

中文核心期刊  
中国科技核心期刊

ISSN 1003-501X  
CN 51-1346/O4  
CODEN GUGOEC

# 光电工程



## Opto-Electronic Engineering

2022年11月 第49卷 第11期

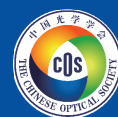


光场调控专题 (二)

DOI: 10.12086/oe.2022.220178



中国科学院光电技术研究所



中国光学学会

# 光电工程 (Guangdian Gongcheng)

月刊 1974 年创刊  
第 49 卷第 11 期 (总第 396 期)  
2022 年 11 月

主管单位: 中国科学院  
主办单位: 中国科学院光电技术研究所  
中国光学学会  
主 编: 罗先刚  
编辑出版: 《光电工程》编辑部  
(四川省成都市双流区 350 信箱, 邮编 610209)  
电 话: 028-85100579  
电子邮箱: oee@ioe.ac.cn  
网 址: <http://www.ojournal.org>  
印 刷: 四川玖艺呈现印刷有限公司  
国内发行: 四川省报刊发行局  
(邮发代号: 62-296)  
国外发行: 中国国际图书贸易集团有限公司  
(发行代号: M7114)  
中国标准连续出版物号: ISSN 1003-501X  
CN 51-1346/O4  
出版时间: 每月 25 日  
国内定价: 90 元/期

## Opto-Electronic Engineering

(Monthly, since 1974)

Volume 49, Issue 11 November 2022

Managed by  
Chinese Academy of Sciences  
Sponsored by  
Institute of Optics and Electronics,  
Chinese Academy of Sciences  
The Chinese Optical Society  
Editor-in-Chief Luo Xiangang  
Edited and Published by  
Editorial Office of *Opto-Electronic  
Engineering*, P. O. Box 350, Shuangliu,  
Chengdu 610209, P.R.China  
Tel +86-28-85100579  
E-mail oee@ioe.ac.cn  
Website <http://www.ojournal.org>  
Printed by Sichuan Joy Art Printing Co., Ltd.  
Domestic Distributed by  
Sichuan Provincial Newspaper &  
Periodical Subscription and Distribution  
Bureau (Code: 62-296)  
Overseas Distributed by  
China International Book Trading  
Corporation (Code: M7114)

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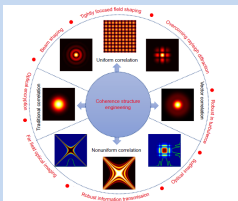
感谢“国家自然科学基金科技  
活动专项”对本期专题的支持



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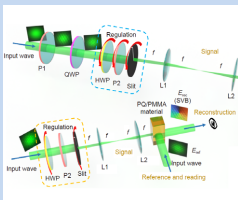
### Review



**Research advances of partially coherent beams with novel coherence structures: engineering and applications** 220178

Liu Yonglei , Dong Zhen , Chen Yahong , Cai Yangjian

The progress of the theoretical construction and experimental generation of PCBs with novel coherence structures was summarized in detail. Meanwhile, their robust propagation properties in complex media and important applications in optical encryption, imaging, robust information transfer, and beam shaping were outlined.

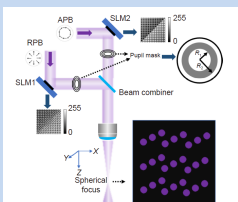


**Light field regulation based on polarization holography** 220114

Zheng Shujun , Lin Xiao , Huang Zhiyun , Huang Lu , Zhang Yuanying , Yang Yi , Tan Xiaodi

The latest research progress in preparing vector beams, scalar vortex beams, and vector vortex beams by using polarization holography was introduced. The light field regulation method based on polarization holography has the advantages of a simple fabrication process, the small size of the optical system and low production cost, which provides a new idea for the manufacture of special light fields.

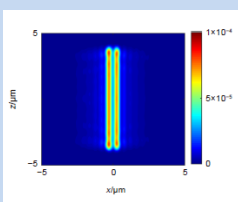
### Article



**Longitudinal super-resolution spherical multi-focus array based on column vector light modulation** 220109

Xia Xiaolan , Zeng Xianzhi , Song Shichao , Liu Xiaowei , Cao Yaoyu

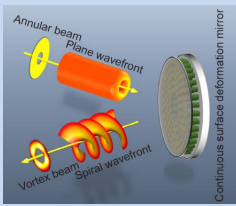
A feasible method for generation of axially super-resolved multifocal array with quasi-spherical focal spots was proposed. In particular, quasi-spherical multifocal array was optically synthesized via precise modulation on the coherent superposition of the orthogonal radially polarized beam (RPB) and azimuthally polarized beam (APB) states in the focal region based on annular amplitude modulation.



**Label-free far-field subdiffraction imaging based on hyperbolic metamaterial** 220056

Chen Xuesong , Du Wenjuan , Lou Zhilang , Tang Dongliang

Illuminated by a bulk plasmon polariton (BPP) field with  $2.66 k_0$  at a wavelength of 532 nm, a double-slit structure with a 100 nm-wide center-to-center distance had been resolved with a 0.85 numerical aperture standard objective. The resolution was improved to  $\lambda/5.32$ . By further improving the transverse wave vector of BPP, it could be improved to  $\lambda/7.82$ .

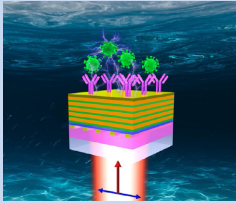


### Vortex field manipulation based on deformation mirror with continuous surface

220066

Xiong Guangyun , Tang Ao , Lan Bin , Shen Feng

A complete orthogonal basis was constructed by using the eigen-mode method of continuous surface deformation mirror, and the voltage of each driver of the deformation mirror can be obtained according to the spiral wavefront information which needs to be manipulated. This method has a good application prospect in the dynamic manipulation of high-power vortex laser.

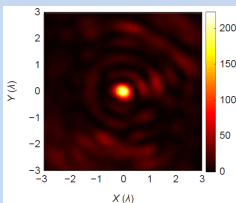


### Tamm-surface plasmon hybrid mode for improving sensing figure of merit

220217

Wei Xinran , Liang Yuzhang , He Yijin , Fang Yurui , Peng Wei

In order to simplify the excitation condition of the TPP-SPP hybrid mode, a feasible grating-coupled multilayer stack structure was proposed. The structure mainly consisted of three parts: a nanometric thin gold film on the top layer, a one dimensional Bragg photonic crystal in the middle, and a gold nanograting on the bottom.



### Silicon-based super-resolution metalens with weak sidelobe

220258

Zhang Kun , Ma Zijie , Zhou Yi , Liang Gaofeng , Wen Zhongquan , Zhang Zhihai , Shang Zhengguo , Chen Gang

A method for producing super-resolution metalens with a large numerical aperture ( $NA=0.944$ ) and weak sidelobe was presented. For a circularly polarized light with the wavelength of  $\lambda=632.8$  nm, a super-resolution pointfocusing with a weak sidelobe was realized based on PB phase regulation of silica-based metasurface.