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ATTENDEE PROGRAM

OFC

The future of optical networking
and communications

TECHNICAL CONFERENCE
19 – 23 March 2017

EXHIBITION
21 – 23 March 2017

Los Angeles, California, USA

ofcconference.org

SPONSORED BY:

IEEE ComSoc IEEE Communications Society

IEEE photonics Society

OSA The Optical Society 100 Since 1916

Managed by OSA

location

Los Angeles Convention Center

1201 S Figueroa St.
Los Angeles, California 90015 USA

2017 dates

10 January

Conference Program Online

20 February

Advance Registration Deadline
(11:59 EST)

26 February

Hotel Reservation Deadline

7 March

Postdeadline Paper Submission Deadline

19 – 23 March

Technical Conference

21 – 23 March

Exhibit and Show Floor Activities

support

general information

+1.202.416.1907
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registration

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OFC@onpeak.com

technical publications and submissions

+1.202.416.6191
cstech@osa.org

DEAR COLLEAGUES,

OFC is the largest optical communications conference in the world. It's a conference you cannot afford to miss! Think OFC is just fiber optics? You're wrong! OFC has in-depth coverage of photonic integrated circuits, optical networking, digital-signal processing, ASICs, free-space optical communications, quantum optics, and more. Whether you are in the technical or the commercial community, at OFC you will have the opportunity to listen, learn, collaborate, take a course, see new products, meet with colleagues and vendors, conduct business, see the state-of-the-art and glimpse into the future.

OFC is the only global conference that truly represents the entire ecosystem, from research to the marketplace and paints a picture of the entire industry — where it is today and where it is going tomorrow in terms of research, technologies and product solutions. Get the most up-to-the-minute in-depth research results in your topic area in technical sessions, or explore other areas of interest in tutorials or short courses — all presented by internationally recognized experts. You can see how current research may impact the future of your work and generate new ideas and solutions to your current and future problems. In addition you can get a view of the competitive landscape to see what others are doing, what drives their solutions, and how they may be different from your own.

Perhaps the biggest value of OFC is the face-to-face interactions and the connections you make. Whether you talk to the experts, catch up with former colleagues, establish new relationships or find new vendors or customers, these personal interactions are invaluable and you can make them all at one place in just 5 days.

Join us in Los Angeles for OFC 2017 to gain the knowledge you need to stay competitive.

See you there!

GENERAL CHAIRS

Andrew Lord
BT Labs, UK

Shu Namiki
AIST, Japan

Peter Winzer
Nokia Bell Labs, USA

PROGRAM CHAIRS

Gabriella Bosco
Politecnico di Torino, Italy

Jöerg-Peter Elbers
ADVA Optical Networking SE, Germany

Laurent Schares
IBM TJ Watson Research Center, USA

it's here

OFC 2017 is the year's premier event in telecom and data centers.

The program is comprehensive — from research to marketplace, from components to systems and networks, from technical sessions to the exhibition.

OFC draws nearly 13,000 business and technology leaders from 65 countries from around the world, who come seeking the future direction of the industry, from the latest research and developments to the newest technologies.

amplify expertise — get the latest advancements at OFC

OFC is the world's largest conference and exhibition for optical communication and networking professionals.

The peer-reviewed technical conference features more than 120 invited speakers, the thought leaders in the industry who present the highlights of emerging technologies. The technical program also includes special symposia, one-hour in-depth tutorials, interactive workshops and panels. You can also take a short course and learn from the experts about important topics in the industry — there are 50 to choose from at a variety of educational levels.

The show floor is buzzing with new product announcements and what's trending in the market. Over 600 exhibitors keep you current on all the latest products and innovative solutions. Three theaters feature Market Watch, The Network Operator Summit (formerly The Service Provider Summit) and over 15 programs covering the state-of-the-industry, hot topics and solutions to business challenges.

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

"We are very excited about this year's interactive workshops (including two forward-looking team challenges), a new open platform summit, ground breaking symposia and a stimulating rump session, which all feature hot topics that are highly important to our field."

– 2017 PROGRAM CHAIRS

CONFERENCE HIGHLIGHTS

- **520+ Peer-reviewed Technical Presentations**
  Get all your education needs met under one roof
- **120+ Invited Experts in the Field**
  Hear the leaders in the industry
- **600+ Exhibits**
  Attend the world's largest optical networking and communications show
- **13,000 Attendees**
  Gain unparalleled networking opportunities
- **Postdeadline Sessions**
  Keep current with up-to-the-minute research
- **Show-Floor Activities**
  Presentations by Industry for Industry on market trends and business issues

TRENDING TOPICS

- Advanced devices and fibers for high-speed data center links
- Enabling 5G and IoT through next-generation optical access
- Manufacturing and packaging of photonic and electronic subsystems
- Multiplexing, transmission and switching techniques for Tb/s networks
- New network architectures and applications enabled by SDN and NFV
- Open hardware and software platforms for cloud scale networks
- Optical wireless and visible light communications
- Silicon and integrated photonics for datacom and telecom

schedule

All times reflect Pacific Time Zone.

	SUNDAY 19 MARCH	MONDAY 20 MARCH	TUESDAY 21 MARCH	WEDNESDAY 22 MARCH	THURSDAY 23 MARCH
PROGRAMMING					
Short Courses	09:00 – 20:00	08:30 – 20:00			
Workshops	15:30 – 18:30	09:00 – 12:00			
Technical Sessions		13:30 – 18:00	14:00 – 18:30	08:00 – 17:30	08:00 – 17:30
Plenary and Awards			08:00 – 10:00		
Open Forum (Rump Session)			19:30 – 21:30		
Poster Session				10:00 – 12:00	10:00 – 12:00
Postdeadline Papers					18:00 – 20:00
EXHIBITION & SHOW FLOOR ACTIVITIES					
Exhibition and Show Floor			10:00 – 17:00	10:00 – 17:00	10:00 – 16:00
Unopposed Exhibit-Only Time			10:00 – 12:00	12:00 – 13:00	12:00 – 13:00
Market Watch — Expo Theater I			12:00 – 17:00	13:00 – 15:00	10:15 – 15:00
Network Operator Summit — Expo Theater I				08:00 – 12:30	
Expo Theater II & III Programs			10:15 – 17:00	10:15 – 14:30	10:15 – 12:30
OFC Career Zone			10:00 – 17:00	10:00 – 17:00	10:00 – 16:00
SPECIAL EVENTS					
Conference Reception			18:30 – 20:00		

short course schedule

SUNDAY, 19 MARCH		
9:00 – 12:00	SC176	Metro Network: The Transition to Ethernet
	SC177	High-speed Semiconductor Lasers and Modulators
	SC443	Optical Amplifiers: From Fundamental Principles to Technology Trends [NEW]
	SC444	Optical Communication Technologies for 5G Wireless [NEW]
	SC447	The Life Cycle of an Optical Network: From Planning to Decommissioning [NEW]
9:00 – 13:00	SC105	Modulation Formats and Receiver Concepts for Optical Transmission Systems
	SC114	Passive Optical Networks (PONs) Technologies
	SC359	Datacenter Networking 101
	SC384	Background Concepts of Optical Communication Systems
13:00 – 17:00	SC267	Silicon Microphotonics: Technology Elements and the Roadmap to Implementation
	SC325	Highly Integrated Monolithic Photonic Integrated Circuits
	SC395	Modeling and System Impact of Optical Transmitter and Receiver Components
13:30 – 16:30	SC216	An Introduction to Optical Network Design and Planning
	SC430	SDN Standards and Applications
	SC433	Photodetectors for Optical Communications
13:30 – 17:30	SC203	100 Gb/s and Beyond Transmission Systems, Design and Design Trade-offs
	SC369	Test and Measurement for Metro and Long-haul Communications
	SC393	Digital Signal Processing for Coherent Optical Systems
17:00 – 20:00	SC205	Integrated Electronic Circuits for Fiber Optics
	SC217	Optical Fiber Based Solutions for Next Generation Mobile Networks
	SC328	Standards for High-speed Optical Networking
	SC372	Building Green Networks: New Concepts for Energy Reduction
	SC386	The SDN Evolution of Wireline Transport due to Cloud Services and DCI Innovations
	SC428	Link Design for Short Reach Optical Interconnects
	SC429	Flexible Networks
	SC451	Fiber-based Devices and Sensors [NEW]

MONDAY, 20 MARCH		
8:30 – 12:30	SC102	WDM in Long-haul Transmission Systems
	SC178	Test and Measurement for Data Center/Short Reach Communications
	SC327	Modeling and Design of Fiber-optic Communication Systems
	SC341	Multi-carrier Modulation: DMT, OFDM and Superchannels
	SC390	Introduction to Forward Error Correction
	SC432	[Hands-on] Silicon Photonics Component Design & Fabrication
	SC446	[Hands-on] Characterization of Coherent Opto-electronic Subsystems [NEW]
	SC453A	[Hands-on] Fiber Optic Handling, Measurements and Component Testing [NEW]
9:00 – 12:00	SC208	Optical Fiber Design for Telecommunications and Specialty Applications
	SC385	Optical Interconnects for Extreme-scale Computing
	SC411	Multi-layer Interaction in the Age of Agile Optical Networking
	SC442	Free Space Switching Systems: PXC and WSS [NEW]
	SC450	Design, Manufacturing and Packaging of Opto-electronic Modules [NEW]
13:30 – 16:30	SC261	ROADM Technologies and Network Applications
	SC431	Photonic Technologies in the Data Center
	SC445	Visible Light Communications — the High Bandwidth Alternative to WiFi [NEW]
	SC448	An Introduction to the Control and Management of Optical Networks [NEW]
13:30 – 17:30	SC160	Microwave Photonics
	SC347	Reliability and Qualification of Fiber-optic Components
	SC408	Space-division Multiplexing in Optical Fibers
	SC449	[Hands-on] An Introduction to Writing Transport SDN Applications [NEW]
	SC452	FPGA Programming for Optical Subsystem Prototyping [NEW]
	SC453B	[Hands-on] Fiber Optic Handling, Measurements and Component Testing [NEW]
	SC454	[Hands-on] Silicon Photonic Circuits and System Design [NEW]

plenary speakers

"The plenary speakers at OFC typically 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.

This year we chose Google's Employee #8 and current VP of Engineering Urs Hölzle to speak about Google's groundbreaking cloud network in terms of reach, scale, and capability. On the research front, Prof. Meint Smit, considered by many as the father of the integrated photonics foundry model, will talk about affordable photonic integration and the wide range of applications that the photonic foundry model is enabling. Our visionary speaker, Prof. Mischa Dohler, will share his joint loves of communications research and music by firstly discussing how the 'Internet of Skills' will allow the transmission of labor, enabled by next-generation wireless 5G and optical networks, and then 'playing us out' with some tunes from his latest album!"

– OFC 2017 PROGRAM CHAIRS

URS HÖLZLE

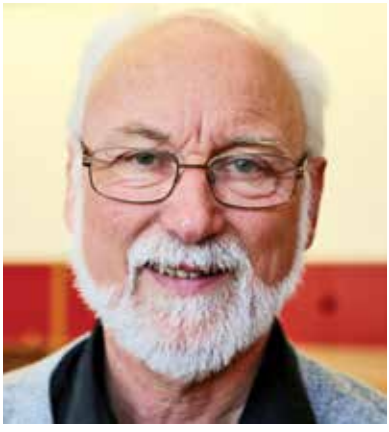
Senior Vice President for Technical Infrastructure, Google, Inc., USA

A Ubiquitous Cloud Requires a Transparent Network

Google has been building a network unparalleled in reach, scale and capability. While we built the network as the backbone of a global super computer, we also turned the network control and management planes into distributed services running on the same Cloud. In the process, we made every network layer, including optical transport, intelligent, fault-tolerant, highly reliable and programmatically manageable to allow for rapid evolution and innovation. We have also applied the lessons of disaggregation, learned from Cloud, widely to our network infrastructure.

BIOGRAPHY

Urs Hölzle is Senior Vice President for Technical Infrastructure at Google. In this capacity he oversees the design, installation, and operation of the servers, networks, and datacenters that power Google's services. Through efficiency innovations, Hölzle and his team have reduced the energy used by Google data centers to less than 50% of the industry average.



MEINT K. SMIT

Professor, Eindhoven University of Technology, Netherlands

Photonic Integrated Circuits for All: How Foundries Are Transforming the Prototyping of Exciting New Devices

This presentation describes the photonics foundry model and its development in Europe, explains the significant reductions in prototyping costs, and highlights foundry-model-developed-photonic-ICs across a broad range of applications.

BIOGRAPHY

In 2000 Meint Smit became the leader of the Photonic Integration group at the COBRA Research Institute of TU Eindhoven. His current research interests are in InP-based Photonic Integration and integration of InP circuitry on Silicon. He is the founder of the JePPIX platform, the Joint European Platform for Photonic Integration of Components and Circuits and strongly involved in the development of the InP-based photonic foundry system in Europe.

MISCHA DOHLER

Professor, King's College, London, UK

Internet of Skills — Where Communications, Robotics and Artificial Intelligence Meet

This presentation looks at the disruptive technology approaches in wireless 5G and next-generation optical networks which will allow us to break through the next technology frontier.

BIOGRAPHY

Mischa Dohler is full Professor in Wireless Communications at King's College London, driving cross-disciplinary research and innovation in technology, sciences and arts. He is the Director of the Centre for Telecommunications Research and co-founder of the pioneering smart city company Worldsensing.

special sessions

SYMPOSIA

What is Driving 5G, and How Can Optics Help?

ORGANIZERS
Björn Skubic, *Ericsson Research, Broadband Technol., Sweden*
Gee-Kung Chang, *Georgia Institute of Technology, USA*
Anna Tzanakaki, *University of Athens, Greece*
Jun Terada, *NTT, Japan*

Session I: What is driving 5G?
Speakers from the 5G community as well as vertical industries speak to the benefits of adopting the 5G vision. This session gives an overview of the services, applications and ecosystems that are driving 5G and provide some insight on how these can create a new and substantial business opportunity for optical networking and its most advanced technologies.

Session II: The role of optics
Speakers from the optical networking/communications community give an overview of how optics can play a key role for realizing 5G networks and covers topics such as evolved x-haul, radio over fiber, distributed cloud connect (including edge/fog computing) and support for tactile (low latency) Internet applications.

Overcoming the Challenges in Large-Scale Integrated Photonics

ORGANIZERS
Po Dong, *Nokia, USA*
Benjamin Lee, *IBM, USA*
Erik Pennings, *7 Pennies, USA*
Takuo Tanemura, *University of Tokyo, Japan*

Integrated photonics provides significant opportunities to develop highly compact and extremely functional components and subsystems for a wide range of communication and sensor applications. However, photonic integration brings with it unique manufacturing and packaging challenges, which can limit the commercial exploitation of novel integration concepts and slow the time-to-market. These challenges can be economic or technical in nature, and are often most apparent during the transition from prototype development to manufacturing.

This symposium provides a balanced view of the promises and challenges of integrated photonics, and focuses on what is being done to get beyond the many roadblocks in order to enable a much larger market adoption. During the symposium leaders in the field address applications in traditional and non-traditional markets for integrated photonics, finding the right fabrication model using MPW or custom processing services, choosing Si versus InP platforms, optical and electrical packaging approaches, and other fundamental component challenges.

Data Center Summit: Open Hardware and Software Platforms [NEW]

ORGANIZERS
Ramon Casellas, *CTTC, Spain*
Daniel King, *University of Lancaster, UK*
Noboru Yoshikane, *KDDI R&D Laboratories, Japan*
Ilya Baldin, *RENCI/UNC Chapel Hill, USA*

The Open Platform Summit will discuss recent trends on open platforms and its applications to the optical networking space.

Session I: Open Platforms for Optical Innovation
Invited speakers provide an overview of key frameworks, architectures and projects using open hardware and software platforms for designing, deploying and operating large-scale networks and complex commercial environments, showcasing the benefits of SDN and NFV. The session presentations will be technology oriented, and will include benefits from the point of view of the operator/user of the platform and that of the system vendor/integrator. The session covers CORD (Central Office Re-architected as a Datacenter), OpenROADM and ACTN (Abstraction and Control of Traffic Engineered Networks) and its ongoing implementation on top of the ONOS network operating system.

Session II: SDN & NFV Demo Zone
This interactive table-top session provides the opportunity to see live demonstrations and prototypes of collaborative research projects, pre-commercial products and proof-of-concept implementations in the SDN and NFV space.

RUMP SESSION

The rump session encourages audience debate presenting opposing points of view. Session organizers open with short introductory presentations, followed by one-slide presentations from opposing points of view, followed by audience participation with organizers' facilitating open discussion.

Sub $0.25/Gbps Optics; How and When will Fiber Finally Kill Copper Cable Interconnects in the Data Center (DC)?

ORGANIZERS
Chris Cole, *Finisar Corporation, USA*
Dan Kuchta, *IBM TJ Watson Research Center, USA*

Questions for Discussion:

- What technologies are required to get to sub $0.25/Gbps optical transceivers?
- What happened to the $1/Gbps optics cost target for switch interconnects?
- Are technologies for $0.25/Gbps optics and $1/Gbps optics synergistic or unrelated?
- What's the trend in switch-to-server architectures; move them apart or closer together?
- Are optical transceivers inside active cables lower cost compared to inside modules?
- Does matching today's copper cable cost even matter for connecting servers in a few lane rate generations?
- Are high volume optics even possible with fragmentation of requirements and applications?
- In the future, will Cloud DC Operators stay at lower cost for lower rate or pay higher cost to move to higher rate?
- Are low-power technical solutions like VCSELs being arbitrarily excluded by Cloud DC Operators?
- Is Silicon Photonics the answer to sub $0.25/Gbps or $1/Gbps optics?

technical program

Presenting the latest research.

The technical conference features invited talks by experts in industry and academia as well as peer-reviewed presentations.

- 110+ invited speakers
- 500+ contributed papers
- 100+ technical sessions
- 50 Short Courses
- 15 tutorials
- 10 workshops
- 6 panels
- 2 special symposia
- 1 rump session
- 1 Data Center/ Open Platform Summit
- 1 SDN/NVF demo zone

The comprehensive program covers the technological breakthroughs and all the important topics in the field today.

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 16 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 highly important in the field today. 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.

TRACK D: Devices, Optical Components, and Fiber		
D1	Advances in deployable optical components, fibers and field installation equipment	**PAGE 14**
D2	Passive optical devices and circuits for switching and filtering	**PAGE 15**
D3	Active optical devices and photonic integrated circuits	**PAGE 16**
D4	Fiber and propagation physics	**PAGE 17**
D5	Fiber-optic and waveguide devices and sensors	**PAGE 18**
TRACK S: Systems and Subsystems		
S1	Advances in deployable subsystems and systems	**PAGE 19**
S2	Optical, photonic and microwave photonic subsystems	**PAGE 20**
S3	Radio-over-fiber, free-space and non-telecom systems	**PAGE 21**
S4	Digital and electronic subsystems	**PAGE 22**
S5	Digital transmission systems	**PAGE 23**
TRACK N: Networks, Applications and Access		
N1	Advances in deployable networks and their applications	**PAGE 25**
N2	Control and management of optical and multilayer networks	**PAGE 26**
N3	Network architectures and techno-economics	**PAGE 27**
N4	Optical access networks for fixed and mobile services	**PAGE 28**
N5	Network Operators Summit and Market Watch (invited program only)	

DSN6	Optical devices, subsystems and networks for Datacom and Computercom	**PAGE 29**

TRACK D: Devices, Optical Components, and Fiber

D1: ADVANCES IN DEPLOYABLE OPTICAL COMPONENTS, FIBERS AND FIELD INSTALLATION EQUIPMENT

INVITED SPEAKERS

Future of Short-Reach Optical Interconnects based on MMF Technologies

Jonathan Ingham, *Foxconn Interconnect Technology, USA*

2.4 Tb/s Full C+Band Tunable Optical Engines Utilizing InP Coherent Photonic Integrated Circuits Operating At 200 Gb/s Per Lane

Vikrant Lal, *Infinera Corporation, USA*

>1 Tb/s On-Board Optical Engine for High-Density Optical Interconnects

Hideyuki Nasu, *Furukawa Electric, Japan*

Cost-Effective TOSA/ROSA for 100G (2*28G PAM4) 10km QSFP28 Transceiver

Dong Pan, *SiFotonics Technologies Co., Ltd, USA*

Emerging Integrated Devices for Coherent Transmission — Digitally Assisted Analog Optics

Takashi Saida, *NTT Device Innovation Center, NTT, Japan*

G.654E Fibre Deployments in Terrestrial Transport System

Shikui Shen, *China Unicom, China*

TUTORIAL

The State of the Art of Modern Non-SDM Amplification Technology in Agile Optical Networks: EDFA and Raman Amplifiers and Circuit Packs

Gregory Cowle, *Lumentum, USA*

PANELS

Are Electronic & Optical Components Ready to Support Higher Symbol Rates & Denser Constellations?

ORGANIZERS

Rich Baca, *Microsoft, USA*

Gary Nicholl, *Cisco, Canada*

Direct vs. Coherent Detection for Metro-DCI

ORGANIZERS

Robert Griffin, *Oclaro, UK*

Tom Issenhuth, *Microsoft, USA*

SHORT COURSES

SC178 – Test and Measurement for Data Center/Short Reach Communications

Greg D. Le Cheminant, *Keysight Technologies, USA*

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, *Corning, USA*

SC450 – Design, Manufacturing and Packaging of Opto-electronic Modules [NEW]

Twan Korthorst, *Phoenix Software, Netherlands*

Arne Leinse, *LioniX BV, Netherlands*

Kevin Williams, *Eindhoven University of Technology, Netherlands*

SC453A and B – [Hands-on] Fiber Optic Handling, Measurements and Component Testing [NEW]

Steve Baldo, *Seikoh Gikken, USA*

Loic Cherel, *Data-Pixel, France*

Keith Foord, *Greenlee Communications, USA*

Chris Heisler, *OptoTest Corporation, USA*

D2: PASSIVE OPTICAL DEVICES AND CIRCUITS FOR SWITCHING AND FILTERING

INVITED SPEAKERS

Fiber Coupling and Packaging of Si Photonic Integrated Circuits

Tymon Barwicz, *IBM Research, USA*

Subwavelength Index Engineered Waveguides and Devices

Pavel Cheben, *National Research Council, Canada*

Laser Written Glass Waveguide Devices for Optical Interconnects

Kevin Chen, *University of Pittsburgh, USA*

Capacity Limits for Spatially Multiplexed Free-Space Communication

Joseph Kahn, *Stanford, USA*

Silicon Photonic Bragg Grating Devices

Sophie LaRochelle, *Laval University, USA*

Switching Devices and Systems Enabled by Advanced Planar Lightwave Circuits

Masanori Takahashi, *Furukawa Electric Co., Ltd., Japan*

Large-Scale Silicon Photonic Switches Using Electro-Optic MZIs

Linjie Zhou, *Shanghai Jiao Tong University, China*

TUTORIALS

Passive Waveguide Device Technologies - Building Block of Functionality and Integration

Yasuo Kokubun, *Yokohama National University, Japan*

Switching and Multiplexing Technologies for Mode-Division Multiplexed Networks

Roland Ryf, *Nokia Bell Labs, USA*

WORKSHOPS

Making the Case for SDM in 2027

ORGANIZERS

Cristian Antonelli, *Universita degli Studi dell'Aquilla, Italy*
Yoshinari Awaji, *National Inst of Information & Communications Technology, Japan*
Nicolas Fontaine, *Nokia Bell Labs, USA*
Sheryl Woodward, *AT&T, USA*

Scaling Datacenter Bandwidth: Novel Optics, Advanced Electronics or New Architectures?

ORGANIZERS

Piero Gambini, *STMicroelectronics, Switzerland*
Ming-Jun Li, *Corning, USA*
Ilya Lyubomirsky, *Facebook, USA*

SHORT COURSES

SC261 – ROADM Technologies and Network Applications

Thomas Strasser, *Nistica Inc., USA*

SC267 – Silicon Microphotonics: Technology Elements and the Roadmap to Implementation

Lionel Kimerling, *MIT, USA*

SC325 – Highly Integrated Monolithic Photonic Integrated Circuits

Chris Doerr, *Acacia Communications, USA*

SC384 – Background Concepts of Optical Communication Systems

Alan Willner, *Univ. of Southern California, USA*

SC432 – [Hands-on] Silicon Photonics Component Design & Fabrication

Loukas Chrostowski, *University of British Columbia, Canada*

SC442 – Free Space Switching Systems: PXC and WSS [NEW]

David Neilson, *Nokia Bell Labs, USA*

D3: ACTIVE OPTICAL DEVICES AND PHOTONIC INTEGRATED CIRCUITS

INVITED SPEAKERS

Hybrid III-V/Silicon Integration: Enabling the Next Generation of Advanced Photonic Transmitters

Guilhem De Valicourt, *Nokia Bell Labs, USA*

Silicon Photonic Wavelength Tunable Lasers for High-Capacity Optical Communication System

Tomohiro Kita, *Tohoku University, Japan*

High-Bandwidth and Low-Dimensional VCSELs for Optical Interconnects

James Lott, *TU Berlin, Germany*

850nm Hybrid Vertical Cavity Laser Integration for On-Chip Silicon Photonic Light Generation

Günther Roelkens, *Ghent University/ IMEC, Belgium*

DAC-Free High-Speed InP Modulators

Martin Schell, *Fraunhofer HHI, Germany*

Low Power Consumption and High-Speed Ge Receivers

Laurent Vivien, *CNRS and University of Paris Sud, France*

High Speed Silicon Photonic Modulators

Xi Xiao, *Wuhan Research Institute of Posts & Telecommunications, China*

>200Gb/s PAM-4 EA-DFB Transmitters

Hiroshi Yamazaki, *NTT, Japan*

TUTORIALS

InP Photonic Integrated Circuits

Larry Coldren, *UCSB, USA*

High-Capacity VCSEL Links

Daniel Kuchta, *IBM, USA*

WORKSHOPS

III-V + Silicon: To Integrate or to Co-package?

ORGANIZERS

Mike Larson, *Lumentum, USA*
Anders Larsson, *Chalmers University of Technology, Sweden*
Bert Offrein, *IBM, Switzerland*

Frequency Combs for Communications — Real Potential or Hype?

ORGANIZERS

Toshihiko Hirooka, *Tohoku University, Sendai, Japan*
Christian Koos, *Karlsruhe Institute of Technology, Germany*
Michael Vasilyev, *University of Texas at Arlington, USA*

Processors and Switches with Integrated Optical Engines — Researchers' Dream or a Commercial Reality Soon?

ORGANIZERS

Dominic Goodwill, *Huawei Technologies Canada Co Ltd, Canada*
Ken Morito, *Fujitsu Laboratories Ltd., Japan*
Sam Palermo, *Texas A&M University, USA*
Thomas Schrans, *Rockley Photonics, USA*

SHORT COURSES

SC177 – High-speed Semiconductor Lasers and Modulators

John Bowers, *University of California at Santa Barbara, USA*

SC205 – Integrated Electronic Circuits for Fiber Optics

Y. K. Chen, *Nokia Bell Labs, USA*

SC267 – Silicon Microphotonics: Technology Elements and the Roadmap to Implementation

Lionel Kimmerling, *MIT, USA*

SC325 – Highly Integrated Monolithic Photonic Integrated Circuits

Chris Doerr, *Acacia Communications, USA*

SC384 – Background Concepts of Optical Communication Systems

Alan Willner, *University of Southern California, USA*

SC428 – Link Design for Short Reach Optical Interconnects

Petar Pepeljugoski, *IBM Research, USA*

SC431 – Photonic Technologies in the Data Center

Clint Schow, *UC Santa Barbara, USA*

SC433 – Photodetectors for Optical Communications

Joe Campbell, *University of Virginia, USA*

SC442 – Free Space Switching Systems: PXC and WSS [NEW]

David Neilson, *Nokia Bell Labs, USA*

SC443 – Optical Amplifiers: From Fundamental Principles to Technology Trends

Shu Namiki, *National Institute of Advanced Industrial Science and Technology (AIST), Japan*
Michael Vasilyev, *University of Texas at Arlington, USA*

SC454 – [Hands on] Silicon Photonic Circuits and Systems Design [NEW]

Loukas Chrostowski, *University of British Columbia, Canada*
Chris Doerr, *Acacia Communications, USA*

D4: FIBER AND PROPAGATION PHYSICS

INVITED SPEAKERS

Propagation of Vector Modes in Optics

Andrew Forbes, *WITS University, South Africa*

Advances in Optical Fibers Fabricated with Granulated Silica

Alexander Heidt, *University of Bern, Switzerland*

Phospate Optical Fibers

Daniel Milanese, *Politecnico di Torino, Italy*

Elliptical Core Few Mode Fiber for MIMO-Less SDM Transmission

Giovanni Milione, *NEC Laboratories America, Inc., USA*

Recent Progress of Coupled Core Multi Core Fiber

Taiji Sakamoto, *NTT, Japan*

SDM Fibers for Power Efficient Transmission

Yu Sun, *TE SubCom, USA*

TUTORIAL

Hollow Core Fibers: Current and Future Applications

David Richardson, *University of Southampton, UK*

WORKSHOPS

Making the Case for SDM in 2027

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Cristian Antonelli, *Universita degli Studi dell'Aquilla, Italy*
Yoshinari Awaji, *National Inst of Information & Communications Technology, Japan*
Nicolas Fontaine, *Nokia Bell Labs, USA*
Sheryl Woodward, *AT&T, USA*

Scaling Datacenter Bandwidth: Novel Optics, Advanced Electronics or New Architectures?

ORGANIZERS

Piero Gambini, *STMicroelectronics, Switzerland*
Ming-Jun Li, *Corning, USA*
Ilya Lyubomirsky, *Facebook, USA*

SHORT COURSES

SC205 – Integrated Electronic Circuits for Fiber Optics

Y. K. Chen, *Nokia Bell Labs, USA*

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, *Corning, USA*

SC408 – Space Division Multiplexing

Roland Ryf, *Nokia Bell Labs, USA*

D5: FIBER-OPTIC AND WAVEGUIDE DEVICES AND SENSORS

INVITED SPEAKERS

Tailoring the Response of Stimulated Brillouin Scattering in Fibers

John Ballato, *Clemson Univ, USA*

Adiabatically-Tapered Fiber Mode Multiplexers

Tim Birks, *University of Bath, UK*

Application of Multicore Optical Fibers in Astronomy

Nemanja Jovanovic, *Subaru Telescope — National Astronomical Observatory of Japan, Japan*

The Photonic Lantern

Sergio Leon Saval, *University of Sydney, Australia*

Nitride-Based Devices at Telecom Wavelengths

Eva Monroy, *CEA-Grenoble, France*

Multicore Fiber Sensors

Joel Villatoro, *Universidad del Pais Vasco, Spain*

Fiber Optics for Short Pulse Biomedical Imaging

Chris Xu, *Cornell University, USA*

TUTORIAL

High Power Fiber Lasers

Jens Limpert, *Institute of Applied Physics Abbe Center of Photonics*
Friedrich Schiller, *University Jena, Germany*

WORKSHOPS

Making the Case for SDM in 2027

ORGANIZERS

Cristian Antonelli, *Universita degli Studi dell'Aquilla, Italy*
Yoshinari Awaji, *National Inst of Information & Communications Technology, Japan*
Nicolas Fontaine, *Nokia Bell Labs, USA*
Sheryl Woodward, *AT&T, USA*

SHORT COURSES

SC451 – Fiber-based Devices and Sensors [NEW]

Zuyuan He, *Shanghai Jiao Tong University, China*
William Shroyer, *SageRider, Inc., USA*

SC453A and B – [Hands-on] Fiber Optic Handling, Measurements and Component Testing [NEW]

Steve Baldo, *Seikoh Gikken, USA*
Loic Cherel, *Data-Pixel, France*
Keith Foord, *Greenlee Communications, USA*
Chris Heisler, *OptoTest Corporation, USA*

TRACK S
Systems and Subsystems

S1: ADVANCES IN DEPLOYABLE SUBSYSTEMS AND SYSTEMS

INVITED SPEAKERS

Lessons Learned from CFP2-ACO System Integrations, Interoperability Testing and Deployments

Hacene Chaouch, *Arista, USA*

Lessons Learned from Open Line System Deployments

Valey Kamalov, *Google, USA*

Design Considerations for a Digital Subcarrier Coherent Optical Modem

David Krause, *Infinera, Canada*

Power Consumption in a Metro Optimized DSP

Theodor Kupfer, *Cisco, Germany*

Power and Reach Trade-offs Increasing the Optical Channel Rate Through Higher Baud Rate and Modulation Order

Christian Rasmussen, *Acacia, USA*

Embedded Optics to Decrease Power Consumption

Rob Stone, *Broadcom, USA*

Specifying an Open Cable

Tim Stuch, *Microsoft, USA*

TUTORIAL

PAM4 Signaling for Intra-data Center and Data Center to Data Center Connectivity (DCI)

Sudeep Bhoja, *Inphi, USA*

PANELS

Are Electronic & Optical Components Ready to Support Higher Symbol Rates & Denser Constellations?

ORGANIZERS

Rich Baca, *Microsoft, USA*

Gary Nicholl, *Cisco, Canada*

Coherent Interoperability Beyond QPSK — Is it Needed and What Will it Take?

ORGANIZERS

Marc Bohn, *Coriant GmbH & Co. KG, Germany*

Sebastian Randel, *Nokia Bell Labs, USA*

Direct vs. Coherent Detection for Metro-DCI

ORGANIZERS:

Robert Griffin, *Oclaro, UK*

Tom Issenhuth, *Microsoft, USA*

SHORT COURSES

SC114 – Passive Optical Networks (PONs) Technologies

Frank J. Effenberger, *Futurewei Technologies, USA*

SC178 – Test and Measurement for Data Center/Short Reach Communications

Greg D. Le Cheminant, *Keysight Technologies, USA*

SC203 – 100 Gb/s and Beyond Transmission Systems, Design and Design Trade-offs

Martin Birk, *AT&T Labs, USA*

Benny Mikkelsen, *Acacia Communications, USA*

SC328 – Standards for High-speed Optical Networking

Stephen Trowbridge, *Nokia Bell Labs, USA*

SC369 – Test and Measurement for Metro and Long-haul Communications

Michael Koenigsmann and Bernd Nebendahl, *Keysight, Germany*

SC384 – Background Concepts of Optical Communication Systems

Alan Willner, *Univ. of Southern California, USA*

SC428 – Link Design for Short Reach Optical Interconnects
Petar Pepeljugoski, *IBM Research, USA*

SC429 – Flexible Networks
David Boertjes, *Ciena, Canada*

SC442 – Free Space Switching Systems: PXC and WSS [NEW]
David Neilson, *Nokia Bell Labs, USA*

S2: OPTICAL, PHOTONIC AND MICROWAVE PHOTONIC SUBSYSTEMS

INVITED SPEAKERS

Ultra-Broadband Optical Signal Processing Using AlGaAs-OI Devices
Michael Galili, *DTU Fotonik, Denmark*

Speeding up FFTs by Coherent Optical Processing
Bill Kuo, *UCSD, USA*

Solitons and Nonlinear Fourier Transformation
Akihiro Maruta, *Osaka University, Japan*

Reconfigurable Photonic Signal Processing Circuits
Andrea Melloni, *Politecnico di Milano, Italy*

Semiconductor-Based Terahertz Photonics for Industrial Applications
Kyung Hyun Park, *Terahertz Basic Research Section, ETRI, Korea*

Record-Capacity Transmission Experiments Enabled by Using Optical Frequency Combs
Benjamin Puttnam, *NICT Japan, Japan*

Optical Injection Locking for Carrier Phase Recovery and Regeneration
Radan Slavik, *University of Southampton, UK*

Signal Processing Subsystems for RF Photonics and Beyond
Keith Williams, *Naval Research Laboratories, USA*

TUTORIAL

Photonic Integrated Circuit for Optical Signal Processing
Michael Watts, *MIT, USA*

WORKSHOPS

Frequency Combs for Communications — Real Potential or Hype?

ORGANIZERS
Toshihiko Hirooka, *Tohoku University, Sendai, Japan*
Christian Koos, *Karlsruhe Institute of Technology, Germany*
Michael Vasilyev, *University of Texas at Arlington, USA*

SHORT COURSES

SC114 – Passive Optical Networks (PONs) Technologies

Frank J. Effenberger, *Futurewei Technologies, USA*

SC261 – ROADM Technologies and Network Applications

Thomas Strasser, *Nistica Inc., USA*

SC372 – Building Green Networks: New Concepts for Energy Reduction

Rod Tucker, *University of Melbourne, Australia*

SC442 – Free Space Switching Systems: PXC and WSS [NEW]

David Neilson, *Nokia Bell Labs, USA*

SC443 – Optical Amplifiers: From Fundamental Principles to Technology Trends [NEW]

Shu Namiki, *National Institute of Advanced Industrial Science and Technology (AIST), Japan*
Michael Vasilyev, *University of Texas at Arlington, USA*

SC446 – [Hands-on] Characterization of Coherent Opto-electronic Subsystems [NEW]

Robert Palmer and Harald Rohde, *Coriant, Germany*

S3: RADIO-OVER-FIBER, FREE-SPACE AND NON-TELECOM SYSTEMS

INVITED SPEAKERS

Towards Programmable Microwave Photonics Processors

Jose Capmany, *Universitat Politècnica de València, Spain*

Lifi Based on LED

Nan Chi, *Fudan University, China*

Techniques for Highly Linear RoF Links

Tom Clark, *JHU Applied Physics Laboratory, USA*

LIGO Experiments

Eric Gustafsson, *LIGO Caltech, USA*

UAV Aerial Network and Free Space Communication

Hamid Hemmati, *Facebook, USA*

Trends and Progress in Optical Wireless Communications

Steve Hranilovic, *McMaster University, Canada*

Advanced Mobile Fronthaul Interfaces and Architectures for Next Generation Mobile Data Networks

Chih-Lin I, *China Mobile, China*

High Bitrate mmw Links Using RoF Technologies

Atsushi Kanno, *NICT Japan, Japan*

Applications for Optical Components in THz Systems

Andreas Stoehr, *Universität Duisburg-Essen, Germany*

Mm-Wave Based Bio-Sensing and Data Communications Using Low-Cost CMOS Circuits

Hua Wang, *Georgia Tech, USA*

TUTORIAL

THz Communication Systems

Tadao Nagatsuma, *Osaka University, Japan*

WORKSHOP

Optical Wireless — Can it Become a Gigabit Wireless Alternative? Capabilities, Opportunities, Challenges and Threats

ORGANIZERS:
Volker Jungnickel, *Fraunhofer Heinrich-Hertz Institute, Germany*
Ton Koonen, *Eindhoven University of Technology, The Netherlands*
Thas Nirmalathas, *University of Melbourne, Australia*

SHORT COURSES

SC160 – Microwave Photonics

Vince Urick, *DARPA, USA*

SC217 – Optical Fiber Based Solutions for Next Generation Mobile Networks

Dalma Novak, *Pharad, LLC., USA*

SC445 – Visible Light Communications — the High Bandwidth Alternative to WiFi

Harald Haas, *LiFi Research and Development Centre, The University of Edinburgh, UK*

S4: DIGITAL AND ELECTRONIC SUBSYSTEMS

INVITED SPEAKERS

Signal Processing for Spectrally Efficient Systems

Gabriel Charlet, *Nokia Bell Labs, France*

Extreme Speed Power-DAC : Leveraging InP DHBT for Ultimate Capacity Single-Carrier Optical Transmissions

Agnieszka Konczykowska, *III-V Lab, France*

Advances in Coded Modulation for Optical Communications

Gerhard Kramer, *Tech. Univ. Of Munich, Germany*

Optical Transmission Techniques for Emerging 5G Fronthaul, DCI and Metro Applications

Gordon Ning Liu, *Huawei, China*

Linear vs. Nonlinear Frequency-Division Multiplexing

Mansoor Yousefi, *Télécom Paris-Tech, France*

Advanced Algorithm for High-baud Rate Signal Generation and Detection

Junwen Zhang, *ZTE (TX) Inc., USA*

Recent Advances in Short Reach Systems

Kangping Zhong, *Hong Kong Polytechnic University, Hong Kong*

TUTORIALS

Digital Coherent Transceivers: From Algorithm Design to Economics

Maxim Kuschnerov, *Coriant, Germany*

High-Order Modulation Formats and DSP for Direct Detection Optical Communications Systems

David Plant, *Mc Gill University, Canada*

PANEL

Coherent Interoperability Beyond QPSK — Is it Needed and What Will it Take?

ORGANIZERS
Marc Bohn, *Coriant GmbH & Co. KG, Germany*
Sebastian Randel, *Nokia Bell Labs, USA*

WORKSHOPS

Capacity Crunch: When, Where and What Can Be Done?

ORGANIZERS:
Dmitri Foursa, *TE Subcom, USA*
David Millar, *Mitsubishi Electric Research Labs, USA*
Qunbi Zhuge, *Ciena Corporation, Canada*

Will Machine Learning and Big-data Analytics Relieve Us from the Complexity of System and Network Engineering?

ORGANIZERS

Sethumadhavan Chandrasekhar, *Nokia Bell Labs, USA*
Neil Guerrero Gonzalez, *Universidad Nacional de Colombia, Colombia*
Massimo Tornatore, *Politecnico di Milano, Italy*

SHORT COURSES

SC105 – Modulation Formats and Receiver Concepts for Optical Transmission Systems

Peter Winzer and Chandrasekhar Sethumadhavan, *Nokia Bell Labs, USA*

SC205 – Integrated Electronic Circuits and Signal Processing for Fiber Optics

Y. K. Chen, *Nokia Bell Labs, USA*

SC261 – ROADM Technologies and Network Applications

Thomas Strasser, *Nistica Inc., USA*

SC341 – Multi-carrier Modulation: DMT, OFDM and Superchannels

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

SC390 – Introduction to Forward Error Correction

Frank Kschischang, *University of Toronto, Canada*

SC393 – Digital Signal Processing for Coherent Optical Systems

Chris Fludger, *Cisco Optical GmbH, Germany*

SC446 – [Hands-on] Characterization of Coherent Opto-electronic Subsystems [NEW]

Robert Palmer and Harald Rohde, *Coriant, Germany*

SC452 – FPGA Programming for Optical Subsystem Prototyping [NEW]

Noriaki Kaneda and Laurent Schmalen, *Nokia Bell Labs, USA*

S5: DIGITAL TRANSMISSION SYSTEMS

INVITED SPEAKERS

Information Rates and Post-FEC BER Prediction in Optical Fiber Communications

Alex Alvarado, *Eindhoven University of Technology, The Netherlands*

Probabalistic Shaping for Reach and Rate Adaptation

Fred Buchali, *Nokia Bell Labs, Germany*

Advanced Technologies for High Capacity (>50T) Transoceanic Distance Transmission Systems

Jin-Xing Cai, *TE SubCom, USA*

Fast DAC Solutions for Future High Symbol Rate Systems

Xi Chen, *Nokia Bell Labs, USA*

Direct-Detection Solutions for 100G and Beyond

Michael Eiselt, *ADVA Optical Networking, Germany*

Advances in Quantum Cryptography and Further Applications in Quantum Communication

Nicolas Gisin, *Geneva University, GAP Optique, Switzerland*

Digital Nonlinear Compensation Technologies in Coherent Optical Communication Systems

Hisao Nakashima, *Fujitsu Limited, Japan*

Signal Processing Techniques for DMD and MDL Mitigation in Mode-Division Multiplexed Transmission

Kohki Shibahara, *NTT Network Innovation Laboratories, Japan*

On the Use of GMI to Compare Advanced Modulation Formats

Shaoliang Zhang, *NEC, USA*

TUTORIAL

High-Capacity Transmission Using High-Density Multicore Fiber

Toshio Morioka, *Technical University of Denmark, Denmark*

WORKSHOPS

Capacity Crunch: When, Where and What Can Be Done?

ORGANIZERS

Dmitri Foursa, *TE Subcom, USA*
David Millar, *Mitsubishi Electric Research Labs, USA*
Qunbi Zhuge, *Ciena Corporation, Canada*

Making the Case for SDM in 2027

ORGANIZERS

Cristian Antonelli, *Universita degli Studi dell'Aquilla, Italy*
Yoshinari Awaji, *National Inst of Information & Communications Technology, Japan*
Nicolas Fontaine, *Nokia Bell Labs, USA*
Sheryl Woodward, AT&T, USA

Will Machine Learning and Big-data Analytics Relieve Us from the Complexity of System and Network Engineering?

ORGANIZERS

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Neil Guerrero Gonzalez, *Universidad Nacional de Colombia, Colombia*
Massimo Tornatore, *Politecnico di Milano, Italy*

PANEL

Quantum Communication Programs Around the World

ORGANIZERS

Andrew Lord, *BT Labs, UK*
Masahide Sasaki, *National Inst of Information & Comm Tech, Japan*

SHORT COURSES

SC102 – WDM in Long-Haul Transmission Systems

Neal S. Bergano, *TE Subcom, USA*

SC203 – 100 Gb/s and Beyond Transmission Systems, Design and Design Trade-offs

Martin Birk, *AT&T Labs, Res., USA*
Benny Mikkelsen, *Acacia Communications, USA*

SC261 – ROADM Technologies and Network Applications

Thomas Strasser, *Nistica Inc., USA*

SC327 – Modeling and Design of Fiber-optic Communication Systems

Rene-Jean Essiambre, *Nokia Bell Labs, USA*

SC341 – Multi-carrier Modulation: DMT, OFDM and Superchannels

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

SC384 – Background Concepts of Optical Communication Systems

Alan Willner, *Univ. of Southern California, USA*

SC393 – Digital Signal Processing for Coherent Optical Systems

Chris Fludger, *Cisco Optical GmbH, Germany*

SC395 – Modeling and System Impact of Optical Transmitter and Receiver Components

Robert Palmer and Harald Rohde, *Coriant, Germany*

SC408 – Space Division Multiplexing in Optical Fibers

Roland Ryf, *Nokia Bell Labs, USA*

SC429 – Flexible Networks

David Boertjes, *Ciena, Canada*

TRACK N
Networks, Applications and Access

N1: ADVANCES IN DEPLOYABLE NETWORKS AND THEIR APPLICATIONS

INVITED SPEAKERS

Two Decades of Progress in Optical Networks

Rod Alferness, *UC Santa Barbara, USA*

The Evolution of Outside Plant Architectures with Network Convergence and New PON Technologies

Kevin Bourg, *Corning, USA*

Progress in Enabling E-Science Applications with Dynamic Optical Networks

Cees De Laat, *University of Amsterdam, The Netherlands*

Multinational Submarine Networks

Lara Garrett, *TyComm, USA*

Experiences and Future Perspective of China Telecom on Optical Access Technologies and Networks

Chengbin Shen, *Shanghai Institute of China Telecom, China*

The DARPA 100G RF Link Program: What to do When There is No Fiber

Ted Woodward, *DARPA, USA*

Managing Service Quality in a Software Defined Network

Jennifer Yates, *AT&T, USA*

TUTORIAL

YANG, Netconf, Restconf — What is This All About and How is it Used for Multi-layer Networks

Carl Moberg, *Cisco, USA*

PANELS

Lessons Learned From Global PON Deployment

ORGANIZERS

Frank Effenberger, *FutureWei Technologies, Inc. USA*

Thomas Pfeiffer, *Nokia Bell Labs, Germany*

Quantum Communication Programs Around the World

ORGANIZERS

Andrew Lord, *BT Labs, UK*

Masahide Sasaki, *National Inst of Information & Comm Tech, Japan*

Transport SDN — What is Ready, What is Missing?

ORGANIZERS

Doug Freimuth, *IBM, USA*

Karthik Sethuraman, *NEC, USA*

WORKSHOPS

Making the Case for SDM in 2027

ORGANIZERS

Cristian Antonelli, *Universita degli Studi dell'Aquilla, Italy*

Yoshinari Awaji, *National Inst of Information & Communications Technology, Japan*

Nicolas Fontaine, *Nokia Bell Labs, USA*

Sheryl Woodward, *AT&T, USA*

White Box Optics: Will it Kill or Encourage Innovations?

ORGANIZERS

Chongjin Xie, *Alibaba Group, USA*

Filippo Cugini, *CNIT, Italy*

David Boertjes, *Ciena, Canada*

SHORT COURSES

SC176 – Metro Network: The Transition to Ethernet
Loudon Blair, *Ciena Corp., USA*

SC216 – An Introduction to Optical Network Design and Planning
Jane M. Simmons, *Monarch Network Architects, USA*

SC359 – Datacenter Networking 101
Cedric Lam and Hong Liu, *Google, USA*

SC447 – The Life Cycle of an Optical Network: From Planning to Decommissioning [NEW]
Andrew Lord, *BT Labs, BT, UK*

N2: CONTROL AND MANAGEMENT OF OPTICAL AND MULTILAYER NETWORKS

INVITED SPEAKERS

Efficient and Verifiable Service Function Chaining in NFV: Current Solutions and Emerging Challenges
Sujata Banerjee, *HP, USA*

Control Plane Architectures for Flexi-Grid Networks
Oscar González de Dios, *Telefónica, Spain*

Optical Physical Layer SDN, Enabling Physical Layer Programmability through Open Control Systems
Dan Kilper, *University of Arizona, USA*

High Performance SDN Hardware Architectures and Their Uses in the Evolving Transport Network
Yatish Kumar, *CTO, Corsa Technologies, Canada*

SDN/NFV Futures at Verizon
Bryan Larish, *Verizon, USA*

Packet-Optical Integration and Trend Towards White Boxes
Hans-Jürgen Schmidtke, *Facebook, USA*

Segment Routing
Walid Wakim, *Cisco Systems, USA*

TUTORIAL

ONF SDN Architecture for Transport Networks
Lyndon Ong, *Ciena, USA*

PANEL

Transport SDN — What is Ready, What is Missing?
ORGANIZERS:
Doug Freimuth, *IBM, USA*
Karthik Sethuraman, *NEC, USA*

SHORT COURSES

SC386 – The SDN Evolution of Wireline Transport due to Cloud Services and DCI Innovations
Loukas Paraschis, *Cisco Systems, Inc., USA*

SC411 – Multi-layer Interaction in the Age of Agile Optical Networking
Ori A. Gerstel, *Sedona Systems, Israel*

SC429 – Flexible Networks
David Boertjes, *Ciena, Canada*

SC430 – SDN Standards and Applications
Lyndon Y. Ong, *Ciena, USA*

SC448 – An Introduction to the Control and Management of Optical Networks [NEW]
Ramon Casellas, *CTTC, Spain*

SC449 – [Hands-on] Introduction to Writing Transport SDN Applications [NEW]
Ricard Vilalta, *CTTC, Spain*
Karthik Sethuraman, *NEC Corporation of America, USA*

N3: NETWORK ARCHITECTURES AND TECHNO-ECONOMICS

INVITED SPEAKERS

Routing and Regenerator Planning in a Carrier's Core ROADM Network

Angela Chiu, *AT&T Labs, USA*

Bandwidth Variable Transmitter for Software Defined Networks

Arnaud Dupas, *Nokia Bell-Labs, France*

How Much Transport Grooming is Needed in the Age of Flexible Clients?

Antonio Eira, *Instituto de Telecomunicações (IT), Coriant Portugal, Portugal*

Techniques for Agile Network Re-Optimization Following Traffic Fluctuations

Tomohiro Hashiguchi, *Fujitsu Limited, Japan*

Abstraction and Programmability in Optical 5G Transport

Paolo Monti, *KTH Royal Institute of Technology, Sweden*

Leveraging FlexGrid and Advanced Modulations in a Multi-Layer Inter-Datacenter Network

Alexander Nikolaidis, *Facebook, Inc., USA*

Network Fault Protection Performance Enhancement by Using Elastic Optical Path

Hitoshi Takeshita, *Green Platform Research Labs., NEC Corporation, Japan*

Open Hardware Infrastructure for Optical Network Function Virtualisation: A Disaggregated Approach

Georgios Zervas, *University of Bristol, UK*

TUTORIAL

Beyond 100G OTN Interface Standardization

Steve Gorshe, *Microsemi Corporation, USA*

WORKSHOPS

White Box Optics: Will it Kill or Encourage Innovations?

ORGANIZERS

David Boertjes, *Ciena, Canada*
Filippo Cugini, *CNIT, Italy*
Chongjin Xie, *Alibaba Group, USA*

Will Machine Learning and Big-data Analytics Relieve Us from the Complexity of System and Network Engineering?

ORGANIZERS

Sethumadhavan Chandrasekhar, *Nokia Bell Labs, USA*

Neil Gonzales, *Tyndall National Institute, Ireland*

Massimo Tornatore, *Politecnico di Milano, Italy*

SHORT COURSES

SC176 – Metro Network: The Transition to Ethernet

Loudon Blair, *Ciena Corp., USA*

SC216 – An Introduction to Optical Network Design and Planning

Jane M. Simmons, *Monarch Network Architects, USA*

SC328 – Standards for High-speed Optical Networking

Stephen Trowbridge, *Nokia Bell Labs, USA*

SC372 – Building Green Networks: New Concepts for Energy Reduction

Rod S. Tucker, *University of Melbourne, Australia*

SC384 – Background Concepts of Optical Communication Systems

Alan Willner, *Univ. of Southern California, USA*

SC429 – Flexible Networks

David Boertjes, *Ciena, Canada*

SC447 – The Life Cycle of an Optical Network: From Planning to Decommissioning [NEW]

Andrew Lord, *BT Labs, BT, UK*

N4: OPTICAL ACCESS NETWORKS FOR FIXED AND MOBILE SERVICES

INVITED SPEAKERS

Technologies for Convergence of Fixed and Mobile Access: An Operator's Perspective

Carsten Behrens, *T-Labs, Germany*

Frequency Division Multiplexing for Very High Capacity Transmission in Bandwidth-Limited Systems

Pierpaolo Boffi, *Politecnico di Milano, Italy*

Mobile Fronthaul Architecture and Technologies: a RAN Equipment Assessment

Philippe Chanclou, *Orange Lab, France*

100G OFDM-PON for Converged 5G Networks: From Concept to Realtime Prototype

Kai Habel, *Fraunhofer HHI, Germany*

FTTH Deployment — Google Fiber's Perspective

Cedric Lam, *Google, USA*

Fast-Tunable TWDM-PON

Yumiko Senoo, *NTT, Japan*

Challenges and Technology Innovations for Interconnections in Smart Cities

Rodney Tucker, *University of Melbourne, Australia*

DSP-Based Multi-Band Schemes for High Speed Next Generation Optical Access Networks

Jinlong Wei, *Huawei Technologies Duesseldorf GmbH, European Research Center, Germany*

TUTORIALS

Architecture and Technologies for the Current and Future Radio Access Network

Erik Dahlman, *Ericsson, Sweden*

Programmable Access and Edge Cloud Architecture

Peter Vetter, *Nokia Bell Labs, USA*

PANEL

Lessons Learned From Global PON Deployment

ORGANIZERS

Frank Effenberger, *FutureWei Technologies, Inc. USA*

Thomas Pfeiffer, *Nokia Bell Labs, Germany*

WORKSHOPS

Connected OFCity Challenge: Optical Innovations for Future Services in a Smart City

ORGANIZERS

Denis Khotimsky, *Verizon, USA*

Domaniç Lavery, *University College London, UK*

Jun Shan Wey, *LightNotes Consulting, USA*

Optical Wireless — Can it Become a Gigabit Wireless Alternative? Capabilities, Opportunities, Challenges and Threats

ORGANIZERS

Volker Jungnickel, *Fraunhofer Heinrich-Hertz Institute, Germany*

Ton Koonen, *Eindhoven University of Technology, The Netherlands*

Thas Nirmalathas, *University of Melbourne, Australia*

SHORT COURSES

SC114 – Passive Optical Networks (PONs) Technologies

Frank J. Effenberger, *Futurewei Technologies, USA*

SC444 – Optical Communication Technologies for 5G Wireless [NEW]

Xiang Liu, *Futurewei Technologies, USA*

DSN6: OPTICAL DEVICES, SUBSYSTEMS AND NETWORKS FOR DATACOM AND COMPUTERCOM

INVITED SPEAKERS

Scalable and Low Cost Data Center Architecture for Cloud Services

Edward Crabbe, *Oracle, USA*

Energy Efficiency Measures for Future Core Networks

Jaafar Elmirghani, *Leeds University, UK*

Optical Interconnects: Design and Analysis

Azita Emami, *Caltech, USA*

Applications of Silicon Photonics in Datacenters

Michael Hochberg, *Coriant Advanced Technology Group, USA*

Microprocessor Chip with Photonics I/O

Chen Sun, *Ayar Labs, Inc., UC Berkeley, USA*

Optical Interconnects for Computercomm

Michael Tan, *HP, USA*

Datacenter Interconnects and Networking

Ryohei Urata, *Google, USA*

TUTORIAL

Optical Technologies in Support of Computing Systems

George Papen, *University of California at San Diego, USA*

WORKSHOPS

III-V + Silicon: To Integrate or to Co-package?

ORGANIZERS

Mike Larson, *Lumentum, USA*
Anders Larsson, *Chalmers University of Technology, Sweden*
Bert Offrein, *IBM, Switzerland*

Processors and Switches with Integrated Optical Engines — Researchers' Dream or a Commercial Reality Soon?

ORGANIZERS

Dominic Goodwill, *Huawei Technologies Canada Co Ltd, Canada*
Ken Morito, *Fujitsu Laboratories Ltd., Japan*
Sam Palermo, *Texas A&M University, USA*
Thomas Schrans, *Rockley Photonics, USA*

White Box Optics: Will it Kill or Encourage Innovations?

ORGANIZERS

David Boertjes, *Ciena, Canada*
Filippo Cugini, *CNIT, Italy*
Chongjin Xie, *Alibaba Group, USA*

Scaling Datacenter Bandwidth: Novel Optics, Advanced Electronics or New Architectures?

ORGANIZERS

Piero Gambini, *STMicroelectronics, Switzerland*
Ming-Jun Li, *Corning, USA*
Ilya Lyubomirsky, *Facebook, USA*

SHORT COURSES

SC178 – Test and Measurement for Data Center/Short Reach Communications

Greg D. Le Cheminant, *Keysight Technologies, USA*

SC359 – Datacenter Networking 101

Cedric Lam and Hong Liu, *Google, USA*

SC385 – Optical Interconnects for Extreme-scale Computing

Keren Bergman, *Columbia University, USA*
John Shalf, *Lawrence Berkeley National Laboratory, USA*

SC386 – The SDN Evolution of Wireline Transport due to Cloud Services and DCI Innovations

Loukas Paraschis, *Cisco Systems, Inc., USA*

SC428 – Link Design for Short Reach Optical Interconnects

Petar Pepeljugoski, *IBM Research, USA*

SC431 – Photonic Technologies in the Data Center

Clint Schow, *UC Santa Barbara, USA*

new short courses for 2017

SC442 – Free Space Switching Systems: PXC and WSS

Monday, 20 March, 9:00 - 12:00

INSTRUCTOR

David Neilson, *Nokia Bell Labs, USA*

This course provides an overview of photonic cross connects (PXC) and wavelength selective switches (WSS), how they work and what the design trade-offs are.

SC443 – Optical Amplifiers: From Fundamental Principles to Technology Trends

Sunday, 19 March, 9:00 - 12:00

INSTRUCTORS

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

Michael Vasilyev, *University of Texas at Arlington, USA*

This course provides a comprehensive overview of optical amplification technologies and platforms used for optical communication systems and networks.

SC444 – Optical Communication Technologies for 5G Wireless

Sunday, 19 March, 9:00 - 12:00

INSTRUCTOR

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

This course provides an up-to-date overview of the emerging optical communication technologies for next-generation wireless networks such as 5G.

SC445 – Visible Light Communications — the High Bandwidth Alternative to WiFi

Monday, 20 March, 13:30 - 16:30

INSTRUCTOR

Harald Haas, *LiFi Research and Development Centre, The University of Edinburgh, UK*

After an introduction to optical wireless communications and visible light communication, this course discusses the relationship between VLC and LiFi (light fidelity), introducing the major advantages, existing challenges and recent advancements of each.

SC446 – [Hands-on] Characterization of Coherent Opto-electronic Subsystems

Monday, 20 March, 8:30 - 12:30

INSTRUCTORS

Robert Palmer and Harald Rohde, *Coriant, Germany*

This course discusses the main characteristics of lasers, IQ modulators and coherent receivers, and the advantages and disadvantages of different measurement techniques.

SC447 – The Life Cycle of an Optical Network: From Planning to Decommissioning

Sunday, 19 March, 9:00 - 12:00

INSTRUCTOR

Andrew Lord, *BT Labs, BT, UK*

This course demonstrates the entire optical network life cycle from an operator's point of view — from the initial requirements, vendor selection, network design and planning, installation and provisioning, operation and management and final use as a legacy technology before retiring the network.

SC448 – An Introduction to the Control and Management of Optical Networks

Monday, 20 March, 13:30 - 16:30

INSTRUCTOR

Ramon Casellas, *CTTC, Spain*

This is an introductory course covering the use of control plane (CP) technology to control optical networks. The main drivers, uses, key benefits and current trends around the concept of a control plane, are presented, focusing on transport networks and covering the access, aggregation and core network segments.

SC449 – [Hands-on] Introduction to Writing Transport SDN Applications [NEW]

Monday, 20 March, 13:30 - 17:30

INSTRUCTORS

Ricard Vilalta, *CTTC, Spain*
Karthik Sethuraman, *NEC Corporation of America, USA*

This course takes participants through all the key steps in writing a simple but complete SDN application which could be used to control an optical transport network through the ONF Transport API.

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

Monday, 20 March, 9:00 - 12:00

INSTRUCTORS

Twan Korthorst, *Phoenix Software, Netherlands*
Arne Leinse, *LioniX International, Netherlands*
Kevin Williams, *Eindhoven University of Technology, Netherlands*

This course identifies the distinctive features of packaging and testing for optical integrated modules when compared with discrete optical products and integrated electrical systems.

SC451 – Fiber-based Devices and Sensors

Sunday, 19 March, 17:00 - 20:00

INSTRUCTORS

Zuyuan He, *Shanghai Jiao Tong University, China*
William Shroyer, *SageRider, Inc., USA*

The first half of the course reviews basic fiber-based devices and typical "point" sensors followed by a focus on the principles, limiting factors and performance trade-offs of "distributed" fiber optic sensing.

SC452 – FPGA Programming for Optical Subsystem Prototyping

Monday, 20 March, 13:30 - 17:30

INSTRUCTORS

Noriaki Kaneda, *Nokia Bell Labs, USA*
Laurent Schmalen, *Nokia Bell Labs, Germany*

This course covers the key applications, approaches, functionalities and capabilities of FPGA prototyping in optical subsystems.

SC453A and SC453B – [Hands-on] Fiber Optic Handling, Measurements and Component Testing

453A: Monday, 20 March, 8:30 - 12:30

453B: Monday, 20 March, 13:30 - 17:30

INSTRUCTORS

Steve Baldo, *Seikoh Gikken, USA*
Loic Cherel, *Data-Pixel, France*
Keith Foord, *Greenlee Communications, USA*
Chris Heisler, *OptoTest Corporation, USA*

This Short Course focuses on the practical aspects of working with fiber optic components and instrumentation used to make optical performance characterization measurements. Through four fully-equipped stations you will get the basic concepts and hands-on use of basic component testing, launch condition effects on multimode fibers, fiber optic test overview, end face polishing and interferometry measurements on single and multi-fiber connectors.

SC454 – [Hands on] Silicon Photonic Circuits and Systems Design

Monday, 20 March, 13:30 - 17:30

INSTRUCTORS

Lukas Chrostowski, *University of British Columbia, Canada*
Chris Doerr, *Acacia Communications, USA*

This course describes state-of-the-art silicon photonic systems including commercialized and research results. The course provides tutorials on the design of such systems including identifying target specifications, compact models for silicon photonic components, photonic circuit modeling, manufacturing variability analysis and layout for fabrication and packaging. Temporary licenses to Lumerical Solutions and open-source tools are provided during and after the workshop for participants to complete a design.

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Pluggable Optics — How is the Ecosystem and Value Chain Changing?

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SDN and Optics — What is the Business Case?

Network Operator Summit

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

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Zhang Chengliang, *Vice President, China Telecom, China*

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Next-Generation Access and Metro — Where Is the Money?

PANEL II

Optical Mobile Network Access

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