Advance Program

Nonlinear Processing in Optical Fibers

Monday, 12 January 2009

ALL SESSIONS TO BE HELD IN INNSBRUCK

08.30 - 10.00

Session MC1: **JOINT PLENARY SESSION**
Session Chair: Göery N. Genty*, Tampere University of Technology, Tampere, Finland*

MC1.1 08.30 - 09.15 (Plenary)

10 Years of Nonlinear Optics in Photonic Crystal Fiber: Progress and Perspectives, J. M. Dudley*, University of Franche-Comte, Besancon, France*

2009 marks ten years since the first report of supercontinuum generation in photonic crystal fiber. These results have had wide-reaching impact, and continue to stimulate new research directions in nonlinear dynamics and nonlinear optics.

MC1.2 09.15 - 10.00 (Plenary)

Octave Spanning High Quality Super Continuum Generation using Ultrashort Pulse Fiber Laser ~Highly Functional Optical Control using Ultrafast Nonlinear Effects in Optical Fibers~, N. Nishizawa*, Osaka University, Suita, Osaka, Japan*

Ultrafast nonlinear phenomena in optical fibers have a lot of applications and exciting possibilities. In this talk, the achievements and recent results, such as high quality super continuum generation, pulse trapping, etc, are presented.

10.00 – 10.30 **COFFEE BREAK**

10.30 - 12.15

Session MC2: **PARAMETRIC AMPLIFICATION I**
Session Chair: Armand Vedadi, *Swansea University, Swansea, UK*

MC2.1 10.30 - 11.00 (Invited)

Tunable Optical Delays, N. Alic*, University of California - San Diego, La Jolla, CA, USA*

Recent record breaking all-optical delay experiments based on fiber parametric wavelength conversion and dispersion are presented and analyzed. Impairment mechanisms and ultimate limits of the delay-generating concept are outlined.

MC2.2 11.00 - 11.30 (Invited)

High Resolution Optical Waveform Sampling, P. A. Andrekson*, Chalmers University of Technology, Gothenburg, Sweden*

Techniques to analyze optical waveforms with high resolution are discussed. Emphasis is on all-optical sampling based on fiber-optic parametric amplifiers that offer high resolution with excellent sensitivity.

MC2.3 11.30 - 11.45

Demonstration of Parametric Amplification at 1µm by use of a Microstructured Optical Fiber, T. Sylvestre*, University of Franche-Comte, Besancon, France*, A. Mussot*, University of Sciences and Technologies of Lille 1, Villeneuve d'Ascq, France* and H. Maillotte*, University of Franche-Comte, Besancon, France*

Highly efficient parametric amplification and wavelength conversion have been demonstrated in the 1040-1090nm band by use of a microstructured optical fiber and Q-switched picosecond pulses.

MC2.4 11.45 - 12.00

BER Estimation of a Long-Haul Transmission System with Phase-Sensitive Amplifiers, A. Bogris*, University of Athens, Athens, Greece*, T. Kamalakis*, Harokopio University, Athens, Attika, Greece*, D. Syvridis and T. Sphicopoulos*, University of Athens, Athens, Greece*

The impact of phase-sensitive amplification on the BER performance of a phase-modulated link is semi-analytically estimated revealing its effectiveness in handling nonlinear phase noise.

MC2.5 12.00 - 12.15

Parametric Multicasting of 320 Gb/s OTDM Data, C.-S. Bres, A. O. Wiberg, J. R. Windmiller, N. Alic and S. Radic*, University of California - San Diego, La Jolla, CA, USA*

We report, for the first time, simultaneous wavelength conversion for WDM multicasting of an optical time division multiplexed single data channel at 320 Gb/s using a 2-pump fiber optic parametric amplifier.

MC2.6 12.15 - 12.30

Polarization-Insensitive 2R-Regenerator based on Two-Pump Fiber Optical Parametric Amplifier, P. Velanas, A. Bogris and D. Syvridis, *University of Athens, Athens, Greece*

An all optical parametric 2R-regenerator is numerically investigated in terms of its polarization insensitivity. The proposed device is based on the use of a fiber optical parametric amplifier with two pumps at orthogonal polarization states.

12.30 – 14.00 LUNCH BREAK - *Restaurant Guggeryllis*

14.00 - 15.30

Session MC3: SUPERCONTINUUM
Session Chair: John M. Dudley, *University of Franche-Comte, Besancon, France*

MC3.1 14.00 - 14.30 (Invited)

Towards a Thermodynamic Description of Supercontinuum Generation, S. Coen, *University of Auckland, Auckland, New Zealand*, B. Barviau, B. Kibler and A. Picozzi, *Université de Bourgogne, Dijon, France*

Based on the kinetic wave theory, we describe continuous-wave supercontinuum generation as a thermalization process, i.e., an irreversible evolution of the optical field towards a state of maximum nonequilibrium entropy.

MC3.2 14.30 - 15.00 (Invited)

CW Pump Supercontinuum Generation in Dispersion-Tailored Photonic Crystal Fibers, A. Mussot and A. Kudlinski, *University of Sciences and Technologies of Lille 1, Villeneuve d'Ascq, France*

Recent results concerning the control of the spectral extension of very high power supercontinum are presented. They are obtained with powerful Ytterbium fiber lasers and dispersion tailored photonic crystal fibers.

MC3.3 15.00 - 15.15

Route to Coherent Supercontinuum Generation in the Long Pulse Regime, G. N. Genty, *Tampere University of Technology, Tampere, Finland* and J. M. Dudley, *University of Franche-Comte, Besancon, France*

We study numerically the possibility of generating supercontinuum with improved stability characteristics through modulation of the input pulse. General guidelines for the choice of modulation parameters leading to coherent supercontinuum generation in the long pulse regime are given.

MC3.4 15.15 - 15.30

Enhanced Supercontinuum Generation using Multi-Fibre Ultra-Long Raman Cavities, A. El-Taher, M. Alcon-Camas, *Aston University, Birmingham, UK*, J. D. Ania-Castanon, *Instituto de Óptica, Madrid, Spain* and P. Harper, *Aston University, Birmingham, UK*

Supercontinuum generation in a TrueWave and SMF fibre based ultra-long Raman fibre laser cavity is investigated experimentally. By including SMF in the ultra-long Raman cavity, bandwidth and flatness can be dramatically improved.

15.30 – 16.00 COFFEE BREAK

16.00 - 17.45

Session MC4: TELECOM APPLICATIONS
Session Chair: Colin J. McKinstrie, *Alcatel-Lucent, Holmdel, NJ, USA*

MC4.1 16.00 - 16.30 (Invited)

Tapered Chalcogenide Fibers, B. J. Eggleton, *CUDOS, University of Sydney, Sydney, NSW, Australia*

ABSTRACT NOT AVAILABLE

MC4.2 16.30 - 17.00 (Invited)

Bismuth Oxide Fiber-based Tunable Delay Schemes using Nonlinear Optical Processing Techniques, C. Shu, *Chinese University of Hong Kong, Shatin, NT, Hong Kong* and M. P. Fok, *Princeton University, Princeton, NJ, USA*

Different tunable delay schemes are demonstrated using nonlinear approaches for wavelength conversion in a 35-cm highly nonlinear bismuth-oxide fiber together with dispersion in a linearly chirped fiber grating. The compact setup offers a low-latency operation.

MC4.3 17.00 - 17.15

All-Optical Modulation Format Conversion from NRZ-OOK to RZ-Multilevel APSK based on Fiber Nonlinearity, A. Maruta and S. Kitagawa, *Osaka University, Suita, Osaka, Japan*

We demonstrate an all-optical modulation format conversion from non-return-to-zero on-off-keying to return-to-zero multilevel amplitude-phase-shift-keying based on parametric amplification and cross-phase modulation in optical fibers.

MC4.4 17.15 - 17.30

640 Gbit/s Optical Time-Division Add-Drop Multiplexing in a Non-Linear Optical Loop Mirror, H. C. H. Mulvad, M. Galili, L. K. Oxenløwe, A. T. Clausen, P. Jeppesen, *Technical University of Denmark, Lyngby, Denmark* and L. Grüner-Nielsen, *OFS Fitel Denmark, Brøndby, Denmark*

Error-free 640~Gbit/s all-optical time-division add-drop multiplexing is demonstrated using a non-linear optical loop mirror. Both the add- and drop operations are achieved simultaneously by switching.

MC4.5 17.30 - 17.45

Reduction of Nonlinear Phase Noise in DPSK Transmission Using a NALM, C. Stephan, K. Sponsel, G. Onishchukov, B. Schmauss and G. Leuchs*, University of Erlangen-Nuremberg, Erlangen, Germany*

Performance of a NALM as phase-preserving amplitude 2R-regenerator in a DPSK transmission system has been investigated experimentally and numerically. A 3dB improvement of eye opening or alternatively a 3dB increase of fibre-launched power are demonstrated.

18.30 – 20.00 **WELCOME RECEPTION - CASINEUM**

Tuesday, 13 January 2009

08.30 - 10.00

Session TuC1: NONLINEAR PROCESSING I
Session Chair: Karsten Rottwitt, *Technical University of Denmark, Kgs. Lyngby, Denmark*

TuC1.1 08.30 - 09.00 (Invited)

Optical Signal Processing using Nonlinearity in Optical Fibers, F. Futami*, Fujitsu Laboratories Ltd., Kawasaki, Kanagawa, Japan*

High-speed all-optical signal processing by using nonlinearity in silica-based highly-nonlinear fibers is reviewed. Besides, our development of an optical parametrically amplified fiber switch that suppresses amplitude noise of 160-Gb/s OOK and DPSK data signals is introduced.

TuC1.2 09.00 - 09.30 (Invited)

Ultrafast All-Optical A/D Conversion using NOLMs with Multi-Period Transfer Functions, Y. Miyoshi, S. Takagi*, Osaka University, Suita, Osaka, Japan*, H. Nagaeda*, Trimatiz Limited, Sapporo, Hokkaido, Japan*, K.-I. Kitayama*, Osaka University, Suita, Osaka, Japan* and S. Namiki*, National Institute of Advanced Industrial Science and Technology, Tsukuba, Ibaraki, Japan*

We will present an ultrafast all-optical A/D conversion using multi-period transfer function of nonlinear optical loop mirrors (NOLMs) to overcome the speed bottleneck of electronic A/D converters.

TuC1.3 09.30 - 10.00 (Invited)

Nonlinear Processing in Bismuth Optical Fibers, J. H. Lee*, University of Seoul, Seoul, Korea*

Recent research activities on the state-of-the-art Bismuth oxide-based nonlinear optical fiber technology are reviewed from a perspective of practical implementation of all-optical nonlinear signal processing devices.

10.00 – 10.30 **COFFEE BREAK**

10.30 - 12.30

Session TuC2: EMERGING TOPICS
Session Chair: John D. Harvey, *University of Auckland, Auckland, New Zealand*

TuC2.1 10.30 - 11.00 (Invited)

Fibre-Optical Analogue of the Event Horizon, U. Leonhardt, T. G. Philbin, C. E. Kuklewicz, S. Robertson, S. Hill and F. Koenig*, University of St. Andrews, St. Andrews, Fife, UK*

The physics at the event horizon resembles the behavior of waves in moving media where the speed of the medium reaches the wave velocity. We use ultrashort pulses in microstructured optical fibers to demonstrate the formation of an artificial event horizon in optics.

TuC2.2 11.00 - 11.30 (Invited)

Nonlinear Optics in Photonics Nanowires, M. Lipson*, Cornell University, Ithaca, NY, USA*

Nonlinear optical processes benefit from high field intensities and long interaction lengths between light and the media within which it propagates. In bulk media, high optical intensities can be achieved by tightly focusing the light, but this leads to reduced interaction lengths.

TuC2.3 11.30 - 12.00 (Invited)

New Concepts based on Nonlinear Polarization Effects and Raman Amplification in Optical Fibers, S. Pitois, J. Fatome, A. Picozzi and G. Millot*, Université de Bourgogne, Dijon, France*

We report a theoretical analysis and experimental demonstration of a polarization attraction process at telecommunication wavelengths in isotropic optical fibers. The combined effects of polarization attraction and Raman amplification are also presented.

TuC2.4 12.00 - 12.15

Generation and Detection of Optical Rogue-wave-like Fluctuations in Fiber Raman Amplifiers, K. Hammani*, Institut Carnot de Bourgogne, Dijon, France*, C. Finot*, Université de Bourgogne, Dijon, France*, J. M. Dudley*, University of Franche-Comte, Besancon, France* and G. Millot*, Université de Bourgogne, Dijon, France*

Rogue wave-like statistics is reported in a fiber Raman amplifier. The pump-signal noise transfer leads to the development of large peak-power fluctuations following a powerlaw probability distribution. Discrimination of the rarest events is demonstrated.

TuC2.5 12.15 - 12.30

Convective Instabilities and Optical Rogue Waves in Fibers with CW Pumping, A. Mussot*, University of Sciences and Technologies of Lille 1, Villeneuve d'Ascq, France*

We have evidenced both experimentally and numerically the occurrence of optical rogue waves with continuous wave pumping. We have also shown that this system exhibit convective instability revealing its extreme sensitivity to initial conditions.

12.30 – 14.00 LUNCH BREAK - *Restaurant Guggeryllis*

14.00 - 15.30

Session TuC3: Parametric Amplification II
Session Chair: Jose M. Boggio, *State University of Campinas, Campinas, São Paulo, Brazil*

TuC3.1 14.00 - 14.30 (Invited)

Versatile Parametric Wavelength Exchange, K. K.-Y. Wong, H. K. Y. Cheung, R. W. L. Fung*, University of Hong Kong, Hong Kong*, C. H. Kwok*, University of Cambridge, Cambridge, Cambridgeshire, UK*, B. P. P. Kuo*, University of California - San Diego, La Jolla, CA, USA* and P. C. Chui*, University of Hong Kong, Hong Kong*

We review different functionalities that can be achieved by the fiber-based parametric wavelength exchange, such as all-optical demultiplexer in optical time-division multiplexing (OTDM) system and as packet-switch in optical networking.

TuC3.2 14.30 - 14.45

Continuous-Wave One-Pump Fiber Optical Parametric Amplifier with 230 nm Gain Bandwidth, A. Vedadi*,* M. Jamshidifar and M. E. Marhic*, Swansea University, Swansea, Wales, UK*

We report operation of a continuous-wave one-pump fiber OPA with net gain between 1460 nm and 1690 nm. We used a 50 m long step-index highly-nonlinear fiber, and 5 W of pump power.

TuC3.3 14.45 - 15.00

RZ Pulse Source for Optical Time Division Multiplexing Based on Self-Phase Modulation and Four Wave Mixing, A. O. Wiberg, C.-S. Bres, J. R. Windmiller, N. Alic and S. Radic*, University of California - San Diego, La Jolla, CA, USA*

We present an RF-driven two-stage 40 GHz RZ pulse source based on self-phase modulation and a fiber optic parametric amplifier, for generation of 1.1 ps pulses, and demonstrate generation of OTDM data up to 320 Gb/s.

TuC3.4 15.00 - 15.15

Wide-Band Generation of Pico-second Pulse via Idler Generation in Optical Parametric Amplifier, K. K.-Y. Wong*, University of Hong Kong, Hong Kong*, B. P. P. Kuo*, University of California - San Diego, La Jolla, CA, USA*, K. K. Y. Cheung and Y. Zhou*, University of Hong Kong, Hong Kong*

A wide-band generation of pico-second pulse using optical parametric amplifier (OPA) was demonstrated. High quality pulse was generated at 85-nm away from the pump with pulsewidth narrower than that of the pump.

15.30 – 16.00 COFFEE BREAK

16.00 - 17.45

Session TuC4: Fibers I
Session Chair: TBD

TuC4.1 16.00 - 16.30 (Invited)

Nonlinear Fibers: A Fiber Maker's Tool Box, A. Evans*, Corning, Inc., Corning, NY, USA*

Nonlinear fibers for optical signal processing have competing requirements. The main tools of a fiber maker are profile design and composition.

TuC4.2 16.30 - 17.00 (Invited)

Polarization Maintaining Highly Nonlinear Fibers and their Applications, L. Grüner-Nielsen*, OFS Fitel Denmark, Brøndby, Denmark*

Polarization maintaining highly nonlinear fibers based on elliptical core with high birefringence, precise and wide range dispersion control, and good splice performance are presented. Application results including high-speed wavelength conversion and supercontinuum generation are reported.

TuC4.3 17.00 - 17.30 (Invited)

Emerging Nonlinear Optical Fibers: Fabrication and Access to New Properties, T. M. Monro, H. Ebendorff-Heidepriem, W. Q. Zhang and S. Afshar V.*, University of Adelaide, Adelaide, SA, Australia*

We review the properties and limitations of conventional and emerging nonlinear fibers. We describe advances in soft glass microstructured fibers, including fabrication, the demonstration of extreme nonlinearity and a generalisation of the underpinning nonlinear theory.

TuC4.4 17.30 - 17.45

Fiber-Bragg-Grating Writing in Highly Nonlinear PM Fibers for Raman Fiber Lasers, A. Siekiera, R. Engelbrecht, E. Mueller and B. Schmauss*, University of Erlangen-Nuremberg, Erlangen, Germany*

We describe the fabrication of fiber-Bragg-gratings (FBG) in highly nonlinear polarization maintaining (PM) fibers with tight constraints concerning their spectral bandwidth and maximum reflectivity. The experimental setup for the inscription and writing results are presented.

Wednesday, 14 January 2009

08.30 - 09.45

Session WC1: FIBERS II
Session Chair: Man F. Yan, *OFS Laboratories, Murray Hill, NJ, USA*

WC1.1 08.30 - 09.00 (Invited)

Recent Advances in Highy Nonlinear Fiber, T. Sasaki*, Sumitomo Electric Industries Ltd., Yokohama, Kanagawa, Japan*

Recent advances on silica-based highly nonlinear fibers of their enhanced nonlinear coefficient and ultra uniform longitudinal chromatic dispersion uniformity are described. Practical applications utilizing these fibers such as enhanced wavelength conversion efficiency and supercontinuum generation are demonstrated.

WC1.2 09.00 - 09.30 (Invited)

Anomalous Dispersion in All-Silica Fibers, S. Ramachandran*, OFS Laboratories, Somerset, NJ, USA*

Recent demonstrations of anomalous dispersion in the visible and NIR wavelengths with conventional all-silica fibers, previously considered feasible primarily with small-A_{eff} microstructured fibers, has opened the door to a variety of linear and nonlinear applications.

WC1.3 09.30 - 09.45

SBS Shaping and Suppression by Arbitrary Strain Distributions Realized by a Fiber Coiling Machine, R. Engelbrecht, M. Mueller and B. Schmauss*, University of Erlangen-Nuremberg, Erlangen, Germany*

Experimental results of coiled fibers with a permanent arbitrary distribution of longitudinal strain along the fiber in order to shape or to suppress significantly the gain spectrum of Stimulated Brillouin Scattering (SBS) are presented.

10.00 – 10.30 COFFEE BREAK

10.30 - 12.30

Session WC2: REGENERATION
Session Chair: TBD

WC2.1 10.30 - 11.00 (Invited)

All-Optical Signal Regeneraion using Fiber Nonlinearity, M. Matsumoto*, Osaka University, Suita, Osaka, Japan*

Signal regeneration schemes using fiber nonlinearity are reviewed. Phase-preserving noise reduction of PSK signals using saturation of fiber-optic parametric amplifier is described in detail. Multi-channel reshaping by a single nonlinear medium is also discussed.

WC2.2 11.00 - 11.30 (Invited)

Simultaneous 2R Regeneration of WDM Signals in a Single Optical Fibre, P. Petropoulos, L. Provost, F. Parmigiani*, University of Southampton, Southampton, UK*, C. H. Kouloumentas*, Athens Information Technology Center, Peania, Athens, Greece*, C. Finot*, Université de Bourgogne, Dijon, France*, K. Mukasa*, Furukawa Electric Co. Ltd, Ichihara, Chiba, Japan*, P. Vorreau*, University of Karlsruhe, Karlsruhe, Germany*, I. Tomkos*, Athens Information Technology Center, Peania, Athens, Greece*, S. Sygletos, W. Freude, J. Leuthold*, University of Karlsruhe, Karlsruhe, Germany*, A. D. Ellis*, University College, Cork, Cork, Ireland* and D. J. Richardson*, University of Southampton, Southampton, UK*

Two experimental implementations of amplitude regeneration of WDM signals based on self-phase modulation (SPM) in optical fibres are discussed. The two examples differ in their approach of mitigation of inter-channel nonlinearities.

WC2.3 11.30 - 12.00 (Invited)

All-Optical Regeneration of Multi-Wavelength Signals, M. Vasilyev, P. G. Patki*, University of Texas at Arlington, Arlington, TX, USA* and T. Lakoba*, University of Vermont, Burlington, VT, USA*

We discuss our experimental results on 8x10 Gb/s all-optical 2R regeneration, enabled by the innovative dispersion management scheme in Mamyshev regenerator based on off-center filtering of self-phase-modulation-broadened signal spectrum.

WC2.4 12.00 - 12.15

All-Optical Arbitrary Wavelength Conversion with Signal Regeneration based on Slicing of Supercontinuum Spectrum, S. Oshiba and R. Moritomo*, Kyoto Institute of Technology, Kyoto, Japan*

Signal regeneration was demonstrated with a wavelength conversion in a wide wavelength range (±20 nm from an input signal) using a highly nonlinear fiber (HNLF) at normal dispersion. At the optimum pumping condition, Q-factor of converted signals can be increased up to 15.

WC2.5 12.15 - 12.30

Optimization of Dispersion-Imbalanced Loop Mirror for Phase-Preserving Amplitude Regeneration, T. Röthlingshöfer, K. Sponsel, C. Stephan, G. Onishchukov, B. Schmauss and G. Leuchs*, University of Erlangen-Nuremberg, Erlangen, Germany*

The adaptation and optimization of a dispersion-imbalance loop mirror for phase-preserving amplitude 2R regeneration is shown by numerical simulations. Its performance has been evaluated for DPSK transmission. A 4.5dB Q-factor improvement has been demonstrated.

12.30 – 14.00 LUNCH BREAK - *Restaurant Guggeryllis*

14.00 - 15.15

Session WC3: PARAMETRIC AMPLIFICATION III
Session Chair: Magnus Karlsson, *Chalmers University of Technology, Göteborg, Sweden*

WC3.1 14.00 - 14.30 (Invited)

Quantum Mechanics of Optical Parametric Devices, C. J. McKinstrie*, Alcatel-Lucent, Holmdel, NJ, USA*

Parametric devices based on four-wave mixing in fibers can generate, frequency convert and delay photons. I will review the quantum optics of parametric devices and recent quantum communication experiments done with them.

WC3.2 14.30 - 14.45

Fiber Optical Parametric Amplifiers with Alternating Fiber Twists, C. Braimiotis*, Swansea University, Swansea, Wales, UK*, P. Kylemark*, Sweden* and M. E. Marhic*, Swansea University, Swansea, Wales, UK*

We show that the impact of PMD on the gain spectrum of fiber OPAs can be reduced by imposing twists along the fiber axis. Alternating twists are used in order to cancel the induced circular birefringence.

WC3.3 14.45 - 15.00

Tunable 2.5W Continuous-Wave Optical Source Based on Efficient Parametric Conversion in Highly Nonlinear Fiber, J. M. Chavez Boggio, S. Moro, J. R. Windmiller, A. J. Anderson, J. X. Zhao, N. Alic and S. Radic*, University of California - San Diego, La Jolla, CA, USA*

An S-band tunable optical source based on highly-efficient parametric conversion is investigated. Generation of a continuous-wave 2.5W source that is tunable over 1470-1520nm is demonstrated.

WC3.4 15.00 - 15.15

Widely-Tunable Triply-Resonant Optical Parametric Ring Oscillator, Y. Q. Xu, S. G. Murdoch, R. Leonhardt and J. D. Harvey*, University of Auckland, Auckland, New Zealand*

We present a widely-tunable low-threshold all-fiber optical parametric ring oscillator that is resonant for the pump wavelength and the two sidebands. For some detunings, threshold can be achieved with as little as 0.7W peak power.

15.30 – 16.00 COFFEE BREAK

16.00 - 17.45

Session WC4: NONLINEAR PROCESSING II
Session Chair: Periklis Petropoulos, *University of Southampton, Southampton, UK*

WC4.1 16.00 - 16.30 (Invited)

Optical Pulse Compression based on Fiber Nonlinearity and Dispersion, Y. Mimura, T. Inoue and T. Yagi*, Furukawa Electric Co. Ltd, Ichihara, Chiba, Japan*

Pulse compression technique based on fiber nonlinearity and dispersion is discussed, where we focus on comb-like profiled fiber (CPF). CPF is a practical pulse compressor owing to its systematic and flexible compression design scheme.

WC4.2 16.30 - 17.00 (Invited)

High Performance Optical Processing Systems Incorporating Grating Based Pulse Shaping, D. J. Richardson, F. Parmigiani, M. Ibsen and P. Petropoulos*, University of Southampton, Southampton, UK*

We review the operating principles and performance of optical pulse processing systems which exploit the powerful combination of Kerr-nonlinearity based optical switches and tailored optical pulses (e.g. square, triangular and parabolic) produced using superstructured fiber Bragg gratings.

WC4.3 17.00 - 17.30 (Invited)

Measuring Optical Waveforms with Fiber Frequency Combs, I. Coddington, W. C. Swann and N. R. Newbury*, National Institute of Standards and Technology, Boulder, CO, USA*

A stabilized frequency comb provides a broadband array of highly resolved comb lines. Using a multiheterodyne technique, we measure the amplitude and phase of every comb line, allowing for massively parallel, high-resolution optical sampling.

WC4.4 17.30 - 17.45

Pulse Shaping using the Optical Fourier Transform Technique - for Ultra-High-Speed Signal Processing, L. K. Oxenløwe, E. Palushani, M. Galili, H. C. H. Mulvad, A. T. Clausen, and P. Jeppesen, *Technical University of Denmark, Lyngby, Denmark*

This paper reports on the generation of a 1.6 ps FWHM flat-top pulse using the optical Fourier transform technique. The pulse is validated in a 320 Gbit/s demultiplexing experiment.

END OF PROGRAM