



ISSN 1007-2276
<http://www.irla.cn>

红外与激光工程

INFRARED AND LASER ENGINEERING

2017

Vol.46 No.8



本期专家报告

激光雷达用高性能光纤激光器

史 伟

激光雷达以其极高的分辨本领和抗干扰能力，被广泛应用于巡航制导、目标跟踪以及大气遥感等领域。光纤激光作为新一代激光技术，因其光束质量优、功率/脉冲能量高、集成性好以及维护简单等优势，在激光雷达测控领域有着广阔的应用前景。

中国航天科工集团公司

《红外与激光工程》编辑部

目次

(加★文章为本期推荐优秀论文)

◆邀请报告◆

激光雷达用高性能光纤激光器 史伟,房强,李锦辉,等 0802001

◆太赫兹技术及应用◆

★氧化镁单晶在太赫兹波段的介电特性 任冠华,赵红卫,张建兵,等 0825001

圆周阵列太赫兹干涉成像仿真 吴俊政,严卫东,倪维平,等 0825002

亚波长金属光栅的凹槽深度对太赫兹伪表面等离子体影响(英文) 杜鸣笛,贾雅琼,何淑珍 0825003

◆红外技术及应用◆

★我国海雾总体特点及其对中红外辐射能量衰减的分析 李伟,邵利民,李树军,等 0804001

面向微光/红外融合彩色夜视的场景解析方法 鲁佳颖,谷小婧,顾幸生 0804002

人在回路红外成像导弹搜捕概率建模与仿真 罗木生,沈培志,陈邓安,等 0804003

红外制导半实物仿真系统误差分析 赵世明,孙致月 0804004

临近空间全球温度场三维变分同化 谢衍新,吴小成,胡雄,等 0804005

◆激光技术及应用◆

★激光熔覆高耐蚀 Fe 基固溶体合金涂层 王彦芳,李豪,石志强,等 0806001

可应用于高效光电对抗的新颖结构激光谐振腔(英文) 曾钦勇,万勇,秦开宇 0806002

掺铈激光晶体双波长振荡条件的理论研究 李景照,陈振强,朱思祁,等 0806003

角度多样性激光散斑抑制方法的比较 徐美芳,丁俊文,王冠军,等 0806004

不同能量背景的环形艾里飞秒激光光束大气成丝特性(英文) 胡瑜泽,聂劲松,孙可,等 0806005

退火温度及保温时间对激光沉积制造 TA15 钛合金微观组织和显微硬度的影响 杨光,王文东,钦兰云,等 0806006

光学薄膜激光损伤阈值测量不确定度 徐均琪,苏俊宏,葛锦蔓,等 0806007

基于非对称 sinc 函数拟合的激光测距算法优化 郭荣幸,赵亚飞,马鹏阁,等 0806008

边界约束条件对薄板激光喷丸诱导残余应力和塑性变形的影响 黄志伟,张兴权,章艳,等 0806009

◆光电测量◆

★薄片 DKDP 晶体前后表面损伤识别技术研究 万能,达争尚,李红光,等 0817001

模型式无波前探测自适应光学系统抗噪能力分析 杨慧珍,王斌,刘瑞明,等 0817002

锯齿波调制半波扫描技术对甲烷检测系统的性能改进 曾祥豹,王海旭,王忠民,等 0817003

CCD 的非线性响应特性对光束质量测量的影响及修正 景文博,张汝平,王晓曼,等 0817004

◆光学设计及仿真◆

- 基于 PI 逆模型的快速微摆反射镜的开环控制 胡亮亮,米凤文,金伟其,等 0818001
- 空间同轴三反相机 $\Phi 520$ mm 次镜的加工与检测 孟晓辉,王永刚,马仙梅,等 0818002
- 部分空间相干光经准均匀介质的散射(英文) 赵新亮,王海霞,李同海,等 0818003
- 基于空间机构学的 Coude 光路装调方法 张丽敏,韩西达,曹玉岩,等 0818004
- 红外与可见光图像融合的汽车抗晕光系统 郭全民,董 亮,李代娣 0818005
- 大口径望远镜阻尼调制技术 赵勇志,安其昌,韩西达 0818006

◆光电器件与微系统◆

- 宽光谱在线弯晶谱仪研制 杨国洪,韦敏习,张文海,等 0820001
- 800 nm 亚波长夹层式金属偏振分束光栅 季淑英,孔伟金,李 娜,等 0820002

◆先进光学材料◆

- 光热敏折变玻璃的体布拉格光栅热特性理论研究 李志永,谭荣清,黄 伟,等 0821001
- 高掺铒硅基氧化钽脊形光波导 陈朝夕,温浩康,于 浩,等 0821002

◆光通信与光传感◆

- 0.34 THz 肖特基二极管高速 OOK 信号直接检波器 田遥岭,蒋 均,黄 昆,等 0822001
- 纯硅芯光纤的空间辐照环境适应性 贾 晓,朱恒静,张红旗,等 0822002
- 高斯阵列光束自耦合特性的实验研究 柯熙政,张 雅 0822003
- 光纤陀螺抑制过调制串扰的多态方波调制方法 李 贺,邓学文,朱奎宝,等 0822004

◆前沿光学成像技术◆

- 多孔径压缩编码超分辨率大视场成像方法 袁 影,王晓蕊,吴雄雄,等 0824001
- 任意阶运动目标强度关联成像 梁振宇,樊 祥,程正东,等 0824002

◆景象信息处理◆

- 利用序列图像解算目标视线角速率的方法 王向军,乐 兵,邢 峰,等 0828001

Contents

◆Invited paper◆

High-performance fiber lasers for LIDARs Shi Wei, Fang Qiang, Li Jinhui, et al. 0802001

◆Terahertz technology and application◆

Terahertz dielectric properties of single-crystal MgO Ren Guanhua, Zhao Hongwei, Zhang Jianbing, et al. 0825001

Simulation of terahertz interferometric imaging with circular array Wu Junzheng, Yan Weidong, Ni Weiping, et al. 0825002

Impact of groove depth of subwavelength metal grating on THz spoof SPPs
..... Du Mingdi, Jia Yaqiong, He Shuzhen 0825003

◆Infrared technology and application◆

Features of China sea fog and its influence on intermediate infrared radiation energy attenuation
..... Li Wei, Shao Limin, Li Shujun, et al. 0804001

Scene parsing method toward low-light-level/infrared color night vision
..... Lu Jiaying, Gu Xiaojing, Gu Xingsheng 0804002

Modeling and simulation of acquisition probability of infrared imaging missile with human in-the-loop
..... Luo Musheng, Shen Peizhi, Chen Deng'an, et al. 0804003

Error analysis of infrared guidance hardware in loop simulation system Zhao Shiming, Sun Zhiyue 0804004

Preliminary study on 3-dimensional variational assimilation of global temperature field in near space
..... Xie Yanxin, Wu Xiaocheng, Hu Xiong, et al. 0804005

◆Laser technology and application◆

Laser cladding Fe-based solid solution alloy coating with high corrosion resistance
..... Wang Yanfang, Li Hao, Shi Zhiqiang, et al. 0806001

Laser resonator of novel configuration applicable to efficient electro-optical countermeasure
..... Zeng Qinyong, Wan Yong, Qin Kaiyu 0806002

Theoretical research of the dual-wavelength oscillating condition in Nd-doped laser crystals
..... Li Jingzhao, Chen Zhenqiang, Zhu Siqi, et al. 0806003

Comparison of laser speckle suppression due to angle diversity
..... Xu Meifang, Ding Junwen, Wang Guanjuan, et al. 0806004

Air filamentation characteristics of ring Airy femtosecond laser beam with different background energies
..... Hu Yuze, Nie Jinsong, Sun Ke, et al. 0806005

Effect of annealing temperature and soaking time on microstructures and microhardness of laser deposition manufacturing TA15 titanium alloy Yang Guang, Wang Wendong, Qin Lanyun, et al. 0806006

Measurement uncertainty of laser-induced damage threshold of the optical thin films
..... Xu Junqi, Su Junhong, Ge Jinman, et al. 0806007

Optimization of laser ranging algorithm based on asymmetric sinc function fitting
..... Guo Rongxing, Zhao Yafei, Ma Pengge, et al. 0806008

Effect of boundary constraint conditions of thin plate on residual stresses and plastic deformation induced by laser shock peening
..... Huang Zhiwei, Zhang Xingquan, Zhang Yan, et al. 0806009

◆Photoelectric measurement◆

Identification of the front or rear surface damage of the thin DKDP crystal
..... Wan Neng, Da Zhengshang, Li Hongguang, et al. 0817001

Analysis of anti-noise capability of model-based wavefront sensorless adaptive optics system	Yang Huizhen, Wang Bin, Liu Ruiming, et al. 0817002
Methane detection system performance improvement based on sawtooth modulation half-wave scanning technology	Zeng Xiangbao, Wang Haixu, Wang Zhongmin, et al. 0817003
Impact and correction of CCD nonlinear response on measurement of the laser beam quality	Jing Wenbo, Zhang Ruping, Wang Xiaoman, et al. 0817004
❖ Optical design and simulation ❖	
Open loop control of fast steering mirror based on PI inverse model	Hu Liangliang, Mi Fengwen, Jin Weiqi, et al. 0818001
Fabrication and test for $\Phi 520$ mm secondary mirror of on-axis three mirror space camera	Meng Xiaohui, Wang Yonggang, Ma Xianmei, et al. 0818002
Scattering of spatially partially coherent light on quasi-homogeneous medium	Zhao Xinliang, Wang Haixia, Li Tonghai, et al. 0818003
Coude light path alignment scheme with spatial mechanism	Zhang Limin, Han Xida, Cao Yuyan, et al. 0818004
Vehicles anti-halation system based on infrared and visible images fusion	Guo Quanmin, Dong Liang, Li Daidi 0818005
Tuned damping technique for large telescope	Zhao Yongzhi, An Qichang, Han Xida 0818006
❖ Photoelectric device and microsystem ❖	
Fabrication of on-line wide energy range convex crystal spectrometer	Yang Guohong, Wei Minxi, Zhang Wenhai, et al. 0820001
Subwavelength sandwiched metal polarizing beam grating for 800 nm	Ji Shuying, Kong Weijin, Li Na, et al. 0820002
❖ Advanced optical materials ❖	
Investigation on the thermal properties of volume Bragg grating in photo-thermo-refractive glass	Li Zhiyong, Tan Rongqing, Huang Wei, et al. 0821001
Silicon-based tantalum pentoxide ridge waveguide with high erbium concentration	Chen Zhaoxi, Wen Haokang, Yu Hao, et al. 0821002
❖ Optical communication and optical sensing ❖	
0.34 THz high speed on-off keying (OOK) signal direct detector based on Schottky diode	Tian Yaoling, Jiang Jun, Huang Kun, et al. 0822001
Space radiation applicability of pure silicon-core optical fibers	Jia Xiao, Zhu Hengjing, Zhang Hongqi, et al. 0822002
Experimental study on the self-coupling characteristics of Gaussian array beams	Ke Xizheng, Zhang Ya 0822003
Method of variable square wave modulation to restrain excessive modulation crosstalk in FOG	Li He, Deng Xuewen, Zhu Kuibao, et al. 0822004
❖ Advanced optical imaging technology ❖	
Multi-aperture super-resolution and wide-field imaging method using compressive coding	Yuan Ying, Wang Xiaorui, Wu Xiongxiang, et al. 0824001
Nth-order intensity correlated imaging for moving target	Liang Zhenyu, Fan Xiang, Cheng Zhengdong, et al. 0824002
❖ Scene information and processing ❖	
Method of measuring target LOS angular rate with sequence images	Wang Xiangjun, Le Bing, Xing Feng, et al. 0828001

ISV系列 紫外到短波红外积分球

主要测试功能:

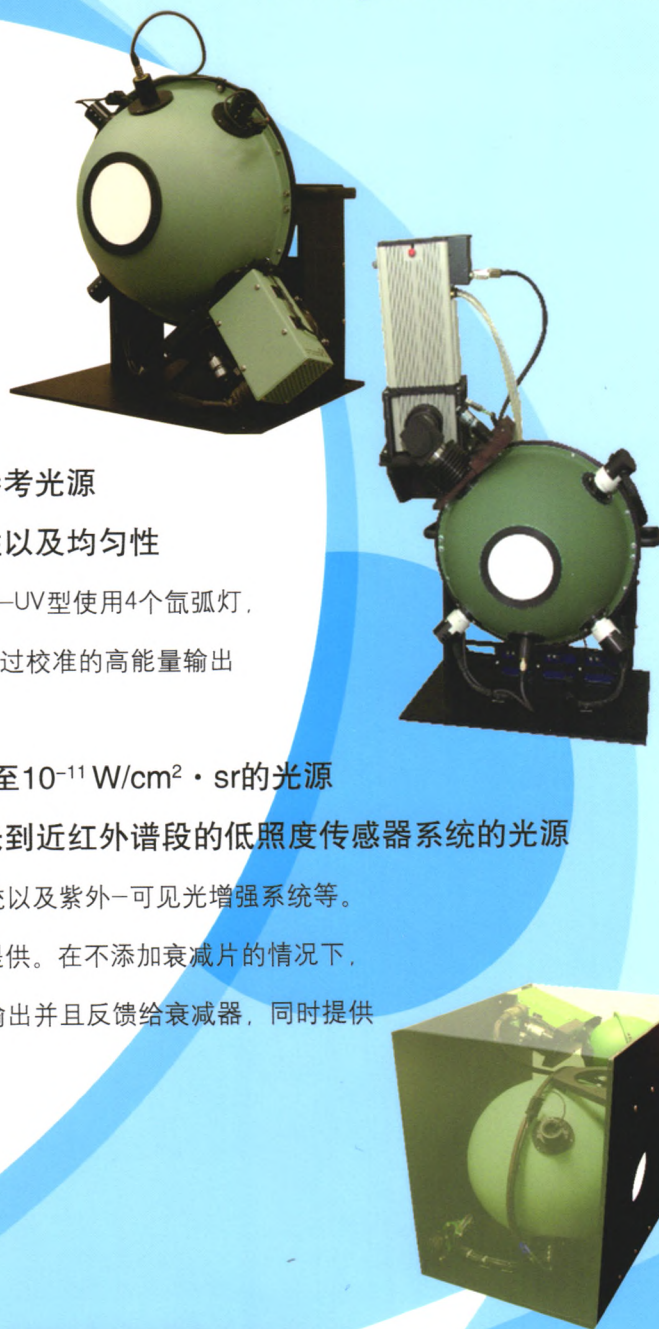
- ◇ 用于校准覆盖紫外到短波红外波长传感器的参考光源
- ◇ 亮度范围广并且具有极卓越的精确性, 稳定性以及均匀性
- ◇ ISV410-LL: 低亮度和近红外专用辐亮度可低至 10^{-11} W/cm² · sr的光源
- ◇ ISV410-LL是专用于测试和校准工作于可见光到近红外谱段的低照度传感器系统的光源

紫外波段扩展型号可提供独有的5000 K色温ISV410-UV型使用4个氙弧灯, 色温可达5000 K, 可提供覆盖200 nm到2000 nm波段的经过校准的高能量输出适用于测试和校准辐射计以及紫外增强相机。

比如夜视系统、图像增强相机、辐射计、遥感系统以及紫外-可见光增强系统等。其照明由色温达到 2856 ± 25 K可溯源NIST的钨卤素灯提供。在不添加衰减片的情况下, 可输出低照度真实色温。硅探测器可连续监视光源的输出并且反馈给衰减器, 同时提供可靠及可重复的性能表现。

★ 整合资源, 优化销售渠道, 做红外测试和全景监控系统领域的开拓者!
HGH成功收购美国光电工业公司EOI。

★ 全参数测试算法符合国家标准GB/T 17444-2013 《红外焦平面阵列参数测试方法》



HGH Systèmes Infrarouges

10 Rue Maryse Bastié
91430 IGNY - FRANCE
Tel: +33 1 69 35 47 70
Fax: +33 1 69 35 47 80

法国HGH红外系统股份公司北京代表处
北京东城区东直门南大街14号
北京保利大厦办公楼974室 (100027)
电话: 010 - 6551 5319
传真: 010 - 6551 5318

ISSN 1007-2276



9 771007 227004
万方数据

刊号 ISSN 1007-2276
CN 12-1261/TN

邮发代号 国内 6-133
国外 BM1766

国内定价 45.00元