IEEE PHOTONICS SOCIETY

SUMMER TOPICALS MEETING SERIES 2023

17-19 July 2023
Sicily, Italy
www.ieee-sum.org

General Chair
Cristian Antonelli,
University of L'Aquila, Italy

General Chair Elect
Georg Rademacher
University of Stuttgart, Germany

IEEE Photonics Society | IEEE

Welcome to the 2023 IEEE Summer Topicals Meeting Series!

Summer Topicals is a premier conference organized by the IEEE Photonics Society. Its primary objective is to explore emerging areas of research and technology in the broad field of Photonics. The conference format is special, as it gathers togethers world-wide experts and technology leaders in an intimate resort environment for three days, where talks and engaging discussions are accompanied by unforgettable networking events.

With the 2022 edition that took place in Cabo San Lucas, Mexico, Summer Topicals returned to their traditional in-person format with greater enthusiasm than ever, after two virtual editions enforced by the pandemic. This year, for the first time, Summer Topicals will take place in Europe, in the sunny land of Sicily, where local history, culture, and nature will provide the meetings with a charming atmosphere.

Historically, the conference includes four to seven topics, and each year topics and organizers are brand new, which keeps the technical content fresh. The topics selected for this year are:

- Fiber Sensing Using Deployed Telecom Networks (FS)
- Multimode Nonlinear Photonics (MNP)
- Parallelisation and Inversion in Network Technologies (PINT)
- Quantum and Cryogenic Photonics (QCP)
- Visible Light Integrated Photonics and Application to Atomic and Quantum Sensing, Communications, and Computing (VLIP)
- Where Photonics Meets Computing: From Devices to Applications (WPMC)

The organizers have done a great job in planning the individual topics, from submitting a proposal to securing high-quality invited speakers, and selecting excellent contributed papers.

Networking, socializing, and mentorship are highly valued at Summer Topicals. For this reason, we are glad to complement the technical program with a number of initiatives, including a Sunday night Happy Hour, Monday evening Welcome Reception, and a “Mentor Match Meet-Up” event. In addition, the IEEE Photonics Society has sponsored one travel grant per topic to encourage early-career participation at the Summer Topicals.

We are confident that attending the 2023 Summer Topicals will give you a great opportunity to build new relationships and consolidate existing ones in a charming location, and we thank you for joining us here in beautiful Sicily!

We look forward to seeing you again next year!

Cristian Antonelli
2023 General Chair

Georg Rademacher
2023 Chair-Elect, 2024-2025 General Chair

2023 IEEE Photonics Society Summer Topicals Meeting Series (SUM) has gone mobile!

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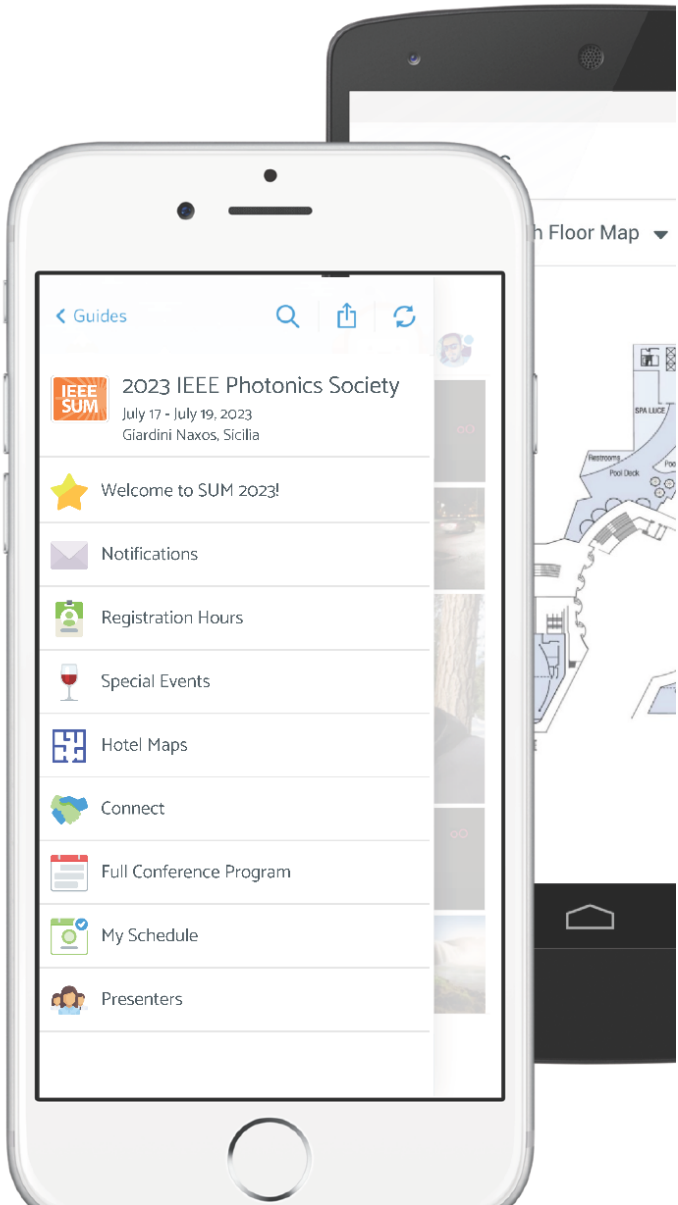

IEEE PHOTONICS SOCIETY
SUMMER TOPICALS MEETING SERIES 2023

Program-at-a-Glance

Sunday, 16 July 5:00pm-7:00pm | HAPPY HOUR | *Hibiscus/Giardino*

MONDAY | 17 JULY

	FS *Cordari*	MNP *Dionisio*	PINT *Scilla*	QCP *Calipso*	VLIP *Cariddi*	WPMC *Nettuno*
8:30am - 10:00am	MA1 Novel Approaches to Fiber Sensing Technology		MC1 Multicore and Parrallel Transmission	MD1 Lasers for Quantum	ME1 Visible Light Photonics I	MF1 *8:30am-9:30am* Machine Learning for Photonics
10:00am - 10:30am	*BREAK*					
10:30am - 12:00pm	MA2 *10:30am-11:30am* Sensing in Optical Communication Network	MB2 *10:30am-11:45am* Frequency Combs in Multimode Waveguides and Fibers I	MC2 Amplifier Design and Optimisation	MD2 *10:30am-11:45am* Cryogenic Classical and Quantum Interconnect I	ME2 Visible Light Integration Platforms I	MF2 The Role of Interconnects in Optical Computing
12:00pm - 1:30pm	*LUNCH*					
1:30pm - 3:00pm	MA3 Listening to the Earth Pulse with Distributed Acoustic Sensing	MB3 Complex Dynamics in Nonlinear Cavities	MC3 Underwater Communications at the Beach (*meet in the sand*)	MD3 Cryogenic Classical and Quantum Interconnect II	ME3 Integrated Atom, Ion and Quantum Systems I	MF3 Neuromorphic Computing: Trends and Applications
3:00pm - 3:30pm	*BREAK*					
3:30pm - 5:00pm		MB4 *3:30pm-4:15pm* Thermodynamics of Nonlinear Multimode Optics	MC4 Challenges of Multimode Transmission	MD4 *3:30pm-4:30pm* Quantum Sources of Light	ME4 Quantum Sensing and Photonic Integration Opportunties	MF4 Lasers and All-Optical Activation Units in Neuromorphic Computing
6:00pm - 8:00pm	**Welcome Reception | *Hibiscus/Giardino***					

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Program-at-a-Glance

TUESDAY | 18 JULY

	FS *Cordari*	MNP *Dionisio*	PINT *Scilla*	QCP *Calipso*	VLIP *Cariddi*	WPMC *Nettuno*
8:30am - 10:00am	TuA1 Improving Sensing Technology and Opportunities		TuC1 Modelling of Transmission Impairments	TuD1 *8:30am-9:45am* Quantum Photonics with Trapped Ions and Color Centers	TuE1 *8:30am-9:30am* Atoms and Ions for Timekeeping, Sensing and Computing	TuF1 Enabling Technologies for Neuromorphic Computing
10:00am - 10:30am	*BREAK*					
10:30am - 12:00pm	TuA2 *10:30am-11:45am* Fiber Sensing Using Polarization Effects	TuB2 Frequency Combs in Multimode Waveguides and Fibers II	TuC2 3D Waveguides and Volume Devices	TuD2 Single-Photon Devices	TuE2 *10:30am-11:45am* Visible Light Inegrated Platforms II	TuF2 *10:30am-11:15am* Linear Optics Revisited I
12:00pm - 1:30pm	*LUNCH*					
1:30pm - 3:00pm	TuA3 *1:30pm-2:45pm* Enhancing Sensing Capabilities on the Existing Infrastructure	TuB3 Multimode Quantum Optics	TuC3 Multiplane Light Conversion	TuD3 *1:30pm-3:15pm* Advances in Photonic Integration	TuE3 Integrated Atom, Ion and Quantum Systems II	TuF3 Neuromorphic Computing: Trends and Applications
3:00pm - 3:30pm	*BREAK*					
3:30pm - 5:00pm	TuA4 *3:30pm-4:00pm* Geophysical Applications of Fiber Sensing Instruments	TuB4 *3:30pm-4:45pm* Complex Dynamics in Optical Fibers	TuC4 SDM: How Many Modes/Cores? (*Panel Session*)	TuD4 *3:30pm-4:30pm* Quantum Sensing & Metrology	TuE4 Visible Light Photonics II	TuF4 Physics-Inspired Optical Computing

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Program-at-a-Glance

WEDNESDAY | 19 JULY

	FS *Cordari*	MNP *Dionisio*	PINT *Scilla*	QCP *Calipso*	VLIP *Cariddi*	WPMC *Nettuno*
8:30am - 10:00am		WB1 Multimode Frequency Conversion	WC1 High Data Throughput Solutions for SDM	WD1 *8:30am-10:30am* Quantum Networks and Communications	WE1 Government Programs & Commercial Opportunties for Integrated Quantum Information Sciences & Applications	WF1 Enabling Technologies for Neuromorphic Computing
10:00am - 10:30am	*BREAK*					
10:30am - 12:00pm		WB2 Managing Light Complexity	WC2 Dynamic and Adaptive SDM Components		WE2 *10:30am-11:45am* Visible Light Photonics III	WF2 Linear Optics Revisited II
12:00pm - 1:30pm	*LUNCH*					
1:30pm - 3:00pm		WB3 *1:30pm-2:30pm* Spatiotemporal Mode-locked Lasers and Amplifiers				WF3 Programmable Photonics
3:00pm - 3:30pm	*BREAK*					
3:30pm - 5:00pm						

Monday, 17 July

8:30am **MA1 -**
MA1 - Novel Approaches to Fiber Sensing Technology
Cordari
Chaired by: Ettore Biondi (United States) and Mikael Mazur (United States)

8:30am **MA1.1 (Invited) - Science with seafloor optical cables**
» Giuseppe Marra (United Kingdom)[1] (1. NPL)

9am **MA1.2 (Invited) - Coherent laser interferometry for a permanent earthquake observatory over the deployed optical fiber network**
» Simone Donadello (Italy)[1], Cecilia Clivati (Italy)[1], Alberto Mura (Italy)[1], Filippo Levi (Italy)[1], Davide Calonico (Italy)[1] (1. Istituto Nazionale di Ricerca Metrologica (INRiM))

9:30am **MA1.3 (Invited) - What can we learn about climate change using submarine fiber cables**
» Miguel Gonzalez-Herraez (Spain)[1] (1. Universidad de Alcala)

8:30am **MC1 -**
MC1 - Multicore and Parrallel Transmission
Scilla
Chaired by: Wladek Forysiak (United Kingdom) and Ruben S. Luís (Japan)

8:30am **MC1.1 (Invited) - Multicore Fibers for Optical Communications**
» Tetsuya Hayashi (Japan)[1] (1. Sumitomo Electric Industries, Ltd.)

9am **MC1.2 (Invited) - Dispersion-diversity multicore fiber for tunable microwave signal processing**
» Sergi García (Spain)[1], Mario Ureña (Spain)[1], Elham Nazemosadat (Spain)[1], Ivana Gasulla (Spain)[1] (1. Photonics Research Labs, iTEAM, Universitat Politècnica de València)

9:30am **MC1.3 - Temporal differentiation and integration based on a dispersion-diversity heterogeneous multicore fiber**
» Sergi García (Spain)[1], Mario Ureña (Spain)[1], Ivana Gasulla (Spain)[1] (1. Photonics Research Labs, iTEAM, Universitat Politècnica de València)

9:45am **MC1.4 - Turning Zero-Bits of Parallel Interconnects into Optical Budget: Biasing APDs through Dumped Power**
» Bernhard Schrenk (Austria)[1], Fotini Karinou (United Kingdom)[2] (1. AIT Austrian Institute of Technology, 2. Microsoft Research Ltd)

8:30am **MD1 -**
MD1 - Lasers for Quantum
Calipso
Chaired by: Frederic Grillot (France) and Marek Osinski (United States)

8:30am **MD1.1 (Invited) - Threshold in nanolasers: definitions, measurement, modelling and applications**
» Gian Luca Lippi (France)[1] (1. Université Côte d'Azur, CNRS, UMR 7010, Institut de Physique de Nice)

9am **MD1.2 (Invited) - Laser Physics of sub-Hz Linewidth Integrated III-V/Si Lasers**
» Weng W. Chow (United States)[1] (1. Sandia National Laboratories)

9:30am **MD1.3 - Development of vertical cavity surface emitting laser for 4.2 K environment**
» Jukka Viheriälä (Finland)[1], Topi Uusitalo (Finland)[1], Heikki Virtanen (Finland)[1], Behzad Namvar (Finland)[1], Patrik Rajala (Finland)[1], Sanna Ranta (Finland)[1], Teemu Hakkarainen (Finland)[1], Antti Tukiainen (Finland)[1], Guilhem Almuneau (France)[2], Mircea Guina (Finland)[1] (1. Tampere University, 2. LAAS-CNRS)

9:45am **MD1.4 - Prime comb lasing in a fiber ring at low temperatures**
» Eyal Buks (Israel)[1] (1. The Andrew and Erna Viterbi Faculty of Electrical & Computer Engineering Technion – Israel Institute of Technology)

Continued from **Monday, 17 July**

8:30am **ME1 -**
ME1 - Visible Light Photonics I
Cariddi
Chaired by: Daniel Blumenthal (United States) and Radan Slavik (United Kingdom)

8:30am **ME1.1 (Invited) - Efficient blue and ultraviolet frequency combs with thin-film lithium niobate**
» Scott Diddams (United States)[1] (1. University of Colorado Boulder)

9am **ME1.2 (Invited) - Monolithic sub-kHz-linewidth visible VECSELs for cold atoms**
» Martin Lee (United Kingdom)[1], Paulo Moriya (United Kingdom)[1], Jennifer Hastie (United Kingdom)[1] (1. University of Strathclyde)

9:30am **ME1.3 (Invited) - A scalable infrastructure for strontium optical clocks with integrated photonics**
» Scott Papp (United States)[1] (1. NIST, Boulder)

8:30am **MF1 -**
MF1 - Machine Learning for Photonics
Nettuno
Chaired by: Paolo Bardella (Italy) and Kaveh (Hassan) Rahbardar Mojaver (Canada)

8:30am **MF1.1 (Keynote) - Machine learning for photonics: from computing to communication**
» Francesco Da Ros (Denmark)[1], Ali Cem (Denmark)[1], Yevhenii Osadchuk (Denmark)[1], Ognjen Jovanovic (Denmark)[1], Darko Zibar (Denmark)[1] (1. Technical University of Denmark)

9:15am **MF1.3 - Performance Improvement of Spatial Mode Conversion Based on Spatial Cross Modulation Using Genetic Algorithm**
» Tomohiro Maeda (Japan)[1], Rino Ishibashi (Japan)[1], Hideyuki Sotobayashi (Japan)[1] (1. Aoyama Gakuin University)

10am **Break**
Foyer

10:30am **MA2 -**
MA2 - Sensing in Optical Communication Network
Cordari
Chaired by: Mikael Mazur (United States)

10:30am **MA2.1 (Invited) - Fiber Optical Sensing Utilizing Correlation Techniques**
» Florian Azendorf (Germany)[1], André Sandmann (Germany)[1], Sander Jansen (Germany)[1], Michael Eiselt (Germany)[1] (1. ADTRAN)

11am **MA2.3 (Invited) - Sensing the world and protecting the network**
» David Neilson (United States)[1] (1. Nokia Bell Labs)

10:30am **MB2 -**
MB2 - Frequency Combs in Multimode Waveguides and Fibers I
Dionisio
Chaired by: Goëry Genty (Finland) and Logan Wright (United States)

10:30am **MB2.1 (Invited) - All-fiber triple frequency comb light source**
» Arnaud Mussot (France)[1], Eve-Line Bancel (France)[2] (1. Lille University, 2. PhLAM CNRS)

11am **MB2.2 - Chirped solitons and wavetrain solutions for Kerr-frequency combs**
» Sanjana Bhatia (India)[1], C N Kumar (India)[2] (1. Panjab University, Chandigarh, 2. Department of Physics, Panjab University, Chandigarh)

11:15am **MB2.3 (Invited) - Harmonic Wavefront Shaping with Nonlinear Metasurfaces**
» L. Coudrat (France)[1], R. Tanos (France)[2], K. Moratis (France)[1], P. Filloux (France)[1], J. Claudon (France)[2], J-M. Gerard (France)[2], A. Degiron (France)[1], Giuseppe Leo (France)[1] (1. Laboratoire Matériaux et Phénomènes Quantiques, Université Paris Cité and CNRS, 2. Université Grenoble Alpes, CEA, IRIG, PHELIQS)

Continued from **Monday, 17 July**

10:30am **MC2 -**

MC2 - Amplifier Design and Optimisation

Scilla

Chaired by: Ruben S. Luís (Japan) and Wladek Forysiak (United Kingdom)

10:30am **MC2.1 (Invited) - Energy Efficiency of Amplification Technologies for Ultra-Wideband Transmission**

» Lutz Rapp (Germany)[1] (1. ADVA Optical Networking SE)

11am **MC2.2 (Invited) - Ultra-wideband WDM transmission using PPLN-based optical parametric amplifiers with over 10-THz bandwidth**

» Takayuki Kobayashi (Japan)[1], Shimpei Shimizu (Japan)[1], Takaushi Kazama (Japan)[1], Masashi Abe (Japan)[1], Takeshi Umeki (Japan)[1], Masanori Nakamura (Japan)[1], Fukutaro Hamaoka (Japan)[1], Yutaka Miyamoto (Japan)[1] (1. NTT)

11:30am **MC2.3 (Invited) - Modeling optical amplifiers: from inverse design to full system optimization**

» Francesco Da Ros (Denmark)[1], Metodi Yankov (Denmark)[1], Mehran Soltani (Denmark)[1], Andrea Carena (Italy)[2], Darko Zibar (Denmark)[1] (1. Technical University of Denmark, 2. Politecnico di Torino)

10:30am **MD2 -**

MD2 - Cryogenic Classical and Quantum Interconnect I

Calipso

Chaired by: Paolo Pintus (Italy)

10:30am **MD2.1 (Keynote) - Photonic Interconnects to Superconducting Circuit Platforms**

» Franklyn Quinlan (United States)[1] (1. NIST)

11:15am **MD2.2 (Invited) - Toward the optical control of cryogenic quantum technologies**

» Antti Kemppinen (Finland)[1], Arijit Bera (Finland)[1], Giovanni Delrosso (Finland)[1], Jaani Nissilä (Finland)[1], Jorden Senior (Finland)[1], Emma Mykkänen (Finland)[1], Kirsi Tappura (Finland)[1], Visa Vesterinen (Finland)[1], Pranauv Selvasundaram (Finland)[1], Katja Kohopää (Finland)[1], Alberto Ronzani (Finland)[1], Ben Wälchli (Finland)[1], Joel Hunnakko (Finland)[1], Leila (Robab) Najafi Jabdaraghi (Finland)[1], Thomas Fordell (Finland)[1], Mario Ribeiro (Finland)[1], Dibyendu Hazra (Finland)[1], Tomi Haatainen (Finland)[1], Renan Pires Loreto (Finland)[1], Joel Hätinen (Finland)[1], Mika Prunnila (Finland)[1], Timo Aalto (Finland)[1], Janne Lehtinen (Finland)[1], Antti Manninen (Finland)[1], Joonas Govenius (Finland)[1], Matteo Cherchi (Finland)[1], Pekka Pursula (Finland)[1] (1. VTT Technical Research Centre of Finland)

10:30am **ME2 -**

ME2 - Visible Light Integration Platforms I

Cariddi

Chaired by: Radan Slavik (United Kingdom) and Daniel Blumenthal (United States)

10:30am **ME2.1 (Invited) - VLSI Fabricated Photonic Integrated Circuits for Quantum Computing and Networking**

» Matt Eichenfield (United States)[1] (1. University of Arizona)

11am **ME2.2 (Invited) - Silicon-Nitride Photonic Integrated Circuits for Atomic Systems**

» Kevin Gallacher (United Kingdom)[1], Eugenio Di Gaetano (United Kingdom)[1], Sean Dyer (United Kingdom)[2], Brendan Keliehor (United Kingdom)[2], James McGilligan (United Kingdom)[2], Martin Sinclair (United Kingdom)[1], Aidan Arnold (United Kingdom)[2], Ugne Hawley (United Kingdom)[1], Paul Griffin (United Kingdom)[2], Marc Sorel (United Kingdom)[1], Erling Riis (United Kingdom)[2], Douglas Paul (United Kingdom)[1] (1. University of Glasgow, 2. University of Strathclyde)

10:30am **MF2 -**

MF2 - The Role of Interconnects in Optical Computing

Nettuno

Chaired by: Paolo Bardella (Italy) and Angelina Totovic (United States)

Continued from **Monday, 17 July**

10:30am **MF2.1 (Keynote) - Realizing Petabit/s IO and sub-pJ/bit System-wide Communication with Silicon Photonics**
» Keren Bergman (United States)[1] (1. Columbia University)

11:15am **MF2.2 (Invited) - Co-packaged Silicon Photonics Interconnects for Next-Gen AI/ML Systems**
» Ashkan Seyedi (United States)[1] (1. Nvidia)

11:45am **MF2.3 - Silicon Photonics I/O Nodes for HPC Applications**
» Luca Ramini (Italy)[1], Yanir London (Israel)[1], Daniel Dauwe (United States)[2], Jared Hulme (United States)[1], Steven Dean (United States)[1], Marco Fiorentino (United States)[1], Raymond Beausoleil (United States)[1] (1. Hewlett Packard Enterprise, 2. Google)

12pm **Lunch (On Own)**

1:30pm **MA3 -**
MA3 - Listening to the Earth Pulse with Distributed Acoustic Sensing
Cordari
Chaired by: Biondo Biondi (United States) and Ettore Biondi (United States)

1:30pm **MA3.1 (Invited) - Underwater DAS-fibres for ocean monitoring**
» Martin Landrø (Norway)[1] (1. Norwegian University of Science and Technology)

2pm **MA3.2 (Invited) - Microseismicity Detection with DAS**
» Sonja Gaviano (Italy)[1], Juan Porras (Italy)[2], Davide Pecci (Italy)[2], Giacomo Rapagnani (Italy)[2], Francesco Grigoli (Italy)[2] (1. University of Pisa and INGV (Istituto Nazionale di Geofisica e Vulcanologia), 2. University of Pisa)

2:30pm **MA3.3 (Invited) - Monitoring the Italian landscape using the fiber optic cables**
» Nicola Piana Agostinetti (Italy)[1] (1. University of Milan Bicocca)

1:30pm **MB3 -**
MB3 - Complex Dynamics in Nonlinear Cavities
Dionisio
Chaired by: Logan Wright (United States) and Goëry Genty (Finland)

1:30pm **MB3.1 - Wideband chaos from external cavity mode dynamics in a laser diode with phase-conjugate feedback**
» Delphine Wolfersberger (France)[1], Tushar Malica (France)[1], Marc Sciamanna (France)[1] (1. Chaire Photonique, LMOPS, CentraleSupélec)

1:45pm **MB3.2 (Invited) - Light spatio-temporal complexity from nonlinear dynamics of semiconductor laser modes**
» Marc Sciamanna (France)[1], Stefan Bittner (France)[2] (1. CentraleSupélec, 2. Chaire Photonique, LMOPS, CentraleSupélec)

2:15pm **MB3.3 - High-order dissipative solitons in Kerr resonators with parabolic potentials**
» Pedro Parra-Rivas (Italy)[1], Yifan Sun (Italy)[1], Mario Zitelli (Italy)[1], Mario Ferraro (Italy)[1], Fabio Mangini (Italy)[1], Stefan Wabnitz (Italy)[1] (1. Sapienza University of Rome)

2:30pm **MB4.1 (Invited) - Optical Thermodynamics of highly multimode nonlinear systems**
» Demetrios Christodoulides (United States)[1] (1. University of Southern California)

1:30pm **MC3 -**
MC3 - Underwater Communications at the Beach
Scilla

1:30pm **MD3 -**
MD3 - Cryogenic Classical and Quantum Interconnect II
Calipso
Chaired by: Paolo Pintus (Italy) and Galan Moody (United States)

1:30pm **MD3.1 (Invited) - Microwave-optical transduction with integrated photonic devices**
» Paul Seidler (Switzerland)[1] (1. IBM Research – Zurich)

Continued from **Monday, 17 July**

2pm

MD3.2 (Invited) - Hybrid superconducting photonic circuits for microwave-to-optics quantum frequency conversion

» Hong Tang (United States)[1] (1. Yale University)

2:30pm

MD3.3 (Invited) - Monolithic CMOS photonic transmitters for superconducting circuit 4K-to-room temperature optical interfaces

» Milos Popovic (United States)[1] (1. Boston University)

1:30pm

ME3 -

ME3 - Integrated Atom, Ion and Quantum Systems I

Cariddi

Chaired by: Daniel Blumenthal (United States) and Radan Slavik (United Kingdom)

1:30pm

ME3.1 (Invited) - Microfabricated vapor cells for integrated precision spectroscopy

» Matthew Hummon (United Kingdom)[1] (1. NIST)

2pm

ME3.2 (Invited) - Integrated Photonics for Trapped Ion Qubit Gates

» Robert Niffenegger (United States)[1] (1. University of Massachusetts Amherst)

1:30pm

MF3 -

MF3 - Neuromorphic Computing: Trends and Applications

Nettuno

Chaired by: Chaoran Huang (Hong Kong) and Miltiadis Moralis-Pegios (Greece)

1:30pm

MF3.1 (Invited) - Nonlocal and Single-Chip Machine Learning Enabled by Light

» Ryan Hamerly (United States)[1] (1. MIT)

2pm

MF3.2 (Invited) - Neuromorphic computing by means of recurrent spectrum slicing for next generation high baud rate transmission systems

» Adonis Bogris (Greece)[1], Kostas Sozos (Greece)[1], George Sarantoglou (Greece)[2], Stavros Deligiannidis (Greece)[1], Charis Mesaritakis (Greece)[2] (1. University of West Attica, 2. University of the Aegean)

2:30pm

MF3.4 - Parallel Photonic Reservoir Computing Based on Wavelength Multiplexing

» Yi-Wei Shen (China)[1], Bao-De Lin (China)[1], Rui-Qian Li (China)[2], Jingyi Yu (China)[1], Xuming He (China)[1], Cheng Wang (China)[1] (1. ShanghaiTech University, 2. ShanghaiTech Univesity)

2:45pm

No-Show|MF3.3 - Efficient Multicast Communication in Silicon Photonics Enhanced DNN Acceleration

» Yuan Li (United States)[1], Ahmed Louri (United States)[1], Avinash Karanth (United States)[2] (1. George Washington University, 2. Ohio University)

3pm

Break

Foyer

3:30pm

MB4 -

MB4 - Thermodynamics of Nonlinear Multimode Optics

Dionisio

Chaired by: Fabio Mangini (Italy) and Mario Ferraro (Italy)

3:30pm

MB4.2 (Invited) - Fixing entropy loopholes in multimode fiber thermodynamics

» Günter Steinmeyer (Germany)[1] (1. Max Born Institute)

4pm

TuB4.4 - Time-resolved mode power decomposition for nonlinear multimode fibers

» Mario Zitelli (Italy)[1], Vincent Couderec (France)[2], Mario Ferraro (Italy)[1], Fabio Mangini (Italy)[1], Pedro Parra-Rivas (Italy)[1], Yifan Sun (Italy)[1], Stefan Wabnitz (Italy)[1] (1. Sapienza University of Rome, 2. XLIM, UMR CNRS 7252, Université de Limoges)

Continued from **Monday, 17 July**

3:30pm **MC4 -**

MC4 - Challenges of Multimode Transmission

Scilla

Chaired by: Martin Lavery (United Kingdom) and Nicolas Fontaine (United States)

3:30pm **MC4.1 (Invited) - Progress in Coupled-Core Fiber Based Transmission Systems**

» Roland Ryf (United States)[1], Mikael Mazur (United States)[1], Lauren Dallachiesa (United States)[1], Nicolas Fontaine (United States)[1], Haoshuo Chen (United States)[1] (1. Nokia Bell Labs)

4pm **MC4.2 (Invited) - High-density Optical Transceivers**

» Haoshuo Chen (United States)[1] (1. Nokia Bell Labs)

4:30pm **MC4.3 (Invited) - Partial Parallelisation of MIMO Processing in Multi-Mode Fiber Transmission**

» Paola Parolari (Italy)[1], Alberto Gatto (Italy)[1], Ruben S. Luís (Japan)[2], Georg Rademacher (Japan)[2], Ben Puttnam (Japan)[2], Cristian Antonelli (Italy)[3], Paolo Martelli (Italy)[1], Pierpaolo Boffi (Italy)[1] (1. Politecnico di Milano, 2. National Institute of Information and Communication Technology, 3. University of L'Aquila)

3:30pm **MD4 -**

MD4 - Quantum Sources of Light

Calipso

Chaired by: Marina Radulaski (United States) and Frederic Grillot (France)

3:30pm **MD4.1 (Invited) - Quantum dot laser sources for quantum computing, optical computing and data connects**

» John Bowers (United States)[1], Chen Shang (United States)[2], Paolo Pintus (United States)[2], Galan Moody (United States)[2] (1. University of California, Santa Barbara, 2. UCSB)

4pm **MD4.3 - Quantum-Dot Sources for Single-Photon Emitter Applications**

» Erika Sommer (United States)[1], Sami Nazib (United States)[1], Troy Hutchins-Delgado (United States)[1], Hosuk Lee (United States)[1], Ruth Gyan-Darkwa (United States)[1], Erum Jamil (United States)[1], Thomas Rotter (United States)[1], Sadhvikas Addamane (United States)[2], John Nogan (United States)[2], Anthony James (United States)[2], Matthew Doty (United States)[3], Joshua Zide (United States)[3], Ganesh Balakrishnan (United States)[1], Marek Osinski (United States)[1] (1. University of New Mexico, 2. Sandia National Laboratories, 3. University of Delaware)

4:15pm **MD4.4 - Generation of non-classical light using semiconductor quantum dot lasers**

» Shiyuan Zhao (France)[1], Shihao Ding (France)[1], Heming Huang (France)[1], Isabelle Zaquine (France)[1], Nadia Belabas (France)[2], Frederic Grillot (France)[1] (1. Telecom Paris, 2. Centre de Nanosciences et de Nanotechnologies C2N, CNRS, Université Paris-Saclay Palaiseau France)

3:30pm **ME4 -**

ME4 - Quantum Sensing and Photonic Integration Opportunties

Cariddi

Chaired by: Radan Slavik (United Kingdom) and Daniel Blumenthal (United States)

3:30pm **ME4.1 (Invited) - Photonic engineering of atomic and solid-state quantum sensors**

» Jennifer Choy (United States)[1] (1. University of Wisconsin)

4pm **ME4.2 (Invited) - Quantum Sensing in integrated devices and 3D printing for quantum technologies**

» Lucia Hackermueller (United Kingdom)[1] (1. Physics Department, University of Nottingham)

3:30pm **MF4 -**

MF4 - Lasers and All-Optical Activation Units in Neuromorphic Computing

Nettuno

Chaired by: Angelina Totovic (United States) and Miltiadis Moralis-Pegios (Greece)

Continued from **Monday, 17 July**

3:30pm **MF4.1 (Invited) - Application of adaptive activation unit based on injection-locked lasers in machine learning tasks**
» Jasna Crnjanski (Serbia)[1], Mladen Banović (Serbia)[1], Isidora Teofilović (Denmark)[2], Marko Krstić (Serbia)[1], Dejan Gvozdić (Serbia)[1] (1. University of Belgrade - School of Electrical Engineering, 2. Technical University of Denmark)

4pm **MF4.2 (Invited) - Membrane III-V on Si Spiking Lasers for Ultrafast Photonic Spiking Neural Networks**
» Nikolaos Panteleimon Diamantopoulos (Japan)[1] (1. NTT)

4:30pm **MF4.3 - All-Optical Activation Function Based on a Semiconductor Laser**
» Guan-Ting Liu (China)[1], Yi-Wei Shen (China)[1], Rui-Qian Li (China)[2], Jingyi Yu (China)[1], Xuming He (China)[1], Cheng Wang (China)[1] (1. ShanghaiTech University, 2. ShanghaiTech Univesity)

4:45pm **MF4.4 - All-Optical ReLU as a Photonic Neural Activation Function**
» Margareta Vania Stephanie (Austria)[1], Lam Pham (Austria)[1], Alexander Schindler (Austria)[1], Michael Waltl (Austria)[2], Tibor Grasser (Austria)[2], Bernhard Schrenk (Austria)[1] (1. AIT Austrian Institute of Technology, 2. Institute for Microelectronics, TU Wien)

6pm **Welcome Reception**
Hibiscus/Giardino

Tuesday, 18 July

8:30am **TuA1 -**
TuA1 - Improving Sensing Technology and Opportunities
Cordari
Chaired by: Magnus Karlsson (Sweden) and Mikael Mazur (United States)

8:30am **TuA1.1 (Invited) - Generation of Ultrashort Pulses Modulated in Space and Time**
» Rodrigo Amezcua Correa (United States)[1], Daniel Cruz Delgado (United States)[1], Stephanos Yerolatsitis (United States)[1], Nicolas Fontaine (United States)[2], Demetrios Christodoulides (United States)[3], Miguel Bandres (United States)[1] (1. CREOL, The College of Optics and Photonics, University of Central Florida, 2. Nokia Bell Labs, 3. University of Southern California)

9am **TuA1.2 (Invited) - Engineered Fibers for Enhanced Distributed Sensing in Telecom Networks**
» Paul Westbrook (United States)[1] (1. OFS Labs)

9:30am **TuA1.3 (Invited) - Optical sensing for sustainable and resilient cities**
» Biondo Biondi (United States)[1], Siyuan Yuan (United States)[1], Jingxiao Liu (United States)[1], Haeyoung Noh (United States)[1] (1. Stanford University)

8:30am **TuC1 -**
TuC1 - Modelling of Transmission Impairments
Scilla
Chaired by: Anastasiia Vasylchenkova (United Kingdom) and Ruben S. Luís (Japan)

8:30am **TuC1.1 (Invited) - Accuracy of Physical Layer Models for Multi-Band Networks QoT Estimation**
» Emanuele Virgillito (Italy)[1], Giacomo Borraccini (Italy)[1], Andrea D'Amico (Italy)[1], Vittorio Curri (Italy)[1] (1. Politecnico di Torino)

9am **TuC1.2 (Invited) - Accounting for Raman-induced impairments in multi-band networks**
» Andre Richter (Germany)[1], Dmitry Khomchenko (Germany)[1], Igor Koltchanov (Germany)[1] (1. VPIphotonics)

9:30am **TuC1.3 (Invited) - Gaussian Noise Model Advancements for The Design of High-Capacity Optical Networks**
» Chiara Lasagni (Italy)[1] (1. Università degli Studi di Parma)

Continued from **Tuesday, 18 July**

8:30am

TuD1 -

TuD1 - Quantum Photonics with Trapped Ions and Color Centers

Calipso

Chaired by: Galan Moody (United States)

8:30am

TuD1.1 (Invited) - Quantum Nanophotonic Hardware with Integrated Color Centers

» Marina Radulaski (United States)[1] (1. University of California, Davis)

9am

TuD1.2 (Invited) - Integrated Photonics for Trapped Ion-based Quantum Computing and Sensing

» Cheryl Sorace-Agaskar (United States)[1], Colin Bruzewicz (United States)[1], Patrick Callahan (United States)[1], Ike Chuang (United States)[2], Ethan Clements (United States)[2], Paul Juodawlkis (United States)[1], Dave Kharas (United States)[1], May Kim (United States)[1], Felix Knollmann (United States)[2], William Loh (United States)[1], Thomas Mahony (United States)[1], Ryan Maxson (United States)[1], Alexander Medeiros (United States)[1], Rachel Morgan (United States)[2], David Reens (United States)[1], Meghan Schuldt (United States)[1], Reuel Swint (United States)[1], Gavin West (United States)[2], Robert McConnell (United States)[1], John Chiaverini (United States)[1] (1. MIT Lincoln Laboratory, 2. MIT)

9:30am

TuD1.3 - Study of W centers formation in silicon upon ion implantation and rapid thermal annealing

» Greta Andrini (Italy)[1], Gabriele Zanelli (Italy)[2], Sviatoslav Ditalia Tchernij (Italy)[2], Emilio Corte (Italy)[2], Elena Nieto Hernández (Italy)[2], Alessio Verna (Italy)[3], Matteo Cocuzza (Italy)[3], Ettore Bernardi (Italy)[4], Salvatore Virzì (Italy)[4], Paolo Traina (Italy)[4], Ivo Pietro Degiovanni (Italy)[4], Paolo Olivero (Italy)[2], Marco Genovese (Italy)[4], Jacopo Forneris (Italy)[2] (1. Istituto Nazionale di Fisica Nucleare (INFN) - sez. TO, 2. Dipartimento di Fisica, Università degli Studi di Torino, 3. DISAT, Politecnico di Torino, 4. Istituto Nazionale di Ricerca Metrologica (INRiM))

8:30am

TuE1 -

TuE1 - Atoms and Ions for Timekeeping, Sensing and Computing

Cariddi

Chaired by: Daniel Blumenthal (United States) and Radan Slavik (United Kingdom)

8:30am

TuE1.1 (Invited) - Ion Trap Quantum Computing and Prospects for Integrated Photonics

» Mary Rowe (United States)[1] (1. Quantinuum)

9am

TuE1.3 (Invited) - Optical lattice clocks at NPL

» Ian Hill (United Kingdom)[1] (1. National Physical Laboratory)

8:30am

TuF1 -

TuF1 - Enabling Technologies for Neuromorphic Computing

Nettuno

Chaired by: Chaoran Huang (Hong Kong) and Kaveh (Hassan) Rahbardar Mojaver (Canada)

8:30am

TuF1.1 (Keynote) - Towards the realisation of complex photonics engines using silicon nitride

» Frederic Gardes (United Kingdom)[1], Thalia dominguez_bucio (United Kingdom)[1], Ilias Skandalos (United Kingdom)[1], Valerio Vitali (Italy)[2], yaonan hou (United Kingdom)[1], Teerapat Rutirawut (Thailand)[3], JOAQUIN FANECA (Spain)[4], daniele melati (France)[5], Alejandro Ortega Moñux (Spain)[6], Pavel Cheben (Canada)[7], Jose Manuel Luque (Spain)[6], James Gates (United Kingdom)[1], jens schmid (Canada)[7], Iñigo Molina Fernandez (Spain)[6], Cosimo Lacava (Italy)[2], Periklis Petropoulos (United Kingdom)[1], J. Gonzalo Wangüemert Pérez (Spain)[6], George Mourgias-Alexandris (Greece)[8], Miltiadis Moralis-Pegios (Greece)[8], Nikolaos Passalis (Greece)[8], Manos Kirtas (Greece)[8], Anastasios Tefas (Greece)[8], Nikos Pleros (Greece)[8], huiyun liu (United Kingdom)[9], Tang Mingchu (United Kingdom)[9], Alwyn Seeds (United Kingdom)[9] (1. University of Southampton, 2. University of Pavia, 3. Suranaree University of Technology, 4. Institute of Microelectronics of Barcelona, 5. universite paris saclay, 6. University of malaga, 7. nrc-cnrc, 8. Aristotle University of Thessaloniki, 9. University college london)

Continued from **Tuesday, 18 July**

9:15am

TuF1.2 (Invited) - Heterogeneously integrated III-V on silicon photonics for neuromorphic computing

» Bassem Tossoun (United States)[1], Aashu Jha (United States)[1], George Giamougiannis (United States)[1], Stanley Cheung (United States)[1], Xian Xiao (United States)[1], Thomas Van Vaerenbergh (Belgium)[1], Geza Kurczveil (United States)[1], Raymond Beausoleil (United States)[1] (1. Hewlett Packard Labs)

9:45am

TuF1.3 - Applications of Double Injection Photonic Devices

» Ofer Amrani (Israel)[1], Roei Cohen (Israel)[2], Shlomo Ruschin (Israel)[1] (1. Tel-Aviv University, 2. Star-Photonics)

10am

Break

Foyer

10:30am

TuA2 -

TuA2 - Fiber Sensing Using Polarization Effects

Cordari

Chaired by: Ettore Biondi (United States)

10:30am

TuA2.1 (Invited) - Fiber sensing based on polarization tracking

» Magnus Karlsson (Sweden)[1] (1. Chalmers University of Technology)

11am

TuA2.2 (Invited) - Optical coherent detection for environmental sensing

» Antonio Mecozzi (Italy)[1] (1. Università degli Studi dell'Aquila)

11:30am

TuA2.3 - A practical approach to vibration monitoring on a metro length fiber cable using low-cost State of Polarization monitoring

» Kristina Skarvang (Norway)[1], Steinar Bjørnstad (Norway)[2], Dag Roar Hjelme (Norway)[1] (1. Norwegian University of Science and Technology, 2. Tampnet)

10:30am

TuB2 -

TuB2 - Frequency Combs in Multimode waveguides and Fibers II

Dionisio

Chaired by: Goëry Genty (Finland) and Logan Wright (United States)

10:30am

TuB2.1 (Tutorial) - Multi-mode and multi-octave chi-2 photonics

» Dmitry Skryabin (United Kingdom)[1] (1. University of Bath)

11:15am

TuB2.2 - Mode-Selective Silicon Photonic Signal Processing Using Wideband, High-Efficiency Mode Converters

» Yuanfei Zhang (Hong Kong)[1], Ziyue Zhang (Hong Kong)[1], Honghui Zhang (Hong Kong)[1], Qiulin Zhang (China)[2], Chester Shu (Hong Kong)[1] (1. The Chinese University of Hong Kong, 2. HiSilicon Technology Co., Ltd,)

11:30am

TuB2.3 (Invited) - Nonlinear dynamics of chirped pulses in a multimode waveguide

» Pavel Sidorenko (Israel)[1] (1. The Andrew and Erna Viterbi Faculty of Electrical & Computer Engineering Technion – Israel Institute of Technology)

10:30am

TuC2 -

TuC2 - 3D Waveguides and Volume Devices

Scilla

Chaired by: Martin Lavery (United Kingdom) and Nicolas Fontaine (United States)

10:30am

TuC2.1 (Invited) - Ultrafast Laser Fabrication of Optics, Photonics, and Waveguide Lasers

» Jie Qiao (United States)[1] (1. Rochester Institute of Technology)

11am

TuC2.2 (Invited) - Ultrafast Laser Inscribed 3D Waveguides and their Application to Space-Division-Multiplexed Optical Networks

» Andrew Ross-Adams (Australia)[1], Elizabeth Arcadi (Australia)[1], Glen Douglass (Australia)[2], Mark Bakovic (Australia)[3], Michael J. Withford (Australia)[1], Simon Gross (Australia)[2] (1. School of Mathematical and Physical Science, Macquarie University, 2. School of Engineering, Macquarie University, 3. Modular Photonics Pty Ltd)

Continued from **Tuesday, 18 July**

11:30am

TuC2.3 (Invited) - Inverse methods applied to the fabrication of femtosecond laser-written spatial mode multiplexers in glass

» Nicolas Barré (Germany)[1], Ravi Shivaraman (United Kingdom)[2], Lisa Ackermann (Germany)[1], Simon Moser (Austria)[3], Michael Schmidt (Germany)[1], Patrick Salter (United Kingdom)[2], Martin Booth (United Kingdom)[2], Alexander Jesacher (Austria)[3] (1. Institute of Photonic Technologies, Friedrich-Alexander-University Erlangen-Nürnberg, 2. Department of Engineering Science, University of Oxford, 3. Institute of Biomedical Physics, Medical University of Innsbruck)

10:30am

TuD2 -

TuD2 - Single-Photon Devices

Calipso

Chaired by: Cheryl Sorace-Agaskar (United States) and Galan Moody (United States)

10:30am

TuD2.1 (Invited) - Photonic resource state generation from quantum emitters

» Sophia Economou (United States)[1] (1. Virginia Tech)

11am

TuD2.2 (Invited) - Single photon nonreciprocity in silicon integrated magneto-optical isolators

» Lei Bi (China)[1] (1. University of Electronic Science and Technology of China, Chengdu)

11:30am

TuD2.3 (Invited) - Arrays of Mid-IR Superconducting Single Photon Detectors

» Dmitry Morozov (United Kingdom)[1], Vidur Raj (United Kingdom)[1], Ewan MacKenzie (United Kingdom)[1], Ciaran Lennon (United Kingdom)[1], Gregor Taylor (United States)[2], Umberto Nasti (United Kingdom)[3], Robert H. Hadfield (United Kingdom)[1] (1. University of Glasgow, 2. California Institute of Technology, 3. Heriot-Watt University)

10:30am

TuE2 -

TuE2 - Visible Light Integrated Platforms II

Cariddi

Chaired by: Radan Slavik (United Kingdom) and Daniel Blumenthal (United States)

10:30am

TuE2.1 (Invited) - Heterogeneous materials integration for chipscale photonics

» Michael Strain (United Kingdom)[1], Benoit Guilhabert (United Kingdom)[1], Nils Wessling (United Kingdom)[1], Jack Smith (United Kingdom)[1], Dimitars Jevtics (United Kingdom)[1], Sean Bommer (United Kingdom)[1], Eleni Margariti (United Kingdom)[1], Zhongyi Xia (United Kingdom)[1], Changyu Hu (United Kingdom)[1], Ross Cassells (United Kingdom)[1], Ian Watson (United Kingdom)[1], Martin Dawson (United Kingdom)[1] (1. University of Strathclyde)

11am

TuE2.2 - Foundry SiN as a Platform for Heterogeneous Integration at Visible Wavelengths

» Jack Smith (United Kingdom)[1], Zhibo Li (United Kingdom)[2], Saptarsi Ghosh (United Kingdom)[3], Henry Francis (Switzerland)[4], Gabriele Navickaite (Switzerland)[4], Loyd McKnight (United Kingdom)[2], Rachel Oliver (United Kingdom)[3], Martin Dawson (United Kingdom)[1], Michael Strain (United Kingdom)[1] (1. University of Strathclyde, 2. Fraunhofer Centre for Applied Photonics, 3. University of Cambridge, 4. LIGENTEC)

10:30am

TuF2 -

TuF2 - Linear Optics Revisited I

Nettuno

Chaired by: Bassem Tossoun (United States) and Kaveh (Hassan) Rahbardar Mojaver (Canada)

10:30am

TuF2.2 (Invited) - Accelerating linear operations with light

» Apostolos Tsakyridis (Greece)[1], Miltiadis Moralis-Pegios (Greece)[1], George Giamougiannis (Greece)[1], Angelina Totovic (United States)[2], Nikos Pleros (Greece)[1] (1. Aristotle University of Thessaloniki, 2. Celestial AI)

Continued from **Tuesday, 18 July**

11am

TuF2.3 - Integrated microwave photonics coherent architecture for Massive-MIMO

» José Roberto Rausell-Campo (Spain)[1], Pablo Martínez-Carrasco (Spain)[1], Xu Li (Canada)[2], Ting Qing (Canada)[2], Tiangxiang Wang (Canada)[2], Daniel Pérez-López (Spain)[1] (1. Polytechnic University of Valencia, 2. Huawei Technologies Canada Co., Ltd)

12pm **Lunch (On Own)**

1:30pm **TuA3 -**

TuA3 - Enhancing Sensing Capabilities on the Existing Infrastructure

Cordari

Chaired by: Martin Landrø (Norway) and Mikael Mazur (United States)

1:30pm

TuA3.1 (Invited) - Easy Submarine Cable Monitoring using FPGA+GPU Combination and Portable Ultrastable Reference Cavity

» Nicolas Fontaine (United States)[1] (1. Nokia Bell Labs)

2pm

TuA3.2 - Deployed telecom cables with sensing capabilities thanks to sustainable interferometric approaches

» Pierpaolo Boffi (Italy)[1], Marco Brunero (Italy)[2], Marco Fasano (Italy)[1], Andrea Madaschi (Italy)[1], Jacopo Morosi (Italy)[2], Maddalena Ferrario (Italy)[2] (1. Politecnico di Milano, 2. COHAERENTIA)

2:15pm

TuA3.3 - Experimental Demonstration of Vibration Sensing and Positioning on Multiple Metropolitan Fibers

» Saverio Pellegrini (Italy)[1], Roberto Gaudino (Italy)[1], Claudio Crognale (Italy)[2] (1. Politecnico di Torino, 2. CISCO Photonics Italy)

2:30pm

TuA3.4 - Monolithically Integrated Wavelength-meter in InP with measurement bandwidth of 100nm centered on the C band

» Andrea Volpini (Netherlands)[1], Damiano Massella (Italy)[1], David Alvarez Outerelo (Spain)[2], Francisco Soares (Portugal)[3], Francisco Diaz-Otero (Spain)[4] (1. University of Vigo, El Telecomunication - Campus Universitario As Lagoas, 2. atlanTTic Research Center, University of Vigo, El Telecommunication, 3. Sparc Foundry, 4. AtlanTTic research center, El Telecomunication - Campus Universitario As Lagoas)

1:30pm **TuB3 -**

TuB3 - Multimode Quantum Optics

Dionisio

Chaired by: Logan Wright (United States) and Mario Ferraro (Italy)

1:30pm

TuB3.1 (Tutorial) - Multimode nonlinear integrated optics for quantum and machine learning-assisted signal processing

» Luigi Di Lauro (Canada)[1], Imtiaz Alamgir (Canada)[1], Stefania Sciara (Canada)[1], Pavel Dmitriev (Canada)[1], Celine Mazoukh (Canada)[1], Hao Yu (Canada)[1], Nazanin S. Kamali (Canada)[1], Riza Fazili (Canada)[1], Aadhi A. Rahim (Canada)[1], Bennet Fischer (Canada)[2], Brent Little (China)[3], Sai T. Chu (Hong Kong)[4], David J. Moss (Australia)[5], Zhiming Wang (China)[6], Roberto Morandotti (Canada)[2] (1. Institut National de la Recherche Scientifique – Centre EMT, 2. INRS, 3. QXP Technologies Inc., 4. City University of Hong Kong, 5. Swinburne University of Technology, 6. Institute of Fundamental and Frontier Sciences, University of Electronic Science and Technology of China)

2:15pm

TuB3.2 - Mode entanglement using multiple orbital angular momentum modes

» Karsten Rottwitt (Denmark)[1], Jacob Koefoed (Denmark)[1], Lars Rishøj (Denmark)[1] (1. Technical University of Denmark)

2:30pm

TuB3.3 (Invited) - High-dimensional quantum sources via multimode nonlinearities in fibers

» Siddharth Ramachandran (United States)[1] (1. Boston University)

Continued from **Tuesday, 18 July**

1:30pm **TuC3 -**
TuC3 - Multiplane Light Conversion
Scilla
Chaired by: Nicolas Fontaine (United States) and Martin Lavery (United Kingdom)

1:30pm **TuC3.1 (Invited) - Integrated Multiplane Light Conversion and Metasurface Devices for Highly Parallelized Optical Processing**
» Takuo Tanemura (Japan)[1] (1. The University of Tokyo)

2pm **TuC3.2 (Invited) - All-optical inversion of light scrambling through multimode fibres**
» Dave Phillips (United Kingdom)[1] (1. Exeter University)

1:30pm **TuD3 -**
TuD3 - Advances in Photonic Integration
Calipso
Chaired by: Marek Osinski (United States) and Paolo Pintus (Italy)

1:30pm **TuD3.1 (Keynote) - The Revolution of Silicon Photonics**
» Michal Lipson (United States)[1] (1. Columbia University)

2:15pm **TuD3.2 (Invited) - Hybrid low loss photonic integrated circuits: Chipscale frequency combs, Erbium doped fiber amplifiers to cryogenic interconnects**
» Tobias J. Kippenberg (Switzerland)[1], Johann Riemensberger (Switzerland)[1] (1. École Polytechnique Fédérale de Lausanne)

2:45pm **TuD3.3 (Invited) - Micro- and Nano-lasers: From One to Many, Unleashing Endless Possibilities**
» Mercedeh Khajavikhan (United States)[1] (1. University of Southern California)

1:30pm **TuE3 -**
TuE3 - Integrated Atom, Ion and Quantum Systems II
Cariddi
Chaired by: Daniel Blumenthal (United States) and Radan Slavik (United Kingdom)

1:30pm **TuE3.1 (Invited) - Micro-fabricated components for laser cooling platforms**
» James McGilligan (United Kingdom)[1] (1. University of Strathclyde)

2pm **TuE3.2 - Photonic integrated building-blocks for rubidium cold atom systems**
» Andrei Isichenko (United States)[1], Nitesh Chauhan (United States)[1], Jiawei Wang (United States)[1], Debapam Bose (United States)[1], Kaikai Liu (United States)[1], Mark Harrington (United States)[1], Daniel Blumenthal (United States)[1] (1. University of California, Santa Barbara)

1:30pm **TuF3 -**
TuF3 - Neuromorphic Computing: Trends and Applications
Nettuno
Chaired by: Bassem Tossoun (United States) and Chaoran Huang (Hong Kong)

1:30pm **TuF3.1 (Invited) - In-memory Photonic Tensor Core Accelerator for Neural Networks-based Applications**
» Jiawei Meng (United States)[1], Xiaoxuan Ma (United States)[1], Nicola Peserico (United States)[2], Hamed Dalir (United States)[2], Volker Sorger (United States)[3] (1. George Washington University, 2. University of Florida, 3. University of Florida & George Washington University)

2pm **TuF3.2 (Invited) - Emerging applications enabled by silicon photonic machine learning**
» Alex Tait (Canada)[1] (1. Queen's University)

2:30pm **TuF3.3 (Invited) - Brain-Derived Sparse Neuromorphic Computing with Attojoule Nanoscale Optoelectronic Neurons and Hierarchical 3D Photonic-Electronic Synaptic Interconnection Networks**
» Ben Yoo (United States)[1] (1. University of California, Davis)

Continued from **Tuesday, 18 July**

3pm **Break**
Foyer

3:30pm **TuA4 -**
TuA4 - Geophysical Applications of Fiber Sensing Instruments
Cordari
Chaired by: Mikael Mazur (United States) and Ettore Biondi (United States)

3:30pm **TuA4.1 - Fiber seismic tomography for volcanic hazard and geothermal exploration**
» Ettore Biondi (United States)[1], Weiqiang Zhu (United States)[1], Jiaxuan Li (United States)[1], Ethan Williams (United States)[2], Zhongwen Zhan (United States)[1] (1. California Institute of Technology, 2. University of Washington)

3:45pm **TuA4.2 - Earthquake Epicenter Localization Using Fiber Optic Distributed Acoustic Sensing for Earthquake Early Warning Purposes**
» Hasan Yetik (Turkey)[1], Ali Eksim (Turkey)[2], Selcuk Paker (Turkey)[1] (1. Istanbul Technical University, 2. TUBITAK BILGEM)

3:30pm **TuB4 -**
TuB4 - Complex Dynamics in Optical Fibers
Dionisio
Chaired by: Mario Ferraro (Italy) and Fabio Mangini (Italy)

3:30pm **TuB4.1 (Invited) - Inter-vortex nonlinear phenomena in chiral photonic crystal fibre**
» Philip Russell (Germany)[1] (1. Max Planck Institute for the Science of Light)

4pm **TuB4.2 (Invited) - Modelling multimode nonlinear optics experiments with the Nonlinear Schrödinger equation**
» Peter Horak (United Kingdom)[1] (1. University of Southampton)

4:30pm **TuB4.3 - Spatial self-cleaning of laser beams with arbitrary state of polarization of light**
» Mario Ferraro (Italy)[1], Fabio Mangini (Italy)[2], Raphaël Jauberteau (Italy)[2], Mario Zitelli (Italy)[2], Yifan Sun (Italy)[2], Pedro Parra-Rivas (Italy)[2], Katarzyna Krupa (Poland)[3], Alessandro Tonello (France)[4], Vincent Couderc (France)[4], Stefan Wabnitz (Italy)[2] (1. University of Calabria, 2. Sapienza University of Rome, 3. Polish Academy of Sciences, 4. XLIM Research Institute)

3:30pm **TuC4 -**
TuC4 - SDM: How Many Modes/Cores? (Panel Session)
Scilla

3:30pm **TuD4 -**
TuD4 - Quantum Sensing & Metrology
Calipso
Chaired by: Paolo Pintus (Italy) and Galan Moody (United States)

3:30pm **TuD4.1 (Invited) - Ultimate Resolution Limits in Quantum Metrology**
» Luis Lorenzo Sanchez Soto (Spain)[1] (1. Universidad Complutense, Spain / Max Planck Institute for the Science of Light, Germany)

4pm **TuD4.2 (Invited) - Hybrid spin-phonon systems in diamond**
» Ania Jayich (United States)[1] (1. Physics Department, University of California Santa Barbara)

3:30pm **TuE4 -**
TuE4 - Visible Light Photonics II
Cariddi
Chaired by: Radan Slavik (United Kingdom) and Daniel Blumenthal (United States)

3:30pm **TuE4.1 (Invited) - Nanophotonic resonators for arbitrary laser conversion**
» Jennifer Black (United States)[1] (1. NIST)

Continued from **Tuesday, 18 July**

4pm **TuE4.2 - Machine learning assisted inverse design on mechanically tunable lateral hybrid metasurface**
» Rui Fang (United Kingdom)[1], Amir Ghasemi (United Kingdom)[1], Dagou Zeze (United Kingdom)[1], Mehdi Keshavarz Hedayati (United Kingdom)[1] (1. Durham University)

4:15pm **TuE4.3 (Invited) - Visible Light Photonic Integration for Atom and Quantum Applications**
» Daniel Blumenthal (United States)[1] (1. University of California, Santa Barbara)

3:30pm **TuF4 -**
TuF4 - Physics-Inspired Optical Computing
Nettuno
Chaired by: Paolo Bardella (Italy) and Miltiadis Moralis-Pegios (Greece)

3:30pm **TuF4.1 (Invited) - Coherent Ising machine as a thermodynamic system**
» Hiroki Takesue (Japan)[1], Yasuhiro Yamada (Japan)[1], Kensuke Inaba (Japan)[1], Takuya Ikuta (Japan)[1], Yuya Yonezu (Japan)[1], Takahiro Inagaki (Japan)[1], Toshimori Honjo (Japan)[1] (1. NTT Basic Research Laboratories)

4pm **TuF4.2 (Invited) - Physical neural networks for large-scale AI at the quantum limit**
» Logan Wright (United States)[1] (1. Yale University)

4:30pm **TuF4.3 (Invited) - Scaling up photonic neuromorphic accelerators based on heterogeneous III-V-on-Silicon through matrix decomposition methods**
» Thomas Van Vaerenbergh (Belgium)[1], Xian Xiao (United States)[1], Bassem Tossoun (United States)[1], Matej Hejda (United States)[2], Wolfger Peelaers (Belgium)[3], Yuan Yuan (United States)[1], Yiwei Peng (United States)[1], Geza Kurczveil (United States)[1], Raymond Beausoleil (United States)[3] (1. Hewlett Packard Enterprise (HPE), 2. HPE, 3. Hewlett Packard Enterprise)

Wednesday, 19 July

8:30am **WB1 -**
WB1 - Multimode Frequency Conversion
Dionisio
Chaired by: Mario Ferraro (Italy) and Fabio Mangini (Italy)

8:30am **WB1.1 (Invited) - Far-detuned frequency conversion beyond 3500 nm in a few-mode graded-index silica fiber**
» Karolina Stefanska (France)[1], Pierre Béjot (France)[2], Julien Fatome (France)[2], Guy Millot (France)[2], Karol Tarnowski (Poland)[3], Bertrand Kibler (France)[2] (1. Laboratoire Interdisciplinaire Carnot de Bourgogne, UMR6303 CNRS-Université de Bourgogne, Dijon, France; Department of Optics and Photonics, Wrocław University of Science and Technology, Wrocław, Poland, 2. Laboratoire Interdisciplinaire Carnot de Bourgogne, UMR6303 CNRS-Université de Bourgogne, Dijon, France, 3. Department of Optics and Photonics, Wrocław University of Science and Technology, Wrocław, Poland)

9am **WB1.2 - Spatial coherence study of supercontinuum in multimode fibers**
» Jiaqi Li (Finland)[1], Piotr Ryczkowski (Finland)[1], Goëry Genty (Finland)[1] (1. Tampere University)

9:15am **WB1.3 - Efficient All-Fiber Broadband Frequency Conversion via Intermodal Bragg Scattering**
» Denis Bolotov (Denmark)[1], Lars Grüner-Nielsen (Denmark)[1], Karsten Rottwitt (Denmark)[1], Lars Rishøj (Denmark)[1] (1. Technical University of Denmark)

9:30am **WB1.4 (Invited) - Power Scaling of Dispersive Wave Generation using Higher Order Modes**
» Andrea Arduin (Denmark)[1], Lars Rishøj (Denmark)[1], Jesper Lægsgaard (Denmark)[1] (1. Technical University of Denmark)

Continued from **Wednesday, 19 July**

8:30am

WC1 -

WC1 - High Data Throughput Solutions for SDM

Scilla

Chaired by: Ruben S. Luís (Japan) and Wladek Forysiak (United Kingdom)

8:30am

WC1.3 - Modal Dispersion Mitigation in a long-haul 15-Mode Fiber link through Mode Permutation

» Giammarco Di Sciullo (Italy)[1], Menno van den Hout (Netherlands)[2], Georg Rademacher (Germany)[3], Ruben S. Luís (Japan)[4], Ben Puttnam (Japan)[4], Nicolas Fontaine (United States)[5], Roland Ryf (United States)[5], Haoshuo Chen (United States)[5], Mikael Mazur (United States)[5], David Neilson (United States)[5], Pierre Sillard (France)[6], Frank Achten (Netherlands)[6], Jun Sakaguchi (Japan)[4], Chigo Okonkwo (Netherlands)[2], Hideaki Furukawa (Japan)[4] (1. University of L'Aquila, 2. Eindhoven University of Technology, 3. University of Stuttgart, 4. National Institute of Information and Communication Technology, 5. Nokia Bell Labs, 6. Prysmian Group)

8:45am

WC1.2 (Invited) - High-capacity Transmission over High-density SDM Fibers

» Daiki Soma (Japan)[1], Shohei Beppu (Japan)[1], Yuta Wakayama (Japan)[1], Noboru Yoshikane (Japan)[1], Takehiro Tsuritani (Japan)[1] (1. KDDI Research, Inc.)

9:15am

WC1.1 - Multi-band Photonic Integrated WSS for 800G Optical Data Center Interconnect System

» Muhammad Umar Masood (Italy)[1], Lorenzo Tunesi (Italy)[1], Ihtesham Khan (Italy)[1], Bruno Correia (Italy)[1], Enrico Ghillino (United States)[2], Paolo Bardella (Italy)[1], Andrea Carena (Italy)[1], Vittorio Curri (Italy)[1] (1. Politecnico di Torino, 2. Synopsys)

9:30am

WC1.4 (Invited) - Optical Fiber Options for High Density Parallel Transmissions

» Ming-Jun Li (United States)[1] (1. Corning Incorporated)

8:30am

WD1 -

WD1 - Quantum Networks and Communications

Calipso

Chaired by: Frederic Grillot (France) and Marek Osinski (United States)

8:30am

WD1.1 (Keynote) - Sharpening the tools for Quantum Communications

» Paolo Villoresi (Italy)[1] (1. University of Padua)

9:15am

WD1.2 (Invited) - Quantum-dot based non-classical light sources for quantum photonic networks

» Peter Michler (Germany)[1] (1. University of Stuttgart)

9:45am

WD1.3 - Towards an All-Silicon DV-QKD Transmitter Sourced by a Ge-on-Si Light Emitter

» Florian Honz (Austria)[1], Nemanja Vokić (Austria)[1], Philip Walther (Austria)[2], Hannes Hübel (Austria)[1], Bernhard Schrenk (Austria)[1] (1. AIT Austrian Institute of Technology, 2. University of Vienna)

10am

WD1.4 (Invited) - Multiparty entanglement in frequency or path: Towards high dimension with integrated and fibered optics

» Nadia Belabas (France)[1] (1. Centre de Nanosciences et de Nanotechnologies C2N, CNRS, Université Paris-Saclay Palaiseau France)

8:30am

WE1 -

WE1 - Governtment Programs and Commercial Opportunities for Integrated Quantum Information Sciences and Applications

Cariddi

Chaired by: Daniel Blumenthal (United States) and Radan Slavik (United Kingdom)

8:30am

WE1.1 (Invited) - NSF Programs on Integrated Quantum Information Science in the Visible

» Dominique Dagenais (United States)[1] (1. National Science Foundation (NSF))

Continued from **Wednesday, 19 July**

9am **WE1.2 (Invited) - Heterogeneous Photonics Programs at DARPA**
» Gordon Keeler (United States)[1] (1. Defense Advanced Research Projects Agency, Microsystems Technology Office (DARPA MTO))

9:30am **WE1.3 (Invited) - Commercial Pathways for Photonics and Quantum Systems**
» Scott Faris (United States)[1] (1. Infleqtion/ColdQuanta)

8:30am **WF1 -**
WF1 - Enabling Technologies for Neuromorphic Computing
Nettuno
Chaired by: Bassem Tossoun (United States) and Paolo Bardella (Italy)

8:30am **WF3.1 (Invited) - InP Photonic Integrated Neural Networks**
» Ripalta (Patty) Stabile (Netherlands)[1], Nicola Calabretta (Netherlands)[1], Bin Shi (Netherlands)[1] (1. Technische Universiteit Eindhoven)

9am **WF1.2 (Invited) - Leti's Silicon Photonics Platform for Computing**
» Benoit Charbonnier (France)[1], Giuliano Coppola (France)[1] (1. University Grenoble Alpes, CEA, LETI)

9:30am **WF1.3 (Invited) - Optical Frequency Combs for Data Communications**
» Alexander Gaeta (United States)[1] (1. Columbia University)

10am **Break**
Foyer

10:30am **WB2 -**
WB2 - Managing Light Complexity
Dionisio
Chaired by: Fabio Mangini (Italy) and Mario Ferraro (Italy)

10:30am **WB2.1 (Invited) - On-chip temporal pulse pattern generation and fiber propagation: Multidimensional wave-packet control and characterization**
» Van-Thuy Hoang (France)[1], Bruno P. Chaves (France)[1], Yassin Boussafa (France)[1], Lynn Sader (France)[1], Alexis Bougaud (France)[1], Bennet Fischer (Canada)[2], Mario Chemnitz (Canada)[2], Piotr Roztocki (Canada)[2], Benjamin MacLellan (Canada)[2], Christian Reimer (United States)[3], Michael Kues (Germany)[4], Alessia Pasquazi (United Kingdom)[5], Marco Peccianti (United Kingdom)[5], Sébastien Février (France)[1], Vincent Couderc (France)[1], Brent Little (China)[6], Sai T. Chu (Hong Kong)[7], David J. Moss (Australia)[8], Jose Azaña (Canada)[2], Roberto Morandotti (Canada)[2], Benjamin Wetzel (France)[9] (1. XLIM, UMR CNRS 7252, Université de Limoges, 2. INRS, 3. HyperLight Corporation, 4. Institute of Photonics, Leibniz University Hannover, 5. Emergent Photonics Research Centre, Loughborough University, 6. QXP Technologies Inc., 7. City University of Hong Kong, 8. Swinburne University of Technology, 9. XLIM Research Institute)

11am **WB2.2 (Invited) - Light self-organization**
» Massimiliano Guasoni (United Kingdom)[1] (1. University of Soutampton)

11:30am **WB2.3 (Invited) - Learning and control of polarization-structured light**
» Davide Pierangeli (Italy)[1], Claudio Conti (Italy)[2] (1. Institute for Complex Systems - National Research Council, 2. Sapienza University of Rome)

10:30am **WC2 -**
WC2 - Dynamic and Adaptive SDM Components
Scilla
Chaired by: Nicolas Fontaine (United States) and Anastasiia Vasylchenkova (United Kingdom)

10:30am **WC2.1 (Invited) - Phase Mask Designs for Multi-Plane Light Conversion (MPLC) Compatible with 3D-Nanoprinting**
» Dan Marom (Israel)[1], Hanoch Blumenfeld (Israel)[1], Ksenia Shukhin (Israel)[1] (1. Hebrew University of Jerusalem)

11am **WC2.2 (Invited) - Broadband Reconfigurable Universal Mode Multiplexer Built on an Integrated Photonics Platform**
» Martin Lavery (United Kingdom)[1] (1. University of Glasgow)

Continued from **Wednesday, 19 July**

11:30am **WC2.3 (Invited) - FIFO-less Multicore Erbium-doped Fiber Amplifiers for Subsea Cable Systems**
» Yuta Wakayama (Japan)[1] (1. KDDI Research, Inc.)

10:30am **WE2 -**
WE2 - Visible Light Photonics III
Cariddi
Chaired by: Daniel Blumenthal (United States) and Radan Slavik (United Kingdom)

10:30am **WE2.1 (Invited) - Recent Advances of III-nitride Integrated Photonics Technology for Visible Light Applications**
» Shulan Yi (China)[1], Junhui Hu (China)[1], Chao Shen (China)[1] (1. Fudan University)

11am **WE2.2 - Excitation of semiconductor nanowires using individually addressable micro-LED arrays**
» Zhongyi Xia (United Kingdom)[1], Dimitars Jevtics (United Kingdom)[1], Benoit Guilhabert (United Kingdom)[1], Jonathan McKendry (United Kingdom)[1], Hark Hoe Tan (Australia)[2], Chennupati Jagadish (Australia)[2], Martin Dawson (United Kingdom)[1], Michael Strain (United Kingdom)[1] (1. University of Strathclyde, 2. The Australian National University)

11:15am **WE2.3 (Invited) - Single-Mode, UV-Visible Guiding Hollow-Core Fibers**
» Ian Davidson (United Kingdom)[1], Greg Jackson (United Kingdom)[1], Seyed Mousavi (United Kingdom)[1], Eric Numkam Fokoua (United Kingdom)[1], Tom Kelly (United Kingdom)[1], Thejus Varghese (United Kingdom)[1], Gregory Jasion (United Kingdom)[1], Natalie Wheeler (United Kingdom)[1], David Richardson (United Kingdom)[1], Francesco Poletti (United Kingdom)[1] (1. University of Southampton)

10:30am **WF2 -**
WF2 - Linear Optics Revisited II
Nettuno
Chaired by: Kaveh (Hassan) Rahbardar Mojaver (Canada) and Angelina Totovic (United States)

10:30am **WF2.2 (Invited) - Diffractive neural networks for analog information processing**
» Elena Goi (China)[1], Steffen Schoenhardt (China)[1], Min Gu (China)[1] (1. Institute of Photonic Chips, University of Shanghai for Science and Technology)

11am **WF2.3 - A Multisource-Multidetector Coherent Detection Scheme based on Binary Amplitude Modulation**
» Ye Luo (China)[1], Yang Zheng (China)[1] (1. Xiamen University)

11:15am **WF2.4 - Intensity-only Detection and Decoding of Coherent Signals using a Photonics Spectrogram**
» Connor Rowe (Canada)[1], Benjamin Crockett (Canada)[1], Jose Azaña (Canada)[1] (1. INRS)

11:30am **WF3.3 (Invited) - Integrated Photonics for Computing and Artificial Intelligence**
» Ray T. Chen (United States)[1] (1. University of Texas, Austin)

12pm **Lunch (On Own)**

1:30pm **WB3 -**
WB3 - Spatiotemporal Mode-locked Lasers and Amplifiers
Dionisio
Chaired by: Logan Wright (United States) and Goëry Genty (Finland)

1:30pm **WB3.1 (Invited) - Spatial and Temporal Control of Light in a Degenerate-Cavity Mode-Locked Laser**
» Adrian Bartolo (France)[1], Nathan Vigne (France)[2], Mathias Marconi (France)[1], Gregoire Beaudoin (France)[3], Kostantinos Pantzas (France)[4], Isabelle Sagnes (France)[5], Arnaud Garnache (France)[6], Massimo Giudici (France)[1] (1. Université Côte d'Azur, CNRS, UMR 7010, Institut de Physique de Nice, 2. Institut d'Electronique et des Systemes, Université de Montpellier, 3. Centre de Nanosciences et de Nanotechnologies, C2N UMR 9001, CNRS, Université Paris Sud, Université Paris-Saclay, 4. Centre de Nanosciences et de Nanotechnologies C2N, CNRS, Université Paris-Saclay, 5. Centre de Nanosciences et de Nanotechnologies C2N, CNRS, Université Paris-Saclay Palaiseau France, 6. Institut d'Electronique et des Systemes, Montpellier)

Continued from **Wednesday, 19 July**

2pm	**WB3.3 (Invited) - Suppressing Nonlinear and Thermal Optical Effects in Fiber Amplifiers** » Hui Cao (United States)[1] (1. Yale University)
1:30pm	**WF4 -** **WF3- Programmable Photonics** *Nettuno* Chaired by: Chaoran Huang (Hong Kong) and Angelina Totovic (United States)
1:30pm	**WF4.1 (Invited) - Software-defined Synthesis of Optical Circuits on a Programmable Photonic Platform** » David Sanchez (Spain)[1], Zhenyun Xie (Spain)[1], Mikel Gutierrez Zubillaga (Spain)[1], Daniel Pérez-López (Spain)[1] (1. iPronics Programmable Photonics S.L.)
2pm	**WF4.2 (Invited) - Novel Approaches to Calibration and Programming of MZI-Based Optical Processors: Overcoming Challenges and Enhancing Performance** » Kaveh (Hassan) Rahbardar Mojaver (Canada)[1], Odile Liboiron-Ladouceur (Canada)[1] (1. McGill University)
2:30pm	**WF4.3 (Invited) - Control electronics on-board of integrated photonic circuits : an overview** » Marco Sampietro (Italy)[1], Francesco Zanetto (Italy)[1], Giorgio Ferrari (Italy)[1] (1. Politecnico di Milano)
3pm	**Break** *Foyer*