Workshop 1: AI-based Optics

Workshop 2: Photonics for 6G: How and when?

Workshop 3: Security Solutions Enabled by Physics in Fiber

Workshop 4: Marriage between artificial intelligence and micro-/nano-photonics: happy or not?

Workshop 5: Workshop on Information Functional Materials and Devices

Workshop 6: Multiple Band Optical Communications and Networking

Workshop 7: Special Light Communications

Workshop 8: Data Center Optic Interconnection

Workshop 9: Wireless Optical Communication and Networking

Workshop 10: Workshop on Space Division Multiplexing Communication System

Workshop 11: Short-reach applications: Current status, Trend and Demand

Workshop 12: Photonics Research Workshop: Next-generation silicon photonics

Industry Forum

Workshop and Forums

Workshop 1: AI-based Optics
Workshop Time: 14:00-17:30, Saturday, 24 October
Venue: Conference 12, 3F
Organizer
Alan P.K. Lau, The Hong Kong Polytechnic University, China
Co-organizers
Qunbi Zhuge, Shanghai Jiao Tong University, China

Description: Machine learning (ML) has been widely investigated for both optical transmissions (equalization, coding, telemetry, etc.) and optical networks (modeling, resource allocation, optimization, failure management, etc.). Many interesting research works are reported for various applications. Nevertheless, the adoption of ML techniques in commercial systems falls behind due to many practical issues. In this workshop, we invite speakers from universities, vendors and operators to discuss about the key question: what else is needed for full adoption of ML? The discussions will focus on three aspects: 1) the technological and commercial issues which limit the adoption of ML, 2) the path to address these issues to advance the adoption, and 3) the corresponding roadmap. We will also discuss about open data sources and projects for the community to achieve faster progress in developing and adopting ML-aided applications.
Speakers:
Part 1, Presider Qunbi Zhuge
14:00-14:15 Jianqiang Li, Alibaba, USA
14:15-14:30 Zuqing Zhu, University of Science and Technology of China, China
14:30-14:45 Miquel Garrich, Huawei, France
14:45-15:00 Danshi Wang, BUPT, China
15:00-15:30 Panel discussion
15:30-16:00 Coffee break

Part 2, Presider Alan Pak Tao Lau
16:00-16:15 Qian Hu, China Telecom, China
16:15-16:30 Massimo Tornatore, Politecnico di Milano
16:30-16:45 Pesic Jelena, Nokia Bell Labs, France
16:45-17:00 Vittorio Curri, Politecnico di Torino, Italy
17:00-17:30 Panel discussion

Workshop 2: Photonics for 6G: How and when?
Workshop Time: 9:00-11:50, Saturday, 24 October
Venue: Conference 12, 3F
Organizer
Chao Shen, KAUST, Saudi Arabia
Co-organizers
Zhenming Yu, Beijing University of Posts and Telecommunications, China

Description: With the commercialization of 5G, 6G has gradually entered planning. However, Moore's Law is gradually coming to an end. Full-spectrum mobile communication technology will be applied in 6G. Traditional electronic methods are becoming difficult to meet the demands. In this era of photonic information, the entire signal processing chain of wireless communication is gradually migrating to the optical domain. The asynchronous wireless technology platform will be a photon-defined radio system integrating microwave photonic technology, optical computing and photon AI. According to current research, the continuous wireless technology platform defined by photon can well adapt to the future 6G vision, such as application scenarios, key technologies and system architectures. Coherent radio-over-fiber (CROF), Integrated microwave photonics (IMWP), Photonic digital signal processing (PDSP), and Optical frequency comb (OFC) are expected to lead the design of future radio systems and sensing systems. This workshop aims to provide a forum for international experts to present and discuss the visions and perspectives of photonics for 6G including recent progresses and future prospects and challenges for applications. We welcome people of relevant interest to attend and join the discussions.

Speakers:

Presider: Chao Shen, KAUST, Saudi Arabia

09:00-09:20 Prof. Changyuan Yu, Hong Kong Polytechnic University, China

09:20-09:40 Prof. Hongyan Fu, Tsinghua-Berkeley Shenzhen Institute, China

09:40-10:00 Dr. Kozlov, Lightcounting Corp, China

10:00-10:20 Prof. Qinggui Tan, Xi'an Branch of China Academy of Space Technology, China

10:20-10:30 Coffee break

10:30-10:50 Prof. Wu Ben, Rowan University, USA

10:50-11:10 Prof. Boon S. Ooi, King Abdullah University of Science and Technology (KAUST), South Korea

11:10-11:30 Prof. Jing Zhang, University of Electronic Science and Technology of China, China

11:30-11:50 Prof. Weiwei, Beijing Institute of Technology, China

Workshop 3: Security Solutions Enabled by Physics in Fiber

Workshop Time: 08:30–12:00, Saturday, 24 October

Venue: Conference 10, 3F

Presider:

Lilin Yi, Shanghai Jiao Tong University, China

Wei Chen, University of Science and Technology of China, China

Chairs:

Reza Nejabati, University of Bristol, UK

Lilin Yi, Shanghai Jiao Tong University, China

Wei Chen, University of Science and Technology of China, China

Yongli Zhao, Beijing University of Posts and Telecommunications, China

Description:

With the development of information technology and quantum computers, the network security issue is increasingly prominent, and a series of threatens exist in the underlying optical networks. At present, there exists two research topics on security in optical networks: one is optical fiber

physical layer security, and the other is quantum key distribution. For the former, different solutions such as noise-encrypted optical communication, chaotic based optical communication, spectrum-spread optical communication, hidden based optical communication, and frequency-hopping optical communication can be adopted, which have been experiencing a period of fast development. For the later, the research focus was on point-to-point quantum key distribution system, aiming to improve the generation rate of quantum key, reduce the quantum bit error rate, and increase the quantum key transmission distance. However, it is an urgent need for the deployment of multi-point interconnection for practical applications. This workshop mainly focuses on the above two research topics and their bottleneck issues. By discussing the latest progresses, research directions as well as possible solutions, we try to fundamentally enhance the network security in the future.

Session 1: Physical Layer Security

Presider:

Lilin Yi, Shanghai Jiao Tong University, China

Speakers:

08:30-08:35 Opening

08:35-08:50 Anbang Wang, Taiyuan University of Technology, China

Topic: Chaotic key distribution

08:50-09:05 Lei Deng, Huazhong University of Science and Technology, China

Topic: High speed physical layer security

09:05-09:20 Xuelin Yang, Shanghai Jiao Tong University, China

Topic: High speed and long distance random key distribution

09:20-09:35 Tao Pu, PLA Army Engineering University, China

Topic: The Security Analysis and Realization of Quantum stream Cipher physical-layer encryption System

09:35-09:50 Yajie Li, Beijing University of Posts and Telecommunications, China

Topic: Physical layer key generation: feature extraction and post-processing protocol

9:50:00-10:20 Coffee Break

Session 2: Quantum Communications and Networks

Presider:

Wei Chen, University of Science and Technology of China, China

Speakers:

10:20-10:35 Zhenqiang Yin, University of Science and Technology of China

Topic: Recent progresses on long-distance quantum key distribution

10:35-10:50 Yongmei Sun, Beijing University of Posts and Telecommunications, China

Topic: Low-noise Wavelength Assignment in Hybrid DV-QKD and DWDM Optical Networks

10:50-11:05 Zhangchao Ma, Beijing University of Science and Technology, China

Topic: Quantum key distribution networking technology and its standardization

11:05-11:20 Masahiro Takeoka, National Institute of Information and Communications Technology

Topic: Quantum key distribution network technologies toward quantum secure cloud

11:20-11:35 Yi Qian, Wuhan Research Institute of Posts and Telecommunications, China

Topic: Practical quantum key distribution powered by silicon photonics

11:35-11:50 Xiaosong Yu, Beijing University of Posts and Telecommunications, China

Topic: Optional Design and Optimization for Quantum Key Distribution Optical Networks (QKD-ON)

Workshop 4: Marriage between artificial intelligence and micro-/nano-photonics: happy or not?
Workshop Time: 08:30–18:00, Saturday, 24 October
Venue: Conference 16, 3F
Organizer
Hongbo Sun, Tsinghua University, China
Co-organizers
Mable P. Fok, University of Georgia, USA
Honghua Fang, Tsinghua University, China
Qiming Zhang, University of Shanghai for Science and Technology, China
Lili Gui, Beijing University of Posts and Telecommunications, China

Description: Emerging artificial intelligence algorithms have found wide-spread and successful applications in machine vision, speech and pattern recognition, etc. With the difficulties of fabricating more and more integrated electronic components, the performances of the algorithms have been meeting their limitations, determined by Moore's law and Von Neumann architecture. Neuromorphic computing and optical neural networks enabled by integrated photonics, however, could offer advantages of high speed and low consumption. Presently, the optical computing hardware is highly unexplored yet and awaits more researches. Development of novel materials, design methods, integrated chips, and training procedures is the key for more powerful functionalities in smart applications.
The aim of this workshop is to bring together leading experts in both nanophotonics and artificial intelligence algorithms to discuss the latest advances and challenges in this field. On the one hand, exploring materials and integrated photonic chips helps the construction of optical neuromorphic computing hardware. On the other hand, machine learning enables more intelligent design of nanophotonic devices with better performances, which could further improve optical systems for diverse applications including optical computing, sensing, communications, etc.
The workshop will cover specifically the following main topics:
1. Integrated photonics for optical neuromorphic computing
2. Intelligent algorithms for designing smart nanophotonic devices and optical systems
3. Volatile and nonvolatile materials for optical computing
4. Challenges in upscaling and training of optical neuromorphic computing

Morning Session
Presider: Lili Gui, Mable P. Fok
Speakers:
8:30-8:35 Opening
8:35-9:05 Bhavin J. Shastri, Queen's University, Canada
Topics: Silicon photonics for AI and neuromorphic computing
9:05-9:35 Yuebing Zheng, The University of Texas at Austin, USA
Topic: Inverse design of photonic nanostructures with a deep convolutional mixture density network

9:35-10:05 Keisuke Kojima, Mitsubishi Electric Research Laboratories, USA
Topic: Inverse Design of Nanophotonic Devices using Deep Neural Networks
10:05-10:30 Coffee Break
10:30-11:00 Richard Haglund, Vanderbilt University, USA
Topic: Enhancing device functionality using phase-changing quantum materials
11:00-11:30 Yichen Shen, Lightelligence, USA
Topic: Integrated Photonics for Machine Learning Applications
11:30-12:00 Alexandra Boltasseva, Purdue University, USA
Topic: Machine Learning Assisted Photonics

Afternoon Session
Presider: Honghua Fang, Qiming Zhang
Speakers:
14:00-14:30 Lin Yang, Institute of Semiconductors, CAS, China
Topic: Silicon-based optical matrix processor
14:30-15:00 Andrew Forbes, University of the Witwatersrand, Wits, South Africa
Topic: Structured light gets intelligent
15:00-15:30 Zengguang Cheng, Fudan University, China
Topic: Chalcogenide phase-change materials for future photonic memory and computing
15:30-16:00 Coffee Break
16:00-16:30 Xing Lin, Tsinghua University, China
Topic: Artificial Intelligence Accelerator using Optoelectronic Computing
16:30-17:00 Chao Qian, Zhejiang University, China
Topic: Intelligent invisibility cloak without human intervention
17:00-17:30 Li Gao, Nanjing University of Posts and Telecommunications, China
Topics: Deep neural network for accurate, multifunctional nanophotonic design
17:30-18:00 Cuicui Lu, Beijing Institute of Technology, China
Topic: Intelligent algorithms: new avenues for designing nanophotonic devices

Workshop 5: Information Functional Materials and Devices
Workshop Time: 9:00-11:30, Saturday, 24 October
Venue: Conference 05, 2F
Workshop Organizer：
Sishen Xie, Institute of Physics CAS, China
Weihua Tang, Beijing University of Posts and Telecommunications, China
Jianhua Hao, The Hong Kong Polytechnic University, Hong Kong, China
Ting-Chang Chang, National Sun Yat-sen University, China
Qixin Guo, Saga University, Japan
Presider: Wu Zhenping
Description: Information functional materials are expected to lead to the major future breakthroughs in electronics, photonics and energetics. This workshop focuses on novel functional materials and nanostructures in combination with modern information devices, as well as on the physics of new devices and sensors, nanostructured materials and nano-scaled device

characterization. It aims to bring together leading researchers to exchange and share their experiences and research results on all aspects of Information Functional Materials and Devices. It also provides a premier interdisciplinary platform for researchers to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of Information Functional Materials and Devices

Speakers:

9:00-9:20 Zhou Shifeng, South China University of Technology

Topic: Multimaterials fiber and device

9:20-9:40 Guo Erjia, Institute of Physics, China Academy of Science

Topic: Spin-lattice entanglement in the oxide-based multiferroic devices

9:40-10:00 Huang Wen, University of Electronic Science and Technology of China

Topic: Surface plasmon polariton enhanced 2d-material photodetector for inferred application

10:00-10:30 Coffee break

10:30-10:50 Zhang Yang, Nankai University

Topic: Field-induced smart phosphors and their applications

10:50-11:10 Bai Gongxun, China Jiliang University

Topic: Luminescence modulation of lanthanide ions doped photonic materials

11:10-11:30 Wu Zhenping, Beijing University of Posts and Telecommunications

Topic: Phase control of Ga2O3 film and its optoelectronic application

Workshop 6: Multiple Band Optical Communications and Networking

Workshop Time: 9:00-12:00, Saturday, 24 October

Venue: Conference 09, 3F

Organizer

Gangxiang Shen, Soochow University, Suzhou, China

Co-organizers

Vittorio Curri, Politecnico di Torino, Italy

Liangjia Zong, Huawei Technology, China

Antonio Napoli, Infinera, Germany

Description: In fiber-optic communication systems and networks, transmission technologies based on the conventional C-band standard single-mode fiber (SSMF) have approached the transmission capacity limit. However, the remaining bandwidth from the low-loss window of the SSMF is still abundant, up to 400 nm. To explore this potential capacity, fiber-optic communication systems based on multi-band wavelength division multiplexing (WDM) have been gathering increasing attentions. With the extension of spectra from the widely adopted C and L bands to additional bands including O, E, S, and U bands, a multi-band fiber-optic transmission system can be realized with an ultra-high spectrum efficiency, so as to cope with the rapid increase of data traffic. This workshop will focus on the key technical aspects that enable the full utilization of these multi-bands. The industrial status, system issues, and technical challenges in realizing such a multi-band optical transmission system will be presented and discussed. Also, new developed multi-band optical devices, such as photonic integrated wavelength selective switches (WSSs), fiber optical amplifiers supporting different or multiple bands in addition to the C band, etc., will be introduced. Other related technologies and open questions will also be discussed in this workshop.

Speakers:

Presider: Prof. Gangxiang Shen

09:00-09:20 Chao Lu, The Hong Kong Polytechnic University, China

Topic: Challenges in Realizing Multi-band Transmission

09:20-09:40 Ning Deng, Huawei Technologies Co., Ltd., China

Topic: Multi-band Optical System: Industry Status, System Issues, and Technical Challenges

09:40-10:00 Nicola Calabretta, Eindhoven University of Technology, Netherlands

Topic: Multi Band Photonic Integrated Wavelength Selective Switches

10:00-10:30 Coffee Break

10:30-10:50 Andrea D'Amico, Polytechnic University of Turin, Italy

10:50-11:10 Wladek Forysiak, Aston University, UK

Topic: Recent advances in Raman amplifiers for ultra-wideband transmission systems

11:10-11:30 Mingyi Gao, Soochow University, China

Topic: Application and Challenges of Broadband Fiber Optical Parametric Amplifiers on Multiple Band Optical Communications

11:30-11:50 Guanshi Qin, Jilin University, China

Topic: Wideband Optical Amplification in Newly-developed Tellurite Fibers

11:50-12:00 Conclusion and Discussion

Workshop 7: Wireless Optical Communication in 6G: Challenges, and Prospects

Workshop Time: 14:00-17:20, Saturday, 24 October

Venue: Conference 10, 3F

Workshop Chairs

Gong-Ru Lin, National Taiwan University, China

Boon S Ooi, King Abdullah University of Science and Technology (KAUST), Saudi Arabia

Nan Chi, Fudan University, China

Description: Following the commercial deployment of 5G at the end of 2019, research efforts on 6G are now expended in different countries and organizations. 6G networks are supposed to provide better performances than 5G and satisfy emerging services for Industry 4.0, personalized health, virtual presence, and other challenging applications. Accordingly, it would be necessary to explore different frequency sources to solve the problem of the scarce spectrum, such as wireless optical communication (WOC). WOC, exploiting the spectrum from terahertz to ultraviolet, employs unlicensed bands and high-transmission rates. Correspondingly, it is a promising candidate for short/medium range high-speed wireless communication. Several key research challenges have emerged within the WOC domain, including high data rates, physical layer security, resource allocation, machine-to-machine, underwater links, system network topologies, front-end design and novel photonic material. The proposed special issue will provide an opportunity for a thorough assessment of the current state of WOC across numerous applications, helping to develop the state-of-the-art.

Speakers:

Presider: Prof. Nan Chi

14:00-14:20 Prof. Zabih Ghassemlooy, Dept. EE of Northumbria University, UK

Topic: Laser Diode based FSO/OWC
14:20-14:40 Prof. Bin Liu, Nanjing University, China
14:40-15:00 Prof. Chi-Wai Chow, Dept. Photonics of National Chiao-Tung University, China
Topic: WDM LD VLC/OWC
15:00-15:20 Prof. Chao Zhao, CAS (China) & RWTH Aachen/Forschungszentrum (Germany)
Topic: High-speed visible optoelectronics on unconventional substrate
15:20-15:40 Dr. Rami Elagandy, Yale, USA
Topic: high-speed visible VCSEL
15:40-16:00: Coffee Break
16:00-16:20 Dr. Jorge Holguin Lerma, Yale USA
Topic: high-speed DFB laser for VLC
16:20-16:40 Prof. Chao-Hsin Wu, Grad. Photonics of National Taiwan University
Topic: ULED for OWC data transmission
16:40-17:00 Dr. Xiaobin Sun, Fraunhofer, Scotland
Topic: Deployment of water-air optical communication systems
17:00-17:20 Prof. Hsin-Mu Tsai, Dept. Computer Sci. of National Taiwan University, China
Topic: LED Vehicular Networking VLC

Workshop 8: Data Center Optic Interconnection
Workshop Time: 14:00-18:10, Saturday, 24 October
Venue: Conference 11, 3F
Organizer
Chao Lu, The Hong Kong Polytechnic University, China
Co-organizers
Zhaohui Li, Sun Yat-sen University, China
Deming Liu, Huazhong University of Science and Technology, China
Bingli Guo, Beijing University of Posts and Telecommunications, China

Description: The projected increase in capacity, processing power and bandwidth density in data center environments must be addressed by the migration of high-density optical interconnect into the datacom and computercom communication scenario. This workshop will therefore consider the optical technologies required to support the migration of short and long reach optical interconnect technology deployed in telecom system into datacom/computercom systems and the resulting architectural advancements that can be opened up in data center environments. In more detail, this workshop covers the following topics: requirement and challenge for T bit/s optical interconnect and its technology option, AI enabled FEC and equalization approach, application requirements and interconnect architectures at from system level.
Speakers:
14:00-14:30 Chongjin Xie, Alibaba Group
Topic: Tb optical interconnect technologies
14:30-15:00 Wen Zhou, Fudan University
Topic: 1Tb/s four-lane O-band IM/DD system for data center interconnection
15:00-15:30 Fan Li, Sun Yat-sen University

Topic: Beyond 100 Gbit/s Inter-Data Center Interconnect (Inter-DCI) with Direct Detection

15:30-15:40 Coffee break

15:40-16:10 Xiaogeng Xu, Hisilicon OE

Topic: The challenge of short reach optical transmission

16:10-16:40 Gangxiang Shen, Soochow University

Topic: Energy-efficent virtual data center embedding

16:40-17:10 Chuanchuan Yang, Peking University

Topic: Adaptive Neural Network-based Equalizer via Online Semi-supervised Learning

17:10-17:40 Qinghua Tian, Beijing University of Post and Telecommunications

Topic: Application of Machine Learning Techniques for Error Correction Codes

17:40-18:10 Zhongwei Tan, Hong Kong Polytechnic University

Topic: Simplified Coherent Optical Communication Systems for Data Center Interconnections

Workshop 9: Wireless Optical Communication and Networking

Workshop Time: 09:00–12:00, Saturday, 24 October

Venue: Conference 11, 3F

Presider: Hui Yang, Beijing University of Posts and Telecommunications, China

Chairs:

Lei Guo, Chongqing University of Posts and Telecommunications, China

Tianshu Wang, Changchun University of Science and Technology, China

Li Zeng, Huawei Technology, China

Hui Yang, Beijing University of Posts and Telecommunications, China

Description:

Wireless optical communication, ranging from Fiber-Wireless (FiWi), Free Space Optics (FSO), Radio over Fiber (RoF), et al, combines the advantages of both wireless and optical domains for flexible and high-speed data transmission. In this workshop, we focus on the recent progress in wireless optical communication and networking. The advent of 5G and B5G drives the convergence of optical network and wireless network into a new chapter. The new and efficient solutions to network architecture, deployment and resource allocation are expected for the network convergence towards 5G and beyond. As enabling techniques for wireless optical communication, RoF, FSO and Radio over FSO are also attracting ever-increasing attentions. However, many challenging issues such as mobility, reliability and networking remain unsolved and are worth of more research efforts. From the workshop, we aim to introduce more innovative ideas, insightful viewpoints and research opportunities to wireless optical communication and networking.

Speakers:

09:00-09:10 Opening

09:10-09:35 Chathurika Ranaweera, Deakin University, Melbourne, Australia
Topic: Optical and Wireless Convergence for 5G and Beyond Networks

09:35-10:00 Jiahao Huo, University of Science & Technology Beijing, China

Topic: Experimental Demonstration of 80 Gbaud PAM4 Signal Transmission Over 500 m SSMF in an 18 GHz IM/DD system

10:00-10:20 Coffee Break

10:20-10:45 Pham Tien Dat, National Institute of Information and Communications Technology, Tokyo, Japan
Topic: RoF/RoFSO Systems for Ultra-Dense Small Cells in B5G

10:45-11:10 Yejun Liu, Chongqing University of Posts and Telecommunications, China
Topic: Cooperative Free-Space Optical Communications

11:10-11:35 Mohamed-Slim Alouini, King Abdullah University of Science and Technology (KAUST), Saudi Arabia
Topic: On the Potential of Airborne Base Stations with Laser-Powered UAVs

11:35-12:00 Muhammad Bashir Salman, King Abdullah University of Science and Technology (KAUST), Saudi Arabia
Topic: Signal Acquisition and Tracking with Photon-Counting Detector Arrays in Free-Space Optical Communications

Workshop 10: Workshop on Space Division Multiplexing Communication System

Workshop Time: 8:30-17:10, Saturday, 24 October

Venue: Conference 08, 3F

Organizer

Zhaohui Li, Sun-Yat Sen University, China

Co-organizers

Xiaocong Yuan, Shenzhen University, China

Siyuan Yu, Sun-Yat Sen University, China

Guifang Li, University of Central Florida, USA

Description: The capacity of existing standard single-mode fiber is approaching its fundamental limit, due to the fiber nonlinearity, fiber fuse and bandwidth limitation of available optical amplifiers. As a promising solution to enlarge the transmission capacity of optical communication, space division multiplexing (SDM) has attracted much attention in the last decade. In order to move SDM forward to the practical applications, there are still many issues should be considered. The following topics will be covered in this forum:

- Design methods of SDM fibers and SDM fiber-based transmission.
- Advanced SDM optical amplifiers: recent progresses and the potential future impact.
- SDM peripheral devices, such as mode converters, mode (de)multiplexers, mode filters, mode switch and so on.
- Novel modes (OAM/CVB) supporting fiber-based transmission.
- High-dimensional quantum communication: recent progresses and challenges.

Speakers:

Section I: Space division multiplexing devices

Presider: Jiajing Tu, Jinan University

09:00-09:20 Kunimasa Saitoh, Hokkaido University, Japan
Topic: Reduction of Group Delay Spread in Coupled Multicore Fibers

09:20-09:40 Kin Seng Chiang, City University of Hong Kong, China
Topic: Polymer optical waveguide platform for the development of mode-controlling devices

09:40-10:00 Jiajing Tu, Jinan University

Topic: Dense space division multiplexing fiber design for orbital angular momentum modes transmission

10:00-10:20 Jiangbing Du, Shanghai Jiao Tong University, China

Topic: Improved MDM fiber link by inverse design

10:20-10:40 Coffee Break

10:40-11:00 Ting Lei, Shenzhen University,China

Topic: Liquid crystal photonics enabled mode division multiplexing optical communication towards datacenter applications

11:00-11:20 Yujie Chen, Sun Yat-sen University, China

Topic: Integrated mode sorters for optical vortex communications

11:20-11:40 Ke Xu, Harbin Institute of Technology, Shenzhen, China

Topic: Photonic integrated components and circuits for on-chip mode division multiplexing

11:40-12:10 Panel Discussion

Section II: Space division multiplexing system

Presider: Jianping Li, Guangdong University of Technology

14:00-14:20 Yunfeng Huang, University of Science and Technology of China, China

Topic: Distribution of high-dimensional orbital angular momentum entanglement over a 1 km few-mode fiber

14:20-14:40 Jian Wang, Huazhong University of Science and Technology, China

Topic: MIMO-Less Space-Division Multiplexing Fiber-Optic Communications using Diverse Spatial Modes

14:40-15:00, Jie Liu, Sun Yat-sen University, China

Topic: Study on mode division multiplexed optical fibre communications using orbital angular momentum modes

15:00-15:20 Jianping Li, Guangdong University of Technology, China

Topic: Vector-mode-multiplexing based transmission over few-mode fiber

15:20-15:40 Coffee Break

15:40-16:00 Davide Bacco, Technical University of Denmark, Denmark

Topic: Multidimensional fibre based quantum communication

16:00-16:20 Andrew Forbes, University of the Witwatersrand

Topic: Classical and quantum communication with structured light

16:20-16:40 Yongmin Jung, University of Southampton, UK

Topic: Optical amplifier and component technologies for successful SDM transmission

16:40-17:00 Takayuki Mizuno, NTT Network Innovation Laboratories

Topic: Recent progress in SDM transmission

17:00-17:30 Panel Discussion

Workshop 11: Short-reach applications: Current status, Trend and Demand

Workshop Time: 08:30-12:00, Saturday, 24 October

Venue: Conference 15, 3F

Organizer

Fan Zhang, Peking University, China

Co-organizers
William Shieh, University of Melbourne, Australia
Jiajia Chen, Chalmers University of Technology, Sweden

Description: The rapid development of data centre interconnection and 5G applications drives short-reach optical transmission technology to high-speed and high capacity. This workshop will cover the most important technologies and the current status of short-reach applications, and also try to discuss the future trend in this field. The topics will cover advanced fibres for short distance communication, Short-reach applications in 5G X-haul, coherent VS. direct detection in data centre interconnect, advanced detection schemes such as Kramers-Kronig, self-homodyne, and carrier assisted differential detection, machine-learning VS digital signal processing, advanced techniques for free-space optical communication, ultra-high baud rate operation, optical comb, and optical single-side band signalling.
Speakers:
Presider: Fan Zhang, Peking University, China
8:30-8.45 Xiang Liu, Futurewei Technologies, USA
Topic: Short-reach applications in 5G X-haul
8:45-9:00 Xiang Zhou, Google, USA
Topic: Coherent communication for data centre
9:00-9:15 Ming-jun Li, Corning, USA
Topic: Advanced fibers for short distance communication
9:15-9:30 Di Che, Bell Labs, USA
Topic: ultra-high baud rate transmission: approaching to data rate limit for short reach
9:30-9:45 Hoon Kim, KAIST, South Korea
Topic: Optical single side-band generation for short-reach applications
9:45-10:00 Yuki Yoshida, National Institute of information and communication technology, Japan
Topic: advanced FSO receiver for optical wireless communication
10:15-10:30 Tao Gui, Huawei, China
Topic: Self-Homodyne Coherent Detection for Short Reach
10:30-10:45 Lilin Yi, Shanghai Jiao Tong University, China
Topic: Machine Learning Vs DSP for short reach and access networks
10:45-11:00 Chester Shu, Chinese University of Hong Kong, China
Topic: Learning rate decay based LMS equalization for Kramers-Kronig detection system
11:00-11:15 Bill Corcoran, Monash University, Australia
Topic: Optical Micro-combs for Ultra-Dense Data Transmission in Installed Fibre Links
11:15-11:30 Chuan Bowen Sun, The University of Melbourne, Australia
Topic: Carrier-assisted differential detection for short-reach communications
11:30-12:00 Panel discussion

Workshop 12: Photonics Research Workshop: Next-generation silicon photonics
Workshop Time: 9:00-17:45, Saturday, 24 October
Venue: Conference 06, 2F
Organizers
Daoxin Dai, Zhejiang University, China

Po Dong, II-VI Incorporated, USA
Yikai Su, Shanghai Jiao Tong University, China
Dries Van Thourhout, Ghent University, Belgium

Description: Silicon photonics has been developing very well in the past decades. Various passive and active silicon photonic devices have been demonstrated successfully with excellent performances. Large-scale silicon photonic integrated circuits have also been realized with high density. It is expecting to explore more and more applications for silicon photonics. This workshop is to discuss the progresses and the challenges of silicon photonics. More importantly, we will discuss more on the prospective of next-generation silicon photonics, including new structures, new materials, new wavelength-bands, new applications, new fabrication technologies, etc.

Speakers:

Presider: Daoxin Dai and Po Dong

9:00-9:05 Opening

Lan Yang, Washington University, St. Louis, USA

Kelly Cohen, OSA, USA

9:05-9:30 Argisthi Melikyan, Nokia Bell Labs, USA

Topic: Reinventing Coherent Optical Front-End with Silicon Photonics

9:30-9:55 Zhiping Zhou, Peking University, China

Topic: Recent Development on Silicon Photonics: A Perspective

9:55-10:20 Liu Liu, Zhejiang University, China

Topic: Heterogenous Integration Technology and Devices for Next Generation Silicon Photonics

10:20-10:35 Coffee break

10:35-11:00 Jian Wang, Huazhong University of Science and Technology, China

Topic: Multi-Dimensional Multiplexing and Processing Using Silicon Photonics

11:00-11:25 Di Liang, Hewlett Packard Labs, USA

Topic: Optical Communication and Computing Enabled by a Fully-Integrated Heterogenous Silicon Photonic Platform

11:25-11:50 Shinji Matsuo, NTT Device Technology Laboratories, Japan

Topic: Heterogeneous Integration of Membrane III-V Devices on Si Photonics Platform

11:50-14:00 Lunch break

Presider: Yikai Su and Dries Vanthourhout

14:00-14:25 Hon-Ki Tsang, The Chinese University of Hong Kong, China

Topic: Progress on 2D Materials for Integrated Optical Detectors and Modulators

14:25-14:50 Linjie Zhou, Shanghai Jiao Tong University, China

Topic: Optical Delay Line and Its Application in Microwave Phased Array

14:50-15:15 Joyce Poon, Max Planck Institute of Microstructure Physics, Germany

Topic: Integrated Photonics on Silicon for the Visible Spectrum

15:15-15:30 Coffee break

15:30-15:55 Robert Halir, University of Malaga, Spain

Topic: Building High Performance Devices with Silicon Metamaterials

15:55-16:20 Huiyun Liu, University College London, UK

Topic: III-V Quantum-Dot Lasers: The Key Technology for Silicon-Based Laser for Silicon Photonics

16:20-16:45 Lin Yang, Institute of Semiconductor, CAS, China

Topic: From Multimode Optical Switches to Multimode Systems-on-Chip

Industry Fourms

Forum1: High-speed Broadband Optical Fiber Communication System and the Key Technology Trend

Time: 13:30-18:20, Saturday, 24 October

Venue: Conference 07, 2F

Organizer: YOFC

Chairs:

Liangming (Ansion) Xiong, State Key Laboratory of Optical Fiber and Cable Manufacture Technology, YOFC, China

Junjie Li, China Telecom Research Institute, Beijing, China

Description: As the Cloud and 5G era comes, bigger and bigger data must be transported, more and more important it is for high-speed optical communication. This FORUM will give an overview of high-speed broadband optical communication technology and system, involving advanced optical fiber and nonlinearity mitigation, the latest broadband amplification, ultra-long haul and ultra-high capacity WDM systems, hybrid cross-connect network beyond 100G, and the SDM technology. A Panel Discussion will follow the invited talks and focus on the topic of Tb/s Ultra-long Haul Optical Transport Technology and Application. The experts from university, institute or academy, supplier and telecommunication operators will give their professional perspective on the high-speed broadband optical fiber communication.

For each invited talk, the time is 25 min including 5 min for Q&A.

FORUM PROGRAMME

13:30-13:40 Welcome Address by the ACP/IPOC 2020 Industrial Forum Chair **Dr. Jie Luo** (State Key Laboratory of Optical Fiber and Cable Manufacture Technology, YOFC, China)

13:40-14:05 (Invited) Toward 100Tb/s per Fiber WDM Transmission

Junjie Li, China Telecom Research Institute, Beijing, China.

14:05-14:30 (Invited) Hybrid Cross-connect Optical Communication Network beyond 100G

Dechao Zhang, China Mobile Research Institute, Beijing, China

14:30-14:55 (Invited) Recent Progress in SDM Technique to Increase Fiber Transmission Capacity

Guangquan Wang, China Unicom Research Institute, Beijing, China.

14:55-15:20 (Invited) Development Situation and Trend in High-speed Optical Transport Technology

Wenyu Zhao, China Academy of Information and Communications Technology (CAICT), Beijing, China

15:20-15:30 Coffee Break

15:30-15:55 (Invited) Fiber Nonlinearity Mitigation in High-speed Optical Transmission Systems

Fan Zhang, Peking University, China.

15:55-16:20 (Invited) Ultral-long Haul and Unrepeated WDM System Design and Optimization

Yi Yu, Huawei Technologies Co., Ltd., China.

16:20-16:45 (Invited) Advanced Optical Fibers for 3U Transmission Networks

Lei Zhang, State Key Laboratory of Optical Fiber and Cable Manufacture Technology, YOFC, China.

16:45-17:10 (Invited) Latest Approach of Broadband Amplification and Its Impacts on Transmission
Qinlian Bu, Accelink Technologies Co., Ltd., Wuhan, China.
17:10-18:10 Panel Discussion: Tb/s Ultra-long Haul Optical Transport Technology and Application
18:10-18:20 Closing Speech

Forum2: F5G: Trends in Optical Switching Devices and Networks
Time: 13:30-17:45, Saturday, 24 October
Venue: Conference 05, 2F
Co-organizers
Yongli Zhao, Beijing University of Posts and Telecommunications, China
Zhiyong Feng, Huawei China
Speakers:
13:30-13:50 Register
13:50-14:00 Open Speaking
14:00-14:25 Yunbo Li, China Mobile, China
Topic: Evolution and challenges for All-optical network
14:25-14:50 Jianjun Tang, China Telecom, China
Topic: The key technologies and application for ROADM
14:50-15:15 14:20-14:55 Zhiyong Feng, Huawei China, China
Topic: Key Technologies for evolving to all optical networking
15:15-15:40 Gangxiang Shen, Soochow University, China
Topic: What will OXCs look like in the future optical networks?
15:40-16:00 Coffee Break
16:00-16:25 Haining Yang, Southeast University, China
Topic: Highly integrated wavelength selective switches based on the LCOS technology
16:25-16:50 Liangjun Lu, Shanghai Jiao Tong University, China
Topic: Large scale optical switches on the silicon platform
16:50-17:15 Bin Tan, Lumentum, China
Topic: The WSS production and technical Trends Lumentum
17:15-17:45 Panel discussion

Forum3: Marketing Trend of Communication Industry based on Advanced ROADM and OXC Technologies
Time: 9:00-12:30, Saturday, 24 October
Venue: Conference 05, 2F
Organizer: LUSTER
Chairman: Chengliang Zhang, China Telecom
Co-Chairman: Vincent Wang, LUSTER LightTech Co.,LTD.
Description: The industry forum of ACP is an excellent place where the academics can learn the state of the art of the optical communications industry in terms of product, technology and market, and exchange ideas with experts from the industry.This is the sixth time for Luster LightTech Corp to organize the ACP Industry forum. This year's industry forum will focus on ROADM and OXC Technologies. Distinguished speakers from the industry will discuss the latest advances and trends

of the ROADM and OXC Technologies.

Speakers:
09:00-09:10 Chairman Speech
Chengliang Zhang, China Telecom
Vincent Wang, LUSTER LightTech
09:10-09:30 Rui Tang, CAICT
Topic: Development and Application Trend of ROADM Technologies
09:30-09:50 Dong Wang, China Mobile
Topic: Considerations on High-efficiency Hybrid OTN/OXC Network
09:50-10:10 Jianjun Tang, China Telecom
Topic: Problems and Challenges in ROADM Application
10:10-10:30 Liang Dou, Alibaba
Topic: Migration from FOADM to ROADM in Data Centers Interconnect Networks
10:30-10:40 Coffee Break
10:40-11:00 Zhiyong Feng, Huawei
Topic: Building a Petabit Optical Transmission Network
11:00-11:20 Zhenhua Feng, FiberHome
Topic: OXC Technology Evolution for all Optical Network in the Cloud Era
11:20-11:40 Yiran Ma, II-VI(Finisar)
Topic: Advanced WSS Technologies
11:40-12:00 Jet Zhang, LUSTER
Topic: Application Opportunities of Optical Matrix Switch in all Optical Network
12:00-12:30 Panel Discussion