2007 OFC/NFOEC Postdeadline Paper Abstracts

Session	Room	Category
Postdeadline Session A	**Ballroom A**	**8–Optical Processing and Analog Subsystems** **10–Emerging Applications and Access Solutions**
Postdeadline Session B	**Ballroom B**	**9–Networks** **7–Transmission Subsystems and Network Elements**
Postdeadline Session C	**Ballroom C**	**6–Digital Transmission Systems** **NFOEC–Network Systems; Network Technologies**
Postdeadline Session D	**Ballroom D**	**5–Optoelectronic Devices** **2–Amplifiers and Lasers: Fiber or Waveguide**
Postdeadline Session E	**Ballroom E**	**1–Fibers and Optical Propagation Effects** **3–Signal Measurement Distortion Compensation Devices and Sensors** **4–Switching Wavelength-Selective Filtering and Routing Devices**

Ballroom A
5:30 p.m.–7:18 p.m.
Postdeadline Session A

► **Category 8: Optical Processing and Analog Subsystems**
Dalma Novak; Pharad, USA, *Presider*

PDP1 • 5:30 p.m.
Cascadability and Wavelength Tunability Assessment of a 2R Regeneration Device Based on a 8 Channel Saturable Absorber Module, *Laurent Bramerie[1], Quang-Trung Le[1], Sebastien Lobo[1], Mathilde Gay[1], Michel Joindot[1], Jean-Claude Simon[1], Alain Poudoulec[2], Michiel Van der Keur[2], Christophe Devemy[2], David Massoubre[3], Jean-Louis Oudar[3], Guy Aubin[3], Jean Dion[4], Alexandre Shen[4], Jean Decobert[4]; [1]CNRS UMR FOTON 6082, France, [2]Yenista Optics, France, [3]LPN-CNRS, France, [4]Alcatel Thales III-V Lab, France.* We report the first pigtailed chip saturable absorber which has been implemented with 8 independent fibers using a cost effective coupling technique. The cascadability and wavelength tunability assessment have been experimentally demonstrated at 42.6 Gbit/s.

PDP2 • 5:42 p.m.
All-Optical NRZ-OOK to RZ-QPSK Error-Free Conversion at 10.7 Gsymbol/s Using Parallel SOA-MZI OOK/BPSK Converters in a MZI Configuration, *Ken Mishina[1], Suresh Malinda Nissanka[1], Akihiro Maruta[1], Shunsuke Mitani[2], Kazuyuki Ishida[2], Katsuhiro Shimizu[2], Tatsuo Hatta[1,2,3], Ken-ichi Kitayama[1]; [1]Osaka Univ., Japan, [2]Mitsubishi Electric Corp., Japan, [3]Optoelectronic Industry and Technology Development Association, Japan.* We have proposed a novel all-optical NRZ-OOK/RZ-QPSK modulation format converter using parallel SOA-MZIs in a MZI configuration. We experimentally demonstrate an error-free operation of the proposed modulation format conversion at 10.7 Gsymbol/s.

PDP3 • 5:54 p.m.
Coherent Receiver Based on a Broadband Optical Phase-Lock Loop, *Anand Ramaswamy[1], Leif A. Johansson[1], Jonathan Klamkin[1], Colin Sheldon[1], Hsu-Feng Chou[2], Mark J. Rodwell[1], Larry A. Coldren[1], John E. Bowers[1]; [1]Univ. of California at Santa Barbara, USA, [2]LuminentOIC, USA.* We propose and demonstrate a 1.45GHz bandwidth optical phase-lock loop receiver for linear optical phase demodulation. Using the receiver in a link application, a spurious free dynamic range of 125 dBHz$^{2/3}$ is measured at 300MHz.

► **Category 10: Emerging Applications and Access Solutions**
Raghu Ranganathan; Ciena Corp., USA, *Presider*

PDP4 • 6:06 p.m.
Field Trial of IP over 160 Gbit/s Colored-Optical-Packet Switching Network with Transient-Response-Suppressed EDFA and 320 Gbit/s through Put Optical Packet Switch Demonstrator, *Hideaki Furukawa[1], Naoya Wada[1], Hiroaki Harai[1], Yoshinari Awaji[1], Makoto Naruse[1], Hideki Otsuki[1], Tetsuya Miyazaki[1], Katsuya Ikezawa[2], Akira Toyama[2], Naoki Itou[2], Hiroshi Shimizu[2], Hiroshi Fujinuma[3], Hatsushi Iiduka[3], Eddie Kong[4], Peter Chan[4], Ray Man[4], Gabriella Cincotti[5], Ken-ichi Kitayama[6]; [1]Natl. Inst. of Information and Communications Technology, Japan, [2]Yokogawa Electric Co., Japan, [3]NTT Electronics Co., Japan, [4]Amonics Ltd., Hong Kong, [5]Univ. Roma Tre, Italy, [6]Osaka Univ., Japan.* Field trial of 160 (16λ x 10) Gbit/s, fine granularity, colored-optical-packet switching network with >87km transmission using a novel transient-response-suppressed EDFA, multiple all-optical-label-processor, arrayed burst-mode Tx./Rx., and IP/optical-packet converter is demonstrated for the first time.

PDP5 • 6:18 p.m.
160 Gb/s All-Optical Packet Switched Network Operation over 110 km of Field Installed Fiber, *Javier Herrera[1,2], Oded Raz[1], Eduward Tangdiongga[1], Yong Liu[1], Javier Marti[2], Francisco Ramos[2], Graeme Maxwell[3], Alistair Poustie[3], Hans Christian Mulvad[4], Martil T. Hill[1], Huug de Waardt[1], Djan G. Khoe[1], Antonious M. J. Koonen[1], Harm J. S. Dorren[1]; [1]COBRA Res. Inst., Netherlands, [2]Nanophotonics Technology Ctr., Spain, [3]Ctr. for Integrated Photonics, UK, [4]COM•DTU, Technical Univ. of Denmark, Denmark.* We report on the first demonstration of all-optical packet switching over a 110 km field installed fiber link. The packet routing is accomplished solely by photonic control circuits. Error-free operation at acceptable penalties is shown.

PDP6 • 6:30 p.m.
24-Gb/s Transmission over 730 m of Multimode Fiber by Direct Modulation of an 850-nm VCSEL Using Discrete Multi-Tone Modulation, *Jeffrey Lee[1], F. Breyer[2], S. Randel[3], J. Zeng[1], F. Huijskens[1], H. P. A. van den Boom[1], A. M. J. Koonen[1], N. Hanik[4]; [1]Eindhoven Univ. of Technology, Netherlands, [2]Inst. for Communications Engineering, Munich Univ. of Technology, Germany, [3]CT IC 2, Siemens AG, Germany, [4]Inst. for Communications Engineering, Technical Univ. of Munich, Germany.* Using discrete multi-tone modulation with up to 64-QAM mappings, 24-Gb/s transmission is experimentally demonstrated over 730 m of MMF by direct modulation of an 850-nm VCSEL and direct detection with a multimode receiver.

PDP7 • 6:42 p.m.
Demonstration of High Spectral Efficiency Coherent OCDM Using DQPSK, FEC, and Integrated Ring Resonator-Based Spectral Phase Encoder/Decoders, *Paul Toliver, Anjali Agarwal, Tom Banwell, Ron Menendez, Janet Jackel, Shahab Etemad; Telcordia Technologies, Inc., USA.* We have demonstrated record spectral efficiency (0.87 b/s/Hz, properly accounting for FEC overhead) for a spectral phase-encoded coherent OCDM system using DQPSK modulation and FEC for 8-channels x 10 Gb/s within an 80 GHz window.

PDP8 • 6:54 p.m.
A 10.3125-Gbit/s SiGe BiCMOS Burst-Mode 3R Receiver for 10G-EPON Systems, *Susumu Nishihara[1,2], Shunji Kimura[1], Tomoaki Yoshida[1], Makoto Nakamura[2], Jun Terada[3], Kazuyoshi Nishimura[3], Keiji Kishine[3], Kazutoshi Kato[2], Yusuke Ohtomo[3], Takamasa Imai[1]; [1]NTT Access Network Service Systems Labs, NTT Corp., Japan, [2]NTT Photonics Labs, NTT Corp., Japan, [3]NTT Microsystem Integration Labs, NTT Corp., Japan.* The first burst-mode 3R receiver operating at 10 Gbit/s using monolithic ICs is reported. We achieved -18.0-dBm sensitivity and 75-ns responsivity. This is the highest sensitivity among all reported 10-Gbit/s-class burst-mode receivers.

PDP9 • 7:06 p.m.
Enhanced System Performance of an RSOA Based Hybrid WDM/TDM-PON System Using a Remotely Pumped Erbium-Doped Fiber Amplifier, *Jungmi Oh[1], Sanggeun Koo[1], Donghan Lee[1], Soo Jin Park[2]; [1]Chungnam Natl. Univ., Republic of Korea, [2]Korea Telecom, Republic of Korea.* 1.25Gb/s upstream transmission with a low seed channel power of -14 dBm is feasible over a total reach of 25 km for the 512 ONUs by employing a remotely pumped optical amplifier.

Ballroom B
5:30 p.m.–7:18 p.m.
Postdeadline Session B

► **Category 9: Networks**
Dominic A. Schupke; Siemens, Germany, *Presider*

PDP10 • 5:30 p.m.
On Reliable and Cost-Efficient Design of Carrier-Grade Ethernet in a Multi-Line Rate Network under Transmission-Range Constraints, *Marwan M. Batayneh[1], Biswanath Mukherjee[1,2], Dominic A. Schupke[2], Marco Hoffmann[2], Andreas Kirstaedter[2]; [1]Univ. of California at Davis, USA, [2]Siemens Networks GmbH & Co. KG, Germany.* We study cost-efficient design of reliable Next-Generation Carrier-Grade Ethernet under different link rates and signal-transmission-range constraints. Experimental results from our proposed algorithms show significant improvement on the network cost compared to other designs.

PDP11 • 5:42 p.m.
Control of Channel Power Instabilities in Transparent Networks Using Scalable Mesh Scheduling, *D. C. Kilper, C. A. White, S. Chandrasekhar; Bell Labs, Alcatel-Lucent, USA.* Experiments on transparent, constant-gain-controlled amplifier networks show that WDM channel-power instability, which grows from competing adjustments on multiple nodes, can be controlled. Simulations demonstrate a fast, stable node control algorithm scalable to large mesh networks.

PDP12 • 5:54 p.m.
Achieving Multi-Rate Dynamic Sub-Wavelength Service Provisioning in Strongly Connected Light-Trails (SLiTs), *Ashwin A. Gumaste[1], Nasir Ghani[2], Paresh Bafna[1], Akhil Lodha[1], Sumit Srivastava[1], Tamal Das[1], Si Qing Zheng[3]; [1]Indian Inst.of Technology, India, [2]Tennessee Tech Univ., USA, [3]Univ. of Texas at Dallas, USA.* We report on achieving multi-rate, dynamic, sub-wavelength provisioning of VoIP, video, storage and data services over Strongly connected Light-trails (SLiTs). A novel service differentiation subsystem and associated control are discussed and test-bed results are presented.

PDP13 • 6:06 p.m.
Hybrid CWDM Amplifier Shared by Multiple TDM PONs, *P. P. Iannone[1], H. H. Lee[1], K. C. Reichmann[1], X. Zhou[1], M. Du[2], B. Palsdottir[2], K. Feder[2], P. Westbrook[2], K. Brar[2], J. Mann[2], L. Spiekman[3]; [1]AT&T Labs-Res., USA, [2]OFS Fitel, USA, [3]Alphion, USA.* We demonstrate four conventional TDM PONs with symmetric 2.5-Gb/s line rate and extended reach, sharing a common infrastructure. A hybrid SOA-Raman amplifier provides 150-nm bi-directional gain over the PONs' downstream and upstream CWDM wavelength plan.

PDP14 • 6:18 p.m.
100km Field Trial of 1.24 Tbit/s, Spectral Efficient Asynchronous 5 WDM×25 DPSK-OCDMA Using One Set of 50×50 Ports Large Scale En/Decoder, *Xu Wang[1], Naoya Wada[1], Nobuyuki Kataoka[1], Tetsuya Miyazaki[1], Gabriella Cincotti[2], Ken-ichi Kitayama[3]; [1]Natl. Inst. of Information and Communications Technology, Japan, [2]Univ. of Roma Tre, Italy, [3]Osaka Univ., Japan.* Field trial of Terabit payload capacity (1.24 Tb/s), spectral efficient (SE>0.41 bit/s/Hz) asynchronous WDM/DPSK-OCDMA system is demonstrated for the first time with a set of large scale (50×50 ports, 500 Gchip/s) multi-port en/decoder and FEC.

► **Category 7: Transmission Subsystems and Network Elements**
Michel W. Chbat; Siemens Communications, Inc., USA, *Presider*

PDP15 • 6:30 p.m.
20-Gb/s OFDM Transmission over 4,160-km SSMF Enabled by RF-Pilot Tone Phase Noise Compensation, *Sander L. Jansen, Itsuro Morita, Noriyuki Takeda, Hideaki Tanaka; KDDI R&D Labs Inc., Japan.* We introduce a novel method to compensate for local oscillator offset and phase-noise in coherent-OFDM systems and report continuously detectable transmission at 20-Gb/s data rate (25.8 Gb/s before coding) over 4,160-km SSMF without dispersion compensation.

PDP16 • 6:42 p.m.
Wavelength Division Multiplexing (WDM) and Polarization Mode Dispersion (PMD) Performance of a Coherent 40Gbit/s Dual-Polarization Quadrature Phase Shift Keying (DP-QPSK) Transceiver, *Charles Laperle, Bernard Villeneuve, Zhuhong Zhang, Doug McGhan, Han Sun, Maurice O'Sullivan; Nortel, Canada.* We report the measured WDM performance and PMD tolerance of a coherent 40Gbit/s DP-QPSK transceiver at 50-GHz minimum channel spacing in a 40-channel, 40-span test bed comprised of 3200 km of uncompensated G.652 fiber.

PDP17 • 6:54 p.m.
Efficient Mitigation of Fiber Impairments in an Ultra-Long Haul Transmission of 40Gbit/s Polarization-Multiplexed Data, by Digital Processing in a Coherent Receiver, *Gabriel Charlet[1], Jeremie Renaudier[1], Massimiliano Salsi[2], Haik Mardoyan[1], Patrice Tran[1], Sebastien Bigo[1]; [1]Alcatel-Lucent Res. and Innovation, France, [2]Dept. di Ingegneria dell Informazione, Univ. di Parma, Italy.* In a 4080km-long link, where large PMD is emulated, we demonstrate that distortions from PMD/PDL and dispersion can be contained when sending 40Gbit/s Polarization-Multiplexed QPSK data and recovering them with coherent detection and digital processing.

PDP18 • 7:06 p.m.
Experimental Demonstrations of 20 Gbit/s Direct-Detection Optical OFDM and 12 Gbit/s with a Colorless Transmitter, *Brendon J. C. Schmidt, Arthur J. Lowery, Jean Armstrong; Monash Univ., Australia.* We show experimentally that optical orthogonal frequency division multiplexing using a simple direct-detection receiver can post-compensate for dispersion in 320km of SMF28e fiber at 20 Gbit/s. We also demonstrate a colorless transmitter at 12 Gbit/s.

Ballroom C
5:30 p.m.–7:30 p.m.
Postdeadline Session C

► **Category 6: Digital Transmission Systems**
Takashi Mizuochi; Mitsubishi Electric Corp., Japan, *Presider*

PDP19 • 5:30 p.m.
25.6-Tb/s C+L-Band Transmission of Polarization-Multiplexed RZ-DQPSK Signals, *Alan H. Gnauck[1], Gabriel Charlet[2], Patrice Tran[2], Peter Winzer[1], Chris Doerr[1], Joe Centanni[1], Ellsworth Burrows[1], Tetsuya Kawanishi[3], Takahide Sakamoto[3], Kaoru Higuma[4]; [1]Alcatel-Lucent, USA, [2]Alcatel-Lucent, France, [3]Natl. Inst. of Information and Communications Technologies, Japan, [4]Sumitomo Osaka Cement, Japan.* We demonstrate record 25.6-Tb/s transmission over 240 km using 160 WDM channels on a 50-GHz grid in the C+L bands. Each channel contains two polarization-multiplexed 85.4-Gb/s RZ-DQPSK signals, yielding a spectral efficiency of 3.2 b/s/Hz.

PDP20 • 5:42 p.m.
20.4-Tb/s (204 × 111 Gb/s) Transmission over 240 km Using Bandwidth-Maximized Hybrid Raman/EDFAs, *Hiroji Masuda[1], Akihide Sano[1], Takayuki Kobayashi[1], Eiji Yoshida[1], Yutaka Miyamoto[1], Yoshinori Hibino[1], Kazuo Hagimoto[1], Takashi Yamada[2], Tomohumi Furuta[2], Hiroyuki Fukuyama[2]; [1]NTT Network Innovation Labs, Japan, [2]NTT Photonics Labs, Japan.* We demonstrate 20.4-Tb/s (204×111-Gb/s) transmission over 240 km (3×80 km) using CSRZ-DQPSK format and gain-flattened hybrid Raman/EDFAs. The bandwidth of the amplifiers is maximized to 10.2 THz using phosphorous co-doped silicate EDFAs.

PDP21 • 5:54 p.m.
First Experimental Demonstration of Single-Polarization 50-Gbit/s 32-Level (QASK and 8-DPSK) Incoherent Optical Multilevel Transmission, *Nobuhiko Kikuchi, Kohei Mandai, Kenro Sekine, Shinya Sasaki; Central Res. Lab, Hitachi Ltd., Japan.* The feasibility of 50 Gbit/s 32-level optical multilevel signaling for high-speed optical fiber transmission is demonstrated in a 100-km DSF transmission for the first time, with digital joint coupled differential detection and digital signal processing.

PDP22 • 6:06 p.m.
10 x 111 Gbit/s, 50 GHz Spaced, POLMUX-RZ-DQPSK Transmission over 2375 km Employing Coherent Equalisation, *C. R. S. Fludger[1], T. Duthel[1], D. van den Borne[2], C. Schulien[1], E-D. Schmidt[3], T. Wuth[3], E. de Man[3], G. D. Khoe[2], H. de Waardt[2]; [1]CoreOptics GmbH, Germany, [2]Eindhoven Univ. of Technology, Netherlands, [3]Siemens Networks/PSE GmbH & Co. KG, Germany.* We demonstrate spectrally efficient (2.0 b/s/Hz) transmission of 10 x 111 Gbit/s polarisation multiplexed 27.75 Gbaud RZ-DQPSK over 2375km of SSMF and 5 add-drop nodes. Coherent equalisation enables polarisation recovery and high chromatic dispersion tolerance.

PDP23 • 6:18 p.m.
1 Tbit/s (10x107 Gbit/s ETDM) NRZ Transmission over 480km SSMF, *Karsten Schuh, B. Junginger, Eugen Lach, G. Veith; Alcatel-Lucent Res. and Innovation, Germany.* We report on 10x107 Gbit/s serial ETDM DWDM transmission lab system with 200 GHz channel spacing and decorrelated DWDM channels. System performance is assessed in an error free transmission experiment over 480 km SSMF.

PDP24 • 6:30 p.m.
10 x 107-Gb/s NRZ-DQPSK Transmission at 1.0 b/s/Hz over 12 x 100 km Including 6 Optical Routing Nodes, *Peter J. Winzer[1], Greg Raybon[1], S. Chandrasekhar[1], Christopher R. Doerr[1], Tetsuya Kawanishi[2], Takahide Sakamoto[2], K. Higuma[3]; [1]Bell Labs, Alcatel-Lucent, USA, [2]Natl. Inst. of Information and Communications Technologies (NICT), Japan, [3]Sumitomo Osaka Cement, Japan.* We demonstrate 100-Gb/s high spectral efficiency long-haul optical networking. Ten co-polarized 107-Gb/s electronically multiplexed/demultiplexed NRZ-DQPSK channels at 1.0 b/s/Hz spectral efficiency are sent over 1200 km, with an optical routing node every 200 km.

PDP25 • 6:42 p.m.
2Tb/s (200x10Gb/s) Data Transmission over 7,300km Using 150km Spaced Repeaters Enabled by ROPA Technology, *Dmitri G. Foursa, Alan Lucero, Carl R. Davidson, Jin-Xing Cai, William Anderson, Yi Cai, Patrick C. Corbett, William W. Patterson, Haifeng Li, Matthew Mazurczyk, Morten Nissov, Alexei N. Pilipetskii, Neal Bergano; Tyco Telecommunications, USA.* We transmitted 2Tb/s (200x10Gb/s) with 60% spectral efficiency over 7,300km with 4dB FEC margin using 150km spaced ROPA assisted repeaters. The same capacity, spectral efficiency and margin was achieved at 3,100km using 40Gb/s channels.

PDP26 • 6:54 p.m.
Polarization-Multiplexed 1 Gsymbol/s, 64 QAM (12 Gbit/s) Coherent Optical Transmission over 150 km with an Optical Bandwidth of 2 GHz, *Masataka Nakazawa, Jumpei Hongo, Keisuke Kasai, Masato Yoshida; Res. Inst. of Electrical Communication, Tohoku Univ., Japan.* A polarization-multiplexed 1 Gsymbol/s, 64 QAM coherent signal carrying 12 Gbit/s data was successfully transmitted over 150 km using heterodyne PLL detection. The spectral efficiency in a single-channel reached as high as 6 bit/s/Hz.

► **NFOEC: Network Systems and Network Technologies**
Ann Von Lehmen; Telcordia Technologies, USA, *Presider*

PDP27 • 7:06 p.m.
Field Deployment of WDM 10 Gb/s Capacity over 10,757 km of Reconfigured Portion of SAm-1 Cable System, *Ekaterina Golovchenko, Lutfur Rahman, Bamdad Bakhshi, Dmitiry Kovsh, Fernando Idrovo, Stuart Abbott; Tyco Telecommunications, USA.* Existing segments of Sam-1 submarine Cable System, each < 5,000 km, were concatenated making the world longest 10,757-km commercial WDM 10 GB/s link. 10-Gb/s transponders were successfully deployed, and DPSK transponders allow 480 Gb/s capacity.

PDP28 • 7:18 p.m.
0.8-bit/s/Hz Terabit Transmission at 42.7-Gb/s Using Hybrid RZ-DQPSK and NRZ-DBPSK Formats over 16 x 80 km SSMF Spans and 4 Bandwidth-Managed ROADMs, *Sethumadhavan Chandrasekhar, Xiang Liu, Daniel Kilper, Christopher R. Doerr, Alan H. Gnauck, Ellsworth C. Burrows, Lawrence L. Buhl; Bell Labs, Alcatel-Lucent, USA.* We demonstrate for the first time the use of asymmetric-bandwidth interleaver based ROADM to transmit 42.7-Gb/s channels on a 50-GHz grid. Mixed DBPSK and DQPSK formats enabled 0.8-bit/s/Hz terabit transmission over 1280-km including 4 ROADMs.

Ballroom D
5:30 p.m.–7:30 p.m.
Postdeadline Session D

► **Category 5: Optoelectronic Devices**
Ed Murphy; JDS Uniphase, USA, *Presider*

PDP29 • 5:30 p.m.
High-Power Parallel-Fed Traveling Wave Photodetector Module for >100 GHz Applications, *Andreas Beling[1], Joe C. Campbell[1], Heinz-Gunter Bach[2], Gebre G. Mekonnen[2], Reinhard Kunkel[2], Thomas Eckhardt[2], Detlef Schmidt[2]; [1]Univ. of Virginia, USA, [2]Fraunhofer-Inst. für Nachrichtentechnik, Heinrich-Hertz-Inst., Germany.* For the first time, a traveling wave photodetector with integrated optical power splitter for >80Gbit/s systems is demonstrated. The fully packaged detector provides Vp>0.5V, 0.24A/W, a polarization dependence of 0.2dB and broadband impedance match.

PDP30 • 5:42 p.m.
107-Gbit/s Opto-Electronic Receiver with Hybrid Integrated Photodetector and Demultiplexer, *Jeffrey H. Sinsky[1], Andrew L. Adamiecki[1], Lawrence Buhl[1], Greg Raybon[1], Peter Winzer[1], Oliver Wohlgemuth[2], Marcus Duelk[1], Chris R. Doerr[1], Andreas Umbach[3], Heinz-Gunter Bach[4], Detlef Schmidt[4]; [1]Bell Labs, Alcatel-Lucent, USA, [2]Alcatel-Lucent, Germany, [3]u²t Photonics, Germany, [4]Fraunhofer-Inst. für Nachrichtentechnik, Heinrich-Hertz-Inst., Germany.* We present a 107-Gbit/s receiver using hybrid integration of a photodiode and electronic demultiplexer. Using an ETDM system and long bit pattern, we achieve the lowest reported required OSNR, 21 dB for a 10-3 BER.

PDP31 • 5:54 p.m.
A Four-Channel, 10 Gbps Monolithic Optical Receiver in 130nm CMOS with Integrated Ge Waveguide Photodetectors, *Gianlorenzo Masini, Giovanni Capellini, Jeremy Witzens, Cary Gunn; Luxtera, Inc., USA.* We introduce the world's first multi-channel, high-speed optical receiver using Ge waveguide photodetectors monolithically integrated in the CMOS process. The integrated receivers achieves a sensitivity of -14.2dBm (10-12 BER) at 10Gbps and 1550nm.

PDP32 • 6:06 p.m.
Monolithic, 10 and 40 Channel InP Receiver Photonic Integrated Circuits with On-Chip Amplification, *Radhakrishnan Nagarajan, Masaki Kato, Sheila Hurtt, Andrew Dentai, Jacco Pleumeekers, Peter Evans, Mark Missey, Ranjani Muthiah, Arnold Chen, Damien Lambert, Prashant Chavarkar, Atul Mathur, Johan Bäck, Sanjeev Murthy, Randal Salvatore, Charles Joyner, Jon Rossi, Richard Schneider, Mehrdad Ziari, Fred Kish, David Welch; Infinera, USA.* We demonstrate a high speed, high channel count, dense wavelength division multiplexed (DWDM), InP receiver photonic integrated circuit with on-chip amplification.

PDP33 • 6:18 p.m.
Compact EAM-Based InP DQPSK Modulator and Demonstration at 80 Gb/s, *Christopher R. Doerr, Liming Zhang, Andrew L. Adamiecki, Nicholas J. Sauer, Jeffrey H. Sinsky, Peter J. Winzer; Bell Labs, Alcatel-Lucent, USA.* We demonstrate a compact InP DQPSK modulator at 80 Gb/s. It consists of two lumped-electrode electro-absorption modulators in a three-arm interferometer and measures only 1.7 mm × 0.3 mm.

PDP34 • 6:30 p.m.
Slow Light Modulator with Bragg Reflector Waveguide, *Go Hirano[1], Fumio Koyama[1], Koichi Hasebe[1], Takahiro Sakaguchi[1], Nobuhiko Nishiyama[1], Catherine Caneau[2], Chung-En Zah[2]; [1]Tokyo Inst. of Technology, Japan, [2]Corning Inc., USA.* We demonstrate slow-light modulators with Bragg reflectors for the first time. The device length could be reduced to 20µm, which is 10 times smaller than conventional electro-absorption-modulators. A novel coupling-scheme for slow-light gives 2dB insertion-loss.

PDP35 • 6:42 p.m.
Electrically Pumped InP-Based Microdisk Lasers Integrated with a Nanophotonic SOI Waveguide Circuit, *Joris Van Campenhout[1], Pedro Rojo Romeo[2], Philippe Regreny[2], Christian Seassal[2], Dries Van Thourhout[1], Léa Di Cioccio[3], Jean-Marc Fedeli[3], Roel Baets[1]; [1]Ghent Univ., Belgium, [2]Inst. des Nanotechnologies de Lyon, France, [3]CEA LETI-Minatec, France.* We have achieved electrically-injected continuous-wave lasing in InP-based microdisk structures coupled to a sub-micron silicon-on-insulator wire waveguide, fabricated through bonding technology. The threshold current was 0.6 mA with up to 7 μW continuous-wave output power.

PDP36 • 6:54 p.m.
Monolithic 40 Gbps Separate Absorption and Modulation Mach-Zehnder Wavelength Converter, *Anna Tauke-Pedretti[1], Matthew Dummer[1], Matthew N. Sysak[1], Jonathon S. Barton[1], James W. Raring[2], Jonathan Klamkin[1], Larry A. Coldren[1]; [1]Univ. of California at Santa Barbara, USA, [2]Sandia Natl. Labs, USA.* The first 40 Gbps monolithic SAM Mach-Zehnder wavelength converter is demonstrated. The device exhibits a bandwidth in excess of 20 GHz and power penalties less than 2.5 dB at 40 Gbps using NRZ data.

► **Category 2: Amplifiers and Lasers: Fiber or Waveguide**
Atul Srivastava; OneTerabit, USA, *Presider*

PDP37 • 7:06 p.m.
Parametric Translation of a Phase-Coded Signal over a Record Spectral Range, *Rui Jiang[1], Nikola Alic[1], Robert E. Saperstein[1], Eygeny Myslivets[1], Colin J. McKinstrie[2], Stojan Radic[1]; [1]Dept. of Electrical and Computer Engineering, Univ. of California at San Diego, USA, [2]Bell Labs, Alcatel-Lucent, USA.* A phase-modulated optical signal was translated over record 1065nm, from the near-infrared band to the visible band. A Gbps phase-modulated signal was received in an error-free manner in the visible band for the first time.

PDP38 • 7:18 p.m.
Energetic Soliton Self-Frequency Shift below 1300 nm over a 240 nm Range in a Solid Silica-Based Fiber, *Jennifer H. Lee[1], James van Howe[1], Chris Xu[1], Siddharth Ramachandran[2], Samir Ghalmi[2]; [1]Cornell Univ., USA, [2]OFS Labs, USA.* We demonstrate 240 nm of soliton self-frequency shift of greater than 1 nJ-energy pulses in a higher-order mode fiber. A shifted soliton of 91 fs pulsewidth and 1.05 nJ pulse energy is measured.

Ballroom E
5:30 p.m.–7:18 p.m.
Postdeadline Session E

► **Category 1: Fibers and Optical Propagation Effects**
Ming-Jun Li; Corning Inc., USA, *Presider*

PDP39 • 5:30 p.m.
Compact Electrically Controlled Broadband Liquid Crystal Photonic Bandgap Fiber Polarimeter for 1550nm, *Thomas T. Alkeskjold, Anders Bjarklev; COM•DTU Dept. of Communications, Optics and Materials, Technical Univ. of Denmark, Denmark.* We demonstrate a compact liquid crystal photonic bandgap fiber based polarimeter for 1550nm wavelength integrated in a double silicon v-groove assembly for low-cost integration in an optical fiber communication or sensing system.

PDP40 • 5:42 p.m.
Cavity Effects in Slow-Light Systems, *Cesar Jáuregui, P. Petropoulos, D. J. Richardson; Optoelectronics Res. Ctr., UK.* Interferometric effects can substantially modify the properties of a slow-light system. A ~100% delay enhancement corresponding to a group velocity of c/12 is achieved in a 2m-long Bifiber slow-light system based on Brillouin gain.

PDP41 • 5:54 p.m.
Reducing Confinement Loss in All-Silica Bragg Bandgap Fibers, *Kristopher J. Rowland, Shahraam Afshar V., Tanya M. Monro; Univ. of Adelaide, Australia.* We predict the existence of a low loss bandgap in hollow-core all-silica Bragg fibers. Approaches for scaling this gap to a range of operating wavelengths are evaluated.

► **Category 3: Signal Measurement Distortion Compensation Devices and Sensors**
Paul Westbrook; OFS Labs, USA, *Presider*

PDP42 • 6:06 p.m.
Silicon Waveguide Based Dispersion Compensation by Optical Phase Conjugation, *Simon Ayotte[1], Shengbo Xu[1], Haisheng Rong[1], Mario Paniccia[1], Oded Cohen[2]; [1]Intel Corp., USA, [2]Intel Corp., Israel.* We experimentally demonstrate the use of a silicon based optical phase conjugator for dispersion compensation, enabling transmission of 40 Gb/s optical data over 320 km of standard fiber with negligible power penalty.

PDP43 • 6:18 p.m.
Parametric Tunable Dispersion Compensation, *Shu Namiki; AIST, Japan.* An intrinsically ultra-fast, wide-band and -range tunable dispersion compensation is realized through parametric wavelength conversion in conjunction with dispersion slope fibers. The proposed scheme produces two orders of magnitude larger bandwidth-dispersion product than conventional ones.

PDP44 • 6:30 p.m.
Tunable Dispersion Trimming in Dynamic Wavelength Processor at 80 Gbit/s per Channel, *Michaël A. F. Roelens[1], Jeremy Bolger[1], Glenn Baxter[2], Steven Frisken[2], Simon Poole[2], Benjamin J. Eggleton[1]; [1]Univ. of Sydney, Australia, [2]Optium Australia, Australia.* We experimentally demonstrate dispersion compensation in a dynamic wavelength processor. At 80 Gbit/s, we have compensated for various amounts of dispersion (up to +/-60 ps/nm), to obtain error-free transmission in each of 4 WDM channels.

PDP45 • 6:42 p.m.
40-Gb/s Modulator with Monolithically Integrated Tunable Optical Dispersion Compensator, *Christopher R. Doerr, Liming Zhang, Lawrence L. Buhl, Nicholas J. Sauer, Andrew L. Adamiecki; Bell Labs, Alcatel-Lucent, USA.* We monolithically integrate a two-tap optical equalizer (OEQ) with an electro-absorption modulator on InP. Using this OEQ as a tunable optical dispersion compensator, we demonstrate a 40-Gb/s transmitter with a dispersion tolerance range of 280ps/nm.

PDP46 • 6:54 p.m.
Demonstration of a Multi-Turn Microfiber Coil Resonator, *Misha Sumetsky, Yury Dulashko, Michael Fishteyn; OFS Labs, USA.* We demonstrate, for the first time to our knowledge, a multi-turn microfiber coil resonator. It is wrapped onto an optical rod in a liquid medium having the refractive index equal to that of the rod.

► **Category 4: Switching Wavelength-Selective Filtering and Routing Devices**
Yoshinori Hibino; NTT Photonics Labs, Japan, *Presider*

PDP47 • 7:06 p.m.
15ns, High-Speed Wavelength Tuning over 16 nm Using Electrically Controllable PLZT Arrayed-Waveguide Grating, *Hiroyuki Tsuda[1], Mitsuhiro Yasumoto[1], Jiro Ito[1,2], Dwight Ritums[2], Jeff Dawley[2], David Kudzuma[2], Yuki Tanaka[2], Keiichi Nashimoto[2]; [1]Keio Univ., Japan, [2]Nozomi Photonics Co., Ltd., USA.* 15 ns, high-speed wavelength tuning from 1543 nm to 1559 nm has been successfully demonstrated using a PLZT arrayed-waveguide grating. The free spectral range and the 3-dB bandwidth were 32 nm and 2.3 nm, respectively.