Technical Conference

Leap forward with breakthrough research, trends and solutions



The future of optical networking and communications

TECHNICAL CONFERENCE

06 - 10 March 2022

EXHIBITION

08 - 10 March 2022

San Diego Convention Center San Diego, California, USA

A HYBRID CONFERENCE –
IN-PERSON AND VIRTUAL PRESENTATIONS







Get the Latest Advancements at OFC, the Premier Event in Telecom and Data Center Optics

OFC is the world's largest conference and exhibition for optical communication and networking professionals. The program is comprehensive – from research to marketplace, from components to systems and networks and from technical sessions to the exhibition.

The technical conference is planned as a hybrid event, comprised of inperson and virtual programming.

The Technical Conference – **Hear the Latest Research**

The five-day technical conference features peer-reviewed presentations and more than 120 invited speakers, the thought leaders in the industry presenting the highlights of emerging technologies. Additional technical programming throughout the week includes symposia, in-depth tutorials, workshops, panels and the thought-provoking rump session.

Take a Training Course

ofcconference.org/shortcourse

Learn from the experts about important topics in the industry. There are 56 Short Courses to choose from.

Short Courses are presented in person only.

The Exhibition – See **New Products and Attend Educational Programs**

ofcconference.org/exhibithall

The show floor is buzzing with new product announcements and what's trending in the market. Stay current on the latest products and innovative solutions.

Three theaters feature Market Watch, the Network Operator Summit, the Data Center Summit and more than 15 show floor programs that cover market trends, new technologies and insight into the future of the industry. Panels of experts from global brands and key industry organizations provide high-level perspectives on the state of the industry, hot topics and perspectives on current and future challenges and solutions.

Attend Educational Programs on the Show Floor

Three theaters feature Market Watch, the Network Operator Summit, the Data Center Summit and more than 15 additional show floor programs that cover market trends, new technologies and insight into the future. Panels of experts from global brands and key industry organizations provide high-level takes on the state of the industry, hot topics and perspectives on current and future challenges and solutions.

Register for OFC

Be part of the event that brings together the people, products and information that drive optical networking and communications.

Schedule at a Glance

	Sunday, 06 March	Monday, 07 March	Tuesday, 08 March	Wednesday, 09 March	Thursday, 10 March
Programming					
Short Courses	09:00 - 20:00	08:30 - 17:30			
Workshops	13:00 - 18:30				
Lab Automation Hackathon	20:00 - 22:00				
Technical Sessions		08:00 - 18:30	14:00 - 18:30	08:00 - 18:30	08:00 - 16:00
Demo Zone		14:00 - 16:15			
Open Networking Summit		16:30 - 18:30			
Plenary Session			08:00 - 10:00		
Rump Session			19:30 - 21:30		
Poster Sessions				10:30 - 12:30	10:30 - 12:30
Postdeadline Papers					16:30 - 18:30
Exhibition and Show F	-loor Program	S			
Exhibition			10:00 - 17:00	10:00 - 17:00	10:00 - 16:00
Exhibit-Only Time			10:00 - 14:00	12:30 - 14:00	12:30 - 14:00
Show Floor Programs			10:15 - 17:00	10:15 - 17:00	10:15 - 16:00
Market Watch			10:30 - 16:00	15:30 - 17:00	10:30 - 13:00
Data Center Summit			10:30 - 15:00		
Network Operator Summit				10:30 - 15:00	
Career Zone			10:00-	10:00-	10:00 -

17:00

17:00

16:00

Short Course Schedule

Sunday, 06 March				
09:00 - 12:00	SC177	High-speed Semiconductor Lasers and Modulators		
	SC444	Optical Communication Technologies for 5G		
	SC460	Digital Coherent Optical System Performance Basics		
	SC470	Secure Optical Communications		
	SC485	Advanced Fiber Access Networks		
09:00 - 13:00	SC105	Modulation Formats and Receiver Concepts for Optical Transmission Systems		
	SC208	Optical Fiber Design for Telecommunications and Specialty Applications		
	SC328	Standards for High-speed Optical Networking		
	SC395	Modeling and Simulation of Optical Transmitter and Receiver Components for Coherent Communications		
	SC443	Optical Amplifiers: From Fundamental Principles to Technology Trends		
	SC461	High-capacity Data Center Interconnects for Cloud-scale Networking		
	SC469	Hands-on: Laboratory Automation and Control Using Python		
13:00 - 17:00	SC203	400 Gb/s and Beyond Optical Communication Systems, Design and Design Trade-offs		
	SC267	Silicon Microphotonics: Technology Elements and the Roadmap to Implementation		
	SC369	Hands-on: Test and Measurement for Signals with Complex Optical Modulation		
	SC384	Background Concepts of Optical Communication Systems		
	SC390	Introduction to Forward Error Correction		
	SC463	Optical Transport SDN: Architectures, Applications and Actual Implementations		
13:30 - 17:30	SC452	FPGA Prototyping for Optical Subsystems		
17:00 - 20:00	SC428	Link Design and Modeling for Intra Data Center Optical Interconnects		
	SC484	Transport Evolution Due to Cloud Services		
Monday, 07	March			
08:30 - 12:30	SC102	WDM in Long-haul Transmission Systems		
	SC160	Microwave Photonics		
	SC178	Test and Measurement for Data Center/Short Reach Communications		
	SC433	Introduction to Photodetectors and Optical Receivers		
	SC448	Evolving Software Defined Optical Networks: Architecture and Design Principles		
	SC453A	Hands-on: Fiber Optic Handling, Measurements and Component Testing		

	March (c			
08:30 - 12:30 SC468		Advanced FEC Techniques for Optical Communications		
	SC472	Hands-on: Controlling and Monitoring Optical Network Equipment		
	SC473	Photonic Switching Systems		
	SC483	Hands-on: Machine Learning in Optical Networks		
	SC487	Hands-on: Laboratory Automation and Control Using Python (Advanced)		
09:00 - 12:00	SC261	ROADM Technologies and Network Applications		
	SC341	Sub-carrier Modulation and Superchannels for Terabit-class DWDM Transceivers		
	SC359	Networking for Data Centers and Machine Learning		
	SC408	Space Division Multiplexing for Optical Communication Systems and Networks		
	SC450	Design, Manufacturing and Packaging of Opto-electronic Modules		
	SC465	Transmission Fiber and Cables		
	SC486	Optoelectronic Devices for LIDAR and High-BW or 3D Sensing		
13:30 - 16:30	SC114	Technologies and Applications for Passive Optical Networks (PONs)		
	SC205	Integrated Electronic Circuits for Fiber Optics		
	SC217	Applications of Radio-over-fiber Technologies Including Future 5G Networks		
	SC429	Advances in Flexible Photonic Networks and Open Architectures		
	SC447	The Life Cycle of an Optical Network: From Planning to Decommissioning		
	SC459	Multimode Photonic Devices, Characterization and Applications		
	SC464	Software Defined Networking in the Cloud – Designs, Operations and Management		
13:30 - 17:30	SC325	Highly Integrated Monolithic Photonic Integrated Circuits		
	SC327	Modeling and Design of Long-haul Fiber-optic Communication Systems		
	SC347	Reliability and Qualification of Fiber-optic Components		
	SC357	Circuits and Equalization Methods for Coherent and Direct Detection Optical Links		
	SC393	Digital Signal Processing for Coherent Optical Transceivers		
	SC431	Photonic Technologies in the Data Center		
	SC451	Optical Fiber Sensors		
	SC453B	Hands-on: Fiber Optic Handling, Measurements and Component Testing		

Special Sessions

Plenary Speakers

The plenary speakers include an industrial leader and a research leader, both covering topics related to the technical core of the conference, and a visionary speaker linking topics outside OFC's focus to the conference.



John Bowers
Director, Institute of
Energy Efficiency,
University of California,
Santa Barbara, USA

Present and Future Silicon Photonics

Silicon photonics is advancing rapidly in performance and capability with multiple fabrication facilities and foundries having advanced passive and active devices, including modulators, photodetectors and lasers. Integration of photonics with electronics is key to advanced photonics and advanced electronics. The low cost and scaling ability of silicon photonics is expanding the market beyond datacom and telecom to sensors, navigation and IoT.



James Green NASA Chief Scientist, NASA, USA

Exploration
Technologies:
Communicating with
Spacecraft, Landers,

Rovers and Human Missions

We are in a golden age of robotic and human exploration requiring new and exciting architectures and technologies. One top goal for NASA is to provide optical communications supporting humans on the Moon and Mars. This talk will discuss the evolution and architecture of advanced communication technologies for exploring the planets.



Elise Neel Senior Vice President, Verizon New Business Incubation, Verizon, USA

5G and the Promise of Industry 4.0

Industry 4.0 is a new technology chapter promising fully autonomous, self-improving processes of matching work to the most appropriate set of resources; robot, human, drone or machine. This session will cover how 5G is foundational technology enabling connection, management and operation of the physical, digital and biological elements required for this autonomous world.

Symposia

Emerging Photonic Interconnects and Architectures for Femtojoule per Bit Intra Data Center Links

There are many emerging technologies addressing femtojoule per bit optical components (lasers, modulators, receivers, etc.) and low power electronic links (serdes, 2.5D integration, etc.). This symposium looks at how to integrate these advances into practical link applications for intra data center interconnects for near term deployment. The discussion examines architectures and choices on optical and electrical components, cooling and optical and electrical connectorizations.

Multi-access Network Leveraging Edge Computing for Energyefficient, Ultra-reliable and Low Latency Services

This symposium covers "Network Edge" considerations to address multi-access, open access and disaggregated architectures. These are expected to adopt comprehensive Artificial Intelligence approaches to support predictive and optimized Real Time and Near-RT operation, automation and improved user experience.

Optical Satellite Communications — Entering a New Era

Speakers from government agencies, industry and academia will discuss the future of space-based communications where optical technologies will play a significant role to increase link bandwidths and enable new networking paradigms.

Special Chairs' Sessions

Network Evolution and Adaptation to Environmental Change

This special session will cover fundamental and long-term trends that the industry will have to address in order to deliver scalable and flexible high-capacity networks in an environmentally compatible way, while adapting to the challenges imposed by natural disasters caused by global warming. Experts and visionaries from industry, academia and operators will discuss their vision of the future of the telecommunication infrastructure.

Reflections on the Pandemic Reflect back on the way the pandemic changed the demands on our networks, creating different traffic requirements, challenges and opportunities. Experts from across various regions including industry, academia, operators, engineers and futurists will discuss the global impact of COVID-19 and network infrastructure actions for a post-pandemic world.

Special Session

Network Intelligence

Network Intelligence has increasingly become an important new area of innovation given its potential to improve network dependability and efficiency. This special session will focus on promising contributions to network intelligence from fiber sensing techniques like SOP monitoring based on coherent transponders or distributed

acoustic sensing (DAS). The recent advancements of such fiber sensing techniques in subsea, LH and metro optical transport will be reviewed and debated.

Open Networking Summit

Open Optical Disaggregation: What the Heck Is Going On?

Open disaggregation has revolutionized the world of servers (enabling hyperscale cloud computing) and is surging to upend switches and routers. Optical communication is next, at all distance scales. This summit delves into the most profound developments in open optical disaggregation as presented by leading disruptors along with the incumbents trying to smooth the transition.

Rump Session

Will Quantum Always Remain Basic Research or Is it Ready to Power Great Products?

Quantum has received widespread publicity as a solution to otherwise insurmountable technical problems in areas of networking, computing, cryptography and others. Join the pro-quantum and anti-quantum team captains and provocateurs as this Rump Session debates whether quantum products in any of these areas will become real in the near future.

Demo Zone

The Demo Zone features live demonstrations of research projects and proof-of-concept implementations in the space of optical communication devices, systems and networks. Demonstrations occur in dedicated booths in the Demo Zone as part of the technical program. This year's Demo Zone features aspects of network orchestration and intelligence, hardware, software and physical layer transmission.

Tracks and Topic Categories

OFC features an exciting roster of invited speakers and tutorial speakers to anchor the technical sessions. These experts have been carefully chosen by subcommittees of over 150 volunteers representing the 15 topic categories. They have also put together a thought-provoking program of 10 interactive workshops designed to stimulate debate and discussion on time-critical topics. Short Courses provide training from a distinguished faculty to expand your knowledge and advance your career.

The technical program and Short Courses are organized by topic category.

TRAC	K D: Devices, Optical Components and Fiber	PAGE
D1	Advances in prototypes and product developments of components and subsystems for data centers and optical networks	7
D2	Passive optical devices for switching and filtering	7
D3	Active optical devices and photonic integrated circuits	8
D4	Fiber and propagation physics	9
D5	Fiber-optic and waveguide devices and sensors	10
TRAC	K S: Systems and Subsystems	
S1	Subsystems and systems for data centers and high-performance computing	10
S2	Optical, photonic and microwave photonic subsystems	11
S 3	Fiber-radio, optical wireless and sensing systems	12
S4	Digital and electronic subsystems	12
S5	Digital transmission systems	14
TRAC	K N: Networks, Applications and Access	
N1	Advances in system, network and service developments and field trials in commercial data centers and networks	15
N2	Optical networking for data center and computing applications	15
N3	Architectures and software-defined control for metro and core networks	16
N4	Optical access networks for fixed and mobile services	17
N5	Market Watch, Network Operator Summit and Data Center Summit (invited program only)	

TRACK D: DEVICES, OPTICAL COMPONENTS AND FIBER

D1: Advances in prototypes and product developments of components and subsystems for data centers and optical networks

Invited Speakers

Takaaki Ishigure, Keio University, Japan GI-core Multimode and Single-mode Polymer Waveguides for Highdensity Co-packaging

Kishore Kota, Marvell Technology Inc., USA Development of Low-power Coherent ASIC

Cedric Lam, Google LLC, USA
The 802.3cs TWDM Super-PON
Standard

Bardia Pezeshki, Avicena Tech Corp, USA Microled Array-based Optical Links Using an Imaging Fiber for Chip-tochip Communications

Dan Tauber, Lumentum Operations Inc., USA

Role of Coherent System in the Next DCI Generation

Steve Yao, NuVision Photonics, USA Highly-parallel LED-based Optical Links with Multicore Fibers for Chip-to-chip Communications

Tutorial

John Johnson, *Broadcom Corporation, USA*Performance and Reliability of
Advanced CW Lasers for Silicon
Photonics Applications

Panel

Progress and Roadmap in Silicon Photonics Foundries and Supply Chains

Workshop

Is Paradigm Shift from Pluggable Optics to Co-packaged Optics Inevitable in the Next Generation of Data Centers?

Time to Face the Cost Per Bit "Crunch": Trends and Expectations for the Next Decade

Short Courses

SC205 Integrated Electronic Circuits for Fiber Optics

Y. K. Chen, Bell Labs (Retired), USA

SC261 ROADM Technologies and Network Applications Thomas Strasser, *Molex, USA*

SC347 Reliability and Qualification of Fiber-optic Components

David Maack, *David Maack Consulting*, *USA*

SC357 Circuits and Equalization Methods for Coherent and Direct Detection Optical Links Alexander Rylyakov, Nokia, USA

SC359 Data Center Networking 101 Hong Liu and Ryohei Urata, *Google, USA*

SC428 Link Design and Modeling for Intra Data Center Optical Interconnects

Petar Pepeljugoski, IBM Research, USA

SC431 Photonic Technologies in the Data Center

Clint Schow, University of California, Santa Barbara, USA

SC450 Design, Manufacturing, and Packaging of Opto-electronic Modules

Peter O'Brien, Tyndall National Institute, Ireland

Yoichi Taira, Keio University, Japan

D2: Passive optical devices for switching and filtering

Invited Speakers

Zizheng Cao, Technische Universiteit Eindhoven, Netherlands

Momentum-space-controlled Flexible Spatial Light Modulator for Optical Wireless Communication

Kamran Entesari, *Texas A&M University, USA*Automated Tuning for Silicon
Photonic Filters

Takashi Goh, NTT Corporation, Japan Multiband Optical Switch Technology

Xingchen Ji, *Columbia University, USA* Widely Tunable Delay Line on SiN Platform

Jelena Notaros, *Massachusetts Institute* of *Technology, USA*Visible Light Phased Arrays

Keijiro Suzuki, National Institute of Advanced Industrial Science and Technology (AIST), Japan

Recent Advances in Large-scale Optical Switches Based on Silicon Photonics

Tutorial

Jelena Vuckovic, *Stanford University, USA* Optimized Photonics

Panel

Programmable Photonic Chips for AI, Computing and Optical Networks

Workshop

Time to Face the Cost Per Bit "Crunch": Trends and Expectations for the Next Decade

Short Courses

SC261 ROADM Technologies and Network Applications Thomas Strasser, *Molex, USA*

SC267 Silicon Microphotonics: Technology Elements and the Roadmap to Implementation Lionel Kimerling, Massachusetts Institute of Technology, USA

SC325 Highly Integrated Monolithic Photonic Integrated Circuits Chris Doerr, *Doerr Consulting, LLC, USA*

SC454 Hands-on: Introduction to Silicon Photonics Circuit Design Wim Boegarts, *Ghent University, Belgium*

SC473 Photonic Switching Systems David Neilson, *Nokia Bell Labs, USA* Benjamin Lee, *IBM, USA*

D3: Active optical devices and photonic integrated circuits

Invited Speakers

Yasuhiko Arakawa, University of Tokyo, Japan

Highlights of 10 years of Research in a Japanese Si Photonics Project

Daniel Blumenthal, *University of California*Santa Barbara, USA

Ultranarrow Linewidth Stabilized Brillouin Lasers

Lukas Czornomaz, *Lumiphase, Switzerland* BTO-enhanced Silicon Photonics and Applications

Bart Kuyken, Ghent University, imec, Belgium

Heterogeneous III-V-on Silicon Nitride Mode Locked Lasers

Kei May Lau, Hong Kong University of Science and Technology, Hong Kong III-V Micro- and Nano-lasers/ photodetectors in the Telecom Band Grown on SOI

Edward Preisler, Tower Semiconductor, USA State-of-the-art Silicon Photonics PDK for Datacom and other Applications

Johann Peter Reithmaier, *University* of Kassel, Germany

1.5-um Indium Phosphide-based Quantum Dot Lasers and Optical Amplifiers

Shiyoshi Yokoyama, Kyushu University, Japan

Highly Reliable Organic Optical Modulators

Tutorial

Yasuhiro Matsui, *II-VI Incorporated, USA*Directly Modulated Lasers in A 3.2
Tb Era

Panels

Progress and Roadmap in Silicon Photonics Foundries and Supply Chains

What are the Parallelization Technologies for Cost and Energy Efficient 1.6Tb Links?

Workshops

How will 200G (and beyond) per Lambda IM/DD Compete with Coherent Technology for Intra-DC Applications?

What Will the Future ML and AI Systems Look Like?

Time to Face the Cost Per Bit "Crunch": Trends and Expectations for the Next Decade

Short Courses

SC177 High-speed Semiconductor Lasers and Modulators

John Bowers, University of California, Santa Barbara, USA

SC205 Integrated Electronic Circuits for Fiber Optics

Y. K. Chen, Bell Labs (Retired), USA

SC267 Silicon Microphotonics: Technology Elements and the Roadmap to Implementation Lionel Kimerling, Massachusetts Institute of Technology, USA

SC325 Highly Integrated Monolithic Photonic Integrated Circuits Chris Doerr, *Doerr Consulting*, *LLC*, *USA*

SC357 Circuits and Equalization Methods for Coherent and Direct Detection Optical Links Alexander Rylyakov, *Nokia*, *USA*

SC431 Photonic Technologies in the Data Center

Clint Schow, University of California, Santa Barbara, USA

SC433 Introduction to Photodetectors and Optical Receivers

Andreas Beling, University of Virginia, USA

SC454 Hands-on: Introduction to Silicon Photonics Circuit Design Wim Boegarts, *Ghent University, Belgium*

SC486 Optoelectronic Devices for LIDAR and High-BW or 3D Sensing Martin Zirngibl, *II-VI Incorporated, USA* Cibby Pulikkaseril, *Baraja, Australia*

D4: Fiber and Propagation Physics

Invited Speakers

Davide Bacco, *DTU Fotonik*, *Denmark*Multicore Fibers for Quantum
Communications

Maxim Bolshtyansky, *SubCom LLC, USA*Impact of GAWBS in Communication
Systems

Tetsuya Hayashi, Sumitomo Electric Industries Ltd, Japan

MCF Design, Fabrication and Deployment for Long Haul SDM System

Ming-Jun Li, *Corning Inc, USA*Reduced Coating/Cladding Diameter
Fiber Technology

Antonio Mecozzi, Universita degli Studi dell'Aquila, Italy

Polarization Sensing with Transmission Fibers in Undersea Cables

Herve Rigneault, *Institut Fresnel, France* Multimode Fibers for Lensless Endoscopy

Paul Westbrook, *OFS Laboratories, USA* Enhanced Back Scatter Fibers for Sensing in Telecom Networks

Tutorial

David Richardson, *University of*Southampton, *UK*Telecomm Opportunity for Hollow
Core Fibers

Workshops

What are the Prospects and Challenges for Hollow-core Fibers in Optical Communications?

Time to Face the Cost Per Bit "Crunch": Trends and Expectations for the Next Decade

Short Courses

SC208 Optical Fiber Design for Telecommunications and Specialty Applications

David J. DiGiovanni, OFS Labs, USA

SC347 Reliability and Qualification of Fiber-optic Components
David Maack, David Maack Consulting, USA

SC453A and B **Hands-on:** Fiber Optic Handling, Measurements and Component Testing

Steve Baldo, Seikoh Giken, USA Chris Heisler, OptoTest Corporation, USA Steve Lane, Data-Pixel, France Jonathan Novick, OptoTest Corporation, USA

SC465 Transmission Fiber and Cables

Corey Keisler and Chris Towery, Corning Optical Communications, USA

D5 Fiber-optic and waveguide devices and sensors

Invited Speakers

Kazi Abedin, CACI International Inc., USA Advanced Optical Fibers for Communications

Youichi Akasaka, Fujitsu Network Communications Inc., USA Hybrid Amplification Approach to Communications Beyond Cand L-Bands

Mable Fok, *University of Georgia, USA*Bio-inspired Photonic Devices and
Circuits for RF Signal Processing

Wei Jin, Hong Kong Polytechnic University, Hong Kong Photoacoustic Spectroscopy of Gas Filled Hollow Core Fiber

Sergio Leon-Saval, *University of Sydney,* Australia

Photonic Lanterns as Wavefront Sensors

David Novoa, University of the Basque Country, Spain

Harnessing Multi-octave Coherent Light Using Anti-resonant Fibers

Víctor Torres-Company, Chalmers Tekniska Högskola, Sweden Ultralow-loss Silicon Nitride Waveguides for Parametric Amplification

Tutorial

Jose Azana, Institut National de la Recherche Scientifique (INRS) Passive Enhancement and Noise Mitigation of Ultra-wideband Optical Signals

Panel

Fiber Optic Sensor Technologies and Their Applications

Workshop

Time to Face the Cost Per Bit "Crunch": Trends and Expectations for the Next Decade

Short Courses

SC208 Optical Fiber Design for Telecommunications and Specialty Applications

SC451 Optical Fiber Sensors Alexis Mendez, *MCH Engineering, USA* William Shroyer, *SageRider, Inc., USA*

David J. DiGiovanni, OFS Labs, USA

SC453A and B Hands-on: Fiber Optic Handling, Measurements and Component Testing

Steve Baldo, Seikoh Giken, USA Chris Heisler, OptoTest Corporation, USA Steve Lane, Data-Pixel, France Jonathan Novick, OptoTest Corporation, USA

SC459 Multimode Photonic Devices, Characterization and Applications Nicolas Fontaine, *Nokia Bell Labs, USA*

TRACK S: SYSTEMS AND SUBSYSTEMS

S1: Subsystems and systems for data centers and high performance computing

Invited Speakers

Tianwai Bo, *Beijing Institute of Technology, China*Monolithically Integrable Optical
Sideband Transmitters for Inter-data
Center Applications

Po Dong, *II-VI Incorporated, USA*Silicon Photonics for 800G and
Beyond

Ram Huggahalli, *Microsoft, USA*Subsystems for XPU to XPU and to
Memory for Data Center Applications

Fotini Karinou, *Microsoft Research Ltd, UK* Optical Switching in Data Centers Ben Lee, *NVIDIA, USA*Driving Down Link Energy and
Driving up Link Density in GPU
Networks

Dou Liang, *Alibaba Group, China* New Trend of Open and Disaggregated Optical Networks

Akihiko Shinya, NTT Basic Research Laboratories, Japan

Energy Efficient OEO Conversion and its Applications to Photonic Integrated System

David Welch, *Infinera, USA*Digital Subcarrier Multiplexing for PT-to-Multipoint Applications

Tutorial

Ling Liao, *Intel Corporation, USA*High Density Silicon Photonics
for Co-packaged Ethernet Switch
and XPUs

Panel

Technologies for Breaking the Metro/Access Barrier

Short Courses

SC178 Test and Measurement for Data Center/Short Reach Communications

Greg D. Le Cheminant, Keysight Technologies, USA

SC203 400 Gb/s and Beyond Transmission Systems, Design and Design Trade-offs

Ezra Ip, NEC Labs, USA Chongjin Xie, Alibaba Group, USA

SC205 Integrated Electronic Circuits for Fiber Optics

Y. K. Chen, Bell Labs (Retired), USA

SC328 Standards for High-speed Optical Networking

Tom Huber, Nokia Bell Labs, USA

SC357 Circuits and Equalization Methods for Coherent and Direct Detection Optical Links Alexander Rylyakov, *Nokia*, *USA*

SC428 Link Design and Modeling for Intra Data Center Optical Interconnects

Petar Pepeljugoski, IBM Research, USA

SC461 High-capacity Data Center Interconnects for Cloud-scale Networking

Mark Filer, Microsoft, USA Sander L. Jansen, ADVA Optical Networking, USA Dirk van den Borne, Juniper Networks, Germany

S2: Optical, photonic and microwave photonic subsystems

Invited Speakers

Grant Brodnik, *University of California,* Santa Barbara, USA

Narrow Linewidth Lasers for Low-energy Communications

Maxim Karpov, Ecole Polytechnique Federale de Lausanne, Switzerland Photonic Neural Networks

Ryosuke Matsumoto, National Institute of Advanced Industrial Science and Technology (AIST), Japan

Scalable and Fast Optical Circuit Switch Exploiting Colorless Coherent Detection

Hideharu Mikami, Hokkaido University, Japan High-speed Single-pixel Imaging by Frequency-time-division Multiplexing

Daniel Perez, *Universitat Politècnica* de València, Spain

Large-scale Programmable Integrated Photonic Circuits: From Microwave Photonics to Optical Computing

Antoine Rolland, IMRA America Inc., USA Ultra-low Noise 300 GHz Wave Generated by a Dissipative Kerr Soliton

Takuo Tanemura, *University of Tokyo, Japan*Photonic Integrated Unitary
Processor based on Multi-plane
Light Conversion

Tutorial

Tobias Kippenberg, Ecole Polytechnique Federale de Lausanne, Switzerland Hybrid Nonlinear Integrated Photonics: From Chipscale Frequency Combs, Ultra Narrow Linewidth Frequency Agile Lasers to Traveling Wave Parametric Amplifiers on Chip

Short Courses

SC160 Microwave Photonics

Jose Capmany, Polytechnic University of Valencia, Spain

SC443 Optical Amplifiers: From Fundamental Principles to Technology Trends

Peter Andrekson, Chalmers University of Technology, Sweden Michael Vasilyev, University of Texas at Arlington, USA

S3: Fiber-radio, optical wireless and sensing systems

Invited Speakers

Liam Barry, *Dublin City University, Ireland*Role of Hybrid Fiber-radio
Technology Beyond 5G

Alberto Carrasco-Casado, Space Communication Systems Laboratory (NICT), Japan

Free-space Laser Communications for Small Moving Platforms

Jaime Gómez Rivas, Technische Universiteit Eindhoven, Netherlands THz Resonant Structures and Metasurfaces for Local Field Enhancement and Beam Steering

Katherine Newell, Johns Hopkins University Applied Physics Laboratory, USA Free Space Optics for Communications at Sea

Hiroshi Okazaki, NTT DOCOMO, Japan THz Transport Technologies and Strategists Beyond 5/6G Systems

Jair Silva, Federal University of Espírito Santo (UFES), Brazil

Towards AI-enhanced VLC Systems

Ting Wang, NEC Laboratories America Inc., USA

AI-based Analysis of Vibrations, Temperature, and Sounds Sensed by Existing Optical Fiber Networks

Tutorials

Eric Black, *Pivotal Commware*, *USA*Holographic Beam Forming and
Massive MIMO from Optical
Communication Perspective

Ke Wang, Royal Melbourne Institute of Technology, Australia Evolution of Optical-wireless Communications

Panel

Optical Wireless Communications for Indoor Access Networks — Practical Solutions Beyond Table-top Demos

Workshop

Is Optical Wireless Still Relevant for 6G or Will Fiber-Radio be Enough?

Short Course

SC217 Applications of Radio-over-fiber Technologies Including Future 5G Networks

Dalma Novak, Octane Wireless, USA

S4: Digital and electronic subsystems

Invited Speakers

Bin Chen, Hefei University of Technology, China

Shaped Modulation and Hybrid Forward Error Correction for Optical Fiber Communication Systems

Xi Chen, *Nokia Bell Labs, USA* Toward 200-Gbaud Coherent Transmission

Per Larsson-Edefors, Chalmers Tekniska Högskola, Sweden

Fiber-on-chip: Digital FPGA Emulation of Channel Impairments for Real-time Evaluation of DSP

Zhenning Tao, Fujitsu Research and Development Center, China

How to Connect Device Nonlinear Specification and System Nonlinear Penalty

Tony Wang, Marvell Technology Inc., USA Coherent DSP and System Integration Technologies for 800G and Beyond

Zhongwen Zhan, California Institute of Technology, USA

Optical Polarization – based Sensing on Transoceanic Cables Using Standard Coherent Telecom Receiver

Fan Zhang, Peking University, China Neural Network-based Fiber Nonlinearity Mitigation in High-speed Coherent Optical Transmission Systems

Tutorial

Junho Cho, *Nokia Bell Labs, USA*Probabilistic Constellation Shaping:
An Implementation Perspective

Workshops

Can Optical Communication Infrastructure Double Its Values by Introducing Fiber Sensing?

Single-carrier vs Multi-carrier For >800G Coherent Optics: A Revived Debate After a Decade.

Will Machine Learning Replace QoT/ Performance Estimation and Has it Reached the Stage of Commercial Deployment?

Short Courses

SC105 Modulation Formats and Receiver Concepts for Optical Transmission Systems

Peter Winzer, Nubis Communications, USA Xi Vivian Chen, Nokia Bell Labs, USA

SC114 Technologies and Applications for Passive Optical Networks (PONs)

Yuanqiu Luo, Futurewei Technologies, Huawei R&D, USA

SC205 Integrated Electronic Circuits for Fiber Optics

Y. K. Chen, Bell Labs (Retired), USA

SC328 Standards for High-speed Optical Networking
Tom Huber, *Nokia Bell Labs, USA*

SC341 Sub-carrier Modulation and Superchannels for Terabit-class DWDM Transceivers

Sander L. Jansen, ADVA Optical Networking, Germany Dirk van den Borne, Juniper Networks, Germany

SC357 Circuits and Equalization Methods for Coherent and Direct Detection Optical Links Alexander Rylyakov, Nokia, USA

SC369 Test and Measurement for Signals with Complex Optical Modulation

Michael Koenigsmann and Bernd Nebendahl, *Keysight Technologies*, *Germany* **SC384** Background Concepts of Optical Communication Systems Alan Willner, *University of Southern California*, USA

SC390 Introduction to Forward Error Correction

Georg Böcherer, Huawei Munich Research Center, Germany

SC393 Digital Signal Processing for Coherent Optical Transceivers Chris Fludger, *Infinera, Germany*

SC395 Modeling and Simulation of Optical Transmitter and Receiver Components for Coherent Communications

Harald Rohde, *Nokia, Germany* Howard Wang, *Nokia, USA*

SC408 Space Division Multiplexing for Optical Communication Systems and Networks

Roland Ryf, Nokia Bell Labs, USA

SC452 FPGA Programming for Optical Subsystem Prototyping Robert Elschner, *Fraunhofer HHI*, *Germany* Noriaki Kaneda, *nEye systems Inc.*

SC460 Digital Coherent Optical System Performance Basics

John Cartledge, *Queen's University, Canada* Maurice O'Sullivan, *Ciena, Canada*

SC468 Advanced FEC Techniques for Optical Communications
Laurent Schmalen, *Karlsruhe Institute of Technology (KIT)*, *Germany*

SC469 Hands-on: Laboratory Automation and Control Using Python Jochen Schröder, *Chalmers University* of Technology, Sweden Binbin Guan, Microsoft, USA Roland Ryf, Nokia Bell Labs, USA

SC483 Hands-on: Machine Learning in Optical Networks

Massimo Tornatore, *Polytechnic University* of *Milan, Italy*Darko Zibar, *DTU Fotonik, Denmark*

SC487 Hands-on: Laboratory Automation and Control Using Python (Advanced)

Nicolas Fontaine, *Nokia Bell Labs, USA* Binbin Guan, *Microsoft, USA* Jochen Schröder, *Chalmers University* of Technology, Sweden

S5: Digital transmission systems

Invited Speakers

Vahid Aref, *Nokia Bell Labs, Germany* Applications of Deep Learning for Optical Fiber Communications

Alberto Bononi, *Università di Parma, Italy* Capacity Maximization of Powerconstrained Submarine Systems

Daniel Semrau, *Infinera, UK*Modeling of Fiber Nonlinearity in
Wideband Transmission

Daiki Soma, KDDI Research, Inc., Japan High Capacity Mode Division Multiplexing Transmission Technology

Olga Vassilieva, Fujitsu Network Communications Inc, USA Probabilistic VRs Geometric Constellation Shaping in Commercial Applications

Catherine White, *British Telecom PLC, UK* Quantum Key Distribution in the Service Provider Network

Yu Rong Zhou, *British Telecom PLC*, *UK* High Capacity Innovations Enabling Scalable Optical Transmission Networks

Tutorials

Takuya Hirano, *Gakushuin University, Japan* Introduction to Continuous Variable Quantum Key Distribution

Sergejs Makovejs, *Corning Inc., UK*The Next Decade of Optical Fibres:
Outlook and Implications for Long
Haul Transmission Systems

Workshop

Time to Face the Cost Per Bit "Crunch": Trends and Expectations for the Next Decade

Short Courses

SC102 WDM in Long-haul Transmission Systems Neal S. Bergano, *Retired*, *USA* **SC203** 400 Gb/s and Beyond Transmission Systems, Design and Design Trade-offs

Ezra Ip, NEC Labs, USA Chongjin Xie, Alibaba Group, USA

SC327 Modeling and Design of Long-haul Fiber-optic Communication Systems

Rene-Jean Essiambre, Nokia Bell Labs, USA

SC341 Sub-carrier Modulation and Superchannels for Terabit-class DWDM Transceivers

Sander L. Jansen, ADVA Optical Networking, Germany Dirk van den Borne, Juniper Networks, Germany

SC384 Background Concepts of Optical Communication Systems Alan Willner, *University of Southern California, USA*

SC408 Space Division Multiplexing for Optical Communication Systems and Networks

Roland Ryf, Nokia Bell Labs, USA

SC429 Advances in Flexible Photonic Networks and Open Architectures David Boerties, *Ciena, Canada*

SC460 Digital Coherent Optical System Performance Basics John Cartledge, *Queen's University, Canada*

Maurice O'Sullivan, Ciena, Canada

SC469 Hands-on: Laboratory Automation and Control Using Python Binbin Guan, *Acacia Communications, USA* Roland Ryf, *Nokia Bell Labs, USA* Jochen Schröder, *Chalmers University* of Technology, Sweden

SC470 Secure Optical Communications

Andrew Shields, Toshiba Research Europe Ltd., UK Helmut Griesser, ADVA Optical Networking SE, Germany

SC487 Hands-on: Laboratory Automation and Control Using Python (Advanced)

Nicolas Fontaine, *Nokia Bell Labs, USA* Binbin Guan, *Microsoft, USA* Jochen Schröder, *Chalmers University* of *Technology, Sweden* TRACK N: NETWORKS, APPLICATIONS AND ACCESS

N1: Advances in system, network and service developments and field trials in commercial data centers and networks

Invited Speakers

Mattia Cantono, *Google, USA* Sensing on Submarine Networks

Christian Dorize, Nokia Bell Labs France, France

Distributed Fiber Sensing over Deployed Telecom Fibers

Lara Garrett, SubCom LLC, USA Agile Subsea Networks

Nir Laufer, Oscilloquartz SA, Switzerland Timing and Synchronization in Optical Networks for 5G Transport

Alex MacKay, *Ciena, Canada*Field Learnings of Deploying Model
Assisted Network Feedback Systems

Mark McKillop, Facebook Inc., UK
Unified Software Controllers:
Operating a Global Cloud Network

Dezhi Zhang, *China Telecom, China* Fronthaul Trials for 5G Cells, Optical Transport Studies and Implementations

Tutorials

Mei Du, *Tata Communications, USA* Modern Subsea Networks

Alexander Nikolaidis, *Facebook Inc., USA* Building a Global Content Provider Network at Scale

Workshop

Can Optical Communication Infrastructure Double Its Values by Introducing Fiber Sensing?

Short Courses

SC328 Standards for High-speed Optical Networking
Tom Huber, Nokia Bell Labs, USA

SC429 Advances in Flexible Photonic Networks and Open Architectures David Boertjes, *Ciena, Canada* **SC447** The Life Cycle of an Optical Network: From Planning to Decommissioning
Andrew Lord, *BT Labs, BT, UK*

SC461 High-capacity Data Center Interconnects for Cloud-scale Networking

Mark Filer, Microsoft, USA Sander L. Jansen, ADVA Optical Networking, USA Dirk van den Borne, Juniper Networks, Germany

SC463 Optical Transport SDN: Architectures, Applications and Actual Implementations

Achim Autenrieth and Jörg-Peter Elbers, ADVA Optical Networking SE, Germany

SC464 Software Defined Networking in the Cloud — Designs, Operations and Management

David Maltz. Microsoft, USA

SC472 Hands-on: Controlling and Monitoring Optical Network Equipment

Ricard Vilalta, CTTC, Spain

N2: Optical networking for data center and computing applications

Invited Speakers

Manya Ghobadi, Massachusetts Institute of Technology, USA

Next-generation AI Systems with Optical Technologies

Masahisa Kawashima, NTT Communications Corporation, Japan IOWN, a New Converged Network for Digital Twin Enabled Societies

David Moss, Swinburne University of Technology, Australia High-speed Optical Neural Networks Based on Microcombs

Shu Namiki, National Institute of Advanced Industrial Science and Technology (AIST), Japan

Digitalizing Optical Layer for the Green Computing Continuum as the Future Digital Infrastructure

Nikos Pleros, Aristoteleio Panepistimio Thessalonikis, Greece

Photonic Neuromorphic Computing: Architectures, Technologies and Training Models

Neil Zimmerman, National Insitute of Standards and Technology, USA What's the Fuss: The Excitement, Prospects and Software/Hardware Challenges of Distributing Entanglement over a Quantum Network

Tutorials

David A. B. Miller, Stanford University, USA Self-configuring Programmable Photonics for Processing, Communications and Sensing

Paul Prucnal, *Princeton University, USA*Neuromorphic Photonics

Panel

The Role of Photonics for AI/ML at the Edge: What for, Why now, and How?

Workshops

How will the Future DC Infrastructure be in the Hyperconnectivity Era?

What Will the Future ML and AI Systems Look Like?

Short Courses

SC359 Data Center Networking 101 Hong Liu and Ryohei Urata, *Google, USA*

SC448 Software Defined Networking for Optical Networks: a Practical Introduction

Ramon Casellas, CTTC, Spain

SC464 Software Defined Networking in the Cloud — Designs, Operations and Management

David Maltz. Microsoft. USA

SC472 Hands-on: Controlling and Monitoring Optical Network Equipment Ricard Vilalta, *CTTC*, *Spain*

N3: Architectures and softwaredefined control for metro and core networks

Invited Speakers

Achim Autenrieth, ADVA Optical Networking AG, Germany Carrier Grade AI/ML for Network Automation

Filippo Cugini, Scuola Superiore Sant Anna di Pisa, Italy

Applications of P4-based Network Programmability in Optical Networks

Carmen Mas Machuca, Technische Universität Munchen, Germany Next-generation Network Planning

Reza Nejabati, *University of Bristol, UK*Dynamic Quantum Network: From
Quantum Data Center to Quantum
Cloud Computing

Yvan Pointurier, *Huawei, France*Intelligent Use of Machine Learning for Qot Estimation

Cristina Rottondi, *Politecnico di Torino, Italy* Application of Explainable AI for QoT Estimation in Optical Networks

Tutorials

David Boertjes, *Ciena, Canada*Perspectives and Challenges on
Autonomous Networking

Andrew Lord, *BT Applied Research, UK*The Future of Optical Transport:
Architectures and Technologies
from an Operator Perspective

Workshop

Will Machine Learning Replace QoT/ Performance Estimation and Has it Reached the Stage of Commercial Deployment?

Short Courses

SC261 ROADM Technologies and Network Applications Thomas Strasser, *Molex, USA*

SC328 Standards for High-speed Optical Networking
Tom Huber, *Nokia Bell Labs, USA*

SC429 Advances in Flexible Photonic Networks and Open Architectures David Boertjes, *Ciena, Canada*

SC448 Software Defined Networking for Optical Networks: a Practical Introduction

Ramon Casellas, CTTC, Spain

SC463 Optical Transport SDN: Architectures, Applications and Actual Implementations

Achim Autenrieth and Jörg-Peter Elbers, ADVA Optical Networking SE, Germany

SC472 Hands-on: Controlling and Monitoring Optical Network Equipment

Ricard Vilalta, CTTC, Spain

SC483 Hands-on: Machine Learning in Optical Networks

Massimo Tornatore, *Polytechnic University* of *Milan, Italy*Darko Zibar, *DTU Fotonik, Denmark*

SC484 Transport Evolution Due to Cloud Services

Loukas Paraschis, Infinera, USA

N4: Optical access networks for fixed and mobile services

Invited Speakers

Rene Bonk, *Nokia Bell Labs, Germany* New Use-cases for PONs Beyond Residential Services

Li Borui, *Huawei Technologies Co Ltd, China* DSP Enabled Next Generation Flexible PON for 50G and Beyond

L. Alberto Campos, *CableLabs, USA*Coherent Optics for Access from P2P to P2MP

Ching-yin Hong, SiFotonics Technologies Co. Ltd, USA

High Speed Ge/Si Avalanche Photodiode with High Sensitivity for 50Gbit/s and 100Gbit/s Optical Access Systems Aleksandra Kaszubowska-Anandarajah, University of Dublin Trinity College, Ireland PIC Reconfigurable Transmitter for Short Reach Applications

David Larrabeiti, *Universidad Carlos III* de Madrid, Spain

Latency-aware Network Architectures for 5G Backhaul and Fronthaul

Fan Li, Sun Yat-Sen University, China Architectures and Key DSP Techniques of Next Generation 100G Passive Optical Network (PON)

Takahiro Suzuki, *NTT Corporation, Japan* PON Virtualization Including PHY Softwarization

Tutorials

Elaine Wong, *University of Melbourne, Australia*

AI-enhanced Latency-sensitive Human-to-machine (H2M) Communications

Panels

Has the Time Come for Coherent Optics in Access Networks?

What is the Role of Machine Learning in Optical Access Networks

Short Courses

SC114 Technologies and Applications for Passive Optical Networks (PONs)

Yuanqiu Luo, Futurewei Technologies, Huawei R&D, USA

SC444 Optical Communication Technologies for 5G

Xiang Liu, Futurewei Technologies, Huawei R&D, USA

SC483 Hands-on: Machine Learning in Optical Networks

Massimo Tornatore, *Polytechnic University* of Milan, Italy

Darko Zibar, DTU Fotonik, Denmark

SC485 Advanced Fiber Access Networks

Cedric F. Lam and Shuang Yin, *Google, USA*

Exhibit Hall

Visit the world's largest exhibit hall in the industry, and attend industry programs on the show floor.

A Showcase for Solutions

Participating companies have the products and technologies to build your competitive edge. The entire spectrum of products will be on display: network equipment and software, active and passive components, test and manufacturing equipment, data center/IT products and cable and fiber. See what's new and identify technology must-haves for your business. Only OFC offers the size and scope to compare and contrast vendors, giving you the information you need to make all your technology purchasing decisions in one place.

There will also be multi-vendor interoperability demos on the show floor including booths by Ethernet Alliance, OIF, OpenROADM and 400 Open ZR+.

Industry-focused Programs

Theaters II and III on the show floor offer 15 programs covering new technologies and insight into the future. Hear from industry groups such as Ethernet Alliance, OIF, ETSI, TIP, IEEE, DARPA and others.

Topics on the show floor include: intra and inter data center connectivity, network infrastructure, access networks, optical systems and components and standard and industry group updates.
Technologies covered include: 400ZR, 800ZR/LR, PON: 25G or 50G, hollow core fiber, open/disaggregated networks, optics for mobile and more.



Show Floor Programs — Theater I

In addition to the exhibits, OFC offers industry programs on the show floor covering market trends.

Market Watch

This three-day series of panel discussions engages the latest application topics and business issues in the field of optical communications. Presentations and panel sessions feature esteemed guest speakers from industry, research and the investment community.

Panel I

State of the Industry

Panel II

The Path to Co-packaged Optics for Switching Applications

Panel III

Building the Ecosystem for Converged IP/Optical Networks – Beyond 400G Pluggables

Panel IV

The Role of Optics in Future Machine Learning Architectures

Panel V

Evolution of Coherent Transceiver Architectures for Specific Applications

Panel VI

Building the Next Generation 3.2T Transceiver

Network Operator Summit

This dynamic program presents the inside perspective from network operators and service providers – their issues, drivers and how their requirements may impact the future of the industry. Everyone in the supply chain, from equipment manufacturer to components, will want to hear what's next in meeting the needs of network operators.

Panel I

Operator Investment Directions for FTTH and Access Networks

Panel II

Using Disaggregation as a Strategy to Modernize the Network

Data Center Summit

This program focuses on next generation optical technologies for intra and/or inter data center connectivity. Evolving data center requirements for technologies, equipment, applications and deployment scenarios in hyperscale and enterprise will be discussed.

Panel I

Scaling Data Center Interconnect

Panel II

Solving the Challenge of Moving Data Centers to the Network Edge

N5 Network Operator Summit and Market Watch Sub-committee Chair Andrew Schmitt, Cignal AI, USA

Registration

ofcconference.org/registration

OFC offers flexible and convenient options for all registrants. We recognize that 2022 will continue to be a year of transition, with some participants able to attend in person and others who must continue to rely on a virtual platform. No matter your registration choice, you will have the ability to modify your registration at any time up to the conference without penalty.

OFC will be presented in a hybrid format with in-person and virtual programming. Consult the conference website to learn what programs are accessible for each registration type.

	On or Before 07 February (USD)		After 07 February (USD)		
Full Conference					
IN-PERSON					
Member*	\$6	86	\$814		
Student Member*	\$2	01	\$284		
Nonmember	\$860		\$1,000		
Student Nonmember	\$241		\$367		
VIRTUAL					
Member*	\$375		\$446		
Student Member*	\$110		\$131		
Nonmember	\$469		\$559		
Student Nonmember	\$132		\$157		
Exhibits Pass Plus**	\$0 \$0		0		
Short Courses	Half Day	Hands-on	Half Day	Hands-on	
Member*	\$278	\$338	\$338	\$389	
Nonmember	\$354	\$414	\$414	\$485	

 $^{^{\}star}$ Member of IEEE Communications Society, IEEE Photonics Society or OPTICA (formerly OSA).

Health and Safety Practices

ofcconference.org/cares

The health and safety of attendees and exhibitors is of primary importance. OFC Management is committed to taking necessary precautions to provide participants with a safe and secure conference experience.

OFC follows regulations set by federal, state and local governments and guidelines from public health agencies. We confirm best practices and recommendations from the San Diego Convention Center and our conference service providers.

Now more than ever, it is vital to keep our community reliably informed on current conditions. Learn more about our health and safety practices on the conference website.

Hotel

Maritz Global Events is the official hotel reservations vendor for OFC. Working with Maritz, we have negotiated exclusive discounts on room rates at popular hotels within walking distance from the San Diego Convention Center.

When you reserve through the conference room block, you help OFC Management keep overall meeting costs down. Check hotel availability, review current hotel listings and make hotel reservations on the conference website.

San Diego Convention Center

111 W. Harbor Drive San Diego, California 92101

Hotel	Distance from Convention Center	Room Rate* (USD)
Hard Rock Hotel San Diego	0.2 mile	\$288
Hilton San Diego Bayfront	0.2 mile	\$309
Marriott Marquis San Diego Marina	0.2 mile	\$310
Manchester Grand Hyatt San Diego	0.3 mile	\$309
Hilton San Diego Gaslamp Quarter	0.3 mile	\$286
Pendry San Diego	0.3 mile	\$280
Horton Grand Hotel	0.4 mile	\$202
Hotel Z	0.4 mile	\$254
Solamar San Diego	0.5 mile	\$258
Omni San Diego Hotel	0.5 mile	\$290
San Diego Marriott Gaslamp Quarter	0.5 mile	\$287
Andaz San Diego	0.7 mile	\$286
Westin San Diego Gaslamp Quarter	0.7 mile	\$269
Embassy Suites by Hilton San Diego Bay Downtown	0.8 mile	\$264
Hotel Indigo San Diego Gaslamp Quarter	0.8 mile	\$246
Sofia Hotel	0.9 mile	\$244
US GRANT – A Luxury Collection Hotel	0.9 mile	\$284
Bristol Hotel	1.0 mile	\$222
Kimpton Hotel Palomar San Diego	1.0 mile	\$248
Westgate Hotel	1.0 mile	\$258
Wyndham San Diego Bayside	1.2 miles	\$198

^{*}Hotel rates are listed in US dollars and do not include taxes or any hotel fees. Rates shown are for single rooms. Double rooms may have an increased rate.

^{**} Exhibits Pass Plus is not for use by presiders, poster presenters or speakers. These audiences must register as a Full Conference attendee.

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Registration Rates Increase After 07 February 2022

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