Xiaochen, Jiang Xiaojun, Zhao Zihao et al. 1002001
-------------------------------------------------------------------------------------	---------------------------------------------------------

Diffraction and Gratings

Thickness Error Analysis of Diffractive Segmented Primary Lens and Resolution Enhancement Experiment	Li Taojie, Wang Yuefeng, Yang Zheng et al. 1005001
------------------------------------------------------------------------------------------------------------	----------------------------------------------------

Diffraction of Vortex Beam by Regular Hexagonal Multi-Hole Array	Li Runquan, Wang Zhi, Cui Can et al. 1005002
------------------------------------------------------------------------	----------------------------------------------

Fiber Optics and Optical Communications

Narrow Linewidth All-Fiber Ring Filters	Qin Xiaoqiong, Fang Zujie, Ying Kang et al. 1006001
-----------------------------------------------	-----------------------------------------------------

Low-Loss Fusion Splice of Hollow-Core Anti-Resonant Fiber and Single Mode Fiber	Li Xiaoqian, Gao Shoufei, Wang Yingying et al. 1006002
---------------------------------------------------------------------------------------	--------------------------------------------------------

Characteristics of Fabry-Perot Cavity Based on Dynamic Grating in Er-Doped Fiber and Fiber Bragg Grating	Meng Yu, Su Xuemei, Pang Yan 1006003
----------------------------------------------------------------------------------------------------------------	--------------------------------------

Structural Impact Localization Based on Optical Fiber Sagnac Sensing Technique	Cheng Zhuming, Zeng Jie, Chang Chen et al. 1006004
--------------------------------------------------------------------------------------	----------------------------------------------------

Biosensing Properties of Nanofilm-Modified Long-Period Fiber Gratings	Qi Yuefeng, Jia Cui, Liu Lei et al. 1006005
-----------------------------------------------------------------------------	---------------------------------------------

PbS Quantum-Dot-Doped Fiber Amplifier in NIR S-C-L Ultra-Broad Waveband with Low Noise	Cheng Cheng, Wu Changbin 1006006
----------------------------------------------------------------------------------------------	----------------------------------

High Precision Indoor Visible Three-Dimensional Positioning System Based on Immune Algorithm	Wang Pengfei, Guan Weipeng, Wen Shangsheng et al. 1006007
----------------------------------------------------------------------------------------------------	-----------------------------------------------------------

Optical Fiber Sensor for Mercury Ion Detection Based on Quantum Dots and Evanescent Wave Sensing	Liu Ting, Wang Wengi, Liu Zhiqun et al. 1006008
--------------------------------------------------------------------------------------------------------	-------------------------------------------------

Image Processing

Adaptive Image Denoising Based on Improved Stacked Sparse Denoising Auto-Encoder	
----------------------------------------------------------------------------------------	--

Ma Hongqiang, Ma Shiping, Xu Yuelei et al. 1010001

Depth Map Super-Resolution Based on Two-Channel Convolutional Neural Network	Li Sumei, Lei Guoqing, Fan Ru 1010002
------------------------------------------------------------------------------------	---------------------------------------

Joint Deep Denoising Prior for Image Blind Deblurring	Yang Aiping, Wang Jinbin, Yang Bingwang et al. 1010003
-------------------------------------------------------------	--------------------------------------------------------

Fast Face Image Retrieval Based on Depth Feature	Li Zhendong, Zhong Yong, Chen Man et al. 1010004
--------------------------------------------------------	--------------------------------------------------

Three-Dimensional Point Cloud Registration Algorithm Based on l^p Spatial Mechanics Model	
---------------------------------------------------------------------------------------------------	--

Zhao Min, Shu Qin, Chen Wei et al. 1010005

Nighttime Image Dehazing Based on Low-Pass Filtering and Joint Optimization of Multi-Feature (Cover Paper)	
---------------------------------------------------------------------------------------------------------------------------	--

Yang Aiping, Zhao Meiqi, Wang Haixin et al. 1010006

Imaging Systems

Influence of Chirped-Amplitude Correlated Imaging Under Incoherent Detection	Pan Long, Deng Chenjin, Gong Wenlin et al. 1011001
------------------------------------------------------------------------------------	----------------------------------------------------

Instrumentation, Measurement and Metrology

Fast Measurement and Cloud Detection of Solar Transmission Ratio at Different Fields of View	
----------------------------------------------------------------------------------------------------	--

Yang Dong, Li Jianyu, Xu Wenqing et al. 1012001

A Naked-Eye 3D LED Display Based on a Parallax Barrier with Weak Moiré Fringes	
--------------------------------------------------------------------------------------	--

Hu Jianqing, Zhao Wuxiang, Ma Xiaoli et al. 1012002

Lasers and Laser Optics

Optimization Design of Epitaxially-Stacked Multiple-Active-Region Lasers	Hou Jida, Xiong Cong, Qi Qiong et al. 1014001
--------------------------------------------------------------------------------	-----------------------------------------------

Friction and Wear Properties of H62 Brass Subjected to Laser Shock Peening	<i>Duan Haifeng, Luo Kaiyu, Lu Jinzhong</i>	1014002
Influence of Nonlinear Modulation on the Defocusing Performance of Beam Smoothing Phase Plate	<i>Tian Yuting, Wu Rong, Sun Mingying et al.</i>	1014003
Passively Q-Switched Nd:YAG/Cr ⁴⁺ :YAG Microchip Laser with Low Time Jitter and High Repetition Rate	<i>Wang Yu, Jiang Menghua, Hui Yongling et al.</i>	1014004
Machine Vision		
Complementary Object Tracking Based on Directional Reliability	<i>Song Richeng, He Xiaohai, Wang Zhengyong</i>	1015001
Robust Real-Time Visual Tracking via Dual Model Adaptive Switching	<i>Xiong Changzhen, Che Manqiang, Wang Runling et al.</i>	1015002
Multi Classification Method of Lane Arrow Markings Based on Support Vector Machines with Adaptive Partitioning Coding	<i>Du Enyu, Zhang Ning, Li Yandi</i>	1015003
Medical Optics and Biotechnology		
Denoising Algorithm of Cerenkov Luminescence Images Based on Spatial Information Improved Clustering	<i>He Xiaowei, Sun Yi, Wei Xiao et al.</i>	1017001
Optical Coherent Image Despeckling Algorithm Based on Grouping Principal Component Analysis	<i>Fang Jing, Teng Shuyun, Niu Sijie et al.</i>	1017002
Low-Rank-Matrix-Completion-Based Method for Suppressing Background Fluorescence	<i>Wang Xiaodong, Geng Guohua, Yi Huangjian et al.</i>	1017003
Nonlinear Optics		
Intrapulse Four-Wave Mixing and Four-Component Ultraslow Optical Solitons	<i>Wang Miao, Hang Chao</i>	1019001
Optical Design and Fabrication		
Design of Super-Wide-Angle Mobile Phone Camera Based on Concentric Lens	<i>Wang Yang, Meng Xiangyue, Zhang Lei et al.</i>	1022001
Mathematical Modeling Method for Generation of Gaussian-Type Removal Function in Fluid Jet Polishing	<i>Wang Zhongyu, Zhang Lianxin, Sun Pengfei et al.</i>	1022002
Design and Implementation of Navigation System for Assisting Ships in Entering Port Based on Light-Emitting Diodes	<i>Zhang Jiabin, Guo Wenping, Xia Min et al.</i>	1022003
Multi-Degree-of-Freedom Uniformity Correction Method of Illumination System in Lithography Machine	<i>Cheng Weilin, Zhang Fang, Lin Dongliang et al.</i>	1022004
Optics at Surfaces		
Properties of Multi-Frequency Phase Resonance in Double-Slit Compound Gratings with Different Slit Widths	<i>Zhou Fengqi, Gao Enduo, Zhang Zhenbin et al.</i>	1024001
Fano Resonance Dual Mode Performance of Single Baffle Contained MDM Waveguide Coupled Disk Cavity	<i>Han Shuaитao, Chen Ying, Di Yuanjian et al.</i>	1024002
Physical Optics		
Analysis of Visible Polarization Characteristics of Typical Satellite Surface Materials	<i>Chen Weili, Li Junwei, Sun Zhongqiu et al.</i>	1026001
Quantum Optics		
Preparation of Entangled States Based on Strong Coupling Between Double Electron Spins and Nano-Mechanical Harmonic Oscillator	<i>Lu Ruiqi, Ren Ren, Hu Xiaorui et al.</i>	1027001
Air-Water Quantum Key Distribution on Irregular Sea Surface Covered with Foams	<i>Wang Lian, Zhou Yuanyuan, Zhou Xuejun et al.</i>	1027002
Research on Experimental Generation of Quantum Optical Frequency Comb	<i>Wang Shaofeng, Xiang Xiao, Dong Ruifang et al.</i>	1027003
Remote Sensing and Sensors		
Large-Scale Scattered Point-Cloud Denoising Based on VG-DBSCAN Algorithm	<i>Zhao Kai, Xu Youchun, Li Yongle et al.</i>	1028001
Improvement of Universal Dynamic Threshold Cloud Detection Algorithm and Its Application in High Resolution Satellite	<i>Wang Quan, Sun Lin, Wei Jing et al.</i>	1028002
Scattering		
Measurement and Modeling of Bidirectional Reflectance Distribution Function on Cutting Surface	<i>Shi Weichao, Zheng Jianming, Li Yan et al.</i>	1029001
Spectroscopy		
Estimation of Soil Moisture Content Based on Competitive Adaptive Reweighted Sampling Algorithm Coupled with Machine Learning	<i>Ge Xiangyu, Ding Jianli, Wang Jingzhe et al.</i>	1030001
Thin Films		
Fabrication and Optical Properties of Tin Oxide Thin Films by Solution Process	<i>Wang Jialiang, Liu Xianzhe, Deng Yuxi et al.</i>	1031001
News		
Self-Calibrated Binocular Ranging System Based on Hardware SURF Algorithm	<i>Jiang Xiaodong, Yu Jiyan, Zhu Likun et al.</i>	1036001