Track 4: Optoelectronic Devices and Integration

Venue:Kaifeng Room

Monday, 25 October

13:30–15:00

M4D • Novel Integrated Photonics

Presider: To Be Announced

M4D.1 • 13:30 Invited

Future on-Chip Optoelectronic Devices Base on Nanostructures, Yidong Huang[1], Wei Zhang[1], Xue Feng[1], Fang Liu[1], Kaiyu Cui[1]; *[1]Tsinghua Univ., China.* A series of new functional optoelectronic devices have been realized, such as the on-chip free electron light source, real-time spectral im- aging, integrated OAM emitter, and integrated quantum light sources for various quantum en- tangled state generation .

M4D.2 • 14:00 Invited

Integrated Silicon and Chalcogenide Photonic Devices at 2-Micron Wavelength, Hongtao Lin[1]; *[1]College of Information Science & Electronic Engi- neering, Zhejiang Univ., China.* High-performance silicon and chalcogenide photonic devices operating at 2-micron wavelength were inverse designed and fabricated . Besides, through integration with graphene and black phosphorus, hybrid integrated modulators and detectors were also achieved .

14:30-15:00 Invited

On-chip gradient metasurface and its applications， Ke Xu

M4D.3 • 14:30 Invited

SOI Based InAs QD Lasers and Multi-Wave- length Comb Lasers for Tbps Transmission, Ting Wang[1], wenqi wei[1], Zihao Wang[1], jianjun zhang[1]; *[1]Inst. of Physics, CAS, China.* Direct epitaxial growth of III-V on Si is one of the most promising candidates for realizing Si photonic integrated laser sources . Here, we demonstrated first CW current operated InAs QD lasers on SOI substrates via IV/III-V hybrid epitaxy . In addition, 60 channel QD comb lasers are developed for CW-WDM Tbps transmission .

16:00–18:00

M5D • Optoelectronics Devices I

Presider: To Be Announced

M5D.1 • 16:00 Tutorial

Photonic Integrated Circuits for Optical Wire- less Communication, Ton Koonen[1], Zizheng Cao[1]; *[1]Inst. for Photonic Integration, Eindhoven Univ. of Technology, Netherlands.* Optical wireless com- munication is becoming vital for solving the immi- nent congestion of radio-wireless networks . Mass deployment will require cost-effective photonic integrated circuits . This tutorial overlooks both transmitter and receiver circuits for wide-field as well as beam-steered OWC .

M5D.2 • 16:45

Thermal Dynamic Performance and Integrated Optoelectronic System With InGaP / GaAs Quantum Well Light-Emitting Transistors (LETs), **Lu-Ching Hsueh[1], Hsin-Yu Lin[1], Kumar Mukul[1], Chao-Hsin Wu[1,2]; *[1]Graduate Inst. of Photonics and Optoelectronics, National Taiwan Univ., Taiwan; [2]Graduate Inst. of Electronics Engineering, Na-***

tional Taiwan Univ., Taiwan. **The study investigates the DC characteristics and the optical output from room temperature to 358K . The current gain of the LET with triple QWs improves 146 .62%which is desired for high resolution temperature sensor .**

M5D.3 • 17:00

High-Power, Single-Mode, Multi-Aperture
VCSELs for Long-Reach Optical Intercon- S nects, **Sicong Tian[1,2], Ahamed Mansoor[1,3], Julian T Lindner[1,2], Gunter Larisch[1,2], Dieter Bimberg[1,2];**
[1]Changchun Inst of Optic, Fine Mech & Phy, Chi- s na; [2]Center of Nanophotonics, Inst. of Solid State c Physics, Technische Universität Berlin, Germany; t [3]The Univ. of Chinese Academy of Sciences, Chi- T na. **Adapting photon lifetimes of VCSELs allows ¡ to increase their power efficiency/bit and cut-off frequency . Single-mode multi-aperture VCSELs, will lead to additional enormous improvements of temperature stability, larger roll-over current and increased output power .**

M5D.4 • 17:15

High-Power and High-Speed Traveling-Wave Photodetectors With Genetic Algorithm Optimization, **Zhilei Fu[1], Hui Yu[1], Penghui Xia[1], Xiaofei Wang[1], Gikai Huang[1], Xiaoqing Jiang[1], Jianyi Yang[1];** ***[1]College of Information Science and Electronic Engineering, Zhejiang Univ., China.*** **We demonstrate the 4-stage and 8-stage silicon traveling-wave photodetectors (TWPDs) . The 3-dB bandwidth of 4-TWPD is enhanced to 54 GHz . It is the first time the bandwidth of TWPD exceeds that of the PD unit .**

M5D.5 • 17:30

Monolithic Integrated Continuously Tunable Terahertz Source Based on a Dual-Wavelength DBR Laser, Wanshu Xiong[1], Mengdie Sun[2], Ruoyun Yao[1], Qianwen Guo[1], Ronald Broeke[3], Chen Ji[1]; *[1]Zhejiang Univ., China; [2]Chinese Academy of Sciences, China; [3]Bright Photonics, Netherlands.* We demonstrate a tunable terahertz (THz) source whose generation range over 0 .05- 0 .7THz . The monolithically integrated Terahertz generation chip consists of dual-wavelength Distributed Bragg Reflector (DBR) lasers, an SOA and a multimode interference (MMI) coupler .

M5D.6 • 17:45

Subwavelength-Structure-Assisted Multimode add-Drop Multiplexer, Xiaolin Yi[1], Weike Zhao[1], Chenlei Li[1], Chaochao Ye[1], Daoxin Dai[1]; *[1]Zhejiang Univ., China.* A novel subwavelength-structure- assisted multimode add-drop multiplexer is proposed and demonstrated to enable the adding/dropping of any mode-channels from the multimode bus waveguide in a multimode- division-multiplexing system .

Tuesday, 26 October
08:30–10:00
T1D • Silicon Photonics I
Presider: To Be Announced

T1D.1 • 08:30 **Invited**

Title to be Announced, Zhihong Huang[1]; *[1]Hewlett Packard laboratories, USA.* Abstract not available .

T1D.2 • 09:00

Demonstration of Stimulated Brillouin Scat- tering in low-Loss Chalcogenide Waveguides, Jingcui Song[2], Lei Wan[1], Xiaojie Guo[1], Tianhua Feng[1], Bin Zhang[2], Zhaohui Li[2]; *[1]Jinan Univ., China; [2]Sun Yat-sen Univ., China.* The

Brillouin gain characteristics were demonstrated in two low-loss chalcogenide waveguides . Compared with the Brillouin gain coefficient of 202 $m^{-1}W^{-1}$ in the As-S spiral waveguide, the gain performance of the Ge-As-S counterpart was measured to be 118 $m^{-1}W^{-1}$.

T1D.3 • 09:15

Ultralow-Loss Compact Silicon Photonic Wave- guide Spirals, Shihan Hong[1], Long Zhang[1], Yi Wang[1], Ming Zhang[1], Yiwei Xie[1], Daoxin Dai[1]; *[1]Zhejiang Univ., China.* We propose a broadened silicon spiral with tapered-Euler-S-bend to realize low-loss and compact waveguides . A 100-cm- long spiral is realized with a minimum bending radius of 10 μm . The measured propagation loss is 0 .28 dB/cm .

T1D.4 • 09:30

High-Performance Waveguide Ge/Si Avalanche Photodiode with Simplified Fabrication Pro- cesses, Yuluan Xiang[1], Hengzhen Cao[1], Chaoyue Liu[1], Daoxin Dai[1]; *[1]Zhejiang Univ., China.* A high- performance waveguide Ge/Si avalanche photo- diode is designed and fabricated with simplified processes, showing a high primary responsivity of 0 .96 A/W, a 3dB bandwidth of 27 GHz . A 50 Gbps data transmission is also demonstrated .

T1D.5 • 09:45

Nonlinearity Enhancement in Organic-Silicon Hybrid Slot Waveguide, Su He[1], Yonghua Wang[1], Houzhi Cai[1], Lei Lei[1]; *[1]Shenzhen Univ., China.* We experimentally demonstrate a highly nonlinear or- ganic-silicon hybrid slot waveguide (HN-OSSW), whose nonlinear coefficient reaches to 1.55×10^{6} $W^{-1}km^{-1}$ with the waveguide length of 2mm.

10:30–12:00
T2D • Silicon Photonics II
Presider: To Be Announced

T2D.1 • 10:30 Invited

Ultra-Fast Silicon Optical Modulators and Pho- todetectors Operating Beyond 100 Gbaud, Xi Xiao[1], Yuguang Zhang[2,1], Xiao Hu[2,1], Hongguang Zhang[1], Daigao Chen[2,1], Lei Wang[2,1], Shaohua Yu[2,1]; *[1]National Information Optoelectronics In- novation Center, China; [2]State Key Laboratory of Optical Communication Technologies and Networks, China Information Communication Technologies Group Corporation, China.* We demonstrate several novel silicon optical modula- tors and photodetectors, such as 67 GHz Si3N4- coupled Ge photodetector, 90 GHz microring modulator, and et . al . Silicon-based optical link operating >100 Gbaud will also be presented .

T2D.2 • 11:00

2.5D Optoelectronic Integration for 400G (8×56Gbps) CPO-Based Optical Interconnects, Xuecheng Yang[1], Jiangbing Du[1], Jiacheng Liu[1], Xinyi Wang[1], Ningfeng Tang[2], Yingchun Shang[3], Zuyuan He[1]; *[1]Department of Electronic Engineer- ing, Shanghai Jiao Tong Univ., China; [2]ZTE Corp., China; [3]ZTE Corp., China.* A proof-of-concept 2 .5D optoelectronic integration solution for CPO applications is demonstrated, based on organic substrate, silicon photonics, flip-chip . Pre-FEC BER under 0 .02 is obtained for 56Gbps OOK signals, indicating feasibility for 400G .

T2D.3 • 11:15

70 Gbit/s Optical NRZ Modulation Based on Silicon Photonic Crystal Modulator, Yuguang Zhang[2,1], Dingyi Wu[2], Lei Wang[2,1], Xi Xiao[2,1]; *[1]Wuhan Research Inst of Post & Telecom, China; [2]National Information Optoelectronics Innovation Center, China Information and Communication Technologies Group Corporation (CICT), Wuhan 430074, Hubei, China, China.* We present an ultra- high speed silicon photonic crystal modulator with the 3-dB electro-optical

bandwidth of 38 .6 GHz . Based on the ultra-compact silicon photonic crystal modulator, modulation of 70 Gbit/s NRZ signal is experimentally demonstrated .

T2D.4 • 11:30

A 4×100 Gb/s DWDM Optical Link With all- Silicon Microring Transmitters and Receivers, Yuan Yuan[1], Wayne V . Sorin[1], Stanley Cheung[1], Yiwei Peng[1], Di Liang[1], Zhihong Huang[1], Marco Fiorentino[1], Raymond G . Beausoleil[1]; *[1]Hewlett Packard Labs, USA.* We prove the feasibility of an all-Silicon, Germanium-free, high-speed dense wavelength division multiplexing optical link using a 4-channel 100 Gb/s microring modulator array and a 100 Gb/s microring photodiode .

T2D.5 • 11:45

1300 nm and 1500 nm InAs/GaAs Quantum dot Lasers Directly Grown on SOI Substrates for Silicon Photonics Integration, Qi W . Wei[1]; *[1]Songshan Lake materials laboratory, China.* By using (111)-faceted silicon hollow structures, high- performance 1300 nm and 1500 nm InAs/GaAs quantum dot lasers are epitaxially grown and fabricated on SOI substrates by an III-V/IV dual chamber MBE for silicon photonics integration .

13:30 – 15:30

T3D • Optical Sensing

Presider: To Be Announced

T3D.1 • 13:30 Tutorial

Photonic-Crystal Surface-Emitting Lasers: From Fundamen- tal to the State of the Arts, Susumu Noda[1]; *[1]Kyoto Univ., Japan.* Photonic-crystal surface-emitting lasers (PCSELs) are an unprecedented type of semiconductor laser that can operate in a single longitudinal and lateral mode over a broad area (>1mm in a resonant diameter) . In this conference, I will make a tuto- rial talk on PCSELs from fundamental to the state of the arts .

T3D.2 • 14:15 Invited

Title to be Announced, Linjie Zhou[1]; *[1]Shanghai Jiao Tong Univ., China.* Abstract not available .

T3D.3 • 14:45

Wavelength Tunable Hybrid-Cavity Laser Based on Whisper- ing-Gallery Cavity in Potential for Sensing, Fangyuan Meng[1], Hongyan Yu[1], Xuliang Zhou[1], Yejin Zhang[1], Jiaoqing Pan[1]; *[1]Inst. Of Semiconductors, CAS, China.* A hybrid-cavity laser consists of a square Whispering-Gallery microcavity and a Fabry-Perot cavity was demonstrated . A single-mode emitting laser with a wavelength tuning range over 7 .5 nm from 1775 .47 nm to 1783 .02 nm was obtained .

T3D.4 • 15:00

Hybrid 2D Beam Steering for Solid-State TOF Lidar, Chao Li[1], Kan Wu[1], Xianyi Cao[1], Guangjin Zhang[1], Xinwan Li[1], Jian- ping Chen[1]; *[1]Shanghai Jiao Tong Univ., China.* We present a solid-state light detection and ranging system with a hybrid beam-steering technology . A blind zone-suppressed TOF Lidar is demonstrated with a field of view of 0 .9°×8 .1°and a resolution point of 192 .

T3D.5 • 15:15

1024-Channel Passive Optical Phased Array With High An- gular Resolution, Guangzhen Luo[1,2], Pengfei Wang[1,2], Pengfei Ma[1,2], Ruiting Wang[1,2], Hongyan Yu[1,2], Xuliang Zhou[1,2], Yejin Zhang[1,2], Jiaoqing Pan[1,2]; *[1]Key Laboratory of Semiconductor Materials Science, Inst. of Semiconductors, Chinese Academy of Sciences, China; [2]Center of*

Materials Science and Optoelec- tronics Engineering, Univ. of Chinese Academy of Sciences, Beijing 100049, China, China. We have demonstrated a large- scale passive optical phased array (OPA) with 1024 channels, which has a spot divergence angle of less than 0 .1° . It can realize beam scanning through wavelength tuning .

Wednesday, 27 October
Kaifeng Room, 3F
08:30–10:00
W1C • Silicon Photonics III
Presider: To Be Announced

W1C.1 • 08:30 Invited

Title to be Announced, Remus Nicolaescu[1]; [1]*Pointcloud Inc, USA*. Abstract not available .

W1C.2 • 09:00 Invited

High-Speed Silicon Photonic Modulators and Switches, Tao Chu[1]; [1]*Rzhanov Ins of Semiconductor Physics RAS, China*. Based on silicon photonic integrations, 112Gbps high-speed modulators fabricated on SOI and LNOI substrates, as well as large-scale SOI photonic switches with a switching speed of less than several nano-seconds will be demonstrated .

W1C.3 • 09:30

Enhanced Nonlinear Wavelength Conversion in Silicon Photonic Waveguides Beyond the Singlemode Regime, ***Mingfei Ding[1];*** **[1]Zhejiang Univ., China.** ***Nonlin- ear light–matter interaction is demonstrated with ultralow-loss silicon-on-insulator photonic waveguides beyond the single-mode regime . Significant enhancement of nonlinear photonic effects is observed with a pump power of 15 dBm .***

W1C.4 • 09:45

O-Band P-Doped InAs/GaAs Quantum dot Lasers Directly Grown on SOI Sub- strate, ***Jing-Zhi Huang[3,1], Ting Wang[3,2], jiajian chen[3], Zihao Wang[3,1], Jianjun Zhang[3,1];***

[1]School of Physical Sciences, Univ. of Chinese Academy of Sciences, China; [2]Songshan Lake Materials Laboratory, China; [3]Inst. of Physics, Chinese Academy of Sciences, China. ***This work demonstrated the first electrically pumped ground-state InAs QD narrow ridge lasers emission at 1310 nm (O-band) epitaxially grown on standard SOI substrate with continuous-wave (CW) current injection at room temperature .***

10:30 – 12:00
W2D • Photonic Integrated Signal Processing
Presider: Yaocheng Shi, Zhejiang University, China

W2D.1 • 10:30 Invited

Chip-Scale Intelligent Photonic Signal Processing (Invited), Jian Wang[1]; [1]*Wuhan National Laboratory for Optoelectronics, Huazhong Univ. of Science and Technology, China.* In this talk, we review recent advances in chip-scale intelligent photonic signal processing . We focus on multi-dimensional photonic signal processing, reconfigu- rable, programmable and intelligent photonic signal processing and its practical applications in fiber-optic communication systems .

W2D.2 • 11:00 Invited

Title to be Announced, Junfeng Song[1]; [1]*Jilin Univ., China*. Abstract not available .

W2D.3 • 11:30

Photonic Digital-to-Analog Converter Based on Microring Resonator and Photonic-Nonvolatile-Memory, Peng Zhao[1], Pengxing Guo[1], Zhiyuan Liu[1], Weigang Hou[1], Lei Guo[1]; [1]*CQUPT, China.* We propose an N-bit photonic digital-to-analog converter (PDAC) based on non-volatile memory and microring resonators . Simula- tion results show that the proposed structure can operate at 10 Gbps and maintain a high conversion accuracy .

W2D.4 • 11:45

The Influence of Proton Radiation on the Performance of Silicon Mach-Zehnder Modulator, Changhao Han[1], Zhaoyi Hu[2], Yuansheng Tao[1], Engang Fu[2], Xingjun Wang[1]; [1]*State Key Laboratory of Advanced Optical Communications System and Networks, Department of Electronics, School of Electronics Engineering and Computer Science, Peking Univ., China;* [2]*State Key Laboratory of Nuclear Physics and Technology, School of Physics, Peking Univ., China.* The influence of proton radiation on silicon Mach- Zehnder modulator performance was studied for space environment . The modulator was sensitive to proton radiation while still demonstrated a certain working ability after 3MeV protons of 5×10^{13} ions/cm^2 .

13:30–15:30
W3D • Advanced Diode Lasers
Presider: To Be Announced

W3D.1 • 13:30 Invited

Integrated Circular-Sided Polygon Microlasers, **Yong-Zhen Huang[1], Ke Yang[1,2], Yue-De Yang[1,2], Jia-Chen Liu[1,2], Jin-Long Xiao[1,2]; [1]*State Key Laboratory of Integrated Optoelectronics, Inst. of Semiconductors,Chinese Academy of Sciences, China;* [2]*Center of Materials Science and Optoelectronics Engineering, Univ. of Chinese Academy of Sciences, China.* Mode Q factors and field patterns can be greatly modulated in circular-sided polygonal microcavities, which are suitable for photonic integration . Lasing characteristics are reported for integrated microlasers with circular-sided square and octagon microcavities, respectively .**

W3D.2 • 14:00 Invited

Mode-Locked Lasers on a Silicon Nitride Platform, **Bart Kuyken[1]; [1]*Ghent Univ., INTEC, Belgium.* The low loss silicon nitride platform with its wide transparency range and lack of two-photon absorption at telecom wavelengths is exploited to make high performant compact, electrically pumped mode-locked lasers on chip .**

W3D.3 • 14:30 Invited

On-Chip, Optical Injetion-Locked III-v/Si Micro-Ring Lasers, **Stanley Cheung[1], Yuan Yuan[1], Antoine Descos[1], Di Liang[1], Raymond G . Beausoleil[1]; [1]*Hewlett Packard Labs, USA.* We demonstrate >9× direct modulation bandwidth improvement up to 45 GHz for heterogeneous III-V/Si micro-ring lasers via optical injection locking (OIL) . Co-integration of master and slave lasers on the same chip was also realized . We also demonstrate on-chip OIL without the need for external lasers, thus improving bandwidth**

> 4× up to 20 GHz .

W3D.4 • 14:45

Ultra-Fast and Highly Efficient 850-nm VCSELs for Next-gen PAM-4 Transceivers, Yun-Cheng Yang[1], Hao-Tien Cheng[2], Chao- Hsin Wu[1,2]; [1]*Graduate Inst. of Photonics and Optoelectronics, National Taiwan Univ., Taiwan;* [2]*Graduate Inst. of Electronics Engi- neering, National Taiwan Univ., Taiwan.* We fabricated ultra-fast 850 nm VCSELs with high efficiencies, excellent output linearity, and exhibits a modulation bandwidth of up to 32 .4 GHz . Which could be applicable for next-gen

50-100 Gbps PAM4 transceivers .

W3D.5 • 15:00

Broadband Noise Suppression in Self-Injection Locked Fiber Laser With a High-Q Optical Microresonator, Xiaoying Wang[1], Tuo Liu[1], Hairun Guo[1]; *[1]Shanghai Univ., China.* We develop MgF_2 high-Q crystalline microresonators (Q~10^8) and implement laser self-injection locking for an erbium-doped fiber laser in the continuous mode . The locked laser linewidth is 100s kHz, and the broadband spontaneous emission is suppressed .

W3D.6 • 15:15

Demonstration of Two-Section High-Power 1.27-μm DFB Lasers With High Single Mode Yield for Photonic Integration, Minwen Xiang[1], Xiang Ma[1], Yuanhao Zhang[1], Gong Zhang[1], Qiaoyin Lu[1], Mingzhi Lu[2], Weihua Guo[1]; *[1]Huazhong Univ. of Science & Techno, China; [2]ORI-CHIP OPTOELECTORNICS TECH. CO. LTD, China.* We experimentally demonstrated two-section high power 1 .27-μm single-mode DFB lasers with high single-mode yield for photonic-integration . The fabricated laser exhibited a stable single-mode operation with the output power above 70-mW and slope efficiency over 0 .42-mW/mA .

Luoyang Room, 3F

08:30 – 10:00

W1F • Optoelectronics Devices II

Presider: To Be Announced

W1F.1 • 08:30 **Invited**

20 Gbps Optical Wireless Communication System Enabled by Field-Programmable Metasurfaces, Zizheng Cao[1], Jianou Huang[1], Chao Li[2], Ton Koonen[1]; *[1]Eindhoven Univ. of Technology, Netherlands; [2]Anhui Univ., China.* Beam-steering is an elementary technique for optical wireless communication (OWC) systems . In this talk, we review our work of a 20 Gbps 2D beam-steering OWC system based on the novel passively field-programmable gap-surface plasmon metasurfaces .

W1F.2 • 09:00

Highly Reliable and High Speed InGaAs PIN Photodetector on Si by Heteroepitaxy, Bowen Song[1], Bei Shi[1], Si Zhu[1], Simone Š . Brunelli[1], Jonathan klamkin[1]; *[1]Univ. of California Santa Barbara, USA.* InGaAs photodiodes were realized on Si by heteroepi- taxy, demonstrating the dark current density of 0 .45 mA/cm2, responsivity of 0 .7 A/W, bandwidth of 11 .2 GHz and 17 years equivalent room-temperature operation

W1F.3 • 09:15

Monolithic High Power Master Oscillator Power Amplifier Emitting 2.2 W at 1550 nm, Hao Wang[1], Ruikang Zhang[1], Dan Lu[1], Wei Wang[1], Lingjuan Zhao[1]; *[1]Inst Semiconductors, CAS, China.* We present the design and the performance of monolithi- cally integrated master oscillator power amplifier at 1550 nm . The MOPA with 2 .5 mm total cavity, single mode kink-free output power is up to 2 .2 W .

W1F.4 • 09:30

Heterogeneous O-Band InAs/GaAs Quantum-Dot Optical Amplifier on Silicon, Antoine Descos[1], Geza Kurczveil[1], Di Liang[1], Raymond G . Beausoleil[1]; *[1]Hewlett Packard Labs, USA.* We demonstrate a heterogeneous QD/silicon O Band SOAs with gain over 15 dB and noise figure around 7 dB on a platform supporting DFBs, high speed modulators and no impact on high-speed signal integrity up to 32 .1 Gbps .

W1F.5 • 09:45

Electrical Control of Valley Polarization in Monolayer Molybdenum Ditelluride via Exciton-Trion Interactions, Qiyao Zhang[1,2], Hao Sun[1,2], Jiacheng Tang[1,2], Xingcan Dai[1], Zhen Wang[1,2], Cun-Zheng Ning[1,2]; [1]*Tsinghua Univ., China;* [2]*Frontier Science Center for Quantum Information, China.* We systematically investigated the electrically-tunable valley polarization mechanism in monolayer $MoTe_2$ by helicity-resolved photoluminescence and ultrafast pump-probe spectroscopy . The interplay of exciton-to-trion conver- sion and valley dynamics is revealed, enriching the understanding of valley manipulation .

W2D.1 • 10:30 Invited

Chip-Scale Intelligent Photonic Signal Processing (Invited), Jian Wang[1]; [1]*Wuhan National Laboratory for Optoelectronics, Huazhong Univ. of Science and Technology, China.* In this talk, we review recent advances in chip-scale intelligent photonic signal processing . We focus on multi-dimensional photonic signal processing, reconfigu- rable, programmable and intelligent photonic signal processing and its practical applications in fiber-optic communication systems .

W2D.2 • 11:00 Invited

Title to be Announced, Junfeng Song[1]; [1]*Jilin Univ., China.* Abstract not available .

10:30 – 12:00

W2G • Optical Switch and Tunable Devices

Presider: To Be Announced

W2G.1 • 10:30 Invited

Ultrahigh-Q AlGaAs-on-Insulator Microresonators for Ultra-Efficient Integrated Nonlinear Photonics, Weiqiang Xie[1]; [1]*Shanghai Jiao Tong Univ., China.* AlGaAs of- fers strong material nonlinearity and holds great potential for integrated nonlinear photonics . Here, we present our recent work on heterogeneously integrated low-loss AlGaAs nanophotonics on Si and demonstrate ultrahigh-Q AlGaAs microresonators and various ultra-efficient nonlinear applications .

W2G.2 • 11:00

High-Efficiency Thermo-Optical Phase Shifter Using Wave-Vector and Polarization Multiplexing, Zhen Wang[1], Qihang Shang[1], Yong Zhang[1], Yikai Su[1]; [1]*Shanghai Jiao Tong Univ., China.* We demonstrate a four-pass thermo-optic phase shifter using wave- vector and polarization multiplexing . The experiment shows that the structure reduces the power consumption of a phase shifter by 3 .2 times with a 3 .1-dB insertion loss .

W2G.3 • 11:15

Fano Resonance With Sharp Transmittance Slope Based on High-Q Factor Multi- Mode Micro-Ring Resonator, Yuan Yuan[1], Ruihuan Zhang[1], He Yu[1], Yong Zhang[1], Yikai Su[1]; [1]*Shanghai Jiao Tong Univ., China.* We propose a Fano resonance generator based on a multi-mode racetrack micro-ring resonator . A high slope rate of 3210 dB/ nm is obtained . The extinction ratio is ~ 13 .6 dB .

W2G.4 • 11:30

Calibration-Free 2 × 2 Mach-Zehnder Switches With Ultralow-Loss MMI Couplers, Lijia Song[1], Hongxuan Liu[1], Yingying Peng[1], Huan Li[1], Daoxin Dai[1]; [1]*Zhejiang Univ., China.* Calibration-free 2 × 2 Mach-Zehnder switches have been proposed and ex- perimentally demonstrated with ultralow-loss multimode interference couplers with multi-segment multimode section .

W2G.5 • 11:45

Tunable Dispersion Compensator Based on Taper Bragg Gratings With Heating- Engineering, Shujun Liu[1], Jianghao He[1], Daoxin Dai[1]; [1]*Zhejiang Univ., China*. A tunable dispersion compensator on silicon is proposed and demonstrated by using taper Bragg gratings with engineered heating . The dispersion tuning range is about 5-15 ps/nm in theory .