Slow and Fast Light

Topical Meeting

July 23-26, 2006
OSA Headquarters, Washington, DC

Submission Deadline: March 31, 2006, 12:00 p.m. noon EST (17.00 GMT)

Pre-Registration Deadline: July 12, 2006

Plan to attend Slow and Fast Light 2006!

The Slow and Fast Light Topical Meeting brings together researchers from all over the world in the first meeting dedicated solely to the discussion of slow, stopped and superluminal light. As the first meeting to be held at OSA's Headquarters, Slow and Fast Light provides an intimate environment for interaction with influential contributors to this exciting field, as well as exposure to a dynamic and fascinating city.

Due to increasing delays in securing visas to the US, we strongly encourage international attendees to begin this process as early as possible (but no later than three months before the meeting) to ensure timely processing. Please refer to the Letters of Invitation section {link} **of this website for additional information.**

About Slow and Fast Light

July 23-26, 2006

Optical scientists and engineers have become accustomed to thinking of the speed of light as a constant. Yet, over the past few years, it has become clear that the tools exist to make the speed of a photon faster or slower, or even to stop it completely. This has certainly had a profound impact on the optics community from a fundamental science point of view. This topical meeting will harness the overwhelming excitement surrounding new methods to achieve light control by featuring new insights into conventional phenomenon, exploring novel material engineering to make speed-of-light manipulation possible, and examining enabling applications. Topics and scope will include: the physics of light control; various slow light, stored light and fast light material and structure engineering; enhanced optical nonlinearities; and techniques for experiments, measurement and simulations.

Important Dates

Submission Deadline: March 31, 2006, 12:00 p.m. noon EST (17.00 GMT)

Pre-Registration Deadline: July 12, 2006

Meeting Topics

Meeting Topics

Topics to be covered include:

- Physics of light control
    - Electromagnetically induced transparency
    - Coherent population oscillation
    - SBS
    - Polaritons and resonators, etc.
- Various slow light, stored light and fast light material and structure engineering
    - BEC, hot vapor cells
    - Solid-state crystal
    - Semiconductor quantum wells and quantum dots
    - Photonic crystal
    - Holey fiber
- Techniques
    - Experimentation and demonstrations
    - Measurements and figures-of-merit
    - Simulation
        - Bandwidth-storage trade-offs
        - Pulse propagation and distortion
- Enhanced optical nonlinearities
- New applications
    - All-optical buffers and routers
    - True time delay
    - Wavelength converter
    - Signal processing
    - Low $V\pi$ modulator
    - Time reversal and convolution

Technical Program Committee

Meeting Co-Chairs

Connie Chang-Hasnain, *Univ. of California at Berkeley, USA*
Alan Willner, *Univ. of Southern California, USA*

Committee Members

Robert Boyd, *Univ. of Rochester, USA*
S. L. Chuang, *Univ. of Illinois, USA*
Gadi Eisenstein, *Technion, Israel*
Michael Fiddy, *Univ. of North Carolina at Charlotte, USA*
Alexander Gaeta, *Cornell Univ., USA*
Philip Hemmer, *Texas A&M Univ., USA*
Thomas Krauss, *Univ. of St. Andrews, UK*
Susumu Noda, *Kyoto Univ., Japan*
Marlin Scully, *Texas A&M Univ., USA*
Arthur Smirl, *Univ. of Iowa, USA*
Rodney Tucker, *Univ. of Melbourne, Australia*
Lars Thylen, *Royal Inst. of Technology (KTH), Sweden*

Invited Speakers

Quantum Information Processing Using EIT, *Raymond G. Beausoleil; HP Labs, USA.*

Slow and Fast Light and Their Applications, *Robert W. Boyd; Univ. of Rochester, USA.*

Slow Light in Photonic Crystals, *Shanhui Fan; Stanford Univ., USA.*

Slow Light, Stopped Light and Shocking Bose-Einstein Condensates, *Lene V. Hau; Harvard Univ., USA.*

Real Space Investigation of Slow Light in Nanophotonic Structures, *L. Kobus Kuipers; FOM Inst. for Atomic and Molecular Physics, The Netherlands.*

Applications of and Advances in Slow Light, *Jay Lowell; DARPA, USA.*

Quantum Control of Single Photons via Electromagnetically Induced Transparency, *M. Eisaman, P. Walther, A. S. Zirbov, Mikhail Lukin; Physics Dept., Harvard Univ., USA.*

Slow Light in Semiconductor Waveguides, *Jesper Mørk, Filip Öhman, R. Kjær, M. van der Poel, K. Yvind; Technical Univ. of Denmark, Denmark.*

Ultra-High-Q Photonic Nanocavities and Trapping of Ultra-Short Optical Pulses, *Takashi Asano, Susumu Noda; Kyoto Univ., Japan.*

Slow Light Propagation in Photorefractive Crystals, *Boris Sturman[1], E. Podivilov[1], A. Shumelyuk[2], S. Odoulov[2]; [1]Russian Acad. of Sciences, Russian Federation, [2]Natl. Acad. of Sciences, Ukraine.*

Slow Light in Optical Waveguides and the Influence of Loss, *Min Qiu; Royal Inst. of Technology (KTH), Sweden.*

Using Slow Light Physics to Improve LIDAR? *Marlan O. Scully[1,2], Yuri Rostovtsev[1,2]; [1]Inst. for Quantum Studies, Texas A&M Univ., USA, [2]Applied Physics Group, Mechanical and Aerospace Dept. and PRISM, Princeton Univ., USA.*

Periodically-Spaced Semiconductor Quantum Wells: Slow Light and Fast Nonlinearities, *Arthur L. Smirl[1], R. Binder[2], J. P. Prineas[1]; [1]Photonics Lab, Univ. of Iowa, USA, [2]College of Optical Sciences, Univ. of Arizona, USA.*

System Performance of a Slow-Light Delay Line for 10-Gb/s Data Packets, *Yikai Su, Lilin Yi, Weisheng Hu; Shanghai Jiao Tong Univ., China.*

Flexible Slow and Fast Light Using Tailored Brillouin Spectra in Optical Fibers, *Miguel Gonzalez-Herraez, Kwang-Yong Song, Luc Thevenaz; Swiss Federal Inst. of Technology, Switzerland.*

Design Trade-offs for Slow-Light Optical Buffers, *Rodney S. Tucker; Univ. of Melbourne, Australia.*

Tunable Optical Delay with Carrier Induced Exciton Dephasing in Semiconductor Quantum Wells, *Susanta K. Sarkar, Yan Guo, Hailin Wang; Dept. of Physics, Univ. of Oregon, USA.*

Slow Light and Its Control in Passive and Active Coupled Optical Resonator Waveguides (CROWS), *Amnon Yariv; Caltech, USA.*

Recent Advances in Stimulated Brillouin Scattering Slow Light, *Zhaoming Zhu[1], Andrew M. C. Dawes[1], Daniel Gauthier[1], Michael D. Stenner[2], Mark A. Neifeld[2], Ting Luo[3],*

Changyuan Yu[3], Lin Zhang[3], Alan E. Willner[3]; [1]Dept. of Physics and the Fitzpatrick Ctr. for Photonics and Communications Systems, Duke Univ., USA, [2]Dept. of Electrical and Computer Engineering and The Optical Sciences Ctrl, Univ. of Arizona, USA, [3]Dept. of Electrical and Computer Engineering, Univ. of Southern California, USA.

2006 Slow and Fast Light Technical Program Committee

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Arthur Smirl, *Univ. of Iowa, USA*
Rodney Tucker, *Univ. of Melbourne, Australia*
Lars Thylen, *Royal Inst. of Technology (KTH), Sweden*

Welcome to the **2006 Slow and Fast Light Topical Meeting**! We are pleased to have you here in Washington, DC, for what promises to be an exciting and informative first-ever meeting on this fascinating topic.

Our inspiration for creating this meeting came from the overwhelming excitement surrounding new methods to achieve light control, unique insights to conventional phenomenon, novel material engineering to make speed-of-light manipulation possible, and new examinations for enabling important applications. Indeed, it is quite possible that we are on the verge of a dramatic change in the way we envision and construct communication, processing and control systems.

Such fervor also created an unexpected dilemma when we quickly reached the seating capacity of >100 people for our venue, the headquarters of the Optical Society of America. We extend a sincere apology to those few people who were forced to be on a wait list while the OSA worked their magic to accommodate everyone. Truly, the amount of interest in this meeting attests to a topic surrounded by great excitement and potential, and we are very pleased to be a part of that with you!

A total of 71 papers will be presented, with several postdeadline papers featured on Wednesday afternoon. The program consists of 19 invited presentations, 40 oral presentations and 12 poster presentations. Please join us on Monday evening for the Conference Reception/Poster Session at the Hotel Palomar (just down the street from OSA).

We believe that this relatively new field is in the process of forming a cohesive community of researchers. To help build this sense of camaraderie, you are cordially invited to join your fellow OSA Slow and Fast Light attendees on Tuesday, July 25, for an evening of Shakespeare at Washington's world-renowned Shakespeare Theatre.

We want to extend our deep appreciation to the OSA meetings staff (led by Will Ryan) for doing a superb job of coordinating this meeting, the first such meeting to be held inside the OSA headquarters. In particular, we wish to thank Brian Hanrahan, the staff organizer of our meeting. There are a myriad of details that must be addressed, and Brian has always been extremely helpful, very professional, and of wonderful good cheer. It has been a distinct pleasure and privilege working with him!

We thank you again for your attendance at Slow and Fast Light, and we hope that you enjoy your time with us this week in Washington, DC.

Connie Chang-Hasnain, *Univ. of California at Berkekley, USA*
Alan E. Willner, *Univ. of Southern California, USA*
Conference Co-Chairs

Program Agenda

	Monday, July 24, 2006
7:00 a.m.–6:00 p.m.	**Registration**
8:15 a.m.–8:30 a.m.	**Opening Remarks**
8:30 a.m.–10:00 a.m.	**MA: Advances and Applications**
10:00 a.m.–10:30 a.m.	**Coffee Break**
10:30 a.m.–12:30 p.m.	**MB: Coupled Resonators I**
12:30 p.m.–1:30 p.m.	**Lunch Break (on your own)**
1:30 p.m.–3:30 p.m.	**MC: Semiconductor QWs and Devices**
3:30 p.m.–4:00 p.m.	**Coffee Break**
4:00 p.m.–6:00 p.m.	**MD: Rare Earth**
6:00 p.m.–8:00 p.m.	**Conference Reception / ME: Poster Session (Hotel Palomar)**

	Tuesday, July 25, 2006
7:00 a.m.–6:00 p.m.	**Registration**
8:00 a.m.–10:00 a.m.	**TuA: EIT**
10:00 a.m.–10:30 a.m.	**Coffee Break**
10:30 a.m.–12:30 p.m.	**TuB: Slow Light in Fiber**
12:30 p.m.–1:30 p.m.	**Lunch Break (on your own)**
1:30 p.m.–3:30 p.m.	**TuC: Coupled Resonators II**
3:30 p.m.–4:00 p.m.	**Coffee Break**
4:00 p.m.–6:00 p.m.	**TuD: Fundamental Studies**

	Wednesday, July 26, 2006
7:00 a.m.–3:00 p.m.	**Registration**
8:00 a.m.–9:45 a.m.	**WA: Bandgap Structures**
9:45 a.m.–10:30 a.m.	**Coffee Break**
10:30 a.m.–12:30 p.m.	**WB: System Performance**
12:30 p.m.–1:30 p.m.	**Lunch Break (on your own)**
1:30 p.m.–3:00 p.m.	**WC: Postdeadline Papers**

Slow and Fast Light Abstracts

● Monday, July 24, 2006 ●

OSA Headquarters, 1st Floor
7:00 a.m.–6:00 p.m.
Registration

OSA Headquarters, 1st Floor
8:15 a.m.–8:30 a.m.
Opening Remarks
Connie J. Chang-Hasnain; Univ. of California at Berkeley, USA
Alan Willner; Univ. of Southern California, USA

MA • Advances and Applications

OSA Headquarters, 1st Floor
8:30 a.m.–10:00 a.m.
MA • Advances and Applications
Alan Willner; Univ. of Southern California, USA, Presider

MA1 • 8:30 a.m. ●Invited●
Applications of and Advances in Slow Light, *Jay Lowell; DARPA, USA.* No abstract available.

MA2 • 9:00 a.m. ●Invited●
Slow and Fast Light and Their Applications, *Robert W. Boyd; Univ. of Rochester, USA.* We review the status of research aimed at producing light waves with controllably large or small propagation velocities and at developing applications based on these phenomena.

MA3 • 9:30 a.m. ●Invited●
Using Slow Light Physics to Improve LIDAR? *Marlan O. Scully[1,2], Yuri Rostovtsev[1,2]; [1]Inst. for Quantum Studies, Texas A&M Univ., USA, [2]Applied Physics Group, Mechanical and Aerospace Dept. and PRISM, Princeton Univ., USA.* No abstract available.

OSA Headquarters, 1st Floor
10:00 a.m.–10:30 a.m.
Coffee Break

MB • Coupled Resonators I

OSA Headquarters, 1st Floor
10:30 a.m.–12:30 p.m.
MB • Coupled Resonators I
Philip R. Hemmer; Texas A&M Univ., USA, Presider

MB1 • 10:30 a.m. ●Invited●
Slow Light and Its Control in Passive and Active Coupled Optical Resonator Waveguides (CROWS), *Amnon Yariv; Caltech, USA.* CROWs are the prime candidate for obtaining major (orders of magnitude) slowing of light combined with (communication) useful bandwidths. I will discuss the basic theoretical constructs–especially the powerful matrix approach for treating propagation in CROWS as well as the interplay between loss/gain and maximum delay. We will conclude with recent supportive experimental results on slowing of light.

MB2 • 11:00 a.m.
Tunable Slow-Wave Optical Delay-Lines, *Francesco Morichetti[1], Andrea Melloni[1], Cristina Canavesi[1], Filippo Persia[1], Mario Martinelli[1], Marc Sorel[2]; [1]Politecnico di Milano, Italy, [2]Univ. of Glasgow, UK.* Tunable delay lines exploiting slow-light in directly-coupled ring-resonators are presented. Time delay can be tuned from zero to maximum. Experimental results showing delays of 300ps and slowing factor of 7.5 over 3GHz bandwidth are reported.

MB3 • 11:15 a.m.
Slow-Light Waveguides with Mode Degeneracy: Rotation-Induced Superstructures and Optical Gyroscopes, *Ben Z. Steinberg, Jacob Scheuer, Amir Boag; Tel-Aviv Univ., Israel.* We study wave propagation in a rotating slow-light structure with mode degeneracy. The rotation effectively induces a super-structure that significantly modifies the structure's dispersion relation. Applications to ultra-sensitive integrated optical gyroscopes are discussed.

MB4 • 11:30 a.m. ●Invited●
Ultra-High-*Q* Photonic Nanocavities and Trapping of Ultra-Short Optical Pulses, *Takashi Asano, Susumu Noda; Kyoto Univ., Japan.* A recently-developed photonic nanocavity having an ultra-high-*Q* factor of almost one million is described. Also, a method to trap an ultra-short optical pulse into an ultra-high-*Q* nanocavity is investigated.

MB5 • 12:00 p.m.
Tracking Light in High *Q* Low V Nanocavities, *Philippe Velha[1], Benoit Cluzel[1], Loic Lalouat[2], Emmanuel Picard[1], David Peyrade[3], Jean Claude Rodier[4], Thomas Charvolin[1], Philippe Lalanne[4], Frédérique de Fornel[2], Emmanuel Hadji[1]; [1]CEA Grenoble, France, [2]CNRS/LPUB, France, [3]CNRS/LTM, France, [4]CNRS/IOTA, France.* A near-field optical probe is used to observe the electromagnetic field within photonic crystal nanocavities. The cavity mirrors are designed to provide mode matching. A quality factor enhancement by two orders of magnitude is observed.

MB6 • 12:15 p.m.
Enhanced Second Harmonic Generation Using Slow Light in AlGaAs Microring Resonators, *Zhenshan Yang[1], Philip Chak[1], Rajiv Iyer[1], Alan D. Bristow[1], John E. Sipe[1], J. Stewart Aitchison[1], Henry M. van Driel[1], Arthur L. Smirl[2]; [1]Univ. of Toronto, Canada, [2]Univ. of Iowa, USA.* Highly efficient SHG can be achieved by harnessing slow light effects in microring resonator structures. We propose an angular quasi-phase-matching scheme based on polar dependence of polarization inside the ring resonator.

12:30 p.m.–1:30 p.m.
Lunch Break (on your own)

MC • Semiconductor QWs and Devices

OSA Headquarters, 1st Floor
1:30 p.m.–3:30 p.m.
MC • Semiconductor QWs and Devices
Marlan O. Scully; Inst. for Quantum Studies, Texas A&M Univ., USA, Presider

MC1 • 1:30 p.m. ●Invited●

Tunable Optical Delay with Carrier Induced Exciton Dephasing in Semiconductor Quantum Wells, *Susanta K. Sarkar, Yan Guo, Hailin Wang; Dept. of Physics, Univ. of Oregon, USA.* We report the experimental demonstration of tunable optical delay using carrier induced exciton dephasing in a GaAs quantum well. Fractional delays exceeding 200% have been obtained for an 8 ps optical pulse.

MC2 • 2:00 p.m.

Tunable Pulse Delay Demonstration Using Four-Wave Mixing in Semiconductor Optical Amplifiers, *Zhangyuan Chen, Bala Pesala, Connie Chang-Hasnain; Univ. of California at Berkeley, USA.* We demonstrate fractional delay exceeding 40 percent for a 1.3ns pulse using non-degenerate four-wave mixing in semiconductor optical amplifiers. Continuously tunable fast and slow light with a total difference of 0.59 ns was obtained.

MC3 • 2:15 p.m.

Variable Slow Light Using Coherent Population Oscillation in Quantum-Dot Electro-Absorption Modulator, *Peter K. Kondratko, Shu-Wei Chang, Hui Su, Shun Lien Chuang; Univ. of Illinois at Urbana-Champaign, USA.* Room temperature quantum-dot semiconductor electro-absorption modulator is utilized as an optical group delay. Electrical (reverse and forward bias below transparency current level) and optical tunable buffer is realized by means of counter-propagating coherent population oscillation.

MC4 • 2:30 p.m. ●Invited●

Slow Light in Semiconductor Waveguides, *Jesper Mørk, Filip Öhman, R. Kjær, M. van der Poel, K. Yvind; Technical Univ. of Denmark, Denmark.* We describe recent experiments demonstrating slow-down of light in a semiconductor waveguide at gigahertz frequencies. The results are explained by a simple model, which is used to analyze the potential and limitations of the technique.

MC5 • 3:00 p.m.

Slow and Fast Light in an Electro-Absorber, *Filip Öhman[1], Andres Bermejo Ramirez[2], Salvador Sales[2], Jesper Mørk[1]; [1]COM•DTU Dept. of Communications, Optics & Materials, Technical Univ. of Denmark, Denmark, [2]Dept. de Comunicaciones, ITEAM Res. Inst., Univ. Politécnica de Valencia, Spain.* We demonstrate controllable and large time delay in cascaded semiconductor saturable absorbers and amplifiers. The possibility of further increasing the tunable phase shift by utilizing field screening effects in the quantum well absorber is demonstrated.

MC6 • 3:15 p.m.

Room Temperature Slow Light with 17 GHz Bandwidth in Semiconductor Quantum Dots, *Giovanni Piredda, Aaron Schweinsberg, Robert W. Boyd; Inst. of Optics, USA.* We demonstrate the delay of a 25 ps pulse by 10% of its FWHM using coherent population oscillations in PbS quantum dots at room temperature. The 17 GHz bandwidth is adequate for telecommunications applications.

OSA Headquarters, 1st Floor
3:30 p.m.–4:00 p.m.
Coffee Break

MD • Rare Earth

OSA Headquarters, 1st Floor
4:00 p.m.–6:00 p.m.
MD • Rare Earth
Gadi Eisenstein; Technion, Israel, Presider

MD1 • 4:00 p.m. ●Invited●

Real Space Investigation of Slow Light in Nanophotonic Structures, *L. Kobus Kuipers; FOM Inst. for Atomic and Molecular Physics, Netherlands.* With a phase-sensitive near-field microscope femtosecond light pulses have been locally tracked en route as they propagate through a photonic crystal waveguide. For one optical frequency ultraslow and seemingly stationary light is observed.

MD2 • 4:30 p.m.

Slow-Light Diffraction Management and Nonlinear Localization in Coupled Bragg-Grating Waveguides, *Andrey A. Sukhorukov, Yuri S. Kivshar; Australian Natl. Univ., Australia.* We show that in specially designed nonlinear waveguides with phase-shifted Bragg gratings it is possible to realize the frequency-independent spatial diffraction in the vicinity of band-gap, allowing for efficient spatio-temporal self-trapping of slow-light pulses.

MD3 • 4:45 p.m.

Slow, High-Intensity Light in Fibre Bragg Gratings, *Joe T. Mok, C. Martijn de Sterke, Ian C. M. Littler, Benjamin J. Eggleton; ARC Ctr. of Excellence for Ultrahigh-Bandwidth Devices for Optical Systems, Australia.* We experimentally demonstrate tunable delay of 0.68 ns pulses by up to 1.61 ns in a 10cm fibre Bragg grating. The Kerr nonlinearity in the glass eliminates dispersive broadening.

MD4 • 5:00 p.m.

Tailoring the Group Velocity in Photonic Crystal Waveguides, *Lars H. Frandsen, Andrei V. Lavrinenko, Jacob Fage-Pedersen, Peter I. Borel; Dept. of Communications, Optics & Materials, Technical Univ. of Denmark, Denmark.* A silicon-on-insulator photonic crystal waveguide is tailored to obtain a ~20-nm low-loss bandwidth with low group-index dispersion and group velocity around c/20. This is obtained by perturbing the holes adjacent to the waveguide core.

MD5 • 5:15 p.m.

Flatband Slow Light in Photonic Crystal Waveguides , *Michael Settle[1], Rob Engelen[2], Tim Karle[1], Michael Salib[3], Albert Michaeli[4], L. (Kobus) Kuipers[2], Thomas F. Krauss[1]; [1]Univ. of St Andrews, UK, [2]FOM Inst. for Atomic and Molecular Physics (AMOLF), Netherlands, [3]Intel Corp., USA, [4]Intel Corp., Israel.* A photonic crystal waveguide that features slow light without noticeable dispersion is demonstrated using a higher order even mode in a W2 waveguide on a SOI platform.

MD6 • 5:30 p.m.

Broadband Slow Light in a Photonic Crystal Line Defect Waveguide, *Jan-Michael Brosi[1], Wolfgang Freude[1], Jürg Leuthold[1], Alexander Yu Petrov[2], Manfred Eich[2]; [1]Inst. of High-Frequency and Quantum Electronics, Germany, [2]Materials in Electrical Engineering and Optics, Germany.* Pulse transmission at 4% of the vacuum light velocity is shown for a slow-light line-defect waveguide with 1300GHz bandwidth. We prove the concept for an upscaled microwave model with disorder both theoretically and experimentally.

MD7 • 5:45 p.m.
Observation of Wideband Slow Light in Chirped Photonic Crystal Waveguide Directional Coupler, *Daisuke Mori, Shousaku Kubo, Takashi Kawasaki, Toshihiko Baba; Yokohama Natl. Univ., Japan.* We fabricated a directional coupler consisting of chirped photonic crystal waveguides with opposite dispersion. We observed c/15 – c/70 slow light in a wide wavelength range of 30 nm.

Conference Reception / ME • Poster Session

Hotel Palomar
6:00 p.m.–8:00 p.m.
Conference Reception / ME • Poster Session

ME1
Slow Light with Gain Induced by Three Photon Effect in Strongly Driven Two-Level Atoms, *Yuping Chen[1,2], Zhimin Shi[1], Petros Zerom[1], Robert W. Boyd[1]; [1]Inst. of Optics, Univeristy of Rochester, USA, [2]Inst. of Optics and Photonics, Dept. of Physics, Shanghai Jiao Tong Univ., China.* Slow light induced by the three-photon effect is studied theoretically. The effect results from the modification of the atomic-level structure by the ac-Stark effect. A group index of the order of 106 can be obtained.

ME2
Low Group Velocity Devices in Silicon Photonics, *Daniel Pergande[1], Andreas von Rhein[1], Torsten Geppert[1], Cecile Jamois[1], Ralf B. Wehrspohn[1], Jens Huebner[2], Henry van Driel[2]; [1]Univ. of Paderborn, Germany, [2]Univ. of Toronto, Canada.* Two possible concepts to slow down the light are discussed: (coupled) cavities in comparison to the concept of low group velocities at flat bands in photonic crystals. Two devices using the second concept are presented.

ME3
Extended and Localized Photon States in 1D-Coupled Resonators, *Björn M. Möller[1], Ulrike Woggon[1], Mikhail V. Artemyev[2]; [1]Dept. of Physics, Univ. of Dortmund, Germany, [2]Inst. for Physico-Chemical Problems of Belarussian State Univ., Belarus.* The evolution of individual microsphere-resonator modes into coherently coupled photon states is studied using polarization-sensitive imaging spectroscopy. Photon localization is found both due to Bloch-mode formation and size disorder in agreement with a coupled-oscillator model.

ME4
Fast Light, Non-Analytical Points and the Speed of Information Using Pulses Described by Functions with Compact Support, *Wagner F. Silva[1], Daniel R. Solli[2], Adan J. Corcho[1], Dilson P. Caetano[1], Jandir M. Hickmann[1]; [1]Univ. Federal de Alagoas, Brazil, [2]Univ. of California at Los Angeles, USA.* We compare the propagation of pulses based on Gaussian analytical functions and on functions with compact support, that present perfectly smooth non analytical points, to clarify the relation between not analytical points and information.

ME5
Observation of Superluminal in C_{60} Nonlinear Solution, *Yun-Dong Zhang, Hao Wang, Nan Wang, He Tian, Ping Yuan; Harbin Inst. of Technology, China.* We observed the group superluminal in C_{60} toluene solution by coherent population oscillation with input power of 60 mW from Ar^+ laser at 514.5nm. Maximum advancement was 3.58ms, inferred a negative group velocity of -8.40m/s.

ME6
Ultraefficient Nonlinear Quantum Optics Using Slow-Light-Based Stationary Light , *Byoung S. Ham[1], Sergei A. Moiseev[1,2]; [1]Inha Univ., Republic of Korea, [2]Kazan Physical-Technical Inst. of Russian Acad. of Sciences, Russian Federation.* We propose a dynamic control of a traveling light for ultraefficient quantum wavelength conversion using slow-light-based stationary light phenomenon. The stationary light is resulted from quantum coherence interactions induced by resonant Raman optical pulses.

ME7
Slow Light Trapping and Memory Readout in a Resonant Photonic Crystal, *Igor V. Mel'nikov[1,2], Boris I. Mantsyzov[3], J. Stewart Aitchison[4], Clark A. Merchant[4]; [1]High Q Labs, Inc., Canada, [2]Optolink, Ltd., Russian Federation, [3]M. V. Lomonosov Moscow State Univ., Russian Federation, [4]Dept. of Electrical and Computer Engineering, Univ. of Toronto, Canada.* We demonstrate previously unforeseen property of all-optical control over the light slowing, pinning, and depinning in a resonant photonic crystal with defect that is mediated by an inversion inside the crystal.

ME8
Withdrawn.

ME9
Slow "Photonic Sound" Waves on Active Photonic Lattices, *Spilios Riyopoulos; SAIC, USA.* Theory and simulations show that active photonic lattices of coupled microlaser arrays support slow coherent optical waves propagating at sound speed (photonic sound) over the array. Numerical results and implications are discussed.

ME10
Slow and Fast Light Using Stimulated Rayleigh-Wing Scattering, *Qiguang Yang[1,2], Jae Tae Seo[1], Na Xu[2], Bagher Tabibi[1], SeongMin Ma[1], Huitian Wang[2], S. S. Jung[3], M. Namkung[4]; [1]Hampton Univ., USA, [2]Natl. Lab of Solid-State Microstructures and Dept. of Physics, Nanjing Univ., China, [3]Korea Res. Inst. of Standards and Science, Republic of Korea, [4]Astrochemistry Branch, NASA Goddard Space Flight Ctr., USA.* Stimulated Rayleigh-Wing Scattering has been found to be a perfect way for group velocity controlling. The velocity of a pulse can be exactly controlled by tuning the wavelength and intensity of a strong CW beam.

ME11
Withdrawn.

ME12
Transients and Rise Times of the Refractive EIT-Kerr Nonlinearity, *Michael V. Pack, Ryan M. Camacho, John C. Howell; Univ. of Rochester, USA.* We observe transients and rise times for the refractive EIT Kerr nonlinearity in Rubidium vapor, and discuss the importance of the rise times for various applications of EIT enhanced optical nonlinearities.

ME13
Dynamic Control of the Time Delay in a Semiconductor Quantum Well, *Miguel Angel Antón[1], Fernando Carreño[1], Oscar Gómez Calderón[1], Sonia Melle[1], Isabel Gonzalo[2]; [1]Escuela Universitaria de Óptica, U.C.M., Spain, [2]Facultad de Ciencias Físicas, U.C.M., Spain.* In this work we propose a scheme for coherent control of time delay of light pulses that employs quantum interference and coherence in the conduction inter-subband transitions of a double-quantum well.

ME14
Observation of Superluminal and Slow Light in Doped Er^{+} Fiber, *Yun-Dong Zhang, Wei Qiu, He Tian, Jian-Bo Ye, Ping Yuan; Harbin Inst. of Technology, China.* The superluminal and slow light were observed in doped Er^{+} fiber by coherent population oscillation with input powers of 30 mW and 4mW from a fiber laser at 1550nm, respectively.

ME15
Withdrawn.

ME16
1-D Photonic Crystal Exhibiting Degenerate Band Edge to Slow Light, *Yang Cao[1], Robert Hudgins[1], Thomas J. Suleski[1], Michael A. Fiddy[1], Jeff Raquet[1], Ken Burbank[2], Monty Graham[2], Phil Sanger[2]; [1]Univ. of North Carolina, USA, [2]Western Carolina Univ., USA.* We describe recent studies on slowing and trapping of light in artificial materials constructed from a dielectric superlattice. A device for use at microwave frequencies has been made and results from it will be described.

● Tuesday, July 25, 2006 ●

OSA Headquarters, 1st Floor
7:00 a.m.–6:00 p.m.
Registration

TuA • EIT

OSA Headquarters, 1st Floor
8:00 a.m.–10:00 a.m.
TuA • EIT
Robert W. Boyd; Univ. of Rochester, USA, Presider

TuA1 • 8:00 a.m. **●Invited●**
Ultra-Slow Light in Bose-Einstein Condensates: Shocking Matter and Transforming Light, *Naomi S. Ginsberg[1], Sean R. Garner[1], Christopher Slowe[1], Zachary Dutton[2], Lene V. Hau[1]; [1]Harvard Univ., USA, [2]Radar Div., NRL, USA.* Ultra-slow and spatially compressed light pulses in Bose-Einstein condensates allow for halting light and imprinting optical information in atomic holograms that can be processed and read out. Generated "Quantum shock waves" reveal break-down of superfluidity.

TuA2 • 8:30 a.m.
Generation of Narrow Bandwidth Paired Photons: Use of a Single Driving Laser, *Shengwang Du, Pavel Kolchin, Chinmay Belthangady, G. Y. Yin, S. E. Harris; Edward L. Ginzton Lab, Stanford Univ., USA.* We use a single Ti:Sapphire laser to cool, pump, and to render transparent a cloud of 87Rb atoms. Paired photons are generated into opposing single-mode fibers at a rate of 750 counts per second.

TuA3 • 8:45 a.m.
Demonstration of Bi-Chormatic Channelization Slow Light in Rubidium Vapor, *Zachary Dutton, Mark Bashkansky, Fredrik Fatemi, John Reintjes, Michael Steiner, Verne Jacobs; NRL, USA.* We demonstrate EIT-based slow light delay of modulated light with frequency widths far exceeding the EIT linewidth. Using a magnetic field to split two EIT resonances, we employ a two-color version of the "channelization" technique.

TuA4 • 9:00 a.m. **●Invited●**
Quantum Information Processing Using EIT, *Raymond G. Beausoleil; HP Labs, USA.* We review our progress towards the observation of weak quantum optical nonlinearities in condensed matter systems. In particular, we discuss results of spectroscopic experiments conducted using nitrogen-vacancy color centers in diamond, and erbium-doped endohedral fullerenes.

TuA5 • 9:30 a.m. **●Invited●**
Quantum Control of Single Photons via Electromagnetically Induced Transparency, *M. Eisaman, P. Walther, A. S. Zirbov, Mikhail Lukin; Physics Dept., Harvard Univ., USA.* We will discuss recent experimental progress towards controlled generation, storage and manipulation of single photons and entangled photon states using Electromagnetically Induced Transparency.

OSA Headquarters, 1st Floor
10:00 a.m.–10:30 a.m.
Coffee Break

TuB • Slow Light in Fiber

OSA Headquarters, 1st Floor
10:30 a.m.–12:30 p.m.
TuB • Slow Light in Fiber
Rodney S. Tucker; Univ. of Melbourne, Australia, Presider

TuB1 • 10:30 a.m. **●Invited●**
Recent Advances in Stimulated Brillouin Scattering Slow Light, *Zhaoming Zhu[1], Andrew M. C. Dawes[1], Daniel Gauthier[1], Michael D. Stenner[2], Mark A. Neifeld[2], Ting Luo[3], Changyuan Yu[3], Lin Zhang[3], Alan E. Willner[3]; [1]Dept. of Physics and the Fitzpatrick Ctr. for Photonics and Communications Systems, Duke Univ., USA, [2]Dept. of Electrical and Computer Engineering and Optical Sciences Ctrl, Univ. of Arizona, USA, [3]Dept. of Electrical and Computer Engineering, Univ. of Southern California, USA.* We will discuss progress in achieving long, controllable fractional pulse delay with low distortion via stimulated Brillouin scattering slow light. The technique works at telecommunication wavelength and uses off-the-shelf components.

TuB2 • 11:00 a.m.
Quantification of Signal Distortion in Brillouin Scattering Based Slow Light Systems, *Evgeny Shumakher, Nadav Orbach, Amir Nevet, David Dahan, Gadi Eisenstein; Technion, Israel.* Measured small-signal gain and delay spectra were used to quantify pulse distortions in Brillouin scattering based fiber slow light systems. Exact determination of the delay and the role played by pump modulation are highlighted.

TuB3 • 11:15 a.m.
Raman Slow Light in Fibers and on Chip, *Yoshitomo Okawachi, Mark A. Foster, Jay E. Sharping, Alexander L. Gaeta, Qianfan Xu, Michal Lipson; Cornell Univ., USA.* We demonstrate all-optical tunable delays using stimulated Raman scattering in an optical fiber and in a silicon-on-insulator waveguide. These results represent a step towards implementing optically tunable dispersion in ultra-high bandwidth telecommunication systems.

TuB4 • 11:30 a.m. **●Invited●**
Flexible Slow and Fast Light Using Tailored Brillouin Spectra in Optical Fibers, *Luc Thevenaz, Sang-Hoon Chin, Kwang-Yong Song, Miguel Gonzalez-Herraez; Swiss Federal Inst. of Technology, Switzerland.* Stimulated Brillouin scattering makes possible the generation of synthesized gain spectra, so that innovative slow light schemes can be realized, ranging from broadband tunable delays to a zero-gain situation identical to an ideal electromagnetically-induced transparency.

TuB5 • 12:00 p.m.
Low-Light-Level Optical Interactions with Rubidium Vapor in a Photonic Band-Gap Fiber, *Saikat Ghosh, Amar R. Bhagwat, Christopher Kyle Renshaw, Shireen Goh, Alexander L. Gaeta, Brian J. Kirby; Cornell Univ., USA.* We show that an appreciable density of Rubidium atoms can be produced in a hollow-core photonic band-gap fiber which can be used for nonlinear optical interactions at very low light levels.

TuB6 • 12:15 p.m.
Ultraslow Light Propagation in Erbium-Doped Solid-State Materials, *Elisa Baldit, Stephan Briaudeau, Paul Monnier, Kamel Bencheikh, Ariel Levenson; LPN-CNRS, France.* Strong dispersion of the refraction index causes slow light propagation. We reported on such phenomenon induced by coherent population oscillations effect in Erbium-doped solids achieving group velocities as low as 2.7 m/s.

12:30 p.m.–1:30 p.m.
Lunch Break (on your own)

TuC • Coupled Resonators II

OSA Headquarters, 1st Floor
1:30 p.m.–3:30 p.m.
TuC • Coupled Resonators II
Takashi Asano, Kyoto Univ., Japan, Presider

TuC1 • 1:30 p.m. **●Invited●**
Slow Light in Optical Waveguides and the Influence of Loss, *Min Qiu; Royal Inst. of Technology (KTH), Sweden.* The slow light phenomena and the influence of the loss in different waveguide structures—in particular, coupled resonator optical waveguides—will be discussed. The impacts of combining such structures with EIT media will also be addressed.

TuC2 • 2:00 p.m.
Tunable Optical Delay on Silicon Chip with a Double-Ring Resonator, *Qianfan Xu, Jagat Shakya, Michal Lipson; Cornell Univ., USA.* The group delay in a silicon double-ring resonator, which has a narrow transparency peak with low group velocity, is measured. Effective group indices from 90 to 289 are obtained by thermal tuning of the resonator.

TuC3 • 2:15 p.m.
On-Chip Polarization Controlled Optical Delay Lines, *Rajiv Iyer[1], Alan D. Bristow[1], Zhenshan Yang[1], J. Stewart Aitchison[1], Henry M. van Driel[1], John E. Sipe[1], Arthur L. Smirl[2]; [1]Univ. of Toronto, Canada, [2]Univ. of Iowa, USA.* Optical delay lines were fabricated in AlGaAs demonstrating pulse delays of 200ps controlled by the input polarization at room temperature. The structures have relatively low loss and are robust against power and wavelength variations.

TuC4 • 2:30 p.m. **●Invited●**
Slow Light in Photonic Crystals, *Shanhui Fan; Stanford Univ., USA.* We review some of recent developments in the use of dynamic optical resonator systems to slow and stop the propagation of light, and to control the spectrum of photon pulses.

TuC5 • 3:00 p.m.
Slow Light in Coupled Heterostructure Nanocavity Waveguides, *David O'Brien[1], Michael Settle[1], Michael Salib[2], Albert Michaeli[3], Thomas Krauss[1]; [1]Univ. of St. Andrews, UK, [2]Intel Corp., USA, [3]Intel Corp., Israel.* Multiple high-*Q* photonic crystal nanocavities are coupled together for non-dispersive slow wave operation with appreciable bandwidth. Efficient coupling into the slow light regime of the photonic crystal waveguide passband is also observed.

TuC6 • 3:15 p.m.
Experimental Demonstration of MEMS-Tunable Slow Light in Silicon Microdisk Resonators, *David Leuenberger[1], Jin Yao[1], Ming-Chang M. Lee[2], Ming C. Wu[1]; [1]Univ. of California at Berkeley, USA, [2]Natl. Tsing Hua Univ., Taiwan.* We present slow light pulse propagation in MEMS-tunable microdisks at telecom wavelength for the first time. Furthermore we obtain delays up to 94 ps, a slowdown factor of 700, and a delay-bandwidth product of 0.5.

OSA Headquarters, 1st Floor
3:30 p.m.–4:00 p.m.
Coffee Break

TuD • Fundamental Studies

OSA Headquarters, 1st Floor
4:00 p.m.–6:00 p.m.
TuD • Fundamental Studies
Shun L. Chuang; Univ. of Illinois, USA, Presider

TuD1 • 4:00 p.m. **●Invited●**
The Meaning of Group Delay in Barrier Tunneling: A Reexamination of Superluminal Group Velocities, *Herbert G. Winful; Univ. of Michigan, USA.* It is widely believed that photons tunnel through bandgaps with group velocities exceeding c. Here we examine the experimental evidence and show that the measured group delays are photon lifetimes as opposed to transit times.

TuD2 • 4:30 p.m.
Large Fractional Pulse Delays in a Hot Rubidium Vapor, *Ryan Camacho, Michael V. Pack, John C. Howell; Univ. of Rochester, USA.* Widely tunable large fractional pulse delays are achieved in a hot, Rubidium vapor with a spectrally burned resonance hole. The delay is tunable by both power broadening the resonance and frequency modulating the pump laser.

TuD3 • 4:45 p.m.
Influence of Incoherent Pumping on Slow Light Propagation in Rubidium Atomic Vapor, *Andrey B. Matsko, Dmitry Strekalov, Anatoliy A. Savchenkov, Lute Maleki; JPL, USA.* We study influence of incoherent pumping on slow light propagation in rubidium atomic vapor. We show that the pumping allows to increase the dynamic range of the system compared with the usual slow light system.

TuD4 • 5:00 p.m.
Symmetry Induced "Heavy" and "Light" Photons in Modified Parallel-Coupled Microrings Waveguides, *Jacob Scheuer; School of Electrical Engineering, Tel-Aviv Univ., Israel.* The band structure of a modified parallel-coupled-microring waveguide incorporating a directional coupler in each unit cell is studied. The dispersion relation splits into fast and slow bands determined by the symmetry of the Bloch waves.

TuD5 • 5:15 p.m.
Test of Exact Solutions for Non-EIT Fast-Light Pulses, *B. D. Clader, Q-Han Park, J. H. Eberly; Univ. of Rochester, USA.* We analyze exact non-EIT type solutions to the equations for propagation of fast-light pulses through a resonant medium. We examine instabilities encountered attaining superluminal group velocities with an ultra-short rather than adiabatic or cw probe.

TuD6 • 5:30 p.m.
Widely Tunable Time Delay Control in Phase-Shifted Gain/Loss Coupled Distributed Feedback Structures, *Mykola Kulishov[1], Jacques M. Laniel[1,2], José Azaña[2], Nicolas Bélanger[1], David V. Plant[1]; [1]McGill Univ., Canada, [2]INRS - Energy, Materials and Telecommunications, Canada.* Group delay behavior of phase-shifted DFB structures with gain/loss coupling is numerically analyzed below the lasing threshold condition. It is demonstrated that these structures can be used as widely tunable optical time delay lines.

TuD7 • 5:45 p.m.
All-Optical Tunable Delay Line Based on Soliton Self-Frequency Shift and Filtering Supercontinuum Spectrum, *Shoichiro Oda, Akihiro Maruta; Graduate School of Engineering, Osaka Univ., Japan.* We propose a novel all-optical tunable delay line based on soliton self-frequency shift and filtering supercontinuum spectrum to compensate for the frequency shift. A temporal shift up to 23ps is experimentally demonstrated for 0.5ps pulse.

● Wednesday, July 26, 2006 ●

OSA Headquarters, 1st Floor
7:00 a.m.–3:00 p.m.
Registration

WA • Bandgap Structures

OSA Headquarters, 1st Floor
8:00 a.m.–9:45 a.m.
WA • Bandgap Structures
Thomas Krauss; Univ. of St. Andrews, UK, Presider

WA1 • 8:00 a.m. **●Invited●**
Slow Light Propagation in Photorefractive Crystals, *Boris Sturman[1], E. Podivilov[1], A. Shumelyuk[2], S. Odoulov[2]; [1]Russian Acad. of Sciences, Russian Federation, [2]Natl. Acad. of Sciences, Ukraine.* When recording a dynamic refractive index grating, two light waves create a highly dispersive medium where they propagate themselves. This may lead to considerable pulse deceleration what we demonstrate with photorefractive $BaTiO_3$ and $Sn_2P_2S_6$.

WA2 • 8:30 a.m.
Backwards Pulse Propagation with a Negative Group Velocity in Erbium Doped Fiber, *George M. Gehring, Aaron Schweinsberg, Robert W. Boyd; Inst. of Optics, Univ. of Rochester, USA.* Simple models predict that pulses propagate "backwards" through a material with a negative group velocity. We find that the peak of the pulse does propagate backwards, even though no energy propagates in that direction.

WA3 • 8:45 a.m.
Slow Light Propagation Experiments in Highly-Doped Erbium Fibers, *Sonia Melle, Oscar G. Calderón, Fernando Carreño, Miguel Angel Antón, Eduardo Cabrera, Isabel Gonzalo; Escuela Univ. de Optica, Univ. Complutense de Madrid, Spain.* We experimentally study slow light propagation in highly-doped erbium fibers by using an amplitude modulated signal. The frequency of the maximum fractional delay shifts to smaller values when increasing ions density.

WA4 • 9:00 a.m.
Long Term Stopped Light and Quantum Memories in Rare-Earth-Ion Doped Solids, *Jevon J. Longdell, Annabel L. Alexander, Elliot Fraval, Matthew J. Sellars; Australian Natl. Univ., Australia.* We describe work towards extending the stopped-light storage times in rare-earth-ion doped solids from our current value of 2.3 seconds. Progress towards a long term quantum memory based on Stark shifts is also reported.

WA5 • 9:15 a.m.
Stopping Fast Waves with a Left-Handed Metamaterial Slab, *Kosmas L. Tsakmakidis, Andreas Klaedtke, Durga P. Aryal, Ortwin Hess; Advanced Technology Inst., School of Electronics and Physical Sciences, Univ. of Surrey, UK.* We show that, with judicious choice of opto-geometrical parameters, oscillatory waves guided by generalized left-handed slab waveguides can attain zero group velocity. Advantages compared to previous methods of slowing or stopping light are concisely discussed.

WA6 • 9:30 a.m.
A Slow-Light-Like Effect Observed in the Frequency-Mapped Modulation and Heterodyne Detection, *Lu Gao, Sandrine I. Herriot, Kelvin H. Wagner; Univ. of Colorado at Boulder, USA.* An effective slow light velocity of 86 m/s and fractional time delay of 15 have been experimentally observed in frequency mapped modulation using AOTF and femtosecond pulses, which can be used for RF true-time-delay applications.

OSA Headquarters, 1st Floor
9:45 a.m.–10:30 a.m.
Coffee Break

WB • System Performance

OSA Headquarters, 1st Floor
10:30 a.m.–12:30 p.m.
WB • System Performance
Michael A. Fiddy, Univ. of North Carolina, USA, Presider

WB1 • 10:30 a.m. **●Invited●**
Slow Light Buffers for Optical Packet Switching: Power Dissipation and Footprint , *Rodney S. Tucker; Univ. of Melbourne, Australia.* We investigate scaling characteristics of slow-light optical buffers for optical packet switching, and compare slow-light buffers with future 22-mn eDRAM SiCMOS buffers. Dissipated energy per bit stored in slow-light buffers increases quadratically with capacity.

WB2 • 11:00 a.m.
Fast Light in a Semiconductor Optical Amplifier, *Forrest G. Sedgwick, Connie J. Chang-Hasnain; Univ. of California at Berkeley, USA.* Wave mixing in a semiconductor optical amplifier offers tunable slow and fast light. We simulate a simple link with a fast light device. Power penalty and fractional advance are calculated and causality is examined.

WB3 • 11:15 a.m.
Distortion-Reduced Pulse-Train Propagation with Large Delay in a Triple Gain Media, *Zhimin Shi[1], Robert W. Boyd[1], Zhaoming Zhu[2], Daniel J. Gauthier[2], Ravi Pant[3], Michael D. Stenner[3,4], Mark A. Neifeld[3,4]; [1]Inst. of Optics, Univ. of Rochester, USA, [2]Dept. of Physics, and Fitzpatrick Ctr. for Photonics and Communications Systems, Duke Univ., USA, [3]Optical Sciences Ctr., Univ. of Arizona, USA, [4]Dept. of Electrical and Computer Engineering, Univ. of Arizona, USA.* A slow light medium based on three closely spaced gain lines is studied. Both numerical calculations and experiments demonstrate that large delay can be achieved with large bandwidth and with very small distortion.

WB4 • 11:30 a.m. **●Invited●**
System Performance of a Slow-Light Delay Line for 10-Gb/s Data Packets, *Yikai Su, Lilin Yi, Weisheng Hu; Shanghai Jiao Tong Univ., China.* We perform, to the best of our knowledge, the first system-experiment of delaying 10-Gb/s data in an optimized slow-light amplifier based on parametric process. We also study a wideband SBS slow-light device with phase-modulated pump.

WB5 • 12:00 p.m.
Low Distortion Propagation of High Bit Rate Data Streams in a Slow Light System Based on Narrow Band Raman Assisted Parametric Amplification in Optical Fibers, *Evgeny Shumakher, Amnon Willinger, Roy Blit, David Dahan, Gadi Eisenstein; Technion, Israel.* We demonstrate low distortion in a delayed 10 Gb/s signal propagating in a fiber parametric amplification based slow light system. Determination of fiber dispersion parameter distribution with several meters resolutions is also presented.

WB6 • 12:15 p.m.
Pulse-Distortion in EIT Medium, *Jonas Tidström, Peter Jänes, L. Mauritz Andersson; Dept. of Microelectronics and Applied Physics, Royal Inst. of Technology, Sweden.* We analyze pulse-distortion due to propagation through medium exhibiting Electromagnetically Induced Transparency; separately investigating real and imaginary parts of the susceptibility; the latter being the limiting factor, by analytical and numerical arguments.

12:30 p.m.–1:30 p.m.
Lunch Break (on your own)

WC • Postdeadline Papers

OSA Headquarters, 1st Floor
1:30 p.m.–3:00 p.m.
WC • Postdeadline Papers
Connie J. Chang-Hasnain; Univ. of California at Berkeley, USA, Presider

Key to Authors and Presiders

Abstracts

●Wednesday, July 26, 2006●

WC • Postdeadline Papers

OSA Headquarters, 1st Floor
1:30 p.m.–2:30 p.m.
WC • Postdeadline Papers
Connie J. Chang-Hasnain, Univ. of California at Berkeley, USA, Presider

WC1 • 1:30 p.m.
The Use of Synthesized Pump Chirp in Stimulated Brillouin Scattering to Extend the Delay of 5 Gb/S PRBS, *Avi Zadok, Avishay Eyal, Moshe Tur; Tel Aviv Univ., Israel.* The chirp of directly modulated pump laser is tailored to obtain broadband stimulated-Brillouin-scattering slow light in optical fiber. PRBS data of 5 Gb/S are delayed by up to 120 pS (BER<10^{-5}) and 80 pS (BER<10^{-9}).

WC2 • 1:45 p.m.
Tunable Wide-Bandwidth Slow Light between Two Absorbing Resonances, *Ryan Camacho, Michael Pack, Aaron Schweinsberg, Robert Boyd, John Howell; Univ. of Rochester, USA.* We demonstrate a tunable all-optical delay line capable of buffering high-bandwidth pulse trains in a hot Cs vapor.

WC3 • 2:00 p.m.
Fast Light Using Cascaded Quantum-Well Semiconductor Optical Amplifiers, *Peter K. Kondratko, Hui Su, Shun Lien Chuang; Univ. of Illinois at Urbana-Champaign, USA.* Fast light at room temperature using cascaded quantum-well semiconductor optical amplifiers is demonstrated. Change in discrete amplifier gain, four-wave mixing and population oscillation enable large controllable delays in Giga-Hertz range and delay-bandwidth product of 0.24.

WC4 • 2:15 p.m.
Dependence of Loss on Group Velocity in Photonic Crystal Waveguides, *Thomas F. Krauss, Liam O'Faolain, David O'Brien, Michael Settle; Univ. of St. Andrews, UK.* We examine propagation loss for photonic crystal waveguides by deliberately introducing disorder into the system. Loss scales sub-linearly with group velocity, indicating that the belief of a square scaling law is incorrect.

KEY TO AUTHORS