

The Annual Conference of the  
IEEE Photonics Society

# IPC

## FINAL PROGRAM

29 September – 3 October 2019  
Hilton Palacio Del Rio  
San Antonio, USA

[www.ieee-ipc.org](http://www.ieee-ipc.org)

**General Co-Chair:**  
Nikola Alic, University of California, San Diego

**General Co-Chair:**  
Carmen Menoni, Colorado State University



09-29-2019

- 13:00 - 15:00 Photonics in Texas** **La Vista A/B/C**  
Moderation: W. Zhou<sup>1</sup>, C. Lim<sup>2</sup>, <sup>1</sup>Arlington/US, <sup>2</sup>TBC/US
- 15:00 - 15:30 Coffee Break** **La Vista & El Mirador Foyers**
- 15:30 - 17:30 Panel Session: Getting Familiar with the Peer Review Process** **La Vista A/B/C**  
Moderation: C. Jagadish, Acton/AU
- 18:00 - 20:00 Sunday Evening Social** **La Vista D/E**  
Moderation: N. Fontaine, /US

09-30-2019

MB1

**08:30 - 10:00 Hybrid Materials and Devices**

**EI Mirador B**

Moderation: G. Grosso, New York/US

**08:30 - 09:00 MB1.1 - ON THE PATH TO A HYBRID PEROVSKITE LASER DIODE**

N. Giebink, /US

**09:00 - 09:15 MB1.2 - AN INVESTIGATION ON STABLE AND CONTINUOUS OPERATION OF HYBRID PEROVSKITE QUANTUM DOT LIGHT EMITTING DIODES**

Y.-Y. Cho<sup>1</sup>, S.-C. Hsu<sup>1</sup>, Y.-M. Huang<sup>1</sup>, H.-Y. Shih<sup>1</sup>, T.-Y. Lee<sup>1</sup>, C.-P. Huang<sup>1</sup>, H.-C. Kuo<sup>2</sup>, Y.-H. Liu<sup>2</sup>, T.-M. Chen<sup>2</sup>, Y.-J. Cheng<sup>3</sup>, C.-C. Lin<sup>1</sup>, <sup>1</sup>Tainan/TW, <sup>2</sup>/TW, <sup>3</sup>Taipei/TW

**09:15 - 09:30 MB1.3 - THERMALLY CONTROLLABLE HIGH-EFFICIENCY UNIDIRECTIONAL COUPLING IN A DOUBLE-SLIT STRUCTURE FILLED WITH PHASE CHANGE MATERIAL**

M. Afshari Bavi, M. Dong, C. Li, S. Feng, L. Zhu, /CN

MC1

**08:30 - 09:15 OC TUT - Submarine Transmission Systems**

**EI Mirador C East**

Moderation: H. Batshon, TBC/US

**08:30 - 09:15 MC1.1 - RECENT ADVANCES IN SUBMARINE TRANSMISSION SYSTEMS**

A. Ghazisaeidi, /FR

**08:30 - 10:00 Silicon Photonics** **El Mirador C West**

Moderation: S. Dwivedi, Leuven/BE

**08:30 - 08:45 MD1.1 - INTEGRATED PAM-4 WDM RECEIVER BY INGAASP-BASED MEMBRANE PDS AND SIN DEMULTIPLEXER ON SI**H. Nishi, N.-P. Diamantopoulos, T. Fujii, Y. Maeda, K. Takeda, T. Tsuchizawa, T. Kakitsuka, H. Fukuda, S. Matsuo, /JP**08:45 - 09:00 MD1.2 - CMOS COMPATIBLE III-V/SILICON LASER INTEGRATION ON SILICON PHOTONICS PLATFORM**B. Szelag<sup>1</sup>, K. Hassan<sup>2</sup>, L. Adelmini<sup>2</sup>, K. Ribaud<sup>2</sup>, M.-C. Roure<sup>2</sup>, L. Sanchez<sup>1</sup>, A. Schembri<sup>2</sup>, C. Jany<sup>1</sup>, <sup>1</sup>Grenoble/FR, <sup>2</sup>GRENOBLE/FR**09:00 - 09:30 MD1.3 - III-V-ON-SILICON PHOTONIC TRANSCEIVERS**G. Roelkens<sup>1</sup>, J. Bauwelinck<sup>1</sup>, J. Van Campenhout<sup>2</sup>, <sup>1</sup>Ghent/BE, <sup>2</sup>Leuven/BE**09:30 - 09:45 MD1.4 - O-BAND QUANTUM DOT SEMICONDUCTOR OPTICAL AMPLIFIER DIRECTLY GROWN ON CMOS COMPATIBLE SI SUBSTRATE**S. Liu<sup>1</sup>, J. Norman<sup>1</sup>, M. Dumont<sup>1</sup>, P. Pintus<sup>1</sup>, M. Tran<sup>1</sup>, D. Jung<sup>1</sup>, A. Torres<sup>1</sup>, A. Gossard<sup>1</sup>, J. Bowers<sup>2</sup>, <sup>1</sup>Santa Barbara/US, <sup>2</sup>TBC/US**09:45 - 10:00 MD1.5 - PNP-TYPE OPTICAL PHASE-SHIFTER WITH LOW POWER CONSUMPTION AND FAST SWITCHING TIME ON SILICON PHOTONICS FOUNDRY PLATFORM**R.-L. Chao, Z. Ahmad, J. Chen, /TW**08:30 - 10:00 Remote Sensing** **La Vista F**

Moderation: D. Ting, TBC/US

**08:30 - 09:00 MH1.1 - NEW AND INNOVATIVE SENSORS AND INSTRUMENTS DEVELOPMENT AT NASA EARTH SCIENCE TECHNOLOGY OFFICE FOR FUTURE SPACE NASA MISSIONS**S. Babu, P. Ghuman, R. Bauer, P. Miller, /US**09:00 - 09:30 MH1.2 - SCALABLE AND HIGH-RESOLUTION IMAGING WITH PHOTONIC INTEGRATED INTEROMETRIC TELESCOPES (SPIDER-PIITS)**S.J.B. Yoo, Davis/US**09:30 - 10:00 MH1.3 - LASER SPECKLE IN MULTIMODE WAVEGUIDES FOR RANDOM PROJECTIONS IN COMPRESSIVE SENSING AND RESERVOIR COMPUTING**G. Sefler<sup>1</sup>, U. Paudel<sup>1</sup>, T. Shaw<sup>1</sup>, D. Monahan<sup>1</sup>, A. Scofield<sup>2</sup>, S. Estella<sup>3</sup>, L. Johansson<sup>3</sup>, G. Valley<sup>1</sup>, <sup>1</sup>El Segundo/US, <sup>2</sup>Pasadena/US, <sup>3</sup>Santa Barbara/US**10:00 - 10:30 Coffee Break** **La Vista & El Mirador Foyers**

**10:30 - 12:00 NANO TUT - Metamaterials**

El Mirador B

Moderation: D. Rosser, /US

**10:30 - 11:30 MB2.1 - HIGH-SPEED QUANTUM PHOTONICS WITH PLASMONIC METAMATERIALS EMPOWERED BY MACHINE LEARNING**S. Bogdanov<sup>1</sup>, Z. Kudyshev<sup>2</sup>, A. Kildishev<sup>2</sup>, A. Boltasseva<sup>1</sup>, V. Shalaev<sup>3</sup>, <sup>1</sup>West Lafayette/UM, <sup>2</sup>/US, <sup>3</sup>West Lafayette/US**11:30 - 11:45 MB2.2 - FOLDED DIELECTRIC METASURFACE PLATFORM FOR COMPACT OPTICAL SYSTEMS**M. Faraji-Dana<sup>1</sup>, E. Arbabi<sup>1</sup>, A. Arbabi<sup>2</sup>, S.M. Kamali<sup>1</sup>, H. Kwon<sup>1</sup>, A. Faraon<sup>1</sup>, <sup>1</sup>Pasadena/US, <sup>2</sup>Amherst/US**11:45 - 12:00 MB2.3 - EXCITATION OF EPSILON-NEAR-ZERO MODE IN OPTICAL FIBER**J. Yang, K. Minn, A. Anopchenko, S. Gurung, H. Lee, Waco/US**10:30 - 12:00 Utilizing and Compensating Transmission Effects**

El Mirador C East

Moderation: H. Batshon, TBC/US

**10:30 - 11:00 MC2.1 - NONLINEARITY MITIGATION WITH ADAPTIVE FILTERS**M. Paskov, Eatontown/US**11:00 - 11:15 MC2.2 - HYBRID FIBER LINKS USING QUASI-SINGLE-MODE FIBERS**X. Jiang<sup>1</sup>, I. Roudas<sup>2</sup>, L. Miranda<sup>3</sup>, <sup>1</sup>Staten Island/US, <sup>2</sup>Bozeman/US, <sup>3</sup>Pamplona/ES**11:15 - 11:30 MC2.3 - JOINT LOW-COMPLEXITY OPTO-ELECTRONIC CHROMATIC DISPERSION COMPENSATION FOR SHORT-REACH TRANSMISSION**S. Ranzini, F. Da Ros, D. Zibar, Kgs. Lyngby/DK**11:30 - 12:00 MC2.4 - TECHNIQUES FOR OPTICAL PARAMETRIC AMPLIFICATION USING HIGHLY NONLINEAR FIBER**S. Takasaka, Ichihara/JP

**10:30 - 12:00 Emerging PIC Technologies & Applications****El Mirador C West**

Moderation: S. Arafin, TBC/US

**10:30 - 10:45 MD2.2 - SILICON NITRIDE BRAGG GRATING WITH JOULE THERMAL TUNING FOR EXTERNAL CAVITY LASERS**F. Van Dijk<sup>1</sup>, P. Primiani<sup>1</sup>, S. Boust<sup>1</sup>, J.-M. Fedeli<sup>2</sup>, F. Duport<sup>1</sup>, C. Gomez<sup>1</sup>, J.-F. Paret<sup>1</sup>, A. Garreau<sup>1</sup>, K. Mekhazni<sup>1</sup>, C. Fortin<sup>1</sup>, <sup>1</sup>Palaiseau/FR, <sup>2</sup>Grenoble/FR**10:45 - 11:00 MD2.3 - CMOS COMPATIBLE OPTICAL ISOLATOR WITH TANDEM RING MODULATORS**A. Jain<sup>1</sup>, S. Dwivedi<sup>2</sup>, S. Arafin<sup>3</sup>, <sup>1</sup>Shakopee/US, <sup>2</sup>Leuven/BE, <sup>3</sup>Columbus/US**11:00 - 11:30 MD2.4 - NEUROMORPHIC PHOTONICS FOR DEEP LEARNING**V. Bangari<sup>1</sup>, B. Marquez<sup>1</sup>, A. Tait<sup>2</sup>, M. Nahmias<sup>2</sup>, T. Ferreira De Lima<sup>2</sup>, H.-T. Peng<sup>2</sup>, P. Prucnal<sup>2</sup>, B. Shastri<sup>1</sup>, <sup>1</sup>Kingston/CA, <sup>2</sup>/US**10:30 - 12:00 Nonlinear and High Q-Factor Microresonator Structures****La Vista A/B**

Moderation: D. Skryabin, /GB

**10:30 - 11:00 ME2.1 - BI-PERIODIC NANOPHOTONIC RESONATORS: A NEW APPROACH FOR OPTICAL PARAMETRIC OSCILLATORS AND OPTOMECHANICS**S. Combr  <sup>1</sup>, G. Marty<sup>1</sup>, I. Ghorbel<sup>1</sup>, D. Dodane<sup>1</sup>, F. Raineri<sup>2</sup>, A. De Rossi<sup>1</sup>, <sup>1</sup>PALAISEAU Cedex/FR, <sup>2</sup>PALAISEAU/FR**11:00 - 11:30 ME2.1 - QUADRATIC OPTICAL FREQUENCY COMBS**S. Wabnitz<sup>1</sup>, T. Hansson<sup>2</sup>, M. De Rosa<sup>3</sup>, I. Ricciardi<sup>3</sup>, F. Leo<sup>4</sup>, M. Erkintalo<sup>5</sup>, S. Mosca<sup>3</sup>, M. Parisi<sup>3</sup>, P. Parra-Rivas<sup>4</sup>, <sup>1</sup>Rome/IT, <sup>2</sup>Link  ping/SE, <sup>3</sup>Pozzuoli/IT, <sup>4</sup>Bruxelles/BE, <sup>5</sup>Auckland/NZ**11:30 - 11:45 ME2.3 - ULTRA-HIGH-Q MICRORING RESONATORS USING SINGLE CRYSTAL ALUMINUM NITRIDE ON SAPPHIRE PLATFORM**Y. Sun<sup>1</sup>, D. Laleyan<sup>1</sup>, E. Reid<sup>1</sup>, P. Wang<sup>1</sup>, X. Liu<sup>1</sup>, A. Pandey<sup>2</sup>, M. Soltani<sup>1</sup>, Z. Mi<sup>2</sup>, <sup>1</sup>/US, <sup>2</sup>Ann Arbor/US**11:45 - 12:00 ME2.4 - RAMAN SIGNAL AMPLIFICATION IN PHOTONIC CRYSTAL MICRORING RESONATORS**M. Karabiyik<sup>1</sup>, N. Akter<sup>1</sup>, N. Pala<sup>1</sup>, B.I. Akca<sup>2</sup>, <sup>1</sup>Miami/US, <sup>2</sup>Amsterdam/NL**10:30 - 12:00 Classical and Quantum Optical Fiber Communication****La Vista C**

Moderation: G. Milione, Princeton/US

**10:30 - 11:00 MF2.1 - EVOLUTION OF LONG DISTANCE QKD SYSTEMS**D. Nolan, S. Gray, J. Li, /US**11:00 - 11:30 MF2.2 - Shaping optical fibers to mode division multiplex without MIMO**L. Rusch, /CA

MG2

**10:30 - 12:00 Photonics for 5G – How Industry is Addressing the Challenge La Vista D/E**

Moderation: R. Waterhouse

10:30 - 11:00 **MG2.1 - Optical Communications for 5G**

X. Liu, /US

11:00 - 11:30 **MG2.2 - 5G RAN: Challenges and Solutions for Optical Transport**

J. Zou, /DE

11:30 - 12:00 **MG2.3 - Silicon Photonics for 5G**

J.K. Doylend, San Jose/US

MH2

**10:30 - 12:00 From Sensing to Imaging La Vista F**

Moderation: S. Mallidi, 02155/US

10:30 - 11:00 **MH2.1 - Single Molecule Sensors**

F. Vollmer, /GB

11:00 - 11:30 **MH2.3 - IMPROVING THE CONTRAST, SPEED, AND RESOLUTION OF FLUORESCENCE MICROSCOPY**

M. Guo, /US

**12:00 - 13:30 Lunch (on own)**

MB3

**13:30 - 14:45 2D Materials El Mirador B**

Moderation: P. Deotare, TBC/US

13:30 - 14:00 **MB3.1 - 2D MATERIAL INTEGRATED NANOPHOTONICS RESONATORS**

A. Majumdar, D. Rosser, /US

14:00 - 14:30 **MB3.2 - SPECTROSCOPY OF QUANTUM EMITTERS IN TWO-DIMENSIONAL H-BN**

G. Grosso, New York/US

14:30 - 14:45 **MB3.3 - FIELD ENHANCEMENT OF EPSILON-NEAR-ZERO MODES IN ATOMIC-LAYER-DEPOSITED ZNO:AL NANOLAYERS**

A. Anopchenko, S. Gurung, S. Bej, J. Joyner, H. Lee, Waco/US

**13:30 - 15:00 High Speed Photodetectors and Systems**

El Mirador C East

Moderation: A. Sarangan, TBC/US

**13:30 - 14:00 MC3.1 - NEXT GENERATION INFRARED TECHNOLOGY**N. Dhar, Fort Belvoir/US**14:00 - 14:15 MC3.2 - Dispersion engineered metasurfaces for broadband achromatic optics**W.T. Chen, F. Capasso, Cambridge/US**14:15 - 14:30 MC3.3 - WAVELENGTH MODULATION SPECTROSCOPY ENHANCED BY MACHINE LEARNING FOR EARLY FIRE DETECTION**Y. Matsuda<sup>1</sup>, M.-F. Huang<sup>2</sup>, Y. Tian<sup>2</sup>, A. Tanaka<sup>1</sup>, <sup>1</sup>Tokyo/JP, <sup>2</sup>Princeton/US**14:30 - 14:45 MC3.4 - BIG DATA ANALYTICS ON FIBER-OPTICAL DISTRIBUTED ACOUSTIC SENSING WITH RAYLEIGH ENHANCEMENTS**Z. Peng<sup>1</sup>, J. Jian<sup>1</sup>, M. Wang<sup>1</sup>, Q. Wang<sup>1</sup>, T. Boyer<sup>1</sup>, H. Wen<sup>2</sup>, H. Liu<sup>3</sup>, Z. Mao<sup>1</sup>, K.P. Chen<sup>1</sup>, <sup>1</sup>Pittsburgh/US, <sup>2</sup>Wuhan/CN, <sup>3</sup>Beijing/CN**14:45 - 15:00 MC3.5 - 25 GHZ BANDWIDTH HIGH SPEED PHOTODIODE FOR TWO-MICRON WAVELENGTH APPLICATION**Y. Chen, Z. Xie, B. Chen, Shanghai/CN**13:30 - 15:00 Photonic Integration for Large Capacity Optical Communication**

El Mirador C West

Moderation: S. Liu, Santa Barbara/US

**13:30 - 14:30 MD3.1 - PHOTONIC INTEGRATION TECHNOLOGY FOR COHERENT OPTICAL COMMUNICATION SYSTEMS**M. Larson, Milpitas/US**14:30 - 14:45 MD3.2 - High-Speed Electro-Absorption Modulated Laser at 1.3  $\mu\text{m}$  wavelength Based on Selective Area Growth Technique**J.-W. Shi, Z. Ahmad, R.-L. Chao, Y.-J. Hung, J. Chen, C.-C. Wei, /TW**14:45 - 15:00 MD3.3 - IMPROVEMENT OF QUANTUM-WELL INTERMIXING THROUGH ADJUSTING P-DOPED LAYER FOR HIGH-PERFORMANCE SOA-INTEGRATED EAM**Y.-J. Chiu<sup>1</sup>, Y.-J. Chen<sup>2</sup>, Y.-H. Fang<sup>1</sup>, <sup>1</sup>KAOHSIUNG/TW, <sup>2</sup>Kaohsiung/TW



ME3

**13:30 - 15:00 Metamaterial and Non-Reciprocal Nanophotonic Devices La Vista A/B**

Moderation: S. Combrié, PALAISEAU Cedex/FR

**13:30 - 14:00 ME3.1 - RECENT ADVANCES IN METAMATERIAL INTEGRATED PHOTONICS**

P. Cheben, Ottawa/CA

**14:00 - 14:30 ME3.2 - MAGNET-LESS NON-RECIPROCAL PHOTONICS**

A. Alu, New York/US

**14:30 - 14:45 ME3.3 - MID-INFRARED AIR TOP-CLADDED SUBWAVELENGTH GRATING WAVEGUIDES**

Y. Zou, T. Li, P. Zhou, Y. Wu, S. Tang, Shanghai/CN

**14:45 - 15:00 ME3.4 - ENHANCED SUBWAVELENGTH COUPLING AND NANOFOCUSING WITH FIBER-PLASMONIC HYBRID PROBE**

K. Minn<sup>1</sup>, H. Lee<sup>1</sup>, Z. Zhang<sup>2</sup>, <sup>1</sup>Waco/US, <sup>2</sup>/US

MF3

**13:30 - 14:45 Optical Fiber Sensors La Vista C**

Moderation: G. Milione, Princeton/US

**13:30 - 13:30 MF3.3 - INTRINSIC FABRY-PEROT INTERFEROMETER FOR VIBRATION MEASUREMENT BY ENHANCED RAYLEIGH BACKSCATTERING DOTS FABRICATED BY FEMTOSECOND LASER INSCRIPTION**

Y. Yang<sup>1</sup>, M. Wang<sup>1</sup>, Q. Yu<sup>2</sup>, K.P. Chen<sup>1</sup>, <sup>1</sup>Pittsburgh/US, <sup>2</sup>dalian/CN

**13:30 - 13:30 MF3.4 - OPTICAL SENSOR BEHAVIOR PREDICTION USING LSTM NEURAL NETWORK**

M. Zaghoul, Pittsburgh/US

**13:30 - 13:30 MF3.5 - TEMPERATURE-INDEPENDENT BENDING SENSOR BASED ON HOLLOW CORE MICROSTRUCTURED OPTICAL FIBER**

Y. Zheng<sup>1</sup>, P. Shum<sup>1</sup>, S. Liu<sup>2</sup>, Y. Luo<sup>1</sup>, B. Li<sup>3</sup>, Y. Zhang<sup>4</sup>, J.-L. Auguste<sup>5</sup>, G. Humbert<sup>5</sup>, <sup>1</sup>Singapore/SG, <sup>2</sup>Wuhan/CN, <sup>3</sup>Guangzhou/CN, <sup>4</sup>Shenyang/CN, <sup>5</sup>Limoges/FR

MG3

**13:30 - 14:30 University Photonics Technology Transfer for Successful Start-ups – A Global Perspective La Vista D/E**

Moderation: G. Cincotti, /IT

**13:30 - 14:00 MG3.1 - Tech Transfer at University of California Santa Barbara**

L. Coldren, /US

**14:00 - 14:30 MG3.2 - Tech Transfer at The University of Melbourne and Australia**

T.A. Nirmalathas, /AU

**13:30 - 14:45 Frontiers in Biophotonics****La Vista F**

Moderation: B. Applegate, TBC/US

**13:30 - 13:30 MH3.2 - PHOTODYNAMIC THERAPY OF ORAL LESIONS IN LOW COST SETTINGS: TECHNOLOGY DEVELOPMENT, FEASIBILITY AND EVALUATION IN PATIENTS**S. Mallidi, /US**13:30 - 13:30 MH3.3 - IMAGING GENETICALLY-MODIFIED CELLS WITH A MINIATURIZED MULTIMODAL OPTICAL COHERENCE TOMOGRAPHY + FLUORESCENCE PROBE**J. Li<sup>1</sup>, B. Quirk<sup>1</sup>, J. Delhove<sup>1</sup>, R. Kirk<sup>1</sup>, A. Mccarron<sup>1</sup>, P. Cmielewski<sup>1</sup>, C. Boudoux<sup>2</sup>, D. Parsons<sup>1</sup>, M. Donnelley<sup>1</sup>, R. Mclaughlin<sup>1</sup>, <sup>1</sup>AU, <sup>2</sup>TBC/CA**13:30 - 13:30 MH3.4 - HIGH-SPEED BLOOD FLOW IMAGING WITH SCANLESS CONFOCAL MICROSCOPE**C. Gong<sup>1</sup>, N. Kulkarni<sup>1</sup>, W. Zhu<sup>1</sup>, C. Nguyen<sup>1</sup>, C. Curiel-Lewandrowski<sup>1</sup>, D. Kang<sup>2</sup>, <sup>1</sup>/US, <sup>2</sup>TBC/US**15:00 - 15:30 Coffee Break****La Vista & El Mirador Foyers****15:30 - 16:45 Sensing & Imaging****El Mirador B**

Moderation: P. Deotare, TBC/US

**15:30 - 16:00 MB4.1 - ENGINEERING LASER COHERENCE AND ITS APPLICATIONS**H. Cao, New Haven/US**16:00 - 16:15 MB4.3 - MULTIPLEXED DETECTION OF SINGLE ANTIBIOTIC DRUG-RESISTANT PLASMIDS USING MULTIMODE INTERFERENCE WAVEGUIDE BASED OPTOFLUIDIC CHIP**G. Gopalakrishnan Meena<sup>1</sup>, O. Brown<sup>2</sup>, R. Hanson<sup>2</sup>, R. Wood<sup>2</sup>, W. Pitt<sup>2</sup>, A. Woolley<sup>2</sup>, R. Robison<sup>2</sup>, A.R. Hawkins<sup>2</sup>, H. Schmidt<sup>1</sup>, <sup>1</sup>Santa Cruz/US, <sup>2</sup>Provo/US**16:15 - 16:45 MB4.4 - HYBRID PLASMONIC SENSOR FOR THE DETECTION OF NEUROTRANSMITTERS DIRECTLY FROM THE BLOOD**D. Chanda, Orlando/UM

**15:30 - 17:00 High Power and UTC Detectors, Optics and Electronics EI Mirador C East**

Moderation: N. Dhar, Fort Belvoir/US

**15:30 - 15:45 MC4.1 - HIGH-POWER FLIP-CHIP BONDED PHOTODIODE WORKING AT 1064NM**

Y. Peng<sup>1</sup>, J. Zang<sup>1</sup>, K. Sun<sup>2</sup>, Z. Yang<sup>3</sup>, J. Campbell<sup>1</sup>, <sup>1</sup>CHARLOTTESVILLE/US,  
<sup>2</sup>Charlottesville/US, <sup>3</sup>Newark/US

**15:45 - 16:00 MC4.2 - TYPE-II HYBRID ABSORBER UTC-PDS WITH ENHANCED SPEED AND RESPONSIVITY PERFORMANCES ACROSS 1.3 TO 1.55  $\mu\text{m}$  WAVELENGTHS**

J.-W. Shi, N. Naseem, H.-Y. Zhao, /TW

**16:00 - 16:15 MC4.3 - DEEP-ULTRAVIOLET B-GA2O3 PHOTODETECTORS GROWN ON MGO SUBSTRATES WITH A TIN TEMPLATE**

K.-H. Li<sup>1</sup>, N. Alfaraj<sup>1</sup>, C.H. Kang<sup>1</sup>, L. Braic<sup>1</sup>, N.C. Zoita<sup>2</sup>, A.E. Kiss<sup>2</sup>, T.K. Ng<sup>1</sup>, B.S. Ooi<sup>1</sup>,  
<sup>1</sup>Thuwal/SA, <sup>2</sup>Magurele/RO

**16:15 - 16:30 MC4.4 - INFRARED DIGITAL FOCAL PLANE ARRAYS FOR EARTH REMOTE SENSING APPLICATIONS**

S. Gunapala, Pasadena/US

**16:30 - 16:45 MC4.5 - MINIMIZING DAC COMPLEXITY FOR CONTROL OF OPTICAL PHASED ARRAYS**

J.Ø. Kjellman, T.D. Kongnyuy, B. Figeys, S. Kerman, M.S. Dahlem, X. Rottenberg, P. Soussan, R. Jansen, Leuven/BE

**16:45 - 17:00 MC4.6 - IMPACT OF NONLINEARITY IN AN MUTC PHOTODETECTOR ON AN RF-MODULATED FREQUENCY COMB**

S.E. Jamali Mahabadi<sup>1</sup>, T.F. Carruthers<sup>1</sup>, C.R. Menyuk<sup>1</sup>, M.N. Hutchinson<sup>2</sup>, J.D. McKinney<sup>2</sup>,  
K.J. Williams<sup>2</sup>, <sup>1</sup>Baltimore/US, <sup>2</sup>Washington D.C./US

MD4

**15:30 - 17:00 Novel Photonic Materials**

**El Mirador C West**

Moderation: K. Choquette, Champaign/US

**15:30 - 16:00 MD4.1 - INDISTINGUISHABLE ON-CHIP SINGLE-PHOTON SOURCES**

M. Fox, Sheffield/GB

**16:00 - 16:15 MD4.2 - SPINNING RADIATION FROM TOPOLOGICAL INSULATORS**

E. Khan, E. Narimanov, West Lafayette/US

**16:15 - 16:30 MD4.3 - TUNGSTEN BORIDE BROADBAND AND THERMALLY STABLE ABSORBER**

A. Haque<sup>1</sup>, M. Morshed<sup>1</sup>, Z. Li<sup>2</sup>, L. Li<sup>2</sup>, K. Vora<sup>2</sup>, A. Miroshnichenko<sup>1</sup>, B. Olbricht<sup>3</sup>, H. Hattori<sup>1</sup>, <sup>1</sup>ACT/AU, <sup>2</sup>Canberra/AU, <sup>3</sup>Newark/US

**16:30 - 16:45 MD4.4 - DIAMOND SUBSTRATE HIGH FLUENCE NANO-ANTENNAS**

M. Morshed<sup>1</sup>, Z. Li<sup>1</sup>, B. Olbricht<sup>2</sup>, H. Hattori<sup>3</sup>, <sup>1</sup>Canberra/AU, <sup>2</sup>Newark/US, <sup>3</sup>ACT/AU

**16:45 - 17:00 MD4.5 - ANTIREFLECTION STRATEGY FOR NEAR-ZERO REFRACTIVE INDEX PHOTONIC CRYSTALS APPLICABLE TO AN ELEMENT-BY-ELEMENT FULL-RANK OPTICAL WIRELESS MIMO SYSTEM**

H. Iizuka<sup>1</sup>, H. Tanaka<sup>2</sup>, S. Sugiura<sup>3</sup>, <sup>1</sup>Ann Arbor/US, <sup>2</sup>Nagakute/JP, <sup>3</sup>Tokyo/JP

ME4

**15:30 - 16:30 Lasing Microdevices**

**La Vista A/B**

Moderation: P. Cheben, Ottawa/CA

**15:30 - 16:00 ME4.1 - EARTH-ROTATION-RATE MEASUREMENT AND EXCEPTIONAL POINTS IN CHIP-BASED BRILLOUIN LASER GYROSCOPES**

K. Vahala, /US

**16:00 - 16:15 ME4.2 - LOW THRESHOLD GAIN VISIBLE SEMICONDUCTOR NANOLASERS**

Y. Fan, K.A. Shore, Y. Hong, Bangor/GB

**15:30 - 17:15 Optical Fiber Nonlinearities and Devices**

La Vista C

Moderation: G. Milione, Princeton/US

**15:30 - 16:00 MF4.1 - THE INFLUENCE OF ANGULAR MOMENTUM ON FIBER NONLINEAR OPTICS**S. Ramachandran, /US**16:00 - 16:15 MF4.2 - MULTIMODE INTERFERENCE TUNABLE FILTER IN CHALCOGENIDE FIBER**K. Zhang, I. Alamgir, Y.-A. Peter, M. Rochette, Montreal/CA**16:15 - 16:30 MF4.3 - TRACKING THE DISPERSIVE PROPAGATION OF A FAST WAVEFORM USING A TEMPORAL PHASE MODULATOR**X. Zhu<sup>1</sup>, J. Azana<sup>2</sup>, <sup>1</sup>Montréal/CA, <sup>2</sup>Montreal/CA**16:30 - 16:45 MF4.5 - HIGH RESOLUTION DYNAMIC STRAIN SENSOR USING A POLARIZATION MAINTAINING FIBER BRAGG GRATING**D. Barot, L. Duan, Huntsville/US**16:45 - 17:00 MF4.6 - TWO TANTALUM BORIDES AS POTENTIAL SATURABLE ABSORBERS FOR Q-SWITCHED FIBER LASERS**K. As'Ham<sup>1</sup>, A. Haque<sup>2</sup>, Z. Li<sup>2</sup>, M. Morshed<sup>2</sup>, B. Olbricht<sup>3</sup>, H. Hattori<sup>2</sup>, <sup>1</sup>Canberra/AU, <sup>2</sup>Canberra/AU, <sup>3</sup>Newark/US**15:30 - 17:30 Photonics in Government Labs – The Interface between Industry and University**La Vista  
D/E

Moderation: D. Novak, /US

**15:30 - 16:00 MG4.1 - Photonics Technology Research at MIT LL**P. Juodawlkis, /US**16:00 - 16:30 MG4.3 - Photonics Technology Research at JHU APL**T. Clark, /US**16:30 - 17:00 MG4.4 - Photonics Technology Research at NIST**V. Aksyuk, /US**17:00 - 17:30 MG4.5 - Collaborating with Sandia's National Security Photonics Center**R. McCormick, /US

**15:30 - 16:45 BIO TUT - Photonic and Microfluidic Devices**

La Vista F

Moderation: M. Villiger, Boston/US

**15:30 - 16:15 MH4.1 - PHOTONIC RESONATOR HYBRIDS FOR ULTRASENSITIVE LIQUID BIOPSY OF NUCLEIC ACID BIOMARKERS FOR CANCER**

B. Cunningham<sup>1</sup>, T. Canady<sup>1</sup>, N. Li<sup>1</sup>, Q. Huang<sup>2</sup>, Y. Lu<sup>1</sup>, M. Kohli<sup>3</sup>, <sup>1</sup>Urbana/US, <sup>2</sup>Urbana, IL/US, <sup>3</sup>Tampa, FL/US

**16:15 - 16:30 MH4.2 - THREE-DIMENSIONAL HYDRODYNAMIC FOCUSING DESIGNS FOR INTEGRATED OPTOFLUIDIC DETECTION ENHANCEMENT**

E. Hamilton<sup>1</sup>, J. Wright<sup>1</sup>, V. Ganjalizadeh<sup>1</sup>, H. Schmidt<sup>2</sup>, A. Hawkins<sup>3</sup>, <sup>1</sup>/US, <sup>2</sup>Santa Cruz/US, <sup>3</sup>Provo/US

**16:30 - 16:45 MH4.3 - FREE SPACE EXCITATION IN OPTOFLUIDIC DEVICES FOR SINGLE PARTICLE DETECTION**

M.N. Amin<sup>1</sup>, M. Hamblin<sup>2</sup>, G.G. Meena<sup>1</sup>, A.R. Hawkins<sup>2</sup>, H. Schmidt<sup>1</sup>, <sup>1</sup>Santa Cruz/US, <sup>2</sup>Provo/US

TuA1

**08:30 - 09:30 Optical Coherence Tomography**

**El Mirador A**

Moderation: P. Munro, London/GB

08:30 - 08:45 **TuA1.1 - A 3-D SUBNANOMETER VIBROMETRY SYSTEM BASED ON OPTICAL COHERENCE TOMOGRAPHY**

S. Kim<sup>1</sup>, W. Kim<sup>2</sup>, J. Oghalai<sup>3</sup>, B. Applegate<sup>4</sup>, <sup>1</sup>College Station/US, <sup>2</sup>Los Angeles/US, <sup>3</sup>/US, <sup>4</sup>TBC/US

08:45 - 09:00 **TuA1.2 - POLARIZATION-SENSITIVE OPTICAL COHERENCE TOMOGRAPHY WITH A SINGLE INPUT POLARIZATION STATE**

M. Villiger<sup>1</sup>, Q. Xiong<sup>2</sup>, N. Wang<sup>2</sup>, X. Liu<sup>2</sup>, L. Liu<sup>2</sup>, B. Bouma<sup>1</sup>, <sup>1</sup>Boston/US, <sup>2</sup>/SG

09:00 - 09:15 **TuA1.3 - PLGA ENCAPSULATED METHYLENE BLUE AS A CONTRAST AGENT FOR OPTICAL COHERENCE TOMOGRAPHY**

J. Palma-Chavez<sup>1</sup>, W. Kim<sup>2</sup>, M. Serafino<sup>2</sup>, S. Kim<sup>1</sup>, J. Jo<sup>2</sup>, P. Charoenphol<sup>2</sup>, B. Applegate<sup>3</sup>, <sup>1</sup>College Station/US, <sup>2</sup>/US, <sup>3</sup>TBC/US

09:15 - 09:30 **TuA1.4 - SPATIOTEMPORAL OPTICAL COHERENCE (STOC) MANIPULATION IMPROVES IMAGING WITH FULL-FIELD SWEEP-SOURCE OCT**

D. Borycki, P. Węgrzyn, M. Wojtkowski, Warsaw/PL

TuB1

**08:30 - 10:00 Award Winning Photonics Science and Technology I**

**El Mirador B**

Moderation: Z. Mi, Ann Arbor/US

08:30 - 09:00 **TuB1.1 - Next Generation Silicon Photonics**

M. Lipson, /US

09:00 - 09:30 **TuB1.2 - Metastable III/V Materials for Semiconductor Lasers**

L. Mawst, TBC/US

09:30 - 10:00 **TuB1.3 - AUTOMATED DISEASE IDENTIFICATION WITH OPTICAL IMAGING BASED COMPACT AND FIELD PORTABLE BIO-PHOTONICS SENSORS**

B. Javidi<sup>1</sup>, T. O'Connor<sup>1</sup>, A. Anand<sup>2</sup>, I. Moon<sup>3</sup>, <sup>1</sup>/US, <sup>2</sup>/IN, <sup>3</sup>/KP

**08:30 - 09:45 Optical Computing Microdevices****El Mirador C East**

Moderation: M. Cotrufo

**08:30 - 09:00 TuC1.1 - PHOTONIC RESONATOR STRUCTURES: TOPOLOGY IN SCATTERING, AND COMPUTING APPLICATIONS**S. Fan, /US**09:00 - 09:15 TuC1.2 - FULLY INTEGRATED 20 GBIT/S SILICON OPTICAL COMPUTING CHIP FOR 4-BIT FULL ADDERS**Z. Ying<sup>1</sup>, C. Feng<sup>2</sup>, Z. Zhao<sup>1</sup>, D. Pan<sup>1</sup>, R. Chen<sup>1</sup>, <sup>1</sup>AUSTIN/US, <sup>2</sup>Austin/US**09:15 - 09:30 TuC1.3 - MULTI-OPERAND DIRECTED LOGIC-BASED ELECTRO-OPTIC GATES FOR ULTRACOMPACT OPTICAL COMPUTING**Z. Ying<sup>1</sup>, C. Feng<sup>2</sup>, Z. Zhao<sup>1</sup>, D. Pan<sup>1</sup>, R. Chen<sup>1</sup>, <sup>1</sup>AUSTIN/US, <sup>2</sup>Austin/US**09:30 - 09:45 TuC1.4 - ALL-OPTICAL SWITCHING USING A III-V NANOWIRE INTEGRATED SI PHOTONIC CRYSTAL NANOCAVITY**M. Takiguchi, N. Takemura, K. Tateno, K. Nozaki, S. Sasaki, S. Sergent, E. Kuramochi, T. Wasawo, A. Yokoo, A. Shinya, M. Notomi, Astugi/JP**08:30 - 09:45 Semiconductor-Based Emitters and Detectors****El Mirador C West**

Moderation: M. Fox, Sheffield/GB

**08:30 - 09:00 TuD1.1 - DIGITAL ALLOY AVALANCHE PHOTODIODES**J. Campbell<sup>1</sup>, S. Bank<sup>2</sup>, <sup>1</sup>CHARLOTTESVILLE/US, <sup>2</sup>Austin/US**09:00 - 09:15 TuD1.2 - COMPARISON STUDY OF HIGH-TEMPERATURE SPONTANEOUS EMISSION QUANTUM EFFICIENCY OF COMMERCIAL LED MATERIALS**A. Sabbar<sup>1</sup>, S. Madhusoodhanan<sup>1</sup>, S. Al-Kabi<sup>1</sup>, B. Dong<sup>2</sup>, J. Wang<sup>2</sup>, S. Atcity<sup>3</sup>, R. Kaplar<sup>3</sup>, H.A. Mantooh<sup>1</sup>, S.-Q. Yu<sup>1</sup>, Z. Chen<sup>1</sup>, <sup>1</sup>Fayetteville/US, <sup>2</sup>CN, <sup>3</sup>/US**09:15 - 09:30 TuD1.3 - INP QUANTUM DOT MODE-LOCKED LASERS AND MATERIALS STUDIES**Z. Li<sup>1</sup>, S. Shutts<sup>1</sup>, C. Allford<sup>1</sup>, A. Krysa<sup>2</sup>, P. Smowton<sup>1</sup>, <sup>1</sup>Cardiff/GB, <sup>2</sup>/GB**09:30 - 09:45 TuD1.4 - ENGINEERING MONOCLINIC (AL,IN,GA)2O3 FOR ULTRAVIOLET PHOTODETECTOR**X. Liu, C.-K. Tan, Potsdam/US



TuE1

**08:30 - 10:00 Avalanche Photodetectors**

**La Vista A/B**

Moderation: A. Sarangan, TBC/US

**08:30 - 08:45 TuE1.1 - HIGH-SPEED AND WIDE DYNAMIC RANGE AVALANCHE PHOTODIODE FOR COHERENT LIDAR APPLICATION**

J.-W. Shi<sup>1</sup>, H.-Y. Zhao<sup>1</sup>, N. Nasseem<sup>1</sup>, A. Jones<sup>2</sup>, J. Campbell<sup>3</sup>, <sup>1</sup>/TW, <sup>2</sup>Charlottesville/US, <sup>3</sup>/US

**08:45 - 09:00 TuE1.2 - UNDERSTANDING THE ROLE OF MINIGAPS IN APDS: TOWARDS DESIGNING A BETTER PHOTODETECTOR**

S. Ahmed<sup>1</sup>, J. Zheng<sup>1</sup>, Y. Tan<sup>2</sup>, J. Campbell<sup>1</sup>, A. Ghosh<sup>1</sup>, <sup>1</sup>Charlottesville/US, <sup>2</sup>San Jose/US

**09:00 - 09:15 TuE1.3 - CMOS COMPATIBLE DUAL AVALANCHE PHOTODIODE FOR ALGORITHMIC VISIBLE SPECTRAL SENSING**

M.M. Hossain, Albuquerque/US

**09:15 - 09:30 TuE1.4 - EDGE BREAKDOWN SUPPRESSION OF AVALANCHE PHOTODIODES USING ZN DIFFUSION AND SELECTIVE AREA GROWTH**

O. Pitts, O. Salehzadeh, G. Bonneville, A. Springthorpe, Ottawa/CA

**09:30 - 09:45 TuE1.5 - HIGH-SPEED INGAAS/INALAS SACM AVALANCHE PHOTODIODES WITH ROBUST OPTICAL & ELECTRICAL OVERLOAD**

J.J.-S. Huang, West Hills/US

**09:45 - 10:00 TuE1.6 - CHARACTERIZATION OF DEEP LEVELS IN INP BASED INGAASBI PHOTODETECTOR**

J. Huang<sup>1</sup>, B. Chen<sup>1</sup>, Z. Deng<sup>1</sup>, Y. Gu<sup>2</sup>, Y. Ma<sup>2</sup>, J. Zhang<sup>2</sup>, X. Chen<sup>2</sup>, J. Shao<sup>2</sup>, <sup>1</sup>Shanghai/CN, <sup>2</sup>/CN

TuF1

**08:30 - 10:00 Photonic Approaches to Quantum Information Processing**

**La Vista C**

Moderation: M. Brodsky, Adelphi/US

**08:30 - 09:00 TuF1.1 - FREQUENCY BIN QUANTUM PHOTONICS**

A. Weiner, West Lafayette/US

**09:00 - 09:30 TuF1.2 - Integrated photonics for high-performance quantum sources and detectors**

S. Mookherjea, /US

**09:30 - 10:00 TuF1.3 - PROGRESS AND OPPORTUNITIES IN TRAPPED ION QUANTUM COMPUTING**

J. Kim, S. Crain, Y. Wang, V. Inlek, C. Fang, Y. Aikyo, R. Spivey, G. Vrijsen, J. Kim, Durham/US

TuG1

**08:30 - 10:00 Photonics and Hybrid Integrations**

**La Vista D/E**

Moderation: P. Morton, West Friendship/US

**08:30 - 09:00 TuG1.1 - NOVEL HIGH-PERFORMANCE SEMICONDUCTOR LASERS AND PICS**

M. Mashanovitch, /US

**09:00 - 09:15 TuG1.2 - MICRO-TRANSFER-PRINTED III-V-ON-SILICON C-BAND SOAS WITH 17 DB GAIN**

B. Hag<sup>1</sup>, S. Kumari<sup>1</sup>, J. Zhang<sup>1</sup>, K.V. Gasse<sup>1</sup>, A. Gocalinska<sup>2</sup>, E. Pelucchi<sup>2</sup>, B. Corbett<sup>2</sup>, G. Roelkens<sup>1</sup>, <sup>1</sup>Ghent/BE, <sup>2</sup>Cork/IE

**09:15 - 09:30 TuG1.3 - TELECOM III-V NANO-LASERS WITH DISTRIBUTED BRAGG REFLECTORS GROWN ON (001) SILICON-ON-INSULATORS**

Y. Han, W.K. Ng, Y. Xue, K.S. Wong, K.M. Lau, /HK

**09:30 - 09:45 TuG1.4 - IMPROVING RELIABILITY OF INAS QUANTUM DOT LASERS ON SILICON SUBSTRATES**

J. Selvidge<sup>1</sup>, J. Norman<sup>1</sup>, D. Jung<sup>1</sup>, E. Hughes<sup>1</sup>, M. Salmon<sup>2</sup>, J. Bowers<sup>1</sup>, R. Herrick<sup>3</sup>, K. Mukherjee<sup>4</sup>, <sup>1</sup>Santa Barbara/US, <sup>2</sup>Raleigh/US, <sup>3</sup>Santa Clara/US, <sup>4</sup>Goleta/US

**09:45 - 10:00 TuG1.5 - 10 GBPS ERROR-FREE TRANSMISSION OF A HIGH COHERENT SI/III-V HYBRID DISTRIBUTED FEEDBACK LASER UNDER STRONG OPTICAL FEEDBACK**

S. Gomez<sup>1</sup>, H. Huang<sup>1</sup>, J. Duan<sup>1</sup>, B. Sawadogo<sup>1</sup>, A. Gallet<sup>2</sup>, A. Shen<sup>2</sup>, S. Combrié<sup>3</sup>, G. Baili<sup>3</sup>, A. De Rossi<sup>3</sup>, F. Grillot<sup>1</sup>, <sup>1</sup>Paris/FR, <sup>2</sup>/FR, <sup>3</sup>PALAISEAU Cedex/FR

TuH1

**08:30 - 09:45 Passive Integrated Optics**

**La Vista F**

Moderation: J.D. Ryckman, Clemson/US

**08:30 - 09:00 TuH1.1 - BROADBAND AND LOW-LOSS SILICON-PHOTONIC PASSIVES: LEVERAGING BIREFRINGENCE OF SILICON CHANNEL WAVEGUIDE FOR COHERENT APPLICATIONS**

A. Melikyan, K. Kim, P. Dong, Holmdel/US

**09:00 - 09:15 TuH1.2 - HIGHLY DISPERSIVE COUPLED MODES IN A SIN/SIO<sub>2</sub>/SI HETEROSTRUCTURE**

M.B. Mia<sup>1</sup>, S. Kim<sup>2</sup>, <sup>1</sup>Lubbock/US, <sup>2</sup>LUBBOCK/US

**09:15 - 09:30 TuH1.3 - BROADBAND SILICON TM-PASS POLARIZER USING A SLOT-ASSISTED PERIODIC WAVEGUIDE**

H. Zafar<sup>1</sup>, M. Odeh<sup>2</sup>, A. Khilo<sup>2</sup>, M.S. Dahlem<sup>3</sup>, <sup>1</sup>/AE, <sup>2</sup>/US, <sup>3</sup>Leuven/BE

**09:30 - 09:45 TuH1.4 - A DESIGN OF PLC-BASED 6-MODE EXCHANGER IN MODE DIVISION MULTIPLEXED TRANSMISSION**

M. Shirata<sup>1</sup>, T. Fujisawa<sup>1</sup>, T. Sakamoto<sup>2</sup>, T. Matsui<sup>2</sup>, K. Nakajima<sup>2</sup>, K. Saitoh<sup>3</sup>, <sup>1</sup>/JP, <sup>2</sup>Tsukuba/JP, <sup>3</sup>Sapporo/JP

**10:00 - 10:30 Coffee Break**

**La Vista & El Mirador Foyers**

TuA2

**10:30 - 12:00 Computational Imaging**

**El Mirador A**

Moderation: D. Borycki, Warsaw/PL

10:30 - 11:00 **TuA2.1 - DEEP LEARNING-ENABLED COMPUTATIONAL MICROSCOPY AND SENSING**

A. Ozcan, Z. Gorocs, Z. Ballard, /US

11:00 - 11:15 **TuA2.2 - SYNTHETIC APERTURE MICROSCOPY FOR GIGAPIXEL DYNAMIC IMAGING**

S. Jung, Ulsan/KR

11:15 - 11:30 **TuA2.3 - CONFOCAL IMAGING THROUGH A MULTIMODE FIBER WITHOUT ACTIVE WAVE-CONTROL**

S.-Y. Lee<sup>1</sup>, B. Bouma<sup>2</sup>, M. Villiger<sup>2</sup>, <sup>1</sup>Cambridge/US, <sup>2</sup>Boston/US

11:30 - 11:45 **TuA2.4 - FAST IMAGE RECOVERY THROUGH DYNAMIC TURBID MEDIA VIA PARALLEL BISPECTRUM ANALYSIS**

B. Hwang, Ulsan/KR

11:45 - 12:00 **TuA2.5 - SOLVING THE INVERSE PROBLEM IN OCT USING FULL-WAVE ADJOINT MODELS**

C. Macdonald<sup>1</sup>, S. Arridge<sup>1</sup>, P. Munro<sup>2</sup>, <sup>1</sup>BT/GB, <sup>2</sup>London/GB

TuB2

**10:30 - 12:00 Award Winning Photonics Science and Technology II**

**El Mirador B**

Moderation: Z. Mi, Ann Arbor/US

10:30 - 11:00 **TuB2.1 - Optofluidic Waveguides - Construction and Operation**

A.R. Hawkins, Provo/US

11:00 - 11:30 **TuB2.2 - Optofluidic Waveguides – Biomedical Applications**

H. Schmidt, /US

11:30 - 12:00 **TuB2.3 - BREAKING THE LIMITS IN PHOTOACOUSTIC IMAGING: SMALLER, DEEPER, AND MORE COLORFUL**

J. Yao, /US

**10:30 - 12:00 Access Networks****El Mirador C East**

Moderation: I. Roudas, TBC/US

**10:30 - 11:00 TuC2.1 - WIRED AND WIRELESS CONVERGENCE IN FUTURE OPTICAL ACCESS NETWORKS**C. Browning, /IE**11:00 - 11:30 TuC2.2 - OPTICAL FIBER IN WIRELESS NETWORKS: FROM RADIO-OVER-FIBER DAS TO 5G RAN**B. Imanilov<sup>1</sup>, M. Sauer<sup>2</sup>, A. Kobayakov<sup>2</sup>, <sup>1</sup>/IL, <sup>2</sup>/US**11:30 - 11:45 TuC2.3 - DEMONSTRATION OF REFLECTED INTERFERENCE CANCELLATION IN SINGLE-WAVELENGTH BIDIRECTIONAL PON SYSTEM**S. Shibita, D. Hisano, K. Mishina, A. Maruta, Suita/JP**11:45 - 12:00 TuC2.4 - DYNAMIC BANDWIDTH ALLOCATION AND FORWARDING ORDER CONTROL TECHNIQUES IN TDM-PON FOR ACCOMMODATING FRONTHAUL TRAFFIC**D. Hisano<sup>1</sup>, Y. Nakayama<sup>2</sup>, <sup>1</sup>2-1 Yamadaoka, Suita, Osaka/JP, <sup>2</sup>Tokyo/JP**10:30 - 11:15 Metamaterials, Metasurfaces, and Chiral Materials****El Mirador C West**

Moderation: J. Campbell, Charlottesville/US

**10:30 - 10:45 TuD2.4 - ELECTROMAGNETIC REFLECTION AND TRANSMISSION RESPONSE OF A CHIRAL SLAB RESONATOR TO A CIRCULARLY POLARIZED WAVE**M. Chatterjee, R. Atai, Dayton/US**10:45 - 11:00 TuD2.5 - HIGHLY TUNABLE, FLEXIBLE AND STRETCHABLE FREQUENCY SELECTIVE SURFACE-BASED THZ BANDPASS FILTER**N. Akter, M. Karabiyik, N. Pala, Miami/US**10:30 - 11:30 Nonlinear Processes in Photonic Crystal Fibers****La Vista A/B**

Moderation: C.-S. Bres, /CH

**10:30 - 11:00 TuE2.1 - Real-time Measurements of Ultrafast Instabilities**G. Genty, /FI**11:00 - 11:15 TuE2.3 - MOLECULAR GASES FOR LOW ENERGY PULSE COMPRESSION IN HOLLOW CORE FIBERS**E. Haddad, R. Safaei, O. Kwon, A. Leblanc, R. Piccoli, Y.-G. Jeong, H. Ibrahim, B.E. Schmidt, R. Morandotti, L. Razzari, F. Légaré, P. Lassonde, Varennes/CA

**10:30 - 12:00 The Art of Disturbing Quantum Information La Vista C**

Moderation: W. Munro, /JP

**10:30 - 11:30 TuF2.1 - QUANTUM COMMUNICATIONS AND NETWORKING**P. Kumar, /US**11:30 - 11:45 TuF2.2 - EFFECT OF PUMP BANDWIDTH ON MEASUREMENTS OF FREQUENCY-BIN ENTANGLEMENT.**N. Lingaraju<sup>1</sup>, O. Sandoval<sup>1</sup>, D. Leaird<sup>1</sup>, M. Brodsky<sup>2</sup>, A. Weiner<sup>1</sup>, <sup>1</sup>West Lafayette/US, <sup>2</sup>Adelphi/US**11:45 - 12:00 TuF2.3 - Entanglement Distillation Using Polarization Dependent Loss**D.E. Jones<sup>1</sup>, B.T. Kirby<sup>1</sup>, G. Riccardi<sup>2</sup>, C. Antonelli<sup>2</sup>, M. Brodsky<sup>3</sup>, <sup>1</sup>/US, <sup>2</sup>/IT, <sup>3</sup>Adelphi/US**10:30 - 12:00 Low Noise and Telecom Lasers La Vista D/E**

Moderation: M. Mashanovitch, /US

**10:30 - 11:00 TuG2.1 - HIGH-POWER, ULTRA-LOW NOISE SEMICONDUCTOR LASERS**P. Morton<sup>1</sup>, M. Morton<sup>2</sup>, M. Tran<sup>3</sup>, D. Huang<sup>3</sup>, C. Xiang<sup>3</sup>, C. Morton<sup>1</sup>, J. Khurgin<sup>4</sup>, J. Bowers<sup>3</sup>, <sup>1</sup>West Friendship/US, <sup>2</sup>/US, <sup>3</sup>Santa Barbara/US, <sup>4</sup>Baltimore/US**11:00 - 11:15 TuG2.2 - 8-W-PEAK SELF-PULSATING PHOTONIC-CRYSTAL SURFACE EMITTING LASER WITH RING-SHAPED SATURABLE ABSORBER**R. Morita<sup>1</sup>, T. Inoue<sup>1</sup>, M. De Zoysa<sup>1</sup>, K. Ishizaki<sup>2</sup>, Y. Tanaka<sup>1</sup>, S. Noda<sup>2</sup>, <sup>1</sup>Kyoto city/JP, <sup>2</sup>/JP**11:15 - 11:30 TuG2.3 - POWER-BANDWIDTH TRADE-OFFS OF 25 GBPS TRIPLE VCSEL ARRAYS**N. Haghighi, S. Cwalina, M. Zorn, P. Moser, J. Lott, Berlin/DE**11:30 - 11:45 TuG2.4 - IN-PHASE MODULATION BANDWIDTH ENHANCEMENT IN COUPLED MICROCAVITY LASER ARRAYS**H. Dave<sup>1</sup>, Z. Gao<sup>2</sup>, K. Choquette<sup>3</sup>, <sup>1</sup>Urbana/US, <sup>2</sup>Redmond/US, <sup>3</sup>Champaign/US**11:45 - 12:00 TuG2.5 - A MONOLITHIC ELECTRO-OPTIC INTERFEROMETRIC TUNABLE LASER WITH A 44-NM TUNING RANGE AND BELOW 700 KHZ LINEWIDTHS**G.-L. Su, M.C. Wu, /US

TuH2

**10:30 - 11:45 Novel Interconnect Architectures**

**La Vista F**

Moderation: J.D. Ryckman, Clemson/US

**10:30 - 11:00 TuH2.1 - OPTICAL INTERCONNECTS FOR HIGH-PORT AND LOW-LATENCY ROUTING**

N. Pleros, M. Moralis-Pegios, S. Pitris, N. Terzenidis, C. Mitsolidou, G. Mourgias-Alexandris, K. Vysokinos, T. Alexoudi, Thessaloniki/GR

**11:00 - 11:15 TuH2.2 - A NOVEL ARCHITECTURE FOR A TWO-TAP FEED-FORWARD OPTICAL OR ELECTRICAL DOMAIN EQUALIZER USING A DIFFERENTIAL ELEMENT**

A. Maharry, H. Andrade, T. Hirokawa, J. Buckwalter, C. Schow, /US

**11:15 - 11:30 TuH2.4 - ALL-OPTICAL PROCESSING WITH DYNAMIC FREQUENCY TRANSFORMATIONS**

H.-H. Lu<sup>1</sup>, J. Lukens<sup>2</sup>, B. Qi<sup>2</sup>, P. Lougovski<sup>2</sup>, A. Weiner<sup>1</sup>, B. Williams<sup>2</sup>, <sup>1</sup>West Lafayette/US, <sup>2</sup>Oak Ridge/US

TL

**12:00 - 13:30 Photonics Pro Luncheon**

**The Stetson**

TuA3

**13:30 - 15:00 Structural Color Displays, Perovskite Materials and Light Guides**

**El Mirador A**

Moderation: N. Laurand, TBC/GB

**13:30 - 14:00 TuA3.1 - SKIN-LIKE FULL-COLOR ANGLE INDEPENDENT PLASMONIC REFLECTIVE DISPLAYS**

D. Chanda, Orlando/UM

**14:00 - 14:15 TuA3.2 - PRELIMINARY CHARACTERIZATION OF LIGHT GUIDE TOOLING FABRICATED BY SURFACE STRUCTURING BY LASER REMELTING**

E. Bordatchev<sup>1</sup>, M. Küpper<sup>2</sup>, S. Cvijanovic<sup>1</sup>, E. Willenborg<sup>2</sup>, N. Milliken<sup>1</sup>, A. Temmler<sup>3</sup>, O.R. Tutunea-Fatan<sup>1</sup>, <sup>1</sup>London/CA, <sup>2</sup>Aachen/DE, <sup>3</sup>Beijing/CN

**14:15 - 14:45 TuA3.3 - PEROVSKITE LIGHT-EMITTING MATERIALS AND DEVICES**

L. Lin, C. Zou, C. Chang, Seattle/US

**14:45 - 15:00 TuA3.4 - THE OPTIMAL DRIVING ANALYSIS OF ORGANIC LIGHT-EMITTING DIODE LIGHTING SYSTEMS BY ANALYZING SYSTEM TRANSFER FUNCTIONS**

H. Yang, B.-S. Hsu, Taipei/TW

TuC3

**13:30 - 14:45 Networks Architecture and Transmission**

**El Mirador C East**

Moderation: I. Roudas, TBC/US

**13:30 - 14:00 TuC3.1 - CROSSTALK DYNAMICS IN HOMOGENOUS MULTICORE-FIBER SDM NETWORKS**

G. Rademacher, R.S. Luis, B. Puttnam, Y. Awaji, N. Wada, /JP

**14:00 - 14:30 TuC3.2 - (Withdrawn)**

**13:30 - 15:00 Signal Generation and Manipulation****El Mirador C West**

Moderation: R. Desalvo, TBC/US

**13:30 - 13:45 TuD3.1 - DEMONSTRATION OF THE FIRST SUB-GHZ COMB-BASED RF-PHOTONIC FLAT-TOP FILTER**Z. Serahati, E. Temprana, E. Myslivets, V. Ataie, N. Alic, S. Radic, San Diego/US**13:45 - 14:00 TuD3.2 - TIME-MAPPED SPECTROGRAM ANALYSIS WITH RELAXED DETECTION SAMPLING RATE**S.R. Konatham, J. Azana, Montreal/CA**14:00 - 14:15 TuD3.3 - DIRECT OPTICAL LINK BETWEEN A MMWAVE OPTICAL FREQUENCY COMB AND A CHIP-SCALE MODE-LOCKED LASER**R. Bustos-Ramirez<sup>1</sup>, L. Trask<sup>2</sup>, A. Bhardwaj<sup>3</sup>, G.E. Hoefler<sup>3</sup>, F.A. Kish<sup>3</sup>, P.J. Delfyett<sup>2</sup>,  
<sup>1</sup>Orlando/US, <sup>2</sup>ORLANDO/US, <sup>3</sup>Sunnyvale/US**14:15 - 14:30 TuD3.4 - RESERVOIR COMPUTER USING SPECKLE IN A MULTIMODE WAVEGUIDE**U. Paudel<sup>1</sup>, M. Luengo-Kovac<sup>1</sup>, G. Valley<sup>1</sup>, T. Shaw<sup>1</sup>, A. Scofield<sup>2</sup>, <sup>1</sup>El Segundo/US, <sup>2</sup>/US**14:30 - 15:00 TuD3.5 - INTEGRATED MICROWAVE PHOTONICS: THE PATH TO HIGH QUALITY MILLIMETER AND TERAHERTZ WAVE SIGNAL GENERATION?**G. Carpintero, R.C. Guzman Martinez, A. Zarzuelo García, J. César Cuello, M. Ali, M.C. Lo, Leganés/ES**13:30 - 15:00 Nonlinear in Waveguides****La Vista A/B**

Moderation: P. Kuo, /US

**13:30 - 14:00 TuE3.1 - INTEGRATED CHI(2) PHOTONICS**H. Tang, 06511/US**14:00 - 14:30 TuE3.2 - OPTICALLY INDUCED SECOND-ORDER NONLINEARITY IN SILICON NITRIDE WAVEGUIDES**C.-S. Bres, /CH**14:30 - 15:00 TuE3.3 - INTEGRATED LITHIUM NIOBATE PHOTONICS AND APPLICATIONS**M. Loncar, M. Zhang, /US

TuF3

**13:30 - 15:00 Dreams and Reality of Quantum Networking** **La Vista C**

Moderation: M. Brodsky, Adelphi/US

**13:30 - 14:00 TuF3.1 - DEMONSTRATION OF A QUANTUM KEY DISTRIBUTION TRUSTED NODE ON AN ELECTRIC UTILITY FIBER NETWORK**

N. Peters<sup>1</sup>, P. Evans<sup>1</sup>, C.G. Peterson<sup>2</sup>, T. Morgan<sup>3</sup>, K. Jones<sup>3</sup>, S. Morrison<sup>3</sup>, R. Newell<sup>2</sup>,  
<sup>1</sup>Oak Ridge/US, <sup>2</sup>Los Alamos/US, <sup>3</sup>Chattanooga/US

**14:00 - 14:30 TuF3.2 - QUANTUM NETWORKING**

W. Munro, K. Nemoto, /JP

**14:30 - 15:00 TuF3.3 - GLOBAL QUANTUM COMMUNICATION NETWORK AND FUTURE ASPECTS**

Y.-A. Chen, /CN

TuG3

**13:30 - 14:45 Wide Bandgap Semiconductor Lasers** **La Vista D/E**

Moderation: S. Kamiyama, Nagoya/JP

**13:30 - 14:00 TuG3.1 - Development of Ultraviolet-C Laser Diodes**

Z. Sitar, P. Reddy, /US

**14:00 - 14:30 TuG3.2 - ENGINEERING DILUTE-ANION III-NITRIDE FOR LIGHT EMITTERS**

C.-K. Tan<sup>1</sup>, D. Borovac<sup>2</sup>, W. Sun<sup>2</sup>, N. Tansu<sup>2</sup>, <sup>1</sup>Potsdam/US, <sup>2</sup>Bethlehem/US

**14:30 - 14:45 TuG3.3 - INVESTIGATION OF BAND ANTICROSSING PARAMETERS FOR DILUTE-ANION III-NITRIDE ALLOYS**

J. Goodrich<sup>1</sup>, D. Borovac<sup>1</sup>, C.-K. Tan<sup>2</sup>, N. Tansu<sup>1</sup>, <sup>1</sup>Bethlehem/US, <sup>2</sup>Potsdam/US

TuH3

**13:30 - 14:45 Silicon Photonic Interconnect Solutions** **La Vista F**

Moderation: J.D. Ryckman, Clemson/US

**13:30 - 14:00 TuH3.1 - SILICON PHOTONICS FOR 5G WIRELESS: A CWDM4 SOLUTION**

J.K. Doylend, H. Yu, W. Lin, K. Nguyen, W. Liu, D. Gold, A. Dahal, C. Jan, R. Herrick, G. Ghiurcan, S. Hollingsworth, R. Romero, M. Favaro, L. Qiu, D. Zhu, Y. Akulova, San Jose/US

**14:00 - 14:15 TuH3.2 - COARSE-FINE CONTROL OF DUAL-TUNER MACH-ZEHNDER INTERFEROMETER USING IDENTICAL LOW-RESOLUTION DACS**

B. Lee, N. Dupuis, J. Proesel, H. Ainspan, C. Baks, Yorktown Heights/US

**14:15 - 14:45 TuH3.3 - Silicon photonics for data centers**

A. Zilkie, /US

**15:00 - 15:30 Coffee Break** **La Vista & El Mirador Foyers**



**15:30 - 17:00 Plenary I****Salon del Rey**

15:30 - 16:15 **TuI4.1 - Parity-Time-symmetric optics, extraordinary momentum and spin in evanescent waves, optical analog of topological insulators, and the quantum spin Hall effect of light**

F. Nori, /US

16:15 - 17:00 **TuI4.2 - SUBMARINE FIBER OPTIC CABLES: TECHNOLOGY EVOLUTION AND FUTURE DIRECTIONS**

S. Grubb, /US

WA1

**08:30 - 10:00 Microdisplays and Quantum Dot Integration** **El Mirador A**

Moderation: A. Rashidi, Albuquerque/US

**08:30 - 09:00 WA1.1 - MICROLED DISPLAY - THE NEXT GENERATION DISPLAY TECHNOLOGY**

F. Liu, Hsinchu/TW

**09:00 - 09:30 WA1.2 - MONOLITHIC MICRO-LED FULL-COLOR MICRO-DISPLAYS**

K.M. Lau, /HK

**09:30 - 10:00 WA1.3 - FINE PITCH COLLOIDAL QUANTUM DOT MATRIX FOR MICRO-LED DISPLAY APPLICATIONS**S. Yang<sup>1</sup>, W. Kuo<sup>1</sup>, K. Liang<sup>1</sup>, C. Chao<sup>1</sup>, Y.-H. Fang<sup>2</sup>, C.-C. Lin<sup>3</sup>, <sup>1</sup>/TW, <sup>2</sup>Hsinchu County/TW, <sup>3</sup>Tainan/TW

WB1

**08:30 - 10:00 VLC and Short Reach Systems** **El Mirador B**

Moderation: J. Kahn, /US

**08:30 - 08:45 WB1.1 - EFFICIENT RESOURCE ALLOCATION SCHEME FOR MULTI-USER HYBRID VLC/IR NETWORKS**H. Eldeeb<sup>1</sup>, H. Selmy<sup>2</sup>, H. Elsayed<sup>2</sup>, R. Badr<sup>2</sup>, M. Uysal<sup>3</sup>, <sup>1</sup>Istanbul/TR, <sup>2</sup>/EG, <sup>3</sup>/TR**08:45 - 09:00 WB1.2 - 256 GB/S FOUR-CHANNEL SDM-BASED PAM4 FSO-UWOC CONVERGENT SYSTEM**

S.-C. Tu, Y.-C. Huang, H.-H. Lu, Taipei/TW

**09:00 - 09:15 WB1.3 - DEMONSTRATION OF OPTICAL WIRELESS COMMUNICATIONS USING SPATIAL MODULATION WITH SIGNAL SPACE DIVERSITY**T. Song<sup>1</sup>, K. Wang<sup>1</sup>, A. Nirmalathas<sup>1</sup>, C. Lim<sup>1</sup>, E. Wong<sup>1</sup>, K. Alameh<sup>2</sup>, <sup>1</sup>Melbourne/AU, <sup>2</sup>Joondalup/AU**09:15 - 09:30 WB1.4 - IMPACT OF DAC PROPERTIES ON TOMLINSON-HARASHIMA PRECODING FOR 200 GB/S INTRA DATACENTER LINKS**T. Wettlin<sup>1</sup>, R. Weixer<sup>1</sup>, T. Rahman<sup>2</sup>, J. Wei<sup>2</sup>, S. Calabro<sup>2</sup>, N. Stojanovic<sup>2</sup>, S. Pachnicke<sup>1</sup>, <sup>1</sup>Kiel/DE, <sup>2</sup>Munich/DE**09:30 - 10:00 WB1.5 - OPPORTUNITIES AND CHALLENGES OF FUTURE LIFI**

H. Haas, Edinburgh/GB

**08:30 - 10:00 High Average and Peak Power Ytterbium Laser Sources El Mirador C East**

Moderation: K. Légaré, /CA

**08:30 - 09:00 WC1.1 - HIGH-POWER ULTRAFAST INDUSTRIAL THIN-DISK LASERS**T. Metzger, C. Grebing, C. Herkommer, R. Jung, S. Klingebiel, P. Krötz, S. Prinz, C. Teisset, C. Wandt, K. Michel, Unterfoehring/DE**09:00 - 09:15 WC1.2 - DEVELOPMENT AND CHARACTERIZATION OF KILOWATT-AVERAGE-POWER, CRYOGENICALLY-COOLED YB:YAG LASER AMPLIFIERS**A. Meadows<sup>1</sup>, C. Baumgarten<sup>2</sup>, H. Chi<sup>1</sup>, H. Wang<sup>1</sup>, G. Murray<sup>2</sup>, K. Dehne<sup>2</sup>, E. Jankowska<sup>2</sup>, H. Bravo<sup>2</sup>, Y. Wang<sup>1</sup>, B. Reagan<sup>1</sup>, C. Menoni<sup>3</sup>, J. Rocca<sup>2</sup>, <sup>1</sup>/US, <sup>2</sup>Fort Collins/US, <sup>3</sup>FORT COLLINS/US**09:15 - 09:45 WC1.3 - FEMTOSECOND THIN-DISK OSCILLATORS AND NONLINEAR OPTICAL PHENOMENA IN MULTI-PASS CELLS**O. Pronin, K. Fritsch, Hamburg/DE**09:45 - 10:00 WC1.4 - DEVELOPMENT OF A HIGH-QUALITY EPOXY BONDING TECHNOLOGY**J. Cvrček<sup>1</sup>, A.A. Eilanlou<sup>1</sup>, M. Smrž<sup>1</sup>, M. Jelínek<sup>2</sup>, T. Mocek<sup>1</sup>, <sup>1</sup>Dolní Brezany/CZ, <sup>2</sup>/CZ**08:30 - 10:00 Analog and Digital Networks and Links El Mirador C West**

Moderation: J. Kalkavage

**08:30 - 09:00 WD1.1 - ALL OPTICAL GSPS ANALOG-DIGITAL CONVERTORS (ADC)**A. Daryoush<sup>1</sup>, K. Wei<sup>2</sup>, T. Sun<sup>2</sup>, <sup>1</sup>Philadelphia/US, <sup>2</sup>/US**09:00 - 09:30 WD1.2 - POWER-OVER-FIBER FOR REMOTE ANTENNA UNITS**M. Matsuura, Tokyo/JP**09:30 - 10:00 WD1.3 - THE CONVERGENCE OF OPTICAL AND WIRELESS NETWORKS: A CONFLUENCE OF OPPORTUNITIES**C. Ranaweera, C. Lim, E. Wong, A. Nirmalathas, Melbourne/AU

WE1

**08:30 - 10:00 Novel Photodetectors**

**La Vista A/B**

Moderation: C. Scheutz

**08:30 - 09:00 WE1.1 - PHOTONIC TECHNIQUES FOR IMAGING IN THE MICROWAVE/MMW SPECTRUM**

C. Schuetz, T. Dillon, C. Harrity, J. Murakowski, G. Schneider, S. Shi, D. Prather, Newark/US

**09:00 - 09:15 WE1.2 - GE-ON-SI BALANCED PERIODIC TRAVELING-WAVE PHOTODETECTOR**

K. Sun, T.-C. Tzu, R. Constanzo, Q. Yu, S. Bowers, A. Beling, Charlottesville/US

**09:15 - 09:30 WE1.3 - INTEGRATED BIORESORBABLE OPTICAL SENSOR SYSTEMS FOR BIOMEDICAL PRESSURE AND TEMPERATURE MONITORING**

Z. Liu<sup>1</sup>, J. Shin<sup>2</sup>, W. Bai<sup>2</sup>, J. Rogers<sup>2</sup>, W. Zhou<sup>1</sup>, <sup>1</sup>Arlington/US, <sup>2</sup>/US

**09:30 - 10:00 WE1.4 - Novel single photon sensor technology for biomedical imaging**

Q. Xie, /CN

WF1

**08:30 - 10:00 Active Metasurfaced Photonics**

**La Vista C**

Moderation: G. Wang, Albuquerque/US

**08:30 - 09:00 WF1.1 - Metasurfaces for active photonic devices**

F. Capasso, Cambridge/US

**09:00 - 09:30 WF1.2 - EXCEPTIONAL NANOPHOTONICS**

L. Feng, Philadelphia/US

**09:30 - 10:00 WF1.3 - ALL-DIELECTRIC METASURFACES: OPTICAL NONLINEARITIES AND EMISSION CONTROL**

P. Vabishchevich<sup>1</sup>, A. Vaskin<sup>2</sup>, S. Addamane<sup>1</sup>, N. Karl<sup>1</sup>, S. Liu<sup>1</sup>, A. Sharma<sup>1</sup>, G. Balakrishnan<sup>1</sup>, J. Reno<sup>1</sup>, G. Keeler<sup>1</sup>, G. Peake<sup>1</sup>, M. Sinclair<sup>1</sup>, I. Staude<sup>2</sup>, I. Brener<sup>1</sup>, <sup>1</sup>Albuquerque/US, <sup>2</sup>Jena/DE

WG1

**08:30 - 10:00 SL TUT - High Power Quantum Cascade Lasers**

**La Vista D/E**

Moderation: M. Belkin, TBC/US

**08:30 - 09:30 WG1.1 - HIGH-POWER MID-INFRARED QUANTUM CASCADE SEMICONDUCTOR LASERS**

D. Botez<sup>1</sup>, C. Boyle<sup>1</sup>, J. Kirch<sup>1</sup>, K. Oresick<sup>1</sup>, C. Sigler<sup>1</sup>, L. Mawst<sup>2</sup>, D. Lindberg Iii<sup>3</sup>, T. Earles<sup>3</sup>, <sup>1</sup>Madison/US, <sup>2</sup>TBC/US, <sup>3</sup>/US

**09:30 - 10:00 WG1.2 - WIDELY TUNABLE TERAHERTZ METASURFACE QUANTUM-CASCADE LASERS**

B. Williams, Los Angeles/US

WH1

**08:30 - 10:00 Imaging Spectrometers**

**La Vista F**

Moderation: D. Ting, TBC/US

**08:30 - 09:00 WH1.1 - NEXT GENERATION IMAGING SPECTROMETERS ENABLED BY ADVANCED DETECTORS FOR EARTH SCIENCE/APPLICATIONS AS WELL AS SOLAR SYSTEM EXPLORATION**

R. Green, Pasadena/US

**09:00 - 09:30 WH1.2 - A PHOTONIC SPECTROMETER FOR ENHANCED SUSTAINABLE LAND IMAGING**

S. Sandor-Leahy, R. Davis, A. Gutierrez-Aitken, D. Kultran, L. Liao, K. Loi, M. Knight, W. Yoshida, Redondo Beach/US

**09:30 - 10:00 WH1.3 - SNAPSHOT INTEGRAL FIELD IMAGING SPECTROMETERS FOR ENVIRONMENTAL SENSING AND BIOLOGICAL IMAGING**

T. Tkaczyk, /US

**10:00 - 10:30 Coffee Break**

**La Vista & El Mirador Foyers**

WA2

**10:30 - 11:30 Development of MicroLEDs and Their Multi-Functionalities**

**El Mirador A**

Moderation: A. Rashidi, Albuquerque/US

**10:30 - 11:00 WA2.1 - DEVELOPMENT OF MICRO-LEDS AND APPLICATIONS**

J. Lin, H. Jiang, Lubbock/US

**11:00 - 11:30 WA2.2 - Micro-LED arrays for spatio-temporally correlated multi-mode operation**

J. Herrnsdorf, A.D. Griffiths, E. Xie, J.J.D. Mckendry, E. Gu, M. Strain, M. Dawson, /GB

WB2

**10:30 - 11:45 Coding and Security**

**El Mirador B**

Moderation: H. Haas, Edinburgh/GB

**10:30 - 11:00 WB2.1 - LOW-COMPLEXITY SOFT-DECISION FORWARD ERROR-REDUCING CODES**

F. Kschischang, M. Barakatain, Toronto/CA

**11:00 - 11:15 WB2.2 - LASER BEAM PROPAGATION EFFECTS ON SECURE KEY RATES FOR SATELLITE CV-QKD WITH DISCRETE MODULATION**

T.-L. Wang, I. Djordjevic, J. Nagel, /US

**11:15 - 11:30 WB2.3 - DISCRETIZED GAUSSIAN MODULATION-BASED CONTINUOUS VARIABLE (CV)-QKD**

I. Djordjevic, /US

**11:30 - 11:45 WB2.4 - PERFORMANCE DEGRADATION OF SD-FEC DUE TO XPM PHASE NOISE IN WDM TRANSMISSION SYSTEM WITH LOW-SPEED OPTICAL SUPERVISORY CHANNEL**

H. Maeda<sup>1</sup>, H. Kawahara<sup>1</sup>, K. Saito<sup>1</sup>, T. Seki<sup>1</sup>, J. Kani<sup>2</sup>, <sup>1</sup>Tokyo/JP, <sup>2</sup>Kanagawa/JP

WC2

**10:30 - 12:00 Nonlinear Mid-Infrared Laser Science**

**El Mirador C East**

Moderation: N. Alic, San Diego/US

**10:30 - 11:15 WC2.1 - High-Field Physics of Semiconductors Under Subcycle Mid-Infrared Biasing**

A. Leitenstorfer, Konstanz/DE

**11:15 - 11:45 WC2.2 - BEATING ABSORPTION IN SOLID-STATE HIGH HARMONICS**

G. Vampa, H. Liu, /UM

**11:45 - 12:00 WC2.3 - HIGH-FIELD MULTI-THZ TRANSIENTS GENERATED FROM A SUB-PS YB:YAG THIN-DISK SYSTEM**

A.-C. Heinrich<sup>1</sup>, A. Herter<sup>1</sup>, D. Brida<sup>2</sup>, A. Leitenstorfer<sup>1</sup>, <sup>1</sup>Konstanz/DE, <sup>2</sup>Luxembourg/LU

WD2

**10:30 - 12:00 MWP TUT - Optical Frequency Sources for MWP**

**El Mirador C West**

Moderation: J. Kalkavage, TBC/US

**10:30 - 12:00 WD2.1 - TIME DOMAIN ANALYSIS OF OPTICAL FREQUENCY SOURCES**

J. Sherman, Boulder/US

WE2

**10:30 - 12:00 Low Dimensional Photodetectors**

**La Vista A/B**

Moderation: C. Grein, Chicago/US

**10:30 - 11:00 WE2.1 - III-V SEMICONDUCTOR NANOWIRE PHOTODETECTORS**

C. Jagadish, Acton/AU

**11:00 - 11:15 WE2.2 - INAS/INASSB TYPE-II STRAINED LAYER SUPERLATTICE BARRIER INFRARED DETECTORS**

D. Ting<sup>1</sup>, A. Soibel<sup>2</sup>, A. Khoshaklagh<sup>2</sup>, S. Keo<sup>2</sup>, S. Rafol<sup>2</sup>, E. Luong<sup>2</sup>, A. Fisher<sup>2</sup>, B. Pepper<sup>2</sup>, C. Hill<sup>2</sup>, S. Gunapala<sup>3</sup>, <sup>1</sup>TBC/US, <sup>2</sup>/US, <sup>3</sup>Pasadena/US

**11:15 - 11:30 WE2.3 - IMPROVING THE QUANTUM EFFICIENCY OF GA-FREE TYPE-II SUPERLATTICES**

A. Ciani<sup>1</sup>, R. Pimpinella<sup>1</sup>, J. Feldman<sup>1</sup>, C. Grein<sup>2</sup>, <sup>1</sup>Bolingbrook/US, <sup>2</sup>Chicago/US

**11:30 - 12:00 WE2.4 - INFRARED IMAGING USING COLLOIDAL QUANTUM DOTS**

R. Pimpinella<sup>1</sup>, T. Mylnarski<sup>1</sup>, C. Grein<sup>2</sup>, <sup>1</sup>/US, <sup>2</sup>Chicago/US

**10:30 - 12:00 Nanostructured Light Absorbers**

La Vista C

Moderation: M. Gerhold, TBC/US

**10:30 - 11:00 WF2.2 - NANO PHOTONIC STRUCTURES FOR SPECTRALLY-SELECTIVE ABSORPTION**

M. Povinelli<sup>1</sup>, R. Audhkhasi<sup>1</sup>, J. Hennessy<sup>2</sup>, A. Krishnan<sup>1</sup>, A. Morsy<sup>1</sup>, A. O'Gorman<sup>1</sup>, <sup>1</sup>Los Angeles/US, <sup>2</sup>Pasadena/US

**11:00 - 11:30 WF2.3 - ULTRA-SENSITIVE, FAST, AND ULTRA-LOW ENERGY NANO-PHOTODETECTORS INTEGRATED WITH SILICON CMOS**

H. Mohseni, Evanston/US

**10:30 - 12:00 Nanostructure and Grating Lasers**

La Vista D/E

Moderation: P. Reddy, /US

**10:30 - 11:00 WG2.1 - CRYSTAL GROWTH AND OPTICAL PROPERTY OF GAN NANOWIRE CORES AND GAINN/GAN MULTI-QUANTUM SHELLS GROWN BY METALORGANIC VAPOR PHASE EPITAXY**

S. Kamiyama, Nagoya/JP

**11:00 - 11:15 WG2.2 - GAIN PROPERTIES OF TYPE-II ALINN / ZNGEN2 QUANTUM WELLS FOR ULTRAVIOLET LASER DIODES**

H. Fu, J. Goodrich, N. Tansu, Bethlehem/US

**11:15 - 11:30 WG2.3 - MONOLITHIC GROWTH OF INAS QUANTUM DOTS LASERS ON (001) SILICON EMITTING AT 1.55 MM**

Z. Li<sup>1</sup>, S. Shutts<sup>1</sup>, C. Allford<sup>1</sup>, B. Shi<sup>2</sup>, W. Luo<sup>3</sup>, K. Lau<sup>2</sup>, P. Smowton<sup>1</sup>, <sup>1</sup>Cardiff/GB, <sup>2</sup>/HK, <sup>3</sup>/CN

**11:30 - 11:45 WG2.4 - HIGH-POWER LONG-WAVEGUIDE 1300-NM DIRECTLY MODULATED DFB LASER FOR 45-GB/S NRZ AND 50-GB/S PAM4**

R.Y. Chen<sup>1</sup>, Y.-J. Chen<sup>1</sup>, C.-L. Chen<sup>1</sup>, C.-C. Wei<sup>1</sup>, W. Lin<sup>2</sup>, Y.-J. Chiu<sup>3</sup>, <sup>1</sup>Kaohsiung/TW, <sup>2</sup>Tainan/TW, <sup>3</sup>KAOHSIUNG/TW

**11:45 - 12:00 WG2.5 - THERMAL CHARACTERISTICS OF THE THREE-SECTION DISTRIBUTED FEEDBACK LASERS**

C.-P. Huang<sup>1</sup>, H.Y. Shih<sup>1</sup>, S.-H. Chang<sup>1</sup>, S.-C. Hsu<sup>1</sup>, Y.-J. Cheng<sup>2</sup>, C.-C. Lin<sup>1</sup>, <sup>1</sup>Tainan/TW, <sup>2</sup>Taipei/TW

WH2

- 10:30 - 12:00 Laser Technology** **La Vista F**  
Moderation: S. Gunapala, Pasadena/US
- 10:30 - 11:00 **WH2.1 - DUAL FREQUENCY COMB SPECTROSCOPY FOR PLANETARY EXPLORATIONS**  
M. Bagheri<sup>1</sup>, L. Sterczewski<sup>1</sup>, C. Frez<sup>1</sup>, J. Meyer<sup>2</sup>, I. Vurgaftman<sup>2</sup>, G. Wysocki<sup>3</sup>,  
<sup>1</sup>Pasadena/US, <sup>2</sup>Washington/US, <sup>3</sup>Princeton/US
- 11:00 - 11:30 **WH2.2 - QUANTUM CASCADE LASERS FOR IN SITU PLANETARY SCIENCE SPECTROMETERS**  
R. Briggs<sup>1</sup>, M. Fradet<sup>1</sup>, C. Frez<sup>1</sup>, K. He<sup>1</sup>, R. Blanchard<sup>2</sup>, L. Diehl<sup>2</sup>, C. Pfluegl<sup>2</sup>,  
<sup>1</sup>Pasadena/US, <sup>2</sup>Cambridge/US
- 11:30 - 12:00 **WH2.3 - TUNABLE LASERS FOR HUMAN SPACEFLIGHT**  
L. Christensen, Pasadena/US

WL

- 12:00 - 13:30 Student Chapter Leadership Forum Lunch** **The Stetson**

WA3

- 13:30 - 14:45 Applications Beyond Displays and Novel Nanomaterials for MicroLEDs** **El Mirador A**  
Moderation: N. Laurand, TBC/GB
- 13:30 - 13:45 **WA3.1 - MICROSCALE AUTOMATED ALIGNMENT AND SPATIAL TRACKING THROUGH STRUCTURED ILLUMINATION**  
M. Stonehouse<sup>1</sup>, A. Blanchard<sup>1</sup>, B. Guilhabert<sup>2</sup>, I. Watson<sup>1</sup>, E. Gu<sup>1</sup>, J. Herrnsdorf<sup>1</sup>, M. Dawson<sup>2</sup>, <sup>1</sup>/GB, <sup>2</sup>Glasgow/GB
- 13:45 - 14:00 **WA3.2 - CARRIER DYNAMICS IN INGAN/GAN MICRO-LEDS: AN RF APPROACH TO UNDERSTAND EFFICIENCY ISSUES**  
A. Rashidi, M. Monavarian, A. Aragon, A. Rishinaramangalam, D. Feezell, Albuquerque/US
- 14:00 - 14:15 **WA3.3 - UNDERWATER WIRELESS OPTICAL COMMUNICATIONS AT 100 MB/S USING INTEGRATED DUAL-COLOR MICRO-LEDS**  
G.N. Arvanitakis, J.F.C. Carreira, A.D. Griffiths, J.J.D. Mckendry, E. Xie, J. Kosman, R.K. Henderson, E. Gu, M.D. Dawson, /GB
- 14:15 - 14:45 **WA3.4 - NANOWIRE-MEDIATED REALIZATION OF MICROLEDS AND PHOTONIC CAVITY STRUCTURES**  
L. Samuelson, Lund/SE



**13:30 - 15:00 Coherent Transmission and Switches****EI Mirador B**

Moderation: I. Djordjevic, Tucson/US

**13:30 - 14:00 WB3.1 - COHERENT CO-PACKAGED OPTICAL INTERFACES FOR NEXT-GENERATION ELECTRICAL SWITCHES**B. Buscaino, J. Kahn, B. Taylor, /US**14:00 - 14:15 WB3.2 - EXPERIMENTAL DEMONSTRATION OF DUAL-POLARISATION NFDW TRANSMISSION WITH B-MODULATION**X. Yangzhang<sup>1</sup>, S. Le<sup>2</sup>, V. Aref<sup>2</sup>, H. Buelow<sup>2</sup>, D. Lavery<sup>1</sup>, P. Bayvel<sup>1</sup>, <sup>1</sup>London/GB, <sup>2</sup>Stuttgart/DE**14:15 - 14:30 WB3.3 - A SPECTRALLY-PARTITIONED CROSSBAR SWITCH WITH THREE DROPS PER CROSS-POINT CONTROLLED WITH A DRIVER**T. Hirokawa<sup>1</sup>, M. Saeidi<sup>1</sup>, A. Maharry<sup>2</sup>, R. Helkey<sup>1</sup>, J. Bowers<sup>3</sup>, L. Theogarajan<sup>1</sup>, A.A.M. Saleh<sup>1</sup>, C. Schow<sup>2</sup>, <sup>1</sup>Santa Barbara/US, <sup>2</sup>/US, <sup>3</sup>TBC/US**14:30 - 15:00 WB3.4 - THE KRAMERS-KRONIG RECEIVER**C. Antonelli, L'AQUILA/IT**13:30 - 15:00 Quasi-Phasematched Nonlinear Devices****EI Mirador C East**

Moderation: G. Wang, Albuquerque/US

**13:30 - 14:00 WC3.1 - ZINCBLLENDE NONLINEAR CRYSTALS FOR QUANTUM INFORMATION APPLICATIONS**P. Kuo, /US**14:00 - 14:15 WC3.2 - PUMP WAVELENGTH-TUNED FEMTOSECOND OPTICAL PARAMETRIC OSCILLATOR ACROSS 3.6-8 MM BASED ON ORIENTATION PATTERNED GALLIUM PHOSPHIDE**C. O'Donnell<sup>1</sup>, S. Chaitanya Kumar<sup>2</sup>, P. Schunemann<sup>3</sup>, M. Ebrahim-Zadeh<sup>2</sup>, <sup>1</sup>Castelldefels, Barcelona/ES, <sup>2</sup>Castelldefels/ES, <sup>3</sup>Nashua/US**14:15 - 14:30 WC3.3 - GREEN-PUMPED OPTICAL PARAMETRIC OSCILLATOR BASED ON FANOUT-GRATING PERIODICALLY-POLED MG-DOPED CONGRUENT LITAO\_3**S. Sukeert, S. Chaitanya Kumar, M. Ebrahim-Zadeh, Castelldefels/ES**14:30 - 15:00 WC3.4 - ATTOSECOND CURRENT AUTOCORRELATIONS DRIVEN BY SINGLE-CYCLE LASER PULSES**D. Brida, Luxembourg/LU**13:30 - 15:00 PSSI TUT****La Vista A/B**

Moderation: S. Krishnamurthy, TBC/US

**13:30 - 15:00 WE3.1 - QUANTUM SENSING AND IMAGING**B. Saleh, Orlando/US

**13:30 - 15:00 Highly Resonant Photonics** **La Vista C**

Moderation: C.-Z. Ning, Tbd/US

**13:30 - 14:00 WF3.1 - INTEGRATED QUANTUM PHOTONIC CIRCUITS WITH QUANTUM DOTS**S. Aghaeimeibodi<sup>1</sup>, C.-M. Lee<sup>2</sup>, M. Buyukkaya<sup>2</sup>, A. Karasahin<sup>2</sup>, J.-H. Kim<sup>3</sup>, C. Richardson<sup>2</sup>, E. Waks<sup>2</sup>, <sup>1</sup>Hyattsville/US, <sup>2</sup>/US, <sup>3</sup>/KR**14:00 - 14:30 WF3.2 - WHISPERING-GALLERY-MODE RESONATOR AT EXCEPTIONAL POINTS**L. Yang, /US**14:30 - 14:45 WF3.3 - OPTICALLY PUMPED 1  $\mu$ m LOW THRESHOLD PHOTONIC CRYSTAL SURFACE EMITTING LASERS GROWN ON GaAs SUBSTRATE**A. Kalapala<sup>1</sup>, S. Yeom<sup>1</sup>, S. Addamane<sup>2</sup>, K. Reilly<sup>2</sup>, A. Song<sup>2</sup>, R. Gibson<sup>2</sup>, G. Balakrishnan<sup>3</sup>, R. Bedford<sup>2</sup>, S. Fan<sup>4</sup>, W. Zhou<sup>1</sup>, <sup>1</sup>Arlington/US, <sup>2</sup>/US, <sup>3</sup>Albuquerque/US, <sup>4</sup>Stanford/US**14:45 - 15:00 WF3.4 - MODE-LOCKING WITH HERMITE-GAUSSIAN MODES**Y. Sun<sup>1</sup>, F. Bretenaker<sup>1</sup>, A. De Rossi<sup>2</sup>, <sup>1</sup>Orsay/FR, <sup>2</sup>PALAISEAU Cedex/FR**13:30 - 15:00 Comb Based Lasers and Waveguides** **La Vista D/E**

Moderation: C.-K. Tan, Potsdam/US

**13:30 - 14:00 WG3.2 - FREQUENCY MODULATED COMBS IN SEMICONDUCTOR LASERS**B. Schwarz<sup>1</sup>, N. Opacak<sup>1</sup>, J. Hillbrand<sup>1</sup>, M. Beiser<sup>1</sup>, G. Strasser<sup>1</sup>, R. Weih<sup>2</sup>, A. Schade<sup>3</sup>, S. Höfling<sup>3</sup>, D. Auth<sup>4</sup>, S. Breuer<sup>4</sup>, M. Piccardo<sup>5</sup>, F. Capasso<sup>5</sup>, <sup>1</sup>Wien/AT, <sup>2</sup>Gerbrunn/DE, <sup>3</sup>Würzburg/DE, <sup>4</sup>Darmstadt/DE, <sup>5</sup>Cambridge/US**14:00 - 14:15 WG3.3 - DIRECT SEMICONDUCTOR DIODE LASER MODE ENGINEERING AND WAVEGUIDE DESIGN**P. Strzebonski<sup>1</sup>, K. Choquette<sup>2</sup>, <sup>1</sup>Urbana/US, <sup>2</sup>Champaign/US**14:15 - 14:30 WG3.4 - LINEWIDTH BROADENING FACTOR OF AN INTERBAND CASCADE LASER OPERATED ABOVE THRESHOLD**B.-B. Zhao<sup>1</sup>, Y.-T. Gu<sup>2</sup>, C. Wang<sup>2</sup>, <sup>1</sup>/CN, <sup>2</sup>Shanghai/CN**13:30 - 14:30 Optical Communications** **La Vista F**

Moderation: R. Briggs, Pasadena/US

**13:30 - 14:00 WH3.1 - LASER COMMUNICATION TECHNOLOGIES FOR SPACE APPLICATIONS**S. Mariojouis<sup>1</sup>, T. Anfray<sup>1</sup>, P. Berceau<sup>1</sup>, L. Blarre<sup>1</sup>, J. Hauden<sup>2</sup>, A. Mottet<sup>2</sup>, H. Porte<sup>2</sup>, J.-J. Bonnefoy<sup>2</sup>, A. Laurent<sup>2</sup>, T. Schmitt<sup>2</sup>, R. Cousty<sup>2</sup>, <sup>1</sup>toulouse/FR, <sup>2</sup>/FR**14:00 - 14:30 WH3.2 - SUPERCONDUCTING NANOWIRE SINGLE PHOTON DETECTORS FOR DEEP SPACE OPTICAL COMMUNICATION AND FUNDAMENTAL SCIENCE**M. Shaw, /US

**15:15 - 16:45 Plenary II**

**Salon del Rey**

15:15 - 16:00 **WI4.1 - OPTIMIZED QUANTUM PHOTONICS**

J. Vuckovic, /US

16:00 - 16:45 **WI4.2 - ADVANCED LIGO: THE SCIENCE AND TECHNOLOGY BEHIND THE  
DETECTIONS OF GRAVITATIONAL WAVES**

D. Reitze, Pasadena/US

- 18:00 - 20:00 Poster Session &&** **EI Mirador B/C**  
Moderation: Z. Mi, Ann Arbor/US
- 18:00 - 18:00 **WP1 - High-Power and Highly Single-Mode Zn-Diffusion VCSELs at 940 nm Wavelength**  
J.-W. Shi, Z. Khan, J.-C. Shih, C.-L. Cheng, /TW
- 18:00 - 18:00 **WP2 - DRIVING GUIDED SURFACE PLASMON MODES ON GOLD NANOWIRES WITH PERPENDICULARLY ORIENTED DIELECTRIC-METALLIC WAVEGUIDE PAIR**  
C.-M. Chow, J.A. Bain, Pittsburgh/US
- 18:00 - 18:00 **WP3 - EFFICIENT OPTICAL COUPLING TO ULTRA-LOW MODE AREA SILICON V-GROOVE WAVEGUIDES**  
F. Bin Tarik, J.D. Ryckman, Clemson/US
- 18:00 - 18:00 **WP4 - ANAPOLE NEAR FIELD LASER BASED ON ALGAAS NANODISK**  
K. As'Ham<sup>1</sup>, I. Al-Ani<sup>2</sup>, L. Xu<sup>2</sup>, A. Miroshnichenko<sup>2</sup>, H. Hattori<sup>2</sup>, <sup>1</sup>canberre/AU, <sup>2</sup>Canberra/AU
- 18:00 - 18:00 **WP6 - TEMPERATURE SENSOR BASED ON SELECTIVELY LIQUID INFILTRATED DUAL CORE PHOTONIC CRYSTAL FIBER**  
C.L. Wang<sup>1</sup>, P. Shum<sup>1</sup>, D.J.J. Hu<sup>1</sup>, Z.L. Xu<sup>2</sup>, Y.W. Zhu<sup>1</sup>, Y. Luo<sup>1</sup>, S. Liu<sup>2</sup>, Y. Zheng<sup>1</sup>, <sup>1</sup>Singapore/SG, <sup>2</sup>Wuhan/CN
- 18:00 - 18:00 **WP7 - DISTRIBUTED HIGH-TEMPERATURE SENSING WITH RAYLEIGH SCATTERING BASED IN-LINE FABRY-PEROT INTERFEROMETERS**  
M. Wang<sup>1</sup>, Y. Yang<sup>1</sup>, S. Huang<sup>1</sup>, J. Wu<sup>1</sup>, Q. Yu<sup>2</sup>, K.P. Chen<sup>1</sup>, <sup>1</sup>Pittsburgh/US, <sup>2</sup>/CN
- 18:00 - 18:00 **WP8 - DISPERSION ENGINEERING OF ASYMMETRIC VERTICAL-DUAL SLOT WAVEGUIDES**  
S. A Samad, Y. T.R, G. Hegde, S. Talabattula, Bengaluru/IN
- 18:00 - 18:00 **WP9 - OPTIMAL RESOURCE ALLOCATION FOR COOPERATIVE HYBRID FSO/MMW 5G FRONTHAUL NETWORKS**  
M. Hasabelnaby<sup>1</sup>, H. Selmy<sup>2</sup>, M. Dessouky<sup>1</sup>, <sup>1</sup>Menouf/EG, <sup>2</sup>/EG
- 18:00 - 18:00 **WP10 - AUTOMATED CONTROL OF THE TRANSFER FUNCTION OF AN INTEGRATED CASCADED MACH-ZEHNDER INTERFEROMETER**  
A. Jha<sup>1</sup>, T. Ferreira De Lima<sup>2</sup>, C. Huang<sup>2</sup>, S. Abbaslou<sup>2</sup>, P. Prucnal<sup>2</sup>, <sup>1</sup>PRINCETON/US, <sup>2</sup>/US
- 18:00 - 18:00 **WP11 - POWER AND ACCURACY CO-OPTIMIZATION OF AN OPTICAL FULL ADDER VIA OPTIMIZATION ALGORITHMS**  
C. Feng<sup>1</sup>, Z. Ying<sup>2</sup>, Z. Zhao<sup>2</sup>, D. Pan<sup>2</sup>, R. Chen<sup>2</sup>, <sup>1</sup>Austin/US, <sup>2</sup>AUSTIN/US
- 18:00 - 18:00 **WP12 - GENERAL SCATTERING MATRIX FOR DESIGN OF LINEAR COHERENT NETWORKS USING MICRO-RING RESONATORS**  
D. Yi, Y. Zhang, H.K. Tsang, /HK
- 18:00 - 18:00 **WP13 - AN INVESTIGATION ON 25GB/S ULTRA-SHORT CAVITY QUANTUM WELL LASERS OPERATED AT ELEVATED TEMPERATURES**

Y.-L. Tsai<sup>1</sup>, B.-H. Chen<sup>2</sup>, S.-C. Hsu<sup>1</sup>, H.Y. Shih<sup>1</sup>, P.-Y. Lu<sup>2</sup>, W. Lin<sup>2</sup>, C.-C. Lin<sup>1</sup>, <sup>1</sup>Tainan/TW,  
<sup>2</sup>No., Gaofa rd Rd., Guiren Dist., Tainan City , Taiwan/TW

- 18:00 - 18:00 **WP14 - SIMULATION MODEL OF OXIDE-APERTURE STRAIN QUANTUM WELL VCSEL**  
H.-Y. Shih<sup>1</sup>, Y.-Y. Cho<sup>1</sup>, S.-C. Hsu<sup>1</sup>, Y.-M. Huang<sup>1</sup>, S.-W. Wang<sup>1</sup>, H.-H. Huang<sup>1</sup>, C.-H. Wu<sup>2</sup>,  
Y.-W. Yeh<sup>2</sup>, Y.-T. Lu<sup>2</sup>, H.-C. Kuo<sup>2</sup>, C.-C. Lin<sup>1</sup>, <sup>1</sup>Tainan/TW, <sup>2</sup>/TW
- 18:00 - 18:00 **WP15 - ELECTRICAL DETECTION OF COHERENT COUPLING IN VERTICAL CAVITY PHASED LASER ARRAYS**  
H. Dave<sup>1</sup>, J. Hwang<sup>2</sup>, Z. Gao<sup>3</sup>, K. Choquette<sup>2</sup>, <sup>1</sup>Urbana/US, <sup>2</sup>Champaign/US,  
<sup>3</sup>Redmond/US
- 18:00 - 18:00 **WP16 - CHARACTERISTICS OF 1.3MM ELECTRICALLY PUMPED INAS/ALGAINAS QUANTUM DOT LASERS ON (001) SILICON**  
Y. Xue<sup>1</sup>, W. Luo<sup>1</sup>, X. Wu<sup>2</sup>, S. Zhu<sup>2</sup>, K. Lau<sup>2</sup>, H.K. Tsang<sup>2</sup>, <sup>1</sup>/CN, <sup>2</sup>/HK
- 18:00 - 18:00 **WP17 - BROADBAND NEAR-ZERO DISPERSION WITH MULTIPLE MODE COUPLINGS**  
S. Fatema, M.B. Mia, S. Kim, LUBBOCK/US
- 18:00 - 18:00 **WP19 - INTERACTIONS OF BRAGG SOLITONS IN A SEMILINEAR COUPLER WITH SEPARATED GRATING AND CUBIC-QUINTIC NONLINEARITY**  
N. Anam, J. Atai, Sydney/AU
- 18:00 - 18:00 **WP20 - MOVING GAP SOLITONS IN A COUPLED NONUNIFORM FIBER BRAGG GRATING WITH CUBIC-QUINTIC NONLINEARITY**  
A. Akter<sup>1</sup>, M.J. Islam<sup>2</sup>, J. Atai<sup>1</sup>, <sup>1</sup>Sydney/AU, <sup>2</sup>Khulna/BD
- 18:00 - 18:00 **WP22 - FSR ENHANCEMENT BASED ON DIGITAL DESIGN OF MULTI-ETALONS WITH ASYMMETRIC LENGTHS OF CAVITIES**  
F. Iftikhar<sup>1</sup>, U.A. Khan<sup>2</sup>, M.I. Cheema<sup>1</sup>, <sup>1</sup>Lahore/PK, <sup>2</sup>Medford/US
- 18:00 - 18:00 **WP23 - DYNAMIC STRAIN MEASUREMENTS BY FIBER BRAGG GRATINGS AND A 100 MHZ DISPERSIVE SPECTROMETER**  
Y. Barbarin<sup>1</sup>, V. Chuzeville<sup>1</sup>, V. Colas<sup>1</sup>, J.-M. Chevalier<sup>2</sup>, P. Hereil<sup>1</sup>, L. Jacquet<sup>1</sup>, J. Luc<sup>1</sup>,  
<sup>1</sup>GRAMAT/FR, <sup>2</sup>Le Barp/FR
- 18:00 - 18:00 **WP24 - QUANTUM CASCADE LASER USING OXIDATION CONFINEMENT LAYERS**  
R. Hashimoto, T. Kakuno, Y. Yamamoto, K. Kaneko, S. Saito, Yokohama/JP
- 18:00 - 18:00 **WP25 - OPTICAL FEEDBACK EFFECTS ON THE RELATIVE INTENSITY NOISE OF A MID-INFRARED QUANTUM CASCADE LASER**  
X.-G. Wang<sup>1</sup>, B.-B. Zhao<sup>2</sup>, C. Wang<sup>1</sup>, <sup>1</sup>Shanghai/CN, <sup>2</sup>/CN
- 18:00 - 18:00 **WP26 - FREQUENCY NOISE REDUCTION OF QUANTUM CASCADE LASERS USING OPTICAL FEEDBACK**  
X.-G. Wang<sup>1</sup>, B.-B. Zhao<sup>2</sup>, C. Wang<sup>1</sup>, <sup>1</sup>Shanghai/CN, <sup>2</sup>/CN

ThA1

**08:30 - 09:45 Color Microdisplays, Quantum Dots and Instrumentation** **EI Mirador A**

Moderation: S. Garner, TBC/US

**08:30 - 09:00 ThA1.1 - MONOLITHIC COLOR MICRODISPLAYS**H.W. Choi, W.Y. Fu, /HK**09:00 - 09:15 ThA1.2 - ELECTRICAL AND OPTICAL MODELING OF GAP-FREE MICRODISPLAY BASED ON PIXELATED GAN LEDES**J. Hsu, A.M.A. Noor Elahi, University Park/US**09:15 - 09:30 ThA1.3 - MICROLED WAVEGUIDE FOR FLUORESCENCE APPLICATIONS**F. Farrell<sup>1</sup>, E. Xie<sup>2</sup>, B. Guilhabert<sup>2</sup>, A.-M. Haughey<sup>2</sup>, M.D. Dawson<sup>2</sup>, N. Laurand<sup>3</sup>,  
<sup>1</sup>1RD/GB, <sup>2</sup>/GB, <sup>3</sup>TBC/GB**09:30 - 09:45 ThA1.4 - HIGH PERFORMANCE ULTRAVIOLET MICRO-LED ARRAYS FOR FINE-PITCH MICRO DISPLAYS**Y.-L. Tsai<sup>1</sup>, Y.-M. Huang<sup>1</sup>, S.-M. Yang<sup>2</sup>, W.-H. Kuo<sup>2</sup>, Y.-H. Fang<sup>2</sup>, S.-C. Hsu<sup>1</sup>, C.-P. Huang<sup>1</sup>,  
H.Y. Shih<sup>1</sup>, S.-W. Wang<sup>1</sup>, H.-H. Huang<sup>1</sup>, C.-C. Lin<sup>1</sup>, <sup>1</sup>Tainan/TW, <sup>2</sup>Hsinchu County/TW

ThB1

**08:30 - 09:45 Spatial Division Multiplexing** **EI Mirador B**

Moderation: M. Paskov, Eatontown/US

**08:30 - 09:00 ThB1.1 - DIGITAL SIGNAL PROCESSING FOR SPACE-DIVISION MULTIPLEXING (SDM) TRANSMISSION**H. Takahashi, D. Soma, S. Beppu, T. Tsuritani, --, Ohara, Fujimino-shi, Saitama/JP**09:00 - 09:15 ThB1.2 - PROBABILITY DISTRIBUTION OF INTERCORE CROSSTALK IN WEAKLY COUPLED MCFS WITH MULTIPLE INTERFERERS**T. Alves, R. Soeiro, A. Cartaxo, /PT**09:15 - 09:45 ThB1.3 - HIGH CORE COUNT SINGLE-MODE MULTICORE FIBERS FOR DENSE SPACE DIVISION MULTIPLEXING**K. Aikawa, Y. Sasaki, Y. Amma, K. Takenaga, Sakura/JP

**08:30 - 10:00 High Power Laser Sources and Free Electron Laser Technologies**

El Mirador C East

Moderation: E. Haddad, Varennes/CA

**08:30 - 09:00 ThC1.1 - HIGH-REPETITION-RATE HIGH-HARMONIC GENERATION DRIVEN BY INFRARED FREE-ELECTRON LASERS**R. Hajima, Ibaraki/JP**09:00 - 09:30 ThC1.2 - ULTRAFAST LASER TECHNOLOGY FOR X-RAY FEL SCIENCE**I. Hartl, Hamburg/DE**09:30 - 09:45 ThC1.3 - EFFECTS OF THE PUMP WAVELENGTH ON LASER-INDUCED ULTRAFAST DEMAGNETIZATION**V. Cardin<sup>1</sup>, T. Balciunas<sup>2</sup>, K. Légaré<sup>1</sup>, E. Jal<sup>3</sup>, B. Vodungbo<sup>3</sup>, C. Varin<sup>1</sup>, N. Jaouen<sup>3</sup>, A. Baltuska<sup>2</sup>, J. Lüning<sup>3</sup>, F. Légaré<sup>1</sup>, <sup>1</sup>/CA, <sup>2</sup>/AT, <sup>3</sup>/FR**09:45 - 10:00 ThC1.4 - AN EFFICIENT 4-KW LEVEL RANDOM FIBER LASER BASED ON TANDEM-PUMPING SCHEME**Z. Wang<sup>1</sup>, P. Yan<sup>1</sup>, Y. Huang<sup>1</sup>, J. Tian<sup>1</sup>, C. Cai<sup>2</sup>, D. Li<sup>1</sup>, Y. Yi<sup>3</sup>, Q. Xiao<sup>4</sup>, M. Gong<sup>1</sup>, <sup>1</sup>Beijing/CN, <sup>2</sup>Shenzhen/CN, <sup>3</sup>Tianjin/CN, <sup>4</sup>Beijing/CL**08:30 - 09:45 Graphene-Based Detectors**

La Vista A/B

Moderation: A. Ciani, Bolingbrook/US

**08:30 - 08:45 ThE1.1 - INVESTIGATIONS ON HI REDUCED GRAPHENE BASED FET FOR PHOTON DETECTION**A. Garg<sup>1</sup>, B. Garai<sup>2</sup>, S. Ganesh<sup>2</sup>, V. Radhakrishna<sup>2</sup>, K.R. Guneshekharan<sup>2</sup>, <sup>1</sup>/IN, <sup>2</sup>Bengaluru/IN**08:45 - 09:15 ThE1.2 - ULTRA-FAST PLASMONIC GRAPHENE PHOTODETECTORS**J. Leuthold, P. Ma, Y. Salamin, Y. Fedoryshyn, W. Heni, A. Dorodnyy, Zurich/CH**09:15 - 09:30 ThE1.3 - FIRST PRINCIPLES INVESTIGATION INTO GRAPHENE-PBSE MIDWAVE IR (MWIR) PHOTODETECTOR PHYSICS**S. Ganguly<sup>1</sup>, S. Ahmed<sup>1</sup>, A. Ghosh<sup>2</sup>, P. Ghuman<sup>1</sup>, S. Babu<sup>3</sup>, N. Dhar<sup>4</sup>, A. Sood<sup>1</sup>, <sup>1</sup>/US, <sup>2</sup>Charlottesville/US, <sup>3</sup>TBC/US, <sup>4</sup>Fort Belvoir/US**09:30 - 09:45 ThE1.4 - NANOSCALE ISOTOPIC IMAGING BY EXTREME ULTRAVIOLET LASER ABLATION MASS SPECTROMETRY**L. Rush<sup>1</sup>, T. Green<sup>1</sup>, I. Kuznetsov<sup>1</sup>, D. Reilly<sup>2</sup>, J. Rocca<sup>1</sup>, A. Duffin<sup>3</sup>, C. Menoni<sup>1</sup>, <sup>1</sup>Fort Collins/US, <sup>2</sup>Richland/US, <sup>3</sup>/US

ThF1

**08:30 - 09:45 Low Dimensional Light Emitters**

**La Vista C**

Moderation: G. Wang

**08:30 - 09:00 ThF1.1 - SCALING TOWARDS MONOLAYER PHOTONIC CRYSTAL LASERS**

W. Zhou<sup>1</sup>, X. Ge<sup>1</sup>, M. Minkov<sup>2</sup>, X. Li<sup>3</sup>, S. Fan<sup>2</sup>, <sup>1</sup>Arlington/US, <sup>2</sup>Stanford/US, <sup>3</sup>Urbana/US

**09:00 - 09:15 ThF1.2 - TOP-DOWN ETCH PROCESSES FOR III-NITRIDE NANOPHOTONICS**

G. Wang<sup>1</sup>, B. Leung<sup>2</sup>, M.-C. Tsai<sup>2</sup>, K. Sapkota<sup>2</sup>, B. Kazanowska<sup>2</sup>, K. Jones<sup>2</sup>,  
<sup>1</sup>Albuquerque/US, <sup>2</sup>/US

**09:15 - 09:30 ThF1.3 - HIGH-EFFICIENCY ALGAN TUNNEL JUNCTION DEEP ULTRAVIOLET LEDS OPERATING AT 265 NM**

A. Pandey, W. Shin, J. Gim, R. Hovden, Z. Mi, Ann Arbor/US

**09:30 - 09:45 ThF1.4 - ALGAN NANOCRYSTAL ULTRAVIOLET LEDS AND LASER DIODES**

X. Liu<sup>1</sup>, B. Le<sup>2</sup>, Z. Mi<sup>3</sup>, <sup>1</sup>/US, <sup>2</sup>/CA, <sup>3</sup>Ann Arbor/US

ThG1

**08:30 - 10:00 New Applications in Lasers**

**La Vista D/E**

Moderation: L. Yang, TBC/US

**08:30 - 09:00 ThG1.1 - SUPERSYMMETRIC LASER ARRAYS**

M. Khajavikhan, M. Hokmabadi, /US

**09:00 - 09:15 ThG1.3 - DUALY-MODULATED PHOTONIC-CRYSTAL LASERS FOR BEAM SCANNING**

R. Sakata<sup>1</sup>, K. Ishizaki<sup>2</sup>, K. Iwata<sup>1</sup>, M. De Zoysa<sup>1</sup>, S. Fukuhara<sup>1</sup>, Y. Tanaka<sup>1</sup>, T. Inoue<sup>1</sup>, S. Noda<sup>2</sup>, <sup>1</sup>Kyoto city/JP, <sup>2</sup>/JP

**09:15 - 09:30 ThG1.4 - ULTRAFast EMULATION OF RETINAL NEURONAL CIRCUITS WITH ARTIFICIAL VCSEL OPTICAL NEURONS**

J. Robertson<sup>1</sup>, A. Hurtado<sup>2</sup>, E. Wade<sup>1</sup>, <sup>1</sup>Glasgow/GB, <sup>2</sup>TBC/GB

ThH1

**08:30 - 09:15 Metrology/Navigation**

**La Vista F**

Moderation: R. Briggs, Pasadena/US

**08:30 - 09:00 ThH1.1 - PHOTONICS FOR SPACE APPLICATION, EXAMPLE OF LASER METROLOGY**

A. Azizi, Pasadena/UM

**09:00 - 09:15 ThH1.2 - TOWARDS USING LED ARRAYS FOR RELATIVE ALIGNMENT OF CUBE SATELLITE CLUSTERS**

J. Herrnsdorf, A.D. Griffiths, C. Lowe, M. Macdonald, M. Strain, M.D. Dawson, /GB

**10:00 - 10:30 Coffee Break**

**La Vista & El Mirador Foyers**



**10:30 - 12:00 Closing Ceremony****Salon del Ray C****10:30 - 10:40 PD2 - HIGH-SPEED ULTRAVIOLET-C PHOTODETECTOR BASED ON FREQUENCY DOWN-CONVERTING CSPBBR3 PEROVSKITE NANOCRYSTALS ON SILICON PLATFORM**

C.H. Kang<sup>1</sup>, I. Dursun<sup>2</sup>, G. Liu<sup>1</sup>, L. Sinatra<sup>1</sup>, X. Sun<sup>1</sup>, M. Kong<sup>1</sup>, J. Pan<sup>1</sup>, P. Maity<sup>1</sup>, E.-N. Ooi<sup>1</sup>, T.K. Ng<sup>1</sup>, O.F. Mohammed<sup>1</sup>, O.M. Bakr<sup>1</sup>, B.S. Ooi<sup>1</sup>, <sup>1</sup>Thuwal/SA, <sup>2</sup>/SA

**10:40 - 10:50 PD3 - ALXIN1-XASYSB1-Y SEPARATE ABSORPTION, CHARGE, AND MULTIPLICATION AVALANCHE PHOTODIODES FOR 2- $\mu$ M DETECTION**

A. Jones<sup>1</sup>, S. March<sup>2</sup>, S. Bank<sup>2</sup>, J. Campbell<sup>3</sup>, <sup>1</sup>/US, <sup>2</sup>Austin/US, <sup>3</sup>CHARLOTTESVILLE/US

**10:50 - 11:00 PD4 - CONTINUOUS-WAVE RAMAN LASING IN SILICON RING RESONATOR WITH SUB-MILLIWATT PUMP THRESHOLD**

Y. Zhang<sup>1</sup>, W. Zhou<sup>2</sup>, D. Yi<sup>2</sup>, Y. Tong<sup>2</sup>, Y. Wang<sup>2</sup>, R.R. Kumar<sup>2</sup>, H.K. Tsang<sup>2</sup>, <sup>1</sup>hongkong/HK, <sup>2</sup>/HK

**11:00 - 11:10 PD5 - 102GBPS PAM-2 OVER 50M OM5 FIBER USING 850NM MULTIMODE VCSELS**

J. Lavrencik<sup>1</sup>, S. Varughese<sup>2</sup>, V.A. Thomas<sup>2</sup>, J.S. Gustavsson<sup>3</sup>, E. Haglund<sup>3</sup>, A. Larsson<sup>3</sup>, S.E. Ralph<sup>2</sup>, <sup>1</sup>Atlanta/US, <sup>2</sup>ATLANTA/US, <sup>3</sup>Göteborg/SE

**11:10 - 11:20 PD6 - COMPRESSION OF 280-FS PULSES TO TWO OPTICAL CYCLES USING NITROGEN-FILLED HOLLOW-CORE FIBER**

J. Beetar, N.M. Madugula, C. Truong, O. Suarez, M. Chini, /US