

# Slow and Fast Light (SL)

## Topical Meeting and Tabletop Exhibit

Technical Conference: July 12-17, 2009

Exhibition: July 13-15, 2009

[Hilton Hawaiian Village Beach Resort & Spa](#)

Honolulu, Hawaii, USA

PDP Submissions Deadline: June 17, 2009, 12:00 p.m. noon EDT (16.00 [GMT](#))

Housing Deadline: June 9, 2009

Pre-Registration Deadline: June 18, 2009

## Part of Advances in Optical Sciences:: OSA Optics & Photonics Congress

Featuring Three Collocated Topical Meetings:

[Integrated Photonics and Nanophotonics Research and Application \(IPNRA\)](#)

[Nonlinear Optics \(NLO\)](#)

Slow and Fast Light (SL)

### 2009 Meeting Chairs

#### General Chairs

Robert W. Boyd, *Univ. of Rochester, USA*

Jesper Mørk, *Technical Univ. of Denmark, Denmark*

#### Program Chairs

Jacob B. Khurgin, *Johns Hopkins Univ., USA*

Luc Thévenaz, *École Polytechnique Fédérale de Lausanne, Switzerland*

### About SL

We have been 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 slow down, speed up or even completely stop light propagation. This realization has certainly had a profound impact on the optics community from the point of view of fundamental science and has led to the suggestion and exploration of a number of practical applications within various areas.

This topical meeting will bring together physicists and engineers in order to present and discuss the latest achievements within the area of light-speed control. Exciting issues to be discussed include the physics and interpretation of various light-control schemes as well as the potentials and fundamental limitations of possible applications. The area is closely connected to research within structurally engineered materials, such as metamaterials, that allow fundamental control of light-matter interaction. The meeting will provide a forum for vital discussion among experimental and theoretical scientists.

### Topics to Be Considered

- **Physics of Light Control:**
  - Electromagnetically induced transparency
  - Coherent population oscillations
  - Four-wave mixing and parametric processes
  - Absorption or gain saturation
  - Stimulated Brillouin and Raman scattering
  - Passive and active manipulation in periodic structures and resonators
  - New schemes and physical effects
- **Materials and Engineered Structures for Light Control:**
  - Metamaterials, including plasmonic structures
  - Photonic crystal waveguides and periodic structures
  - Micro resonators
  - Optical fibers including holey fibers
  - Semiconductor nanostructures, including quantum wells and quantum dots
  - Saturable optical amplifiers and absorbers
  - BEC and hot vapor cells
  - Crystals and other solid-state materials
  - New materials and structures
- **Applications:**
  - Optical communications; all-optical buffers, routers, etc.
  - Microwave photonics; microwave filters and phased array systems
  - Quantum optics
  - Sampling systems
  - Enhanced optical nonlinear response
  - Sensors and improved measurement systems
  - Figures-of-merit and fundamental limitations
  - New applications
- **Implementation Techniques:**
  - Experimental techniques
  - Theoretical techniques
  - Effective numerical simulation techniques

## About Slow and Fast Light (SL)

We have been 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 slow down, speed up or even completely stop light propagation. This realization has certainly had a profound impact on the optics community from the point of view of fundamental science and has led to the suggestion and exploration of a number of practical applications within various areas.

This topical meeting will bring together physicists and engineers in order to present and discuss the latest achievements within the area of light-speed control. Exciting issues to be discussed include the physics and interpretation of various light-control schemes as well as the potentials and fundamental limitations of possible applications. The area is closely connected to research within structurally engineered materials, such as metamaterials, that allow fundamental control of light-matter interaction. The meeting will provide a forum for vital discussion among experimental and theoretical scientists.

**Technical Conference: July 12-17, 2009**

**Exhibition: July 13-15, 2009**

**[Hilton Hawaiian Village Beach Resort & Spa](#)  
Honolulu, Hawaii, USA**

Submissions Deadline: March 10, 2009, 12:00 p.m. noon EST (16.00 [GMT](#))

Housing Deadline: June 9, 2009

Pre-Registration Deadline: June 18, 2009

*Sponsor:* The Optical Society

## Meeting Topics to Be Considered:

- **Physics of Light Control:**
  - Electromagnetically induced transparency
  - Coherent population oscillations
  - Four-wave mixing and parametric processes
  - Absorption or gain saturation
  - Stimulated Brillouin and Raman scattering
  - Passive and active manipulation in periodic structures and resonators
  - New schemes and physical effects
  
- **Materials and Engineered Structures for Light Control:**
  - Metamaterials, including plasmonic structures
  - Photonic crystal waveguides and periodic structures
  - Micro resonators
  - Optical fibers including holey fibers
  - Semiconductor nanostructures, including quantum wells and quantum dots
  - Saturable optical amplifiers and absorbers
  - BEC and hot vapor cells
  - Crystals and other solid-state materials
  - New materials and structures
  
- **Applications:**
  - Optical communications; all-optical buffers, routers, etc.
  - Microwave photonics; microwave filters and phased array systems
  - Quantum optics
  - Sampling systems
  - Enhanced optical nonlinear response
  - Sensors and improved measurement systems
  - Figures-of-merit and fundamental limitations
  - New applications
  
- **Implementation Techniques:**
  - Experimental techniques
  - Theoretical techniques
  - Effective numerical simulation techniques

# Program Committee

## General Chairs

Robert W. Boyd, *Univ. of Rochester, USA*  
Jesper Mørk, *Technical Univ. of Denmark, Denmark*

## Program Chairs

Jacob B. Khurgin, *Johns Hopkins Univ., USA*  
Luc Thévenaz, *École Polytechnique Fédérale de Lausanne, Switzerland*

## Program Committee

Toshihiko Baba, *Yokohama Natl. Univ., Japan*  
John Howell, *Univ. of Rochester, USA*  
Thomas Krauss, *Univ. of St Andrews, UK*  
Francesco Morichetti, *Politecnico di Milano, Italy*  
Mark Neifeld, *Univ. of Arizona, USA*  
Yuri Rostovtsev, *Texas A&M Univ., USA*  
Moshe Shuker, *Technion – Israel Inst. of Technology, Israel*  
Rod Tucker, *Univ. of Melbourne, Australia*  
Hailin Wang, *Univ. of Oregon, USA*

# Exhibitors

## SL

**Tabletop Exhibit:**  
**July 13-15, 2009**

**Topical Meeting:**  
**July 12-17, 2009**

### Slow and Fast Light 2009 Exhibit Space Reservation Contract

[Exhibit Space Reservation Contract](#) (  PDF, 58KB)

Note: You need Adobe Acrobat to view the PDF files above. If you do not already have this software, you can [download Adobe Acrobat for free](#) at the Adobe Web site.

**Tabletop exhibit space will be \$1,090 for Corporate Members and \$1,250 for non-members and will include:**

- One complimentary registration list
- One complimentary technical registration and two exhibit personnel registrations
- One copy of the meeting's proceedings

If you have questions about exhibiting at this topical meeting, please contact our exhibit sales staff at 202.416.1428 202.416.1428 or [exhibitsales@osa.org](mailto:exhibitsales@osa.org).

### Sponsorship Opportunities at SL 2009

Increase your company's visibility among qualified attendees with a sponsorship at the event.

#### Current SL Sponsorship Opportunities include:

- Coffee Break Sponsorships
- Reception Sponsorships
- Attendee Tote Bag Sponsorship
- Registration Material Inserts
- Advertising Signage Placements

Plus other customizable promotional opportunities

To find out more about one of the sponsorship opportunities listed above or to discuss a customized SL promotional package or sponsorship, please contact Anne Jones at 202.416.1942 202.416.1942 or email [exhibitsales@osa.org](mailto:exhibitsales@osa.org)

# Exhibitor Listings

## ADVANCES in OPTICAL SCIENCES

2009 OSA OPTICS  
AND PHOTONICS  
CONGRESS

July 12-17, 2009  
Honolulu, Hawaii  
USA

### Collated Meetings:

Integrated  
Photonics and  
Nanophotonics  
Research and  
Applications  
(IPNRA)

Nonlinear Optics  
(NLO)

Slow and Fast Light  
(SL)

### Altos Photonics

201 S. Wallace, Ste. B2C  
Bozeman, MT 59715  
P: 406.581.4662 or +1 866.658.5404  
F: 909.363.8637  
sales@altosphotronics.com  
www.altosphotronics.com

Altos Photonics offers pulsed solid-state lasers and tunable systems for research and industrial application, as well as related components and accessories. Laser components include UV and IR optics, non-linear crystals (BBO, KTP, ZGP, KYW, KGW, etc), optical mounts, USB-controlled stages, and laser safety glasses. Altos Photonics sells and services products from EKSPLA, EKSMA, Light Conversion & Standa. Since 1997, we have been partnering with outstanding researchers throughout the Americas to better understand and manipulate materials using photonics.



### Optiwave Systems, Inc.

7 Capella Court  
Ottawa, ON K2E 7X1  
Canada  
Tel: 613.224.4700  
Fax: 613.224.4706  
info@optiwave.com  
www.optiwave.com

Optiwave is the leading provider of innovative software design tools for optoelectronic and optical system engineers, hosting an unparalleled suite of advanced simulation software products. Design advanced passive and non-linear photonic components using sophisticated simulation environments. Plan, test, and simulate almost every type of optical link in the physical layer of a broad spectrum of optical networks from LAN, SAN, MAN to BPON, EPON, and GPON. Visit [optiwave.com](http://optiwave.com) to download your free evaluation license.



*(over for additional companies)*

## Photonics Media

Laurin Publishing  
2 South Street, Berkshire Common  
Pittsfield, MA 01201 USA  
Tel: 413.499.0514  
Fax: 413.442.3180  
photonics@laurin.com  
www.photonics.com



THE PULSE OF THE INDUSTRY

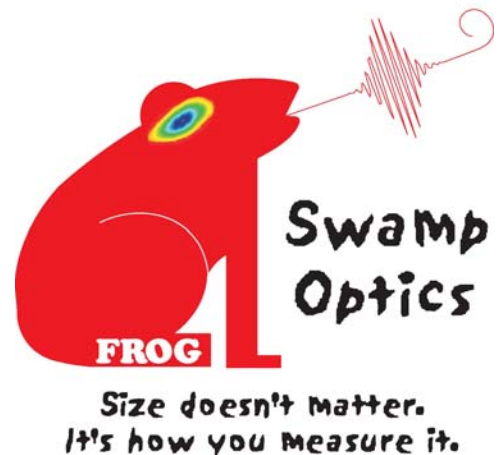
Photonics Media is Laurin Publishing Company's international suite of media and as such the pulse of the industry. More than 50 years as the leading publications. In print with the Photonics Directory, Photonics Spectra, Biophotonics International, EuroPhotonics, and Photonics Showcase magazines and online at Photonics.com.

## CORPORATE SPONSOR & EXHIBITOR

### Swamp Optics, LLC

6300 Powers Ferry Rd.  
Suite 600-345  
Atlanta, GA 30339-2919  
Tel: 404.547.9267  
Fax: +1.866.855.4518  
linda.trebino@swampoptics.com  
www.swampoptics.com

Swamp Optics offers compact, convenient devices for measuring ultrashort laser pulses in real time and which yield the most complete measurements ever and include the beam spatial profile and spatio-temporal distortions. Awards include an R&D100 award and a Circle of Excellence award. Swamp Optics also offers custom devices for nearly every pulse-measurement problem, and we recently introduced a compact pulse compressor automatically free of distortions and very inexpensive.



**Thank you to the following organizations that provided grant funding:**

- ❖ Air Force Office of Science Research (AFOSR)
- ❖ National Science Foundation (NSF)
- ❖ OSA Foundation



## Special Events

### Hawaiian Cultural Workshop for the OPC Summer Congress in Traditional & Modern Hula and Chants with Ka'iulani Visiko

**Dates:** Monday, July 13 and Tuesday, July 14, 2009

**Time:** 9:00–11:30 a.m.

**Location:** Hibiscus Suite, Kalia Executive Conference Center

There will be a 15 minute coffee break with Wayne "Kimo" Knox at 10:00 a.m.

On Tuesday, July 14, 2009, there will be an opportunity to perform what you learned in the workshop at the Conference Luau during Kimo and Ka'iulani's Cocktail Hour Concert.

**Location:** Rooftop of the Mid-Pacific Conference Center

**\*\*Note: Luau admission ticket required to participate. Additional tickets may be purchased at Registration until 6:30 p.m., Monday, July 13, 2009.\*\***



For Ka'iulani's Workshop you'll need:

- Tank top or t-shirt
- Shorts or sarong
- Bare feet
- Notepad and pencil
- Much ALOHA and FUN!!

**Open to members, family, and friends (Children 12 years old and under must have a parent present at all times).**

For more information and any questions, visit [www.GalleryKauai.com](http://www.GalleryKauai.com) or contact Kimo and Ka'iulani by [email](#), or call +1 585.313.1195 +1 585.313.1195 (cell).

## Invited Speakers

### Joint Slow and Fast Light (SL)/Integrated Photonics and Nanophotonics Research and Applications (IPNRA) Session: Slow Light Effects in Integrated Photonics Structures

JMA1, **Dispersion-Controlled Slow Light in Photonic Crystal Waveguides**, Toshihiko Baba<sup>1,2</sup>, Hirokazu Sasaki<sup>1,2</sup>, Jun Adachi<sup>1,2</sup>, Norihiro Ishikura<sup>1</sup>, Yohei Hamachi<sup>1,2</sup>, Koshiro Yamada<sup>1</sup>, Yuji Saito<sup>1,2</sup>; <sup>1</sup>*Yokohama Natl. Univ., Japan*, <sup>2</sup>*CREST, JST, Japan*

JMA2, **Processing Light in Coupled Ring Resonators**, Francesco Morichetti<sup>1,2</sup>, Carlo Ferrari<sup>1</sup>, Antonio Canciamilla<sup>1</sup>, Matteo Torregiani<sup>1</sup>, Andrea Melloni<sup>1</sup>, Antonio Samarelli<sup>3</sup>, Richard De La Rue<sup>3</sup>, Marc Sorel<sup>3</sup>; <sup>1</sup>*POLICOM - DEI Politecnico di Milano, Italy*, <sup>2</sup>*Fondazione Politecnico di Milano, Italy*, <sup>3</sup>*Dept. of Electronics and Electrical Engineering, Univ. of Glasgow, UK*

JMA5, **Ultra-Compact Switches and Modulators Based on Slow Light in Photonic Crystals**, Thomas F. Krauss<sup>1</sup>, Daryl M. Beggs<sup>1</sup>, Thomas P. White<sup>1</sup>, Liam O'Faolain<sup>1</sup>, Tobias Kampfrath<sup>2</sup>, L. (Kobus) Kuipers<sup>2</sup>; <sup>1</sup>*Univ. of St. Andrews, UK*, <sup>2</sup>*FOM Inst. AMOLF, Netherlands*

### Joint Slow and Fast Light (SL)/Nonlinear Optics (NLO) Session: Slow Light Applications in Nonlinear Optics

JWB1, **Slow Light Enhanced Nonlinear Effects in Silicon Photonic Crystal Waveguides**, Cristelle Monat<sup>1</sup>, B. Corcoran<sup>1</sup>, C. Grillet<sup>1</sup>, M. Ebnali-Heidari<sup>1</sup>, D. J. Moss<sup>1</sup>, B. J. Eggleton<sup>1</sup>, T. P. White<sup>2</sup>, L. O'Faolain<sup>2</sup>, T. F. Krauss<sup>2</sup>; <sup>1</sup>*Univ. of Sydney, Australia*, <sup>2</sup>*Univ. of St. Andrews, UK*

JWB4, **Modulation of Single Photons and Biphotons**, Steve Harris; *Stanford Univ., USA*

JWB5, **Broadband Optical Delay and Filtering in Spectrally Structured Materials**, Wm. Randall Babbitt, Zeb W. Barber; *Montana State Univ., USA*

## Invited Speakers

SMA4, **Fast Light in Optical Fiber for Trap-Door Data Buffering**, Selim M. Shahriar, Honam Yum; *Northwestern Univ., USA*

SMB1, **Stabilizing SBS Slow Light Delay in Fibers Using a Faraday Rotator Mirror**, Mark Bashkansky, David Walker, Fredrik Fatemi, Armen Gulian, Michael Steiner; *NRL, USA*

SMB4, **Noise Properties of Semiconductor Optical Amplifiers Based Slow Light Elements**, Gadi Eisenstein; *Technion-Israel Inst. of Technology, Israel*

SMC2, **Polarization Properties of Stimulated Brillouin Scattering and Their Implications on Slow and Fast Light**, Moshe Tur<sup>1</sup>, Avi Zadok<sup>2</sup>, Elad Zilka<sup>1</sup>, Avishay Eyal<sup>1</sup>, Luc Thevenaz<sup>3</sup>; <sup>1</sup>*Tel Aviv Univ., Israel*, <sup>2</sup>*Caltech, USA*, <sup>3</sup>*École Polytechnique Fédérale de Lausanne, Switzerland*

SMC6, **Stored Light and Photonic Signal Processing via Stimulated Brillouin Scattering**, Dan Gauthier; *Duke Univ., USA*

STuA1, **Diffusion of Slow-Light in Vapor**, Nir Davidson<sup>1</sup>, O. Firstenberg<sup>2</sup>, M. Shuker<sup>2</sup>, R. Pugatch<sup>1</sup>, A. Ron<sup>2</sup>; <sup>1</sup>*Weizmann Inst. of Science, Israel*, <sup>2</sup>*Technion-Israel Inst. of Technology, Israel*

STuA4, **Slow and Stored Light Manipulations at High Atomic Densities**, Irina Novikova<sup>1</sup>, Nathaniel B. Phillips<sup>1</sup>, Alexey V. Gorshkov<sup>2</sup>; <sup>1</sup>*College of William & Mary, USA*, <sup>2</sup>*Harvard Univ., USA*

STuB1, **Slow and Fast Light through Nonlinear Wave Mixing in Liquid Crystal Light Valves**, Stefania Residori<sup>1</sup>, U. Bortolozzo<sup>1</sup>, J. P. Huignard<sup>2</sup>; <sup>1</sup>*Univ. de Nice Sophia-Antipolis, France*, <sup>2</sup>*Thales Res. & Technology, France*

STuC3, **Slow Light in Coupled Ring Resonators and PhC: A Comparison**, Andrea Melloni<sup>1</sup>, F. Morichetti<sup>2</sup>, T. F. Krauss<sup>3</sup>; <sup>1</sup>*Politecnico di Milano, Italy*, <sup>2</sup>*Fondazione Politecnico di Milano, Italy*, <sup>3</sup>*Univ. of St. Andrews, UK*

STuC6, **Slotted Photonic Crystal Devices: Slow Light and Applications**, Andrea Di Falco, Liam O'Faolain, Thomas F. Krauss; *Univ. of St. Andrews, UK*

SWA3, **Manipulating Slow Light by Ultrahigh-Q Nanocavities and their Coupled Arrays**, Masaya Notomi, T. Tanabe, E. Kuramochi, H. Taniyama; *NTT Basic Res. Labs, Japan*

SWA6, **Dynamic Control of Q Factor of Nanocavity for Stopping of Light**, Susumu Noda, Yoshinori Tanaka, Jeremy Upham, Yasushi Takahashi, Takashi Asano; *Kyoto Univ., Japan*

	Tapa I	Tapa II	Tapa III	Honolulu I-II	Honolulu III
<b>Sunday, July 12</b>					
3:00 p.m.–6:00 p.m.	Registration Open, <i>Palace Lounge</i>				
<b>Monday, July 13</b>					
7:00 a.m.–6:30 p.m.	Registration Open, <i>Palace Lounge</i>				
8:00 a.m.–10:00 a.m.	NMA • Nonlinear Optics in Semiconductors, Glasses and Crystals	NMB • Spatial Effects			SMA • Fundamental Issues
8:00 a.m.–8:45 a.m.			IMA • IPNRA Plenary		
9:00 a.m.–10:00 a.m.			IMB • Highlights of IPNRA 2009 Contributed Papers		
10:00 a.m.–10:30 a.m.	Coffee Break/Exhibits, <i>Palace Lounge</i>				
10:00 a.m.–4:30 p.m.	Exhibits Open, <i>Palace Lounge</i>				
10:30 a.m.–12:30 p.m.	NMC • Nonlinear Optics Plenary I		IMC • Silicon Photonics and Hybrid Material Integrated Devices	IMD • Filter Technologies	SMB • Applications I
12:30 p.m.–2:00 p.m.	Lunch (on your own)				
2:00 p.m.–4:00 p.m.	NMD • Photonic Crystals and Periodic Nanomaterials	NME • Plasmonics	JMA • Joint IPNRA/SL Session: Slow Light Effects in Integrated Photonics Structures	IME • Nanophotonic Sources	
4:00 p.m.–4:30 p.m.	Coffee Break/Exhibits, <i>Palace Lounge</i>				
4:30 p.m.–6:30 p.m.			IMF • Q-Dot Emitters, PhC Lasers, Microcavities, Coupling	IMG • Modeling and Simulation	SMC • Fiber-Based Slow Light
<b>Tuesday, July 14</b>					
7:30 a.m.–6:30 p.m.	Registration Open, <i>Palace Lounge</i>				
8:00 a.m.–10:00 a.m.	NTuA • Entanglement, Squeezing and Quantum Memories	ITuA • Sensitive Nanophotonics	JTuA • Joint IPNRA/NLO Session: Nonlinear Integrated Photonics	STuA • Atomic Systems	
10:00 a.m.–10:30 a.m.	Coffee Break/Exhibits, <i>Palace Lounge</i>				
10:00 a.m.–11:30 a.m.	JTUB • Joint Poster Session I, <i>Palace Lounge</i>				
10:00 a.m.–1:00 p.m.	Exhibits Open, <i>Palace Lounge</i>				
11:30 a.m.–1:00 p.m.	NTuB • Nonlinear Optics Plenary II	ITuB • Photonic Devices and Integration I	ITuC • Silicon Nanophotonics	STuB • Applications II	
1:00 p.m.–2:30 p.m.	Lunch (on your own)				
2:30 p.m.–4:30 p.m.	NTuC • Nonlinear Optics in Microresonators	ITuD • Modeling and Simulation II	ITuE • Novel Waveguides and Photonic Sensors	STuC • Photonic Structures and Semiconductors	
4:30 p.m.–5:00 p.m.	Coffee Break, <i>Palace Lounge</i>				
5:00 p.m.–6:30 p.m.	Postdeadline Paper Sessions, <i>See Postdeadline Papers book for schedule and locations</i>				
7:00 p.m.–10:00 p.m.	Conference Luau, <i>Lagoon Green</i>				

	Tapa I	Tapa II	Tapa III	Honolulu I-II
<b>Wednesday, July 15</b>				
7:30 a.m.–4:30 p.m.	Registration Open, <i>Palace Lounge</i>			
8:00 a.m.–10:00 a.m.	NWA • Terahertz and Ultrafast	NWB • Novel Effects in Atoms, Molecules and Metals	IWA • Photonic Devices and Integration II	SWA • Photonic Structures
10:00 a.m.–10:30 a.m.	Coffee Break/Exhibits, <i>Palace Lounge</i>			
10:00 a.m.–11:30 a.m.	JWA • Joint Poster Session II, <i>Palace Lounge</i>			
10:00 a.m.–2:30 p.m.	Exhibits Open, <i>Palace Lounge</i>			
11:30 a.m.–1:30 p.m.	NWC • Current Trends in Nonlinear Optical Materials	NWD • Advances in Frequency Conversion, High Energy Lasers, and Laser Dynamics	IWB • Resonator Circuits and their Applications	JWB • Joint NLO/SL Session: Slow Light Applications in Nonlinear Optics
1:30 p.m.–2:30 p.m.	Lunch (on your own)			
2:30 p.m.–4:30 p.m.	IWC • Modeling and Simulation III	IWD • 3-D Photonic Crystals, Novel Fabrication Techniques		
7:30 p.m.–9:00 p.m.	Registration Open, <i>Palace Lounge</i>			
7:30 p.m.–9:30 p.m.	NWE • Squeezing and Biphoton States			
<b>Thursday, July 16</b>				
7:30 a.m.–1:00 p.m.	Registration Open, <i>Palace Lounge</i>			
8:00 a.m.–10:15 a.m.	NThA • Parametric Processes and Oscillators			
10:15 a.m.–10:45 a.m.	Coffee Break, <i>Palace Lounge</i>			
10:45 a.m.–1:00 p.m.	NThB • Advances in Quasi-Phase-Matched Interactions			
7:30 p.m.–9:00 p.m.	Registration Open, <i>Palace Lounge</i>			
7:30 p.m.–9:30 p.m.	NThC • Generating E&M Radiation: Visible, UV, X-Ray and Gamma Rays			
<b>Friday, July 17</b>				
7:30 a.m.–1:00 p.m.	Registration Open, <i>Palace Lounge</i>			
8:00 a.m.–10:15 a.m.	NFA • Self Focusing and Filaments			
10:15 a.m.–10:45 a.m.	Coffee Break, <i>Palace Lounge</i>			
10:45 a.m.–1:00 p.m.	NFB • Applications of Nonlinear Optics			

Key to Shading	
IPNRA Sessions	
NLO Sessions	No Shading
SL Sessions	
Joint Sessions	

## Slow and Fast Light (SL) Abstracts

### • Sunday, July 12, 2009 •

Palace Lounge

3:00 p.m.–6:00 p.m.

Registration Open

### • Monday, July 13, 2009 •

Palace Lounge

7:00 a.m.–6:30 p.m.

Registration Open

#### SMA • Fundamental Issues

Honolulu III

8:00 a.m.–10:00 a.m.

Moshe Shuker; Technion-Israel Inst. of Technology, Israel, Presider

#### SMA1 • 8:00 a.m.

**Fast-Light and the Speed of Information Transfer**, Michael Z. Feng, Wayne V. Sorin, Rodney S. Tucker; Univ. of Melbourne, Australia. We show that in a gain-assisted fast-light transmission link with a thermal-noise-limited receiver, the speed of information transfer can exceed the speed of light in a vacuum.

#### SMA2 • 8:15 a.m.

**Do Pulses in Negative Group Velocity Material Carry Negative Electromagnetic Energy**, Noam Kaminski, Meir Orenstein; Technion-Israel Inst. of Technology, Israel. Negative dispersion can be exhibited in resonant materials with gain (or loss). The resulting causal pulses exhibiting "fast light" can be analytically interpreted as carrying negative electromagnetic energy, exploiting the stored energy in the medium.

#### SMA3 • 8:30 a.m.

**Material Slow Light Does Not Enhance Beer-Lambert Absorption**, Sanghoon Chin<sup>1</sup>, Isabelle Dicaire<sup>1</sup>, Jean-Charles Beugnot<sup>1</sup>, Stella Foaleng-Mafang<sup>1</sup>, Miguel Gonzalez-Herraez<sup>2</sup>, Luc Thévenaz<sup>1</sup>; <sup>1</sup>École Polytechnique Fédéral de Lausanne, Switzerland, <sup>2</sup>Dept. of Electronics, Univ. of Alcalá de Henares, Spain. We experimentally demonstrate that material slow light does not enhance Beer-Lambert absorption. A 26% group velocity reduction induced by stimulated Brillouin scattering in a gas-filled microstructured fiber caused no observable change in the measured absorption.

#### SMA4 • 8:45 a.m.

Invited

**Fast Light in Optical Fiber for Trap-Door Data Buffering**, Selim M. Shahriar, Honam Yum; Northwestern Univ., USA. Constraints encountered in data-buffering via slow light are circumvented by using a trap-door technique based on fast light. We will describe the model and our experimental efforts to realize this buffer using Brillouin gain in optical fiber.

#### SMA5 • 9:15 a.m.

**Free Energies of Dielectrics**, Scott A. Glasgow, Michael Ware; Brigham Young Univ., USA. We compute the real-time maximal and minimum free energies in linear dielectrics. These arise as solutions to classical Riemann-Hilbert problems. Connections to slow and fast light and to the real-time thermodynamics of dielectrics are made.

#### SMA6 • 9:30 a.m.

**Pulses with Non Analytical Points Described by Functions with Compact Support: The Information Velocity in a Fast-Light Medium**, Wagner F. Silva<sup>1</sup>, Marcio A. R. Alencar<sup>1</sup>, Dilson P. Caetano<sup>1</sup>, Adan J. Corcho<sup>2</sup>, Jandir M. Hickmann<sup>1</sup>; <sup>1</sup>Optics and Materials Group - OPTMA, Inst. of Physics, Univ. Federal de Alagoas, Brazil, <sup>2</sup>Inst. of Mathematics, Univ. Federal de Alagoas, Brazil. A new approach to associate information to non analytical points of optical pulses is investigated. These pulses propagation through a dispersive medium is numerically studied and the information velocity is characterized for superluminal propagation.

#### SMA7 • 9:45 a.m.

**Effect Reminiscent of Slow Light in Saturable Bacteriorhodopsin-Based Materials**, Elena Korchemskaya<sup>1,2</sup>, Dmitriy Stepanchikov<sup>3</sup>, Nikolaj Burykin<sup>2</sup>, Tatyana Dyukova<sup>4</sup>; <sup>1</sup>Inst. of Physics, Natl. Acad. of Sciences, Ukraine, <sup>2</sup>Inst. of Applied Optics, Natl. Acad. of Sciences, Ukraine, <sup>3</sup>Zhytomir State Univ., Ukraine, <sup>4</sup>Inst. of Theoretical and Experimental Biophysics, Russian Acad. of Sciences, Russian Federation. We demonstrate that a pulse delay can be reached merely due to nonuniform photobleaching in depth of low-saturable bacteriorhodopsin materials.

Palace Lounge

10:00 a.m.–10:30 a.m.

Coffee Break/Exhibits (Exhibits open 10:00 a.m.–4:30 p.m.)

**SMB • Applications I**

Honolulu III

10:30 a.m.–12:30 p.m.

Francesco Morichetti; Politecnico di Milano, Italy, *Presider*

**SMB1 • 10:30 a.m.**

**Invited**

**Stabilizing SBS Slow Light Delay in Fibers Using a Faraday Rotator Mirror**, Mark Bashkansky, David Walker, Fredrik Fatemi, Armen Gulian, Michael Steiner; NRL, USA. Stokes gain and delay in stimulated Brillouin scattering in fibers is strongly affected by polarization changes due to unavoidable fiber disturbances. We demonstrate the use of a Faraday rotator mirror to counteract polarization fluctuations.

**SMB2 • 11:00 a.m.**

**Controlling the Sensitivity of an Optical Cavity with Slow and Fast Light**, David D. Smith<sup>1,2</sup>, Krishna Myneni<sup>2,3</sup>, Jamiu A. Odutola<sup>4</sup>, Jean-Claude Diels<sup>5</sup>; <sup>1</sup>NASA Marshall Space Flight Ctr., USA, <sup>2</sup>Univ. of Alabama in Huntsville, USA, <sup>3</sup>U.S. Army, USA, <sup>4</sup>Alabama A&M Univ., USA, <sup>5</sup>Univ. of New Mexico, USA. We measure mode pushing in a Fabry-Perot cavity by a dispersive medium and find that the scale factor increases more than the mode width. We discuss the conditions that result in such enhanced cavity sensitivities.

**SMB3 • 11:15 a.m.**

**Influence of Slow Light Effect in Semiconductor Amplifiers on the Dynamic Range of Microwave-Photonics Links**, Perrine Berger<sup>1,2</sup>, Mehdi Alouini<sup>1,3</sup>, Jérôme Bourderionnet<sup>1</sup>, Fabien Bretenaker<sup>2</sup>, Daniel Dolfi<sup>1</sup>; <sup>1</sup>Thales Res. & Technology, France, <sup>2</sup>Lab Aimé Cotton, France, <sup>3</sup>Inst. de Physique de Rennes, France. We propose a theoretical and experimental analysis of the dynamic range of a SOA-based photonic-microwave link. The dynamic range is found constant versus RF frequency, in particular near the gain dip associated with slowlight effects.

**SMB4 • 11:30 a.m.**

**Invited**

**Noise Properties of Semiconductor Optical Amplifiers Based Slow Light Elements**, Gadi Eisenstein; Technion-Israel Inst. of Technology, Israel. Semiconductor optical amplifiers acting as slow light elements offer large phase shifts provided that their output spectra are filtered prior to detection. The filtering affects their noise properties which are described in this paper.

**SMB5 • 12:00 p.m.**

**Picometer Displacement Detection by Using Wave Mixing in a Liquid Crystal Light Valve**, Umberto Bortolozzo<sup>1</sup>, Stefania Residori<sup>1</sup>, Jean-Pierre Huignard<sup>2</sup>; <sup>1</sup>Inst. Non Linéaire de Nice, CNRS, Univ. de Nice Sophia-Antipolis, France, <sup>2</sup>Thales Res. & Technology, France. The large dispersion and narrow frequency bandwidth of the two-wave mixing in liquid crystal light valve is used to realize an adaptive holographic interferometer, by which displacements as small as a few picometers are detected.

**SMB6 • 12:15 p.m.**

**Experimental Demonstration of 360° Tunable RF Phase Shift Using Slow and Fast Light Effects**, Weiqi Xue<sup>1</sup>, Salvador Sales<sup>2</sup>, José Capmany<sup>2</sup>, Jesper Mørk<sup>1</sup>; <sup>1</sup>DTU Fotonik, Technical Univ. of Denmark, Denmark, <sup>2</sup>Univ. Politècnica de Valencia, Spain. A microwave photonic phase shifter realizing 360° phase shift over a bandwidth of more than 10GHz is demonstrated using optical filtering assisted slow and fast light effects in a cascaded structure of semiconductor optical amplifiers.

12:30 p.m.–2:00 p.m.

Lunch (on your own)

**JMA • Joint IPNRA/SL Session: Slow Light Effects in Integrated Photonics Structures**

Tapa III

2:00 p.m.–4:00 p.m.

Wayne Sorin; Univ. of Melbourne, Australia, *Presider*

**JMA1 • 2:00 p.m.**

**Invited**

**Dispersion-Controlled Slow Light in Photonic Crystal Waveguides**, Toshihiko Baba<sup>1,2</sup>, Hirokazu Sasaki<sup>1,2</sup>, Jun Adachi<sup>1,2</sup>, Norihiro Ishikura<sup>1</sup>, Yohei Hamachi<sup>1,2</sup>, Koshiro Yamada<sup>1</sup>, Yuji Saito<sup>1,2</sup>; <sup>1</sup>Yokohama Natl. Univ., Japan, <sup>2</sup>CREST, JST, Japan. Photonic crystal slow light waveguides are demonstrated with a large delay-bandwidth product over 100, picosecond pulse transmission and tunable delay. The nonlinear enhancement based on the slow light pulse is also presented.

**JMA2 • 2:30 p.m.**

**Invited**

**Processing Light in Coupled Ring Resonators**, Francesco Morichetti<sup>1,2</sup>, Carlo Ferrari<sup>1</sup>, Antonio Canciamilla<sup>1</sup>, Matteo Torregiani<sup>1</sup>, Andrea Melloni<sup>1</sup>, Antonio Samarelli<sup>3</sup>, Richard De La Rue<sup>3</sup>, Marc Sorel<sup>3</sup>; <sup>1</sup>POLICOM - DEI Politecnico di Milano, Italy, <sup>2</sup>Fondazione Politecnico di Milano, Italy, <sup>3</sup>Dept. of Electronics and Electrical Engineering, Univ. of Glasgow, UK. The state-of-the-art of coupled resonator optical waveguides made of chains of ring resonators in glass and SOI platforms is reviewed. Issues concerning technology, design, limits and applications in the linear and nonlinear regime are discussed.

**JMA3 • 3:00 p.m.**

**All Optical Switching in Silicon-on-Insulator Photonic Wire Nano-Cavities**, Michele Belotti<sup>1</sup>, Matteo Galli<sup>1</sup>, Dario Gerace<sup>1</sup>, Lucio C. Andreani<sup>1</sup>, Giorgio Guizzetti<sup>1</sup>, Ahmad R. Md Zain<sup>2</sup>, Nigel P. Johnson<sup>2</sup>, Marc Sorel<sup>2</sup>, Richard M. De La Rue<sup>2</sup>; <sup>1</sup>Univ. degli Studi di Pavia, Italy, <sup>2</sup>Univ. of Glasgow, UK. All optical switching in a silicon-on-insulator wire with a 1-D photonic crystal nanocavity with ultra-high quality factor operating at telecom wavelengths is presented. Switching is performed with control pulse energy of only 20 fJ.

**JMA4 • 3:15 p.m.**

**Recent Advances in 'Trapped Rainbow' Techniques for Stopping Light**, Kosmas Tsakmakidis, Ortwin Hess; *Advanced Technology Inst., Univ. of Surrey, UK*. We provide an overview of 'trapped rainbow' techniques for stopping light. We show that guided modes with real propagation constant and complex frequency can be 'trapped rainbow'-stopped even in the presence of waveguide losses.

**JMA5 • 3:30 p.m.**

**Invited**

**Ultracompact Switches and Modulators Based on Slow Light in Photonic Crystals**, Thomas F. Krauss<sup>1</sup>, Daryl M. Beggs<sup>1</sup>, Thomas P. White<sup>1</sup>, Liam O'Faolain<sup>1</sup>, Tobias Kampfrath<sup>2</sup>, L.(Kobus) Kuipers<sup>2</sup>; <sup>1</sup>Univ. of St. Andrews, UK, <sup>2</sup>FOM Inst. AMOLF, Netherlands. Photonic crystal slow light waveguides enable modulators with high speed and large bandwidth. Group indices of 30-40 are achieved with low loss and we demonstrate modulators of <100  $\mu\text{m}$  length with switching times of 3ps.

Palace Lounge

**4:00 p.m.–4:30 p.m.**

**Coffee Break/Exhibits**

**SMC • Fiber-Based Slow Light**

Honolulu III

**4:30 p.m.–6:30 p.m.**

Hailin Wang; *Univ. of Oregon, USA, Presider*

**SMC1 • 4:30 p.m.**

**Optical Pulse Capture and Release in Coupled Semiconductor Laser Arrays**, Yuval Yifat, Jacob Scheuer; *Tel Aviv Univ., Israel*. We present a method for optical pulse capture and release using an array of slightly coupled semiconductor lasers. The pulse is seeded into one of the array's lasers, losing phase information while enabling accurate release.

**SMC2 • 4:45 p.m.**

**Invited**

**Polarization Properties of Stimulated Brillouin Scattering and Their Implications on Slow and Fast Light**, Moshe Tur<sup>1</sup>, Avi Zadok<sup>2</sup>, Elad Zilka<sup>1</sup>, Avishay Eyal<sup>1</sup>, Luc Thévenaz<sup>3</sup>; <sup>1</sup>Tel Aviv Univ., Israel, <sup>2</sup>Caltech, USA, <sup>3</sup>École Polytechnique Fédérale de Lausanne, Switzerland.

Vector formalism for stimulated Brillouin scattering amplification in birefringent fibers is used to model the fiber as an equivalent, pseudo-linear, polarization-dependent gain medium. Implications on slow and fast light setups are discussed.

**SMC3 • 5:15 p.m.**

**Zero-Broadening, Zero-Distortion SBS-Based Slow Light – An Overview**, Thomas Schneider, Andrzej Wiatrek, Ronny Henker; *Hochschule für Telekommunikation, Germany*. In the last few months several "Zero-Broadening" slow light methods were presented. By cascading any wanted delay could be possible. Here we present new results, compare these methods and discuss the underlying physics.

**SMC4 • 5:30 p.m.**

**1.4 Bit Delay and Pulse Compression Based on Brillouin Optical Signal Processing**, Andrzej Wiatrek, Ronny Henker, Stefan Preußler, Thomas Schneider; *Hochschule für Telekommunikation Leipzig, Germany*. We discuss a novel method for pulse delaying by manipulation of the pulse spectrum itself via optical signal processing. Besides a high fractional delay, the typical side effect of pulse broadening is totally cancelled.

**SMC5 • 5:45 p.m.**

**The Fiber Microcoil Optical Gyroscope**, Jacob Scheuer; *Tel Aviv Univ., Israel*. We study the propagation of electromagnetic waves in rotating optical microcoil. The combination of slow-light and conventional propagation enhance the Sagnac phase shift by orders of magnitudes enabling the realization of highly-compact optical rotation sensors.

**SMC6 • 6:00 p.m.**

**Invited**

**Stored Light and Photonic Signal Processing via Stimulated Brillouin Scattering**, Daniel Gauthier; *Duke Univ., USA*. Abstract not available.



• Tuesday, July 14, 2009 •

Palace Lounge

7:30 a.m.–6:30 p.m.

Registration Open

STuA • Atomic Systems

Honolulu I-II

8:00 a.m.–10:00 a.m.

Jesper Mørk; Technical Univ. of Denmark, Denmark, Presider

STuA1 • 8:00 a.m.

Invited

**Diffusion of Slow-Light in Vapor**, Nir Davidson<sup>1</sup>, O. Firtenberg<sup>2</sup>, M. Shuker<sup>2</sup>, R. Pugatch<sup>1</sup>, A. Ron<sup>2</sup>; <sup>1</sup>Weizmann Inst. of Science, Israel, <sup>2</sup>Technion-Israel Inst. of Technology, Israel. We study theoretically and experimentally the propagation of slow light in hot atomic vapor and present novel spatial and spectral effects associated with the diffuse atomic motion.

STuA2 • 8:30 a.m.

**Slow and Stopped Images**, Praveen Vudya Setu, D. Starling, Ryan M. Camacho, C. J. Broadbent, John C. Howell; Univ. of Rochester, USA. We report on the slowing and stopping of images in a warm Rb vapor.

STuA3 • 8:45 a.m.

**Electromagnetically Induced Transparency in an Integrated Rubidium Vapor Cell**, Bin Wu<sup>1</sup>, John Hulbert<sup>2</sup>, Katherine Hurd<sup>2</sup>, Mark Oehlberg<sup>1</sup>, Aaron Hawkins<sup>2</sup>, Holger Schmidt<sup>1</sup>; <sup>1</sup>Univ. of California at Santa Cruz, USA, <sup>2</sup>Brigham Young Univ., USA. Electromagnetically induced transparency in rubidium atoms on a waveguide-based silicon chip is demonstrated. A transparency of 12% is achieved with a coupling laser power of 133 $\mu$ W. Further improvements by modified waveguide design are discussed.

STuA4 • 9:00 a.m.

Invited

**Slow and Stored Light Manipulations at High Atomic Densities**, Irina Novikova<sup>1</sup>, Nathaniel B. Phillips<sup>1</sup>, Alexey V. Gorshkov<sup>2</sup>; <sup>1</sup>College of William & Mary, USA, <sup>2</sup>Harvard Univ., USA. We present analysis of pulse propagation dynamics under the electromagnetically induced transparency conditions. We demonstrate optimal storage of an optical pulse of arbitrary shape, and discuss the mechanisms limiting the efficiency at high optical depths.

STuA5 • 9:30 a.m.

**Ultraslow Matched-Pulse Propagation in Na Vapor**, Masaharu Mitsunaga, Nobuhito Hayashi, Junji Okuma, Akihiko Fujisawa; Kumamoto Univ., Japan. We have observed ultraslow propagation of matched pulses in a parametric amplifying sodium vapor. A fractional delay of >1 and a gain of 28 have been simultaneously achieved for both the probe and Stokes pulses.

STuA6 • 9:45 a.m.

**Stationary Light Using Spin Coherence Gratings**, Byoung S. Ham, J. Hahn; Inha Univ., Republic of Korea. We have observed very long trapping of ultraslow light pulse far beyond the conventional limitation of spin coherence relaxation time in an optical medium using double electromagnetically induced transparency-based spin coherence gratings.

Palace Lounge

10:00 a.m.–10:30 a.m.

Coffee Break/Exhibits (Exhibits open 10:00 a.m.–1:00 p.m.)

JTuB • Joint Poster Session I

Palace Lounge

10:00 a.m.–11:30 a.m.

JTuB25

**Modulation and Measurement of Time-Energy Entangled Photons**, Chinmay N. Belthangady, Shengwang Du, Chih-Sung Chuu, Guang-Yu Yin, Stephen E. Harris; Stanford Univ., USA. We describe a proof-of-principle experiment demonstrating a Fourier technique for measuring the shape of biphoton wavepackets that vary rapidly as compared to the speed of available photon detectors. The technique uses synchronously driven telecommunication modulators.

**JTuB26**

**Middle Band Zero Group Velocities in a SCARECROW Waveguide Structure**, Ori Weiss, Jacob Scheuer; *Tel Aviv Univ., Israel*. SCARECROW structure is presented. Degeneracy Removal of SCISSOR by ring to ring coupling shows band split and middle Brillouin zone zero group velocities. Pulse propagation, finite and infinite structures are discussed.

**JTuB27**

**Compact Optically-Fed Microwave True-Time Delay Using Liquid Crystal Photonic Bandgap Fiber Device**, Lei Wei<sup>1</sup>, Weiqi Xue<sup>1</sup>, Yaohui Chen<sup>1</sup>, Thomas Tanggaard Alkeskjold<sup>2</sup>, Bjarklev Anders<sup>1</sup>; <sup>1</sup>DTU Fotonik, Dept. of Photonics Engineering, Technical Univ. of Denmark, Denmark, <sup>2</sup>Crystal Fibre A/S, Denmark. Electrically tunable liquid crystal photonic bandgap fiber device based optically-fed microwave true-time delay is demonstrated. A maximum ~60° phase shift and an averaged ~7.2ps true time delay are obtained over the modulation frequency range 1GHz-19GHz.

**JTuB28**

**Tunable Optical Delay Line Using Semiconductor Laser for 10 Gbit/s Data Signal**, Fang-Ming Wu<sup>1</sup>, Peng-Chun Peng<sup>2</sup>, Ruei-Long Lan<sup>3</sup>, Jye-Hong Chen<sup>4</sup>, Chun-Ting Lin<sup>4</sup>, Sien Chi<sup>5</sup>; <sup>1</sup>Inst. of Electro-Optical Engineering, Natl. Chiao Tung Univ., Hsinchu, Taiwan, R. O. C., Taiwan, <sup>2</sup>Dept. of Electro-Optical Engineering, Natl. Taipei Univ. of Technology, Taiwan, <sup>3</sup>Dept. of Electrical Engineering, Natl. Chi Nan Univ., Taiwan, <sup>4</sup>Dept. of Photonics and Inst. of Electro-Optical Engineering, Natl. Chiao Tung Univ., Taiwan, <sup>5</sup>Dept. of Electrical Engineering, Yuan-Ze Univ., Taiwan. This work experimentally demonstrates a tunable optical delay line using a vertical-cavity surface-emitting laser (VCSEL). Tunable delays for 10 Gbit/s data signal are achieved by adjusting the driving current of VCSEL.

**JTuB1–JTuB12 can be found in the Integrated Photonics and Nanophotonics Research and Applications (IPNRA) abstracts.**

**JTuB13–JTuB24 can be found in the Nonlinear Optics (NLO) abstracts.**

**STuB • Applications II**

Honolulu I-II

11:30 a.m.–1:00 p.m.

John Howell; *Univ. of Rochester, USA, Presider*

**STuB1 • 11:30 a.m.**

**Invited**

**Slow and Fast Light through Nonlinear Wave Mixing in Liquid Crystal Light Valves**, Stefania Residori<sup>1</sup>, U. Bortolozzo<sup>1</sup>, J. P. Huignard<sup>2</sup>; <sup>1</sup>Univ. de Nice Sophia-Antipolis, France, <sup>2</sup>Thales Res. & Technology, France. The large dispersive properties of wave mixing in liquid crystal light-valves allow obtaining fast and slow light with tunable group velocities. A slow light interferometer is shown by using this process in the light-valve.

**STuB2 • 12:00 p.m.**

**Diffraction Elimination of Slow Images**, Ofer Firstenberg<sup>1</sup>, Moshe Shuker<sup>1</sup>, Amiram Ron<sup>1</sup>, Nir Davidson<sup>2</sup>; <sup>1</sup>Technion-Israel Inst. of Technology, Israel, <sup>2</sup>Weizmann Inst. of Science, Israel. We present a scheme for eliminating the optical diffraction of images imprinted on slow light in vapor. The elimination of diffraction occurs for arbitrary images all throughout their propagation. An initial experimental demonstration is presented.

**STuB3 • 12:15 p.m.**

**The Far Off-Resonant Faraday Effect in a Slow-Light Medium: A Gigahertz Bandwidth Probe**, Paul Siddons, Charles S. Adams, Ifan G. Hughes; *Durham Univ., UK*. The slow-light Faraday effect is the spectral displacement of the group index for opposite circular polarization for atoms in a magnetic field. We have demonstrated polarization rotation of a nanosecond pulse in Rb vapor.

**STuB4 • 12:30 p.m.**

**Pulse Storage Using Wavelength Multiplexed Holograms in Photorefractive Crystal**, Myungjun Lee, Ravi Pant, Mark A. Neifeld; *Univ. of Arizona, USA*. We present a technique for recording, storing, and retrieving a 10 Mbps pulse sequence based on the use of wavelength multiplexed holograms in a photorefractive KNSBN crystal.

**STuB5 • 12:45 p.m.**

**Broadband Microwave Phase Shifter Based on High Speed Cross Gain Modulation in Quantum Dot Semiconductor Optical Amplifiers**, Yaohui Chen, Jesper Mørk; *DTU Fotonik, Dept. of Photonics Engineering, Technical Univ. of Denmark, Denmark*. We present a scheme to achieve tunable ~180 degrees microwave phase shifts at frequencies exceeding 100 GHz based on high speed cross gain modulation in quantum dot semiconductor optical amplifiers.

1:00 p.m.–2:30 p.m.

Lunch (on your own)

STuC • Photonic Structures and Semiconductors

Honolulu I-II

2:30 p.m.–4:30 p.m.

Toshihiko Baba; Yokohama Natl. Univ., Japan, Presider

STuC1 • 2:30 p.m.

**Shaping Paired Photons with Four-Wave Mixing and Slow Light**, Shengwang Du<sup>1</sup>, Jianming Wen<sup>2</sup>, Chinmay Belthangady<sup>3</sup>; <sup>1</sup>Dept. of Physics, Hong Kong Univ. of Science and Technology, Hong Kong, <sup>2</sup>Physics Dept., Univ. of Virginia, USA, <sup>3</sup>Edward L. Ginzton Lab, Stanford Univ., USA. We show that the Glauber correlation function of paired photons generated in a double-lambda atomic ensemble can be controlled by modulating two injected classical laser fields, using slow light assisted four-wave mixing.

STuC2 • 2:45 p.m.

**Single-Photon Traversal of Dielectric Bandgaps: Apparent Superluminality, Tunneling and Surface Modes**, Sergey V. Polyakov<sup>1</sup>, Natalia Rutter<sup>1,2</sup>, Natalia Malkova<sup>1</sup>, Garnett Bryant<sup>1</sup>, Paul Lett<sup>1</sup>, Alan Migdall<sup>1</sup>; <sup>1</sup>NIST and Univ. of Maryland, USA, <sup>2</sup>Georgetown Univ., USA. We investigate the optical Hartman saturation effect in multilayer dielectric stacks. We experimentally observe jumps of photon transversal times due to adding single quarter-wave layers and attribute them to appearance of surface modes.

STuC3 • 3:00 p.m.

Invited

**Slow Light in Coupled Ring Resonators and PhC: A Comparison**, Andrea Melloni<sup>1</sup>, F. Morichetti<sup>2</sup>, T. F. Krauss<sup>3</sup>; <sup>1</sup>Politecnico di Milano, Italy, <sup>2</sup>Fondazione Politecnico di Milano, Italy, <sup>3</sup>Univ. of St. Andrews, UK. Although the light confinement mechanism in photonic crystal and classical waveguides is very different, at a higher abstraction level, namely at circuit level, they can be compared, both in the linear and nonlinear regime.

STuC4 • 3:30 p.m.

**A Method to Achieve Large Tunable Delays Based on EIT in an Inhomogeneously Broadened Quantum Dot Medium**, Per Lunnemann, Jesper Mørk; Technical Univ. of Denmark, Denmark. We propose a scheme for reducing the impact of inhomogeneous broadening on quantum dot based EIT for slow light. Field propagation calculations show superior performance in delay compared to traditionally investigated EIT schemes.

STuC5 • 3:45 p.m.

**Slow Light via Electromagnetically-Induced Transparency in GaAs Multiple Quantum Wells in a Transient Regime**, Seong-Min Ma, Hua Xu, Byoung S. Ham; Inha Univ., Republic of Korea. Slowed group velocity of light in GaAs/AlGaAs multiple quantum wells (MQWs) for ultrafast photonic applications is numerically estimated and discussed using a fourth-order Runge-Kutta method through observed electromagnetically-induced transparency (EIT) in a transient regime.

STuC6 • 4:00 p.m.

Invited

**Slotted Photonic Crystal Devices: Slow Light and Applications**, Andrea Di Falco, Liam O'Faolain, Thomas F. Krauss; Univ. of St. Andrews, UK. Slotted photonic crystal geometries permit the confinement of light in very small air volumes. Tailoring their dispersion, we demonstrate and discuss slow light operation and two applications, a modulator for telecommunications and a chemical sensor.

---

4:30 p.m.–5:00 p.m., Coffee Break, Palace Lounge

---

---

5:00 p.m.–6:30 p.m., Postdeadline Paper Sessions, See Postdeadline Papers book for schedule and locations

---

---

7:00 p.m.–10:00 p.m., Conference Luau, Lagoon Green

---

• Wednesday, July 15, 2009 •

Palace Lounge

7:30 a.m.–4:30 p.m.

Registration Open

SWA • Photonic Structures

Honolulu I-II

8:00 a.m.–10:00 a.m.

Thomas Krauss; Univ. of St. Andrews, UK, Presider

SWA1 • 8:00 a.m.

**Record Wide Range Tuning of Slow Light Pulse in Photonic Crystal Coupled Waveguide via Turnup Chirping**, Jun Adachi, Norihiro Ishikura, Hirokazu Sasaki, Toshihiko Baba; Yokohama Natl. Univ., Japan. We fabricated the high-quality photonic crystal coupled waveguide with turnup index chirping formed by local heating. The maximum tuning range of slow light pulse was 103 ps and tunable buffering capacity was 22.

SWA2 • 8:15 a.m.

**Optical Control of the Localized-Surface-Plasmon-Resonance Enhancement of Evanescent Coupling**, Albert T. Rosenberger, Elijah Dale, Deepak Ganta, Razvan I. Stoian; Oklahoma State Univ., USA. Significant enhancement of coupling from a tapered fiber into a microresonator results when surface plasmons are excited in gold nanorods on its surface. The enhancement may be rapidly controlled by an external light beam.

SWA3 • 8:30 a.m.

Invited

**Manipulating Slow Light by Ultrahigh-Q Nanocavities and their Coupled Arrays**, Masaya Notomi, T. Tanabe, E. Kuramochi, H. Taniyama; NTT Basic Res. Labs, Japan. We investigate ultrahigh-Q nanocavities in photonic crystals for manipulating slow light. First, we study applicability of coupled nanocavities for realizing ultimate slow-light waveguides. Second, we exploit dynamic tuning of slow-light media for read/write processes.

SWA4 • 9:00 a.m.

**Controlling Speed of Polarized Light in Birefringent Media**, Anil K. Patnaik, Paul S. Hsu, Sukesh Roy, James R. Gord; AFRL, USA. For controlling the group velocity of polarized light, we envision the use of a homogeneous magnetic field in conjunction with a single resonant laser in an induced birefringent medium.

SWA5 • 9:15 a.m.

**Slow Light Propagation in a Dynamic Cavity**, Jin-Hui Wu<sup>1</sup>, Maurizio Artomi<sup>2,3</sup>, Giuseppe La Rocca<sup>4</sup>; <sup>1</sup>College of Physics, Jilin Univ., China, <sup>2</sup>Univ. of Brescia, Italy, <sup>3</sup>European Lab for Nonlinear Spectroscopy, Italy, <sup>4</sup>Scuola Normale Superiore, Italy. The interplay between a magnetic field and two traveling or standing-wave lasers is employed to devise a dynamic cavity for light confinement, during which the light pulse undergoes spatial oscillations at a slow velocity.

SWA6 • 9:30 a.m.

Invited

**Dynamic Control of Q Factor of Nanocavity for Stopping of Light**, Susumu Noda, Yoshinori Tanaka, Jeremy Upham, Yasushi Takahashi, Takashi Asano; Kyoto Univ., Japan. First of all, we demonstrate ultra-high quality nanocavities with Q factors more than 3.5 million. Then, we show that Q factors can be dynamically increased and decreased within picosecond regime through time-domain measurements.

Palace Lounge

10:00 a.m.–10:30 a.m.

Coffee Break/Exhibits (Exhibits open 10:00 a.m.–2:30 p.m.)

JWA • Joint Poster Session II

Palace Lounge

10:00 a.m.–11:30 a.m.

JWA26

**Phase-Controlled Slow and Fast Light in Current-Modulated Semiconductor Optical Amplifiers**, Sonia Melle, Miguel A. Antón, Fernando Carreño, Francisco Arrieta-Yañez, Oscar G. Calderon; Univ. Complutense de Madrid, Spain. We present a theoretical study of the slow and fast light propagation in semiconductor optical amplifiers based on coherent population oscillations. By modulating the injection current we control the delay or advancement of light signals.

**JWA27**

**Observation of Slow Light and Superluminal in Cs Atomic Vapor**, *Yundong Zhang, Shuangqiang Liu, Hao Wu, Zhusong He, Ping Yuan; Harbin Inst. of Technology, China.* Slow light and superluminal were both observed in Cs atomic vapor without any couple field. By only changing the signal modulate frequency, the light propagation changes from superluminal to slow light.

**JWA28**

**Delay Times of the Guided and Focused Modes of Ultraslow Light in an Atomic Bose-Einstein Condensate**, *Devrim Tarhan<sup>1</sup>, Alphan Sennaroglu<sup>2</sup>, Özgür Müstecaplıoğlu<sup>2</sup>; <sup>1</sup>Physics Dept., Harran Univ., Turkey, <sup>2</sup>Physics Dept., Koç Univ., Turkey.* We have calculated the delay times of the focused and guided modes of the ultraslow light in an atomic Bose-Einstein condensate by using an off-resonant electromagnetically induced transparency scheme.

**JWA29**

**Pulse Width Depending Group Velocity on Erbium-Doped Fibers**, *Francisco Arrieta-Yañez, Oscar G. Calderon, Sonia Melle, Fernando Carreño, Miguel Angle Anton; Univ. Complutense de Madrid, Spain.* We report a change in the propagation regime (subluminal-superluminal) of light pulses in a pumped erbium doped fiber. We explain this behavior as a propagation effect. A pulse-width separator based on this effect is proposed.

**JWA1–JWA13 can be found in the Integrated Photonics and Nanophotonics Research and Applications (IPNRA) abstracts.**

**JWA14–JWA25 can be found in the Nonlinear Optics (NLO) abstracts.**

**JWB • Joint NLO/SL Session: Slow Light Applications in Nonlinear Optics**

*Honolulu I-II*

**11:30 a.m.–1:30 p.m.**

*Mark Allen Neifeld; Univ. of Arizona, USA, Presider*

**JWB1 • 11:30 a.m.**

**Invited**

**Slow Light Enhanced Nonlinear Effects in Silicon Photonic Crystal Waveguides**, *Christelle Monat<sup>1</sup>, B. Corcoran<sup>1</sup>, C. Grillet<sup>1</sup>, M. Ebnali-Heidari<sup>1</sup>, D. J. Moss<sup>1</sup>, B. J. Eggleton<sup>1</sup>, T. P. White<sup>2</sup>, L. O'Faolain<sup>2</sup>, T. F. Krauss<sup>2</sup>; <sup>1</sup>Univ. of Sydney, Australia, <sup>2</sup>Univ. of St. Andrews, UK.* We experimentally investigate the slow light enhancement of nonlinear effects such as self-phase modulation, two-photon absorption and free carriers, through dispersion-engineered silicon photonic crystal waveguides. We also observe emission of visible light through third-harmonic generation.

**JWB2 • 12:00 p.m.**

**Complete Broadening Compensation in a Slow Light System Using a Non-Linear Regeneration Element**, *Sanghoon Chin<sup>1</sup>, Miguel Gonzalez-Herraez<sup>2</sup>, Luc Thévenaz<sup>1</sup>; <sup>1</sup>École Polytechnique Fédérale de Lausanne, Switzerland, <sup>2</sup>Univ. of Alcalá de Henares, Spain.* We demonstrate experimentally a new configuration to realize zero-broadening slow light. The inevitable pulse broadening in the slow light medium was completely compensated by a nonlinear regeneration element. Experimental results show 1.3-bit delays without distortion.

**JWB3 • 12:15 p.m.**

**Four-Wave Mixing in Slow Light Waveguides**, *Vishnupriya Govindan, Steve Blair; Univ. of Utah, USA.* We study the effects of pulse distortion on four-wave mixing (FWM) for different slow-light architectures. REMZI has the highest FWM conversion. Distortion constraint limits the FWM conversion in CROW with higher number of stages.

**JWB4 • 12:30 p.m.**

**Invited**

**Modulation of Single Photons and Biphotons**, *Steve Harris; Stanford Univ., USA.* We generate photons with sub-natural linewidths and temporal lengths that are sufficiently long that they may be easily modulated. Results include a new technique for measuring the temporal shape of biphotons.

**JWB5 • 1:00 p.m.**

**Invited**

**Broadband Optical Delay and Filtering in Spectrally Structured Materials**, *Wm. Randall Babbitt, Zeb W. Barber; Montana State Univ., USA.* Spectrally structured optical materials have the ability to process broadband signals, including performing true-time-delay and spectral filtering. This paper reviews the theory and experimental results of spatial spectral holographic true time delay and filtering.

**Key to Authors and Presidents**  
(**Bold** denotes Presider or  
Presenting Author)

**A**

Abel, R. P.—NWB5  
Aceves, Alejandro—JTUB19  
Adachi, Jun—JMA1, **SWA1**  
Adachi, Masafumi—JTUB7  
Adams, Charles—**NWB5**, STUB3  
Adams, John J.—NWC7  
Adibi, Ali—IMC3, IMD2, IMG4,  
ITUC2  
Adler, Florian—**NThA3**  
Agarwal, Anu—ITUA1, IWB4  
Agashe, Shashank—IWA4  
Agrawal, Arti—IMG2  
Ahorinta, Risto—NME3  
Aitchison, J. Stewart—IWD7  
Aji, Abdellah—JTUB9  
Alasaarela, Tapani—ITUE2, **JTuB4**  
Albers, Willem M.—NME3  
Albert, Felicie—NThC4  
Albert, J.—IMD4  
Alencar, Marcio A. R.—**NME5**, **SMA6**  
Ali-Khan, Irfan—NWE4  
Ališauskas, Skirmantas—NFA3  
Alkeskjold, Thomas Tanggaard—IWB7,  
JTUB27  
Alouini, Mehdi—SMB3  
Ancukiewicz, Damien—IME5  
Anders, Bjarklev—JTUB27  
Andersen, Ulrik Lund—NTUA1  
Anderson, Harry L.—JWA16  
Anderson, Ryan—ITUA2  
Anderson, Scott G.—NThC4  
Ando, Ryoji—**IMB4**  
Andreani, Lucio C.—JMA3  
Andriukaitis, Giedrius—NThC5  
Anetsberger, G.—ITUA4  
Ania-Castanon, Juan-Diego—NThA5  
Ankuciwiez, Damian—NME4  
Antón, Miguel A.—JWA26, JWA29  
Aoki, Kanna—**IMF**, **IWD1**  
Apolonski, Alexander—NThC2  
Arakawa, Yasuhiko—IMF3  
Arcizet, O.—ITUA4  
Arrieta-Yañez, Francisco—JWA26, **JWA29**

Artoni, Maurizio—SWA5  
Asano, Takashi—SWA6  
Ashihara, Satoshi—**JWA21**  
Ashley, Tim—IMF1  
Assanto, Gaetano—NFA4, NThB6, NThB7  
Asselberghs, Inge—**NWC4**  
Atabaki, Amir H.—**IMC3**  
Atkinson, P.—IME4  
Azad, Abul K.—NMC1

**B**

Baba, Toshihiko—IMB3, **JMA1**, **STuC**,  
SWA1  
Babbitt, Wm. Randall—**JWB5**  
Backus, Sterling—NThC3  
Baets, Roel G.—IME1  
Bahabad, Alon—NThC3  
Bale, Brandon G.—**NWD4**  
Balocchi, A.—IWD4  
Baltuska, Andrius—NFA3, NThC5,  
NWD1  
Ban, Kengo—JTUA6  
Barber, Zeb W.—JWB5  
Barker, Lee—NThA5  
Barkhouse, Aaron R.—**IWD2**  
Barland, S.—NMB4  
Barlow, Stephen—JWA16  
Baroughi, Mahdi F.—ITUC3  
Bartal, Guy—JTUA3  
Barton, Jonathon S.—IWB2  
Barty, Chris P. J.—NThC4  
Bashkansky, Mark—**SMB1**  
Bason, M. G.—NWB5  
Bayat, Khadijeh—**ITuC3**  
Beals, Mark—IMC6  
Beausoleil, Ray G.—IWD6  
Becher, Christoph—NThA1  
Beggs, Daryl M.—ITUC4, JMA5  
Behnia, Babak—IWA4  
Bekal, Anish—**IMG5**  
Belotti, Michele—**JMA3**  
Belthangady, Chinmay—**JTuB25**, STUC1  
Bencheikh, Kamel—NTUA4  
Bennett, Anthony J.—IME2, IME4  
Berger, Perrine—**SMB3**  
Bergman, Keren—**NThA6**  
Berkovitch, Nikolai—JWA4, NME2  
Bernhardt, Birgitta—NThC2

Bertolotti, M.—NTUB3  
Betts, S. M.—NThC4  
Betzler, Klaus—NMD5  
Beugnot, Jean-Charles—SMA3  
Bhagwat, Amar R.—NWB4  
Bjarklev, Anders—IWB7  
Blaaberg, Søren—IWA5  
Blair, Steve—JWB3, **NMD**  
Blumenthal, Daniel J.—IMB1, IWB2  
Bochove, Erik J.—**IWC4**, **JTuB19**  
Bock, P. J.—IMD4  
Bogaerts, Wim—IME1  
Boitier, Fabien—NWE3  
Bondar, Mikhail V.—JWA17  
Bondarenko, Olesya—JTUA1  
Borisкина, Svetlana V.—ITUA6, **ITuD3**  
Bortolozzo, Umberto—**SMB5**, STUB1  
Boulanger, Benoît—**NMD6**, **NTUA4**, **NWE**  
Bourderionnet, Jérôme—SMB3  
Bowers, John—**IMC1**  
Boyd, Robert W.—**NWB2**, **NWD**  
Brand, Pierre—NMD6  
Bravo-Abad, Jorge—NWD2  
Bretenaker, Fabien—SMB3  
Briggs, Ronald D.—IWB6  
Broadbent, C. J.—STUA2  
Brueck, Steven R. J.—NFB5  
Bryant, Garnett—STUC2  
Buchhave, Preben—**JWA24**  
Bucksbaum, Philip H.—**NMC3**  
Budunoğlu, Levent—**NWD5**  
Bulla, Douglas—IWB5, JTUA4  
Burgess, Ian B.—NFA4, **NWD2**  
Burianek, Manfred—NMD5  
Burykin, Nikolaj—SMA7  
Busacca, Alessandro C.—**NThB6**  
Buyanova, I. A.—IWD4

**C**

Caboche, E.—NMB4  
Cada, Michael—JTUB11  
Caetano, Dilson P.—SMA6  
Cai, Hua—NFA1  
Caillet, Xavier—**NWE6**  
Calderon, Oscar G.—JWA26, JWA29  
Camacho, Ryan M.—STUA2  
Canalias, Carlota—NMD4  
Canciamilla, Antonio—ITUC4, JMA2

Capmany, José—SMB6  
 Carlie, Nathan—IWB4  
 Carmon, Tal—**JTuA**, **NTuC5**  
 Carr, C. W.—NWC7  
 Carreño, Fernando—JWA26, JWA29  
 Carter, Tony R.—IWB6  
 Cavalleri, A.—NMA6  
 Centini, M.—NTuB3  
 Cerrina, Franco—**ITuA3**  
 Chang, Hung-chun—**IWC1**, **IWC2**, **IWC3**  
 Chang, Sheng-Hsiung—NMA5  
 Chang, Yu-Chia—IMD6, JTuB5  
 Chang, Zi-Chang—IME6, JWA1  
 Chao, Shiuh—**IWC5**  
 Chaudhuri, Sujeet K.—ITuC3  
 Cheben, Pavel—IMB2, **IMD4**, **ITuE**,  
     IWB3  
 Chen, Chih-Yao—JTuB2  
 Chen, Hou-Tong—NMC1  
 Chen, Jiayu—**IME5**, NME4  
 Chen, Jye-Hong—JTuB28  
 Chen, Ming-Yun—IWC2  
 Chen, Ming-Chang—NThC3  
 Chen, Weimin M.—**IWD4**  
 Chen, Yaohui—JTuB27, **STuB5**  
 Chen, Y.-H.—NFA2  
 Chi, Sien—JTuB28  
 Chiang, An-Chung—**NThB1**  
 Chiang, Po-Jui—IWC3  
 Chin, Sanghoon—**JWB2**, **SMA3**  
 Choi, Duk-Yong—IWB5, JTuA4  
 Christini, Doug—IWA4  
 Christov, Ivan P.—NThC3  
 Chu, Shi-Wei—NWD3  
 Chui, Hsiang-Chen—NWD3  
 Chung, Youngchul—IMC4  
 Chuu, Chih-Sung—JTuB25  
 Cirloganu, Claudiu M.—JWA18  
 Clays, Koen—NWC4, NWC5  
 Clemmen, Stéphane—**IME1**  
 Clifford, Jason P.—IWD2  
 Cohen, Oren—NThC3  
 Cojocarua, Crina—NWA6  
 Coldren, Larry A.—IMB1, IWA1, IWA2,  
     **IWA3**  
 Colley, Stephen—JWA22  
 Columbo, L.—NMB4  
 Cooke, David G.—NWA3  
 Cooper, K.—IME4  
 Corcho, Adan J.—SMA6  
 Corcoran, B.—JWB1  
 Corzine, Scott—IWA4  
 Cossel, Kevin C.—NThA3  
 Couairon, Arnaud—NFA1  
 Creazzo, Tim—ITuC1  
 Cristiani, Ilaria—NThA5  
 Crognale, Claudio—**JWA10**, **JWA25**  
 Cryan, Martin J.—IMF1  
 Cundiff, Steven T.—JTuB14  
  
**D**  
 Dagli, Nadir—**IMC**, IMD6, IWA6, JTuB5  
 Dahlquist, William—ITuA2  
 Dai, Daoxin—IMC1  
 Dai, Jianming—**NWA1**  
 Dal Negro, Luca—ITuA6, ITuD3  
 Dale, Elijah—SWA2  
 Dalton, Larry—**NWC3**  
 Danielius, Romualdas—NFA3, NThC5  
 Dapkus, Paul D.—ITuB3  
 Davidson, Nir—**STuA1**, STuB2  
 Dawes, Andrew—**NWB**  
 De La Rue, Richard M.—**IMG3**, ITuC4,  
     **IWD**, JMA2, JMA3  
 De Valcárcel, Germán J.—NTuA2  
 Declair, Stefan—NTuC2  
 Degiorgio, Vittorio—NThA5  
 Delâge, André—IMB2, IMD4, IWB3  
 Densmore, Adam—IMB2, IMD4, IWB3  
 Dentai, Andrew—IWA4  
 Di Falco, Andrea—**STuC6**  
 Di Giansante, Antonella—JWA10, JWA25  
 Dicaire, Isabelle—SMA3  
 Diebold, Eric—ITuA5  
 Diels, Jean-Claude—SMB2  
 Ding, Edwin—JTuB18  
 Ding, Li—NFB7  
 Dinkins, Matthew—JWA22  
 Dogru, Selim—**IWA6**  
 Dolfi, Daniel—SMB3  
 Dolgaleva, Ksenia—NWB2  
 Dong, Jack—ITuA2  
 Dot, Audrey—NTuA4  
 Dou, James—IWD7  
 Du, Shengwang—JTuB25, NTuA3, **STuC1**  
 Dubois, Charles—JTuB9  
 Ducci, Sara—NWE6  
 Dumay, D.—NWA6  
 Durand, Magali—NWA2  
 Dutta, Neilanjan—**IWD3**  
 Dylov, Dmitry V.—NMB1  
 Dyukova, Tatyana—SMA7  
  
**E**  
 Earnshaw, Mark—**IMA**, **IMB**  
 Ebil, Ozgenc—IWD3  
 Ebnali-Heidari, M.—JWB1  
 Edamatsu, Keiichi—JTuB20  
 Eftekhari, Ali A.—IMC3  
 Egami, Chikara—**JWA13**  
 Eggleton, Benjamin—JTuA4, JWB1  
 Egner, Sebastian—JWA22  
 Eidam, Tino—NThC2  
 Eisenstein, Gadi—**SMB4**  
 Ellis, D. J. P.—IME4  
 Emplit, Philippe—IME1, NMB5  
 Ensley, Trenton—JWA17  
 Evans, Peter—IWA4  
 Eyal, Avishay—SMC2  
  
**F**  
 Fabre, Claude—NWE3  
 Fainman, Yeshaiahu—**IME**, JTuA1,  
     JTuB12  
 Fallahi, Mahmoud—**NThC1**  
 Fang, Alex—IMC1  
 Farrell, Stephen—IMF6  
 Fatemi, Fredrik—SMB1  
 Favero, Ivan—NWE6  
 Fejer, Martin M.—**NMC**, NThA5, NTuB1  
 Félix, Corinne—NMD6, NTuA4  
 Feng, Liang—JTuA1  
 Feng, Mingming—JTuB14  
 Feng, Michael Z.—**SMA1**  
 Fermann, Martin E.—NThC5  
 Fernández, Alma—**NWD1**  
 Ferrari, Carlo—JMA2  
 Ferrera, Marcello—ITuB4  
 Feurer, Thomas—NWE5  
 Fibich, Gadi—**NFA5**  
 Firstenberg, Ofer—STuA1, **STuB2**  
 Fischer, Baruch—**NWB7**  
 Fisher, Matthew—IWA4  
 Fisher, William M.—NWB6

Fleischer, Jason—JTUB13, **NMB1**  
Florjańczyk, M.—IMD4  
Foaleng-Mafang, Stella—SMA3  
Fonseca, Eduardo J. S.—NME5  
Forestiere, Carlo—ITuD3  
Forget, Nicolas—NFA3  
Förstner, Jens—NMA1, **NTuC2**  
Foster, Mark A.—JTUA5  
Franson, James D.—NTUA5  
French, Douglas—**NFB4**  
Fuentes-Hernandez, Canek—**JTuA2**  
Fujii, Kensuke—NMA4  
Fujisawa, Akihiko—STUA5  
Fujita, Naoya—NMA4  
Fukuchi, Yutaka—**JTuB15**  
Furusawa, Akira—**NTuA**, **NTuB2**, NWE2

## G

Gaeta, Alexander L.—JTUA5, **NtuB**,  
**NWB4**  
Gai, Xin—IWB5  
Galli, Matteo—JMA3  
Galvanauskas, Almantas—NWD1  
Ganta, Deepak—SWA2  
García-Ferrer, Ferrán V.—NTUA2  
Garnov, Serge V.—NMD1  
Garrel, Vincent—JWA22  
Gaṭ, Omri—NWB7  
Gauguet, A.—NWB5  
Gauthier, Daniel—**NFB**, NWB3, **SMC6**  
Gauvreau, Bertrand—JTUB9  
Gavish, Nir—NFA5  
Geiss, Reinhard—NMB6, **NMD2**  
Gelesky, Marcos A.—NME5  
Genevet, P.—NMB4  
Gerace, Dario—JMA3  
Gerasov, Andriy O.—JWA17  
Gerrity, Michael—NThC3  
Gheorma, John—IWA4  
Gibson, David J.—NThC4  
Gil, L.—NMB4  
Gin, Aaron V.—IWB6, NFB5  
Giniūnas, Linas—NFA3, NThC5  
Ginzburg, Pavel—**JWA4**, NME2  
Gischkat, Thomas—NMD2  
Giudici, M.—NMB4  
Glasgow, Scott A.—**SMA5**  
Gnan, Marco—IMG3

Godard, Antoine—NThB8, NWE3  
Gonzalez-Herraez, Miguel—JWB2, SMA3  
Gopinath, Anand—**IMA**, **IMB**, ITuD7  
Gopinath, Ashwin—**ITuA6**, ITuD3  
Gord, James R.—NFB1, NFB2, SWA4  
Gorshkov, Alexey V.—STUA4  
Gorza, Simon-Pierre—NMB5  
Goulart-Pailo, Christiane—NThA4  
Govindan, Vishnupriya—**JWB3**  
Grattan, K.T.V.—IMG2  
Gray, Gary M.—JWA19, JWA20  
Greenberg, Joel A.—**NWB3**  
Grillet, C.—JWB1  
Grodecka, Anna—**NMA1**  
Gu, Chenji—NThA4  
Gu, Xiaorong—NWE1  
Guha, Shekhar—JWA18  
Guizzetti, Giorgio—JMA3  
Gulian, Armen—SMB1  
Guo, Ning—JTUB9  
Gürel, Kutan—NWD5  
Guyon, Olivier—JWA22  
Guzzon, Robert S.—IWA1, IWA2  
Gwilliam, Russell—IMC2

## H

Hachey, Simon—NTUA6  
Hader, Jorg—NThC1  
Hadley, G. Ronald—**IMG**, **ITuD1**  
Haelterman, Marc—NMB5  
Hagan, David J.—JTUA2, JWA16, JWA17,  
JWA18, NMA2  
Hahn, J.—STUA6  
Hales, Joel M.—JTUA2  
Hall, T. J.—IMD4  
Ham, Byoung S.—**STuA6**, STuC5  
Hamachi, Yohei—JMA1  
Han, Sang-Pil—**JTuB6**  
Han, Young-Tak—JTUB6  
Han, Z. H.—IWC8  
Hanashima, Kaori—JTUA6  
Hänsch, Theodor W.—NThC2  
Hao, Qiang—NWD7  
Harada, Seiji—**IMG6**  
Harmand, J. C.—IWD4  
Harper, Paul—NThA5  
Harris, Stephen E.—JTUB25, **JWB4**, NWE4  
Hartemann, Frederic V.—NThC4  
Hartung, Holger—NMD2  
Haslam, Bryan—ITUA2  
Hassani, Alireza—JWA5  
Hattori, Masayuki—JWA22  
Hawkins, Aaron R.—ITUE3, ITUE5, STUA3  
Hayano, Yutaka—**JWA22**  
Hayashi, Nobuhito—STUA5  
Hayat, Alex—JWA4, NME2, **NWE7**  
He, S.—IWC8  
He, Zhusong—JWA27  
Heard, Peter J.—IMF1  
Heine, Urs—**NMD5**  
Henker, Ronny—SMC3, SMC4  
Hess, Ortwin—JMA4  
Hessenius, Chris—NThC1  
Heuer, Axel—JTUB21  
Hibino, Yoshinori—**IMD3**  
Hickmann, Jandir M.—NME5, SMA6  
Ho, Daniel—IMF1  
Ho, Seng Tiong—JWA12  
Hoischen, Andreas—NTuC2  
Holmes, Matthew R.—**ITuE5**  
Hong, Ray-Ching—NMB3  
Honkanen, Seppo—ITUE2, JTUB4  
Hooker, Simon M.—NThB3  
Houard, Aurélien—NWA2  
Howell, John C.—**STuA2**, **STuB**  
Hoyer, Walter—NWB1  
Hsu, Kung-Shu—**IME6**  
Hsu, Kuei-Chu—NWD6  
Hsu, Paul S.—SWA4  
Hu, Honghua—JWA16, JWA17  
Hu, Juejun—**ITuA1**, **IWB4**  
Hu, Weisheng—ITUA2  
Huang, Chen-Han—NWD3  
Huang, Y. C.—NThB1  
Huang, Zun—NFB4  
Hudson, A. J.—IME4  
Hughes, Ifan G.—**STuB3**  
Huignard, Jean-Pierre—SMB5, STUB1  
Hulbert, John—STUA3  
Hummel, Michelle—JTUB19  
Hung, Yung-Jr.—IWA2, **IWD5**  
Hurd, Katherine—STUA3  
Hwang, Eui Hyun—ITUB3



**I**

Iguchi, Tatsuya—**IWC6**  
 Ihlefeld, Jon F.—**IWB6**  
 Ikeda, Kazuhiro—**JTuB12**  
 Ikeda, Masao—**NThC7, NWD8**  
 Ikuma, Yuichiro—**JTuB10**  
 Ilday, F. Öemer—**NWD5**  
 Iliew, Rumen—**NMD2**  
 Imura, Ken—**JWA14**  
 Ishida, Yuhki—**NWC2**  
 Ishikawa, Hiroshi—**JTuA6**  
 Ishikura, Norihiro—**JMA1, SWA1**  
 Ishizawa, Shunsuke—**IME3**  
 Ishizuki, Hideki—**NMD6, NThB5, NWE2**  
 Ito, Meguru—**JWA22**  
 Itoh, Hiroshi—**NMA4**  
 Iwamoto, Satoshi—**IMF3**  
 Iye, Masanori—**JWA22, NFB6**

**J**

Jacobs, Bryan C.—**NTuA5**  
 Jain, Ravi K.—**IME5, NFB3, NME4**  
 Jang, Ji-Hyang—**JWA3**  
 Jang, Jao-Shi—**NMA5**  
 Jani, Dharmendra—**NFB7**  
 Janz, Siegfried—**IMB2, IMD4, IWB3**  
 Jechow, Andreas—**JTuB21, NThB2**  
 Jeng, Chien-Chung—**NMB3**  
 Jepsen, Peter—**NThC, NWA3**  
 Jessop, Paul E.—**IMC2**  
 Jia, Shu—**JTuB13**  
 Jin, Jonghan—**NMC2**  
 John, Sajeev—**NMD3**  
 Johnson, Eric G.—**JTuB3**  
 Johnson, Nigel P.—**JMA3**  
 Johnson, Steven G.—**NWD2**  
 Jovanovic, Igor—**NFB4**  
 Joyner, Chuck—**IWA4**  
 Jugessur, Aju S.—**IWD7**

**K**

Kabashin, Andrei—**JWA6**  
 Kachkovski, Alexei D.—**JWA16, JWA17**  
 Kakahara, Kuniaki—**IMD5, JWA7**  
 Kaminski, Noam—**SMA2**  
 Kampfrath, Tobias—**JMA5**  
 Kane, Steve—**NWD1**  
 Kaneda, Yushi—**NThC1**

Kapteyn, Henry C.—**NThC3**  
 Karpowicz, Nicholas—**NWA4**  
 Karvonen, Lasse—**ITuE2**  
 Kasai, Katsuyuki—**JTuB22**  
 Kash, Jeffrey—**IMA1**  
 Kashyap, Raman—**JTuB17**  
 Kato, Masaki—**IWA4**  
 Kauranen, Martti—**NME3**  
 Kawahara, Yusuke—**JWA21**  
 Kawaji, Munenori—**JWA14**  
 Kawashima, Hayato—**NFB8**  
 Kejalakshmy, N.—**IMG2**  
 Kelmelis, Eric—**IWD3**  
 Kemme, Shanalyn A.—**IWB6**  
 Khanna, Amit—**ITuE2**  
 Khorshidahmad, Amin—**IMF5**  
 Khurgin, Jacob B.—**NTuC3**  
 Kikuchi, Akihiko—**IME3**  
 Kim, Byungchae—**IMD6, JTuB5**  
 Kim, Gunwoo—**IMC4**  
 Kim, Jaeyoun—**ITuE4, ITuE6, JWA11**  
 Kim, Jungbae—**JTuA2**  
 Kim, Jun-Whee—**JTuB8**  
 Kim, Kyung-Jo—**JTuB8**  
 Kim, Kyong H.—**NWC6**  
 Kim, Sang-Hun—**ITuE7**  
 Kim, Seungchul—**NMC2**  
 Kim, Seunghyun—**ITuA2**  
 Kim, Seung H.—**NWC6**  
 Kim, Seung-Woo—**NMC2**  
 Kim, Suhyun—**IMC4**  
 Kim, Tae Geun—**NMA4**  
 Kim, Tae W.—**JTuA6**  
 Kimerling, Lionel C.—**IMC6, ITuA1, IWB4**  
 Kippelen, Bernard—**JTuA2**  
 Kippenberg, T. J.—**ITuA4**  
 Kir'yarov, Alexander V.—**JTuB16**  
 Kirk, Andrew G.—**IMF5**  
 Kish, Fred—**IWA4**  
 Kishino, Katsumi—**IME3**  
 Kita, S.—**IMB3**  
 Kitzerow, Heinz—**NTuC2**  
 Kivshar, Yuri S.—**NWA6**  
 Kley, Ernst-Bernhard—**NMD2**  
 Klimentov, Sergey M.—**JTuB16**  
 Klimov, Victor I.—**NMA3**  
 Knigavko, Anton N.—**JTuB16**  
 Knight, Jonathan C.—**NWD3**

Knights, Andrew P.—**IMC2**  
 Knox, Wayne H.—**NFB7**  
 Kobayashi, Takayoshi—**NMB2**  
 Kobori, Shingo—**IMG6**  
 Koch, Stephan W.—**NThC1, NWB1**  
 Koch, Tom—**ITuC, ITuE1**  
 Kockaert, Pascal—**NMB5**  
 Kokubun, Yasuo—**IWB1**  
 Komatsu, Masa-aki—**IMD5**  
 Kondo, Takashi—**JTuA6**  
 Kong, Fanmin—**IMG7, JWA2**  
 Kono, Shunsuke—**NThC6, NThC7, NWD8**  
 Korchemskaya, Elena—**SMA7**  
 Koshiba, Masanori—**IMD5, JWA7**  
 Koshiba, Shun—**NMA4**  
 Kovtun, Yuriy P.—**JWA17**  
 Krauss, Thomas F.—**ITuC4, JMA5, JWB1, STuC3, STuC6, SWA**  
 Krausz, Ferenc—**NThC2**  
 Krishnamachari, Uppili—**IWA1**  
 Krishnamurthy, Srinivasan—**JWA18**  
 Kristensen, Philip T.—**ITuD2**  
 Krolikowski, Wieslaw—**NWA6**  
 Ku, Zahyun—**NFB5**  
 Kuang, Wan—**IME6**  
 Kudo, Yusuke—**JTuB7**  
 Kuipers, L. (Kobus)—**JMA5**  
 Kuittinen, Markku—**JTuB4**  
 Kunert, Bernardette—**NThC1**  
 Künzler, Jay F.—**NFB7**  
 Kuo, Paulina S.—**NWC**  
 Kurakami, Tomio—**JWA22**  
 Kuramochi, E.—**SWA3**  
 Kuramoto, Masaru—**NWD8**  
 Kurimura, Sunao—**NThB4**  
 Kutz, J. Nathan—**JTuB14, JTuB18, NTuA6, NWD4**  
 Kuzyk, Mark G.—**NWC5**

**L**

La Rocca, Giuseppe—**SWA5**  
 Lægsgaard, Jesper—**IMG1**  
 Lagarde, D.—**IWD4**  
 Lai, Chih-Hsien—**IWC1**  
 Lai, Wenn Jing—**NThC5**  
 Lai, Y.—**NWD6**  
 Lambert, Damien—**IWA4**  
 Lamont, Mike—**JTuA4**

Lamontagne, B.—IMD4  
 Lan, Ruei-Long—JTUB28  
 Langrock, Carsten—NThA5, NTuB1  
 Lapointe, Jean—IMB2, IMD4, IWB3  
 Larciprete, M. C.—NTuB3  
 Lassen, Mikael—NTuA1, NTuC  
 Lawson, Christopher M.—JWA19, JWA20  
 Lederer, Falk—NMD2  
 Lee, Dong-Hoon—NThA1  
 Lee, Dongjoo—NWA5  
 Lee, Ho—IMC4  
 Lee, Jiwon—ITuE4  
 Lee, Myungjun—STuB4  
 Lee, Ray-Kuang—JTUB2, NMB3  
 Lee, Sylvanus—ITuD3  
 Lee, San-Liang—IWD5  
 Lee, Seoung H.—NWC6  
 Lee, Tsin-Dong—JTUB2  
 Lefebvre, Michel—NThB8  
 Leijtens, Xaveer—ITuB2  
 Lemaître, Aristide—NWE6  
 Leo, François—NMB5  
 Leo, Giuseppe—NWE6  
 Lett, Paul—STuC2  
 Leuchs, Gerd—NTuA1  
 Levenson, Ariel—NTuA4  
 Levina, Larissa—IWD2, NMA2  
 Li, Hongyan—JWA23  
 Li, Kang—IMG7, JWA2  
 Li, Qing—IMG4, ITuC2  
 Li, Ruxin—NThC5  
 Li, Wenxue—NWD7  
 Li, Yao—NWE1  
 Li, Yuwei—NWB6  
 Liao, Kai-Hsiu—NWD1  
 Liao, Zhi M.—NWC7  
 Limpert, Jens—NThC2  
 Lin, Chun-Ting—JTUB28  
 Lin, Ja-Hon—NWD6  
 Lin, Shih-Chiang—JTUB23  
 Lin, S. T.—NThB1  
 Lin, Y. Y.—NThB1  
 Lin, Yen-Yin—NWD3  
 Lin, Yizhu—IMG7  
 Lin, YuanYao—JTUB2, NMB3  
 Linhardt, Jeffrey—NFB7  
 Linzon, Yoav—ITuB4, NFA6  
 Lipson, Michal—ITuC5, JTUA5  
 Liu, Chi-Hung—NWD1  
 Liu, Hsiang-Lin—NWD3  
 Liu, Jifeng—IMC6  
 Liu, Jun—NMB2  
 Liu, Jinjie—NWB1  
 Liu, Jian-Ming—NWD3  
 Liu, Paul—IWA4  
 Liu, Shih-Kun—JTUB23  
 Liu, Shuangqiang—JWA27  
 Liu, Yifen—ITuE6  
 Liu, Yu—JWA11  
 Liu, Yu-Chen—IME6, JWA1  
 Liu, Yi—NWA2  
 Lively, Erica—IMB1, IWB2  
 Locharoenrat, Kitsakorn—JWA23  
 Lodahl, Peter—ITuD2  
 Logan, Dylan F.—IMC2  
 Lomakin, Vitaliy—JTUA1  
 Lončar, Marko—IMF4, NWD2  
 Londero, Pablo—NWB4  
 Lopinski, Gregory—IWB3  
 Lotshaw, William—JWA15  
 Lu, Ling—ITuB3  
 Lu, Xiaofei—NWA4  
 Lu, Ya Yan—ITuD4, ITuD5, IWC7  
 Luan, Feng—JTUA4  
 Lucht, Robert P.—NFB1, NFB2  
 Lunnemann, Per—STuC4  
 Luo, Suhua—NWC1  
 Luther-Davies, Barry—IWB5, JTUA4  
 Lyashenko, Dmitry A.—NMD1  
 Lyubomirsky, Ilya—IWA4  
  
**M**  
 Ma, R.—IMB2  
 Ma, Seong-Min—STuC5  
 Mašanović, Milan L.—IMB1  
 Machnikowski, Pawel—NMA1  
 Madden, Steven—IWB5, JTUA4  
 Maeda, Joji—JTUB15  
 Maleki, Lute—NME, NTuC1  
 Malkova, Natalia—STuC2  
 Malomed, Boris A.—NFA6  
 Manes, Ken—NWC7  
 Marchena, Elton—ITuC1  
 Marcinkevičius, Andrius—NThC5  
 Marder, Seth R.—JTUA2, JWA16  
 Marie, Z.—IWD4  
 Masada, Genta—NWE2  
 Massar, Serge—IME1  
 Matichak, Jonathan—JWA16  
 Matsuda, Yasuhiro—NWC2  
 Matsushita, Tomonori—JTUA6  
 Mazur, Eric—ITUA5  
 McCutcheon, Murray W.—NWD2  
 McKinnon, R.—IMB2  
 McMorrow, Dale—JWA15  
 McNabb, Dennis P.—NThC4  
 Md Zain, Ahmad R.—JMA3  
 Measor, Philip—ITuE3, ITuE5  
 Meier, Cedrik—NTuC2  
 Meier, Torsten—NTuC2  
 Mel'nikov, Igor V.—JTUB16  
 Melinger, Joseph—JWA15  
 Melle, Sonia—JWA26, JWA29  
 Melloni, Andrea—ITuA, ITuC4, IWB4,  
 JMA2, STuC3  
 Ménaert, Bertrand—NMD6  
 Meneghetti, Mario R.—NME5  
 Menzel, Ralf—JTUB21, NThB2  
 Messerly, Mike J.—NThC4  
 Michel, Jürgen—IMC6  
 Migdall, Alan—STuC2  
 Milchberg, Howard M.—NFA2, NWA  
 Minowa, Yosuke—JWA22  
 Minzioni, Paolo—NThA5  
 Mirin, Richard P.—JTUB14  
 Misawa, H.—IMB3  
 Mischki, Trevor—IWB3  
 Missey, Mark—IWA4  
 Mitsunaga, Masaharu—STUA5  
 Miyagawa, Hayato—NMA4  
 Miyajima, Takao—NWD8  
 Mizrahi, Amit—JTUA1  
 Mizumoto, Tetsuya—ITuE7  
 Mizutani, Goro—JWA23  
 Mock, Adam—IMF2, ITuB3, ITuD6  
 Moloney, Jerome—NThC1, NWB1  
 Momeni, Babak—IMD2  
 Monat, Christelle—JWB1  
 Moraes, Sara F. A.—NME5  
 Morandotti, Roberto—ITuB4, NFA4,  
 NFA6, NThB6  
 Morichetti, Francesco—ITuC4, IWB4,  
 JMA2, SMB, STuC3  
 Morimoto, Masashi—NWC2

Mørk, Jesper—ITuD2, IWA5, SMB6,

**STuA**, STuB5, STuC4

Moss, D. J.—JWB1

Mücke, Oliver D.—**NFA3**

Muehlberg, Manfred—NMD5

Murakami, Bungo—IWC6

Murnane, Margaret M.—NThC3

Murphy-Jolly, Makeba B.—JWA19

Müstecaplioglu, Özgür—JWA28

Myneni, Krishna—SMB2

Myszyrowicz, André—**NWA2**

## N

Nabeshima, Yoshitake—JWA22

Nagarajan, Radha—IWA4

Nakanishi, Shunsuke—**NMA4**

Nakano, Hisamatsu—IMB4, IMG6, IWC6

Nakano, Yoshiaki—**ITuB1**

Nash, Geoff R.—IMF1

Navarrete-Benlloch, Carlos—**NTuA2**

Neifeld, Mark A.—**JWB**, STuB4

Nemova, Galina—**JTuB17**

Neshev, Dragomir N.—**NWA6**

Ness, Stan—ITuA2

Nevet, Amir—NWE7

Nezhad, Maziar P.—**JTuA1**

Nicholes, Steven C.—**IMB1**

Nicoll, Christine A.—IME2, IME4

Nilsson, Alan—IWA4

Nishijima, Y.—IMB3

Nishimura, Naoto—JWA13

Nishizawa, Yuji—ITuA5

Noda, Susumu—**SWA6**

Noh, Jong Wok—ITuA2

Nomura, Akifumi—IMB4

Nomura, Masahiro—**IMF3**

Nootz, Gero—JWA16, **NMA2**

Norberg, Erik J.—**IWA1**, IWA2

Nordin, Gregory P.—**ITuA2**

Notomi, Masaya—**SWA3**

Novikova, Irina—**STuA4**

## O

O'Brien, John—IMF2, IMF6, ITuB3, ITuD6

O'Daniel, Jason—JTuB3

O'Faolain, Liam—ITuC4, JMA5, JWB1,

STuC6

O'Hara, John F.—NMC1

O'Keefe, Kevin—NThB3

Obara, Minoru—ITuA5

Obraztsov, Alexander N.—NMD1

Obraztsov, Petr A.—NMD1

Odom, Susan A.—JWA16

Odutola, Jamiu A.—SMB2

Oehlberg, Mark—STuA3

Oh, Eun—NTuA3

Oh, Min-Cheol—JTuB8, JWA3

Ohkawa, Masashi—**JTuB7**

Ohta, Ikuma—JTuA6

Okawachi, Yoshitomo—JTuA5

Oki, Tomoyuki—NThC7, NWD8

Okuma, Junji—STuA5

Oliveri, Luigi—NThB6

Olszak, Peter—JWA18

Orenstein, Meir—JWA4, NME2, NWE7,

**SMA2**

Ota, Junya—JTuA6

Ota, Satoshi—JWA13

Oulton, Rupert F.—**JTuA3**

Owens Jr., Samuel B.—JWA19

Owens, Daniel—JTuA2

Oya, Shin—JWA22

## P

Padilha, Lazaro A.—JTuA2, JWA16,

**JWA17**, JWA18, NMA2

Paek, Yong-Soon—JTuB6

Pan, Haifeng—NWE1

Pan, Jin-Shan—JTuB2

Pan, Yen-Ting—IWD5

Panepucci, Roberto R.—**JWA8**

Pant, Ravi—STuB4

Pao, Hsueh-Yuan—NFB4

Park, In-Yong—NMC2

Park, Sang-Ho—JTuB6

Park, Young-Shin—NTuC4

Parker, John S.—IWA1, **IWA2**

Pasiskevicius, Valdas—**NMD4**

Pasquazi, Alessia—NThB6, **NThB7**

Patel, Raj B.—IME2

Patnaik, Anil K.—**NFB1**, **SWA4**

Pattantys-Abraham, Andras G.—IWD2

Pavel, Nicolaie—**JTuB24**

Pavinski, Don—IWA4

Peccianti, Marco—**NFA4**

Peceli, Davorin—JWA16, JWA17

Pedersen, Christian—JWA24

Pelc, Jason S.—**NTuB1**

Pellish, Jonathan—JWA15

Pelusi, Mark—JTuA4

Peng, Peng-Chun—JTuB28

Peng, Yan—**NFA1**, **NFA7**

Perez-Moreno, Javier—**NWC5**

Perry, Joseph W.—JTuA2

Pertsch, Thomas—NMB6, NMD2

Peters, David W.—ITuD1, **IWB6**

Petit, Laeticia—IWB4

Petit, Yannick—NMD6

Petrov, Valentin—**NThA2**, **NThB**

Phan Huy, Kien—IME1

Phillips, Brian S.—ITuE3

Phillips, Nathaniel B.—STuA4

Phua, Poh Boon—NThC5

Piegdon, Karoline—NTuC2

Pignolet, Alain—ITuB4

Pinto, Candido—NFB7

Pocius, Jonas—**NFA3**

Poitras, Daniel—IWB3

Pollak, Thomas M.—**NThA2**

Polyakov, Sergey V.—**STuC2**

Ponomarenko, Sergey A.—JTuB11

Popmintchev, Tenio—**NThC3**

Post, E.—IMB2, IMD4

Prade, Bernard—**NWA2**

Prasad, Amrita—IWB5

Prasankumar, Rohit P.—**NFB5**

Prather, Dennis—**ITuC1**, IWD3

Preußler, Stefan—SMC4

Pritchard, J. D.—NWB5

Pritchett, Timothy M.—**JWA20**

Przhonska, Olga V.—JWA16, JWA17

Pugžlys, Audrius—**NFA3**, **NThC5**, NWD1

Pugatch, R.—STuA1

Pugh, Jonathan R.—**IMF1**

Pun, E. Y. B.—**IWC8**, **JTuB1**

Pupeza, Ioachim—NThC2

Pusino, Vincenzo—NThA5

## Q

Qasymeh, Montasir—**JTuB11**

## R

Raburn, Maura—IWA

Rahman, B.M.A.—**IMG2**

Rahn, Jeff—**IWA4**  
 Raitzsch, U.—**NWB5**  
 Rajput, Monika—**JWA9**  
 Rand, Stephen C.—**NWB6**  
 Rarity, John G.—**IMF1**  
 Rauschenberger, Jens—**NThC2**  
 Rawal, Swati—**JWA9**  
 Raybaut, Myriam—**NThB8**  
 Razzari, Luca—**ITuB4**  
 Reano, Ronald M.—**IMD1**  
 Redding, Brandon F.—**ITuC1**  
 Reffle, Mike—**IWA4**  
 Reinhard, Björn M.—**ITuA6**  
 Residori, Stefania—**SMB5, STuB1**  
 Richardson, Daniel R.—**NFB2**  
 Richardson, Kathleen—**IWB4**  
 Rini, M.—**NMA6**  
 Ritchie, David A.—**IME2, IME4**  
 Riva Sanseverino, Stefano—**NThB6**  
 Rivière, R.—**ITuA4**  
 Roberts, Peter J.—**IMG1**  
 Robinson, Tom A.—**NThB3**  
 Rodriguez, Alejandro W.—**NWD2**  
 Rodriguez, Francisco J.—**NME3**  
 Roldán, Eugenio—**NTuA2**  
 Romanelli, Alejandro—**NTuA2**  
 Ron, Amiram—**STuA1, STuB2**  
 Roppo, Vito—**NWA6**  
 Rosa, Lorenzo—**JWA7**  
 Rosenberger, Albert T.—**SWA2**  
 Rosencher, Emmanuel—**NThB8, NWE3**  
 Röser, Fabian—**NThC2**  
 Roy, Sukesh—**NFB1, NFB2, SWA4**  
 Rudenko, Mikhail—**ITuE5**  
 Ruege, Alexander C.—**IMD1**  
 Rutkowska, Katarzyna A.—**NFA6**  
 Rutter, Natalia—**STuC2**

**S**

Safavi-Naeini, Safieddin—**ITuC3**  
 Sagnes, Isabelle—**NWE6**  
 Saito, Norihito—**JWA22**  
 Saito, Yuji—**JMA1**  
 Saito, Yoshihiko—**JWA22**  
 Saitoh, Kunimasa—**IMD5, JWA7**  
 Sakai, Tetsuo—**ITuA5**  
 Salem, Reza—**JTuA5**  
 Sales, Salvador—**SMB6**

Saltiel, Solomon S.—**NWA6**  
 Salvatore, Randal—**IWA4**  
 Samarelli, Antonio—**ITuC4, JMA2**  
 Samora, Sally—**IWB6**  
 Sano, Haruyuki—**JWA23**  
 Santos, Cassio E. A.—**NME5**  
 Sargent, Edward H.—**IWD2, NMA2**  
 Sarkissian, Raymond—**IMF6**  
 Sasaki, Hirokazu—**JMA1, SWA1**  
 Sato, Aya—**NThC6**  
 Sato, Takashi—**JTuB7**  
 Sato, Yasuhiro—**NWE2**  
 Säynätjoki, Antti—**ITuE2, JTuB4**  
 Scheuer, Jacob—**JTuB26, SMC1, SMC5**  
 Schicker, Kathy—**JTuB9**  
 Schiek, Roland—**NMB6**  
 Schliesser, A.—**ITuA4**  
 Schmid, Jens H.—**IMB2, IMD4, IWB3**  
 Schmidt, Frank—**ITuD**  
 Schmidt, Holger—**ITuE3, ITuE5, STuA3**  
 Schneider, Rick—**IWA4**  
 Schneider, Thomas—**SMC3, SMC4**  
 Schoenlein, Robert W.—**NMA6**  
 Schrempel, Frank—**NMD2**  
 Schunemann, Peter G.—**NThA2**  
 Scott, A.—**IMD4**  
 Segonds, Patricia—**NMD6, NTuA4**  
 Sekiguchi, Hiroto—**IME3**  
 Semenov, Vladimir A.—**NThC4**  
 Şenel, Çağrı—**NWD5**  
 Sennaroglu, Alphan—**JWA28**  
 Sensarn, S.—**NWE4**  
 Settersten, Thomas B.—**NFB1**  
 Setzpfandt, Frank—**NMB6, NMD2**  
 Shah Hosseini, Ehsan—**IMD2**  
 Shahriar, Selim M.—**SMA4**  
 Shandura, Mykola P.—**JWA17, JWA17**  
 Shang, Tao—**ITuE5**  
 Sharkawy, Ahmed—**IWD3**  
 Sharping, Jay E.—**NFA, NThA4**  
 Shelton, David P.—**JWA19**  
 Shi, Hongxin—**NWC1**  
 Shi, Lina—**JWA6**  
 Shi, Shouyuan—**ITuC1, IWD3**  
 Shibayama, Jun—**IMB4**  
 Shibuya, Takatoshi—**JWA22**  
 Shields, Andrew J.—**IME2, IME4**  
 Shih, Chih T'sung—**IWC5**

Shih, Min-Hsiung—**IME6, JWA1**  
 Shimizu, Ryosuke—**JTuB20**  
 Shin, Heedeuk—**NWB2**  
 Shin, JaeHyuk—**IWA6**  
 Shin, Jang-Uk—**JTuB6**  
 Shoji, Ichiro—**JWA14**  
 Shuker, Moshe—**SMA, STuA1, STuB2**  
 Shverdin, Miroslav—**NThC4**  
 Sibia, Concita—**NTuB3**  
 Siddons, Paul—**STuB3**  
 Siders, Craig W.—**NThC4**  
 Sidorenko, Pavel—**NThC3**  
 Sidorov-Biryukov, Dmitrii—**NWD1**  
 Silva, Wagner F.—**SMA6**  
 Silverman, Kevin L.—**JTuB14**  
 Simic, Aleksandar—**JTuA1**  
 Sinclair, William—**IWB3**  
 Sinha, Ravindra—**JWA9**  
 Sipe, John E.—**NME3**  
 Skorobogatiy, Maksim—**JTuB9, JWA5, JWA6**  
 Slepkov, Aaron D.—**NWB4**  
 Slominsky, Yuriy L.—**JWA17**  
 Slutsky, Boris—**JTuA1**  
 Smilgevičius, Valerijus—**NFA3**  
 Smit, Meint—**IMD, ITuB2**  
 Smith, David D.—**SMB2**  
 Smolski, Oleg V.—**JTuB3**  
 Smolski, Viktor O.—**JTuB3**  
 Sohler, Wolfgang—**NMB6**  
 Solheim, B.—**IMD4**  
 Soltani, Mohammad—**IMG4, ITuC2**  
 Song, Dawei—**IWC7**  
 Sorel, Marc—**IMG3, ITuC4, JMA2, JMA3**  
 Sorger, Volker J.—**JTuA3**  
 Sorin, Wayne V.—**JMA, SMA1**  
 Spaeth, Mary—**NWC7**  
 Spannagel, Augi—**IWA4**  
 Srinivasan, Balaji—**IMG5**  
 Staliunas, Kestutis—**NWA6**  
 Starling, D.—**STuA2**  
 Steiner, Michael—**SMB1**  
 Stenberg, Petri—**JTuB4**  
 Stepanchikov, Dmitriij—**SMA7**  
 Stevenson, R. M.—**IME4**  
 Stewart, James—**IWA4**  
 Stivala, Salvatore—**NThB6**  
 Stoeffler, Katherine—**JTuB9**

Stoian, Razvan I.—SWA2  
 Stolz, Wolfgang—NThC1  
 Stone, James M.—NWD3  
 Strain, Michael J.—IMG3  
 Strömqvist, Gustav—NMD4  
 Su, Liangbi—NThC5  
 Sugita, Atsushi—NWC2  
 Sukhovatkin, Vlad—NMA2  
 Sun, Chi-Kuang—IWC1  
 Sun, Nai-Hsiang—IWC3, JTuB23  
 Sun, Xiaochen—IMC6, ITuA1  
 Sun, Xiudong—NWC1  
 Suzudo, Tsuyoshi—NWE2  
 Suzuki, Jun'ichi—NFB8  
 Svirko, Yuri P.—NMD1

**T**  
 Taft, Greg—NThC3  
 Tai, Chao-Yi—NMA5  
 Taira, Takunori—NMA, NMD6, NThB5,  
     NWE2  
 Takahashi, Yasushi—SWA6  
 Takami, Hideki—JWA22  
 Tan, Dawn T. H.—JTuB12  
 Tanabe, T.—SWA3  
 Tanaka, Daiki—JTuB10  
 Tanaka, Shuhei—NFB8  
 Tanaka, Yoshinori—SWA6  
 Tanaka, Yuto—ITuA5  
 Taniyama, H.—SWA3  
 Tanvir, Huda—IMG2  
 Taras, Golota—JWA22  
 Tarhan, Devrim—JWA28  
 Tasaka, Shigeru—NWC2  
 Taylor, Antoinette J.—NFB5, NMC1  
 Tervonen, Ari—ITuE2  
 Themistos, C.—IMG2  
 Thévenaz, Luc—JWB2, SMA3, SMC2  
 Thorpe, Michael J.—NThA3  
 Tidemand-Lichtenberg, Peter—JWA24  
 Tobey, R.—NMA6  
 Tokura, Y.—NMA6  
 Tolstikhin, Valery—ITuB  
 Tomes, Matthew—NTuC5  
 Tomioka, Y.—NMA6  
 Tong, Yuqi—NFA1  
 Torregiani, Matteo—ITuC4, IWB4, JMA2  
 Trebino, Rick—NWA5

Tredicce, J. R.—NMB4  
 Trotter, Douglas C.—IMC5  
 Trull, Jose F.—NWA6  
 Tsai, Corey—IWA4  
 Tsai, Shih-Kuo—IME6  
 Tsakmakidis, Kosmas—JMA4  
 Tsang, K. C.—JTuB1  
 Tsuda, Hiroyuki—JTuB10  
 Tsuji, Harutoshi—NMA4  
 Tsurumachi, Noriaki—NMA4  
 Tu, C. W.—IWD4  
 Tucker, Rodney S.—SMA1  
 Tünnermann, Andreas—NMB6, NMD2,  
     NThC2  
 Tur, Moshe—SMC2  
 Turner-Foster, Amy C.—JTuA5  
 Tzeng, Yan-Wei—NWD3

**U**  
 Uchida, Yoshihisa—NMA4  
 Udem, Thomas—NThC2  
 Ueda, Mikiya—NWE2  
 Ülgüdür, Coskun—NWD5  
 Upadhyaya, Prashanth C.—NFB5  
 Upham, Jeremy—SWA6  
 Urbanski, Mark—NTuC2

**V**  
 Vachon, M.—IMB2  
 Van, Vien—IWC  
 Van Driel, Henry—NME6  
 Van Stryland, Eric W.—JTuA2, JWA16,  
     JWA17, JWA18, NMA2  
 Varma, S.—NFA2  
 Venkataraman, Vivek—NWB4  
 Verhoef, Aart J.—NFA3, NWD1  
 Vilaseca, Ramon—NMB, NWA6  
 Vo, Trung—JTuA4  
 Voelker, Uwe—NMD5  
 Vora, Kevin—ITuA5  
 Vu, Khu—IWB5  
 Vudya Setu, Praveen—STuA2

**W**  
 Wada, Satoshi—JWA22  
 Waldron, Philip—IWB3  
 Walker, David—SMB1  
 Wall, S.—NMA6

Walsh, Gary—ITuD3  
 Wang, Fu Xiang—NME3  
 Wang, Hailin—NThA, NTuC4, SMC  
 Wang, Jianwei—JWA20  
 Wang, Li—IME5, NFB3, NME4  
 Wang, Qian—JWA12  
 Wang, Rongping—IWB5  
 Wang, T. D.—NThB1  
 Wang, Xuan—JWA8  
 Wang, X. J.—IWD4  
 Wang, Yao-Chen—IME6  
 Ware, Michael—SMA5  
 Watanabe, Hideki—NWD8  
 Watanabe, Makoto—JWA22  
 Watts, Michael R.—IMC5  
 Webster, Scott—JTuA2, JWA16, JWA17,  
     JWA18, NMA2  
 Wei, Lei—IWB7, JTuB27  
 Weill, Rafi—NWB7  
 Weiss, Ori—JTuB26  
 Welch, David—IWA4  
 Wen, Jianming—NTuA3, STuC1  
 Wendt, Joel R.—IWB6  
 Wesch, Werner—NMD2  
 White, Thomas P.—JMA5, JWB1  
 Wiatrek, Andrzej—SMC3, SMC4  
 Williams, Matthew O.—JTuB14  
 Willner, Alan E.—IWD6  
 Wu, Bin—STuA3  
 Wu, E.—NWE1  
 Wu, Fang-Ming—JTuB28  
 Wu, Hao—JWA27  
 Wu, Jian—NFA1, NFA7  
 Wu, Jin-Hui—SWA5  
 Wu, Meng-Chyi—IME6, JWA1  
 Wu, Yumao—ITuD4

**X**  
 Xiao-Li, Yinying—IWD6  
 Xie, Huan—ITuD5  
 Xie, Hao—JWA2  
 Xu, Dan-Xia—IMB2, IMD4, IWB, IWB3  
 Xu, Hua—STuC5  
 Xu, Jun—NThC5  
 Xu, Lina—NWA5  
 Xue, Weiqi—JTuB27, SMB6

## Y

Yaguchi, Tomohiko—JWA14  
Yamada, Koshiro—JMA1  
Yamaji, Masahiro—**NFB8**  
Yamauchi, Junji—IMB4, IMG6, IWC6  
Yan, Ming—NWE1  
Yang, Huei-Min—JTUB23  
Yang, Xuan—NFA7  
Yang, Yi-Chun—IME6, JWA1  
Yao, Peng—IWD3  
Ye, Jun—NThA3  
Yegnanarayanan, Siva—IMC3, IMG4,  
ITuC2  
Yen, Tzu-Hsiang—**NWD6**  
Yifat, Yuval—**SMC1**  
Yilmaz, Yigit O.—JTUB3  
Yin, Guang-Yu—JTUB25, NWE4  
Yokoyama, Hiroyuki—**NThC6, NThC7,**  
NWD8  
Yoo, Hyoungsuk—**ITuD7**  
Young, R. J.—IME4  
Yu, Wen-Hsiang—NMA5  
Yuan, Ping—JWA27  
Yuan, Shuai—NFA7  
Yue, Yang—IWD6  
Yum, Honam—SMA4

## Z

Zadok, Avi—SMC2  
Zäh, Florian—**NWE5**  
Zaske, Sebastian—**NThA1**  
Zawilski, Kevin T.—NThA2  
Zayats, Anatoly V.—**NME1**  
Zeng, Heping—NFA1, **NFA7**, NWD7,  
NWE1  
Zeng, Yong—**NWB1**  
Zeng, Zei Wei—IWC5  
Zentgraf, Thomas—JTUA3  
Zhang, Lin—IWD6  
Zhang, Qiang—NTUB1  
Zhang, Xiang—JTUA3  
Zhang, Xiaoshi—NThC3  
Zhang, Xi-Cheng—NWA1, NWA4  
Zhang, Yinan—NWD2  
Zhang, Yundong—**JWA27**  
Zhao, F.—IWD4  
Zhao, Qun—JWA20  
Zhao, Yue—ITUE3

Zhu, Lingxiao—NWD1  
Zhu, Y.—NMA6  
Ziari, Mehrdad—IWA4  
Zilka, Elad—SMC2  
Zortman, William A.—**IMC5**

# Integrated Photonics and Nanophotonics Research and Applications (IPNRA)/ Nonlinear Optics (NLO)/Slow and Fast Light (SL) Postdeadline Paper Abstracts

• Monday, July 13, 2009 •

## NMD • Photonic Crystals and Periodic Nanomaterials

Tapa I

2:00 p.m.–4:00 p.m.

Steve Blair; Univ. of Utah, USA, *Presider*

PDNMD1 • 2:00 p.m.

**Influence of Hole Sizes and Adhesion Layers on the Third-Harmonic Generation from Sub-Wavelength Apertures**, Xiaojin Jiao, Tingjun Xu, Steve Blair; Dept. of Electrical and Computer Engineering, Univ. of Utah, USA. Third-harmonic generation from arrays of sub-wavelength apertures is measured. Strong angular dependence of THG is observed, which roughly corresponds to that of fundamental transmission. Influence of hole size and adhesion layers is also experimental studied.

• Tuesday, July 14, 2009 •

## NTuA • Entanglement, Squeezing and Quantum Memories

Tapa I

8:00 a.m.–10:00 a.m.

Akira Furusawa; Univ. of Tokyo, Japan, *Presider*

PDNTuA2 • 8:30 a.m.

**Experimental Realization of a Multi-Player Quantum Game**, Joseph B. Altepeter<sup>1</sup>, Matthew A. Hall<sup>1</sup>, Milja Medic<sup>1</sup>, Monika Patel<sup>1</sup>, David A. Meyer<sup>2</sup>, Prem Kumar<sup>1</sup>; <sup>1</sup>Northwestern Univ., USA, <sup>2</sup>Univ. of California at San Diego, USA. We implement a multi-player quantum public-goods game using only bipartite entanglement and two-qubit logic. Within measurement error, the expectation per player follows predicted values as the number of players is increased.

## PDPA • Nonlinear Optics Postdeadline Session I

Tapa I

5:00 p.m.–6:00 p.m.

Jens Rauschenberger; Max-Planck-Inst. of Quantum Optics, Germany, *Presider*

PDPA1 • 5:00 p.m.

**40-Gbit/s Optical Data Exchange between WDM Channels Using Second-Order Nonlinearities in PPLN Waveguides**, Jian Wang, Scott Nuccio, Xiaoxia Wu, Omer Yilmaz, Lin Zhang, Irfan Fazal, Jeng-Yuan Yang, Yang Yue, Alan Willner; Univ. of Southern California, USA. We demonstrate 40-Gbit/s optical data exchange between WDM channels based on second-order nonlinearities in a periodically-poled Lithium-niobate (PPLN) waveguide. Channel-selective data exchange of four WDM signals is shown, which introduces ~4 dB penalty.

PDPA2 • 5:15 p.m.

**Experimental Verification of Two-Tone Amplification in Single Frequency Fiber Amplifiers**, Clint Zeringue, Iyad Dajani, Chunte Lu, Ahmed Lobad, Christopher Vergien; AFRL, USA. We present experimental verification of a novel technique to suppress SBS in narrow linewidth fiber amplifiers. This technique relies on seeding with a combination of broad- and narrow-linewidth laser beams allowing favorable laser gain competition.

PDPA3 • 5:30 p.m.

**Wavelength Conversion and 9-Fold Multicasting of a 21.4 Gbit/s DPSK Data Channel Using Supercontinuum Generation**, Omer F. Yilmaz, Scott Nuccio, Zahra Bakhtiari, Xiaoxia Wu, Jian Wang, Lin Zhang, Alan Willner; Univ. of Southern California, USA. We demonstrate wavelength conversion and 9-fold multicasting of a 21.4-Gbit/s DPSK signal using supercontinuum generation. Multicasting is accomplished using a polarization based periodic filter for spectral slicing. Power penalties <3dB are achieved for all channels.

PDPA4 • 5:45 p.m.

**X-Ray View of Dressed Atoms**, Ernest Glover<sup>1</sup>, Marc Hertlein<sup>1</sup>, Steve Southworth<sup>2</sup>, Tom Allison<sup>3</sup>, Jeroen van Tilborg<sup>1</sup>, Elliot Kanter<sup>2</sup>, Bertold Krässig<sup>2</sup>, H. R. Varma<sup>2</sup>, Bruce Rude<sup>1</sup>, Robin Santra<sup>2,4</sup>, Ali Belkacem<sup>1</sup>, Linda Young<sup>2</sup>; <sup>1</sup>Lawrence Berkeley Natl. Lab, USA, <sup>2</sup>Argonne Natl. Lab, USA, <sup>3</sup>Univ. of California at Berkeley, USA, <sup>4</sup>Univ. of Chicago, USA. We report, to our knowledge, the first dressed absorption spectrum at an X-ray probe wavelength. An ultrafast optical pulse induces transparency for X-rays, demonstrating a promising route to femtosecond X-ray pulse shaping and measurement.

## PDPB • Nonlinear Optics Postdeadline Session II

Tapa II

5:00 p.m.–6:15 p.m.

Concita Sibilia; INFN, Dept. di Energetica, Univ. di Roma, Italy, *Presider*

PDPB1 • 5:00 p.m.

**Synthesis and Characterization of Sol-Gel Based Nanostructured Cr(III)Doped ITO Films on Glass**, Prasanta K. Biswas, Susmita Kundu, Sunirmal Jana, Dipten Bhattacharya; Central Glass and Ceramic Res. Inst., India. Sol-gel based Cr(III) doped quantum sized (2-10 nm) indium tin oxide films were deposited on glass and cured at different temperatures. Absorption and photoluminescence study shows a strong quantum confinement effect and exciton phonon interaction.

PDPB2 • 5:15 p.m.

**Two Photo-Absorption Property of Metal Complexes Tethered with Azo Dyes**, Ubaldo M. Neves<sup>1</sup>, Leonardo De Boni<sup>1</sup>, Cleber R. Mendonça<sup>1</sup>, Zhihong Ye<sup>2</sup>, Xiu R. Bu<sup>2</sup>; <sup>1</sup>Inst. de Física de São Carlos, Brazil, <sup>2</sup>Clark Atlanta Univ., USA. Schiff base compounds have been prepared possessing azo dye units. The two-photon absorption properties are evaluated, which reveals the additive property as a result of non-detrimental dipole-dipole interaction between dye chromophores.

**PDPB3 • 5:30 p.m.**

**Two-Photon-Fluorescence Correlation Measurements of Picosecond Optical Pulses Generated from a 405-nm GaInN Laser Diode**, Shunsuke Kono<sup>1</sup>, Takao Miyajima<sup>2</sup>, Masaru Kuramoto<sup>2</sup>, Masao Ikeda<sup>1,2</sup>, Hiroyuki Yokoyama<sup>1</sup>; <sup>1</sup>New Industry Creation Hatchery Ctr., Tohoku Univ., Japan, <sup>2</sup>Advanced Material Labs, Sony Corp., Japan. Intensity auto-correlation measurements using two-photon fluorescence from a GaN crystal were performed on picosecond optical pulses from a 405-nm GaInN laser diode excited by intense electric pulses. The estimated pulse duration was 10 ps.

**PDPB4 • 5:45 p.m.**

**Polarization-Diverse Parametric Processes in Zincblende Crystals**, Paulina S. Kuo<sup>1</sup>, Konstantin L. Vodopyanov<sup>2</sup>, Martin M. Fejer<sup>2</sup>; <sup>1</sup>NIST, USA, <sup>2</sup>Stanford Univ., USA. Quasi-phasematched, non-birefringent nonlinear materials, like orientation-patterned GaAs, allow efficient mixing of diverse polarization states. We investigate parametric processes in these materials, including the six coupled-wave equations that describe them and implications for all-optical signal processing.

**PDPB5 • 6:00 p.m.**

**Vortex Spatiotemporal Optical Solitons in Nonlinear Optical Fibers**, Robabeh Talebzadeh; Azarbaijan Univ. of Tarbiat Moallem, Iran, Islamic Republic of. We investigate possibility of forming spatiotemporal vortex solitons in inhomogeneous dispersive nonlinear-optical fibers using a graded-index kerr medium. We use a variational approach to solve NLS-equation and show they can be stabilized under certain conditions.

**PDPC • Joint IPNRA/SL Postdeadline Session**

Honolulu I-II

**5:00 p.m.–6:15 p.m.**

Liming Zhang; Bell Labs, Alcatel-Lucent, USA

**PDPC1 • 5:00 p.m.**

**Polarization Dependent Pulse Distortion in Stimulated Brillouin Scattering Slow Light Systems**, Avi Zadok<sup>1</sup>, Sanghoon Chin<sup>2</sup>, Elad Zilka<sup>3</sup>, Avishay Eyal<sup>3</sup>, Luc Thévenaz<sup>2</sup>, Moshe Tur<sup>3</sup>; <sup>1</sup>Caltech, USA, <sup>2</sup>Ecole Polytechnique Fédérale de Lausanne, Switzerland, <sup>3</sup>Tel Aviv Univ., Israel. Stimulated Brillouin scattering slow light delay is shown to introduce an inherent polarization mode dispersion, which can dominate the broadening and distortion of signal pulses. The effect is demonstrated in both simulations and experiments.

**PDPC2 • 5:15 p.m.**

**High-Q Photonic Crystal Chalcogenide Cavities by Photosensitive Post Processing**, Michael W. Lee<sup>1</sup>, Christian Grillet<sup>1</sup>, Snjezana Tomljenovic-Hanic<sup>1</sup>, Dave Moss<sup>1</sup>, Benjamin J. Eggleton<sup>1</sup>, Xin Gai<sup>2</sup>, Steve Madden<sup>2</sup>, Duck Y. Choi<sup>2</sup>, Douglas Bulla<sup>2</sup>, Barry Luther-Davies<sup>2</sup>; <sup>1</sup>CUDOS, School of Physics, Univ. of Sydney, Australia, <sup>2</sup>CUDOS, Laser Physics Ctr., Australian Natl. Univ., Australia. We present the first demonstration of a high-Q (~60000) photonic crystal (PhC) cavity formed post-fabrication by locally modifying the refractive index of a PhC made of a photosensitive chalcogenide glass.

**PDPC3 • 5:30 p.m.**

**Monolithic Dual-Mode DFB Laser for Tunable Continuous-Wave THz Generation**, Namje Kim<sup>1</sup>, Jaeheon Shin<sup>1</sup>, Chul Wook Lee<sup>1</sup>, Eundeok Sim<sup>1</sup>, Sang-Pil Han<sup>1</sup>, Yongsoo Baek<sup>1</sup>, Dae-Su Yee<sup>2</sup>, Min Young Jeon<sup>3</sup>, Kyung Hyun Park<sup>1</sup>; <sup>1</sup>Electronics and Telecommunications Res. Inst., Republic of Korea, <sup>2</sup>Ctr. for Safety Measurement, KRISS, Republic of Korea, <sup>3</sup>Chungnam Natl. Univ., Republic of Korea. We report a monolithic dual-mode DFB laser operating in the 1550-nm range as an optical beat source for tunable THz generation. The THz emission from InGaAs photomixers is continuously tuned from 0.17 to 0.49 THz.

**PDPC4 • 5:45 p.m.**

**Nano-Photonic Electro-Optic Polymer Modulator Based on Photonic Band Gap Engineering**, Xiaolong Wang<sup>1</sup>, Swapnajit Chakravarty<sup>1</sup>, Boem Suk Lee<sup>2</sup>, Cheyun Lin<sup>2</sup>, Jingdong Luo<sup>3</sup>, Alex K.Y. Jen<sup>3</sup>, Ray T. Chen<sup>2</sup>; <sup>1</sup>Omega Optics, Inc., USA, <sup>2</sup>Microelectronics Res. Ctr., Univ. of Texas at Austin, USA, <sup>3</sup>Dept. of Materials Science and Engineering, Univ. of Washington, USA. A nano-photonic electro-optic polymer modulator based on shifting the band diagram of the photonic crystal waveguide is presented. Simulations results show that the device is as short as 20 $\mu$ m and consumes only 25fJ/bit energy.

**PDPC5 • 6:00 p.m.**

**Low-Voltage, Vertical-Junction, Depletion-Mode, Silicon Mach-Zehnder Modulator with Complementary Outputs**, Michael Watts, William A. Zortman, Douglas C. Trotter, Ralph W. Young, Anthony L. Lentine; Sandia Natl. Labs, USA. We demonstrate a new silicon depletion-mode vertical  $p$ - $n$  junction phase-modulator implemented in a lumped-element Mach-Zehnder modulator configuration enabling an ultra-low  $V_{\pi L}$  of ~1V-cm and 10Gb/s non-return-to-zero (NRZ) data transmission with wide-open complementary output eye diagrams.

**• Wednesday, July 15, 2009 •**

**JWA • Joint Poster Session II**

Palace Lounge

**10:00 a.m.–11:30 a.m.**

**PDJWA30**

**Slow Light in a Parametrically Amplifying Medium**, Nobuhito Hayashi, Akihiko Fujisawa, Masaharu Mitsunaga; Kumamoto Univ., Japan. We theoretically study propagation behavior of probe (signal) and Stokes (idler) pulses under a strong coupling beam. The analyses predict that both pulses are parametrically amplified and delayed by about a pulsewidth.

**PDJWA31**

**Laser Induced Absorption Spectra Properties of Ethyl Red Doped Film and Its Applications for Optical Switch Based Two Beams Mutual Modulation**, Zhaofeng Hao<sup>1,2</sup>, Wenqiang Lu<sup>1</sup>, Chunping Zhang<sup>1</sup>, Jianguo Tian<sup>1</sup>; <sup>1</sup>Nankai Univ., China, <sup>2</sup>Columbia Univ., USA. The absorption spectra of the samples were measured and the difference of nonlinear refractive index distribution curve was simulated using the Kramers-Kronig relation. Additionally, the transmission intensity mutual modulations of the two beams were studied.



**PDJWA32**

**Fano Resonances in Saturable Waveguide Arrays**, *Uta Naether, Daniel E. Rivas, Manuel A. Larenas, Mario I. Molina, Rodrigo A. Vicencio; Univ. de Chile, Chile.* We study the main properties of nonlinear localized modes in a waveguide array with an embedded nonlinear saturable impurity. We scatter a wave against the modes, discovering transmission suppression, which we connect to Fano resonances.

**PDJWA33**

**Chaos and Pulses Packages in Current Modulated VCSELs**, *J.H. Talla Mbé, Sifeu Takougang Kingni, Paul Wofo; Univ. of Yaoundé I, Cameroon.* We numerically study the dynamics of VCSELs based on the current-dependent gain model subjected to current modulation. Striking dynamics appears: pulses packages and chaotic behaviour.

**PDJWA34**

**Coherent Control of Fluorescence Intensity with Shaped Femtosecond Pulses in Organic Molecules**, *P. H. D. Ferreira, L. Misoguti, C. R. Mendonça; Inst. de Física de São Carlos, Brazil.* This paper presents a study of the coherent control of fluorescence intensity by two-photon absorption via genetic algorithm in Y-shaped molecules. Using a spatial light modulator, we were able to enhance the fluorescence intensity of two of these molecules.

•Friday, July 17, 2009•

<b>NFA • Self Focusing and Filaments</b>
--

*Tapa I*

**8:00 a.m.–10:15 a.m.**

*Jay E. Sharping; Univ. of California at Merced, USA, Presider*

**PDNFA2 • 8:30 a.m.**

**745 fs Resolution Single-Shot Recording at 2.1 Tsample/s and 104 Mframes/s Using Temporal Imaging**, *Vincent J. Hernandez<sup>1</sup>, Corey V. Bennett<sup>1</sup>, Bryan D. Moran<sup>1</sup>, Alexander D. Drobshoff<sup>1</sup>, Carsten Langrock<sup>2</sup>, Derek Chang<sup>2</sup>, Martin M. Fejer<sup>2</sup>, Morten Ibsen<sup>3</sup>; <sup>1</sup>Lawrence Livermore Natl. Lab, USA, <sup>2</sup>Stanford Univ., USA, <sup>3</sup>Optoelectronics Res. Ctr., Univ. of Southampton, UK.* We demonstrate temporal imaging with -42.6x time magnification of 200 ps frames with subpicosecond resolution for waveforms containing 2.5 Gb/s modulated picosecond pulses. 852 GHz signal bandwidth is captured single-shot at 104 MHz frame rates.

<b>NFB • Applications of Nonlinear Optics</b>
---

*Tapa I*

**10:45 a.m.–1:00 p.m.**

*Daniel Gauthier; Duke Univ., USA, Presider*

**PDNFB8 • 12:45 p.m.**

**Fiber Based Multiphoton Microscope Using a Fiber Femtosecond Laser and MEMS Scanning Probe**, *Gangjun Liu<sup>1</sup>, Zhongping Chen<sup>1</sup>, Khanh Kieu<sup>2</sup>, Frank W. Wise<sup>2</sup>; <sup>1</sup>Univ. of California at Irvine, USA, <sup>2</sup>Dept. of Applied Physics, Cornell Univ., USA.* We developed a fiber based MPM that integrates an all-normal-dispersion femtosecond fiber laser, double cladding photonic crystal fiber, and a MEMS scanning probe. SHG and two photon excited fluorescence images of biological sample were demonstrated.

<b>NOTES</b>
--------------

## Key to Authors and Presiders

(**Bold** denotes Presider or Presenting Author)

### A

Allison, Tom—PDPA4  
Altepetter, Joseph B.—PDNTuA2

### B

Baek, Yongsoon—PDPC3  
Bakhtiari, Zahra—PDPA3  
Belkacem, Ali—PDPA4  
Bennett, Corey V.—PDNFA2  
Bhattacharya, Dipten—PDPB1  
Biswas, Prasanta K.—**PDPB1**  
Blair, Steve—**NMD, PDNMD1**  
Bu, Xiu R.—**PDPB2**  
Bulla, Douglas—PDPC2

### C

Chakravarty, Swapnajit—PDPC4  
Chang, Derek—PDNFA2  
Chen, Ray T.—PDPC4  
Chen, Zhongping—**PDNFB8**  
Chin, Sanghoon—PDPC1  
Choi, Duck Y.—PDPC2

### D

Dajani, Iyad—**PDPA2**  
De Boni, Leonardo—PDPB2  
Drobshoff, Alexander D.—PDNFA2

### E

Eggleton, Benjamin J.—PDPC2  
Eyal, Avishay—PDPC1

### F

Fazal, Irfan—PDPA1  
Fejer, Martin M.—PDNFA2, PDPB4  
Ferreira, P. H. D.—**PDJWA34**  
Fujisawa, Akihiko—PDJWA30  
Furusawa, Akira—**NTuA**

### G

Gai, Xin—PDPC2  
Gauthier, Daniel—**NFB**  
Glover, Ernest—**PDPA4**  
Grillet, Christian—**PDPC2**

### H

Hall, Matthew A.—PDNTuA2  
Han, Sang-Pil—PDPC3  
Hao, Zhaofeng—**PDJWA31**  
Hayashi, Nobuhito—**PDJWA30**  
Hernandez, Vincent J.—**PDNFA2**  
Hertlein, Marc—PDPA4

### I

Ibsen, Morten—PDNFA2  
Ikeda, Masao—PDPB3

### J

Jana, Sunirmal—PDPB1  
Jen, Alex K.Y.—PDPC4  
Jeon, Min Young—PDPC3  
Jiao, Xiaojin—PDNMD1

### K

Kanter, Elliot—PDPA4  
Kieu, Khanh—PDNFB8  
Kim, Namje—PDPC3  
Kingni, Sifeu T.—**PDJWA33**  
Kono, Shunsuke—**PDPB3**  
Krässig, Bertold—PDPA4  
Kumar, Prem—**PDNTuA2**  
Kundu, Susmita—PDPB1  
Kuo, Paulina S.—**PDPB4**  
Kuramoto, Masaru—PDPB3

### L

Langrock, Carsten—PDNFA2  
Larenas, Manuel A.—**PDJWA32**  
Lee, Boem Suk—PDPC4  
Lee, Chul Wook—PDPC3  
Lee, Michael W.—PDPC2  
Lentine, Anthony L.—PDPC5  
Lin, Cheyun—PDPC4  
Liu, Gangjun—PDNFB8  
Lobad, Ahmed—PDPA2  
Lu, Chunte—PDPA2  
Lu, Wenqiang—**PDJWA31**  
Luo, Jingdong—PDPC4  
Luther-Davies, Barry—PDPC2

### M

Madden, Steve—PDPC2  
Mbé, J.H. Talla—**PDJWA33**  
Medic, Milja—PDNTuA2  
Mendonça, Cleber R.—PDPB2, **PDJWA34**  
Meyer, David A.—PDNTuA2  
Misoguti, L.—**PDJWA34**  
Mitsunaga, Masaharu—**PDJWA30**  
Miyajima, Takao—PDPB3  
Molina, Mario I.—**PDJWA32**  
Moran, Bryan D.—PDNFA2  
Moss, Dave—PDPC2

### N

Naether, Uta—**PDJWA32**  
Neves, Ubaldo M.—PDPB2  
Nuccio, Scott—PDPA1, PDPA3

### P

Park, Kyung Hyun—**PDPC3**  
Patel, Monika—PDNTuA2

### R

Rauschenberger, Jens—**PDPA**

Rivas, Daniel E.—**PDJWA32**  
Rude, Bruce—PDPA4

### S

Santra, Robin—PDPA4  
Sharping, Jay E.—**NFA**  
Shin, Jaeheon—PDPC3  
Sibilia, Concita—**PDPB**  
Sim, Eundeok—PDPC3  
Southworth, Steve—PDPA4

### T

Talebzadeh, Robabeh—**PDPB5**  
Thévenaz, Luc—PDPC1  
Tian, Jianguo—**PDJWA31**  
Tomljenovic-Hanic, Snjezana—  
PDPC2  
Trotter, Douglas C.—PDPC5  
Tur, Moshe—**PDPC1**

### V

van Tilborg, Jeroen—PDPA4  
Varma, H. R.—PDPA4  
Vergien, Christopher—PDPA2  
Vicencio, Rodrigo A.—**PDJWA32**  
Vodopyanov, Konstantin L.—**PDPB4**

### W

Wang, Jian—PDPA1, PDPA3  
Wang, Xiaolong—**PDPC4**  
Watts, Michael—**PDPC5**  
Willner, Alan—PDPA1, PDPA3  
Wise, Frank W.—PDNFB8  
Wofo, Paul—**PDJWA33**  
Wu, Xiaoxia—PDPA1, PDPA3

### X

Xu, Tingjun—PDNMD1

### Y

Yang, Jeng-Yuan—PDPA1  
Ye, Zhihong—PDPB2  
Yee, Dae-Su—PDPC3  
Yilmaz, Omer F.—PDPA1, **PDPA3**  
Yokoyama, Hiroyuki—PDPB3  
Young, Linda—PDPA4  
Young, Ralph W.—PDPC5  
Yue, Yang—PDPA1

### Z

Zadok, Avi—PDPC1  
Zeringue, Clint—PDPA2  
Zhang, Chunping—**PDJWA31**  
Zhang, Liming—**PDPC**  
Zhang, Lin—**PDPA1**, PDPA3  
Zilka, Elad—PDPC1  
Zortman, William A.—PDPC5

# Advances in Optical Sciences: OSA Optics & Photonics Congress UPDATE SHEET

## Withdrawals:

Integrated Photonics and Nanophotonics Research and Applications: IMG7, ITuD3, JWA2, JWA10  
Nonlinear Optics: NMD1, NTuA2, JWA11, JWA25, NFA2  
Slow and Fast Light: JWA28

## Presentation Updates:

**NFB8, Three-Dimensional Microfabrication by Single Pulse Femtosecond Laser through Binary Phase Hologram**, Masahiro Yamaji, Hayato Kawashima, Jun'ichi Suzuki, Shuhei Tanaka; *New Glass Forum, Tsukuba Res. Consortium, Japan*, will be presented by Masahiro Yamaji at 8:15 a.m.–8:30 a.m. during session NFA, Self Focusing and Filaments.

## Correction to Program:

The name of one of the authors of **IMF3, Single Quantum Dot Laser with Photonic Crystal Nanocavity**, is misspelled in the program book. The correct spelling is *Masahiro Nomura*.

An author was omitted from **IWD3, Fabrication of Large Area "Woodpile" Photonic Crystal Structures for Near IR**. The corrected author block is as follows: *Neilanjan Dutta<sup>1</sup>, Peng Yao<sup>1</sup>, Shouyuan Shi<sup>1</sup>, Ahmed Sharkawy<sup>2</sup>, Ozgenc Ebil<sup>2</sup>, Eric Kelmelis<sup>2</sup>, Dennis W. Prather<sup>1</sup>, Elton Marchena<sup>1</sup>; <sup>1</sup>Univ. of Delaware, USA, <sup>2</sup>EM Photonics Inc., USA.*

## Presider Updates:

*Takunori Taira; Laser Res. Ctr. for Molecular Science, Inst. for Molecular Science, Japan* will preside over session **NWA, Terahertz and Ultrafast**.

*Michael E. Gehm; Univ. of Arizona, USA* will preside over the joint Nonlinear Optics/Slow and Fast Light session **JWB, Slow Light Applications in Nonlinear Optics**.

## Presenter Changes:

**IMC1, High Speed Modulation of Hybrid Silicon Evanescent Lasers**, will be presented by *Daoxin Dai; Univ. of California at Santa Barbara, USA*.

**ITuE6, Finite Thickness Metal-Insulator-Metal Structure for Waveguide Based Surface Plasmon Resonance Biosensing**, will be presented by *Jiwon Lee; Iowa State Univ., USA*.

**NTuC2, Coupling Dynamics of Quantum Dots in a Liquid-Crystal-Tunable Microdisk Resonator**, will be presented by *Cedrik Meier; Univ. of Paderborn, Germany*.

**NWC3, Integration of Extraordinary Nonlinear Optical Materials into Silicon Photonics, Plasmonics and Metamaterial Devices**, will be presented by *Philip A. Sullivan; Univ. of Washington, USA*.

**NWD4, Spectral Filtering Highly-Chirped Pulses in All-Normal Dispersion Fiber Lasers**, will be presented by *Nathan Kutz; Dept. of Applied Mathematics, Univ. of Washington, USA*.

**NFA7, Enhanced Third Harmonic Generation in Few-Cycle Femtosecond Filaments Modulated by Filament Non-Collinear Interaction**, will be presented by *Jian Wu; East China Normal Univ., China*.

**NFB4, Imaging Resolution Improvement Using Transverse Phase Amplification**, will be presented by *Igor Jovanovic; Purdue Univ., USA*.

**POSTDEADLINE PRESENTATIONS:** Please see the postdeadline papers book for times and locations of postdeadline paper presentations. Postdeadline papers will be presented throughout the week in various oral and poster sessions.

*OSA thanks our corporate sponsor Swamp Optics. OSA also thanks the following organizations for providing grants: Air Force Office of Science Research (AFOSR), National Science Foundation (NSF), OSA Foundation.*