The 21st International Conference on Optical Communications and Networks (ICOCN 2023)

July 31-August 03, 2023

Shangri-La Hotel, Qufu, China

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Welcome to the 21st International Conference on Optical Communications and Networks

It is a great pleasure to invite you to participate in the 21st International Conference on Optical Communications and Networks (ICOCN2023) and share the latest news in communications and photonics science, technology and innovations from leading universities, research laboratories and companies throughout the world. ICOCN has been held annually tracing back to 2002. It is now one of the largest international conferences on optical communications, photonics and relevant technologies.

The ICOCN2023 technical conference features a full suite of plenary, keynote, invited, and contributed talks given by international academic and industrial researchers who are leaders in their respective fields. This year's conference will feature the following topics: Optical fibers and fiber devices; Optical transmission systems and technologies; Optical network technologies; Optoelectronic integration and devices; Optical signal processing and microwave photonics; Optical measurements and imaging; Ultrafast photonics and nonlinear optics; Space communication technologies; Quantum photonics, Optoelectronics based on organic and nanostructured materials; Machine learning for photonics and communications; and 2D-materials based photonics.

With a conference program of broad scope and of the highest technical quality, ICOCN2023 provides an ideal venue to keep up with new research directions and an opportunity to meet and interact with the researchers who are leading these advances. There will be one plenary session and 54 parallel technical sessions. We have over 472 presentations scheduled, including 3 plenary speeches and 220 keynotes and invited talks made

by many of the world's most prominent researchers from academia and industry. We thank all the contributors and authors for making ICOCN2023 a truly unique, outstanding global event.

Our conference highlight is the Plenary Session scheduled on the morning of Tuesday, 01 August. Three distinguished speakers will give presenta-tions: Prof. Sir David Payne from University of South-ampton, United Kingdom will give a talk on challenges and possible solutions for light sources in optoelectronic chips. Prof. Chao Lu from Sun Yat-sen University will talk on challenges and opportunities for future optical communication systems and networks. Prof. Baohua Jia from RMIT University, Australia will give a presentation entitled by Laser nanoprinted integrated photonic devices.

Young Scientist Awards will be given to 2 young researchers who made outstanding contributions and present on our conference. In addition, 10 Best Student Paper Awards and 10 Best Poster Awards will be selected by the Technical Committee or expert panel during the conference. All these awards will be presented during the conference banquet on the evening of Wednesday, 02 August. In addition to the technical program, there will be an impressive range of exhibitions from the relevant industries, publishers and professional organizations.

We have also prepared a rich social program to facilitate meeting and networking with colleagues from so many universities and cities. On the evening of Wednesday, 02 August, the Banquet and Awards Ceremony will be held for all conference registrants. Lucky-draw will be carried out for those who help us select the Best Poster

Award by submitting the award ticket. It is an enormous task to organize a conference and it is impossible to succeed without the dedicated efforts of many supporters and volunteers.

We are indebted to the entire Technical Program Committee, the Subcommittee Chairs and the Organizing committee, who have worked persistently throughout the whole year to invite speakers, solicit and review papers, organize the technical sessions which results in the excellent technical program. We thank the staff and volunteers from Qufu Normal University and Guangdong University of Technology. We also thank the IEEE Photonics Society, IEEE Guangzhou Section, IEEE Photonics Society Guangdong Chapter for sponsoring the event.

Yours sincerely,

Perry Ping Shum

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Yunjie Xia

Qufu Normal Univ.
General Chair

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Track 2: Optical transmission systems, subsystems and technologies

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Track 3: Networks architectures, management and applications

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Houman Rastegarfar, Univ. of Arizona, USA
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Wei Xu, Tsinghua Univ., China
Hui Yang, Beijing Univ. of Posts and Tel., China
Yongli Zhao, Beijing Univ. of Posts and Tel., China
Min Zhu, Southeast Univ., China

Track 4: Optoelectronic integration and devices
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Yaocheng Shi, Zhejiang University, China, **Chair**
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Xuetao Gan, Northwestern Polytechnical Univ., China
Wenhua Gu, Nanjing Univ. of Sci. and Tech., China
Ran Hao, Zhejiang Univ., China
Ho Pui Aaron HO, Chinese Univ. of Hong Kong, HK
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Mingyu Li, Zhejiang Univ., China
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Liu Liu, South China Normal Univ., China
Ting Mei, Northwestern Polytechnical Univ., China
Xiaodong Pi, Zhejiang Univ., China
Minhao Pu, Technical Univ. of Denmark, Denmark
Wei Shi, Laval Univ., Canada
Junqiang Sun, Huazhong Univ. Sci. and Tech., China
Xiankai Sun, Chinese Univ. of Hong Kong, China
Yunxu Sun, Harbin Inst. of Tech., China
Jianwei Wang, Peking Univ., China
Jin Wang, Nanjing Univ. of Posts and Tel., China
Qijie Wang, Nanyang Technological Univ., Singapore
Kevin Williams, Eindhoven Univ. of Tech., Netherland
Yang Xu, Zhejiang Univ., China
Lin Yang, Inst. of Semiconductor, CAS, China

Yu Yu, Huazhong Univ. of Sci. and Tech., China
Linjie Zhou, Shanghai Jiao Tong Univ., China
Zhiping Zhou, Peking Univ., China

Track 5: Optical signal processing & microwave photonics
Hongwei Chen, Tsinghua Univ., China, **Chair**
Jianji Dong, Huazhong Univ. of Sci. and Tech., China, **Chair**
Shiming Gao, Zhejiang Univ., China, **Chair**
Shilong Pan, Nanjing Univ. of Aeronautics and Astronautics, China, **Chair**
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Xinhuan Feng, Jinan Univ., China
Zhanghua Han, Shandong Normal Univ., China
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Xiaoke Yi, Univ. of Sydney, Australia
Xiaoping Zheng, Tsinghua Univ., China
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Track 6: Optical measurements and imaging
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Yingquan Peng, China Jiliang Univ., China
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Kebin Shi, Beijing Univ., China
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Anna Wang, Zhejiang Univ., China

Dongning Wang, China Jiliang Univ., China
Zhuyuan Wang, Southeast Univ., China
Peng Xi, Peking Univ., China
Xiaobo Xing, South China Normal Univ., China
Yuanhong Yang, Beihang Univ., China
Baoli Yao, Xi'an Inst. Optics Precision Mechanics, CAS, China
Zhen Yuan, Univ. of Macau, China
Xuping Zhang, Nanjing Univ., China
Wenjun Zhou, China Jiliang Univ., China

Track 7: Ultrafast photonics and nonlinear optics
Xueming Liu, Zhejiang Univ., China, **Chair**
Jianrong Qiu, Zhejiang Univ., China, **Chair**
Minglie Hu, Tianjin Univ., China, **Chair**
Jianfeng Li, Univ. Electronic Sci. Tech. of China, **Chair**
Shengping Chen, National Univ. Defense Tech., China
Xianfeng Chen, Shanghai Jiao Tong Univ., China

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Wei Ji, National Univ. of Singapore, Singapore
Qian Li, Peking Univ. Shenzhen, China
Weiwei Liu, Nankai Univ., China
Xiaofeng Liu, Zhejiang Univ., China
Zhichao Luo, South China Normal Univ., China
Zhongqi Pan, Univ. of Louisiana Lafayette, USA
Mark Pelusi, Univ. of Sydney, Australia
Guanshi Qin, Jilin Univ., China
Sze Y. Set, Univ. of Tokyo, Japan
Zhi Wang, Nankai Univ., China
Fengqiu Wang, Nanjing Univ., China
Jun Wang, Chinese Academy of Sci., China
Xiaoyong Wang, Nanjing Univ., China
Kan Wu, Shanghai Jiao Tong Univ., China
Min Xiao, Nanjing Univ., China
Xiaosheng Xiao, Beijing Univ. of Posts and Tel., China
Yun-Feng Xiao, Peking Univ., China
Peiguang Yan, Shenzhen Univ., China
Zhijun Yan, Huazhong Univ. of Sci. and Tech., China
Zuxing Zhang, Nanjing Univ. of Posts and Tel., China
Luming Zhao, Huazhong Univ. of Science and Technology, China
Quanzhong Zhao, Shanghai Inst. of Optics and Fine Mechanics, CAS, China
Haiming Zhu, Zhejiang Univ., China

Track 8: Space communications, navigation & tracking
Nan Chi, Fudan Univ., China, **Chair**
Jing Xu, Zhejiang Univ., China, **Chair**
Guijun Hu, Jilin Univ., China, **Chair**
Tianshu Wang, Changchun Univ. Sci. Tech., **Chair**
Minghua Cao, Lanzhou Univ. of Technology, China
Bo Cong, China Satellite Maritime Tracking and Control Department, China

Ming Chen, Beijing Research Inst. of Telemetry, China
Guangxi E, Southwest China Inst. Elec. Tech., China
Xianqing Jin, Univ. of Sci. and Tech. of China
Diqing Li, China Academy of Space Tech., China
Jing Li, Commercial Aircraft Corporation of China
Jianfei Liu, Hebei Univ. of Tech., China
Lilin Liu, Sun Yat-Sen Univ., China
Vuong Mai, University of Bradfor, UK
Chao Wang, China Academy of Space Tech., China
Yan Xia, Hunan Univ., China
Wenge Yang, Equipment Academy, China
Yifei Yang, Jiangsu Univ. of Sci. and Tech., China
Baokang Zhao, National Univ. of Defense Tech., China
Jie Zhong, Zhejiang Univ., China
Weigang Zhu, Equipment Academy, China

Track 9: Quantum photonics and applications
Xianmin Jin, Shanghai Jiao Tong Univ., China, **Chair**
Zhongxiao Man, Qufu Normal Univ., China, **Chair**
Xifeng Ren, Univ. of Sci. and Tech. of China, **Chair**
Shengwang Du, Hong Kong Univ. of Sci. and Tech., China
Guoping Guo, Univ. of Sci. and Tech. of China, China
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Tiefu Li, Tsinghua Univ. , China
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Feng Mei, Shanxi Univ., China
Xiaolong Su, Shanxi Univ., China
Lin Tian, Univ. of California Merced, USA
Guoyong Xiang, Univeristy of Sci. and Tech. of China
Man-Hong Yung, Southern Univ. Sci. and Tech., China
Lijian Zhang, Najing Univ., China
Qiang Zhang, Univeristy of Sci. and Tech. of China
Wei Zhang, Tsinghua Univ., China

Special session 1: Optoelectronics based on organic and nanostructured materials
Wei Huang, Northwestern Polytechnical Univ., China, **Chair**
Zugang Liu, China Jiliang Univ., China, **Chair**
Michele Muccini, National Research Council, Italy, **Chair**
Pavel Brunkov, Ioffe Inst., Russia
Fred Chen, Shine Materials Technolgy Co., China
Guanglu Ge, National Center for NanoSci. and Tech., China
Xiaojun Guo, Shanghai Jiaotong Univ., China
Yizheng Jin, Zhenjiang Univ., China
Rongyin Kuang, Najing Tech., China
Zhen Li, Wuhan Univ./Tianjin Univ., China
Dongge Ma, South China Univ. of Tech., China
Hong Meng, Peking Univ., China
Junbiao Peng, South China Univ. of Tech., China
Nigel Pickett, Nanoco Technologies, UK
Lei Qian, TCL, China
Xiaowei Sun, Southern Univ. of Sci. and Tech., China
Jinshan Wang, Watrp International, USA
Lei Wang, Huazhong Univ. of Sci. and Tech., China

Guohua Xie, Wuhan Univ., China
Rongjun Xie, Xiamen Univ., China
Xuyong Yang, Shanghai Univ., China
Haibo Zeng, Nanjing Univ. of Sci. and Tech., China
Haizheng Zhong, Beijing Inst. of Tech., China
Fushan Li, Fuzhou Univ., China
Lixiang Wang, Changchun Inst. of Applied Chemistry, China
Changqi Ma, Suzhou Institue of Nano-Tech and Nano-Bionics, China
Yiqiang Zhang, Zhengzhou Univ., China
Tao Song, Soochow Univ., China

Special session 2: Machine learning for photonics and communications

Qunbi Zhuge, Shanghai Jiao Tong Univ., China, **Chair**
Yongli Zhao, Beijing Univ. of Posts and Tel., China**, Chair**
Yanni Ou, Nokia Bell Labs, Germany, **Chair**
Shuangyi Yan, Univ. of Bristol, UK
Zilong Ye, California State Univ., Los Angeles, USA
Sabidur Rahman, UC Davis, USA
Yu Wu, Google, USA
Jianqiang Li, Alibaba Group, USA
Nan Hua, Tsinghua Univ., China
Xiaosong Yu, Beijing Univ. of Posts and Tel., China
Xiaoning Zhang, Univ. of Electronic Sci. and Tech. of China
Danish Rafique, ADVA, Germany

Special session 3: 2D-materials based photonics

Weida Hu, Shanghai Inst. of Technical Physics, CAS, China, **Chair**
Kaihui Liu, Peking Univ., China, **Chair**
Hongtao Lin, Zhejiang Univ., China, **Chair**
Hua Zhang, City Univ. of Hong Kong, China
Juejun Hu, Massachusetts Inst. of Tech., USA
Anlian Pan, Hunan Univ., China
Han Zhang, Shenzhen Univ., China
Deep Jariwala, Univ. of Pennsylvania, USA
Xiaomu Wang, Nanjing Univ., China
Zhipei Sun, Aalto Univ., Finland
Baicheng Yao, Univ. of Electronic Sci. and Tech. of China, China
Yaqing Bie, Sun Yat-Sen Univ., China
Zhengqian Luo, Xiamen Univ., China
Qiaoliang Bao, Monash Univ., Australia

General Information

Conference Venue: Shangri-La Hotel, Qufu
会议地点：曲阜香格里拉大酒店

Address: 3 Chunqiu Road, Qufu, China
酒店地址：山东省曲阜市春秋中路 3 号

Accessibility

A modern sanctuary in a land of historical beauty Shangri-La Qufu awaits guests in the heart of this city, within walking distance to the Temple of Confucius and the Mansion of Confucius. Designers have created distinctly Chinese architecture that features a group of buildings, high and low, with exquisite roofs of grey tiers of flying eaves. The Hotel offers spacious and pleasant accommodation with its 322 well-appointed guest rooms and suites.

- The hotel is about 15 minutes' drive from Qufu East Station
- About 15 minutes walking distance to the Temple and Mansion of Confucius

Registration

Location: Lobby of Shangri-La Hotel, Qufu

Hours:

14: 00-22: 00	Monday, 31 July
08: 00-18: 00	Tuesday, 01 Aug.
08: 00-18: 00	Wednesday, 02 Aug.
08: 00-16: 00	Thursday, 03 Aug.

Speaker Preparation

All oral presenters should check in at the corresponding session room at least ten minutes prior to their scheduled talk to upload and check their presentation. **No shows of the oral presentation will be reported to Conference management and these papers will not be published.**

Poster Preparation

Authors should prepare their poster before the poster session starts. The poster must not exceed the boundaries of the poster board and **A0 (0.9m Width * 1.2m Height)** size is recommended. Authors are required to be standing by their poster for the duration of their allocated session to answer questions and further discuss their work with attendees. **No shows will be reports to Conference management and these papers will not be published.**

Poster Board Size: 1m (Width) × 2m (Height)
Location: 2F, Shangri-La Hotel, Qufu

Poster Session 1	15:30-16:00, 01 Aug.
Poster Session 2	10:00-10:30, 02 Aug.
Poster Session 3	15:30-16:00, 02 Aug.
Poster Session 4	10:00-10:30, 03 Aug.

Exhibition

The ICOCN2023 Exhibition is open to all attendees.

Location: Public area, 2F, Shangri-La Hotel, Qufu

Hours:

09: 00-18: 00	Tuesday, 01 Aug.
09: 00-18: 00	Wednesday, 02 Aug.
09: 00-16: 00	Thursday, 03 Aug.

Conference Materials

ICOCN2023 Technical Digest will be provided in a USB drive and not available in print form. The ICOCN2023 Technical Digest material is composed of the 3-page summaries of invited and accepted contributed papers. The Technical Digest material is included with each technical conference registration and can be found in your

registration bag. The Digest will be available on IEEE Xplore Digital Library (http://www.ieee.org/web/publications/xplore/) after the conference. IEEE Xplore

Digital Library is archived and indexed by EI Compendex, where it will be available to the international technical community.

Lunches & Dinners

Five buffet lunches and dinners (31 July - 03 August) in Shangri-La Hotel, Qufu are included in the registration fee for all registered delegates. And lunch & dinner tickets are provided within the badge.

Location: *Zhanxiang Hall, 1st Floor.*
Qufu & Ji'nan Ballroom, 2nd Floor.

Hours:

18:00-21:00	Monday, 31 July
12:00-13:30	Tuesday, 01 August
18:00-20:00	Tuesday, 01 August
12:00-13:30	Wednesday, 02 August
12:00-13:30	Thursday, 03 August

Tea Breaks

15:30-16:00	Tuesday, 01 August
10:00-10:30	Wednesday, 02 August
15:30-16:00	Wednesday, 02 August
10:00-10:30	Thursday, 03 August

Social Events

Conference Banquet and Awards Ceremony

All participants are cordially invited to the banquet. We will announce the winners of Young Scientist Awards, Best Student Paper Award and Best Poster Award. The winners will receive their certificates and awards at the ceremony. Participate in our Lucky Draw during the banquet, you may be one of the lucky winners! At the same time, you will enjoy delicacies foods. It will be an unforgettable Banquet that you will always remember with a smile.

The Banquet is included in the registration fee for all registered delegates. The ticket is provided within the badge. Unregistered personnel can buy ticket at the registration desk to attend the banquet.

Location: *Qilu Hall, 2F,* Shangri-La Hotel, Qufu

Time: 18:30-21:00, 02 August

Conference Highlights

Plenary Presentations

Time: 09:30-11:45, Tuesday, 01 August
Venue: Qilu Grand Ballroom, 2F

ICOCN2023 will feature three plenary presentations that will be preceded by an Opening Ceremony from 9:00-9:30. More information appears below.

Nothing is better than silica

09:30-10:15, Tuesday, 01 August

Prof. Sir David Payne
University of Southampton, United Kingdom

Biography: Prof. Sir David Neil Payne CBE FRS FREng is a leading Professor at the University of Southampton and Director of the Zepler Institute for Photonics and Nanoelectronics/ Opto- electronics Research Centre. A world class pioneer of technology, his work has had a great impact on telecommunications and laser technology over the last forty years. The vast transmission capacity of today's internet results directly from the erbium-doped fibre amplifier (EDFA) invented by David and his team in the 1980s. His pioneering work in fibre fabrication in the 70s resulted in almost all the special fibres in use today including fibre lasers which are undergoing rapid growth for application in manufacturing and defense.

David has made numerous leading contributions to many diverse fields of photonics and is widely acknowledged as an inventor of key components. With US funding, he led the team that broke the kilowatt barrier for fibre laser output to international acclaim and now holds many other fibre laser performance records. An original member of the

Highly Cited Researchers (USA) he is honored as one of the most referenced, influential researchers in the world. He has published over 650 Conference and Journal papers.

As an entrepreneur David's activities have led to a cluster of 11 photonics spin out companies in and around Southampton-helping to boost the local economy. He co-founded SPI Lasers, now owned by Trumpf Group. He is an Emeritus Chairman of the Marconi Society and a foreign member of the Russian and Norwegian Academy of Sciences, the Indian National Science Academy (INSA) and the Indian National Academy of Engineering (INAE). David is a fellow of the Optical Society of America, the IET (UK), the Royal Society and the Royal Academy of Engineering. He holds three honorary Professorships from Chinese Universities. He co-founded The Photonics Institute in NTU that has grown to be the leading photonics institute in Singapore.

Challenges and Opportunities for Future Optical Communication Systems and Networks

10:15-11:00, Tuesday, 01 August

Prof. Chao Lu
Sun Yat-sen University, China

Biography: Chao LU obtained his BEng in Electronic Engineering from Tsinghua University, China in 1985, and his MSc and PhD from University of Manchester in 1987 and 1990 respectively. He joined the School of Electrical and Electronic Engineering, Nanyang Technological University (NTU), Singapore as a faculty member in 1991 and was there until 2006. From June 2002 to December 2005, he was seconded to the Institute for Infocomm Research, Agency for Science, Technology and Research (A*STAR), Singapore, as

Program Director and Department Manager leading a research group in the area of optical communication and fibre devices. He joined the Department of Electronic and Information Engineering, The Hong Kong Polytechnic University in 2006 and has been Chair Professor of Fibre Optics and Director of the Photonics Research Institute. Since late 2022, he has been with Sun Yat-sen University, China. His research interests are in the area of high capacity transmission techniques for long haul and short reach systems and distributed optical sensing systems. In addition to academic research work, he has had many industrial collaborative research projects and has a number of awarded patents. His current research interests are in the area of high capacity transmission techniques for long haul and short reach systems and distributed optical sensing systems. He is a fellow of the Optical Society (OPTICA).

Laser nanoprinted integrated photonic devices

11:00-11:45, Tuesday, 01 August

Prof. Baohua Jia
RMIT University, Australia

Biography: Professor Baohua Jia is a Future Fellow and Director of Centre for Atomaterials and Nanomanufacturing at RMIT University, Australia. Before joining RMIT University in 2022, Baohua was a tenured professor at Swinburne University of Technology and Founding Director of Centre for Translational Atomaterials. Professor Jia is a Fellow of Optica (previously known as the Optical Society of America), and a Fellow of the Institute of Materials, Minerals and Mining (IMO3). Since 2019, Prof. Jia has served as a Colleague of Expert for the Australian Research Council. Professor Jia's research focuses on the design and optical characterization of novel nanostructures and nanomaterials, fabrication, and efficient conversion and storage of light energy. As a leading Chief Investigator, Professor Jia received a total of more than $35 million in research funding support.

Professor Jia has published more than 300 journal papers, and developed more than 20 invention patents and patent applications. Based on Professor Jia's outstanding contributions in scientific research, she has won many awards, including the 2017 finalist of the Australian Prime Minister's Science Award, the Vice Chancellor's Industrial Achievement Award in 2011, 2016, and 2018, 2013, Young Science Leader Award, 2012 UNESCO L'Oréal Australia New Zealand Women in Science Award.

Young Scientist Awards

ICOCN2023 is pleased to announce this year's Young Scientist Awards.

2 recipients, a certificate & a HUAWEI ultrabook for each

To be eligible for the award, the researchers must be born after Aug.24, 1981 and the first author of the paper and register to give the oral presentation at the conference by himself/herself. The selection will be made by the TPC during the conference. Each awardee will receive a certificate of award and a HUAWEI ultrabook as prize.

Best Student Paper Awards

ICOCN2023 is pleased to announce this year's Best Student Paper Awards.

10 recipients, a certificate & a HUAWEI Pad for each

Any full-time research student, who is the first and presenting author of a full paper submitted with choosing presentation type of "Oral for Best Student Paper Award" will be eligible for this award competition. Ten winners will be selected by the ICOCN'2023 Technical Program Committee and invited to attend the conference banquet and award ceremony. Each awardee will receive a certificate of award and a HUAWEI Pad as prize.

Best Poster Awards

ICOCN2023 is pleased to announce this year's Best Poster Awards.

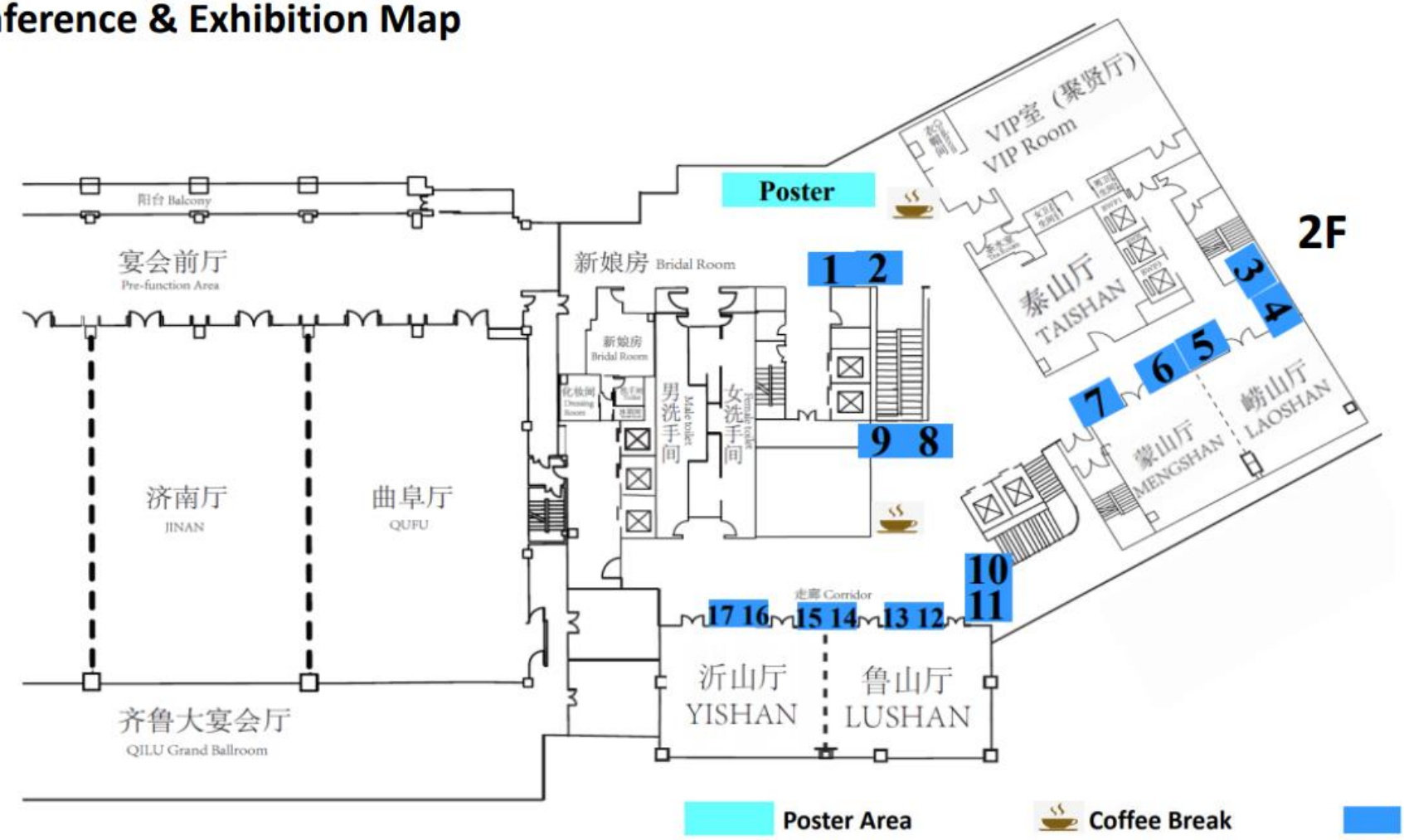
10 recipients, a certificate & a HUAWEI smartphone for each

To be eligible for the award, the paper must be submitted with choosing presentation type of "Best Poster Paper Award competition". Pre-conference shortlist will be carried out based on the peer-review results by TPC/invited reviewers. The shortlisted posters will be presented during the assigned time slot and those who win the first fifteen largest number of "Best Poster Paper Award" vote tickets will be given the Best Poster Award. Certificates and prizes (HUAWEI cellphones) will be presented to the winners in the award ceremony during the conference banquet.

Banquet Lucky-draw

Every registered non-student participant will be given a Best Poster Award Voting Ticket at the registration desk when they collect the conference materials. Those who help us select the awardee candidates by writing down the poster numbers on the voting ticket and put it into the ticket collecting box during the first poster session time will get the chance to be lucky guy. Do help us by submitting your choice for the Best Poster.

Conference & Exhibition Map



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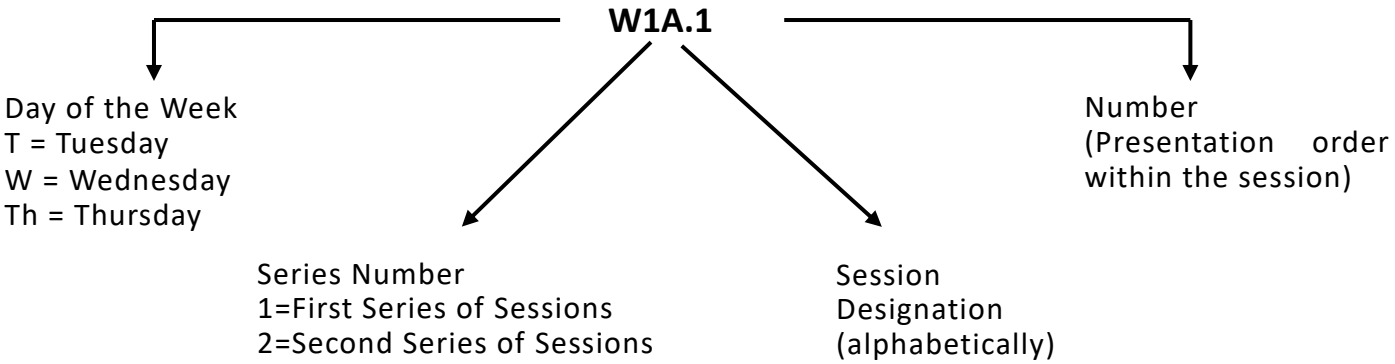
9 YSL安扬激光 10 TOP Photonics拓普光研 11 脉锐光电 12 智感光线 13 飞博光电 14 FIBTOP 15 光佑科技 Optounion

NOTES

Explanation of Session Codes



The first letter of the code designates the day of the week (T = Tuesday, W = Wednesday, Th = Thursday). The second element indicates the session series in that day (for instance, 1would denote the first parallel session in that day). The third element continues alphabetically through a series of parallel sessions. The lettering then restarts with each new series. The number on the end of the code (separated from the session code with a period) signals the position of the talk within the session (first, second, third, etc.). For example, a presentation coded W1A.1 indicates that this paper is being presented on Wednesday (W) in the first series of sessions (1), and is the first parallel session (A) in that series and the first paper (1) presented in that session.

Plenaries are noted with **Plenary**

Keynotes are noted with **Keynote**

Invited papers are noted with **Invited**

Best student paper award are noted with ★

Young Scientists Award are noted with ◇

Best poster paper award are noted with ☀

Post-deadline papers are noted with ☆

Tuesday, 01 August							
	Yishan Hall (沂山厅)	**Lushan Hall (鲁山厅)**	**Mengshan Hall (蒙山厅)**	**Laoshan Hall (崂山厅)**	**Taishan Hall (泰山厅)**	**VIP Room (聚贤厅)**	**Exhibition Area**
08:00-18:00	**Registration, Lobby, 1st Floor**						**Conference Exhibition**
09:00-09:30	**Opening Ceremony, Qilu Grand Ballroom, 2nd Floor**						
09:30-11:45	**Plenary Session, Qilu Grand Ballroom, 2nd Floor**						
11:45-13:30	**Lunch Break, Qufu & Ji'nan Ballroom, 2nd Floor**						
13:30-15:30	T2A Fibers & fiber devices I	T2B Measurement & imaging I	T2C Optoelectronic integration I	T2D Organic optoelectronics I	T2E Ultrafast photonics I	T2F Optical transmission I	
15:30-16:00	**Poster Session I & Tea Break, 2nd Floor**						
16:00-18:00	T3A Fibers & fiber devices II	T3B Measurement & imaging II	T3C Optoelectronic integration II	T3D Organic optoelectronics II	T3E Optical Networks I	T3F Space communication I	
18:00-20:00	**Dinner Break, Qufu & Ji'nan Ballroom, 2nd Floor**						

Wednesday, 02 August							
	Yishan Hall (沂山厅)	**Lushan Hall (鲁山厅)**	**Mengshan Hall (蒙山厅)**	**Laoshan Hall (崂山厅)**	**Taishan Hall (泰山厅)**	**VIP Room (聚贤厅)**	**Exhibition Area**
08:00-18:00	**Registration, Lobby, 1st Floor**						**Conference Exhibition**
08:00-10:00	W1A Fibers & fiber devices III	W1B Measurement & imaging III	W1C Optical signal Processing I	W1D 2D-materials photonics	W1E Ultrafast Photonics II	W1F Optical transmission II	
10:00-10:30	**Poster Session II & Tea Break, 2nd Floor**						
10:30-12:00	W2A Fibers & fiber devices IV	W2B Measurement & imaging IV	W2C Optoelectronic integration III	W2D Young Scientist Award	W2E Quantum Photonics	W2F Optical Transmission III	
12:00-13:30	**Lunch Break, Qufu & Ji'nan Ballroom, 2nd Floor**						
13:30-15:30	W3A Fibers & fiber devices V	W3B Measurement & imaging V	W3C Optoelectronic integration IV	W3D Organic optoelectronics III	W3E Optical networks II	W3F Optical transmission IV	
15:30-16:00	**Poster Session III & Tea Break, 2nd Floor**						
16:00-18:00	W4A Machine learning	W4B Measurement & imaging VI	W4C Optoelectronic integration V	W4D Organic optoelectronics IV	W4E Optical networks III	W4F Space communication II	
18:00-21:00	**Banquet and Awards Ceremony, Qilu Grand Ballroom, 2nd Floor**						

Thursday, 03 August							
	Yishan Hall (沂山厅)	**Lushan Hall (鲁山厅)**	**Mengshan Hall (蒙山厅)**	**Laoshan Hall (崂山厅)**	**Taishan Hall (泰山厅)**	**VIP Room (聚贤厅)**	**Exhibition Area**
08:00-13:00	**Registration, Lobby, 1st Floor**						**Conference Exhibition**
08:00-10:00	Th1A Fibers & fiber devices VI	Th1B Measurement & imaging VII	Th1C Optical signal Processing I	Th1D Organic optoelectronics V	Th1E Ultrafast photonics III	Th1F Optical transmission V	
10:00-10:30	**Poster Session IV & Tea Break, 2nd Floor**						
10:30-12:00	Th2A Fibers & fiber devices VII	Th2B Measurement & imaging VIII	Th2C Optoelectronic integration VI	Th2D Organic optoelectronics VI	Th2E Ultrafast photonics IV	Th2F Optical transmission VI	
12:00-13:30	**Lunch Break, *Zhanxiang Hall (展香园)*, 1st Floor**						
13:30-16:00	Th3A Fibers & fiber devices VIII	Th3B Measurement & imaging IX	Th3C Optoelectronic integration VII	Th3D Organic optoelectronics VII	Th3E Ultrafast photonics V	Th3F Optical transmission VII	

14:00-20:00 **Registration,** *Lobby (大堂),* 1st Floor

13:30-15:30
T2A • Fibers & fiber devices I
Presider: ***Changyuan Yu,*** *The Hong Kong Polytechnic University, China*

9:30 **Opening Ceremony,** *Qilu Grand Ballroom (齐鲁大宴会厅),* 2nd Floor

09:30-11:45 **Plenary Session,** *Qilu Grand Ballroom (齐鲁大宴会厅),* 2nd Floor

Presider: ***Perry Ping Shum****, Southern University of Science and Technology, China*

T1A.1 • 09:30 **Plenary**

Nothing is better than silica, Prof. Sir David Payne, *University of Southampton, United Kingdom.* Biography: Prof. Sir David Neil Payne CBE FRS FREng is a leading Professor at the University of Southampton and Director of the Zepler Institute for Photonics and Nanoelectronics/Optoelectronics Research Centre. A world class pioneer of technology, his work has had a great impact on telecommunications and laser technology over the last forty years. The vast transmission capacity of today's internet results directly from the erbium-doped fibre amplifier (EDFA) invented by David and his team in the 1980s. His pioneering work in fibre fabrication in the 70s resulted in almost all the special fibres in use today including fibre lasers which are undergoing rapid growth for application in manufacturing and defense.

T1A.2 • 10:15 **Plenary**

Challenges and Opportunities for Future Optical Communication Systems and Networks, Chao LU; *Sun Yat-sen University, China.* Optical communication systems and networks have been the key infrastructure supporting the ever increasing internet capacity requirement. Single mode fiber link in C band has more or less reached its capacity limit, how to further increase optical fiber link capacity has been a research challenge. At the same time, increasing capacity utilization of current optical network will also help to satisfy the capacity need. In this talk, research challenges and efforts to increase capacity of optical communication links will be described. Various device and system technology for future optical communication systems and networks will be discussed. In addition, the possibility of using existing optical fiber for monitoring physical parameter variation to enable better maintenance of optical networks as well as providing additional information about the change of our physical world will be explored.

T1A.3 • 11:00 **Plenary**

Laser nanoprinted integrated photonic devices, Baohua Jia; *School of Science, RMIT University, Australia.* This presentation mainly introduces the interaction between 3D nanoprinting and various materials at the angstrom scale. Describe the precise and unparalleled manipulation of materials by nanoprinting at the spatial, temporal and atomic scales. In particular, the application status and broad prospects of optical nanoprinting and two-dimensional photonic integrated devices are introduced in detail. The report will also share the future development directions of ultrafast optical nanoprinting and angstrom material devices, and the major challenges faced. The developed scalable graphene metamaterials show attractive optical and thermal properties. Through patterning with advanced laser nanoprinting technique, functional photonic devices with ultrathin, light weight and flexible nature have been demonstrated promising exciting opportunities for integrated photonics.

11:45-13:30 **Lunch Break,** *Qufu & Ji'nan Ballroom, 2nd Floor*

Yishan Hall (沂山厅), Track 1

T2A.1 • 13:30 Invited

All-fiber multifunction-integrated devices, Fei Xu; *Nanjing University.*

T2A.2 • 13:50 Invited

All-fiber mode converters based on T-superimposed long period gratings in PCF, Weihong Bi; *Yanshan University.* A mode converter based on triple superimposed long period grating in PCF is proposed and demonstrated, which covers the wavelength of S+C+L with 3 dB bandwidth of 121 nm from 1498 nm to 1619 nm.

T2A.3 • 14:10 Invited

Single-frequency Brillouin laser based on chalcogenide fiber, Shixun Dai; *Ningbo University.* By solving the low-loss coupling and optimizing the cavity characteristics, low-threshold and narrow-linewidth Brillouin laser is obtained with high-nonlinearity chalcogenide fiber as Brillouin gain medium.

Lushan Hall (鲁山厅), Track 6

13:30-15:30
T2B • Measurement & imaging I
*Presider: **Long Jin**, Jinan University, China*

T2B.1 • 13:30 Invited

Investigation of Polarization Vector Analyzer for Optical fiber, Chongqing Wu; *Beijing Jiaotong University, China*. This paper studies the co-action of multiple polarization effects in optical fiber, and leads to the concept of polarization vector, which can be measured by the principle of fixed point. The Circular and Line Birefringence Ratio (CLBR) in Elliptic state Maintaining fiber is measured. The technical scheme is proposed and the measurement results are given.

T2B.2 • 13:50 Invited

Fiber optic sensing technologies make the lithium batteries safer, Qizhen Sun; *Huazhong University of Science and Technology, China.*

T2B.3 • 14:10 Invited

Optical Wireless Communication and Sensing Fusion for 6G Applications, Hongyan FU; *Tsinghua University, China.* We will review the optical sensing and communication integration systems for 6G, with the focus on exploring and breaking through the key technologies. Efficiently integrating LiDAR and optical wireless communication enables high-speed and high-precision system.

Mengshan Hall (蒙山厅), Track 4

13:30-15:30
T2C • Optoelectronic integration I
*Presider: **Guangming Tao**, Huazhong University of Science and Technology, China*

T2C.1 • 13:30 Invited

Scalability and capacity limit of large-scale photonic integrated circuits, Yikai Su; *Shanghai Jiao Tong University, China.* We investigate the scalability bottlenecks of PICs in terms of guiding materials, dense integration approaches, wide-band optical sources, and high-efficiency tunable and modulation devices. We also look for solutions to overcome the capacity limitation.

T2C.2 • 13:50 Invited

On-chip spectrometers, Daoxin Dai; Zhejiang University, *China*. This paper presents our recent progress of on-chip spectrometers with high resolution as well as wide working winddowns.

T2C.3 • 14:10 Invited

Tailoring Light with 2D/3D Photonic Integrated Devices, Jian Wang; *Huazhong University of Science and Technology, China.* In this talk, we will review recent advances in tailoring light with 2D/3D photonic integrated devices. Silicon-based 2D photonic integrated circuits and silica-based femtosecond laser direct writing 3D photonic integrated chips will be presented.

Laoshan Hall (崂山厅), Special 1

13:30-15:30
T2D • Organic optoelectronics I
*Presider: **Zugang Liu**, China Jiliang University, China.*

T2D.1 • 13:30 **Keynote**

Organic semiconductor crystals, Wenping Hu; *Tianjin University, China.*

T2D.2 • 14:00 **Keynote**

New Optoelectronic Devices, Dechun Zou; *Peking University, China.*

Taishan Hall (泰山厅), Track 7

13:30-15:30
T2E • Ultrafast photonics I
*Presider: **Lei Shi**, Huazhong University of Science and Technology, China*

T2E.1 • 13:30 **Invited**

Evidence of cnoidal waves and their soliton limits in single mode fiber lasers, Dingyuan Tang, Xiao Hu; *Shenzhen Technology University, China.* We show experimental evidence of conical waves and their evolution to optical solitons in single mode fiber lasers under certain experimental conditions. The behaviors of the fiber lasers could be well explained in terms of the nonlinear Schrodinger equation and numerically simulated.

T2E.2 • 13:50 **Invited**

Ultrafast opto-magnonics: how femtosecond laser pulses help to manipulate spin waves, Alexandra Kalashnikova; *Ioffe Institute, Russia.* In this talk, we discuss how femtosecond laser pulses facilitate development of magnonics by enabling generation of spin waves, controlling their spectra and propagation, end even exciting spin waves with the shortest wavelength.

T2E.3 • 14:10 **Invited**

Forward stimulated Brillouin scattering measurement with 3-mm recognition capability, Yongkang Dong; Harbin Institute of Technology, *China.* Forward-stimulated Brillouin scattering (F-SBS) has been developing rapidly recently. F-SBS recognition capability of 3-mm was demonstrated on SMF, along with temperature sensing. As we know, this is the most advanced spatial recognition capability for F-SBS.

VIP Room (聚贤厅), Track 2

13:30-15:30
T2F • Optical transmission I
*Presider: **Anbang Wang**, Guangdong University of Technology , China*

T2F.1 • 13:30 **Invited**

RSOP monitoring method based on the received powers of two polarization tributaries, Xiaoguang Zhang; *Beijing University of Posts and Telecommunications.*

T2F.2 • 13:50 **Invited**

Recent progress in weakly-coupled FMF transmission toward practical applications, Juhao Li; *Peking University.* Single-fiber 440Tb/s transmission is demonstrated based on 100-km 10-mode FMF and mode MUX/DEMUX supporting C+L bands, which only requires at most 4X4 MIMO-DSP and may be a big step towards practical applications.

T2F.3 • 14:10 **Invited**

Frequency offset estimation method for the nonlinear frequency division multiplexing system, Jianping Li; *Guangdong University of Technology.*

Yishan Hall (沂山厅), Track 1

T2A.4 • 14:30 Invited

3D nanoprinted optical fiber sensor, Changrui Liao; *Shenzhen University, China*. Femto-second laser 3D nanoprinting method can improve the performance of optical fiber sensors in both material and structure. This presentation will introduce 3D nanoprinted optical fiber sensors including MEMS and micro-optics.

T2A.5 • 14:50 Invited

Key Technologies for Super long Fiber Optic Intelligent Sensing System with Multimode Characteristic, Kun Liu; *Tianjin University, China*.

T2A.6 • 15:10 Invited

Hollow core fiber based sensors, Xiaobei Zhang; *Shanghai University, China*. In this talk, we will give a summary of kinds of hollow core fiber based sensors, including principles of FP, MZ, AR and MMI and types of cascaded structures.

Lushan Hall (鲁山厅), Track 6

T2B.4 • 14:30 Invited

High Performance Depolarized Fiber Optic Gyroscope with Birefringent Modulation, Yuanhong Yang; *Beihang University, China*. The spectral modulation in a depolarized Sagnac interferometer assemble was eliminated by applying a birefringent modulation approach. A high performance depolarized fiber-optic rotational seismometer was developed and tested.

T2B.5 • 14:50 Invited

Resonant fiber optic gyroscope with a broadband source, Huilian Ma and Shuang Liu; *Zhejiang University, China*. We report a broadband source-driven resonant-fiber optic gyroscope with 0.0025 deg/sqrt(h) angle random walk and 0.0028 deg/h bias stability when using a 165-meter-long fiber-optic ring resonator of 54 mm diameter.

T2B.6 • 15:10 Invited

Space non-reciprocal fiber optic gyro, Yuefeng Qi; *Yanshan University, China.* Proposed a kind of spatially non-reciprocal phase modulator, fundamentally eliminated the limitation of transmission time in fiber optic gyro, realized the ultra-short ring fiber optic gyro with low frequency modulation (200Hz) and closed-loop feedback.

Mengshan Hall (蒙山厅), Track 4

T2C.4 • 14:30 Invited

Thin-film lithium niobate devices, Xinlun Cai; *Sun Yat-sen University, China*. We will report the recent advances for thin-film lithium liobate devices.

T2C.5 • 14:50 Invited

Programmable Photonic-Electronic Nonlinear Activation Functions for Neuromorphic Applications, Xin Yin; *Ghent University, Belgium.* We present the first demonstration of an analog opto-electronic activation unit that can be programmed to support tanh-, ReLU-, and inverted ReLU-like activations up to 10 Gb/s line-rates. The results demonstrate the excellent fit of these functions to traditional activation functions used in digital deep neural network models and the potential for reconfigurable performance characteristics for their slope and operational range.

T2C.6 • 15:10 Invited

Foundry enabled mid-infrared photonic integrated circuits, Zhenzhou Cheng; *Tianjin University, China* We report our recent advances in the development of silicon photonics integrated circuits with multi-project wafer services, including blazed subwavelength grating couplers and hyperuniform disordered solid devices.

15:30-16:00 Poster Session 1 & Tea Break, 2nd Floor

Laoshan Hall (崂山厅), Special 1

T2D.3 • 14:30 **Keynote**

Effective Charge Generation Layer (CGL) for High-Performance Tandem OLEDs, Junbiao Peng; *South China University of Technology, China.*

T2D.4 • 15:00 **Keynote**

From 0 to 1: Communication-Driven Electro-luminescent Devices based on Non-Sandwich Structures, Hong Meng, Chaohong Zhang and Jvnpeng Ji; *Peking University Shenzhen Graduate School.* In this talk I will describe a non-sandwich structure-based AC-driven electroluminescent four-quadrant device and its application in digitally programmable full-color OLED device unit. These breakthroughs in original innovation have the potential to lead to practical applications in various fields, including lighting, displays, healthcare, beauty, and PCR biodection.

Taishan Hall (泰山厅), Track 7

T2E.4 • 14:30 **Invited**

Wavelength-agile ultrashort pulse generation with Raman fiber amplifier, Yan Feng; *Shanghai Institute of Optics and Fine Mechanics, CAS, China*.

T2E.5 • 14:50 **Invited**

Epsilon-near-zero photonics: infinite potentials, Qian Li; *Peking University Shenzhen Graduate School, China*. With its unique and exclusive linear and nonlinear optical characteristics, epsilon-near-zero (ENZ) photonics has drawn a tremendous amount of attention in the recent decade. I will discuss our recent research in ENZ photonics.

T2E.6 • 15:10 **Invited**

Multimode Nonlinear Optical Effects in Optical Fibers, Jinhui Yuan and Chao Mei; *Beijing University of Posts and Telecommunications, China*. Here we study nonlinear optical effects in different types of multimode fibers. The existence of spatial multimode optical solitons in hollow-core fibers is discussed. The multimode soliton interaction caused by non-instantaneous nonlinearity in step-index fibers is analyzed. We achieved self-similar compression of multimode pulses in photonic crystal fibers.

VIP Room (聚贤厅), Track 2

T2F.4 • 14:30 **Invited**

Application of Trellis-coded Modulation in Long-Haul Optical Fiber Transmissions, Xingwen Yi; *Sun Yat-sen University.* In this paper, we explore the application of Trellis-coded modulation (TCM) in long-haul optical fiber transmissions. We discuss the expected benefits of TCM in the linear transmission region, as well as approaches to enhance its performance in the nonlinear region.

T2F.5 • 14:50 **Invited**

High-capacity WDM Coherent Transmission over Hollow-core Fiber, Meng Xiang; *Guangdong University of Technology.*

T2F.6 • 15:10 ☆

Driver-Free Net-422-Gbps/λ PAM transmission based on TFLN Modulator, Advanced DSP and single DAC with the Highest Net Information Rate in 400G/λ IM/DD, An Yan, Guoqiang Li, Sizhe Xing, Wangwei Shen, Yongzhu Hu, Aolong Sun, Xi Xiao, Zhixue He, Junwen Zhang and Nan Chi; *Fudan University, China*. We report ultrahigh-speed transmission of net-422-Gbps/λ PAM-20 signals over 0.5-km SSMF in C-band, based on only one-DAC without any electrical amplifications, achieving a record net information rate (bits/symbol) in 400G/λ IM/DD.

15:30-16:00 Poster Session 1 & Tea Break, 2nd Floor

Poster Session I (Best Poster Paper Award, 15:30-16:00)

P1.1
A tilted fiber grating humidity sensor based on crystal violet and perfluorosulfonic acid, Jun Wu, Changyu Shen, Ziqiao Ren, Fuxiang Wang, Wenjun Zhou, Jun Zhou, Yufei Shi and Wenbo Sui; *China Jiliang University, China.* Using Etched tilted fiber Bragg grating and coated crystal violet / perfluoric acid composite film, a fiber humidity sensor was developed from 10% to 80% RH with a sensitivity of 0.06 dB /% RH.

P1.2
Design of multi-carrier probe pulse for coherent fading suppression in Φ-OTDR system, Desheng Li, Tianye Huang, Xiang Li, JingZhang, Zhichao Wu, Liangming Xiong, Chuyu Peng, Yixuan Chen, Qier Qin and Perry Ping Shum; *China University of Geosciences (Wuhan), China.* A multi-carrier pulse is designed to eliminate coherent fading in DAS. A single AOM is used in the system for multi-carrier signal generation, and the fading suppression of Φ-OTDR is achieved by processing the subcarriers.

P1.3
Interference Fading Suppression Solution for Phase-sensitive OTDR with Sub Signal Phase Reconstruction, Deyu Xu, Feihong Yu, Shuaiqi Liu, Huaxin Gu and Liyang Shao; *Southern University of Science and Technology, China.* An interference fading suppression scheme based on phase-sensitive optical time-domain reflectometry (Φ-OTDR) system is proposed. This method only processes data in the digital domain without changing the system structure.

P1.4
TFBG Humidity Sensor Based On Fullerene Derivative For Tachypnea Monitor, Fuxiang Wang, Feng Gao, Xiaoniu Wang, Ying Wang, Fei Jin, Ziqiao Ren, Jun Wu, Zhenlin Huang, Wenjun Zhou and Changyu Shen; *China Jiliang University, China.* This paper proposes and experimentally demonstrates a fast response tilted fiber Bragg relative humidity sensor based on fullerene derivative, which is applied to monitor tachypnea.

P1.5
Resolution Improved by a Stretchable Substrate in STED Lithography, Fei Xie, Lili Liang, Sumei Jia, Zhihui Wang and Guoyu Li; *Hebei Key Laboratory of Optical Fiber Biosensing and Communication Devices, China.* We propose a new STED DLW method assisted by a stretchable substrate, and lateral structure size of 38 nm and separated lines resolution of 96 nm were obtained.

P1.6
Ti2C MXene-based highly sensitive optical fiber MZI salinity sensor, Po Jin, Yifan Zhou, Bo Han and Ya-Nan Zhang; *Northeastern University, China.* This paper presents an optical fiber MZI sensor based on Ti2C-MXene nanosheet, which has a salinity sensitivity of -3.4360 nm/%. The sensitivity is improved by 28% after coating with Ti2C-MXene nanosheet.

P1.7
Research on temperature-dependent modulation characteristics of PZT optical fiber phase modulator, Zhanyuan Liu, Xiaochen Niu, Shuo Chen, Aodi Yu, Jundong Tian, Li Xia, Lei Zhao and Cheng Zhao; *Start Grid Smart Grid Research Institute co. Ltd., China.* The temperature-dependent modulation characteristics of PZT fiber phase modulator is experimentally investigated. The modulation principle is theoretically analyzed and a Michelson interferometer is constructed to obtain the modulation characteristics from -40 ℃ to 20 ℃.

P1.8
Switchable multi-wavelength thulium-doped fiber random laser by using two-segment Sagnac loop filter, Fengjiao Li, Yaozong Hu and Xinyong Dong; *Guangdong University of Technology, China.* A switchable multi-wavelength thulium-doped fiber random laser (TDFRL) using a femtosecond laser introduced random fiber grating to provide random distributed feedback and a two-segment Sagnac loop filter is proposed and analyzed.

P1.9
Experimental Demonstration of Self-homodyne Coherent Transmission of TPS-4096-QAM over a 22.5 km MCF with a Spectral Efficiency of 19.15 bits/s/Hz/core, Tianze Wu, Feng Tian, Nan Wang, Yu Gu, Jianwei Zhou, Qi Zhang, Fu Wang, Ran Gao, Bo Liu and Xiangjun Xin; *Beijing University of Posts and Telecommunications, China.* We experimentally demonstrate the self-homodyne coherent transmi-ssion of truncated probabilistic shaping (TPS) 4096-level quadrature amplitude modulation (QAM) over a 22.5 km 7-core fiber, without carrier recovery. The spectral efficiency can be up to 19.15 bits/s/Hz/core.

P1.10
Cadmium Ion Detection Based On Tilted Fiber Bragg Grating Surface Plasmon Resonance, Ziqiao Ren, Fuxiang Wang, Jun Wu, Xijie Feng, Wenbo Sui, Jiahui Li, Yongqi Wang, Wenjun Zhou and Changyu Shen; *China Jiliang University, China.* This paper presents a novel cadmium ion sensor that utilizes a tilted fiber Bragg grating functionalized by glutathione. Gold nanoparticles are used to amplify localized refractive index changes. The limit of detection is 0.07 nm.

P1.11
Effect of Low Frequency Vibration of Sensing Coil on Fiber Optic Current Sensors, Junchang Huang, Bin Liu, Yuzhuo Chen, Jundong Tian and Li Xia; *China Electric Power Research Institute, China.* FOCS current signals are measured by LIA when sensing coils under low frequency vibrations (10~20Hz). After FFT, it was found that the vibration frequency under 17Hz has the greatest influence on the output result.

P1.12
D-shaped terahertz microstructured fiber biosensor based on plasmon resonance on graphene surface, Yani Zhang, Jia Xue, Ting Miao, Yiming Yao, Qiuyang Wang and Jiaqin Gong; *Shaanxi University of Science & Technology, China.* This paper designs a D-shaped microstructured fiber biosensing model based on surface plasmon resonance of graphene, which is dedicated to terahertz regime. Improving optical fiber sensing performance by adjusting graphene thickness and graphene chemical potential.

P1.13
Ultra-narrow spectral line Brillouin laser frequency comb, Zhexin Zhang, Mingzhao Chen, Yin Xu and Hualong Bao; *Soochow University, China.* We combine the principle of four-wave mixing, injection locking and stimulated Brillouin scattering to realize an ultra-narrow spectral line Brillouin laser frequency comb. The linewidth of the optical frequency comb teeth is below 1 Hz.

P1.14
High-security chaotic dynamical enhanced strategy based on reservoir computing, Yilan Ma, Bo Liu, Jianxin Ren, Yaya Mao, Xiangyu Wu, Yiming Ma, Lei Jiang, Shuaidong Chen, Juntao Zhang, Mengjie Wu, Yongyi Yu and Gengyin Chen; *Nanjing University of Information Science and Technology, China.* We propose a high-security chaotic dynamical enhanced strategy in an orthogonal frequency division multiplexed passive optical network (OFDM-PON) based on a nonlinear dynamical enhanced chaotic system generated by reservoir computing(RC).

P1.15
High-precision mode purity measurement of few-mode ring core fibers, Yange Liu, Zekun Shi, Xin Wang, Wenzhe Chang, Pan Wang, Huiyi Guo and Zhi Wang; *Institute of Modern Optics, Nankai University, China.* A simple and accurate method for measuring the mode purity of few-mode ring-core fiber (RCF) is proposed and experimentally demonstrated. The accuracy is verified by off-axis digital holography technology.

P1.16
Three-dimensional CAP modulation optical transmission system based on McEliece encryption, Lei Jiang, Bo Liu, Jianxin Ren, Xiangyu Wu, Yaya Mao, Shuaidong Chen, Yiming Ma, Yilan Ma, Lilong Zhao and Feng Tian; *Beijing University of Posts and Telecommunications, China.* A three-dimensional carrier-less amplitude phase (CAP) modulation scheme based on McEliece encryption is proposed and verified by experiment. Through post-quantum encryption, higher dimensional and more secure optical transmission is realized.

P1.17
Dynamics of Ultrafast Laser introduced Breakdown in Water and Ethanol, Zhihong Ke, Kaixin Zhao, Tianlong Tao and Shuhui Liu; *Hubei Key Laboratory of Optical Information and Pattern Recognition, Wuhan Institute of Technology, China.* 35 fs laser-induced optical breakdown in water and ethanol is studied using time-resolved shadow imaging. Shock wave velocity is higher in ethanol because liquid properties. The velocity decreases over time, faster in ethanol than water.

P1.18
Simulation study of the polarization effect on heterodyne and homodyne coherence factors of iDWS, Yihang Lu and Wenjun Zhou; *China Jiliang University, China.* We present a general form of the Siegert relationship for interferometric diffusing wave spectroscopy in the presence of non-ignorable sample light, and investigate the heterodyne and homodyne coherence factors with analytical and statistical simulation models.

Poster Session I (Best Poster Paper Award Session) 15:30-16:00

P1.19

High gain EDFA for extended L-band by using pre-amplified double-pass configuration, Haoxian Lao, Manbing Lin, Jiyu Ruan and Xinyong Dong; *Guangdong University of Technology, China.* An extended L-band EDFA is demonstrated by employing a pre-amplified double-pass configuration. The pre-amplified double-pass scheme achieves the 20- and 30-dB gain bandwidths, reaching 65 nm (1556-1621 nm) and 58 nm (1558-1616) respectively

P1.20

High Sensitive Surface Plasmon Sensor Based on a Simple Nanosystem, Kaili Kuang, Qiao Wang, Xiaomin Yuan, Yutong Yang, Han Chu and Wei Peng*; Dalian University of Technology, China.* We present a simple nanosystem composed of Ag grating, TiN film and SiO2 substate.

P1.21

Reservoir computing system based on polarization dynamics of a semiconductor optical amplifier fiber ring laser, Nian Fang, Ruolan Qian and Shuai Wang; *Shanghai University, China.* All-optical reservoir computing (RC) based on polarization dynamics of a semiconductor optical amplifier fiber ring laser is proposed and demonstrated experimentally. The results show that the proposed RC has good prediction performance and classification ability.

P1.22

Performance improvement of multi-parameter measurement optical fiber sensors based on machine learning methods, Yifan Zhou, Bo Han, Po Jin, Ya-Nan Zhang and Yong Zhao; *Northeastern University, China.* A machine learning based spectral data analysis method is proposed to solve the problem of limited measurement range of optical fiber sensors. This method expands the measurement range of the sensor and improves measurement accuracy.

P1.23

Distributed optical fiber sensing technology for wind turbine monitoring, Wenqiang Song, Zhewen Ding, Bangning Mao, Ben Xu, Huaping Gong, Yixin Zhang and Chunliu Zhao; *China Jiliang University, China.* This paper presents a novel method for wind turbine condition monitoring that combines a phase-sensitive optical time-domain reflectometer with a one-dimensional convolutional neural network. And the effectiveness of the method was verified experimentally.

P1.24

Calibration of Elasticity Coefficient for Dual-Ring Optical Pressure Measurement Device, Hong Yang, Yuqiang Hu, Ruoduan Sun, Zhenshan Sun and Qing Sun; *National Institute of Metrology, China.* We designed a dual-ring microcantilever device and calibrated the elasticity coefficient of the device using standard weights and an interferometer measurement system. The calibration shows that the displacement of the microcantilever device has good linearity.

P1.25

Temperature and strain monitoring system based on linear optical sampling, Jingwen Li, Jianxing Pan, Chaoyu Xu, Zhichao Wu, Tianye Huang, Jing Zhang and Xiang Li; *China university of geosciences, China.* The application of linear optical sampling to FBG sensing measurement can effectively overcome the limitation of traditional measurement methods in achieving precise measurement due to resolution constraints.

P1.26

A novel gap compensation induced low-loss hollow-core anti-resonant fiber, Zhaoyang Zhang, Yuemei Li, Yao Guo, Dehua Chen, Zheng Liu and Zhiguo Zhang; *Beijing University of Posts and Telecommunications, China.* This paper This paper proposes a new structure of hollow-core anti-resonant fiber. The LP01 mode loss is reduced to 0.00602dB/km by adding some gap compensation tubes. Furthermore, this value was reduced to 0.00103dB/km through optimization. proposes a new structure of hollow-core anti-resonant fiber. The LP01 mode loss is reduced to 0.00602dB/km by adding some gap compensation tubes. Furthermore, this value was reduced to 0.00103dB/km through optimization.

P1.27

Characterization of pearls using spectroscopy techniques, Yunsong Hu, Feng You, Peiquan Yuan, Bing Qian and Huacai Chen; *China Jiliang University, China.* To investigate the difference between freshwater cultured pearls and AKOYA pearls, we characterized the different types of pearls using Raman and Fluorescence spectroscopy.

Poster Session I（Best Poster Paper Award Session）15:30-16:00

P1.28

Research on state monitoring of bridge cable based on optical fiber sensing technology, Chunying Xu, Xinjie Wu, Ruixin Liang, Yu Zhou, Chengyu Yang and Chuliang Wei; *Shantou university, China.* In this paper, the strain and vibration of the bridge cable and its compensation device were monitored using fiber optic grating (FBG) sensing technology on the Zhoushan-Daishan Bridge in Zhoushan, Zhejiang Province.

P1.29

High performance C+L band EDFA enhanced by using a long-period fiber grating, Yongfang Zou, Zhikai Wu and Xinyong Dong, *Guangdong University of Technology, China*. We reported a double-pass C+L band erbium-doped fiber amplifier providing ≥20 dB gain from 1530-1605 nm, with a minimum noise figure of 4.8 dB.

P1.30

Prediction Time-Based Spectrum RMSA Algorithm for Hybrid AR and IR Services in EONs, Zhidong Zhang, Mengru Cai, Jiyuan Ren, Xiaofeng Wang, Ning An, Zhen Luo, Yu Ma and Shan Yin; *Beijing University of Posts and Telecommunications, China*. We propose an algorithm for scheduling and distance adaption of hybrid AR and IR services based on time prediction. Simulation results show that the algorithm can effectively reduce the service blocking probability.

P1.31

All-fiber blood glucose monitoring sensor based on S-cone , Zhongmou Ju and Zixuan Guo; *Handan University, China*. This design proposes an all-fiber blood glucose detection sensor based on the cascade of S-shaped cone and few-mode tilted grating. The design has the advantages of simple structure, stable performance, high sensitivity and anti-bioelectric interference.

P1.32

Optimization of etching conditions for the absorber layer of CuInGa (S,Se)2 solar cells based on nanoparticle ink, Binghong Chen, Dong Liu and Zugang Liu; *China Jiliang University China.* The optimization of etching conditions for the absorber layer of high-performance copper indium gallium selenide solar cells based on nanoparticle ink is of great significance to improve device efficiency.

P1.33

Layered Asymmetrically Clipped Optical SCFDM based on Adaptive LDPC Puncturing for IM/DD Transmission System, Yikun Yang, Dong Guo, Qi Zhang, Ran Gao, Fu Wang, Huan Chang, Zhipei Li, Xin Huang and Bowen Li; *Beijing University of Posts and Telecommunications, China.* An adaptive LDPC puncturing method suitable for L-ACO-SCFDM is proposed. The simulation results show that it can obtain 6~7dB sensitivity gain compared with conventional L-ACO-SCFDM and have potential application in short-distance IM/DD optical transmission system.

P1.34

Modulation format identification based on horizontal projection and LSTM in optical networks , Jingjing Li, Jie Ma, Jianfei Liu, Jia Lu, Xiangye Zeng and Mingming Luo; *Hebei University of Technology, China*. This paper proposes a horizontal projection (HP) and long short-term memory neural network (LSTM) scheme for modulation format identification (MFI). The results show the proposed scheme achieves 100% MFI accuracy for the five modulation formats.

P1.35

Distributed Brillouin temperature and strain discriminative sensor based on a bend-tolerant few-mode fiber , Yihao Peng, Pengbai Xu, Kunhua Wen, Xinyong Dong, Jun Yang and Yuwen Qin; *Guangdong University of Technology, China*. We proposed a distributed temperature and strain discriminative sensor based on differential pulse-pair Brillouin optical time-domain analysis and bending-tolerant few-mode fiber, where the discriminative deviation of 2.78 °C and 33.2 με was demonstrated, respectively.

P1.36

A complex-valued NN equalizer based on pruning optimization algorithm, Xingyuan Huang, Yongjun Wang, Chao Li, Lu Han, Xiying Ding and Qi Zhang; *Beijing University of Posts and Telecommunications, China*. In this paper, a complex-valued NN equalizer based on iterative pruning algorithm is proposed and demonstrated in 64-QAM coherent optical detection. Compared with fully connected NN, the pruned sparse NN reduces computational complexity by 55%.

Yishan Hall (沂山厅), Track 1

16:00-18:00
T3A • Fibers & fiber devices II
*Presider: **Changrui Liao**, Shenzhen University, China*

T3A.1 • 16:00 Invited

High Power Narrow Linewidth Fiber Laser, Pu Zhou; *National University of Defense Technology, China*. The recent progress of high power narrow-linewidth fiber laser will be reviewed in this talk.

T3A.2 • 16:20 Invited

Transverse mode switchable fiber laser based on a fiber beam shaper, Weiqing Gao; *Hefei University of Technology, China*.

T3A.3 • 16:40 Invited

Recent progress on rare-earth-doped fluoride fiber laser at 3~5 microns, Jianfeng Li; *University of Electronic Science and Technology of China, China.* In this talk, I will introduce our recent progress on efficient laser excitation and broadband wavelength tuning in the spectral region of 3~4 μm using Dy3+-, Er3+-, and Ho3+-doped fluoride fibers. The results will promote the advance of mid-infrared fiber laser technology.

Lushan Hall (鲁山厅), Track 6

16:00-18:00
T3B • Measurement & imaging II
*Presider: **Hongyan Fu**, Tsinghua University, China*

T3B.1 • 16:00 Invited

Super-resolution imaging in ultra-long ultra-thin lumen, Qing Yang; *Zhejiang University, China*. In this presentation, we present recent progress on super resolution imaging based on single multimode fiber. Spatial-frequency tracking adaptive beacon combined with spatial frequency engineering was proposed to ensure KHz fast tracking high stable super-resolution multimode fiber endoscopy imaging.

T3B.2 • 16:20 Invited

Head-mounted, fiber-optic photoacoustic microscope for cerebral imaging on a freely-moving mouse, Long Jin; *Jinan University, China*. We developed a head-mounted photoacoustic microscope for freely-moving-state cerebral imaging of a mouse. It can visualize the cerebrovascular responses to external stimuli and is promising in neuroscience studies.

T3B.3 • 16:40 Invited

Microcavity Optical Fibers for biosensing, Yuan Gong; *University of Electronic Science and Technology of China*. The design and fabrication of microcavity optical fibers will be introduced, with unique properties for disposable and sensitive biosensing.

Mengshan Hall (蒙山厅), Track 4

16:00-18:00
T3C • Optoelectronic integration II
*Presider: **Yaocheng Shi**, Zhejiang University, China*

T3C.1 • 16:00 Invited

Single Mode Coupled-Cavity Semi-conductor Lasers with a Microcavity, Yong-Zhen Huang; *Chinese Academy of Sciences, China*. The coupled-cavity laser is reported with a microcavity as an end face of the FP cavity for mode selection. Single mode operation with the highest side-mode suppression ratio (SMSR) of 52 dB is realized at 1550 nm, and a continuous wavelength tunning range of 33 nm is obtained by adjusting currents with the SMSR > 40 dB and a tuning time less than 10 microseconds.

T3C.2 • 16:20 Invited

Design and Application of Reserve Pool Oriented Neural Network, Li Pei; *Beijing Jiaotong University, China*.

T3C.3 • 16:40 Invited

1550nm AlGaInAs/InGaAsP-InP Tunable Distributed Feedback Laser with High Linearity under Direct Analog Modulation, Xun Li; *McMaster University, Canada.* Fiber-optic links among base stations in the next generation wireless communication networks require cost-effective tunable semiconductor lasers capable of being directly modulated with high linearity as the light source. This work reports the development of such laser that can simultaneously achieve a tuning range of 9nm and a direct modulation bandwidth of 6GHz with high linearity and low noise.

Laoshan Hall (崂山厅), Special 1

16:00-18:00
T3D • Organic optoelectronics II
*Presider: **Junbiao Peng,** South China Univ. of Technology; **Lixin Xiao**, Peking University*

T3D.1 • 16:00 Invited

Highly efficient electron-transporting materials for OLEDs, Lixin Xiao; *Peking University, China.*

T3D.2 • 16:20 Invited

Highly Efficient and Long Lifetime Pyrene-Based Blue OLED Materials and Devices, Jianyong Hu; *Shaanxi Normal University, China.*

T3D.3 • 16:40 Invited

Highly efficient and stable blue organic emitters and OLEDs, Dongdong Zhang; *Tsinghua University, China.*

Taishan Hall (泰山厅), Track 3

16:00-18:00
T3E • Optical Networks I
*Presider: **Qunbi Zhuge**, Shanghai Jiao Tong University, China*

T3E.1 • 16:00 Invited

Architecting Wavelength-Switched Optical Networks with Coherent P2MP Transceivers, Ruoxing Li, Qian Lv and Zuqing Zhu; *University of Science and Technology of China, China.*

T3E.2 • 16:20 Invited

Secure OFDM Transmission with Integrated Physical-Layer Key Distribution using NOMA, Zhi Chai, Liuming Zhang, Xinran Huang, Mingye Li and Xuelin Yang; *Shanghai Jiao Tong University.* A secure OFDM data communication is proposed using non-orthogonal multiple access (NOMA), where the physical-layer key distribution is integrated with the data transmission in the same channel.

T3E.3 • 16:40 Invited

Joint Multi-Layer Proactive Recons-truction for Multi-Domain IP-Optical Integrated Network, Yunxuan Li, Rentao Gu and Xiaoya Zhang; *Beijing University of Posts and Telecommunications, China.* A joint multi-layer proactive reconstruction algorithm is proposed to reconstruct IP layer and optical layer simultaneously to adapt to dynamic service requirements for multi-domain IP-optical integrated network, which can effectively reduce blocking probability.

VIP Room (聚贤厅), Track 8

16:00-18:00
T3F • Space communications I
*Presider: **Tianshu Wang**, Changchun University of Science and Technology, China*

T3F.1 • 16:00 Invited

Adaptive Beam Control for Optical Inter-Satellite Communication Systems, Vuong Mai, Kwanyong Lee and Hoon Kim; *Bradford-Renduchintala Centre for Space AI, University of Bradfor, UK.*

T3F.2 • 16:20 Invited

Underwater Wireless Optical Communications with a Reach up to Hundreds Meters, Jing Xu; *Zhejiang University, China.*

T3F.3 • 16:40 Invited

Free Space Optical Communication Based on Mode Diversity, Guijun Hu; *Jilin University, China.* This report mainly talks about three mode diversity receivers for free space optical (FSO) communication systems under turbulence conditions and designed for coherent detection of the FSO communication system based on few-mode fiber coupling.

Yishan Hall (沂山厅), Track 1

T3A.4 • 17:00 Invited

Polymer fiber random lasers, Zhijia Hu; *Anhui University.* Polymer fiber random laser has certain directionality and integration simplicity. A variety of gain materials and scattering structures are combined by doping materials to provide a rich method for regulating random laser emission.

T3A.5 • 17:20 Invited

Complex lasing for information application, Weili Zhang; *University of electronic science and technology of China.*

T3A.6 • 17:40 Invited

High-order mode Brillouin random laser based on distributed Rayleigh scattering in few mode fibers, Zizhou Wei, Yichun Li, Han Wang, Haozhe Shou, Mengshi Zhu, Fufei Pang and Liang Zhang; *Shanghai University.* A high-order-mode (HOM) Brillouin random fiber laser with an all-few-mode-fiber half-open linear cavity was experimentally demonstrated, highlighting a 610-Hz narrow-linewidth LP11 mode laser emission with high purity of ~91.3%.

Lushan Hall (鲁山厅), Track 6

T3B.4 • 17:00 Invited

Imaging through multimode optical fiber with bending, Yunxu Sun; Harbin Institute of Technology, *China*. Multimode fibers (MMF) have been used for transmitting images. We studied the information distribution of MMF speckle patterns for image reconstruction. Experimental results show that only about one-third of full speckle patterns is enough to reconstruct the original images.

T3B.5 • 17:20 Invited

Diffuse [illegible]nterferometry for sensing and imaging the human brain, Wenjun Zhou; *China Jiliang University, China.*

T3B.6 • 17:40 Invited

Optofl[illegible]er for sensitive biosensing, Xi Yang; *Peking University, China.*

Mengshan Hall (蒙山厅), Track 4

T3C.4 • 17:00 Invited

Hybrid integrated external cavity lasers for frequency-modulated contineous wave generation, Linjie Zhou; *Shanghai Jiao Tong University, China.*

T3C.5 • 17:20 Invited

Optical noise of injection-locked epitaxial quantum dot laser on silicon, Jia'nan Duan; *Harbin Institute of Technology, China.*

T3C.6 • 17:40 Invited

InP based spot size converter integrated low divergence angle lasers, Song Liang; *Chinese Academy of Sciences, China.* We have fabricated spot size converter integrated InP based 1.3 μm lasers. A reverse mesa waveguide has been adopted, which eases the device fabrication. The divergence angles are as small as 7.7×8.1 degree.

18:00-20:00 Dinner Break, *Qufu & Ji'nan Ballroom, 2nd Floor*

Laoshan Hall (崂山厅), Special 1

T3D.4 • 17:00 Invited

Thin-film design and interface engineering for organic optoelectronic devices, Zhigang Yin; *Chongqing University, China*.

T3D.5 • 17:20 Invited

Light Manipulation in Organic Light- Emitting Devices by Nanostructures, Yan-Gang Bi; *Jilin University, China.*

T3D.6 • 17:40 Invited

Understanding the charge/exciton dynamics for white OLEDs and colloidal quantum well LEDs, Baiquan Liu; *Sun Yat-sen University, China.*

Taishan Hall (泰山厅), Track 3

T3E.4 • 17:00 Invited

Hardware-based algorithm acceleration towards efficient network traffic storage systems, Baokang Zhao; *National University of Defense Technology, China*.

T3E.5 • 17:20 Invited

Adaptive Scheduling for High-Efficient Computing Power Optical Networking, Hui Yang; *Beijing University of Posts and Telecommunications, China.*

T3E.6 • 17:40 Invited

Self-Adaptive Bandwidth Allocation to Address Dynamic Traffic Concept Drift in Optical Access Networks, Lihua Ruan; *Peng Cheng Laboratory, China*. Fast adapting bandwidth allocation decision to traffic environments is critical in optical access networks. We propose an online reinforcement learning-based solution to tackle the dynamic traffic concept drift in ML-enhanced optical access networks.

VIP Room (聚贤厅), Track 8

T3F.4 • 17:00 ☆

Metasurface-based On-board Optical Switching for Highly-Reliable Space Communications, Weijie Qiu, Weigang Hou, Xiangyu He, Pengxing Guo, Chao Li and Lei Guo; *Chongqing University of Posts and Telecommunications, China*. Our Au metasurface has the stronger cosmic radiation resistance, and the more expeditious channel backup. To further enhance reliability of space communications, the neural network precisely controls the micro-displacement of chips for the metasurface backup.

T3F.5 • 17:15

A Fast Routing Algorithm with Maximum Throughput in Dynamic LEO Optical Satellite Networks, Yunxiao Ning, Yongli Zhao, Longteng Yi and Jie Zhang; *Beijing University of Posts and Telecommunications (BUPT), China*. A novel routing algorithm is proposed to reduce the routing computation time in dynamic LEO optical satellite networks. Simulations prove that our proposed algorithm can significantly fasten the computation while maintaining the maximum throughput.

T3F.6 • 17:30

Continuous Two-way Auction based Traffic Offloading in LEO Satellite Optical Networks, Jingbo Wei, Ruijie Zhu, Qiancheng Zhao, Zhichun Sun, Mengzhen Liu, Xiaojie Hou, Kai Li and Huiying Sang; *Zhengzhou University, China*. We propose a traffic offloading strategy based on contiunous two-way auction to realize traffic transfer of the unbalanced feed link in LEO satellite optical networks. Simulation results show that it can achieve less energy consumption.

T3F.7 • 17:45

Efficient Converged Satellite-Ground Federated Learning for LEO Mega Constellations, Minghao Ge, Ruijie Zhu, Kai Li, Jingbo Wei, Huiying Sang and Xiaojie Hou; *Zhengzhou University, China*. We propose an efficient converged satellite-ground federated learning algorithm by quickly converging parameters to reduce the training time. Simulation results show that it can improve the global aggregation speed.

18:00-20:00 Dinner Break, *Qufu & Ji'nan Ballroom, 2nd Floor*

Yishan Hall (沂山厅), Track 1

08:00-10:00
W1A • Fibers & fiber devices III
*Presider: **Ping Lu**, Huazhong University of Science and Technology, China*

W1A.1• 8:00 Invited

Magnetic Current Sensors based on the Long-Period Fiber Gratings Packaged by Magnetic Fluid, Yunqi Liu; *Shanghai University, China.* The high sensitivity magnetic current sensors are proposed based on the fabricated gratings including the LPFGs operating at the dispersion turning point, the LPFGs inscribed in thin-cladding polarization-maintaining fibers and tapered fibers.

W1A.2• 8:20 Invited

Optical fibres and gases: some new tools for photonics, Fan Yang; *Shanghai Institute of Optics and Fine Mechanics, China.*

W1A.3• 8:40 Invited

Research on wideband tunable DFB laser and application on FBG demodulation, Feng Wang; *Nanjing University, China.* We have developed a tunable DFB laser with 40 nm wavelength tuning range. It has continuous wavelength tuning ability and fast tuning speed. The sensing application on eight FBG channels has been demonstrated.

Lushan Hall (鲁山厅), BSPA-Track 6

08:00-10:00
W1B • Measurement & imaging III
*Presider: **Wenjun Zhou**, China Jiliang University, China*

W1B.1• 8:00 Invited

Recognition of Object's Opening Features Using Machine Learning, Yang Yue and Yiwen Zhang; *Xi'an Jiaotong University, China.*

W1B.2• 8:20 Invited

Deep learning assisted spectral demodulation of optical fiber sensors for marine information monitoring, Zhengyong Liu; *Sun Yat-sen University, China.*

W1B.3• 8:40 Invited

Tilted fiber Bragg grating-based plasmonic fiber-optic spectral comb for ultra low limit and fast response NA detection, Changyu Shen; *China Jiliang University, China.* We present a fiber optical relative humidity (RH) sensor based on an etched tilted fiber Bragg grating (ETFBG) and coated with crystal violet (CV)/perfluorinated sulfonic acid (Nafion) composite film. The proposed sensor can detect RH both qualitatively and quantitatively. On one hand, the color of the sensor changes from yellow to green with the increasing of the RH ranging from 10% to 80%, like an optical fiber RH “test paper”.

Mengshan Hall (蒙山厅), Track 5

08:00-10:00
W1C • Optical signal Processing I
*Presider: **Di Peng**, Guangdong University of Technology, China*

W1C.1• 8:00 Invited

Prospects of THz photonics in 6G, Xianbin Yu; *Zhejiang University & Zhejiang Lab, China.*

W1C.2• 8:20 Invited

Generation of the high-frequency tunable linear frequency modulation signal based on optical fiber frequency shift loop, Jianxin Ma; *Beijing University of Posts and Telecommunications, China.* Optical LFM waveform generation based on OFSL is theoretically analyzed and demonstrated by simulation. By Heterodyne beating with frequency-tunable local oscillator in balanced photo-detector, a high-frequency, tunable LFM signal is generated.

W1C.3• 8:40 Invited

Microwave Photonics Signal Processing in Fractional Fourier Domain, Shangyuan Li; *Tsinghua University, China.* For microwave photonic applications such as wideband communication and radar, Fractional Fourier Domain provides a flexible and insightful perspective to process signals and extract more information than traditional methods in time domain and frequency domain.

Laoshan Hall (崂山厅), Special 3

08:00-10:00
W1D • 2D-materials photonics
*Presider: **Hongtao Lin**, Zhejiang University, China*

W1D.1 • 08:00 Keynote

Novel photodetectors for infrared sensing and intelligent recognition, Weida Hu; *Chinese Academy of Sciences, China.*

W1D.2 • 08:30 Invited

Multispecies and individual molecule gas detection using graphene based micro-resonators, Baicheng Yao; *University of Electronic Science and Technology of China, China.*

W1D.3 • 08:50 Invited

Two-Dimensional Material Optoelec-tronics, Xianguang Yang; *Jinan University, China.* Herein, a strategy for rare earth element doping is utilized for the synthesis of 2D WS2: Er nanosheets to achieve up-conversion and down-conversion emissions ranging from visible to near-infrared regions. Moreover, the potential integration of the synthesized 2D nanosheets in silicon platforms is demonstrated by the realization of an infrared photodetector based on a WS2: Er/Si heterojunction.

Taishan Hall (泰山厅), Track 7

08:00-10:00
W1E • Ultrafast Photonics II
*Presider: **Xiaosheng Xiao**, Beijing University of Posts and Telecommunications, China*

W1E.1 • 08:00 Invited

Ultrahigh-Q rare-earth-doped micro-cavities and their lasing applications, Lei Shi; *Huazhong University of Science and Technology, China.*

W1E.2 • 08:20 Invited

Femtosecond all-polarization-maintained fiber laser systems with application in nonlinear frequency conversion, Peiguang Yan; *Shenzhen University, China.*

W1E.3 • 08:40 Invited

High-power ultrafast Mid-infrared fiber lasers, Chunyu Guo; *Shenzhen University, China.*

VIP Room (聚贤厅), Track 2

08:00-10:00
W1F • Optical transmission II
*Presider: **Xiaoguang Zhang**, Beijing University of Posts and Telecommunications, China*

W1F.1 • 08:00 ★

Geometric and Probabilistic Shaping of 16/32-QAM based on Swarm intelligence algorithm, Junping Xu, Jie Ma, Jianfei Liu, Jia Lu, Xiangye Zeng and Mingming Luo; *Hebei University of Technology, China*. We design the hybrid PS/GS-16/32QAM based on intelligence algorithm in optical fiber transmission. The position and the probability of constellation points are jointly optimized. Results show that PS/GS-16/32QAM outperforms GS-16/32QAM and traditional 16/32QAM.

W1F.2 • 08:15 ★

Experimental Demonstration on ZUC-based Key Expansion for Quantum Noise Stream Cipher, Ying Wu, Yajie Li, Mingrui Zhang, Kongni Zhu, Shuang Wei, Yuang Li, Wei Wang, Yongli Zhao and Jie Zhang; *Beijing University of Posts and Telecommunications, China*. This paper proposes a seed key expansion method based on ZUC and bit shifting in QNSC system. Experimental results verify the improved efficiency of key utilization during data encryption, while the security performance is guaranteed.

W1F.3 • 08:30 ★

Gain optimization in erbium-ytterbium co-doped hybrid slot waveguides, Ziming Dong and Yigang Li; *Nankai University, China*. An on-chip optical amplifier based on an erbium-ytterbium co-doped hybrid slot waveguide is designed. The modal characteristics are optimized by combining the slot overlap factors and the effective modal area to improve its gain performance.

W1F.4 • 08:45 ★

Spatial Pilot-aided Fast-adapt Framework for Image Transmission through Long Multi-mode Fiber, Shuqi Zhang, Wei Zhou, Nan Chi and Ziwei Li; *Fudan University, China*. We propose a pilot-aided learning framework for stable and accurate image transmission through multi-mode fiber. A fast-adapt strategy is developed to allow online model tuning with 1% pilot frames for >50min transmission in 100m fiber.

Yishan Hall (沂山厅), BSPA-Track 1

W1A.4 • 09:00 ★

Scalable ultra-low loss 5-LP mode selective coupler, Huiyi Guo, Liang Chen, Xin Wang, Wenzhe Chang, Letian Gu, Zefeng Li, Zhi Wang and Yan-Ge Liu; *Institute of Modern Optics, Nankai University, China*. The 5-LP mode selection coupler (MSC) with ultra-low loss is designed and manufactured, with losses as low as 0.1 dB, providing excellent cascading performance to achieve low-cost high-performance space division multiplexing.

W1A.5 • 09:15 ★

All-fiber Fourth-order LP Mode Selective Excitation Employing a Mode Selective Photonic Lantern, Liang Chen, Huiyi Guo, Boyu Chen, Yundong Hao, Zhi Wang and Yan-Ge Liu; *Nankai University, China.* An all-fiber fourth-order LP mode converter is proposed and fabricated. The insertion loss of odd and even fourth-order LP mode is less than 0.2 dB and 0.4 dB at 1460-1640 nm, respectively.

W1A.6 • 09:30 ★

Extended L-band EDFA co-pumped by backward ASE, Manbing Lin, Haoxian Lao and Jiyu Ruan, Xinyong Dong; *Guangdong University of Technology, China*. An Er/Yb co-doped fiber (EYDF) amplifier for extended L-band is reported. The inverse amplified spontaneous emission (ASE) is used to increase the gain of the amplifier. The gain is increased by 14 to 24 dB.

W1A.7 • 09:45 ★

A real-time monitoring method for Brillouin fiber laser, Xiang Zhang, Mingzhao Chen, Yin Xu and Hualong Bao; *Soochow University, China*. We demonstrate a real-time monitoring method for Brillouin fiber laser. The Mach-Zehnder interferometer and the gas cell are introduced for data calibration to ensure the accuracy of spectroscopy data.

Lushan Hall (鲁山厅), BSPA-Track 6

W1B.4 • 09:00 ★

A Refractive Index Sensing System by Using EFPI based Microwave Photonic Filter, Shichen Zheng, Weiying Rao, Xun Cai and Hongyan Fu; *Xiamen University, China*. We propose and experimentally demonstrate a refractive index (RI) sensing system using an extrinsic Fabry-Perot interferometer based microwave photonic filter, and the sensitivities of 627.953 MHz/RIU and 1201.653 MHz/RIU have been achieved in the experiment.

W1B.5 • 09:15 ★

Optical Fibertrode for Monitoring Dynamics of Interfacial Capacitive Deionization, Tiansheng Huang, Li-Peng Sun and Bai-Ou Guan;Jinan University, China. This paper shows a fiber-optic electrode for in-situ monitoring dynamic process of electrosorption by parallel spectral and electrochemical integration. Experimental measurement of kinetic and energy consumption information during capacitive deionization of manganese ion are presented.

W1B.6 • 09:30 ★

Simultaneous illumination-imaging system, Kang Fu, Binju Wang and Yongjin Wang; *Shanghai University, China*. A high-order-mode (HOM) Brillouin random fiber laser with an all-few-mode-fiber half-open linear cavity was experimentally demonstrated, highlighting a 610-Hz narrow-linewidth LP11 mode laser emission with high purity of ~91.3%.

W1B.7 • 09:45 ★

A strain sensor based on four core fiber with multi helix torsional structure, Yongxiang Zhang, Jiaqi Wang, Wa Jin, Guangwei Fu, Weihong Bi and Xinghu Fu; *Yanshan university, China*. A strain sensor based on four core fiber (FCF) with multi helix torsional structure is proposed, which structure is a cascade of single mode fiber (SMF)-multi mode fiber (MMF)- FCF- MMF- SMF.

Mengshan Hall (蒙山厅), BSPA-Track 5

W1C.4 • 09:00 Invited

Loss Compensation in a Whispering Gallery Mode Resonator and Its Application as a Tunable Filter, Feng Gao; *Nankai University, China*. Narrow bandwidth tunable filters with stable efficiency were demonstrated in whispering gallery mode resonators by introducing additional coupling mode as loss compensation in the coupling system, which will bring agility in the applications.

W1C.5 • 09:20 ★

Reservoir computing system based on an optoelec-tronic oscillator with double delay feedback, Lanting Zhang, Min Sun and Nian Fang; *Shanghai University, China*. A time-delayed reservoir computing system based on an optoelectronic oscillator with double feedback is proposed. The simulation results verify the prominent performances of the proposed system, which is compact in structure and easy to implement.

W1C.6 • 09:35 ★

High Spatial Resolution Temperature Sensing Based on RDTS System, Peichao Chen and Xiaopeng Dong; *Xiamen University, China*. This report proposes a novel temperature demodulation method that can obtain high spatial resolution temperature results in the entire fiber, and indirectly increases the number of sensing units in the same sensing fiber length.

W1C.7 • 09:50 ★

Physical Layer Security Enhanced Scheme based on Joint Encryption of Diffusion and Scrambling by Galilean Transformation in CO-OFDM System, Le Liu, Xianfeng Tang and Xiaoguang Zhang; *Beijing University of Posts and Telecommunications, China*. A physical-layer encryption scheme is proposed based on joint encryption of diffusion and scrambling by Galilean transformation in CO-OFDM system. Security is enhanced with key space of 10^180 and PAPR is reduced by 0.8 dB.

10:00-10:30 Poster Session 2 & Tea Break, 2nd Floor

Laoshan Hall (崂山厅), Special 3

W1D.4 • 09:10 Invited

Silicon and Chalcogenide integrated two-dimensional materials photonics, Hongtao Lin; *Zhejiang University, China.* In this talk, we will discuss the silicon and chalcogenide-based two-dimensional material optoelectronic integration technology for high-performance photonic devices.

W1D.5 • 09:30 Invited

All-optical Controllable Microring Filter with a Carbon Nanotube/Polymer/SiO2 Hybrid Waveguide, Bo Dong, Liu Yang, Qi Shao, Senpeng Zhang, Zongyu Chen and Wobin Huang; *Shenzhen Technology University, China.* An all-optical controllable microring filter with a carbon nanotube/polymer/SiO2 hybrid waveguide is presented. The device shows the advantages of high tuning efficiency, small size, compact structure, and all-optical control, and it is expected to have potential application in optical filter, optical switch, optical sensor, spectral analysis, and so on.

W1D.6 • 09:50 Invited

2D Infrared Photodetectors based on Optical and Electrical Combined Manipulations, Fang Wang; *Shanghai Institute of Technical Physics, China.*

Taishan Hall (泰山厅), Track 7

W1E.4 • 09:00 Invited

Spectral manipulation of high power Random fiber laser, Jiangming Xu; *National University of Defense Technology, China.*

W1E.5 • 09:20 Invited

Supercontinuum generation in Photonic crystal fibers via manipulating optical rogue wave, Hua Yang; *Hunan University, China.*

W1E.6 • 09:40 Invited

Optical frequency comb generation in coupled nonlinear microcavities, Dongmei Huang; *The Hong Kong Polytechnic University, China.* We present a theoretical understanding and experimental guidance for optical frequency comb generation in coupled nonlinear microcavities. The results will benefit the development of chip-scale sources.

VIP Room (聚贤厅), Track 2

W1F.5 • 09:00 ★

Low-Complexity Frequency-Domain MIMO Equalization in Strongly-Coupled Multi-Core Fiber Transmission Systems, Zhilong Zheng, Shuai Yuan, Yuling Xue, Liuzhu Wang, Hui Yan, Jing Zhang, Shaohua Hu and Kun Qiu; *Univ. of Electronic Science and Technol. China*. We propose a low-complexity frequency-domain MIMO equalization scheme combining unconstrained frequency-domain equalization with out-of-band exclusion. Long-haul strongly-coupled multi-core fiber transmission experiment shows a 73% complexity reduction with negligible performance degradation using the proposed scheme.

W1F.6 • 09:15 ★

Experimental Demonstration of PS-1024-QAM Transmission over 22.5-km MCF with Pre-Compensation, Nan Wang, Feng Tian, Tianze Wu, Mohai Yue, Shuaihang Wang, Bo Liu, Qinghua Tian, Qi Zhang and Xiangjun Xin; *BUPT, China*. The Volterra pre-compensation algorithm based on dynamic deviation reduction is proposed in this paper, and experimentally demonstrated its performance in the polarization multiplexed PS-1024-QAM transmission with capacity of 348.5-Gbit/s.

W1F.7 • 09:30 ★

First over 100-Gb/s PAM-8 IM/DD Fiber Transmission System at 2-micron Waveband Enabled by Advanced DSP, Yongzhu Hu, An Yan, Guoqiang Li, Jianyang Shi, Li Shen, Nan Chi and Junwen Zhang; *Fudan Univ., China*. We demonstrate the first over 100-Gbps PAM-8 signal transmission in IM/DD system at the 2-micron waveband enabled by advanced DSP. Nonlinear FTN-type DSP algorithms are applied to overcome the nonlinear ISI impairments.

W1F.8 • 09:45 ★

Channel Modeling and Analysis of UAV UV NLOS Communi-cation Scenarios, Xingle Xue, Mingyuan Liu, Ping Su, Jianshe Ma and Xingguang Li; *Tsinghua University, China*. This paper provides two UAV UV NLOS communication scenarios and four communication links, and performs channel model modeling and Monte Carlo simulation. The results can provide theoretical guidance for practical implementations.

10:00-10:30 Poster Session 2 & Tea Break, 2nd Floor

Poster Session II (10:00-10:30)

P2.1
Performance analysis of multicarrier modulation waveforms for terahertz wireless communication, Liga Bai, Hongqi Zhang, Zuomin Yang, Zhidong Lyu, Lu Zhang, Xiaodan Pang and Xianbin Yu; *Zhejiang University, China.* This paper presents an experimental comparison among the OFDM, FBMC and OTFS waveforms in a terahertz photonic-wireless point-to-point communication system operating at 300GHz. Results show the BER, out-of-band decay and PAPR performance of these waveforms.

P2.2
Solving RCMSA in SDM-EON by using proximal policy optimization algorithm, An Ning, Ren Jiyuan, Wang Xiaofeng, Jin Tianyu, Zhang Zhidong, Luo Zhen, Ma Yu and Yin Shan; *NORTHEAST BRANCH OF STATE GRID CORPORATION OF CHINA, China.* We use a new reinforce learning PPO algorithm to solve RCMSA. Simulation results show that using PPO algorithm can improve the efficiency of network spectrum resources and reduce the blocking rate of the requests.

P2.3
An All-optical plasmonic modulator based on graphene/ black phosphorus heterostructure at visible wavelengths, Feng Zhou; *Communication University of Zhejiang, China.* An all-optical plasmonic modulator working at visible wavelengths based on graphene/black phosphorus heterostructure is proposed. This modulator is capable of operating from 400 nm to 800 nm with large extinction ratio up to 55 dB.

P2.4
Capillary-Based Structural Long-Period Gratings for High-Sensitivity Curvature and Strain Measurement, Mengjiao Ding, Mengxue Tang, Xin Wang, Ziyang Hua and Yunhe Zhao; *Shanghai Maritime University, China.* A structural long-period gratings built with cascaded- sections of capillaries for high-sensitive curvature and strain measurement is proposed and experimentally demonstrated, and the correspondent sensitivities of 29.51 dB/m-1 and -18.9 pm/ /με could be achieved, respectively.

P2.5
pH sensor based on PDMS fiber doped by NaBaScSi2O7: Eu2+, Liyuan Xie, Juan Kang and Ruiyang Liu; *China Jiliang University, China.* A PDMS fiber doped by NaBaScSi2O7: Eu2+ was designed and proposed for pH measurement, which achieved good linearity within the range of 6.86-9.18.

P2.6
Mid-infrared tunable interband cascade laser employing double-trench waveguide structure with a tuning range of 118nm, Zhanyi Wang, Jingli Gong, Rui Q. Yang and Jian-Jun He; *Zhejiang University, China*. We present a widely tunable single-mode interband cascade laser (ICL) emitting at 3.3 μm based on the V-coupled cavity employing a double-trench structure, with a side-mode suppression ratio of up to 36dB.

P2.7
Real-time Unrepeatered C+L Band Transmission of 36 Tb/s Capacity over 342.5 km, Man Tan, Jianjun Wu, Ying Guo, Fang Chen, Jiekui Yu, Yudong Liang, Mingxiong Duan, Min Xiang, Wenzhong Wang and Jian Xu; *Accelink, China*. This paper demonstrates a record unrepeatered transmission with the capacity of 36 Tb/s over 342.5 km (53.8dB) with C+L band transmission, using Raman pump, C+L ROPA, and ultra-low loss & large effective area fiber.

P2.8
Relative intensity noise suppression based on saturabale gain in the erbium doped fiber amplifier, Yujia Li, Dongmei Huang, Zihao Cheng and Feng Li; Photonics Research Institute, *The Hong Kong Polytechnic University, China.* We propose the suppression of relative intensity noise (RIN) of laser based on the saturable gain in the erbium-doped fiber amplifier. How the input power, pump power will influence the RIN suppression are theoretically studied.

P2.9
Fiber optic temperature sensor based on Fabry-Perot microcavity structure, Sutong Hu, Yongxin Jin and Juanjuan Rao; *China Jiliang University, China.* We have developed a temperature sensor based on Fabry micro-cavity structure with the advantages of high sensitivity, corrosion resistance and high robustness.

Poster Session II (10:00-10:30)

P2.10
Broadband Beam Control and Gain Enhancement Based on Non-Resonant Transmission Phase Gradient Metasurfaces, Kang Chen, Wangqiu Cai, Xiaopeng Su, Yue Lian and Kai Li; *Marine Design & Research Institute of China, China.* Conventional phase gradient metasurface suffers from disadvantage unique. We propose a novel method to extend wideband transmission phase gradient metasurfaces(TGPMs) using non-resonant modes.an design example of antenna gain enhancement is given to prove the method.

P2.11
A large range fiber optic temperature sensor based on cascaded FBG and Sagnac interferometers , Qingchao Zhu, Zhi Meng Chen and Changqing Huang; *China jiliang University, China*. This paper presents a fiber optic temperature sensor based on Sagnac interferometer and fiber Bragg grating cascade structure, with the advantages of wide range measurement and high sensitivity.

P2.12
Whispering gallery mode microsphere resonator integrated inside a capillary tube end, Juanjuan Rao, Kai Yang and Sutong Hu; *College of Optical and Electronic Science, China Jiliang University, Hangzhou, China.* We demonstrate a whispering gallery mode microsphere resonator, which is composed of single-mode fiber and capillary tube. The structure has the advantages of compact size and stable performance.

P2.13
CNN Nonlinear Equalizer with Reducing the Dimensionality of Feature Maps, Shuo Liu, Yongjun Wang, Lu Han, Chao Li, Xingyuan Huang, Qi Zhang and Xiangjun Xin; *Beijing University of Posts and Telecommunications, China.* In this paper, we propose a method of feature map dimensionality reduction as the input of CNN. We validate the complexity advantages of this scheme in a 120 Gb/s PDM 64-QAM coherent optical communication system.

P2.14
The Design of Photoacoustic Cell with Multiple Resonances, Hu Bei; *China Electric Power Research Institute, China.* We have designed a photoacoustic cell with four resonant cavities with the same radius and different lengths, which can achieve two gas differential detection. The crosstalk existed in the cell are analyzed as well.

P2.15
Dual-Comb Generation by Recirculating Frequency-Shifting Loop, Yuxuan Liu, Yihan Wang, Xiang Zhang, Yin Xu and Hualong Bao; *Soochow university, China.* Here, we present a new scheme to dual-comb generation based on recirculating frequency-shifting loop. The obtained dual-combs are down-converted to a beat comb with repetition frequencies of 2 MHz.

P2.16
Dual-stage Gain-Clamped Extended L-band EYDFA with Ring Cavity, Zhikai Wu, Haoxian Lao, Yongfang Zou, Zhensen Gao, Pengbai Xu and Xinyong Dong, *Guangdong University of Technology, China*. A dual-stage gain-clamped extended L-band EYDFA with 52 nm gain bandwidth over 17.5 dB is investigated. The clamped-gain is up to 23.78 dB with a gain variation of less than 0.21 dB.

P2.17
Spectral overlap splicing method based on OFDR sensing system, Tingyi Zhu, Dongcheng Xie and Yuzhou Chen; *Guangdong University of Technology, China.* We propose a spectral overlap splicing method based on the OFDR sensing system to reduce the splicing error using a spectral redundancy setup, achieve strain sensitivity of με level and test length >1 km.

P2.18
The Effect of Accompanied Optical Intensity Modulation on The Phase Noise in IFOS, Qiuyang Huang, Lifan Li, Zhou Meng and Xiaoyang Hu; *College of Meteorology and Oceanography, National University of Defense Technology, China*. The Effect of Accompanied Optical Intensity Modulation on The Phase Noise in IFOS.

Poster Session II (10:00-10:30)

P2.19

Distributed Forward Stimulated Brillouin Scattering Measurement on Polarization-Maintaining fiber with 80cm Spatial Resolution, Wenping Xie, Qiwen Liang, Yongchun Liang, Tianfu Li, Hongying Zhang and Yongkang Dong; *Electric Power Research Institute of Guangdong Power Grid Co.,Ltd., China.* This article presents a novel distributed forward stimulated Brillouin scattering measurement scheme on polarization maintaining fiber (PM fiber) with a spatial resolution of 0.8m named polarization separation assisted opto-mechanical time-domain analysis (PS-OMTDA).

P2.20

Low-threshold cascaded Raman random fiber laser with hybrid Erbium-Raman gain, Yaozong Hu, Fengjiao Li and Xinyong Dong; *Guangdong University of Technology, China*. We demonstrate a cascaded Raman random fiber laser based on the hybrid Erbium-Raman gain. Up to five orders of Raman stokes light with center wavelengths of 1565, 1681, 1810, 1966 and 2140 nm are achieved.

P2.21

Temperature Monitoring System for Underground Pipe Gallery Based on Power-over-Fiber and Indoor Light Hybrid Energy Harvesting, Xueliang Gu, Yuemei Li, Zhiguo Zhang, Tong Zhai, Rui Zhou, Guangxin Li, Shaolong Chang, Zhehao Yan and Yaozong Yang; *Beijing University of Posts and Telecommunications, China.* Based on the laser energy transmitted by optical fiber and indoor light energy, a hybrid energy harvesting system is proposed. The hybrid power supply cycle is 4 minutes shorter than the single-source power supply.

P2.22

Temperature-insensitive sensor based on U-shaped few-mode fiber for blood glucose brix measurement, Haozheng Yu, Zhengrong Tong, Miaoyun Dong and Weihua Zhang; *Tianjin University of Technology, China.* A temperature-insensitive sensor based on U-shaped few-mode fiber (FMF) for blood glucose brix is proposed. The sensor is formed by bending a single mode fiber (SMF)-FMF- SMF through flame.The sensor has advantage of compact structure.

P2.23

Transmitter OAPC performance analysis for FSOC continuous time-domain based on atmospheric turbulence channel reciprocity, Haifeng Yao, Weihao Wang and Qun Hao; *Beijing Institute of Technology, China.* In this paper, a continuous time-domain adaptive power model of transmitter optical and control algorithm based on atmospheric turbulence channel reciprocity are proposed for mitigating the FSOC receiver optical intensity scintillation and communication BER deterioration.

P2.24

Synthesis of narrow half-peak width green InP/ZnSeS/ZnS core/shell/shell quantum dots, Qi Wen Xue, Pei Qing Cai, Qian Min Dong, Chun Deng, Hong Zhao and Zu Gang Liu; *China Jiliang University, China.* We have achieved the synthesis of narrow half-peak width (FWHM=37nm), high-efficiency green InP/ZnSeS/ZnS quantum dots by adjusting the thickness of the outer shell ZnS.

P2.25

The Fabrication of Stress-Tunabled in-Fiber Semiconductor Resonators, Chen Wang, Yunkang Chen, Tianye Huang, Perry Ping Shum, Zhichao Wu and Jing Zhang; *China University of Geosciences (Wuhan), China.* Semiconductor particles in fibers were obtained using in-fiber post process method. By controlling the cooling rates of laser heat treatment, the built-in stress of in-fiber semiconductor particles can be modified.

P2.26

A Y-Net-aided adaptive compensation for orbital angular momentum optical wireless communication, Jinqiu Li, Huan Chang, Qi Zhang, Ran Gao, Fei Wang, Fu Wang, Dong Guo, Zhipei Li and Xin Huang; *Beijing University of Posts and Telecommunications, China.* Adaptive optics technique based on Y-Net is proposed to compensate for the distorted OAM beam caused by atmospheric turbulence and to identify the OAM mode number. It can realize high-precision recognition and beam compensation simultaneously.

P2.27

Sensitivity optimization of fiber sensor based on two FBGs using microwave photonic interrogation technology, Minghe Wang, Ailing Zhang, Guang Hu, Jinmeng Yan, Honggang Pang, Fei Liu, Pengxiang Chang and Junfeng Wang; *Tianjin University of Technology, Tianjin, China.* Sensitivity optimization of fiber sensor based on two FBGs using microwave photonic interrogation technology is proposed and experimentally demonstrated. The strain on two FBGs is demodulated by measuring the power of the recovered RF signal.

Poster Session II (10:00-10:30)

P2.28
Nyquist pulse generation based on XPM time lens, Yusheng Yao, Jiakang Li, Dongfang Jia, Chunfeng Ge, Zhaoying Wang and Tianxin Yang; *Tianjin University, China.* A novel scheme for generating Nyquist pulses with adjustable duty cyclesusing time lens based on cross-phase modulation in the high nonlinear fiber is proposed and simulated.

P2.29
Phase noise measurement of high-frequency microwaves based on electro-optical combs, Xingcan Yan, Shaozhuang Yao, Yin Xu and Hualong Bao; *Soochow University, China.* Assisted by optical injection locking (OIL) and dual-wavelength self-heterodyne techniques, we propose a method to achieve accurate phase noise measurements of high-frequency microwaves based on electro-optic combs.

P2.30
Study on the Mechanism of Coarse Mode Selection in Parity-Time-Symmetric Optoelectronic Oscillator, Jiaxin Zhou, Xinrui Ban, Jie Zhang, Chunfeng Ge, Hengkang Zhang and Zhaoying Wang; *Tianjin University, China.* The influence of coarse mode selection in parity-time (PT) symmetric optoelectronic oscillator (OEO) on side-mode suppression ratio (SMSR) is studied. A single-mode oscillation at 9.98 GHz with an SMSR of 56 dB is experimentally realized.

P2.31
High efficient FAPbBr3-based inverted perovskite light-emitting diodes with Amine additive passivation, Xinquan Gong, Junjie Si and Zugang Liu; *China Jiliang University, China*. A new amine additive passivates Perovskite, resulting in high efficient FAPbBr3 PeLED with EQE of 3% and luminance of 16000 cd/m2. Inverted green PeLEDs are rare.

P2.32
A method to alleviate crosstalk of multiple adjacent carriers in Nyquist DWDM system, Xiao Zhang, Qinghua Tian, Yiqun Pan, Fangxu Yang, Fu Wang, Feng Tian, Qi Zhang, Zhipei Li, Lei Zhu, Yongjun Wang and Xiangjun Xin; *Beijing University of Posts and Telecommunications, China.* In this study, a method to alleviate crosstalk of adjacent carriers in Nyquist system is proposed. This method is verified in 16QAM Nyquist simulation system where the carrier spacing is equal to the baud rate.

P2.33
On-line monitoring method for burial depth of submarine cable based on distributed optical fiber acoustic sensing, Jinyu Song, Yixin Zhang, Fei Xiong, Chi Zhang, Shisong Zhao, Shuai Tong, Feng Wang and Xuping Zhang; *Nanjing University, China*. By analyzing the external marine environment noise field captured by the existed dark fiber inside the submarine cable, a new buried depth monitoring method of submarine cable based on distributed acoustic sensing (DAS) is proposed.

P2.34
Mid-infrared ethane detection system based on TDLAS technology, Yu Zhang, Yanfang Li, Jiachen Sun, Tingting Zhang, Yubin Wei, Weihua Gong, Zhaowei Wang, Yiming Liu, Jinwei Wang, Binkai Li, Guancheng Liu and Qinduan Zhang; *Qilu University of Technology (Shandong Academy of Sciences), China.* This paper introduces a mid-infrared ethane gas detection system: using direct absorption spectroscopy (DAS) and wavelength modulation spectroscopy (WMS) for the detection of ethane gas respectively.

P2.35
Design and application of fiber grating devices based on fiber with optimized gradient refractive index distribution, Peng Wang, Hua Zhao, Hui Hao, Heng Zhang, Kaiyue Gao, Yu Chen, Xinyue Huang and Wenjian Zhang; *Nanjing Xiaozhuang University, China.* By optimizing the refractive index distribution of the gradient refractive index fiber which affects the dispersion characteristics of the fiber mode, we designed and prepared fiber grating devices with high sensing characteristics.

P2.36
Experimental Investigation of an All-fiber FM-EDFA by Optimizing the bidirectional pumping configuration, Xinyi Zhang, Xiheng Huang, Yihong Fang, Yan Zeng, Weijia Luo and Ou Xu; *Guangdong University of Technology, China.* An all-fiber FM-EDFA is designed and constructed under the bidirectional pumping configuration. The influence of the power ratio of forward and backward pump modes on the characteristics of three signal mode amplifiers is experimentally studied.

Yishan Hall (沂山厅), Track 1

10:30-12:00
W2A • Fibers & fiber devices IV
*Presider: **Yunqi Liu**, Shanghai University, China*

W2A.1 • 10:30 Invited

Non-wearable non-invasive smart health monitoring system based on special optical fiber interferometer, Changyuan YU; *The Hong Kong Polytechnic University.* We review our recent work on non-wearable non-invasive smart health monitoring system based on special optical fiber interferometer.

W2A.2 • 10:50 Invited

Photoacoustic Detection Technology, Ping Lu; *Huazhong University of Science and Technology.* Diaphragm based Fabry-Perot acoustic sensors and cantilever beam based photoacoustic sensors, including gold, aluminum, titanium, graphene and MEMS based silicon nitride membranes, will be introduced.

W2A.3 • 11:10 Invited

Highly sensitive FPI at large measurement range based on Vernier effect with digitally tunable reference interferometer, Xiaopeng Dong; *Xiamen University.*

Lushan Hall (鲁山厅), Track 6

10:30-12:00
W2B •Measurement & imaging IV
*Presider: **Daru Chen**, Zhejiang Normal University, China*

W2B.1 • 10:30 Invited

Key technology in Distributed Acoustic Sensing and Application, Liyang Shao; *Southern University of Science and Technology, China.*

W2B.2 • 10:50 Invited

Improvement of Signal-to-noise ratio and Measurement speed for BOTDR, Baoquan Jin; *Taiyuan University of Technology, China.* Traditional BOTDR demodulation methods often require tens of thousands of times of cumulative average, which affects the measurement speed. Aiming at the factors limiting the sensing performance of BOTDR, we conduct an study on improving the SNR and measurement speed.

W2B.3 • 11:10 Invited

Long-range distributed Brillouin optical fiber dynamic sensor with random access, Pengbai Xu; *Guangdong University of Technology, China.* A novel one-end random-access long-range distributed Brillouin optical fiber sensor is presented, at which dynamic measurement with 1 kHz sampling rate and 10 m spatial resolution over 50 km-long standard single-mode fiber is demonstrated.

Mengshan Hall (蒙山厅), Track 4

10:30-12:00
W2C •Optoelectronic integration III
*Presider: **Bin Zhang**, Sun Yat-sen University, China*

W2C.1 • 10:30 Invited

Ultra-High Speed Photodetectors and Optical Modulators for THz Applications, Bing Xiong; *Tsinghua University, China.*

W2C.2 • 10:50 Invited

High-speed and high-efficiency electro-optic modulator enabled by topological structures, Yong Zhang; *Shanghai Jiao Tong University, China.*

W2C.3 • 11:10 Invited

2D Materials for high-performance integrated modulators and photodetectors, Junjia Wang; *Southeast University, China.*

Laoshan Hall (崂山厅), YSA

10:30-12:00
W2D • Young Scientist Award
*Presider: **Perry Ping Shum**, Southern University of Science and Technology, China*

W2D.1 • 10:30 ◇
Multiplexed point-of-care testing of cardiac biomarkers based on optical fiber sensor, Lili Liang, Fei Xie, Kang Yang, Yan Li, Long Jin and Bai-Ou Guan; *Handan University, China*. This work proposed a microfiber-based multiplexed optofluidic immune-sensor (MMOI) biochip for multiplexed, quantitative detection of cardiac biomarkers with miniaturized sensing system. The MMOI biochip shows good sensitivity and specificity and is a promising MPOC sensor.

W2D.2 • 10:45 ◇
Ion-regulated sensitized micro-nano optical fiber interferometer biogenetic sensor, Hanglin Lu, Li Yang, Yalan Niu and Junhui Hu; *Guangxi Normal University, China*. A micro-nano optical fiber biogenetic sensor for genetic material information detection is proposed and experimentally based on the ion-regulation sensitivity enhancement mechanism, and realized the potassium ions and DNA detection at very low concentrations.

W2D.3 • 11:00 ◇
“Invisible” pulsation dynamics of soliton molecules in a bidirectional fiber laser, Pan Wang, Qingbo Wang, Zhi Wang and Yange Liu; *Nankai University, China*. A novel “invisible” pulsation, has gradually attracted extensive interest recently. In this work, based on a new bidirectional passively mode-locked fiber laser (MLFL), the “invisible” pulsation dynamics of soliton molecules (SMs) is systematically studied.

Taishan Hall (泰山厅), Track 9

10:30-12:00
W2E • Quantum Photonics
*Presider: **Xiaolong Su**, Shanxi University, China*

W2E.1 • 10:30 **Keynote**

Tunneling time: ninety-five years, Xiaomin Ren; *Beijing University of Posts and Telecommunications, China.* Ninety-five-years lasting mystery of quantum-tunneling time had been solved essentially in 2022 based on a novel understanding of the tunneling mechanism. It would be technologically beneficial and even lead to amazing changes in fundamental physics.

W2E.2 • 11:00 **Invited**

Silicon Quantum Photonic circuits for Quantum Entanglement Distribution Networks, Wei Zhang; *Tsinghua University, China.*

VIP Room (聚贤厅), Track 2

10:30-12:00
W2F • Optical Transmission III
*Presider: **Jianping Li**, Guangdong University of Technology, China*

W2F.1 • 10:30 **Invited**

Physical-layer secure transmission using optical chaos, Anbang Wang; *Guangdong University of Technology, China.*

W2F.2 • 10:50 **Invited**

Security-enhanced free space optical communication based optical chaos, Ning Jiang; *University of Electronic Science and Technology of China, China.*

W2F.3 • 11:10 **Invited**

Physical random bit generators based on optical chaos, Pu Li; *Guangdong University of Technology, China.*

Yishan Hall (沂山厅), Track 1

W2A.4 • 11:30 ☆

Neural network-based FBG array sensor demodulation system with sparse data, Sufen Ren, Shengchao Chen, Xuan Hou, Haoyang Xu, Guanjun Wang and Mengxing Huang; *Hainan University, China*. An efficient and practical neural network-based demodulation system for FBG array sensors is investigated, which fusing a augmentated algorthm so that system can achieve excellent interrogation precision under sparse data.

W2A.5 • 11:45

Fibre Grating Sensing for Aerospace Applications, Wei Zhang, Lin Zhao, Jinyu Wang, Jiqiang Wang, Jiasheng Ni and Carlos Marques; *Qilu University of Technology (Shandong Academy of Sciences), China*. Fibre Bragg gratings own many advantages that meet the requirements of aerospace applications. Multiple parameters fibre grating sensors have been deployed in fabrication, testing and onboard missions of aircraft and spacecraft systems.

Lushan Hall (鲁山厅), Track 6

W2B.4 • 11:30

Large dynamic strain range BOTDR based on grade index multi-mode fiber, Junhui Hu; *Guangxi Normal University, China*. In this paper, two different large dynamic strain measurement schemes based on the slope-assisted BOTDR system (SA-BOTDR) are proposed through the shape manipulation of the Brillouin scattering spectrum and the slope-assisted measurement method.

W2B.5 • 11:45

Ultrafast Compressive Sensing Imaging Using In-Fiber Grating, Guoqing Wang, Huanhuan Liu and Perry Shum; *School of Microelectronics, Shenzhen Institute of Information Technology, China*. We present a compact and high-efficient compressive sensing (CS) based single pixel imaging system using an in-fiber grating.

Mengshan Hall (蒙山厅), BSPA-Track 4

W2C.4 • 11:30 ★

Compact low-loss dual-mode silicon waveguide bend with simple geometry, Enge Zhang, Shiqi Zhang, Junjing Huang, Xiaoran Zhu, Tongxin Yang, Liuwei Chen, Yu Zhang, Xu Yang and Lei Zhang; *Beijing University of Posts and Telecommunications, The 54th Research Institute of China Electronic Technology Group Corporation, China*. We present a silicon small-radius dual-mode waveguide bend, which exhibits low-loss and low-crosstalk characteristics. A self-adapted particle swarm optimization algorithm is developed to design the structure, which can generate the optimal structure with minimal intervention.

W2C.5 • 11:45 ★

A compact broadband tunable laser source based on REC-DFB laser array, Qian Hao, Pan Dai, Shijie Yang, Feng Wang, Xiangfei Chen, Kaichuan Xu and Yaqiang Fan; *Nanjing University, China*. We develop a compact broadband tunable laser source based on REC-DFB laser array with coverage of 48nm and adjustable power of 7-10dBm. The wavelength resolution is 2 pm, and power resolution is 0.01 dBm.

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12:00-13:30 Lunch Break, *Qufu & Ji'nan Ballroom, 2nd Floor*

Laoshan Hall (崂山厅), YSA

13:30-15:30
W3A •Fibers & fiber devices V
*Presider: **Biqiang Jiang**, Northwestern Polytechnical University, China*

pulses fiber laser, Mengmeng Han, Xingliang Li and Shumin Zhang; *Hebei Normal University, China*. The controlled generation of GHz harmonic pulses based on an MZI is reported. Using fused tapered fiber, we can precisely control the optical path difference of the MZI, thus realizing a precisely controllable repetition rate.

W2D.5 • 11:30

Performance of optical beam switching using liquid crystal polarization grating for FSO networks, Peng Lin, Xiaonan Yu, Yansong Song and Keyan Dong; *Changchun University of Science and Technology, China*. We experimentally demonstrate a non-mechanical optical beam control method based on liquid crystal polarization grating (LCPG). Four angular beam pointing and switching in the range of 12° can be realized by using two LCPGs.

Taishan Hall (泰山厅), Track 9

W2E.3 • 11:20 Invited

Metasurface-enabled Shadow Tomography, He Lu; *Shandong University, China.* We propose to demonstrate generalized measurement with a single metasurface optical chip instead of conventional bulky optical assemblies. By combining the metasurface-enabled shadow tomography with self-learning algorithm and calibration algorithm, we observe several advantages in characterization of multiphoton states, including fewer number of measurements required, high accuracy of the estimation and robustness against optical loss.

W2E.4 • 11:40 Invited

Remote state preparation based on Gaussian entanglement, Xiaolong Su; *Shanxi University, China*.

VIP Room (聚贤厅), Track 2

W2F.4 • 11:30 Invited

Explorations on high-speed coherent optical chaos communication, Longsheng Wang; *Taiyuan University of Technology, China*. This talk will discuss some exploratory works on the high-speed coherent optical chaos communication, including analysis on phase synchronization stability, scheme of coherent optical chaos communication, and its performance improvement with probabilistic shaping.

W2F.5 • 11:50

Secure VLC System with Joint IRS Design and Cooperative Jamming, Xiaoqiong Jing, Yating Wu, Ziwen Wan, Yudie Ge and Zhonghao Zhang; *Key Laboratory of Specialty Fiber Optics and Optical Access Networks, Shanghai University, China*. A joint IRS design and cooperative Jamming strategy is proposed to improve the PLS for MISO VLC systems with eavesdroppers. Simulation results show that the proposed scheme can improve the security of the system.

12:00-13:30 Lunch Break, *Qufu & Ji'nan Ballroom, 2nd Floor*

Yishan Hall (沂山厅), Track 1

W3A.1 • 13:30 Invited

Fiber gratings fabricated by femtosecond laser and their applications, Xuewen Shu; *Huazhong University of Science and Technology.*

W3A.2 • 13:50 Invited

Femtosecond laser direct-written special fiber Bragg gratings for sensor applications, Ruohui Wang; *Northwest University.*

W3A.3 • 14:10 Invited

Optical trapping and metrology in hollow-core optical fiber, Shangran Xie; *Beijing Institute of Technology.*

Lushan Hall (鲁山厅), Track 6

13:30-15:30
W3B • Measurement & imaging V
*Presider: **Liyang Shao**, Southern University of Science and Technology, China*

W3B.1 • 13:30 Invited

Time gated Raman detection by hollow core fibers, Yinlan Ruan; *Guilin University of Electronic Technology, China*.

W3B.2 • 13:50 Invited

Novel Optical Fibers and Their Sensing Applications, Daru Chen; *Zhejiang Normal University, China*. Novel optical fibers such as dual-core photonic crystal fiber, hollow-core Bragg fiber, seven-core fiber and their applications for hydrostatic pressure, gas pressure or temperature sensing are presented.

W3B.3 • 14:10 Invited

External Load Distribution Monitoring based on High-density Optical Fiber Sensing Network, Guofeng Yan; *Zhejiang Lab, China*. A novel fiber optic sensing network is proposed and demonstrated to obtain the fullin-plane strain-field of 2D-structures. Based on our developed strain-load inverse algorithm, the external load distribution monitoring is then realized.

Mengshan Hall (蒙山厅), Track 4

13:30-15:30
W3C • Optoelectronic integration IV
*Presider: **Hongbao Xin**, Jinan University, China*

W3C.1 • 13:30 Invited

Functional Fibers Towards Intelligent Space, Guangming Tao; *Huazhong University of Science and Technology, China*. Functional fiber materials and devices shed a new light on intelligent matters.

W3C.2 • 13:50 Invited

Silicon-based on-chip reconfigurable optical add-drop multiplexer, Yaocheng Shi; *Zhejiang University, China*.

W3C.3 • 14:10 Invited

Integrated photonic devices based on lithium niobate on insulator (LNOI) platform, Yonghui Tian; *Lanzhou University, China.*

Laoshan Hall (崂山厅), Special 1

13:30-15:30
W3D • Organic optoelectronics III
Presider: ***Zhigang Zang,*** Chongqing University, *China*; ***Zeke Liu****, Soochow University, China.*

W3D.1 • 13:30 Invited

Direct Synthesis of Semiconductive PbS Quantum Dot Inks for Optoelectronic Applications, Zeke Liu; *Soochow University, China.*

W3D.2 • 13:50 Invited

Novel Hole Transporting Materials Design and High-Performance Perovskite Solar Cells, Gongqiang Li; *Nanjing Tech University, China.*

W3D.3 • 14:10 Invited

Back Contact Interface Engineering in Sb2(S,Se)3 Solar Cell, Guilin Chen; *Fujian Normal University, China.*

Taishan Hall (泰山厅), Track 3

13:30-15:30
W3E • Optical networks II
Presider: ***Zuqing Zhu****, University of Science and Technology of China, China*

W3E.1 • 13:30 Invited

Ultra-wideband optical transmission systems: challenges and opportunities, Qunbi Zhuge; *Shanghai Jiao Tong University, China*. To support the further increase of single channel data rate and single fiber capacity, high baud and multi-band optical transmission systems are being investigated and developed. This talk discusses the new challenges and opportunities of such ultra-wideband systems.

W3E.2 • 13:50 Invited

The AWGR-based optical/electrical switching data center networks, Xuwei Xue; *Beijing University of Posts and Telecommunications, China.*

W3E.3 • 14:10 ☆

Demonstration of Hierarchical SDN Orchestration for End-to-End Key Provisioning in Large-Scale Quantum Key Distribution Networks, Yazi Wang, Xiaosong Yu, Zihao Wang, Yuan Cao, Yongli Zhao and Jie Zhang; *BUPT, China*. We experimentally demonstrate end-to-end key provisioning among multiple QKDNs with a hierarchical SDN orchestration architecture, where the computational complexity is reduced via abstracted hierarchical network views and the seconds-level latency without manual intervention is achieved.

W3E.4 • 14:25

Congestion-aware Adaptive Arbitration for Multipath Routing in Optical Network-on-chip, Qiuyan Yao, Daqing Meng, Hui Yang, Jie Zhang and Nan Feng; *BUPT, China.* In this paper, we propose an arbitrator-based multipath routing algorithm for optical network-on-chip. Simulation results verify the performance of the algorithm by analyzing end to end delay, optical power consumption, optical loss, and memory usage.

VIP Room (聚贤厅), Track 2

13:30-15:30
W3F • Optical transmission IV
Presider: ***Pu Li****, Guangdong University of Technology, China*

W3F.1 • 13:30 Invited

High-capacity Long-haul Optical Fiber Communications Based on Space Division Multiplexing Technology, Lin Zhang; *Tianjin University, China*.

W3F.2 • 13:50 Invited

Intelligent algorithm-assisted QAM modulation based on hybrid probabilistic and geometric constellation optimization, Jianfei Liu; *Hebei University of Technology, China*.

W3F.3 • 14:10 Invited

AI enabled algrithms in LDPC Decoding, Qinghua Tian; *Beijing University of Posts and Telecommunications, China*.

Yishan Hall (沂山厅), Track 1

W3A.4 • 14:30 Invited

Coupled Multicore Fibers ana Devices, Lin Ma; *Shanghai Jiao Tong University, China*. We report on the design, fabrication, and evaluation of various coupled multicore fibers with low spatial mode dispersion and low mode-dependent loss. Compatible fan-in/fan-out devices with high precision and ultra-low insertion loss are also demonstrated.

W3A.5 • 14:50 Invited

Multicore fiber device and its tip based sensing applications, Limin Xiao; *Fudan University, China.* Multicore fiber devices such as fan-in and fan-out devices and multicore fiber tip-based sensing applications will be discussed.

W3A.6 • 15:10 Invited

3D Printing Technology Enables Versatile Specialty Optical Fibre for Communications and Sensing Applications, Yanhua Luo; *Shanghai University, China*. The development of 3D printed optical fiber will be overviewed, in terms of optical fiber type, fabrication techniques, photonic applications in communications and sensing. It is believed that optical fiber fabrication by 3D printing technology will evidently disrupt traditional optical fiber manufacture in near future.

Lushan Hall (鲁山厅), Track 6

W3A.4 • 14:30 Invited

Ratiometric fiber-optic chemical pH/ dissolved oxygen sensor based on fluorescence technology, Hongxia Zhang; *Tianjin University, China*. We propose a scheme for joint modal-dispersion and mode-coupling compensation in MDM systems, and implement a compensation of 140-ps differential group delay and 800k-rad/s mode coupling, which verifies the effectiveness of our scheme.

W3A.5 • 14:50 Invited

Multimode spectral sensing technology based on optical microcavity, Daquan Yang; *Beijing University of Posts and Telecommunications, China.*

W3A.6 • 15:10 Invited

Fiber-membrane composite devices based acoustic sensing, Wenjun Ni; *South-Central Minzu University, China.*

Mengshan Hall (蒙山厅), Track 4

W3C.4 • 14:30 Invited

Highly efficient acousto-optic modulators for microwave-to-optical conversion, Lei Wan; *Jinan University, China*.

W3C.5 • 14:50 Invited

GST-assited Optical Computing on Chip, Weigang Hou; *Chongqing University of Post and Communications, China*.

W3C.6 • 15:10 Invited

High-speed and High-power Uni-traveling Carrier Photodiodes, Baile Chen; *ShanghaiTech University, China*. High-speed and high-power photo-diodes (PDs) serve as the key component in various fiber-optic communication systems. In this work, we report high power modified uni-traveling carrier PDs and high-speed waveguide PDs with 3dB bandwidth about 150 GHz.

15:30-16:00 Poster Session 3 & Tea Break, 2nd Floor

Laoshan Hall (崂山厅), Special 1

W3D.4 • 14:40 Invited

Metal halides luminescence regulation and their X-ray scintillators, *Zhigang Zang;* Chongqing university*, China*.

W3D.5 • 15:00 Invited

Miniaturized multispectral detector, Xiaobao Xu; *Southeast University, China*.

W3D.6 • 15:20

Perovskite quantum dots improve solar cell performance through anti-reflection and luminescence conversion, Xiaosong Zhang and Ting Ji; *Tianjin University of Technology, China.* CsPbX3 perovskite quantum dots/solar cells are simulated to investigate the reflectance reducing of crystalline silicon solar cells and improvement the absorption of light by the solar cells.

Taishan Hall (泰山厅), Track 3

W3E.5 • 14:40

Partial and Adaptive Light-Trail Sharing in Multi-Source Multicast Optical Networks, Peng Han and Anliang Cai; *Nanjing University of Posts and Telecommunications, China*. We propose flexible multi-source multicast (MSM) grooming in optical networks by allowing MSMs to partially share light-trails and adaptively change the modulation schemes. Simulation results show that the proposed method achieves a better blocking performance.

W3E.6 • 14:55

Fast Routing Algorithm Based on Topology Pruning in Mega Satellite Optical Networks, Xueyan Lai, Yongli Zhao, Yinji Jing, Hua Wang, Wei Wang and Jie Zhang; *Beijing University of Posts and Telecommunications, China.* We perform a topology-pruning based fast routing (TPFR) scheme for mega satellite optical networks, reducing calculation time by over 45% compared to traditional routing algorithms.

W3E.7 • 15:10

CNN-based Methods of Traffic Matrix Prediction with Multiple Timesteps in Optical Network-on-Chip (ONoC), Jiahe Zhao, Hui Li and Feiyang Liu; *Xidian University, China; Xi'an Aeronautics Computing Technique Research Institute, AVIC, China*. In this paper, three CNN-based methods (i.e., Multi-Width CNN, Multi-Channel CNN, and Multi-Input CNN) of traffic matrix prediction are proposed, with multiple timesteps. Multi-Width CNN and Multi-Channel CNN are Single-Input CNN.

W3E.8 • 15:25

Reliability-Aware DQN-based Optimization Method of Initial Mapping Solutions in Optical Network-on-Chip (ONoC), Yuxiang Niu, Hui Li and Feiyang Liu; *Xidian University, China; Xi'an Aeronautics Computing Technique Research Institute, AVIC, China*. This work proposes a reliability-aware DQN-based optimization method of initial mapping solutions in ONoC, to generate better initial mapping solutions. This optimization method of initial mapping solutions can be combined with existing mapping algorithms.

VIP Room (聚贤厅), Track 8

W3F.4 • 14:30 Invited

Optoelectronic Reservoir Computing for Optical Performance Monitoring and Nonlinear Equalization, Muguang Wang; *Beijing Jiaotong University.* We present a review of our recent works on optical performance monitoring and nonlinear equalization based on optoelectronic reservoir computing (RC). The results show that optoelectronic RC is a promising technique for optical communication.

W3F.5 • 14:50 Invited

Research on integrated microwave photon RF front end, Lei Deng; *Huazhong University of Science and Technology.*

W3F.6 • 15:10 ☆

High Fidelity and Low Latency Hollow-Core NANF Transmission at 2-μm Band with 112-Gbps/lambda Data-Rate and 850-m Long Distance, Xuelin Zhang, Jiangbing Du, Jiacheng Liu, Zuyuan He, Lei Shen, Peng Li, Lei Zhang and Jie Luo; *Shanghai Jiao Tong University, China*. The 2-μm-band hollow-core NANF transmission is demonstrated with the longest transmission distance of 850m at 56 Gbps and 100m at the highest Intensity-Modulation-Direct Detection (IMDD) data rate of 112 Gbps using Discrete MultiTone (DMT) modulation.

15:30-16:00 Poster Session 3 & Tea Break, 2nd Floor

Poster Session III (15:30-16:00)

P3.1
A method for detecting the accuracy of optical measurement module, Qiang Wei; *China Satellite Maritime Tracking and Controlling Department, China.* This paper uses photoelectric theodolite and mirror to build an autocollimation optical path, and designs a method to test the accuracy of optical measurement module. The method is convenient and useful in actual use.

P3.2
Extraction of a single OFC mode based on SBS effect and Injection locking, Shaozhuang Yao, Mengcheng Zhang, Xingcan Yan, Yin Xu and Hualong Bao; *Soochow university, China.* We show how to extract a single mode from mode-locked lasers based on stimulated Brillouin scattering and optical injection locking. The selected comb line with ultra-narrow linewidth and low phase noise is experimentally achieved.

P3.3
The Research on a Tunable Self-oscillating Multi-carrier Light Source, Xinrui Ban, Jiaxin Zhou, Jie Zhang, Chunfeng Ge, Hengkang Zhang and Zhaoying Wang; *Tianjin University, China.* A tunable self-oscillating multicarrier source based on recirculating frequency shift loop and optoelectronic oscillator is proposed. 60 subcarriers with 2.48 dB flatness and tunable frequency intervals from 3.1 GHz to 16.5 GHz are experimentally achieved.

P3.4
Research on the performance of 3D-CAP-256QAM signal with superposition, Yu Gu, Feng Tian, Tianze Wu, Jue Wang, Yutian Li, Bo Liu, Qi Zhang and Yongjun Wang; *Beijing University of Posts and Telecommunications, China.* In this paper, a novel 3D-CAP-256QAM scheme which composes of constellation overlay is proposed. The results show that the proposed circle-shaped constellation structure shows better BER performance compared with the other two constellation structures.

P3.5
A flexible hydraulic optical Fiber senor Based on Fabry-Perot Interferometer for Pulse Pressure Measurement, Xue Zou, Yilin Guo, Fumin Zhou, Yihao Li, Chaoke Zou, Decao Wu and Binbin Luo; *Chongqing University of Technology, China.* A flexible hydraulic optical fiber sensor based on Fabry-Perot interferometers for pulse wave measurements is proposed. The structure can reduce the pressure error caused by the position offset, realize the accurate detection of pulse wave.

P3.6
Performance Analysis of Single- and Multiple- Eigenvalue based NFDM Optical Communication Systems with Discrete Spectrum Modulation, Tao Huang, Jianping Li, Yuwen Qin, Xinkuo Yu, Jianqing He, Gai Zhou and Songnian Fu; *Guangdong University of Technology, China.* In this paper, we analyzed the characteristic of increasing the baudrate and increasing the number of eigenvalues from three parts: spectral efficiency, noise robustness and BER in DS-NFDM transmission system for the first time.

P3.7
Cost-efficient protocol upgrading for quantum key distribution over metro optical networks, Mingxuan Guo, Yuan Cao, Jiali Zhu, Xingxu Zhou, Chunhui Zhang, Xiaosong Yu, Yongli Zhao, Jie Zhang and Qin Wang; *Nanjing University of Posts and Telecommunications, China.* This paper proposes a cost-efficient protocol upgrading algorithm for quantum key distribution over metro optical networks, reducing the number of channels added for QKD protocol upgrading by 17.6% compared to the benchmark.

P3.8
A novel PAPR reduction scheme using ISLM cascading neural network-based companding algorithm for CO-OFDM systems, Zhengrong Tong, Tianhao Zhang, Nan Zhang, Weihua Zhang and Yuan Bai; *Tianjin University of Technology, China.* In coherent optical orthogonal frequency division multiplexing (CO-OFDM) systems, the high peak-average-power ratio (PAPR) is the major disadvantage that impacts the system performance

P3.9
Non-invasive Blood Pressure Monitoring Based on Smart Mattresss Embeded with Fiber MZI-BCG Sensor, Yifei Feng, Qinggang Ge, Yi Liu, Liufeng Zhu, Chunliang Wang, Qiang Zhang, Linke Zhang, Wei Xu and Ying He; *Department of Marine Biomedicine and Polar Medicine, Naval Specialty Medical Center, China.* We demonstrate a photoplethysmography (PPG) enabled non-invasive blood pressure monitoring system using a smart mattress, where a compact high sensitive Mach-Zehdner interferometer (MZI) is embedded.

Poster Session III (15:30-16:00)

P3.10 **Zn(O,S) Buffer Layer Optimization for CuInGa(S,Se)2 Solar Cells based on Sulfide Nanoparticles Ink,** Zengzhou Yang,

Jiawei Jing and Zugang Liu; *China Jiliang University, China.* We prepared a Cd-free CIGSSe solar cell with an power conversion efficiency of 6.22% by optimizing the concentration of the reaction solution in chemical bath deposition using a high-quality nanoparticle ink for the absorber layer.

P3.11

Optical vector analysis technology with 160 nm wavelength range and 20 MHz frequency resolution, Peijiong Li, Mingyang Huang and Zhangjun Yu; *Guangdong University of Technology, China.* We propose an optical vector analysis technology with increased delay fiber using Bayesian optimization for online polarization error suppression, achieving a wavelength range of 160 nm and a frequency resolution of 20 MHz.

P3.12

Classification of plastics by near infrared spectroscopy based on clustering algorithm, Yongwei Wu, Kun Yuan, Xun Chen and Jian Wang; *kate_wyw@163.com, China.* Studied a classification method of plastics by combining machine learning algorithm with near infrared spectral analysis technology.

P3.13

Optical Fiber Thermal Anemometer With Laser-Heated Fabry–Perot Interferometer, Linlin Fan, Junhui Hu and Chao Wang; *Shenzhen Technology University, China.* An optical fiber thermal anemometer with a 980nm laser-heated Fabry–Perot interferometer is proposed. FPI is manufactured using UV cured adhesive on the tip of germanium doped optical fibers.

P3.14

Microplastic sensors based on tilted fiber Bragg grating and engineered peptides, Sibo Wang, Yifan Duan, You Lv, Yonghui Feng, Yunting Du, Qiao Wang, Yang Zhang and Wei Peng*; Dalian University of Technology, China.* This paper presents a microplastic sensor that utilizes a tilted fiber Bragg grating surface plasmon resonance modified with a polystyrene-binding peptide. This peptide biosensor is capable of specifically binding to polystyrene microplastics through hydrophobic.

P3.15

Over 16% Efficient Solution-Processed Cu(In,Ga)Se2 Solar Cells via Incorporation of Copper-rich Precursor Film, Shengjie Yuan; *Henan University, China.* A simple and effective precursor film engineering strategy is reported, where Cu-rich (CGI>1) CIGS layer is incorporated into the bottom of CIGS precursor film. This strategy delivers high efficiency of 16.05%.

P3.16

Phase-sensitive Optical Time Domain Reflectometry Assisted by Image-Matching and Dual-frequency, Wang Ying, Li Tianfu, Li Can, Wei Yong, Shang Li, Liu Wenzhao and Dong Yongkang; *State Grid Information & Telecommunication Branch, China.* This article presents a novel phase-sensitive optical time domain reflectometry (Φ-OTDR) with a spatial resolution of 2-m on a 90-m fiber assisted by image-matching and dual-frequency.

P3.17

Experimental Analysis of Full-Bandwidth Statistical Properties in Raman Random Fiber Laser， Jiaojiao Zhang, Shengtao Lin, Pan Wang, Xingyu Bao, Longqun Ni, Yifei Qi and Zinan Wang; *University of Electronic Science and Technology of China, China*. Raman random fiber laser (RRFL) involves complex processes. We experimentally investigate full-bandwidth statistical properties of RRFL. The intensity probability density function of RRFL time-domain properties deviates from exponential distribution, indicating correlations exist in the spectrum.

P3.18

Online, Rapid Measurement of Pb2+ and Hg2+ Ions in Water Based on Quantum Dot Fluorescence Quenching Method， Chao Deng, Hui Zhang, Sunqiang Pan, Pengbing Hu and Yuyang Miao; *Zhejiang Institute of Metrology, China*. A novel method and device for detecting heavy metal ions in water using the principle of quantum dot fluorescence quenching based on a 405nm semiconductor laser has been designed.

Wednesday, 02 August

Poster Session III（15:30-16:00）

P3.19

Extended Kalman Filter Scheme for Modal Dispersion Compensation in Mode Division Multiplexing Systems, Yao Guo, Xia Zhang, Yuemei Li, Zhenshan Yang, Zhiguo Zhang and Zhaoyang Zhang; *Beijing University of Posts and Telecommunications; Liaocheng University, China.* We propose an extended Kalman-filter scheme for modal-dispersion compensation in MDM systems and implement compensation of a large differential group delay of 170 ps. The results verify the effectiveness of our scheme in MDM systems.

P3.20

Anchor-Damage Event Recognition Based on FBG sensors

and CNN-BiLSTM, Chunying Xu, Ruixin Liang, Xinjie Wu, Chengyu Yang, Yu Zhou and Chuliang Wei; *Department of Electronic Engineering, Shantou University, China.* In this paper, a method based on FBG sensors and CNN-BiLSTM neural networks is proposed for the identification of anchor damage events of submarine cables.

P3.21

Performance analysis of OPGW optical cable under simulated icing based on BOTDR , Weiwei Dou, Xuebin Feng, Jian Wu and Yue Hu; *China electric power research institute, China*. This paper simulates and experiments the icing of optical cable based on Brillouin optical time-domain reflection technology. The results show that the ice-coating aggravates optical fiber strain to the point of rapid fiber rupture.

P3.22

Flexible Media Access Control Layer Key Technologies for Elastic Optical Access Network, Nan Feng, Ming Yi Ma, Zhe Li and Shaobo Li; *The 54th research Institute of CETC, China.* We first summary the elastic optical access network system architecture, Then the media access control layer key technologies include the advanced PHY independent and dependent MAC protocol, and the dynamic resource allocations are summarized.

P3.23

Optimization of aperiodic multi-stage amplification transmission system for low overall DMG, Xinrui Jiang, Baojian Wu, Wei Yan, Feng Wen and Kun Qiu; *University of Electronic Science and Technology of China, China*. An all-fiber few-mode erbium-doped fiber amplifier (FM-EDFA) is built up for simulating an aperiodic multi-stage amplification and 3270km-long four mode transmission with the overall DMG of about 2 dB.

P3.24

Regional Load-based Routing Optimization Algorithm for Satellite Network, Zihan Zhang, Qi Zhang, Xiangjun Xin, Yuanfeng Li, Feng Tian, Fu Wang, Qinghua Tian, Jinxi Qian, Yongjun Wang, Furong Chai and Meng Sun; *Beijing University of Posts and Telecommunications, China.* A load-balancing routing optimization algorithm for satellite networks based on regional load is proposed to address the problem of uneven link load in Low earth orbit satellite networks during data transmission.

P3.25

A relative humidity sensor with a fiber tip all-polymer microcavity, Bo Dong, Sengpeng Zhang, Zongyu Chen, Pofeng Lin and Wobin Huang; *Shenzhen Technology University, China.* A fast response relative humidity (RH) sensor with a fiber tip all-polymer microcavity is presented. It is a promising candidate for potential applications in chemical, medical and biological fields related to RH detection.

P3.26

Dynamic distributed Brillouin optical fiber sensing with frequency-agile technique, Zhang Yining, Zhou Dengwang, Huang Zhidi, Li Pengduo, Li Tianfu and Dong Yongkang; *CSG EHV Electric Power Research Institute, China.* We propose a scheme using the frequency-agile technique to measure Brillouin gain and loss spectra simultaneously to simplify the experimental equipment and improve the signal-to-noise ratio (SNR) of the traditional Brillouin optical time-domain analysis (BOTDA).

P3.27

Research on the Delayed Diagonal Zipper Codes Based on Periodic Truncation, Yutian Li, Feng Tian, Ze Dong, Ran Gao, Fu Wang and Bo Liu; *School of Electronic Engineering, Beijing University of Posts and Telecommunications, China.* A modified zipper code scheme is proposed, employing periodic truncation and time delay in interleaver map to reset encoding buffer and avoid error propagation. Simulation results show improved error correction capability and stall pattern reduction.

Poster Session III (15:30-16:00)

P3.28

Research on Evaluation Method of Ship EMC Based on Multi-layer Coupling Network, Wangqiu Cai, Kang Chen and Hongfu Wang; *Marine Design & Research Institute of China, China.* This paper proposes the method based on multilayer coupled networks to evaluate ship electromagnetic compatibility (EMC).

P3.29

Selenisation optimization for nanoparticle based CIGSSe solar cells, Jiawei Jing, Zengzhou Yang and Zugang Liu; *China Jiliang University, China.* Cu(In, Ga)S2 nanoparticle were synthesized and their precursor thin filmw were selenised into light-absorbing layers with large grains. The selenization conditions were optimized, the power conversion efficiency of the CIGSSe devices was 10.84 %.

P3.30

Satellite Optical Signal Modulation Identification Based on Multiple Features and SVM, Jiacheng Mao, Qi Zhang, Xiangjun Xin, Meng Sun, Feng Tian, Qinghua Tian, Fu Wang,

Yongjun Wang, Leijing Yang, Yuanfeng Li and Furong Chai; *Beijing University of Posts and Telecommunications, China.* To address the signal modulation identification problem in satellite optical communication, a signal identification scheme based on multiple features and support vector machines is proposed, and the feasibility and superiority of this scheme are demonstrated.

P3.31

100 Gbps Transmitter Based on Directly Modulated DFB Laser Array for DWDM Systems, Wei Yuan, Jie Zhao, Yaguang Wang, Zhenxing Sun, Rulei Xiao and Xiangfei Chen; *Nanjing University, China*. We proposed and experimentally demonstrated a directly-modulated DFB laser array based on the reconstruction equivalent chirp (REC) technique with a transmission rate of 100 Gbps (10 channels * 10 Gbps).

P3.32

Design of hollow-core negative curvature fiber for the temperature sensing, Fan Zhang, Jinhui Yuan, Shi Qiu, Binbin Yan, Qiang Wu and Kuiru Wang; *Beijing University of Posts and Telecommunications, China.* A hollow-core negative curvature fiber filled with the ethanol and gold wires is proposed for the temperature sensing. The average sensitivity of 3 nm/℃ can be achieved in the temperature range of -40~60 ℃.

P3.33

Study of femtosecond laser multi-step 3D nanoprinting method, Shangben Jiang, Zhihao Cai and Changrui Liao; *Shenzhen University, China*. This paper utilizes femtosecond laser multiphoton lithography to perform multi-step 3D nanoprinting of different parts of the printing model on glass slide. This method can be used in microstructure integration of polymer devices.

P3.34

Dynamic Bandwidth allocation algorithm based on traffic classification with the aid of LSTM and GRU for industrial passive optical networks, Yong Wang, Fu Wang, Qinghua Tian, Dandan Sun, Ruichun Wang, Xiongyan Tang and Pengfei Hu; *Beijing University of Posts and Telecommunications, Beijing 100876, China.* We propose an algorithm to classify IoT/non-IoT traffic using LSTM and GRU models. Results show that it reduces latency by 15.5% and packet losses by 47% under a load of 0.6, compared to existing methods.

P3.35

Na+ doping in absorb layer Optimization for Nanoparticles ink based on Cu(In,Ga)Se2 Solar Cells, Dong Liu, Binghong Chen and Zugang Liu; *China Jiliang University, China*. The CIGS nanoink route in solution method is of great significance for large-scale production of thin film solar cells.

P3.36

High precision optical fiber pressure sensor based on fused taper and small diameter fiber, Yingying Wang, Xiangdong Li, Xiaoan Chen, Guangjun Cao and Changfeng Li; *Qilu University of Technology, China.* A fiber-capillary fusion coupling technology based on fused tapered is proposed, and fiber pressure sensor with high sensitivity, high resolution and low lag error is realized by using small diameter fiber and FBG temperature compensation.

Yishan Hall (沂山厅), Special 2

16:00-18:00
W4A • Machine learning
Presider: ***Qinghua Tian****, Beijing University of Posts and Telecommunications, China*

W4A.1 • 16:00 Invited

Semantic Communications for Image Transmission in Intra-Datacenter Optical Interconnects, Wenbin Chen, Jin Li, Meixia Fu, Pengsheng Zhou, Songyan Li, Chunyu Zhang, Min Zhang and Danshi Wang; *Beijing University of Posts and Telecommunications*.

W4A.2 • 16:20 Invited

High performance reservoir computing system based on VCSELs with variable polarization injection, Guangqiong Xia; *South-west University.* In this work, we have demonstrated that, after introducing gradient boost technology, the parallel information processing performance can be obviously improved in a reservoir computing system based on VCSELs with variable polarization injection.

W4A.3 • 16:40 Invited

Enhanced performance of reservoir computing using multiple self-injection and mutual injection VCSELs, Nianqiang Li; *Soochow University.*

Lushan Hall (鲁山厅), Track 6

16:00-18:00
W4B • Measurement & imaging VI
Presider: ***Changyu Shen*** *China Jiliang University, China*

W4B.1 • 16:00 Invited

Defect Detection in Transparent Materials Based on Optical Coherence Tomography, Xiao Lv, Xiuhao Yao, Jiacheng Lv, Yanjie Zhao, Duo Chen, Hui Li, Jiasheng Ni and Wei Zhang; *Qilu University of Technology (Shandong Academy of Sciences), China.* High-precision optical components have put forward strict requirements for manufacturing technology, and quality detection technology. In this work optical coherence tomography is used to detect both surface and internal defects in transparent optical materials.

W4B.2 • 16:20 Invited

Quantum-Enhanced Signal-to-Noise Ratio Optical Fiber Sensors Utilizing Intensity Correlated Pulse Twin Beams, Chunliu Zhao; *China Jiliang University, China.* We demonstrate the our progress on quantum-enhanced SNR optical fiber sensors by utilizing intensity correlated pulse twin beams, in which intensity difference noise is squeezed below standard quantum limit (SQL).

W4B.3 • 16:40 Invited

High Sensitivity Refractive Index Optical Fiber Sensors based on SPR and LSPR, Ailing Zhang; *Tianjin University of Technology, China.* High sensitivity optical fiber sensors based on SPR/LSPR are designed and fabricated, which has wide applications in environmental protection, food safety and biosensing.

Mengshan Hall (蒙山厅), Track 4

16:00-17:40
W4C • Optoelectronic integration V
Presider: ***Bo Dong****, Shenzhen Technology University, China*

W4C.1 • 16:00 Invited

Enhanced Two-Photon Absorption Response based on Silicon Quasi-BIC Metasurface, Hailun Xie and Lili Gui; *Beijing University of Posts and Telecommunications, China.*

W4C.2 • 16:20 Invited

On-chip sensing based on mechanically flexible photonics, Lan Li; *Westlake University, China.*

W4C.3 • 16:40 Invited

Bio-optical manipulation and detection, Hongbao Xin; *Jinan University, China.* Single cell manipulation and intracellular precision detection in the complex and crowded bio-microenvironment is of great importance for better understanding and controlling cellular activity, which will provide new clues for revealing the living mechanism of single cell. Optical tweezers provide a non-invasive approach for single cell trapping and manipulation, while plasmonic nanoantenna can serve as a new platform for precision molecular detection.

Laoshan Hall (崂山厅), Special 1

16:00-18:00
W4D • Organic optoelectronics IV
*Presider: **Shaocong Hou,** Wuhan University, China; **Jia Liang**, Fudan University, China.*

W4D.1 • 16:00 Invited

Exciton polariton based on organic materials, Shaocong Hou; *Wuhan University, China*.

W4D.2 • 16:20 Invited

Opto-valleytronics in two dimensional bismuth-based layered materials, Jia Liang; *Fudan University, China*.

W4D.3 • 16:40 Invited

Spin and Carrier Dynamics in Organic-Inorganic Hybrid Semiconductors, Yaxin Zhai; *Hunan Normal University, China*. Spintronics and hybrid organic-inorganic semiconductors are promising for new information devices. Our research using femtosecond spectroscopy and magnetic field control explores spin manipulation, lifetime, and chiral-induced spin selectivity (CISS) in 2D hybrid perovskites.

Taishan Hall (泰山厅), Track 3

16:00-18:00
W4E • Optical networks III
*Presider: **Hui Yang**, Beijing University of Posts and Telecommunications, China*

W4E.1 • 16:00 Invited

Networking Considerations in Quantum Key Distribution Enhanced Optical Networks, *Xiaosong Yu; Beijing University of Posts and Telecommunications, China.*

W4E.2 • 16:20 Invited

Channel Power Equalization based on Joint Optimization of EDFA and ROADM Configuration in Open Optical Network, Yajie Li; *Beijing University of Posts and Telecommunications, China*.

W4E.3 • 16:40
50 Gb/s faster-than-Nyquist Coherent PON with optimized ISI cancellation scheme, Nan Feng, Ming Yi Ma, Zhe Li and Shaobo Li; *The 54th research Institute of CETC, China*. We demonstrate a faster-than-Nyquist coherent passive optical networks (PON) for 50Gbit/s 100km fiber transmission. The simulation results show the FTN with advanced equalization scheme leads to better performance than conventional PON.

W4E.4 • 16:55
Distributed Services Provisioning in an All-Optical Switching based Edge Data Center Network, Xunhui Lin, Yiyang Fu, Ershuai Meng, Xiangyong Hao, Puhan Wang and Yongcheng Li; *Soochow University, China*. We introduce an all-optical switching-based EDC and focus on the distributed services provisioning problem. To optimize service provisioning, we explore different strategies, including network resource-aware, computing resource-aware, and aggregated resource-aware strategies.

VIP Room (聚贤厅), Track 8

16:00-18:00
W4F • Optical transmission IV
*Presider: **Jing Xu**, Zhejiang University, China*

W4F.1 • 16:00 Invited

Transmission of laser for microwave photonic link application, Tianshu Wang; *Changchun University of Science and Technology, China*.

W4F.2 • 16:20 Invited

Enhanced Performance of Optical Wireless Communications via Faster-than-Nyquist Technology, Minghua Cao; *Lanzhou University of Technology, China*.

W4F.3 • 16:40
Research on atmospheric propagation characteristics of partially coherent OAM beams, Qiaochu Yang; *Changchun University of Science and Technology, China*. A partially coherent OAM communication system with polarization and optical time was introduced for experimental verification of the OTDM free space transmission system. The SI was significantly reduced and the reception sensitivity was improved.

W4F.4 • 16:55
An improved target detection algorithm of Lidar point cloud in networked vehicles, Minghua Cao, Jiachen Zhao, Yue Zhang, Zhihao Li, Yuan Huang and Huiqin Wang; *Lanzhou University of Technology, China*. An improved 3D point cloud target detection algorithm for assisted driving is proposed. The self-focusing mechanism is introduced to improve the detection capability, replacing the original Prediction Heads, also introduced convolutional block attention model.

Yishan Hall (沂山厅), Special 2

W4A.4 • 17:00 Invited

Fiber Optic Sensing Demodulation Based on Neural Network Algorithm, Guanjun Wang; *Hainan University.*

W4A.5• 17:20

Deep learning-based SPGD algorithm for hybrid vector modes decomposition and reconstruction in spatial light paths, Huihui Zhao, Mengdie Hou, Mengjun Xu and Xianglong Zeng; *Shanghai University, China*. A deep learning-based stochastic parallel gradient descent algorithm is proposed to accurately obtain the modal coefficients of cylindrical vectors in spatial optical paths. The decomposition and reconstruction of mixed vector modes are experimentally realized.

W4A.6 • 17:35

Machine Learning Methods for the Pseudo Mode Problem in OAM Fiber FEM simulation, Jiashu Wang; *Beijing University of Posts and Telecommunications, China.* This paper uses different machine learning models and thus validates the potential of machine learning to solve the pseudo mode problem during OAM fiber FEM simulation.

W4A.7 • 17:50

Adaptive Channel Modeling with Conditional Generative Adversarial Network for 209-GHz Fiber-Terahertz Integrated Communication System, Chengxi Wang, Tao Li, Zhongya Li, Jianyang Shi, Junwen Zhang and Nan Chi; *Fudan University, China.* We propose and experimentally demonstrate an adaptive channel-modeling method based on conditional generative- adversarial-network (CGAN) for the 209-GHz fiber-THz integrated communication system, achieving low fitting mean-square-error (MSE) loss and high accuracy under different channel conditions.

Lushan Hall (鲁山厅), Track 6

W4B.4 • 17:00 Invited

Fiber-optic biosensors: from "in vitro" to "in vivo", Yang Ran; *Jinan University, China*. Fiber-optic sensor has gained great reputation of compact footprint, flexibility, and portability, lending itself a favorable in-vitro and in-vivo sensor for the label-free detection of biomolecules, which is essential for the diagnosis of diseases.

W4B.5 • 17:20 Invited

Advanced photoacoustic gas sensing and implementation, Chaotan Sima; *Huazhong University of Science and Technology, China*.

W4B.6 • 17:40 Invited

Label-Free DNA Biosensing Based on Fiber Sensors Functionalized by 3D Nanostructure Probes, Zhanyu Shen, Hongdan Wan; *Nanjing University of Posts and Telecommunications, China*.

Mengshan Hall (蒙山厅), Track 4

W4C.4 • 17:00 Invited

Integrated optical phased array for wide angle beam steering, Jingye Chen; *Zhejiang University, China.*

W4C.5 • 17:20 Invited

Reconfigurable chalcogenide micro-resonators for integrated nonlinear photonics, Bin Zhang; *Sun Yat-sen University, China.*

W4C.6 • 17:40 ☆

Target Transfer of Ferroelectric Thin Films for Electro-Optic Modulation on SOI Platform, Mengxue Tao, Butong Zhang, Tianxiang Zhao, Xiaoxuan Wu, Ming Liu, Guohua Dong and Junjia Wang; *Southeast University, China; Xi'an Jiao tong University, China*. In this work, we demonstrate target transfer of ferroelectric thin films for electro-optic modulation. Our BTO integrated MZI modulator exhibits $V_\pi L$ of 1.67 V • cm and PTO integrated micro-ring modulator exhibits r_eff as 6 pm/V.

18:00-21:00 Dinner Break, *Qufu & Ji'nan Ballroom, 2nd Floor*

Laoshan Hall (崂山厅), Special 1

08:00-10:00
Th1A • Fibers & fiber devices VI

*r: **Pu Zhou,** National University of Defense logy, China*

Optimization, Dandan Song; *Beijing Jiaotong University, China*.

W4D.5 • 17:20 Invited

Organic semiconductors: studying on lasing and nonlinear optics, Yi Jiang; *Nanjing university of Posts and Telecommunications, China*. Organic solid-state lasers, especially organic semiconductor lasers (OSLs), the likely successor to OLEDs, as another important class of organic light emitters, have been a young and challenging research topic. I will introduce some researches on materials/feedback structure design, how to achieve efficient nonlinear optics, and organic laser applications.

W4D.6 • 17:40 Invited

Study on the instability mechanism and stabilization strategy of organic semiconductors, Liqiang Li; *Tianjin University, China*.

Taishan Hall (泰山厅), Track 3

W4E.5 • 17:10
Spatial-Temporal Prediction Model for Optical Fronthaul Network Traffic based on ASTFN, Zexi Zhou, Hao Zhang, Wenwu Zhu, Zhenxiao Fu and Rentao Gu; *Beijing University of Posts and Telecommunications, China*. This paper proposes an attention-based spatial-temporal fusion model (ASTFN) for optical fronthaul network, using attention mechanism and fusion strategy with CNN combined with LSTM.

W4E.6 • 17:25
Blocking-Driven Spectrum Defragmentation Based on Deep Reinforcement Learning in Tidal Elastic Optical Networks, Yingbo Fan, Yajie Li, Boxin Zhang, Ling Chen, Yahui Wang, Jiaxing Guo, Wei Wang, Yongli Zhao and Jie Zhang; *Beijing University of Posts and Telecommunications, China*. We propose a blocking-driven spectrum defragmentation using deep reinforcement learning in elastic optical networks with tidal traffic.

W4E.7 • 17:40
On-demand provisioning of computing resources in computing power network with mixed CPU and GPU, Yahui Wang, Yajie Li, Jiaxing Guo, Yingbo Fan, Ling Chen, Boxin Zhang, Wei Wang, Yongli Zhao and Jie Zhang; *BUPT, China*. We propose an on-demand computing provisioning method in computing power network with mixed CPU and GPU. Simulation results validate that more computing tasks can be accommodated by optimizing the usage of heterogeneous computing resources.

VIP Room (聚贤厅), Track 8

W4F.5 • 17:10
Data transmission under Smoke pool conditions based on an active mode-locked tunable 2-μm fiber laser, Deqi Li, Baoqun Li, Sunde Wang, Silun Du and Tianshu Wang; *Changchun University of Science and Technology, China*. We experimentally demonstrate 2-㎛ laser transmission characteristics in an indoor smoke pool that simulates atmospheric transport. Compared with the back-to-back condition, the optical signal-to-noise ratio at V=0.005km is reduced by 8.46dB.

W4F.6 • 17:25
BER Performance Analysis of O-OFDM-IM System Under Non-ideal Conditions, Huiqin Wang, Liubao Zhang, Minghua Cao and Qihan Tang; *Lanzhou University of Technology, China*. In this paper, the effects of atmospheric turbulence, aiming error, frequency offset and channel estimation error on the BER performance of an optical OFDM-IM system are investigated and experimentally verified.

W4F.7 • 17:40
Simulation of the ion beam at the atmospheric pressure interface of a mass spectrometer, Shuncheng Xue, Shangzhong Jin and Jiafeng Song; *China Jiliang University, China*. An improved 3D point cloud target detection algorithm for assisted driving is proposed. The self-focusing mechanism is introduced to improve the detection capability, replacing the original Prediction Heads, also introduced convolutional block attention model.

W4F.8 • 17:55
Research on the performance of On-Off-key controlled modulation signal system under weak turbulence, Li Chuyu, Xu Zhiyong, Wang Yimin, Wang Jingyuan, Li Jianhua and Zhao Jiyong; *Army Engineering University of PLA, China*. Based on the theoretical model of atmospheric turbulence with lognormal distribution, the atmospheric transmission signal dataset is established.

18:00-21:00 **Dinner Break,** *Qufu & Ji'nan Ballroom, 2nd Floor*

Yishan Hall (沂山厅), Track 1

Th1A.1 • 08:00 Invited

Bandwidth and wavelength tunable filter and its applications in fiber lasers, Chaoran Wang, Xingliang Li, Mengmeng Han and Shumin Zhang; *Hebei Normal University, China*. A special temperature-sensitive band-pass filter was designed, and then was used in a dissipative soliton Yb-doped fiber laser and a Mamyshev oscillator to study their starting, extinction, and output dynamics.

Th1A.2 • 08:20 Invited

High-order mode amplification based on the novel active optical fibers, Jianxiang Wen; *Shanghai University, China*. We fabricated several active silica fibers that have different structures and active-ions doping concentrations, based on which high-gain, low-noise-figure, and broad-spectrum amplification of high-order modes and OAM modes have been accomplished. These can be applied in optical communications like long-haul mode division multiplexing systems.

Th1A.3 • 08:40 Invited

Continuous wave-pumped second-harmonic generation from all-fiber device, Biqiang Jiang; *Northwestern Polytechnical University, China*.

Lushan Hall (鲁山厅), Track 6

08:00-10:00
Th1B •Measurement & imaging VII
*Presider: **Bing Sun**, Nanjing University of Posts and Telecommunications, China*

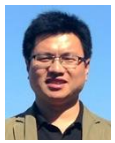
Th1B.1 • 08:00 Invited

Expanding the Sensing Capabilities of Tilted Fiber Bragg Gratings through Higher Order Cladding Modes: From Theory to Applications, Yang Zhang; *Dalian University of Technology, China*. Tilted fiber Bragg gratings are high-quality passive devices for near-infrared sensing, with potential applications in new energy and biomedicine interactions.

Th1B.2 • 08:20 Invited

Sensing Behaviors of Multicore Fiber with Long-Period Gratings, Yunhe Zhao; *Shanghai Maritime University, China.*

Th1B.3 • 08:40 Invited



Design and application of helical-structured fiber devices, Zhifang Wu, *Huaqiao University, China*.

Mengshan Hall (蒙山厅), Track 5

08:00-10:00
Th1C • Optical signal Processing I
*Presider: **Feng Gao**, Nankai University, China*

Th1C.1 • 08:00 Invited

Integrated Microwave Photonic Sensors, Xiaoyi Tian, Liwei Li, Luping Zhou, Linh Nguyen, Robert Minasian and Xiaoke Yi; *The University of Sydney, Australia.* This paper presents the recent advances in microwave photonic (MWP) sensing with a focus on integrated MWP sensors based on microresonators as well as their integration with machine learning techniques for advanced performance.

Th1C.2 • 08:20 Invited

Microwave photonic filter and its applications, Yuan Yu; *Huazhong University of Science and Technology, China*.

Th1C.3 • 08:40 Invited

Multi-band microwave signals generation and its application in microwave photonic radar, Di Peng; *Guangdong University of Technology, China*.

Laoshan Hall (崂山厅), Special 1

08:00-10:00
Th1D • Organic optoelectronics V
*Presider: **Dechun Zou,** Peking University, China; **Kai Wang**, Southern University of Science and Technology*

Th1D.1 • 08:00 Invited

A simple method to fabricate all solution processed inverted RGB QLEDs, Zugang Liu; *China Jiliang University, China*.

Th1D.2 • 08:20 Invited

Full Color Micro-QLED via Metasurface, Kai Wang; *Southern University of Science and Technology, China*.

Th1D.3 • 8:40 Invited

Efficient light-emitting diodes based on quantum dot/perovskite emitters, Xuyong Yang; *Shanghai University, China*. In this report, we will present our latest advances in improving the efficiency and stability of quantum dot/ perovskite perovskite light-emitting diodes.

Taishan Hall (泰山厅), Track 7

08:00-10:00
Th1E • Ultrafast photonics III
*Presider: **Dongmei Huang**, The Hong Kong Polytechnic University, China*

Th1E.1 • 08:00 Invited

Glass composite for nonlinear photonics, Xu Feng and Shifeng Zhou; *South China University of Technology, China*.

Th1E.2 • 08:20 Invited

Recent advances and future outlook in spatiotemporal mode-locking, Xiaosheng Xiao; *Beijing University of Posts and Telecommunications, China*. Spatiotemporal mode-locking (STML) is a general form of mode-locking, generating 3D soliton pulses. In this Presentation, recent progress of STML is reviewed. Furthermore, the future outlook of STML will be given.

Th1E.3 • 08:40 Invited

Rogue waves among noise-like pulses, Xingliang Li, Mengmeng Han, Zhenjun Yang and Shumin Zhang; *Hebei Normal University, China*. Based on a noise-like pulse fiber laser, we report the production and intuitive observation of rogue waves in an optical system.

VIP Room (聚贤厅), Track 2

08:00-10:00
Th1F • Optical transmission V
*Presider: **Fan Li**, Sun Yat-sen University, China*

Th1F.1 • 08:00 Invited

Recent Progress on Full Spectra Modulated Nonlinear Frequency Division Multiplexing System, Lixia Xi; *Beijing University of Posts &Telecommunications.*

Th1F.2 • 08:20 Invited

Advanced Signal Process for Short reach IM/DD Systems, Jing Zhang; *University of Electronic Science and Technology of China.*

Th1F.3 • 08:40 Invited

Signal processing method for high speed optical communication system, Qi Zhang; *Beijing University of Posts and Telecommunications.*

Yishan Hall (沂山厅), Track 1

Th1A.4 • 9:00 Invited

Fluorotellurite glass fibers and their applications, Zhixu Jia; *Jilin University.*

Th1A.5 • 9:20 Invited

Reconfigurable assembly of ultrafast pulses: dynamics, manipulation and applications, Yiyang Luo; *Chongqing University.*

Th1A.6• 09:40
Wavelength Tunable Raman Fiber Laser Based on Raman Gain Spectrum Control, Duanduan Wu; *Ningbo University.* A two-end-pumped wavelength-tunable RFL is demonstrated by the Raman-gain-spectrum-control-method. Its gain-spectrum is the superposition of two SRS-gain-curves. By varying the power-ratios of the two pump-lasers, the net Raman-gain-peak can be controlled to achieve wavelength-tunable laser.

Lushan Hall (鲁山厅), Track 6

Th1B.4• 09:00
A superimposed fiber grating sensor for simultaneous measurement bending and temperature, Qiang Ling, Weixuan Luo, Zhangwei Yu and Daru Chen; *Zhejiang Normal University, China.* A novel superimposed fiber grating sensor for bending and temperature measurement has been proposed. The sensor exhibited high bending and temperature sensitivities of 17.096 nm/m-1 and -0.238 nm/℃, respectively.

Th1B.5• 09:15
Highly sensitive carbon dioxide sensor based on guanidine derivative polymer functionalized Fabry-Perot interferometer, Rujun Zhou, Si Luo, Qiang Ling, Zhangwei Yu and Daru Chen; *Zhejiang Normal University, China.* A highly sensitive CO_2 sensor based on a Fabry-Perot interferometer consisting of a hollow core capillary is proposed. The sensor exhibits a high sensitivity of 10.2 pm/ppm, coated by a gas-sensitive film.

Th1B.6 • 09:30
High sensitivity, multi-Parameter optical probes based on Reflective fiber Couplers, Chen Yufang, Shen Zhanyu, Li Yushan and Wan Hongdan; *Nanjing University of Posts and Telecommunications, China*. Multi-parameter optical sensors using optical reflective coupler probes for detection of liquid level, temperature and refractive index， having high sensitivity of 363.64 nm/mm, -327 pm/ºC and 7859.27 nm/RIU, respectively.

Th1B.7• 09:45
A miniature structure based on ring-core fibers for temperature and strain sensing, Qishuang Zhang, Qiang Ling, Xiuli Jiang, Zhangwei Yu and Daru Chen; *Zhejiang Normal University, China.* The paper reports a novel fiber-optic sensor. It is consisted by the RCF embedded long period fiber grating and RCF-based Mach–Zehnder interferometer and has the ability of simultaneous measuring temperature and strain.

Mengshan Hall (蒙山厅), Track 5

Th1C.4 • 09:00 Invited

Fiber Optic Inspired Microwave Devices for Ultra-High Temperature Sensing Applications, Chen Zhu; *Zhejiang Lab, China.*

Th1C.5• 09:20
All-optical format conversion from PDM-QPSK to PDM-PAM4 using vector phase-sensitive amplification, Zhaoyang Liu, Jiabin Cui and Yuefeng Ji; *Beijing University of Posts and Telecommunications, China.* A conversion system from polarization division multiplexed (PDM)-quadrature phase shift keying signal to PDM-4-level pulse amplitude modulation signal is proposed and analyzed in this paper.

Th1C.6• 09:35
Integrated 4-channel wavelength selective switch based on second-order micro-ring resonators, Tongxin Yang, Shiqi Zhang, Zilong Liu, Xiaoran Zhu, Enge Zhang, Liuwei Chen, Xu Yang and Lei Zhang; *Beijing University of Posts and Telecommunications, China*; We report a 4-channel wavelength selective switch with second-order micro-ring resonators. The WSS exhibits a 3dB bandwidth of 75 GHz and extinction ratios around 10 dB and 22 dB, respectively, at through and drop ports.

Th1C.7• 09:50
Optimization design of FFE-DFE based on differential evolution algorithm, Jinjiang Li, Jiahao Zhou, Xuecheng Ren, Jiaming Liu, Jing Zhang and Kun Qiu; *University of Electronic Science and Technology of China, China*. We propose the p-ADE to optimize the tap coefficients of FFE-DFE in the IM/DD system. The results show that the convergence of p-ADE is faster than DE. The p-ADE provides similar SNR as LMS algorithm.

10:00-10:30 Poster Session 4 & Tea Break, 2nd Floor

Laoshan Hall (崂山厅), Special 1

Th1D.4 • 09:00 Invited

Cluster Light-Emitting Materials and Diodes, Hui Xu; *Heilongjiang University, China*.

Th1D.5 • 09:20 Invited

Structure design and performance optimization of near-infrared organic photodetectors, Yanlian Lei; *Southwest University, China*. In this talk, we will report our effort on the structure design and performance optimization of near-infrared (NIR) organic photodetectors (OPDs), including the visible-blind NIR OPDs and NIR-to-visible upconversion devices.

Th1D.6 • 09:40 Invited

High performance field-effect transistor based on one-dimensional metal oxide nanofiber, Jun Li; *Shanghai University, China*.

Taishan Hall (泰山厅), Track 7

Th1E.4 • 09:00 Invited

Trajectories and collisions of multiple beams with anomalous vortices in nonlocal materials, Jie Li, Zhenjun Yang, Zhaoguang Pang and Shumin Zhang; *Hebei Normal University, China*.

Th1E.5 • 09:20 Invited

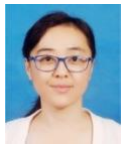
Shaping pulses for controlling dispersive waves emission, Lifu Zhang; *Shenzhen University, China.* Dispersive wave emission is relevant for nonlinear fiber optics, supercontinuum generation, rogue waves, and complex nonlinear dynamics. However, dispersive wave is narrowband, and the challenge is finding novel ways to generate and tailor broadband spectra. We will report controlled dispersive waves emission by using shaped pulses in optical fibers.

Th1E.6 • 09:40 Invited

Soliton pulsation dynamics in ultrafast fiber lasers, Meng Liu; *South China Normal University, China.* Soliton pulsation is one of the most intriguing nonlinear dynamics in dissipative systems. In this talk, we will show our recent works on the generation, transition and characteristics of soliton pulsations in ultrafast fiber lasers.

VIP Room (聚贤厅), Track 2

Th1F.4 • 09:00 Invited



Joint compensation scheme for modal dispersion and mode coupling based ondensity-matrix formalism in Mode division multiplexing systems, Xia Zhang; *Liaocheng University, China*. We propose a scheme for joint modal-dispersion and mode-coupling compensation in MDM systems, and implement a compensation of 140-ps differential group delay and 800k-rad/s mode coupling, which verifies the effectiveness of our scheme.

Th1F.5 • 09:20 Invited

Statistical signal processing for the compensation of channel distortions incoherent optical systems, Xinwei Du; *Beijing Normal University-Hong Kong Baptist University United International College, China.*

Th1F.6 • 09:40

Transceiver imperfections compensation and calibration methods, Liang Junpeng; *Sitrus, China*. In this work, we summary the transceiver imperfections compensation and calibration methods and we also point out the open issues that still exist in the calibration and compensation of transceiver imperfections.

10:00-10:30 Poster Session 4 & Tea Break, 2nd Floor

Poster Session IV (10:00-10:30)

P4.1
A precision fiber optic microseismic monitoring system for underground coal mines, Binxin Hu, Xiang Xu and Siqi Li; Laser Institute, *Qilu University of Technology (Shandong Academy of Sciences), China.* This paper presents the development of a precision fiber optic microseismic monitoring system. The system achieves a bandwidth of 1 Hz to 320 Hz and 86.5 dB dynamic range, and is practical for underground mines.

P4.2
Extrinsic Two-Photon Polymerization 3D Printed Fiber Fabry-Perot Air Cavity For Temperature Measurement, Wei Xu, Zhen Li, Mutian Tang, Guangyao Pan, Changyuan Yu, Chunmin Sheng, Jin Tao and Enqing Cheng; *Changshu Institute of Technology, China.* A micro extrinsic Fabry-Perot air cavity is constructed on the fiber end using two-photon polymerization 3D printer. Experimental measurements show that the temperature sensitivity reaches 0.24 nm/°C in the temperature range of 20°C-60 °C.

P4.3
The Multiplexing Mode for OFDM Passive Optical Networks, Nan Feng, Mingyi Ma and Zhe Li; *The 54th research Institute of CETC, China.* we briefly overview the advanced multiplexing scheme and the according key digital signal processing in optical access network based on orthogonal frequency division multiplexing passive optical network transmission in the enhanced next-generation optical access networks.

P4.4
Periodically poled lithium niobate-based scheme for optical physical layer security in the coherent optical communications system, Zanshan Zhao; *Hainan Acoustics Laboratory, Institute of Acoustics, Chinese Academy of Sciences, China.* A scheme that can be applied to encrypt and decrypt the signals in the optical physical layer of the coherent optical communications system is proposed and numerically verified, whose advantages were explained in the paper.

P4.5
High Fidelity Wristband Pulse Sensor Based on Fiber MZI Structure, Yifei Feng, Chunliang Wang, Liufeng Zhu, Yi Liu, Wei Xu and Ying He; *Department of Marine Biomedicine and Polar Medicine, Naval Specialty Medical Center, China.* We demonstrate a wearable fiber pulse sensor based on Mach-Zehnder interferometer (MZI), which is simply embedded into a commercial wristband such that it can be used to monitor wrist's weak acoustic signal.

P4.6
3×3 microfiber coupler simulation and RI sensing performance with output end Sagnac loop, Wenqian Xiu, Qian Ma and Lijun Li; *Shandong University of Science and Technology, China.* 3×3 microfiber coupler (MFC) is fabricated by fusing taper method. The working principle and the optical field of the MFC is theoretically simulated. The refractive index sensing sensitivity of MFC is 25108nm/RIU.

P4.7
An Overlapped-Dense LSTM Neural Network for Nonlinear Optical Fiber Transmissions, Xingwen Yi and Xubin Hu; *Sun Yat-sen University, China*. We propose an overlapped dense long short-term memory network (OD-LSTM) that consumes different hidden units at different time steps. We use it for effective fiber nonlinearity compensation with a lower complexity.

P4.8
A fiber optic thermal Fabry-Perot interferometer for the detection of β-carotene, Xiangwen Fan and Yinping Miao; *Tianjin University of Technology, China.* We propose an optical fiber Fabry-Perot interferometer (FPI) based on the photothermal effect to detect β-carotene. The sensor has potential applications in the field of environmental pollution detection.

P4.9
Research on lens-coupled dual-channel single-channel single-photon detector system , Wankang Wu, Guilan Feng, Tianqi Zhao, Chunlan Lin, Jinlv Pan and Jiabao Li; *China Jiliang University, China*. In this paper, a lens-coupled dual-channel SPAD single-photon detector is developed based on optical coupling technology and free photon counting technology.

Poster Session IV (10:00-10:30)

P4.10
Blockchain-enabled Data Security Management for Optical Network Telemetry, Hong Zhu, Yue Pang, Ying Zhou, Shengsheng Sha, Yidi Wang, Min Zhang and Danshi Wang; *The Intelligent Network Innovation Center of Chinaunicom, China.* We propose a blockchain-enabled security management scheme for telemetry data collection, storage, and access in optical networks. The designed smart contracts are deployed in the Ethereum blockchain, and its functions are tested and verified.

P4.11
Analysis of influence factors in Quantum Approximate Optimization Algorithm for Solving Max-cut Problem, Jing Wang, Junsen Lai, Meng Zhang, Fei Yao and Fang Li; *China Academy of Information and Communication Technology, China.* For the quantum computing simulator of HiQ platform, QAOA was used for experimental verification, to study types of optimizer, different noise scenarios, and impact of noise error parameters on the maximum number of cutting edges.

P4.12
An Orthogonal Dual-Polarization and Time Multiplexing Scheme of Continuous-Variable Quantum Key Distribution, Shuai Zhang, Yan Pan, Heng Wang, Yun Shao, Tao Zhang, Jinlu Liu, Yaodi Pi, Ting Ye, Wei Huang, Yang Li and Bingjie Xu; *Institute of Southwestern Communication, China.* We established a dual-polarization theoretical model for LLO CV-QKD systems to analyze the influence mechanism of time-domain diffusion and polarization disturbance. Simulations are performed with the optimized parameters, and 5.25 Mbps@25km SKR is achieved.

P4.13
A Method for Precise Planning of Cerebral Puncture Paths and A 3D Printed Puncture Positioning Device, Yiwen Lin, Jiayuan Xu, Hongkun Sun, Shaomin Ou and Chuliang Wei; *Department of Electronic Engineering, Shantou University, Shantou, China.* We propose a method for precise planning of cerebral puncture paths and a 3D-printed puncture positioning device, which simplifies the operational steps. And the success rate of puncture was 89.06%.

P4.14
Research on multi-channel noise suppression technology of fiber optic hydrophone, Hanfeng Xu, Hong Zhang and Yueyang Chen; *Hangzhou Institute of Applied Acoustics, China.* The multi-channel processing method is theoretically analyzed and experimentally verified in this paper. The results show that the multi-channel method has a good effect on noise suppression of optical fiber hydrophone system.

P4.15
A Technical Review of Integrated Sensing and Communication in Optical Transmission System, Jing Yan, Yajie Li, Mengwen Pan, Ying Wu, Mingrui Zhang, Kongni Zhu, Yuang Li, Shuang Wei, Yongli Zhao and Jie Zhang; *Beijing University of Posts and Telecommunications, China.* We investigate the state of art technologies of integrated sensing and communication in optical transmission system. A detailed comparison is made among the available solutions. Meanwhile, the potential research directions and challenges are also presented.

P4.16
Microstrip antenna based on fractal structure, Xuemei Zheng and Xinze Chen; *Key Laboratory of Modern Power System Simulation and Control & Renewable Energy Technology, Ministry of Education, Northeast Electric Power University, China.* With the rapid development of communication technology, people increasingly need compact and efficient antennas that can operate at multiple frequencies.

P4.17
Deep learning-based self-absorption correction method for fan-beam X-ray fluorescence CT, Mengying Sun, Shanghai Jiang, Xinyu Hu, Binbin Luo, Shenghui Shi and Xue Zou; *Chongqing Key Laboratory of Optical Fiber Sensor and Photoelectric Detection, Chongqing University of Technology, China.* A U-net based method is proposed for self-absorption correction in X-ray fluorescence CT. It recovers internal structure in sinogram domain and improves image quality by reconstructing complete projection data.

P4.18
An Φ-OTDR event recognition method based on Transformer, Yi Shi, Jiewei Chen, Xuwei Kang and Chuliang Wei; *Shantou University, China.* An Φ-OTDR event recognition method based on the Transformer is proposed. The transformer model performs better than CNN, with 99.64% accuracy. When the model is pruned to only 2 layers, accuracy can still be saved.

Poster Session IV (10:00-10:30)

P4.19
Semiconductor Laser Chip Damage Detection Based on the Improved YOLOv8 Algorithm, Jianwei Zhou, Feng Tian, Yutian Li, Jue Wang, Qinghua Tian, Qi Zhang, Wei Gao and Ying Zhuang; *Beijing University of Posts and Telecommunications, China.* We proposed an improved YOLOv8 algorithm and verified it through experiments. The results show that our proposed algorithm has 0.98ms and 2.90% performance improvement on the average detection time and mAP@0.5:0.95, respectively.

P4.20
Brillouin Spectral Calibration Method Based on Virtual Imaging Phased Array, Huihuan Wu, Huahui Wu and Hao Liang; *Jinan University, China.* This paper introduces a real-time calibration method for the Free Spectral Range , aiming to eliminate frequency measurement errors and achieve accurate measurement of the Brillouin frequency shift of the sample.

P4.21
Fairness-optimal Resource Allocation Algorithm for NOMA-based Satellite Downlink Systems, Yuhang Tao, Qi Zhang, Xiangjun Xin, Furong Chai, Feng Tian, Fu Wang, Qinghua Tian, Leijing Yang, Yuanfeng Li, Meng Sun and Yongjun Wang; *Beijing University of Posts and Telecommunications, China.* To address the issue of fair resource allocation in low Earth orbit satellite communication systems, a fairness-optimal resource allocation algorithm based on non-orthogonal multiple access (NOMA) is proposed for satellite downlink systems.

P4.22
Multidimensional Resource and Load Collaborative Scheduling Algorithm Based on Reinforcement Learning for Cloud Data Centers, Hui Guo, Fu Wang, Qi Zhang, Dong Guo, Qinghua Tian, Feng Tian, Xiaoli Yin and Jingjing Gao; *School of Electronic Engineering, Beijing University of Posts and Telecommunications, China.* Task scheduling for multi-dimensional resources is a problem in cloud data centers, Q-learning is an excellent tool. We propose the TSQL that aims to reduce makespan and improve resource utilization.

P4.23
Temperature Sensing through Imperfect Quarter-Waveplate in Fiber-Optic Current Sensor, Zhiwen Deng, Wenjie Lu and Yuejiang Song; *Nanjing University, China.* We propose a method of temperature sensing in fiber-optic current sensor without additional temperature sensor based on the phase shift of the quarter-waveplate varying with the ambient temperature, which is helpful to temperature compensation.

P4.24
An End-to-End Autoencoder For FSO System Under Unknown CSI Scenarios, Minghua Cao, Rui Wang, Yue Zhang, Hao Deng, Luxia Zhou and Huiqin Wang; Lanzhou *University of Technology, China.* To address the issue that the maximum likelihood method fails to provide satisfactory BER performance in unknown CSI scenarios, we propose an end-to-end learning method for FSO communication based on convolutional autoencoder.

P4.25
Design and Optimization of Microstrip Dual Band MIMO Antenna, Xuemei Zheng and Junbo Zhao; *KeyLaboratory of Modern Power System Simulation and Control & Renewable Energy Technology, Ministry of Education, Northeast Electric Power University, China.* As an important component of the RF front-end of wireless communication systems, antenna performance has a decisive impact on the communication ability of the system.

P4.26
Multi-task Learning LSTM-based Traffic Prediction in Data Center Networks, Xiongfei Ren, Xuwei Xue, Xiaoyue Su, Yisong Zhao, Yuanzhi Guo, Changsheng Yang and Bingli Guo; *Beijing University of Posts and Telecommunications, China.* Multi-task learning LSTM algorithm is deployed to predict the proportion of traffic flows to each server in DCNs with the Mean Squared Error of 6.61E-3, which guides the bandwidth scheduling for high utilization in DCNs.

P4.27
QAM Signal DSP Algorithm Based On Linear Optical Sampling, Dongxu An, Yongjun Wang, Xingyuan Huang, Lu Han, Qi Zhang and Xiangjun Xin; *Beijing University of Posts and Telecommunications, China.* This article proposes a linear optical sampling DSP algorithm scheme for equalization of high-order QAM signals. The EVM of 16QAM and 32QAM signals balanced by the new algorithm have decreased by approximately 14%.

Poster Session IV (10:00-10:30)

P4.28
Noise Suppression of All-optical OOK Matching System Based on Cascaded Highly Nonlinear Fiber, Ke Guo, Xin Li, Hao Shi, Yu Liu, Zicheng Shi and Shanguo Huang; *Beijing University of Posts and Telecommunications, China.* We apply a noise suppression structure to correct matching errors in all-optical OOK matching system affected by noise. Simulations demonstrate after adding the noise suppression structure, the system can obtain correct matching results under noise.

P4.29
Research on the Two-stage Kalman Filtering Algorithm for Joint Compensation of Phase and Amplitude Noise, Mohai Yue, Yiqing Ji, Feng Tian, Tianze Wu, Nan Wang, Bo Liu, Qinghua Tian, Qi Zhang and Xiangjun Xin; *Beijing University of Posts and Telecommunications, China.* This paper utilizes a two-stage Kalman filter to compensate for phase and amplitude noise in a 64QAM optical transmission system. The results show an OSNR improvement of 0.1-0.6 dB over BPS and LKF.

P4.30
Research on Feature Point Recognition of Laser Welding Seam Based on Machine Vision, Changyong Tian, Chuanyang Zhou, Tie Yin and Yi Zhang; *Technical Institute of Physics and Chemistry CAS, China.* This paper designs and implements a recognition algorithm system for feature points on the surface of oil pipeline welds. It can automatically extract the welds of various shapes in real-time under different working conditions.

P4.31
Laser Wavelength Measurement using a Fabry-Perot Interferometer, Pengbing Hu, Sumei Liu, Sunqiang Pan, Haiyang Qi and Chao Deng; *Zhejiang Institute of Metrology, China*. We build a Fabry-Perot interferometer for cavity ring-down spectroscopy applications. The interferometer provides a FSR of about 50 GHz and a wavelength accuracy of about 25 MHz.

P4.32
Classification and recognition of fiber optic vibration sensing signals based on wavelet packet decomposition and 1D-CNN algorithm, Hongqiang Chang, Yubin Zang and Hongdan Wan; *Nanjing University of Posts and Telecommunications, China.* Algorithm using wavelet packet decomposition and 1D convolutional neural network is proposed to improve recognition accuracy of distributed fiber optic vibration sensor for natural gas pipeline monitoring, achieving average recognition accuracy of > 98%.

P4.33
Research on Sensing of Orbital Changes of Spatial Target Based on Space-based Optical Detection, Chenlu Xu, Yue Li, Jiayi Xu, Penghui Shi and Jinghao Wang; *Chinese people's liberation army unit, China.* For the limitation of ground-based detection on the sensing of orbital change, this paper establishes a space-based optical detection model for spatial target orbital change, and simulates the sensing time under different orbital changes.

P4.34
Thin Piezoelectric Sheet Assisted Unobtrusive IMZI-BCG Sensor with PGC-DCM Demodulation, Chunliang Wang, Wenye Sun, Wei Xu and Chunmin Sheng; *The Second Affiliated Hospital of Soochow University, China.* We demonstrate an unobtrusive ballistocardiogram (BCG) monitor using an integrated Mach-Zehnder interferometer (IMZI) separately molded with silicone rubber and epoxy resin, where the phase is demodulated with PGC-DCM algorithm assisted with a thin piezoelectric sheet.

P4.35
Common-mode Noise Suppression of Interferometric Fiber Optic Hydrophone Based on High Frequency Heterodyne Detection and Phase Locking, Lifan Li, Wei Chen, Qiuyang Huang, Zhou Meng and Xiaoyang Hu; *College of Meteorology and Oceanography, National University of Defense Technology, China.* Common-mode Noise Suppression of Interferometric Fiber Optic Hydrophone Based on High Frequency Heterodyne Detection and Phase Locking_1.

P4.36
NOMA in Flexible Optical Access Network: Principle, Advantage and Challenges, Jia Chai, Nan Feng and Ma Ming Yi; *Beijing Institute of Computer Technology and Application, China.* We summarize the current principle, advantage, and challenges of power domain non-orthogonal multiple access technology which exploited the benefits of different channel gains of passive optical network to improve the capacity and achieved flexibility.

Yishan Hall (沂山厅), Track 1

10:30-12:00
Th2A • Fibers & fiber devices VII
*Presider: **Fei Yu**, Shanghai Institute of Optics and Fine Mechanics, China*

Th2A.1 • 10:30 Invited

Recent advances on multichannel helical long-period fiber grating and its application to high channel-count all-fiber OAM mode generator, Hongpu Li; *Shizuoka University, Japan.* In this study, we will review and discuss the recent advances on multichannel helical long-period fiber grating and its applications to especially the high channel-count all-fiber orbital angular momentum (OAM) mode generator.

Th2A.2 • 10:50 Invited

A fiber-optic Fabry-Perot acoustic sensor based on PDMS diaphragm, Fei Xie, Jiajun Tian; *Harbin Institute of Technology, China*. This paper proposes a low-cost detachable extrinsic Fabry-Perot (FP) acoustic pressure sensor (EFPAPS) based on a polydimethylsiloxane (PDMS) diaphragm. The sensor has a wide frequency response range and high sensitivity.

Th2A.3 • 11:10 Invited

All-fiber focused votex beam generator and its application, Zhiyong Bai; *Shenzhen University, China*.

Lushan Hall (鲁山厅), Track 6

10:30-12:00
Th2B • Measurement & imaging VIII
*Presider: **Rende Ma**,Qufu Normal University, China*

Th2B.1 • 10:30 Invited

Enhancing Temperature Sensitivity via the Implementation of GOPMMA Coating Technique, Bing Sun; Nanjing *University of Posts and Telecommunications, China*. The present study showcases the high sensitivity of coreless D-shaped fiber, which is coated with graphene oxide (GO) and polymethyl methacrylate (PMMA), towards temperature variations. The obtained experimental results demonstrate a high sensitivity of 4.816 nm/℃.

Th2B.2 • 10:50 Invited

Stability enhanced optical frequency domain reflectometry relying on optical phase-locked loop, Weilin Xie; *Beijing Institute of Technology, China*.

Th2B.3 • 11:10
Properties of sandwich-structure based Mach-Zehnder Interferometer Cascade with FBGs Response to Dual-parameter Sensing, Yang Kang, Li Yan, Jia Sumei and Chen Zihan; *Hebei Key Laboratory of Optical Fiber Biosensing and Communication Devices, China*. Mach-Zehnder Interferometer (MZI) based dual-parameter fiber sensor was proposed and manufactured. With the specific structure of the sandwich structure, the high sensitivities of temperature (53.5 pm/oC) and curvature (-7.88 nm/m-1) was achieved.

Mengshan Hall (蒙山厅), Track 4

10:30-12:00
Th2C • Optoelectronic integration VI
*Presider: **Bin Zhang**, Sun Yat-sen University, China*

Th2C.1 • 10:30 Invited

On-chip broadband polarization handing using multimode anti-symmetric apodized Bragg gratings, Li Shen; *Huazhong University of Science and Technology, China.*

Th2C.2 • 10:50 Invited

Ultra-broadband and low-modal-crosstalk mode multiplexer based on 3D optical waveguides without mode conversion, Quandong Huang; *Guangdong University of Technology, China.* An ultra-broadband and low-modal-crosstalk mode multiplexer based on cascaded vertical directional couplers formed by adiabatic-tapered waveguides without mode conversion is presented to form all-optical chips to simplify the MIMO signal processing with low power consumption.

Th2C.3 • 11:10
Compact Half Adder on SOI Platform with Inverse Design, Houyu Chen, Caiyue Zhao, Yinghui Wang, Simei Mao, Lirong Cheng, Xuanyi Liu, Qian Li and H. Y. Fu; *Tsinghua Shenzhen International Graduate School, China*. We propose a compact half adder for optical combinational logic circuits. The device shows high transmission and flat spectrum with acceptable phase difference limit and controlled minimum feature size, making it robust for fabrication.

Laoshan Hall (崂山厅), Special 1

10:30-12:00
Th2D • Organic optoelectronics VI
*Presider: **Hong Meng,** Central South University, **Junliang Yang**, Peking University Shenzhen Graduate*

Th2D.1 • 10:30 Invited

Morphology and Interface Control for Roll-to-Roll Printed Optoelectronics, Junliang Yang; *Central South University, China.*

Th2D.2 • 10:50 Invited

High-Resolution Patterning of Fluorescent Films by Femtosecond Laser Direct Writing, Yue-Feng Liu; *Jilin University, China.*

Th2D.3 • 11:10 Invited

Fabrication of oriented nano-/meso-porous MOF thin films via fluid-assisted technique, Wenchao Chen, Yinhui Dai, Kang Yang, Xinhui Zhou, Yunqing Lu and Jin Wang; *Nanjing University of Posts and Telecommunications, China.*

Taishan Hall (泰山厅), Track 7

10:30-12:00
Th2E •Ultrafast photonics IV
*Presider: **Hualong Bao**, Soochow University, China*

Th2E.1 • 10:30 Invited

High repetition rate and high-power mode-locked fiber oscillators, Jinzhang Wang; *Shenzhen University, China.*

Th2E.2 • 10:50 Invited

Mid-infrared nonlinear frequency conversion from high power fiber sources, Junqing Zhao; *Shenzhen Technology University, China.*

Th2E.3 • 11:10

Generation of noise-like square pulses and pulse clusters from a mode-locked erbium-doped fiber laser, Lei Huang, Dongfang Jia, Ying Jia, Boxin Li and Chunfeng Ge; *Tianjin University, China*. Noise-like (NL) square pulses under different mode-locked conditions and pulse clusters with different numbers (2-12) of sub-pulses are generated from a passively mode-locked erbium-doped fiber laser based on nonlinear polarization rotation (NPR).

VIP Room (聚贤厅), Track 2

10:30-12:00
Th2F •Optical transmission VI
*Presider: **Xia Zhang**, Liaocheng University, China*

Th2F.1 • 10:30 Invited

Coherent P2MP for Next Generation Optical Access Network: Opportunities Challenges and Prospects, Junwen Zhang; *Fudan University, China*. This talk reviews the use cases, challenges and recent progresses of the high-speed coherent optical access network for 100G/λ, 200G/λ and beyond based on P2MP coherent optics. Technical insights into the key enabling technologies including coherent upstream burst detection, burst-mode DSP, and flexible rate access in coherent PON are discussed. The outlook of coherent optical access network towards the rate flexible and adaptive fiber access network is also analyzed.

Th2F.2 • 10:50 Invited

The ring-core microstructure fibers supporting Orbital Angular Momentum Modes, Hu Zhang; *Beijing University of Posts and Telecommunications, China*. An OAM fiber is one of the critical online devices in MDM systems based on OAM modes. We will review the recent progresses in microstructure fibers supporting OAM modes, and summarize why a microstructure can be used to support stable OAM transmission modes.

Th2F.3 • 11:10 Invited

Simplified Self-homodyne Coherent System Based on Alamouti Coding and Digital Subcarrier Multiplexing, Fan Li; *Sun Yat-sen University.*

Yishan Hall (沂山厅), Track 1

Th2A.4 • 11:30
Low-Loss All-Fiber Mode Multiplexers for Weakly-Coupled 4-Mode Fiber, Ruichun Wang, Ying Li, Tingting Dong, Jie Luo, Lu Dai, Liubo Yang, Jun Chu, Lei Zhang, Ying Han, Gaorong Han and Lei Shen; *School of Materials Science and Engineering, Zhejiang University; YOFC, China*. We report an all-fiber 4-mode fiber multiplexer and its measurement, which uses a fused tapering method to fabricate different mode-selective coupler. This device can be applied in mode-division multiplexing transmission systems.

Th2A.5 • 11:45
Performance Comparison Between Core and Cladding Pump Schemes for Weakly-coupled Multi-core EDFAs, Baolong Zhu, Shuailuo Huang, Yu Yang, Chengbin Long, Zhangyuan Cheng, Yongqi He and Juhao Li; *Peking University, China*. Performance between core and cladding pump schemes are simulatively compared based on weakly-coupled 7-core-single-mode and 7-core-3-mode EDFs. The results show that the two schemes have significant performance difference in noise figure and power conversion efficiency.

Lushan Hall (鲁山厅), Track 6

Th2B.4 • 11:25
Simulation of Refractive Index Sensor Based on Microring Resonator, Sunde Wang, Tianshu Wang, Baoqun Li, Silun Du and Deqi Li; *Changchun University of Science and Technology, China.* We modeled a refractive index sensor based on microrings. The microring width is 1μm, and the radius is 34μm. Its quality factor is 224.67, its free spectral range is 16nm, and its sensitivity is 160nm/RIU.

Th2B.5 • 11:40
Metasurface technology and device for ultra precision optical measurement, Lili Han, Duo Chen, Xiaorong Ren, Xiansheng Tang, Weihua Gong, Zhaowei Wang, Wei Zhang, Evgeny Gusev, Vadim Polyakov and Oleg Ageev; *Qilu University of Technology (Shandong Academy of Sciences), China*. Precision measurement is shifting from laboratories to real-world environments and production platforms. Nanotechnology enables us to manufacture ultra compact micro and nano devices. In this work the metasurfaces are being developed for ultraprecision optical measurement.

Mengshan Hall (蒙山厅), Track 4

Th2C.4 • 11:25
High-efficient four-mode Si-SiN interlayer coupler with dual polarizations, Yu Wan, Boai Liu, Rui Wu and Yingjie Liu; *Yanshan University, China*. A compact four-mode Si-SiN interlayer coupler with dual polarizations is proposed. The coupler has a low transmission loss of 0.05-0.73 dB and exhibits high fabrication tolerance from 1450 nm to 1650 nm.

Th2C.5 • 11:40
Extraction of group refractive index of silicon waveguide using two racetrack resonators, Xiaoran Zhu, Enge Zhang, Tongxin Yang, Shiqi Zhang, Liuwei Chen, Zilong Liu, Xu Yang and Lei Zhang; *Beijing University of Posts and Telecommunications, China; The 54th Research Institute of China Electronic Technology Group Corporations, China*. We present the extraction of group refractive index of a silicon waveguide using the spectral responses of two racetrack resonators. This method offers a simple calibration tool in the optical delay line design.

12:00-13:30 Lunch Break, *Zhanxiang Hall(展香园) 1st Floor*

Laoshan Hall (崂山厅), Special 1

Th2D.4 • 11:30 Invited

Electrochemical Control over the Optical Properties of Low-dimensional Nano-materials, Huichao Zhang; *Hangzhou Dianzi University, China*.

Th2D.5 • 11:50

High-performance SERS Substrates via the Plasmonic Micro-nano Structure and MOF-Enabled Molecular Preconcentration Effect, Yongqiang Zhou, Di Cheng, Mengmeng Li, Yunqing Lu, Ji Xu and Jin Wang; *Nanjing University of Posts and Telecommunications, China*. Two kinds of SERS substrates are proposed. Where, the hot-spots are achieved with plasmonic nanogap, and the number of hot-spots significantly increased through 3D structure. Furthermore, MOFs' preconcentration effect can enrich analytes in the hot-spots.

Taishan Hall (泰山厅), Track 7

Th2E.4 • 11:25

Simulation and experiment of noise-like square pulses from a mode-locked erbium-doped fiber laser, Boxin Li, Dongfang Jia, Lei Huang, Ying Jia and Chunfeng Ge; *Tianjin University, China*. This paper presents a numerical simulation and an experiment on the generation of noise-like square pulses (NLSPs) in an ultra-long cavity passively mode-locked fiber laser based on nonlinear optical loop mirror.

Th2E.5 • 11:40

High Repetition Rate Linear Sweep Frequency DFB Laser Based on A Photoelectric Feedback Loop, Yubo Zhang, Qichao Chen, Sha Li, Jie Yu, Haoyan Xu, Feifei Yin, Yitang Dai and Kun Xu; *Beijing University of Posts and Telecommunications, China*. Commercial DFB laser combined with photoelectric feedback loop achieve a high repetition rate linear triangular sweep. The maximum frequency error is reduced from 6% to 0.5%.

VIP Room (聚贤厅), Track 2

Th2F.4 • 11:30

Efficient FPGA-based LDPC Encoder Implementation for Optical Communication Systems, Yu Liu, Wenhua Gu, Zhen Mei and Daying Sun; *Nanjing University of Science and Technology, China*. We propose a new encoding architecture of LDPC code for ITU-T G.975.1 protocol based on FPGA, by exploiting the structure of the parity check matrix. The proposed method significantly reduces resource consumption and latency.

Th2F.5 • 11:45

Adaptive Mitigation of Amplified High-frequency Noise in Faster-than-Nyquist Coherent Optical Communications, Tao Yang and Jing Zhao; *Beijing University of Posts and Telecommunications, China*. A novel adaptive mitigation scheme of amplified high-frequency noise in FTN-WDM coherent systems. It not only exhibits excellent adaptive compensation capabilities, but also has very low complexity and comparable performance to that of traditional schemes.

12:00-13:30 Lunch Break, *Zhanxiang Hall(展香园) 1st Floor*

Yishan Hall (沂山厅), Track 1

13:30-16:00
Th3A • Fibers & fiber devices VIII
*Presider: **Zhixu Jia**, Jilin University, China*

Th3A.1 • 13:30 Invited

Low-loss multimode antiresonant hollow-core fibers, Fei Yu; *Shanghai Institute of Optics and Fine Mechanics.*

Th3A.2 • 13:50 Invited

Low loss and polarization maintaining hollow core anti-resonant fibers, Shoufei Gao; *Jinan University.* We will present our recent advances on several novel arc-nested tube hollow core anti-resonant fibers with ultralow loss and polarization maintaining, as well as application in high energy supercontinuum generation based on nitrogen filled hollow core fiber.

Th3A.3 • 14:10
Measurement and Splicing evaluation of a Low Crosstalk 4-core Fiber, Li Zhang, Peng Li, Jie Luo, Lei Zhang, Lei Shen, Liubo Yang, Liyan Zhang and Shuo Xu; *State Key Laboratory of Optical Fiber and Cable Manufacture Technology, China*. We report the measurement and splicing of a weakly-coupled 4-core-fiber. The average splicing loss of the fiber is 0.10dB. This paper firstly evaluate the influence of splicing to insertion loss and crosstalk.

Lushan Hall (鲁山厅), Track 6

13:30-16:00
Th3B • Measurement & imaging IX
*Presider: **Yunhe Zhao**, Shanghai Maritime University, China*

Th3B.1 • 13:30 Invited

Sensitivity of interferometric refractive index sensor effected by chromatic dispersion of aqueous sample, Rende Ma; *Qufu Normal University, China*. We measure the refractive index of aqueous solution based on hyperspectral technology, and research into the influence of their chromatic dispersion to the sensitivity of ultra-high sensitive refractive index sensors.

Th3B.2 • 13:50
Fiber-optic Michelson interferometric vibration sensing with high sensitivity and large bandwidth response, Donghui Li, Qi Li, Desheng Chen, Jian Wang, Mengyao Han and Muguang Wang; *Beijing Jiaotong University, China*. A fiber-optic Michelson interferometric vibration sensor with enlarged bandwidth and improved sensitivity is proposed and demonstrated, thanks to frequency division multiplexing and polarization diversity detection techniques.

Th3B.3 • 14:05
NO2 Scheimpflug lidar based on wavelength-switchable continuous wave external cavity diode laser, Weixuan Luo, Xiqing Peng, Qiang Ling, Zuguang Guan and Daru Chen; *Hangzhou Institute of Advanced Studies, Zhejiang Normal University, China*. We have developed a high-power laser (3 W) with a central wavelength of approximately 450 nm by using a grating external cavity modulation and applied it to the NO2 differential lidar system.

Mengshan Hall (蒙山厅), Track 4

13:30-16:00
Th3C • Optoelectronic integration VII
*Presider: **Quandong Huang**, Guangdong University of Technology, China*

Th3C.1 • 13:30 Invited

On-chip multifunctional silicon waveguide mode converters for multimode applications, Yin Xu; *Soochow University, China.* We propose multifunctional silicon waveguide mode converters based on the nonvolatile and low-loss phase change material antimony triselenide. Four mode conversions have been achieved on a single device, also supporting the programmable device function.

Th3C.2 • 13:50 Invited

Integrated spectrometer with broad operation temperature range, Ang Li; *Nanjing university of Aeronautics and Astonautics, China.*

Th3C.3 • 14:10
Self-chaotic semiconductor microlasers for random bit generation, Jin-Long Xiao, Jian-Cheng Li, Chun-Guang Ma, Yue-De Yang and Yong-Zhen Huang; *Institute of Semiconductors, Chinese Academy of Sciences, China*. Mode interaction in a microlaser has been proposed and demonstrated for realizing chaotic and period oscillation states without external perturbation, and physical random bits were obtained from the laser at the rate of 500 Gb/s.

Th3C.4 • 14:25
Polarization-insensitive 1×2 power divider on SOI, Liuwei Chen, Enge Zhang, Tongxin Yang, Shiqi Zhang, Xiaoran Zhu and Lei Zhang; *Beijing University of Posts and Telecommunications, China*. We report the design of polarization-insensitive 1×2 power dividers on SOI with 220nm top silicon. The excess losses for both the TE and TM modes at 1550 nm are < 0.1 dB .

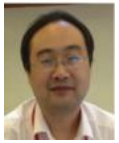
Laoshan Hall (崂山厅), Special 1

13:30-16:00
Th3D • Organic optoelectronics VII
*Presider: **Xing Fan,** Chongqing University, China; **Chao Chen**, Tsinghua University, China.*

Th3D.1 • 13:30 Invited

Flexible fabric structure integrated electronic system, Xing Fan; *Chongqing University, China*. Our research developed a series of all-solid photovoltaic energy fabrics by coating metal and oxide materials on fiber electrodes, using novel assembly techniques, which has given energy devices a high degree of structural flexibility.

Th3D.2 • 13:50 Invited



The synthesis and CPL behavior of Azahelicene, Chao Chen; *Tsinghua University, China*.

Th3D.3 • 14:10 Invited

Synthesis of electronic-grade PbS quantum dots for optoelectronic devices, Jianbing Zhang; *Huazhong University of Science and Technology, China*.

Taishan Hall (泰山厅), Track 7

13:30-16:00
Th3E • Ultrafast photonics V
*Presider: **Junqing Zhao**, Shenzhen Technology University, China*

Th3E.1 • 13:30 Invited

Frequency comb generation in microcavity filtered fiber lasers, Hualong Bao; *Soochow University, China*.

Th3E.2 • 13:50 Invited

Fast predicting the complex nonlinear dynamics of mode-locked fiber laser by a recurrent neural network with prior information feeding, Guoqing Pu; *Shanghai Jiao Tong University, China*. An RNN is proposed to realize fast and accurate mode-locked fiber laser modeling. The generalization over different cavities is achieved via prior information feeding and the AI model can infer 500 roundtrips within 0.1 s.

Th3E.3 • 14:10
Numerical and experimental investigation of quasi-coherent soliton pulses in a fiber laser, Sen Wang, Ni Feng and Renlai Zhou; *Harbin Engineering University, China*. We numerically investigate quasi-coherent soliton pulses formation in a fiber laser. Conventional solitons experience transitional breathing and collapsing regions, and gradually evolve into quasi-coherent soliton pulses. The simulation is consistent with experimental results.

VIP Room (聚贤厅), Track 2

13:30-16:00
Th3F • Optical transmission VII
*Presider: **Hu Zhang**, Beijing University of Posts and Telecommunications, China*

Th3F.1 • 13:30 Invited

Fast and Accurate Estimation of OSNR Penalty Overcome impairment Due to Distributed PDL in Optical Fiber Communication Systems, Nan Cui; *Beijing University of Posts and Telecommunications, China*. We offer a method to fast estimation of OSNR penalty due to distributed PDL in optical fiber links.

Th3F.8 • 13:50 Invited

Advanced direct detection systems for short-reach optical interconnects, Xueyang Li, *Peng Cheng Laboratory, China.* We review recent progress in advanced direct detection systems utilizing phase-, polarization-, and space-diversity for high-speed short-reach optical interconnects.

Th3F.2 • 14:10
Statistical properties of modal dispersion in multiple-mode fibers, Xinran Zhu, Xiaoxiao Liu, Xia Zhang and Zhenshan Yang; *Liaocheng University, China.* Using a statistical model based on the density-matrix formalism, we study the probability distribution and frequency correlation functions of modal dispersion in multiple-mode fibers. The results verify the validity and effectiveness of the density-matrix formalism.

Th3F.3 • 14:25
Meta-learning Accelerated Bi-LSTM for Fiber Nonlinearity Compensation, Xuecheng Ren, Jiaming Liu, Xiatao Huang, Qianwu Zhang, Jing Zhang and Kun Qiu; *University of Electronic Science and Technology of China*. We propose a meta-learning accelerated Bi-LSTM algorithm for fiber nonlinearity equalization by saving training time with different launch power. The proposed algorithm obtains 0.7 dB Q-factor gain compared to DBP and 81.25% complexity reduction.

Yishan Hall (沂山厅), Track 1

Th3A.4 • 14:25
Highly Dispersive Fiber with Two Graded-Index Concentric Cores, Qinru Peng, Wenpu Geng, Wenqian Zhao, Yuanpeng Liu, Zhongqi Pan and Yang Yue; *Xi'an Jiaotong University, China*. A highly dispersive fiber with two graded-index concentric cores is proposed with -34948 ps/(nm · km) chromatic dispersion at 1480 nm. The influence of structural and material parameters on dispersion of the fundamental mode are further discussed.

Th3A.5 • 14:40
Doughnut-shaped mode generation and decomposition based on all-fiber mode selective coupler, Siyan Wang, Huihui Zhao and Xianglong Zeng; *Shanghai University, China*. We demonstrate a doughnut-shaped mode formation with polarization control in a polarization-maintaining fiber. The proposed mode selective couplers act as efficient mode converters to produce spectrally insensitive high-order modes at the visible wavelengths.

Th3A.6 • 14:55
Mutual influences of modal dispersion and mode-dependent loss in multiple-mode fibers, Xiaoxiao Liu, Xia Zhang and Zhenshan Yang; *Liaocheng University, China.* We construct a statistical model of modal dispersion and mode-dependent loss based on the density-matrix formalism，and employ it to study the mutual influences of modal dispersion and mode-dependent loss in a 4-mode fiber.

Th3A.7 • 15:10
Modeling analysis of the temperature transfer of OPGW under ice coating, Xuan Li, Xuebin Feng, Weiwei Dou and Wu Jian; *China Electric Power Research Institute, China*. In this paper, the temperature transfer of OPGW under ice coating is analyzed by finite-element method. The simulation results provide a basis for the theoretical study of fiber optic cable icing.

Lushan Hall (鲁山厅), Track 6

Th3B.4 • 14:20
Temperature insensitive pressure sensor based on a novel cascaded all-fiber structure, Yao Chen, Qiang Ling, Yunlian Ding, Zhangwei Yu, Si Luo and Daru Chen; *Zhejiang Normal University, China*. We have proposed a fiber-optic gas pressure sensor based on the Mach-Zehnder interference with a novel cascaded all-fiber structure. It has a gas pressure sensitivity of 1 nm/MPa and a very low temperature crosstalk.

Th3B.5 • 14:35
Beam intensity shaping with a 3D printed on-fiber microlens, Zhuorong Li, Dejun Liu, Yalong Tai, Liqing Jing, Jiaqi Wang, Cailing Fu, Yiping Wang and Changrui Liao; *Shenzhen University, China.* Spatial beam intensity shaping is highly significant in various applications, including laser fabrication and medical treatment. In this study we present a new method for doughnut beam shaping using a 3D nanoprinted microlens on fiber tip.

Th3B.6 • 14:50
High-Quality Bragg Gratings fabricated by femtosecond laser in Planar lightwave Circuit Chip, Jiajun Guan, Zhihao Cai and Changrui Liao; *Shenzhen University, China.* This paper utilizes femtosecond laser direct writing to fabricate high reflectivity (~ 99.999%) and low insertion loss (~ 0.28dB) Bragg gratings in planar lightwave circuit chip.

Th3B.7 • 15:05
Hot-wire anemometer using cobalt-doped fiber based grating Fabry-Perot interferometer, Ying Lin, Yuhan Tang, Pengbai Xu, Xinyong Dong, *Guangdong University of Technology, China*. A hot-wire anemometer using cobalt-doped fiber based grating Fabry-Perot interferometer is demonstrated with a high sensitivity of 1.32 nm/(m/s) at wind speed of 0.1 m/s.

Mengshan Hall (蒙山厅), Track 4

Th3C.5 • 14:40
Design of a high speed directly modulated laser with high output power, Xiang Ma, Shaobo Li, Wenqi Yu, Yuedi Di, Xiaodong Liang and Hefei Qi; *The 54th Research Institute of China Electronics Technology Group Corporation, China*. We propose and design a three-active-section distributed feedback (TAS-DFB) laser utilizing photo-photo resonance to enhance the modulation bandwidth about 55GHz based on optical feedback from an active waveguide, which simultaneously contributes to higher output power.

Th3C.6 • 14:55
Energy-efficient variable optical attenuator on SOI with folded waveguides and heaters, Shiqi Zhang, Tongxin Yang, Xiaoran Zhu, Enge Zhang, Liuwei Chen, Zilong Liu, Xu Yang, Xiuli Fu and Lei Zhang; *Beijing University of Posts and Telecommunications, China*. A variable optical attenuator with folded silicon waveguides and TiW heaters to improve thermal efficiency. The extinction ratio is 20.4 dB with power of 10.2 mW. The rise and fall times are 17.2,17.55 μs.

Th3C.7 • 15:10
12.14Gb/s Si-substrated GaN/InGaN-based Micro-Photo-detector Array With V-pit Structure, Zengyi Xu, Zhiteng Luo, Xianhao Lin, Chao Shen, Xiaolan Wang, Jianli Zhang, Guangxu Wang, Fengyi Jiang and Nan Chi; *Fudan University, China*. In this paper we proposed a photodetector using GaN/InGaN-based multi-quantum well micro-LED fabricated on Si-substrate. It yields 12.14 Gb/s data rate in our experiment, which is the highest record for GaN-based micro-PD.

Th3C.8 • 15:25
Broadband Polarization-Insensitive Metalenses with High Focusing Efficiency Based on Inverse Design, Junjing Huang, Enge Zhang, Lei Zhang, Xiaofeng Duan, Kai Liu, Yongqing Huang and Xiaomin Ren; *BUPT, China*. We propose a broadband metalens that is polarization-insensitive and has high focusing efficiency at 1270-2000nm. The maximum focusing efficiency of the metalens is 70.7% and the average FWHM is 0.5526μm.

Laoshan Hall (崂山厅), Special 1

Th3D.4 • 14:30 Invited

Highly efficient ultraviolet organic light-emitting diodes, Xiaowen Zhang; *Guilin University of Electronic Technology, China.*

Th3D.5 • 14:50 Invited

Optoelectronic Devices for human health signal detection and visualization, Guijun Li; *Shenzhen University, China*.

Th3D.6 • 15:10 Invited

Thermo-optic switch based on polymer waveguide, Xibin Wang; *Jilin University, China*.

Th3D.7 • 15:30

Polymerized small molecular TADF emitters,

Yunjiao Ding; *Yunnan University, China*.

Taishan Hall (泰山厅), Track 7

Th3E.4 • 14:25

Fiber Nonlinear Effects Compensation by Using Multi-head Self-attention Bi-LSTM, Xiaoqian Feng, Zili Fang, Xinzhi Yang, Lixia Xi and Wenbo Zhang; *Beijing University of Posts and Telecommunications, China*. A bi-directional long short-term memory neural network based nonlinear equalizer with multi-head self-attention mechanism is proposed. The Q-factors of single-channel and 5-channel 130Gbaud dual-polarization fiber-optics communication systems are improved by 0.75dB and 0.68dB, respectively.

Th3E.5 • 14:40

A Neural Networks Nonlinear equalizer based on Volterra Series Transfer Function, Chao Gao, Lixia Xi, Danyang Li, Peiyun Ge and Wenbo Zhang; *Beijing University of posts and Telecommunications, China*. We propose a nonlinear equalizer using neural networks based on Volterra series transfer function(VSTF). Input power was improved by 3dB. Compared to VSTF and DBP, the calculation complexity are reduced by 79.34% and 84.44%.

Th3E.6 • 14:55

Microring Modulators Based Optical Matrix-matrix Multiplication Accelerators, Weiwei Pan, Jinhua Chen, Ruoyun Yao, Zhangwan Peng, Wanshu Xiong and Chen Ji; *Zhejiang University, China*. We propose and simulate a highly parallel, scalable and compact optical neural network accelerator which is able to perform matrix-matrix multiplication based on the microring modulators. Simulation results confirm its feasibility for matrix-matrix multiplication.

VIP Room (聚贤厅), Track 2

Th3F.4 • 14:40

Spectral modeling of optical-domain-equalization shaped wavelength selective switches for filtering penalty suppression and experimental validation, Yuting Du, Wenbo Yu, Yuan Lu, Hu Shi, Xiao Chen and Zhenhua Feng; *ZTE Corporation, China*. An accurate model for optical domain equalization is proposed and verified with experiments. The modeled spectra fit well with measured curves, and prediction accuracy is better than 0.2 dB if used for filtering penalty estimation.

Th3F.5 • 14:55

A Conditional Generative Adversarial Network aided Few-mode Fiber Channel Modeling for large-capacity optical fiber communication, Mengzhu Yuan, Huan Chang, Ming Ma, Ran Gao, Fei Wang, Qi Zhang, Dong Guo, Zhipei Li, Fu Wang and Xin Huang; *Beijing Institute of Technology, China.* In this paper, a conditional generative adversarial network aided channel modeling technique is proposed.

Th3F.6 • 15:10

Photonic Reservoir Computing Based on Reflective Semiconductor Optical Amplifier, Xiaoyu Li, Ning Jiang, Yongsheng Cao, Gang Hu and Kun Qiu; *University of Electronic Science and Technology of China, China*. We propose a time-delayed photonic reservoir computing structure utilizing a reflective semiconductor optical amplifier.

Th3F.7 • 15:25

Fast Power Tilt Estimation for Dynamic C+L-Band Links after Fiber Cut, Yu Wang, Yuchen Song, Lifang Zhang, Shengsheng Sha, Yaguang Zhi, Zhengsi Shi and Danshi Wang; *The Intelligent Network Innovation Center of China Unicom, China.* This paper finds that C-band channels plays a more important role in fiber cut scenarios and derives a simple metric for estimation of power tilt after sudden fiber cut in C+L-band transmission systems.

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