

# Femtosecond Laser Microfabrication (LM)

## Topical Meeting and Tabletop Exhibit

**Technical Conference: October 13, 2009**

[The Fairmont San Jose](#)  
[San Jose, California, USA](#)

**Submission Deadline:** June 1, 2009 8:00 a.m. EDT (12.00 [GMT](#))

**Hotel Reservation Deadline:** September 11, 2009

**Pre-Registration Deadline:** September 16, 2009

## Part of the Fall OSA Optics & Photonics Congress

Featuring Five Topical Meetings Collocated with FiO 2009/LS XXV:

[Frontiers in Optics/Laser Science XXV \(FiO 2009/LS XXV\)](#)

[Adaptive Optics: Methods, Analysis and Applications \(AO\)](#)

[Advances in Optical Materials \(AIOM\)](#)

[Computational Optical Sensing and Imaging \(COSI\)](#)

Femtosecond Laser Microfabrication (LM)

[Signal Recovery and Synthesis \(SRS\)](#)

### 2009 Meeting Chairs

Eric Mazur, *Harvard Univ., USA*

Chris Schaffer, *Cornell Univ., USA*

### About LM

Lasers permit selectively removing, modifying, or depositing materials, making them an attractive tool for materials processing. Recent developments in femtosecond laser development have greatly enhanced the spatial precision of laser microprocessing and given access to new interaction mechanisms that can be utilized to alter materials in new ways.

This one-day conference will provide a forum for discussion of the fundamentals of laser-materials interactions as well as of emerging applications of lasers for microfabrication. The meeting will include invited talks from renowned experts in the field, high-profile poster presentations, and a forum discussion of the future of laser micromachining. While covering a variety of microfabrication related research, the meeting will emphasize the use of ultrashort laser pulses in microfabrication. The topics will cover the fundamentals of femtosecond laser-matter interactions, novel microprocessing techniques and applications.

### Topics to be Considered

- Fundamentals of laser-material interactions
  - Linear and nonlinear absorption
  - Ablation dynamics
  - Mechanisms for bulk modification of transparent materials
  - Laser mediated material deposition
- Applications in microfabrication
  - Surface processing
  - Waveguide writing
  - Laser welding, sintering
  - Localized material deposition
  - 3-D photopolymerization

- Real-time diagnostics for microprocessing

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  - 3-D photopolymerization
  - Real-time diagnostics for microprocessing

# Program Committee

## Program Chairs

Eric Mazur, *Harvard Univ., USA*  
Chris Schaffer, *Cornell Univ., USA*

## Committee Members

Craig Arnold, *Princeton Univ., USA*  
Costas Grigoropoulos, *Univ. of California at Berkeley, USA*  
Peter Herman, *Univ. of Toronto, Canada*  
Minoru Obara, *Keio Univ., Japan*  
Andreas Ostendorf, *Ruhr Univ. Bochum, Germany*  
Hai-Lung Tsai, *Missouri Univ. of Science and Technology, USA*

## Special Events

### **Panel Discussion: Challenges and Opportunities in Femtosecond Laser Micromachining**

Tuesday, October 13, 5:00 p.m.–6:00 p.m.  
Belvedere Room, Fairmont Hotel

Attend the closing technical session, which will begin with two invited speakers (Vassilia Zorba and Y. F. Lu; see the [Invited Speakers](#) page) and will end with an exciting panel discussion, where leaders in the field share their perspective on the most significant recent advances and the most important challenges and opportunities in femtosecond laser microfabrication.

Panel participants include:

Alan Arai; *IMRA, USA*  
Eric Mazur; *Harvard Univ., USA*  
Andreas Ostendorf; *Ruhr-Univ. Bochum, Germany*  
Chris Schaffer; *Cornell Univ., USA*

### **Joint AO/COSI/LM/SRS Welcome Reception and Poster Session**

Tuesday, October 13, 6:00 p.m.–7:30 p.m.  
*Regency Ballroom, Fairmont Hotel*

Get the meeting off to a great start by attending the welcome reception and joint poster session. Meet with colleagues from around the world and tour the wide range of poster displays. The reception is open to all AO/COSI/LM/SRS registered attendees and will feature light fare.

## Invited Speakers

LMTuA1, **Intense Field Science in Dielectrics**, M. Gertsvolf<sup>1,2</sup>, D. Grojo<sup>1</sup>, M. Spanner<sup>1</sup>, P. P. Rajeev<sup>1</sup>, P. B. Corkum<sup>1,2</sup>, D. M. Rayner<sup>1</sup>; <sup>1</sup>Natl. Res. Council Canada, USA, <sup>2</sup>Univ. of Ottawa, Canada

LMTuA3, **Controlling Ultrafast Laser-Induced Refractive Index Changes in Optical Glasses via Adaptive Spatio-Temporal Beam Engineering**, Razvan Stoian; Univ. Jean Monnet, France

LMTuB1, **Three-Dimensional Structuring of Materials by Femtosecond Laser Pulses**, Saulius Juodkazis, Hiroaki Misawa; Hokkaido Univ., Japan

LMTuB3, **Multifunctional Volume Optics Generated by Direct Femtosecond Laser Writing**, Timothy D. Gerke, Rafael Piestun; Univ. of Colorado at Boulder, USA

LMTuC1, **Recent Developments in Monolithic Fibre and Waveguide, DBR and DFB Lasers Fabricated Using Ultrafast Laser Direct-Write Methods**, G. D. Marshall, N. Jovanovic, M. Ams, D. J. Little, P. Dekker, A. Fuerbach, M. J. Withford; Ctr. for Ultrahigh-bandwidth Devices for Optical Systems (CUDOS), Australia

LMTuC3, **Femtosecond Laser Micromachining: An Enabling Tool for Optofluidics**, R. Osellame, R. Martinez Vazquez, R. Ramponi, G. Cerullo; Inst. di Fotonica e Nanotecnologie, CNR, Italy

LMTuD1, **Ultrafast Laser Surface Micro/Nano-Structuring and Applications**, Vassilia Zorba; Lawrence Berkeley Natl. Lab, USA

LMTuD2, **Optically-Controlled Growth of Carbon Nanotubes**, Y. F. Lu, Y. S. Zhou, W. Xiong, M. Mahjouri-Samani, Y. Gao, M. Mitchell; Univ. of Nebraska, USA

OSA's 93<sup>RD</sup> ANNUAL MEETING AND EXHIBIT

# FRONTIERS IN OPTICS 2009

SAN JOSE, CA • OCTOBER 13-14 **EXHIBIT**

[WWW.FRONTIERSINOPTICS.ORG](http://WWW.FRONTIERSINOPTICS.ORG)

# EXHIBIT GUIDE

TECHNICAL CONFERENCE

**October 11 – 15, 2009**

EXHIBIT

**October 13 – 14, 2009**

**Fairmont Hotel  
San Jose, California, USA**

EXHIBIT HOURS

**Tuesday, October 13  
10:00 a.m. – 4:00 p.m.**

**Wednesday, October 14  
10:00 a.m. – 4:00 p.m.**

EXHIBIT-ONLY TIME

**Tuesday, October 13  
12:00 p.m. – 1:30 p.m.**

**OSA<sup>®</sup>**  
[www.frontiersinoptics.org](http://www.frontiersinoptics.org)

# EXHIBIT AND CONFERENCE INFORMATION

	<b>SUNDAY</b> October 11	<b>MONDAY</b> October 12	<b>TUESDAY</b> October 13	<b>WEDNESDAY</b> October 14	<b>THURSDAY</b> October 15
<b>Registration</b> <i>Fairmont Hotel, Market Street Foyer</i>	7:00 a.m. – 6:00 p.m.	7:00 a.m. – 6:00 p.m.	7:00 a.m. – 5:30 p.m.	7:30 a.m. – 5:30 p.m.	7:30 a.m. – 5:00 p.m.
<b>E-Center</b> <i>Fairmont Hotel, Market Street Foyer</i>	7:00 a.m. – 6:00 p.m.	7:00 a.m. – 6:00 p.m.	7:00 a.m. – 5:30 p.m.	7:30 a.m. – 5:30 p.m.	7:30 a.m. – 5:00 p.m.
<b>Press Room</b> <i>Fairmont Hotel, Redwood Room</i>	12:00 p.m. – 4:00 p.m.	8:00 a.m. – 5:00 p.m.	8:00 a.m. – 5:00 p.m.	8:00 a.m. – 5:00 p.m.	8:00 a.m. – 12:00 p.m.
<b>1<sup>st</sup> International OSA Student Chapter Solar Mini-Car Competition</b> <i>Fairmont Hotel, Imperial Ballroom</i>	4:00 p.m. – 7:00 p.m. Prelim. Race		12:00 p.m. – 2:00 p.m. Final Races		
<b>FiO/LS Welcome Reception</b> <i>Sainte Claire Hotel, Ballroom</i>	6:00 p.m. – 7:30 p.m.				
<b>Joint FiO/LS Plenary Session/ Award Presentations</b> <i>Fairmont Hotel, Regency Ballroom</i>		8:00 a.m. – 12:00 p.m.			
<b>Export Regulation Fundamentals for the Optics and Photonics Industry (Registration Required)</b> <i>Sainte Claire Hotel, Sainte Claire Room</i>				9:00 a.m. – 12:00 p.m.	
<b>Exhibit</b> <i>Fairmont Hotel, Imperial Ballroom</i>			10:00 a.m. – 4:00 p.m.	10:00 a.m. – 4:00 p.m.	
<b>Exhibit Hall Coffee Breaks</b> <i>Fairmont Hotel, Imperial Ballroom</i>			10:00 a.m. – 10:30 a.m.	10:00 a.m. – 10:30 a.m. 3:30 p.m. – 4:00 p.m.	
<b>Exhibit-Only Time</b> <i>Fairmont Hotel, Imperial Ballroom</i>			12:00 p.m. – 1:30 p.m.		
<b>Refreshment Break</b> <i>Fairmont Hotel, Imperial Ballroom</i>			3:30 p.m. – 4:00 p.m.		
<b>OSA Member Reception</b> <i>Sainte Claire Hotel, Ballroom</i>			7:00 p.m. – 8:30 p.m.		
<b>Joint FiO/LS Poster Session</b> <i>Fairmont Hotel, Imperial Ballroom</i>				12:00 p.m. – 1:30 p.m.	

The Fall OSA Optics & Photonics Congress 2009 is collocated with FiO 2009 / LS XXV and features the following topical meetings:

- Adaptive Optics: Methods, Analysis and Applications (AO)
- Advances in Optical Materials (AIOM)
- Computational Optical Sensing and Imaging (COSI)
- Femtosecond Laser Microfabrication (LM)
- Signal Recovery and Synthesis (SRS)

Look for these meetings October 13-15 at the Fairmont San Jose.



## E-Center

### *Fairmont Hotel, Market Street Foyer*

The E-Center, offering free Internet connectivity, will be open Sunday through Thursday during registration hours.

## Business Center

### *Fairmont Hotel, B Level*

The Fairmont Hotel's in-house Business Center offers one-stop shopping for all of your business needs, including e-mail and high-speed Internet access, secretarial/transcription services, photocopying, and faxing. The business center is open 24 hours a day with a guest room key. Attendees staying at other hotels should contact an operator from a house phone to gain access to the business center. All machines require a credit card swipe to activate a session.

## Lost and Found

### *Fairmont Hotel, Registration Desk, Market Street Foyer*

For lost and found items and/or questions, please check at the registration desk. Please put your name on all conference materials (Conference Program, Technical Digest CD-ROM and Short Course Notes), as they will only be replaced for a fee.

## Special Needs

If you have a disability and require special accommodations in order to fully participate in this conference, please contact Conference Management at the registration desk. Your specific needs will be addressed.

## Sponsoring Society Membership Booths

### *Fairmont Hotel, Market Street Side*

Catch up on the latest product and service offerings of the conference's sponsoring societies, APS and OSA, by visiting their membership booths.

## SUNDAY

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### 1<sup>st</sup> International OSA Student Chapter Solar Mini-Car Competition

**Preliminary race: Sunday, October 11, 4:00 p.m. – 7:00 p.m.**

#### *Fairmont Hotel, Imperial Ballroom*

OSA Student Chapters compete to build their own mini solar cars and race them. The chapters will work to optimize light capturing efficiency, and demonstrate sustainability and aesthetic appeal.

## FiO/LS Welcome Reception

**Sunday, October 11, 6:00 p.m. – 7:30 p.m.**

### *Sainte Claire Hotel, Ballroom*

Free to all Technical Conference Attendees: Get the FiO 2009/LS XXV meeting off to a great start by attending the welcome reception! Meet with colleagues from around the world. Light hors d'oeuvres will be served.

*A special thanks to Thorlabs for their sponsorship of the 2009 FiO/LS Welcome Reception.*

## TUESDAY

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### 1<sup>st</sup> International OSA Student Chapter Solar Mini-Car Competition

**Final races: Tuesday, October 13, 12:00 p.m. – 2:00 p.m.**

#### *Fairmont Hotel, Imperial Ballroom*

OSA Student Chapters compete to build their own mini solar cars and race them. The chapters will work to optimize light capturing efficiency, and demonstrate sustainability and aesthetic appeal.

## Refreshment Break

**Tuesday, October 13, 3:30 p.m. – 4:00 p.m.**

#### *Fairmont Hotel, Imperial Ballroom*

Free to all Attendees: Enjoy a light refreshment on the Exhibit Hall Floor.

*A special thanks to JK Consulting for sponsoring this event.*

## OSA Member Reception

**Tuesday, October 13, 7:00 p.m. – 8:30 p.m.**

#### *Sainte Claire Hotel, Ballroom*

Free to all OSA Members: The OSA Member Reception is a great opportunity to see old friends and establish new contacts. Appetizers and beverages will be served. Please note: Membership will be verified at the entrance.

# EXHIBIT AND CONFERENCE INFORMATION

## WEDNESDAY

### Export Regulation Fundamentals for the Optics and Photonics Industry

Presented by the OSA Corporate Associates

**Wednesday, October 14, 9:00 a.m. – 12:00 p.m.**

*Sainte Claire Hotel, Sainte Claire Room*

**Instructor:** Kay Allan Morrell, Esq.; Managing Partner and Counsel, MK Technology, USA

With the global nature of business, it is a necessity for every company employee involved in non-U.S. transactions to fully understand the regulations surrounding export controls. This program will provide the foundation by covering need-to-know information about International Traffic in Arms Regulations (ITAR), Export Administration Regulations (EAR) and your compliance, data management and licensing responsibilities. Registration required. Employees of OSA Corporate Associates receive a special registration rate.

### Joint FiO/LS Poster Session

**Wednesday, October 14, 12:00 p.m. – 1:30 p.m.**

*Imperial Ballroom, Fairmont Hotel*

This year, rather than two poster sessions throughout the week, all FiO/LS posters will be presented in one session.

Make sure to visit the poster session in the Exhibit Hall to see the 75 FiO and 8 LS posters scheduled for presentation.

## EXHIBIT HALL REGULATIONS

- All bags are subject to search.
- Neither photography nor videotaping is permitted without the express written consent of Show Management. Non-compliance may result in the surrendering of film or other storage device(s) and removal from the hall.
- Children under 18 are not permitted in exhibit hall during set-up and tear-down.
- Children 12 and under must be accompanied by an adult at all times.
- Strollers are not permitted on the exhibit floor at any time.
- Soliciting in the aisles or any public space is not permitted.
- Distribution of literature is limited to exhibitors and must be done from within the confines of their booths. All other materials will be discarded.
- Smoking is permitted only in designated exterior areas of the facility.
- Alcohol is not permitted in the exhibit hall during set-up and tear-down hours.

**FiO MANAGEMENT THANKS THE FOLLOWING CORPORATE SPONSORS FOR THEIR GENEROUS SUPPORT**



# EXHIBITOR LISTINGS *(as of 9.13.09)*

## **ALPAO** **Booth 204**



2217 route de Meylan | Biviers | Iserre 38330 | France

**Phone:** +33 6 60 05 14 09 | **Fax:** +33 4 76 51 45 32

**Email:** [www.alpao.com](http://www.alpao.com) | **URL:** [contact@alpao.fr](mailto:contact@alpao.fr)

As a designer and manufacturer of adaptive optics for the research and the industry, ALPAO offers you a complete range of adaptive optics products: the next generation of deformable mirrors featuring the largest strokes available, a large bandwidth and a small actuator pitch, extremely sensitive wavefront sensors, and complete adaptive optics loops. Thanks to the unique ALPAO Core Engine control software, the user benefits from a flexible and open architecture.

**ALPAO Hi-Speed DM37:** ALPAO adds a new model to its unique Hi-Speed deformable mirror Series with a cost-optimized product featuring 37 actuators, large bandwidth and high linearity.

## **American Physical Society**

### **Co-sponsor, Lobby**

One Physics Ellipse | College Park, MD 20740

**Phone:** 301.209.3283 | **Fax:** 301.209.0844

**Email:** [assocpub@aps.org](mailto:assocpub@aps.org) | **URL:** <http://publish.aps.org>

The American Physical Society is the publisher of the world's most prestigious and widely-read physics research publications: *Physical Review*, *Physical Review Letters*, *Reviews of Modern Physics*, *PR-Special Topics-Accelerators and Beams*, *PR-Special Topics-Physics Education Research*, *PR Focus*, *PROLA*, and *Physics*. *Physics* is a free online publication that features expert commentaries on selected papers in *Physical Review* and *Physical Review Letters*. For more information, please visit the Physics website at <http://physics.aps.org/>.

**Physics:** Physics is a free online publication that features expert commentaries on selected papers in *Physical Review* and *Physical Review Letters*.

## **Amplitude Laser Inc.**

### **Booth 208**

One Broadway, 14th Floor | Cambridge, MA 02142

**Phone:** 617.401.2195 | **Fax:** 617.758.4101

**Email:** [rbraunschweig@amplitude-laser.com](mailto:rbraunschweig@amplitude-laser.com) | **URL:** [www.amplitude-laser.com](http://www.amplitude-laser.com)

Amplitude Laser is the US based subsidiary for Amplitude Systemes, pioneer in Ytterbium laser technology, manufactures advanced diode-pumped ultrafast lasers for scientific, industrial and medical applications. Products include high energy oscillators (Mikan and t-Pulse series), amplifiers (s-Pulse series) and fiber amplifiers (Satsuma and Tangerine series). Today, by combining high quality manufacturing and aggressive R&D, Amplitude Systemes brings new solutions to your most demanding applications.

**Satsuma:** Compact fiber laser, delivering ultrashort pulse duration as low as 250 fs, high repetition rate (1 MHz or more) and high energy (up to 10  $\mu$ J).

## **Chroma Technology Corp.**



### **Booth 111**

10 Imtec Lane | Rockingham, VT 05151

**Phone:** 800.824.7662

**Email:** [sales@chroma.com](mailto:sales@chroma.com) | **URL:** [www.chroma.com](http://www.chroma.com)

Precision optical filters and coatings designed/manufactured for a broad range of applications including fluorescence microscopy, forensics, material analysis, laser-based imaging, astronomy, absorption spectroscopy. Bandpass and edge filters, laser rejection filters, neutral density filters, polychroic beamsplitters and custom coatings for UV, visible and near-IR portions of the spectrum. Multiple deposition methods (sputtering, e-beam, resistive) offer flexibility in designs and turnaround for prototyping.

## **Coherent, Inc.**



### **Booth 211**

5100 Patrick Henry Drive | Santa Clara, CA 95054

**Phone:** 408.764.4000 | **Fax:** 408.764.4825

**Email:** [tech.sales@coherent.com](mailto:tech.sales@coherent.com) | **URL:** [www.coherent.com](http://www.coherent.com)

World's leading manufacturer of photonics-based products for a wide range of commercial and scientific applications. Industry's largest and most diverse selection of lasers and a wide range of laser test and measurement equipment. Highly reliable, high performance product lines include CO<sub>2</sub>, continuous-wave, diode, diode module, diode-pumped solid-state, excimer, ion, tunable-dye, YAG, YLF, and ultrafast lasers.

## CREOL, The College of Optics and Photonics

### Booth 115

4000 Central Florida Blvd. #53 | PO Box 162700

Orlando, FL 32816-2700

Phone: 407.823.6800 | Fax: 407.823.6880

Email: info@creol.ucf.edu | URL: www.creol.ucf.edu/

CREOL, The College of Optics & Photonics at the University of Central Florida is an internationally recognized academic and research institution, offering MS and PhD degrees in Optics, and serving as a scientific and technical resource partner to industry. The College has 40 faculty, 69 research scientists, and 146 graduate students conducting research into all aspects of optics and photonics. CREOL, FPCE, and the Townes Laser Institute are centers within the College.

**Optics Graduate Education:** The College of Optics & Photonics offers Masters and Doctoral degrees in Optics. Additionally, optics tracks are offered within UCF's Physics and Electrical Engineering Bachelor and graduate Programs.



## Elsevier

### Booth 310

Radarweg 29 | Amsterdam | 1043 NX | Netherlands

Phone: +31 20 485 2037 | Fax: +31 20 485 3280

Email: h.zijlstra@elsevier.com | URL: www.elsevier.com/physics

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### Scientific journals and books on Optics, Lasers and Photonics:

Elsevier offers journals and books on Optics, Lasers and Photonics: hardcopy and sciencedirect.com. New online author service: CiteAlert. Dedicated alerting services for companies in this field.



## FEMTOLASERS, Inc.

### Table 11

1 Mifflin Place | 119 Mt. Auburn Street, Suite 400 | Cambridge, MA 02138

Phone: 978.456.9920 | Fax: 978.456.9922

Email: infofli@femtolasers.com | URL: www.femtolasers.com

FEMTOLASERS is the premier manufacturer of ultrafast laser oscillator and amplifier solutions, offering laser pulses down to sub-7 fs at MHz and multi-kHz repetition rates up to multi-mJ energies. FEMTOOPTICS features a patented optics line with ultra-broadband dispersive/non-dispersive components and custom solutions. Applications include ultrafast spectroscopy, OCT, THz-generation, MP-microscopy, micromachining and Attoscience.

**FEMTOPOWER™ V:** an ultrafast 2-stage Ti:Sapphire multi-millijoule amplifier system including the FEMTOSOURCE™ rainbow™ DFG oscillator for lowest noise Carrier Envelope Phase (CEP) stabilization of the entire system.



## Fianium Ltd.

### Booth 109

858 West Park Street | Eugene, OR 97401

Phone: 541.343.6767 | Fax: 541.343.1838

Email: sales@fianium.com | URL: www.fianium.com

Fianium is a leading manufacturer of optical supercontinuum lasers, operating across 400-2400 nm spectral range and delivering up to 6 W of power in a collimated laser beam. These unique laser sources enable significant improvements in performance of imaging instruments, including confocal and STED microscopes, FLIM and flow-sytometry. Based on compact, maintenance free ultra-fast fiber lasers, the supercontinuum systems offer a versatile laser source for a variety of bio-medical applications.



## Gooch & Housego

### Table 2

Dowlsh Ford | Ilminster | Somerset TA19 0PF  
United Kingdom

Phone: +44 1460 256457 | Fax: +44 1460 256441

Email: sales@goochandhousego.com

URL: www.goochandhousego.com

Gooch & Housego is a global manufacturer of custom precision-optic, acousto-optic, crystal-optic, electro-optic and fibre-optic components, combined with material engineering, crystal growth, polishing and coating capabilities for the Aerospace & Defense, Industrial & Research and Biomedical & Life Sciences Markets.



## Imagine Optic

### Booth 208



Third Street, Suite 231 | San Francisco, CA 94107

Phone: 617.583.1350 | Fax: 617.758.4101

Email: [contact@imagine-optic.com](mailto:contact@imagine-optic.com)

URL: [www.imagine-optic.com](http://www.imagine-optic.com)

Imagine Optic is the leading provider of Shack-Hartmann wavefront sensing hardware and software, adaptive optics technologies and professional services in applied optics. We work with scientists and industrials in domains including pure science, industrial quality control, space and defense, semiconductors and many others. Since 1996, we've been supplying industry leaders around the world with the high-quality products and services that they need to perform. From X-EUV, through the visible light spectrum and on to NIR (near infra-red), we develop, manufacture, distribute and support the largest range of wavefront measurement and correction technologies.

**HASO First:** The HASO First is a mono wavelength calibration wavefront sensor taking benefits of both the calibration performances of Imagine Optic and the HASO V3 software for a very interesting price.

## IOP Publishing

### Table 4

Dirac House, Temple Back | Bristol BS1 6BE | United Kingdom

Phone: +44 (0) 117 9297481 | Fax: +44 (0) 117 9301178

Email: [custserv@iop.org](mailto:custserv@iop.org) | URL: [www.iop.org](http://www.iop.org)

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**Journal of Optics:** As of 2010, the journal has been re-named (previously Journal of Optics A: Pure and Applied Optics).

## Laser Focus World / Pennwell

### Table 8



98 Spit Brook Road | Nashua, NH 03062-5737

Phone: 603.891.0123 | Fax: 603.891.0574

Email: [aadler@pennwell.com](mailto:aadler@pennwell.com)

URL: [www.laserfocusworld.com](http://www.laserfocusworld.com)

Published since 1965, Laser Focus World is a global resource for engineers, researchers, scientists and technical professionals providing comprehensive coverage of optoelectronics and photonics technologies, applications and markets.

## LaserFest

### Booth 113

c/o The Optical Society

2010 Massachusetts Ave., NW | Washington, DC 20036

Phone: 202.416.1412

Email: [info@laserfest.org](mailto:info@laserfest.org) | URL: [www.laserfest.org](http://www.laserfest.org)

Sponsored by Founding Partners, The Optical Society, the American Physical Society and SPIE, LaserFest is a yearlong celebration of the 50<sup>th</sup> anniversary of the laser. This celebration will recognize and honor the accomplishments of the scientists, engineers, inventors and entrepreneurs who made possible the discovery, development and application of the laser; inform students, educators, legislators, funding agencies and the general public about the impact that the laser has had on the economy and how it has affected and continues to affect their lives in many ways; and use the story of the laser to illustrate the importance of scientific discovery and technological innovation.

## MPF Products, Inc.

### Table 10

3046 Bramlett Church Road | Gray Court, SC 29645

Phone: 864.876.9853 | Fax: 864.876.2465

Email: [sales@mpfpi.com](mailto:sales@mpfpi.com) | URL: [www.mpfpi.com](http://www.mpfpi.com)

MPF Products, Inc. specializes in ceramic-to-metal sealing technology. We offer UHV rated electrical feedthroughs, connectors, isolators and viewports. MPF stocks more than 1300 standard parts, and produces custom assemblies with highly competitive costs and lead times. MPF's Viewports are used for energy transmission into vacuum systems. MPF offers several material options – sapphire, fused silica, MgF<sub>2</sub>, CaF<sub>2</sub>, ZnSe and other advanced materials. Single and multi-layer coatings can be added to viewports to optimize transmission performance.

**MPF's Laser-Optics Viewports:** MPF's Laser-Optics viewports have lens and AR-coating features specific to use with high powered lasers - 193 ArF-Excimer, 248 KrF-Excimer, 780 Diode, and 1064 Yag.

## Nature Publishing Group

### Booth 210

75 Varick Street, 9th Floor | New York, NY 10013

**Phone:** 212.726.9200

**Email:** a.wessel@us.nature.com | **URL:** www.nature.com

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## OPN

### Table 17

2010 Massachusetts Ave., NW | Washington, DC 20036

**Phone:** 202.416.1942

**Email:** opn@osa.org | **URL:** www.osa-opn.org

*Optics & Photonics News* (OPN) is a global news and information source that is consistently ranked by OSA members as their #1 member benefit. OPN is published by The Optical Society (OSA), the association that brings together optics and photonics scientists, engineers, educators, technicians and business leaders. OPN's circulation consists of the members of OSA and The Society for Applied Spectroscopy as well as a select group of qualified professionals.

## OP-TEC: National Center for Optics and Photonics Education

### Table 6

324B Kelly Drive | Waco, TX 76710

**Phone:** 254.741.8338 | **Fax:** 254.399.6581

**Email:** op-tec@op-tec.org | **URL:** www.op-tec.org

OP-TEC, the National Center for Optics and Photonics Education, is funded by the National Science Foundation's Advanced Technological Education (ATE) program. OP-TEC has developed materials and strategies for infusing optics and photonics into curriculum for several industries and is committed to developing a robust supply of well-educated engineering technicians in photonics, lasers and related technologies. OP-TEC has also begun to plan and enlist colleges and employers to begin education/training programs for Precision Optics Technicians.

## Optikos Corporation



### Table 7

107 Audubon Road, Bldg. 3 | Wakefield, MA 01880

**Phone:** 617.354.7557 | **Fax:** 617.354.5946

**Email:** sales@optikos.com | **URL:** www.optikos.com

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## Optimax Systems, Inc.



### Table 5

6367 Dean Parkway | Ontario, NY 14519

**Phone:** 585.265.1066 | **Fax:** 585.265.1033

**Email:** sales@optimaxsi.com | **URL:** www.optimaxsi.com

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### Table 9

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**Email:** foundation@osa.org | **URL:** www.osa-foundation.org

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## OSA Interactive Science Publishing

### Booth 203

2010 Massachusetts Ave., NW | Washington, DC 20036

**Phone:** 202.223.8130 | **Fax:** 202.223.1096

**Email:** info@osa.org | **URL:** www.opticsinfobase.org

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### Booth 302

2 South Street, Berkshire Common | Pittsfield, MA 01201

**Phone:** 413.499.0514 | **Fax:** 413.442.3180

**Email:** photonics@laurin.com | **URL:** www.photonics.com

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## Physics Today

### Table 1

One Physics Ellipse | College Park, MD 20740

**Phone:** 301.209.3043 | **Fax:** 301.209.3692

**Email:** alcolema@aip.org | **URL:** www.physicstoday.org

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## PolarOnyx, Inc.

### Booth 202

470 Lakeside Drive, Suite F | Sunnyvale, CA 94085

**Phone:** 408.245.2181 | **Fax:** 408.245.9587

**Email:** lihmeiyang@polaronyx.com

**URL:** www.polaronyx.com

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## Society of Vacuum Coaters

### Table 1

171 Pinon Hill Place | Albuquerque, NM 87122

Phone: 505.856.7188 | Fax: 505.856.6716

Email: [svcinfo@svc.org](mailto:svcinfo@svc.org) | URL: [www.svc.org](http://www.svc.org)

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## Stanford Photonics Research Center

### Booth 215

Ginzton Laboratory – AP 207 | Stanford University  
Stanford, CA 94305-4088

Phone: 650.723.5627 | Fax: 650.725.1822

Email: [photonics@stanford.edu](mailto:photonics@stanford.edu)

URL: <http://photonics.stanford.edu>

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### Table 3

6300 Powers Ferry R, Ste. 600-345 | Atlanta, GA 30339-2919

Phone: 404.547.9267 | Fax: +1 866.855.4518

URL: [www.swampoptics.com](http://www.swampoptics.com)

Email: [linda.trebino@swampoptics.com](mailto:linda.trebino@swampoptics.com)

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Email: [rebecca.hougham@tandf.co.uk](mailto:rebecca.hougham@tandf.co.uk) | URL: [www.tandf.co.uk/journals](http://www.tandf.co.uk/journals)

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### Booth 107

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Email: [sales@thorlabs.com](mailto:sales@thorlabs.com) | URL: [www.thorlabs.com](http://www.thorlabs.com)

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### Booth 205

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Tucson, AZ 85721-0094

**Phone:** 520.621.4111 | **Fax:** 520.626.1480

**URL:** [www.optics.arizona.edu](http://www.optics.arizona.edu)

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## Zygo Corporation

### Booth 206

21 Laurel Brook Road | Middlefield, CT 06455

**Phone:** 860.347.8506 | **Fax:** 860.347.3869

**Email:** [inquire@zygo.com](mailto:inquire@zygo.com) | **URL:** [www.zygo.com](http://www.zygo.com)

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## University of Rochester, The Institute of Optics

### Booth 105

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**Phone:** 585.275.2322 | **Fax:** 585.271.1027

**Email:** [gayle@optics.rochester.edu](mailto:gayle@optics.rochester.edu)

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# Agenda of Sessions — Sunday, October 11

7:00 a.m.–3:00 p.m.	<b>OSA Student Chapter Leadership Meeting</b> , Plaza Ballroom, Crowne Plaza Hotel
7:00 a.m.–6:00 p.m.	<b>Registration</b> , Market Street Foyer, Fairmont Hotel
9:00 a.m.–12:30 p.m.	<b>Short Courses</b> , Locations will be provided at registration <b>SC235: Nanophotonics: Materials, Fabrication and Characterization</b> , Joseph W. Haus, Andrew Sarangan, Qiwen Zhan; Univ. of Dayton, USA <b>SC324: Plasmonics</b> , Stefan Maier; Experimental Solid State Group, Dept. of Physics, Imperial College London, UK <b>SC326: Patent Fundamentals</b> , Mohammed N. Islam; Optics and Photonics and Solid State Electronics Lab, Dept. of Electrical Engineering and Computer Science, Univ. of Michigan, USA
12:30 p.m.–1:30 p.m.	<b>Lunch Break</b> (on your own)
1:30 p.m.–5:00 p.m.	<b>Short Courses</b> , Locations will be provided at registration <b>SC274: Polarization Engineering</b> , Russell Chipman; Univ. of Arizona, USA <b>SC322: Silicon Nanophotonics</b> , Jelena Vučković; Edward L. Ginzton Lab, Stanford Univ., USA <b>SC340: Tissue Optics and Optical Coherence Tomography</b> , Kirill Larin <sup>1</sup> , Valery V. Tuchin <sup>2</sup> ; <sup>1</sup> Univ. of Houston, USA, <sup>2</sup> Saratov State Univ., Russian Federation
4:00 p.m.–6:00 p.m.	<b>What's Hot in Optics Today?</b> Regency Ballroom, Fairmont Hotel
4:00 p.m.–7:00 p.m.	<b>1<sup>st</sup> International OSA Student Chapter Solar Mini-Car Preliminary Races</b> , Imperial Ballroom, Fairmont Hotel
6:00 p.m.–7:30 p.m.	<b>FiO/LS Welcome Reception</b> , Ballroom, Sainte Claire Hotel

## Key to Shading

 Frontiers in Optics	 Laser Science	 Joint	 Fall OSA Optics & Photonics Congress
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# Agenda of Sessions — Monday, October 12

	Empire	Crystal	Gold	Valley	California
7:00 a.m.–6:00 p.m.	<b>Registration</b> , <i>Market Street Foyer, Fairmont Hotel</i>				
8:00 a.m.–12:00 p.m.	<b>2009 Joint FIO/LS Awards Ceremony and Plenary Session</b> , <i>Regency Ballroom, Fairmont Hotel</i>				
10:00 a.m.–10:30 a.m.	<b>Coffee Break</b> , <i>Regency and Imperial Ballroom Foyer, Fairmont Hotel</i>				
12:00 p.m.–1:30 p.m.	<b>Lunch Break</b> ( <i>on your own</i> )				
12:00 p.m.–2:00 p.m.	<b>LSMA: Laser Science Symposium on Undergraduate Research Posters</b> , <i>Cupertino Room, Fairmont Hotel</i>				
1:30 p.m.–3:30 p.m.	<b>JMA: Entanglement Generation and Measurement I</b> (Joint FIO/LS)	<b>FMA: Metamaterials I</b>	<b>FMB: Optics for Renewable Energy</b>	<b>FMC: Anderson Localization I</b>	<b>FMD: RF Photonics</b>
3:30 p.m.–4:00 p.m.	<b>Coffee Break</b> , <i>Regency and Imperial Ballroom Foyer, Fairmont Hotel</i>				
4:00 p.m.–6:00 p.m.	<b>FMG: Quantum Optics in Waveguides I</b>	<b>FMH: Metamaterials II</b> (ends at 5:45 p.m.)	<b>JMB: Gravitational Wave Interferometers I</b> (Joint FIO/LS)	<b>FMI: High Peak Power Laser Technology I</b> (ends at 5:45 p.m.)	<b>FMJ: Integrated Optical Sensors</b>
6:30 p.m.–8:30 p.m.	<b>OSA Student Member Reception</b> , <i>O'Flaherty's Irish Pub, 25 N. Pedro Street, San Jose, California 95110, Phone: 408.947.8007</i>				

## Key to Shading

	Frontiers in Optics		Laser Science		Joint		Fall OSA Optics & Photonics Congress
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Glen Ellen	Atherton	Sacramento	Piedmont	Hillsborough	Fairfield
<b>Registration</b> , <i>Market Street Foyer, Fairmont Hotel</i>					
<b>2009 Joint FiO/LS Awards Ceremony and Plenary Session</b> , <i>Regency Ballroom, Fairmont Hotel</i>					
<b>Coffee Break</b> , <i>Regency and Imperial Ballroom Foyer, Fairmont Hotel</i>					
<b>Lunch Break</b> ( <i>on your own</i> )					
<b>LSMA: Laser Science Symposium on Undergraduate Research Posters</b> , <i>Cupertino Room, Fairmont Hotel</i>					
<b>FME: Tissue Imaging and Spectroscopy</b>	<b>FMF: Spatial Nonlinearities: Solitons and Beams</b>	<b>LSMB: Advances in Chiroptical Spectroscopy I</b>	<b>LSMC: Micro- and Nanofluidics I</b> (ends at 3:15 p.m.)	<b>LSMD: Ultrafast X-Ray Science I</b>	<b>LSME: Laser Science Symposium on Undergraduate Research I</b> (2:00 p.m.–4:00 p.m.)
<b>Coffee Break</b> , <i>Regency and Imperial Ballroom Foyer, Fairmont Hotel</i>					
<b>FMK: Microscopy and OCT I</b>	<b>FML: Silicon Photonics I</b>	<b>LSMF: Advances in Chiroptical Spectroscopy II</b> (ends at 5:30 p.m.)	<b>LSMG: Micro- and Nanofluidics II</b> (ends at 6:15 p.m.)	<b>LSMH: Ultrafast X-Ray Science II</b> (ends at 5:45 p.m.)	<b>LSMI: Laser Science Symposium on Undergraduate Research II</b> (4:30 p.m.–6:30 p.m.)
<b>OSA Student Member Reception</b> , <i>O'Flaherty's Irish Pub, 25 N. Pedro Street, San Jose, California 95110, Phone: 408.947.8007</i>					

# Agenda of Sessions — Tuesday, October 13

	Empire	Crystal	Gold	Valley	California	Glen Ellen
7:00 a.m.–5:30 p.m.	<b>Registration, Market Street Foyer, Fairmont Hotel</b>					
8:00 a.m.–10:00 a.m.	<b>FTuA: 3-D Entertainment in the Marketplace</b> (ends at 9:30 a.m.)	<b>FTuB: Plasmonic Emitters and Resonators</b>	<b>JTuA: Gravitational Wave Interferometers II</b> (Joint FIO/LS) (ends at 10:15 a.m.)	<b>FTuC: Optical Communication</b> (ends at 10:15 a.m.)	<b>FTuD: Novel Fiber Devices I</b>	<b>JTuB: Entanglement Generation and Measurement II</b> (Joint FIO/LS)
8:00 a.m.–9:30 a.m.	<b>OSA Young Professionals Networking Event with Corporate Members, Courtyard Atrium, Sainte Claire Hotel</b>					
9:00 a.m.–12:00 p.m.	<b>Student Programming: Painless Publishing, Science Policy and OSA Traveling Lecturer, Regency Ballroom II, Fairmont Hotel</b>					
10:00 a.m.–10:30 a.m.	<b>Coffee Break, Imperial Ballroom, Fairmont Hotel</b>					
10:00 a.m.–4:00 p.m.	<b>Exhibit Hall Open, Imperial Ballroom, Fairmont Hotel</b>					
10:30 a.m.–12:00 p.m.	<b>FTuF: 3-D Capturing, Visualization and Displays</b>	<b>FTuG: Wavefront Design for Information Transport and Sensing I</b> (ends at 11:45 a.m.)	<b>FTuH: Diffractive and Holographic Optics I</b>	<b>FTuI: All-Optical Signal Processing I</b>	<b>FTuJ: Anderson Localization II</b>	<b>FTuK: High Peak Power Laser Technology II</b>
12:00 p.m.–1:30 p.m.	<b>Exhibit Only Time, Imperial Ballroom, Fairmont Hotel</b>					
12:00 p.m.–2:00 p.m.	<b>1<sup>st</sup> International OSA Student Chapter Solar Mini-Car Final Races, Imperial Ballroom, Fairmont Hotel</b>					
12:00 p.m.–1:30 p.m.	<b>OSA Fellow Member Lunch, Silicon Valley Capital Club, 50 W. San Fernando, Suite 1700, San Jose, California 95113, Phone: 408.971.9300</b>					
12:00 p.m.–1:30 p.m.	<b>Lunch Break (on your own)</b>					
1:30 p.m.–3:30 p.m.	<b>FTuM: Emerging 3-D Display Technologies and Research Frontiers I</b> (ends at 3:00 p.m.)	<b>FTuN: Negative Index Materials and Cloaking</b>	<b>FTuO: Diffractive and Holographic Optics II</b>	<b>FTuP: Optical Access</b>	<b>FTuQ: Light in the Eye</b>	<b>FTuR: Rogue Waves and Related Phenomena</b>
3:30 p.m.–4:00 p.m.	<b>Coffee Break/Exhibits, Imperial Ballroom, Fairmont Hotel</b>					
3:30 p.m.–5:30 p.m.	<b>Meet the Editors of the APS Journals, Bamboo Lounge, Fairmont Hotel</b>					
4:00 p.m.–5:30 p.m.	<b>FTuT: Emerging 3-D Display Technologies and Research Frontiers II</b>	<b>FTuU: Wavefront Design for Information Transport and Sensing II</b>	<b>FTuV: Metamaterials in Emerging Technologies</b>	<b>FTuW: All-Optical Signal Processing II</b>	<b>FTuX: Novel Optics of Periodic Structures</b>	<b>FTuY: Optical Biosensing</b> (ends at 5:45 p.m.)
4:30 p.m.–5:30 p.m.	<b>Minorities and Women in OSA (MWOSA) Tea, Sainte Claire Room, Sainte Claire Hotel</b>					
6:00 p.m.–7:00 p.m.	<b>OSA Annual Business Meeting, Piedmont Room, Fairmont Hotel</b>					
6:00 p.m.–7:00 p.m.	<b>DLS Annual Business Meeting, California Room, Fairmont Hotel</b>					
6:00 p.m.–7:30 p.m.	<b>JTuC: Joint AO/COSI/LM/SRS Welcome Reception and Poster Session, Regency Ballroom, Fairmont Hotel</b>					
7:00 p.m.–8:30 p.m.	<b>OSA Member Reception, Ballroom, Sainte Claire Hotel</b>					
7:00 p.m.–10:00 p.m.	<b>Laser Science Banquet, Gordon Biersch, 33 East San Fernando Street, San Jose, California, Phone: 408.294.6785</b>					

## Key to Shading

	Frontiers in Optics		Laser Science		Joint		Fall OSA Optics & Photonics Congress
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**Fall OSA Optics & Photonics Congress**

AO								LM								COSI								SRS							
Atherton				Sacramento				Piedmont				Hillsborough				Fairfield				Belvedere				Club Regent				Cupertino			
<b>Registration, Market Street Foyer, Fairmont Hotel</b>																															
<b>FTuE: Fiber Optics Sensors</b>				<b>LSTuA: General Laser Science</b>				<b>LSTuB: Cavity Optomechanics I</b>				<b>LSTuC: Ultrafast X-Ray Science III</b>				<b>AOTuA: Adaptive Optics Systems I</b> (ends at 9:50 a.m.)				<b>LMTuA: Fundamentals of Femtosecond Laser Interactions with Materials</b>				<b>CTuA: Computational Imaging and Compressive Sensing</b>				<b>STuA: Imaging from Limited and Compressed Data</b>			
<b>OSA Young Professionals Networking Event with Corporate Members, Courtyard Atrium, Sainte Claire Hotel</b>																															
<b>Student Programming: Painless Publishing, Science Policy and OSA Traveling Lecturer, Regency Ballroom II, Fairmont Hotel</b>																															
<b>Coffee Break, Imperial Ballroom, Fairmont Hotel</b>																															
<b>Exhibit Hall Open, Imperial Ballroom, Fairmont Hotel</b>																															
<b>FTuL: Molecular Imaging and Nanomedicine</b>				<b>LSTuD: Photophysics of Quantum Dots and Nanostructures I</b>				<b>LSTuE: Cavity Optomechanics II</b>				<b>LSTuF: Micro- and Nanofluidics III</b>				<b>AOTuB: Wavefront Sensing I</b>				<b>LMTuB: Three-Dimensional Micromachining with Femtosecond Lasers</b>				<b>CTuB: Light Field Representations</b>				<b>STuB: Inverse Scattering</b>			
<b>Exhibit Only Time, Imperial Ballroom, Fairmont Hotel</b>																															
<b>1<sup>st</sup> International OSA Student Chapter Solar Mini-Car Final Races, Imperial Ballroom, Fairmont Hotel</b>																															
<b>OSA Fellow Member Lunch, Silicon Valley Capital Club, 50 W. San Fernando, Suite 1700, San Jose, California 95113, Phone: 408.971.9300</b>																															
<b>Lunch Break (on your own)</b>																															
<b>FTuS: Short Wavelength Generation and Applications I: From EUV to X-Rays</b> (ends at 3:15 p.m.)				<b>LSTuG: Optoelectronic Materials Characterization</b> (ends at 3:45 p.m.)				<b>LSTuH: Cavity Optomechanics III</b>				<b>LSTuI: High Field Dynamics I</b>				<b>AOTuC: High Contrast Imaging and Point Spread Function Calibration I</b> (ends at 3:10 p.m.)				<b>LMTuC: Fabrication of Waveguides with Femtosecond Laser Systems</b>				<b>CTuC: Constraints on Imaging</b>				<b>STuC: Atmospheric Imaging</b>			
<b>Coffee Break/Exhibits, Imperial Ballroom, Fairmont Hotel</b>																															
<b>Meet the Editors of the APS Journals, Bamboo Lounge, Fairmont Hotel</b>																															
<b>FTuZ: Short Wavelength Generation and Applications II: Spectroscopy and Microscopy</b>				<b>LSTuJ: Photophysics of Quantum Dots and Nanostructures II</b>				<b>LSTuK: Cavity Optomechanics IV</b> (ends at 5:15 p.m.)				<b>LSTuL: High Field Dynamics II</b> (ends at 5:45 p.m.)				<b>AOTuD: System Simulation and Modeling I</b> (ends at 5:20 p.m.)				<b>LMTuD: Surface Processing and Panel Discussion on Femtosecond Laser Micromachining</b> (ends at 6:00 p.m.)				<b>CTuD: 3-D Imaging and PSF Design</b> (ends at 5:45 p.m.)				<b>STuD: Time-Frequency and Phase-Space Methods</b> (ends at 5:15 p.m.)			
<b>Minorities and Women in OSA (MWOSA) Tea, Sainte Claire Room, Sainte Claire Hotel</b>																															
<b>OSA Annual Business Meeting, Piedmont Room, Fairmont Hotel</b>																															
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<b>Laser Science Banquet, Gordon Biersch, 33 East San Fernando Street, San Jose, California, Phone: 408.294.6785</b>																															

# Agenda of Sessions — Wednesday, October 14

	Empire	Crystal	Gold	Valley	California	Glen Ellen
7:30 a.m.–5:30 p.m.	<b>Registration, Market Street Foyer, Fairmont Hotel</b>					
8:00 a.m.–10:00 a.m.	<b>FWA: Biomedical Applications of Ultrafast Lasers</b>	<b>FWB: Optical Information Processing and Transport in the Age of Nanophotonics and Metamaterials</b>	<b>FWC: Extraordinary Transmission and Structured Surface</b>	<b>FWD: Turbulence and Other Nonlinear Phenomena</b>	<b>FWE: Novel Fiber Devices II</b> (ends at 9:45 a.m.)	<b>FWF: Photonic Bandgap Devices</b> (ends at 9:45 a.m.)
9:00 a.m.–12:00 p.m.	<b>Export Regulation Fundamentals for the Optics and Photonics Industry, Sainte Claire Room, Sainte Claire Hotel</b>					
10:00 a.m.–10:30 a.m.	<b>Coffee Break, Imperial Ballroom, Fairmont Hotel</b>					
10:00 a.m.–4:00 p.m.	<b>Exhibit Hall Open, Imperial Ballroom, Fairmont Hotel</b>					
10:30 a.m.–12:00 p.m.	<b>FWH: Coherence and Fundamental Optics I</b> (ends at 12:15 p.m.)	<b>FWI: Optics in Information Sciences</b>	<b>FWJ: Quantum Optics in Waveguides II</b> (ends at 12:15 p.m.)	<b>FWK: All-Optical Signal Processing III</b>	<b>FWL: Optical Communication Devices</b>	<b>FWM: Optical Trapping and Micromanipulation I</b> (ends at 11:45 a.m.)
12:00 p.m.–1:30 p.m.	<b>JWC: Joint FiO/LS Poster Session, Imperial Ballroom, Fairmont Hotel</b>					
12:00 p.m.–1:30 p.m.	<b>Lunch Break (on your own)</b>					
1:30 p.m.–3:30 p.m.	<b>JWD: Entanglement Generation and Measurement III</b> (Joint FiO/LS)	<b>FWO: OSA Topical Meeting Highlights I</b>	<b>FWP: Metamaterials III</b>	<b>FWQ: Phase Space Optics—Optical System Theory for the 21<sup>st</sup> Century I</b> (ends at 3:15 p.m.)	<b>FWR: Novel Optical Architectures in Emerging Technologies I</b>	<b>FWS: Optical Trapping and Micromanipulation II</b>
3:30 p.m.–4:00 p.m.	<b>Coffee Break/Exhibits, Imperial Ballroom, Fairmont Hotel</b>					
4:00 p.m.–5:30 p.m.	<b>FWU: Coherence and Fundamental Optics II</b>	<b>FWV: OSA Topical Meeting Highlights II</b>	<b>JWE: Entanglement Generation and Measurement IV</b> (Joint FiO/LS) (ends at 6:00 p.m.)	<b>FWW: Phase Space Optics—Optical System Theory for the 21<sup>st</sup> Century II</b>	<b>FWX: Novel Optical Architectures in Emerging Technologies II</b>	<b>FWY: Optical Trapping and Micromanipulation III</b>
6:30 p.m.–8:00 p.m.	<b>FiO Postdeadline Paper Sessions, See the Postdeadline Papers Book in your registration bag for exact times and locations</b>					
6:30 p.m.–8:00 p.m.	<b>AIOM Welcome Reception, Regency Ballroom I, Fairmont Hotel</b>					

## Key to Shading

	Frontiers in Optics		Laser Science		Joint		Fall OSA Optics & Photonics Congress
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**Fall OSA Optics & Photonics Congress**

								AO	AIOM	COSI	SRS
Atherton	Sacramento	Piedmont	Hillsborough	Fairfield	Belvedere	Club Regent	Cupertino				
<b>Registration, Market Street Foyer, Fairmont Hotel</b>											
<b>FWG: Photonic Sensing Devices</b>	<b>LSWA: Single-Molecule Biophysics I</b>	<b>LSWB: Second-Order Nonlinear Optics I</b>	<b>LSWC: Multidimensional Spectroscopy I</b>		<b>AWA: Semiconductor Materials</b> (ends at 9:45 a.m.)	<b>JWA: Joint AO/COSI/SRS Session</b>					
<b>Export Regulation Fundamentals for the Optics and Photonics Industry, Sainte Claire Room, Sainte Claire Hotel</b>											
<b>Coffee Break, Imperial Ballroom, Fairmont Hotel</b>											
<b>Exhibit Hall Open, Imperial Ballroom, Fairmont Hotel</b>											
<b>FWN: Silicon Photonics II</b>	<b>LSWD: Single-Molecule Biophysics II</b>	<b>LSWE: Second-Order Nonlinear Optics II</b>	<b>LSWF: Multidimensional Spectroscopy II</b>	<b>AOWA: High Contrast Imaging and Point Spread Function Calibration II</b> (ends at 11:50 a.m.)	<b>AWB: Laser-Material Interactions</b> (ends at 11:45 a.m.)	<b>CWA: Polarization Sensing and Imaging</b>	<b>JWB: Advances in Adaptive Optics Imaging of the Living Retina I</b> (Joint AO/FIO)				
<b>JWC: Joint FIO/LS Poster Session, Imperial Ballroom, Fairmont Hotel</b>											
<b>Lunch Break (on your own)</b>											
<b>FWT: Plasmonic Sensors</b> (ends at 3:15 p.m.)	<b>LSWG: Ultrafast Spectroscopy I</b>	<b>LSWH: Second-Order Nonlinear Optics III</b> (ends at 3:15 p.m.)	<b>LSWI: Multidimensional Spectroscopy III</b> (ends at 3:00 p.m.)	<b>AOWB: Control Algorithms and Architecture</b>	<b>AWC: Oxide Crystals</b> (ends at 3:15 p.m.)	<b>CWB: Multi Aperture Systems</b> (ends at 3:15 p.m.)	<b>SWA: Phase Retrieval Methods</b> (ends at 3:15 p.m.)				
<b>Coffee Break/Exhibits, Imperial Ballroom, Fairmont Hotel</b>											
<b>FWZ: Silicon Photonics III</b>	<b>LSWJ: Ultrafast Spectroscopy II</b> (ends at 6:15 p.m.)	<b>LSWK: Second-Order Nonlinear Optics IV</b> (ends at 5:45 p.m.)		<b>JWF: Advances in Adaptive Optics Imaging of the Living Retina II</b> (Joint AO/FIO)	<b>AWD: Optical Ceramics</b>						
<b>FIO Postdeadline Paper Sessions, See the Postdeadline Papers Book in your registration bag for exact times and locations</b>											
<b>AIOM Welcome Reception, Regency Ballroom I, Fairmont Hotel</b>											

# Agenda of Sessions — Thursday, October 15

	Empire	Crystal	Gold	Valley	California
7:30 a.m.–5:00 p.m.	<b>Registration</b> , <i>Market Street Foyer, Fairmont Hotel</i>				
8:00 a.m.–10:00 a.m.	<b>LSThA: X-Ray Imaging I</b>	<b>FThA: Nanofocusing Optics I</b>	<b>FThB: Diffractive and Holographic Optics III</b>	<b>FThC: Micro-Cavity Devices I</b>	<b>FThD: High-Power Fiber Lasers I</b>
10:00 a.m.–10:30 a.m.	<b>Coffee Break</b> , <i>Regency and Imperial Ballroom Foyer, Fairmont Hotel</i>				
10:30 a.m.–12:00 p.m.	<b>LSThC: X-Ray Photon Correlation Spectroscopy</b>	<b>FThG: Nanofocusing Optics II</b>	<b>FThH: Aspheric and Freeform Optical Surfaces: Design, Characterization and Alignment I</b> (ends at 11:45 a.m.)	<b>FThI: Novel Nonlinear Optical Phenomena</b>	<b>FThJ: High-Power Fiber Lasers II</b>
12:00 p.m.–1:30 p.m.	<b>Lunch Break</b> ( <i>on your own</i> )				
1:30 p.m.–3:30 p.m.	<b>LSThE: X-Ray Imaging II</b> (ends at 2:45 p.m.)	<b>FThM: Nanoscale Methods and Instruments I</b>	<b>FThN: Aspheric and Freeform Optical Surfaces: Design, Characterization and Alignment II</b>	<b>FThO: Micro-Cavity Devices II</b>	<b>FThP: Optics in Interventional Medicine</b>
3:30 p.m.–4:00 p.m.	<b>Coffee Break</b> , <i>Regency and Imperial Ballroom Foyer, Fairmont Hotel</i>				
4:00 p.m.–6:00 p.m.	<b>FThS: Optical Nonlinear Properties of Materials</b> (ends at 5:45 p.m.)	<b>FThT: Nanoscale Methods and Instruments II</b> (ends at 5:15 p.m.)		<b>FThU: Micro-Cavity Devices III</b>	
5:30 p.m.–8:00 p.m.	<b>Science Educators' Day</b> , <i>McCaw Hall, Frances C. Arrillaga Alumni Center, Stanford Univ., 326 Galvez Street, Stanford, California 94305, Phone: 650.723.2021</i>				

## Key to Shading

	Frontiers in Optics		Laser Science		Joint		Fall OSA Optics & Photonics Congress
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**Fall OSA Optics & Photonics Congress**

<div style="display: flex; justify-content: space-around; border-bottom: 1px solid black; padding-bottom: 5px;"> <span>AO</span> <span>AIOM</span> <span>COSI</span> </div>					
Glen Ellen	Atherton	Sacramento	Fairfield	Belvedere	Club Regent
<b>Registration</b> , <i>Market Street Foyer, Fairmont Hotel</i>					
<b>FThE: Integrated Optics</b>	<b>LSThB: Single-Molecule Biophysics III</b>	<b>FThF: Polarization and Birefringence in Optical Design I</b>	<b>AOThA: Adaptive Optics Systems II</b> (ends at 9:40 a.m.)	<b>ATHA: Nanostructured Materials</b> (ends at 9:30 a.m.)	<b>CThA: New Imaging Concepts</b>
<b>Coffee Break</b> , <i>Regency and Imperial Ballroom Foyer, Fairmont Hotel</i>					
<b>FThK: Optoelectronics</b>	<b>LSThD: Single-Molecule Biophysics IV</b>	<b>FThL: Polarization and Birefringence in Optical Design II</b> (ends at 11:45 a.m.)	<b>AOThB: System Simulation and Modeling II</b> (ends at 11:30 a.m.)	<b>ATHB: Applications of Nanophotonics</b>	<b>CThB: Pupil Encoding Methods</b> (ends at 12:15 p.m.)
<b>Lunch Break</b> ( <i>on your own</i> )					
<b>FThQ: Molecular Imaging in the Eye</b>	<b>LSThF: Single-Molecule Biophysics V</b> (ends at 3:00 p.m.)	<b>FThR: Computational Imaging and Photography I</b>	<b>AOThC: Wavefront Sensing II</b> (ends at 3:10 p.m.)	<b>ATHC: Glass Synthesis and Properties</b> (ends at 3:15 p.m.)	<b>CThC: Imaging through Complex Media and Spectroscopy</b> (ends at 3:00 p.m.)
<b>Coffee Break</b> , <i>Regency and Imperial Ballroom Foyer, Fairmont Hotel</i>					
<b>FThV: Microscopy and OCT II</b>	<b>FThW: Plasmonic Waveguides and Devices</b> (ends at 5:45 p.m.)	<b>FThX: Computational Imaging and Photography II</b>	<b>AOThD: Wavefront Correction Technology</b> (ends at 5:30 p.m.)	<b>ATHD: Optical Fibers</b>	<b>CThD: COSI Panel Discussion</b> (4:00 p.m.–5:00 p.m.)
<b>Science Educators' Day</b> , <i>McCaw Hall, Frances C. Arrillaga Alumni Center, Stanford Univ., 326 Galvez Street, Stanford, California 94305, Phone: 650.723.2021</i>					

## Fall OSA Optics &amp; Photonics Congress

## Fairfield

## AO

8:00 a.m.–9:50 a.m.

**AOTuA • Adaptive Optics Systems I**

Richard M. Myers; Univ. of Durham, UK, President

AOTuA1 • 8:00 a.m. **Invited**

**A New Sodium Guidestar Adaptive Optics System for the Starfire Optical Range 3.5m Telescope**, Robert Johnson<sup>1</sup>, Dennis Montera<sup>1</sup>, Timothy Schneeberger<sup>2</sup>, James Spinhirne<sup>3</sup>; <sup>1</sup>Starfire Optical Range, AFRL/DES, USA, <sup>2</sup>Boeing Co., USA. A new adaptive optics system is being installed on the Starfire 3.5m telescope, using the existing 50W pump to create a sodium guidestar. Transmission to the wavefront sensor is improved from 0.16 to 0.67.

AOTuA2 • 8:30 a.m.

**High-Resolution Lidar Observations of Mesospheric Sodium and Implications for Adaptive Optics**, Paul Hickson, Thomas Pfrommer; Univ. of British Columbia, Canada. We describe new observations of sodium density variability obtained with a high-resolution lidar system. These show significant mean altitude variations extending to frequencies above 1 Hz with a near-Kolmogorov spectrum.

AOTuA3 • 8:50 a.m.

**ARGOS: The LBT's Laser-Guided Adaptive Optics System**, Michael Hart<sup>1</sup>, Sebastian Rabien<sup>2</sup>, Simone Esposito<sup>3</sup>, Lorenzo Busoni<sup>3</sup>; <sup>1</sup>Steward Observatory, Univ. of Arizona, USA, <sup>2</sup>Max-Planck-Inst. fuer Extraterrestrische Physik, Germany, <sup>3</sup>Osservatorio Astrofisico di Arcetri, Italy. The Large Binocular Telescope is adding a constellation of Rayleigh laser guide stars to implement ground-layer AO over a 4 arc minute field. A further upgrade will add sodium lasers to provide diffraction-limited operation.

AOTuA4 • 9:10 a.m.

**Laboratory Experiments of Laser Tomographic Adaptive Optics at Visible Wavelengths**, Mark Ammons, Luke Johnson, Donald T. Gavel, Renate Kupke, Claire E. Max; Ctr. for Adaptive Optics, Univ. of California at Santa Cruz, USA. We review laboratory experiments of Laser Tomographic Adaptive Optics (LTAO) on a simulated 10-meter telescope tested at 710 nm. The system maintains 20-35% Strehl across 45° over the equivalent of 0.8 seconds of operation.

## Belvedere

## LM

8:00 a.m.–10:00 a.m.

**LMTuA • Fundamentals of Femtosecond Laser Interactions with Materials**

Eric Mazur; Harvard Univ., USA, President

LMTuA1 • 8:00 a.m. **Invited**

**Intense Field Science in Dielectrics**, M. Gertschov<sup>1,2</sup>, D. Grojo<sup>1</sup>, M. Spanner<sup>1</sup>, P. P. Rajeev<sup>1</sup>, P. B. Corkum<sup>1,2</sup>, D. M. Rayner<sup>1</sup>; <sup>1</sup>Natl. Res. Council Canada, USA, <sup>2</sup>Univ. of Ottawa, Canada. We develop the relationship between intense field ionization in the gas phase and the interaction of femtosecond laser pulses with bulk dielectrics. We establish that sub-cycle dynamics can be observed in solids.

LMTuA2 • 8:30 a.m.

**Interference Measurements of Parallel Femtosecond-Laser-Induced Phenomena**, Yoshio Hayasaki, Mitsuhiro Isaka, Akihiro Takita; Utsunomiya Univ., Japan. Time-resolve pump-probe interference microscope was performed to investigate laser-induced phenomena in parallel femtosecond laser processing. We observed the dynamics of the phenomena and their interaction including microplasma and shockwaves.

LMTuA3 • 8:45 a.m. **Invited**

**Controlling Ultrafast Laser-Induced Refractive Index Changes in Optical Glasses via Adaptive Spatio-Temporal Beam Engineering**, Razvan Stoian; Univ. Jean Monnet, France. Spatio-temporal beam engineering can adaptively regulate the energy exposure, enabling a synergetic interaction between light and matter. We discuss the possibility of controlling refractive index changes and explore the potential for parallel photo inscription.

LMTuA4 • 9:15 a.m.

**Effect of Pulse Shaping on Micromachining Transparent Dielectrics**, Jay D. Shah, Tissa C. Gunaratne, Xin Zhu, Vadim Lozovoy, Marcos Dantus; Michigan State Univ., USA. Successful efforts made with silicon micromachining prompts novel methods to study the femtosecond-laser induced ablation of transparent dielectrics. Characterized AFM images of the ablated surfaces will be presented.

## Club Regent

## COSI

8:00 a.m.–10:00 a.m.

**CTuA • Computational Imaging and Compressive Sensing**

Michael A. Fiddy; Univ. of North Carolina, USA, President

CTuA1 • 8:00 a.m. **Invited**

**Computational Photography**, Ramesh Raskar; MIT, USA. The goal is to create an entirely new class of imaging platforms that have an understanding of the world that far exceeds human ability and produce meaningful abstractions that are well within human comprehensibility.

CTuA2 • 8:30 a.m. **Invited**

**Task-Specific Compressive Imaging**, Mark Allen Neifeld; Univ. of Arizona, USA. Compressive imaging enables optimal use of collected photons. We discuss the implications on image fidelity and task-specific implementations for motion detection, target recognition, and object tracking using both static and adaptive measurements.

CTuA3 • 9:00 a.m.

**Millimeter-Wave Imaging Using k-Space Compression**, Christy Fernandez-Cull<sup>1</sup>, David Brady<sup>1</sup>, David A. Wikner<sup>2</sup>, Joseph N. Mait<sup>2</sup>; <sup>1</sup>Duke Univ., USA, <sup>2</sup>US ARL, USA. We apply compression in the spatial frequency domain to generate millimeter wave images. Simulations indicate the efficacy of the approach. We are in the process of testing the system experimentally.

CTuA4 • 9:15 a.m.

**An Efficient Method for Multi-Dimensional Compressive Imaging**, Yair Rivenson, Adrian Stern; Ben-Gurion Univ. of the Negev, Israel. In previous work we have demonstrated that using a separable imaging operator overcomes practical difficulties of 2-D compressive imaging. Here we extend the separability notion to multidimensional imaging and present the implementation issues it addresses.

## Cupertino

## SRS

8:00 a.m.–10:00 a.m.

**STuA • Imaging from Limited and Compressed Data**

Markus Testorf; Dartmouth College, USA, President

STuA1 • 8:00 a.m. **Invited**

**Image Reconstruction from Highly Sparse Data in Advanced Tomographic Imaging**, Xiaochuan Pan; Univ. of Chicago, USA. Tomographic imaging techniques are found widely in applications in biomedicine, industrial non-destructive, and security applications. We discuss some of the recent algorithm developments for accurate image reconstruction from highly sparse data in advanced tomographic imaging.

STuA2 • 8:30 a.m.

**Bayesian Multiresolution Method for Local Tomography**, Kati Niinimäki<sup>1</sup>, Ville P. Koehmainen<sup>1</sup>, Samuli Siltanen<sup>2</sup>; <sup>1</sup>Univ. of Kuopio, Finland, <sup>2</sup>Dept. of Mathematics, Univ. of Helsinki, Finland. We present a wavelet based multiresolution model for local tomography. Reconstruction model is reduced by discarding fine-scale wavelets outside the region-of-interest (ROI). The approach allows significant model reduction without loss of accuracy in the ROI.

STuA3 • 8:45 a.m.

**On Improved Temporal Resolution for Magnetic Resonance Angiography**, Phil Bones, Bing Wu, Bahereh Vafadar, Anthony Butler, Richard Watts; Univ. of Canterbury, New Zealand. Use of a support constraint derived from a complete k-space acquisition combined with progressive k-space sampling allows improved and adaptive time resolution to be achieved in parallel magnetic resonance angiography (MRA).

STuA4 • 9:00 a.m.

**Sparse Reconstruction of Complex Signals in Compressed Sensing Terahertz Imaging**, Zhimin Xu<sup>1</sup>, Wai Lam Chan<sup>2</sup>, Daniel M. Mittleman<sup>3</sup>, Edmund Y. Lam<sup>1</sup>; <sup>1</sup>Dept. of Electrical and Electronic Engineering, Univ. of Hong Kong, Hong Kong, <sup>2</sup>Dept. of Electrical and Computer Engineering, Rice Univ., USA. In reconstructing complex signals, many existing methods apply regularization on magnitude only. We show that by adding control on phase, reconstruction quality can be improved. This is demonstrated in a compressed sensing terahertz imaging system.

STuA5 • 9:15 a.m.

**Multi-Frequency Inverse Scattering by Compressed Sensing**, Albert Fanjiang; Univ. of California at Davis, USA. Inverse-scattering schemes based on the restricted isometry property (RIP) in compressed sensing are proposed and analyzed. The methods employ randomly and repeatedly (multiple-shot) the single-input-single-output measurements and can recover exactly targets of sufficiently low sparsity.

For FIO/LS presentations on Tuesday, see pages 56-75.

## Fall OSA Optics & Photonics Congress

### Fairfield

#### A O

#### AOTuA • Adaptive Optics Systems I—Continued

##### AOTuA5 • 9:30 a.m.

**CANARY: An On-Sky Laser Guide Star Multiple Object AO Demonstrator**, *Tim Morris<sup>1</sup>, Zoltan Hubert<sup>2</sup>, Richard Myers<sup>1</sup>, Eric Gendron<sup>2</sup>, Andy Longmore<sup>3</sup>, Gerard Rousset<sup>3</sup>, Gordon Talbot<sup>1</sup>, Thierry Fusco<sup>4</sup>, Nigel Dipper<sup>1</sup>, Fabrice Vidal<sup>5</sup>, David Henry<sup>3</sup>, Damien Gratadour<sup>2</sup>, Tim Butterley<sup>1</sup>, Fanny Chemla<sup>2</sup>, Dani Guzman<sup>1</sup>, Eddy Younger<sup>1</sup>, Aglae Kellerer<sup>2</sup>, Mark Harrison<sup>1</sup>, Michel Marteau<sup>2</sup>, Deli Geng<sup>1</sup>, Ali Basden<sup>1</sup>, Andres Guesalaga<sup>3</sup>, Colin Dunlop<sup>1</sup>, Stephen Todd<sup>3</sup>, Colin Dickson<sup>2</sup>*; <sup>1</sup>Univ. of Durham, UK, <sup>2</sup>Observatoire de Paris, France, <sup>3</sup>UK Astronomy Technology Ctr., UK, <sup>4</sup>ONERA, France, <sup>5</sup>Pontificia Univ. Catolica de Chile, Chile. CANARY is the on-sky LGS MOAO demonstrator for the proposed EAGLE E-ELT instrument. The CANARY design is described here for the initial experimental phases. Simulations of system performance predict an H-band Strehl ratio of 0.27-0.33.

### Belvedere

#### L M

#### LMTuA • Fundamentals of Femtosecond Laser Interactions with Materials—Continued

##### LMTuA5 • 9:30 a.m.

**Femtosecond Laser Direct Writing in P, Ge Doped Silica Glasses: Time Resolved Plasma Measurements**, *Matthieu Lancry<sup>1</sup>, Stéphane Guizard<sup>2</sup>, Bertrand Poumellec<sup>1</sup>*; <sup>1</sup>Univ. of Paris Sud, France, <sup>2</sup>Lab des Solides Irradiés, CEA/DRECAM, École Polytechnique, France. Time resolved spectral interferometry shows that the mean trapping time of electrons excited in the conduction band was significantly lower in doped silica and especially in Ge-doped silica when compared to pure silica.

##### LMTuA6 • 9:45 a.m.

**Cascaded Nonlinear Absorption of Laser Pulse Energy in Femtosecond Microfabrication: Experiment, Numerics, and Theory**, *Andrey G. Okhrimchuk, Vladimir Mezentsev, Mykhaylo Dubov, Holger Schmitz, Ian Bennion*; *Aston Univ., UK*. A dedicated study of nonlinear absorption in femtosecond laser micro fabrication is presented. Experimental, numerical and theoretical data are analyzed and compared. The results are presented for a range of dielectrics.

### Club Regent

#### C O S I

#### CTuA • Computational Imaging and Compressive Sensing—Continued

##### CTuA5 • 9:30 a.m.

**Compressive Sensing Hyperspectral Imager**, *Ting Sun, Kevin Kelly*; *Rice Univ., USA*. Compressive sensing based hyper spectral imaging is investigated and compared with its raster scan counterpart. Data acquisition and compression are realized simultaneously which greatly decreases the measurement time and storage volume while increasing the signal fidelity.

##### CTuA6 • 9:45 a.m.

**Compressive Coherence Sensing**, *Ashwin A. Wagadarikar, Daniel Marks, Kerkil Choi, David J. Brady, Fitzpatrick Ctr. for Photonics, Duke Univ., USA*. The 4-D cross spectral density function is recovered using 2-D rotational shear interferometer measurements and a matrix completion algorithm for low rank matrices. Imaging of point sources through turbulence is demonstrated.

### Cupertino

#### S R S

#### STuA • Imaging from Limited and Compressed Data—Continued

##### STuA6 • 9:30 a.m.

**Superresolution with Plenoptic 2.0 Cameras**, *Todor G. Georgiev<sup>1</sup>, Andrew Lumsdaine<sup>2</sup>*; <sup>1</sup>Adobe Systems, USA, <sup>2</sup>Indiana Univ., USA. We have demonstrated working superresolution with Plenoptic 2.0 camera without need for traditional image registration in software. This paper describes our method, which is based only on the camera and microlens parameters.

##### STuA7 • 9:45 a.m.

**Optical Design for Improving Matrix Condition**, *Iftach Klapp, David Mendlovic*; *Tel Aviv Univ., Israel*. The problem of image restoration of space variant blur is common and important. In many cases the restoration is limited by the optical system matrix condition. We present optical design for improving this figure.

**9:30 a.m.–12:00 p.m. Student Programming: Painless Publishing, Science Policy and OSA Traveling Lecturer**, *Regency Ballroom II, Fairmont Hotel*

**10:00 a.m.–10:30 a.m. Coffee Break**, *Imperial Ballroom, Fairmont Hotel*

**10:00 a.m.–4:00 p.m. Exhibit Hall Open**, *Imperial Ballroom, Fairmont Hotel*

#### NOTES

For FIO/LS presentations on Tuesday, see pages 56-75.

## Fall OSA Optics &amp; Photonics Congress

## Fairfield

## AO

10:30 a.m.–12:00 p.m.

**AOTuB • Wavefront Sensing I**

Lisa Poyneer; Lawrence Livermore Natl. Lab, USA, *Presider*

AOTuB1 • 10:30 a.m. **Invited**

Polar Coordinate CCD Array for LGS Wavefront Sensing, Sean Adkins; W. M. Keck Observatory, USA. Abstract not available.

AOTuB2 • 11:00 a.m.

Comparison of Self-Referenced Center of Gravity, Quad-Cell and Matched Filter Algorithms for Laser Guide Star Wavefront Sensing, Rodolphe Conan, Olivier Lardière, Kate Jackson; Univ. of Victoria, Canada. The UVic AO laboratory has built an optical test-bed reproducing LGS wavefront sensing with Shack-Hartmann WFSs on ELTs. The test bench has been used to compare self-referenced version of the center-of-gravity, quad-cell and matched-filter algorithms.

AOTuB3 • 11:20 a.m.

Pyramid Wave-Front Sensing with a Laser Guide Star for an ELT, Brice Le Roux; Astronomy Observatory of Marseilles Provence, Univ. of Provence, France. We present a study of the behavior and performance of the pyramid WFS when the guide star is a laser GS on an ELT. Simulation results are presented.

## Belvedere

## LM

10:30 a.m.–12:00 p.m.

**LMTuB • Three-Dimensional Micromachining with Femtosecond Lasers**

Chris Schaffer; Cornell Univ., USA, *Presider*

LMTuB1 • 10:30 a.m. **Invited**

Three-Dimensional Structuring of Materials by Femtosecond Laser Pulses, Saulius Juodkazis, Hiroaki Misawa; Hokkaido Univ., Japan. Current trends in three-dimensional laser fabrication of materials and their structural modifications will be discussed. Strategies for achieving a sub-100 nm resolution via engineering a light delivery and localization are described.

LMTuB2 • 11:00 a.m.

Patterning of Functional Polymers by Femtosecond Lasers, Andrea Camposeo<sup>1</sup>, Marco Polo<sup>1,2</sup>, Antonio A. R. Neves<sup>1</sup>, Roberto Cingolani<sup>1</sup>, Dario Pisignano<sup>1,2</sup>; <sup>1</sup>Natl. Nanotechnology Lab, CNR-INFN, Italy, <sup>2</sup>Inst. Superiore di Formazione Interdisciplinare ISUFI, Univ. del Salento, Italy. We investigated possible routes for the patterning of conjugated polymers by fs laser pulses. In particular, we analyzed the impact of the exposure to fs laser on the emission properties of the light-emitting conjugated polymers.

LMTuB3 • 11:15 a.m. **Invited**

Multifunctional Volume Optics Generated by Direct Femtosecond Laser Writing, Timothy D. Gerke, Rafael Piestun; Univ. of Colorado at Boulder, USA. We present a three-dimensional scattering approach to the design of aperiodic volume optical elements and explore new functionalities utilizing the available degrees of freedom. We demonstrate volume diffractive elements that multiplex spatial and spectral information.

## Club Regent

## COSI

10:30 a.m.–12:00 p.m.

**CTuB • Light Field Representations**

Ramesh Raskar; MIT, USA, *Presider*

CTuB1 • 10:30 a.m. **Invited**

Frequency Analysis in the Light Field and Time Space Domains, Fredo Durand; MIT, USA. Computational imaging can reduce motion and defocus blur. New analysis in the Fourier domain of the 4-D light field (light rays) and 3-D space-time sheds new insights and leads to new practical solutions.

CTuB2 • 11:00 a.m.

Lightfield Photography and Phase-Space Tomography: A Paradigm for Computational Imaging, Markus E. Testorf<sup>1</sup>, Michael A. Fiddy<sup>2</sup>; <sup>1</sup>Dartmouth College, USA, <sup>2</sup>Univ. of North Carolina at Charlotte, USA. The interpretation of lightfield photography as phase-space tomography is used to introduce a formalism for analyzing and optimizing computational imaging systems. We illustrate this concept by discussing lightfield wavefront sensing and computational imaging applications.

CTuB3 • 11:15 a.m.

Resolution in Plenoptic Cameras, Todor G. Georgiev<sup>1</sup>, Andrew Lumsdaine<sup>2</sup>; <sup>1</sup>Adobe, USA, <sup>2</sup>Indiana Univ., USA. Derivation and analysis of sampling patterns of traditional and focused plenoptic cameras show the former rotates pixels  $\Pi/2$  in phase space, while the latter does not. These results are interpreted regarding the cameras' spatial resolution.

CTuB4 • 11:30 a.m.

Multichannel, Agile, Computationally Enhanced Camera Based On PANOPTES Architecture, Predrag Milojkovic<sup>1,2</sup>, John Gill<sup>1</sup>, Dan Frattin<sup>1</sup>, Kevin Coyle<sup>1</sup>, Karl Haack<sup>1</sup>, Marc P. Christensen<sup>2</sup>, Dinesh Rajan<sup>2</sup>, Scott Douglas<sup>2</sup>; <sup>1</sup>Northrop Grumman Info. Systems, USA, <sup>2</sup>Southern Methodist Univ., USA. Abstract not available.

## Cupertino

## SRS

10:30 a.m.–12:00 p.m.

**STuB • Inverse Scattering**

Andrew Lambert; Univ. of New South Wales, Australia, *Presider*

STuB1 • 10:30 a.m. **Invited**

Inverse Problems with Interior Control, John Schotland; Univ. of Pennsylvania, USA. We report recent work on inverse scattering problems in which manipulation of internal degrees of freedom of a scattering medium leads to improvements in image resolution.

STuB2 • 11:00 a.m.

*Ab initio* Determination of Virus Electron Density in X-Ray Crystallography, Victor L. Lo, Rick P. Millane; Univ. of Canterbury, New Zealand. The electron density of an icosahedral virus with 5-fold non-crystallographic symmetry is reconstructed *ab initio* from crystal X-ray diffraction amplitudes using the difference map projection algorithm.

STuB3 • 11:15 a.m.

Resolution Enhancement and Classification of Virus Particles in Cellular Tomography, Kang Wang, Peter Doerschuk; Cornell Univ., USA. The tomographic reconstruction from whole-cell electron tomography, which is used in the study of viruses *in situ*, is generally noisy and geometrically distorted due to low electron dose and incomplete projection data.

STuB4 • 11:30 a.m.

3-D Reconstruction from Electron Microscope Images of Heterogeneous Particles, Peter Doerschuk, Yili Zheng; Cornell Univ., USA. A statistical estimation problem for determining 3-D reconstructions from a single 2-D projection image of each of multiple objects when the objects are heterogeneous is described.

For FIO/LS presentations on Tuesday, see pages 56-75.

## Fall OSA Optics & Photonics Congress

### Fairfield

#### A O

#### AOTuB • Wavefront Sensing I—Continued

**AOTuB4 • 11:40 a.m.**

**Off-Axis Beacon Sharpening**, Erez N. Ribak<sup>1,2</sup>, Ruth Mackey<sup>2</sup>; <sup>1</sup>Technion-Israel Inst. of Technology, Israel, <sup>2</sup>Natl. Univ. of Ireland, Ireland. We design an atmospheric beacon which can be observed at an angle with reduced loss of resolution along its main axis. We employ direct inversion or iterative optimization, either by computer or in the laboratory.

### Belvedere

#### L M

#### LMTuB • Three-Dimensional Micromachining with Femtosecond Lasers—Continued

**LMTuB4 • 11:45 a.m.**

**The Role of Metaphosphate Glass Composition on Changes to the Glass Network Structure after Modification by Femtosecond Laser Pulses**, Luke B. Fletcher<sup>1</sup>, Jon J. Witcher<sup>1</sup>, Denise M. Krol<sup>1</sup>, Richard K. Brow<sup>2</sup>; <sup>1</sup>Univ. of California at Davis, USA, <sup>2</sup>Missouri Univ. of Science and Technology, USA. Changes to the glass structure after femtosecond laser modification have been studied in multiple metaphosphate glass systems using white light and laser microscopy. Results indicate initial glass structure is important to the resulting morphological changes.

### Club Regent

#### C O S I

#### CTuB • Light Field Representations—Continued

**CTuB5 • 11:45 a.m.**

**Quasi Light Fields: A Model of Coherent Image Formation**, Anthony Accardi, Gregory Wornell; MIT, USA. We develop a model of coherent image formation that strikes a balance between the simplicity of the light field and the comprehensive predictive power of Maxwell's equations, by extending the light field to coherent radiation.

### Cupertino

#### S R S

#### STuB • Inverse Scattering—Continued

**STuB5 • 11:45 a.m.**

**New Computational Methodology for the Recovery of Facial Images Retained in Human Memory**, Christopher J. Solomon<sup>1,2</sup>, Stuart J. Gibson<sup>1</sup>, Matthew I. S. Maylin<sup>1</sup>; <sup>1</sup>Univ. of Kent, UK, <sup>2</sup>Natl. Univ. of Ireland, Ireland. We present a new computational methodology for the construction of facial composites from eyewitness memory for criminal investigation. The conceptual and theoretical basis is described and results from both laboratory and real-world applications are presented.

**12:00 p.m.–1:30 p.m. Exhibit Only Time, Imperial Ballroom, Fairmont Hotel**

**12:00 p.m.–2:00 p.m. 1<sup>st</sup> International OSA Student Chapter Solar Mini-Car Final Races, Imperial Ballroom, Fairmont Hotel**

**12:00 p.m.–1:30 p.m. OSA Fellow Member Lunch, Silicon Valley Capital Club, 50 W. San Fernando, Suite 1700, San Jose, California 95113, Phone: 408.971.9300**

**12:00 p.m.–1:30 p.m. Lunch Break (on your own)**

#### NOTES

For FiO/LS presentations on Tuesday, see pages 56-75.

## Fall OSA Optics &amp; Photonics Congress

## Fairfield

## AO

1:30 p.m.–3:10 p.m.

**AOTuC • High Contrast Imaging and Point Spread Function Calibration I***Jean-Pierre Veran; Inst. Herzberg d'Astrophysique, Canada, Presider***AOTuC1 • 1:30 p.m.**

**Differential Photometry through PDF Deconvolution**, *Szymon Gladysz<sup>1</sup>, Julian Christou<sup>2</sup>, <sup>1</sup>European Southern Observatory, Germany, <sup>2</sup>Gemini Observatory, USA.* We present a novel approach to differential photometry in high-contrast observations. Our algorithm exploits the difference in statistics between the on-axis and off-axis intensity. We test the method on data from the Lick Observatory's 3m telescope.

**AOTuC2 • 1:50 p.m.**

**Statistical Signal Enhancement in Adaptive-Optics Observations of Exoplanets**, *Szymon Gladysz<sup>1</sup>, Patrice Martinez<sup>1</sup>, Emmanuel Aller-Carpentier<sup>1</sup>, Julian Christou<sup>2</sup>, <sup>1</sup>European Southern Observatory, Germany, <sup>2</sup>Gemini Observatory, USA.* We present a new class of algorithms for the detection of faint companions to stars. The new approach was tested on astronomical observations and on high-contrast corona graphic data recorded in a laboratory experiment.

**AOTuC3 • 2:10 p.m.**

**Optimal Method for Exoplanet Detection by Spectral and Angular Differential Imaging**, *Alberto Cornia<sup>1,2</sup>, Laurent Mugnier<sup>1</sup>, Jean-François Sauvage<sup>1</sup>, Thierry Fusco<sup>1</sup>, Marcel Carbillet<sup>3</sup>, David Mouillet<sup>4</sup>, Gérard Rousset<sup>2</sup>, Anthony Boccaletti<sup>2</sup>, <sup>1</sup>ONERA Chatillon, France, <sup>2</sup>Observatoire de Meudon, LESIA, France, <sup>3</sup>Lab Fizeau, Univ. de Sophia-Antipolis, France, <sup>4</sup>Lab d'Astrophysique de l'Observatoire de Grenoble, France.* We propose a method based on maximum-likelihood for the direct detection of exoplanets from the ground using spectral-angular differential imaging. We can estimate the position and intensity of potential planets orbiting the observed star.

## Belvedere

## LM

1:30 p.m.–3:30 p.m.

**LMTuC • Fabrication of Waveguides with Femtosecond Laser Systems***Presider to Be Announced***LMTuC1 • 1:30 p.m. Invited**

**Recent Developments in Monolithic Fibre and Waveguide, DBR and DFB Lasers Fabricated Using Ultrafast Laser Direct-Write Methods**, *G. D. Marshall, N. Jovanovic, M. Ams, D. J. Little, P. Dekker, A. Fuerbach, M. J. Withford; Ctr. for Ultrahigh-bandwidth Devices for Optical Systems (CUDOS), Australia.* We report on active photonic devices, both in bulk and fiber glass formats, fabricated using ultrafast laser direct writing. Recent demonstrations include a monolithic 100 mW DFB waveguide laser and a 100W fiber laser.

**LMTuC2 • 2:00 p.m.**

**Demonstration of a fs-Laser Written Highly Efficient Yb:YAG Channel Waveguide Laser**, *Jörg Siebenmorgen, Thomas Calmano, Klaus Petermann, Günter Huber; Inst. of Laser-Physics, Univ. Hamburg, Germany.* Using a femtosecond laser tracks were written in Yb:YAG. Due to stress induced birefringence waveguiding was possible in channels surrounding the tracks. Laser oscillation was achieved with an output-power of 719mW at 1223mW of pump-power.

**LMTuC3 • 2:15 p.m. Invited**

**Femtosecond Laser Micromachining: An Enabling Tool for Optofluidics**, *R. Osellame, R. Martinez Vazquez, R. Ramponi, G. Cerullo; Inst. di Fotonica e Nanotecnologie, CNR, Italy.* Femtosecond-laser-written optical waveguides are integrated into a commercial micro-fluidic chip. A fluorescence detection scheme is implemented, resulting in a compact device. Testing is performed by electrophoresis and optical detection of a 1-nM oligonucleotide plug.

## Club Regent

## COSI

1:30 p.m.–3:30 p.m.

**CTuC • Constraints on Imaging***Mark Allen Neifeld; Univ. of Arizona, USA, Presider***CTuC1 • 1:30 p.m. Invited**

**Fundamental Limit for Optical Devices**, *David A. B. Miller; Stanford Univ., USA.* We examine a basic general limit to optical components that scatter, separate, disperse, or delay light, an upper bound that depends on material properties and device volume, independent of design details.

**CTuC2 • 2:00 p.m. Invited**

**Holographic Ghost Imaging**, *M. J. Padgett<sup>1</sup>, B. Jack<sup>1</sup>, J. Leach<sup>1</sup>, J. Romero<sup>1</sup>, S. Franke-Arnold<sup>1</sup>, M. Ritsch-Marte<sup>2</sup>, S. M. Barnett<sup>3</sup>, <sup>1</sup>Univ. of Glasgow, UK, <sup>2</sup>Innsbruck Medical Univ., Austria, <sup>3</sup>Univ. of Strathclyde, UK.* We demonstrate a new form of ghost-imaging, where holograms placed non-locally with respect to the object can enhance the contrast of the coincident image. In this configuration the system unambiguously exhibits its quantum properties.

## Cupertino

## SRS

1:30 p.m.–3:30 p.m.

**STuC • Atmospheric Imaging***Rick P. Millane; Univ. of Canterbury, New Zealand, Presider***STuC1 • 1:30 p.m. Invited**

**Information Theoretic Based Image Quality Evaluation**, *David R. Gerwe<sup>1</sup>, Carlos E. Luna<sup>1</sup>, Brandoch Calef<sup>1</sup>, <sup>1</sup>Boeing Directed Energy Systems, USA, <sup>2</sup>Boeing Laser Technical Services, USA.* A new mutual information based metric for characterizing the influence of sensor design, imaging geometry, environmental conditions, and enhancement processing on image quality is shown to better match visual ratings than the current GIQE metric.

**STuC2 • 2:00 p.m.**

**Statistical Turbulence Approach to the Covariance Matrices in the Shiftmap Prediction Using Kalman Filter**, *Murat Tahtali, Andrew J. Lambert; Univ. of New South Wales, Australian Defence Force Acad., Australia.* We consider the statistical estimation of the covariance matrices required in the prediction of restoration shift-maps using Kalman filter. Anisoplanatic warp of imagery through atmospheric turbulence is modeled at pixel level as a simple oscillator.

**STuC3 • 2:15 p.m.**

**Computationally Efficient Image Dewarping Algorithm**, *Samuel T. Thurman; Lockheed Martin Coherent Technologies, USA.* Imagery of scenes viewed through atmospheric turbulence often exhibits dynamic distortion or warping. A computationally efficient method for co-registering this type of imagery is described.

For FIO/LS presentations on Tuesday, see pages 56-75.



## Fall OSA Optics & Photonics Congress

Tuesday, October 13

### Fairfield

#### AO

#### AOTuC • High Contrast Imaging and Point Spread Function Calibration I—Continued

**AOTuC4 • 2:30 p.m.**

**Long Exposure PSF Reconstruction for GPI,** Jérôme Maire<sup>1</sup>, Jean-Pierre Véran<sup>2</sup>, Lisa A. Poyneer<sup>3</sup>; <sup>1</sup>Univ. of Montreal, Canada, <sup>2</sup>Herzberg Inst. of Astrophysics, Canada, <sup>3</sup>Lawrence Livermore Natl. Lab, USA. We investigate the performance and limitations of two different methods to reconstruct the Gemini Planet Imager long-exposure PSF based on a statistical analysis of the AO WFS data provided by the GPI AO simulation tool.

**AOTuC5 • 2:50 p.m.**

**Enhanced Faint Companion Photometry and Astrometry Using Wavelength Diversity,** Daniel Burke<sup>1</sup>, Nicholas Devaney<sup>1</sup>, Szymon Gladysz<sup>2</sup>, Chris Dainty<sup>3</sup>; <sup>1</sup>Natl. Univ. of Ireland, Galway, Ireland, <sup>2</sup>European Organisation for Astronomical Res. in the Southern Hemisphere, Germany. We propose a new method to enhance the differential photometry and astrometry of faint companions in adaptive optics images. Our approach combines PSF estimation from multi-wavelength data with a pre-whitening matched filter.

### Belvedere

#### LM

#### LMTuC • Fabrication of Waveguides with Femtosecond Laser Systems—Continued

**LMTuC4 • 2:45 p.m.**

**Annealing Behavior of Femtosecond Laser-Written Waveguides in Fused Silica,** Jonathan Witcher, Luke Fletcher, Wilbur Reichman, Denise Krol; Univ. of California at Davis, USA. We have studied thermal annealing of fs-laser fabricated waveguides in fused silica using confocal fluorescence and Raman microscopy. The results show that laser-induced NBOHC defects disappear at much lower temperatures than three-membered SiO rings.

**LMTuC5 • 3:00 p.m.**

**Femtosecond Laser Writing of Phase-Shifted Bragg Grating Waveguides in Fused Silica,** Luis A. Fernandes<sup>1,2</sup>, Jason R. Grenier<sup>1</sup>, Peter R. Herman<sup>1</sup>, J. Stewart Aitchison<sup>1</sup>, Paulo V. S. Marques<sup>2</sup>; <sup>1</sup>Univ. of Toronto, Canada, <sup>2</sup>INESC Porto, Dept. de Física, Univ. do Porto, Portugal. Phase-shifted Bragg grating waveguide filters were formed in bulk glass for the first time by femtosecond laser direct writing. A narrow, tunable 0.1-nm transmission window at 1550-nm is demonstrated for tunable  $\pi$  and other phase-shifts.

**LMTuC6 • 3:15 p.m.**

**Curvilinear Low-Loss Waveguides in Borosilicate Glass Fabricated by Femtosecond Chirp-Pulse Oscillator,** Mykhaylo Dubov, T. Allsop, S. R. Natarajan, V. K. Mezantsev, I. Bennion; Aston Univ., UK. Results on direct femtosecond inscription of straight low-loss waveguides in borosilicate glass are presented. The refractive index contrast obtained allowed us to fabricate low-loss curvilinear waveguides, which are main building blocks for integrated optics circuits.

### Club Regent

#### COSI

#### CTuC • Constraints on Imaging—Continued

**CTuC3 • 2:30 p.m.**

**An Information Theoretic Analysis of Support Assisted Optical Superresolution in One and Two Dimensions,** Sudhakar Prasad, Xuan Luo; Univ. of New Mexico, USA. A Fisher-information-theoretic analysis is presented of the fidelity of optical superresolution of low-resolution image sequences in one and two dimensions based on object support. Both rectangular and circular support geometries are treated.

**CTuC4 • 2:45 p.m.**

**Surpassing the Diffraction Limit of Digital Imaging Systems Using Sinusoidal Illumination Patterns,** Prasanna V. Rangarajan, Vikrant R. Bhakta, Marc P. Christensen; Dept. of Electrical Engineering, Southern Methodist Univ., USA. This work presents experimental evidence on surpassing the diffraction limit of digital imaging systems using sinusoidal illumination patterns. Unique contributions of the work include aliasing-management and the notion of incoherent band-pass filtering using sinusoidal modulation.

**CTuC5 • 3:00 p.m.**

**Signal-to-Noise-Ratio Limit to the Depth-of-Field Extension for Task-Specific Imaging Systems with an Arbitrary Pupil Function,** Saeed Bagheri; IBM T. J. Watson Res. Ctr., USA. The rigorous trade-off between achieving an extended depth-of-field and improved spectral signal-to-noise-ratio for a task-specific imaging system using arbitrary phase and/or amplitude pupil function is presented.

**CTuC6 • 3:15 p.m.**

**Non-Rectangular Sampling Topologies for Fast Joint Digital-Optical System Optimization,** Kathrin Berkner, M. Dirk Robinson; Ricoh Innovations, Inc., USA. Approximation errors of the MSE merit function for joint digital-optical system optimization are caused by use of rectangular sampling grids. We overcome this problem by adapting the MSE calculations to use flexible non-rectangular sampling topologies.

### Cupertino

#### SRS

#### STuC • Atmospheric Imaging—Continued

**STuC4 • 2:30 p.m.**

**Wavelength Diversity in Restoration from Atmospheric Turbulence Effected Surveillance Imagery,** Andrew J. Lambert<sup>1</sup>, Geoffrey Nichols<sup>2</sup>; <sup>1</sup>Australian Defence Force Acad., Univ. of New South Wales, Australia, <sup>2</sup>Defence Science and Technology Organisation, Australia. We investigate the fusion of imagery taken at long-range and high-magnification in four wavelength bands, and consider the localised tip-tilt variance that shifts regions of the images differently in each wavelength range.

**STuC5 • 2:45 p.m.**

**Speckle Imaging with a Partitioned Aperture,** Brandoch Calef; Boeing LTS, USA. We describe a generalization of aperture masking interferometry that improves the speckle imaging performance of a telescope in the large  $D/r_0$  regime while making use of all collected photons.

**STuC6 • 3:00 p.m.**

**Laboratory Demonstration of Sharpness Metric Approach to Correct Multiple-Plane Phase Errors,** Abbie E. Tippie, James R. Fienup; Univ. of Rochester, USA. We describe a laboratory experiment for correction of anisoplanatic blurring effects due to phase screens in multiple planes. A nonlinear optimization method maximizing a modified sharpness metric estimates two phase screens and sharpens the image.

**STuC7 • 3:15 p.m.**

**Image Restoration Using Natural Image Statistics,** Zhiying Wen, Donald Fraser, Andrew Lambert; Australian Defence Force Acad., Univ. of New South Wales, Australia. This paper proposes to use the natural image statistics to reconstruct a potential image from a blurred image. The compressive sensing theory and  $l_1$  minimization technique is employed to iteratively estimate the image gradient.

**3:30 p.m.–4:00 p.m. Coffee Break/Exhibits, Imperial Ballroom, Fairmont Hotel**

**3:30 p.m.–5:30 p.m. Meet the Editors of the APS Journals, Bamboo Lounge, Fairmont Hotel**

For FIO/LS presentations on Tuesday, see pages 56-75.

## Fall OSA Optics &amp; Photonics Congress

## Fairfield

## AO

4:00 p.m.–5:20 p.m.

**AOTuD • System Simulation and Modeling I**  
*Michael Lloyd Hart; Univ. of Arizona, USA, Presider*

AOTuD1 • 4:00 p.m.

**Extreme Adaptive Optics Simulations for the European ELT**, *Visa Korkiakoski, Christophe Véronaud; Lab d'Astrophysique de Grenoble, France*. EPICS is a project for a high contrast imaging instrument dedicated to direct imaging of exo-planets with the European Extremely Large Telescope. We present end-to-end simulation results of a Foucault-like sensors based XAO system.

AOTuD2 • 4:20 p.m.

**High Fidelity Sky Coverage Analysis and Long Exposure PSF Modeling for Multi-Conjugate AO**, *Liangqi Wang, Brent Ellerbroek; Thirty Meter Telescope, Caltech, USA*. We report a method for long exposure PSF modeling using the previously reported time domain sky coverage simulation. The enclosed energy and point source sensitivity PSF metrics are used as measures of sky coverage.

AOTuD3 • 4:40 p.m.

**VLT Adaptive Optics Facility Simulations**, *Miska LeLouarn, Pierre-Yves Madec, Jerome Pauflique, Stefan Stroebele; European Organisation for Astronomical Res., Germany*. We detail the simulated performance of two new instruments providing three observing modes (GLAO in the visible and IR and LTAO in the visible) of the Adaptive Optics Facility for the Very Large Telescope.

## Belvedere

## LM

4:00 p.m.–6:00 p.m.

**LMTuD • Surface Processing and Panel Discussion on Femtosecond Laser Micromachining**  
*Andreas Ostendorf; Ruhr-Univ. Bochum, Germany, Presider*

LMTuD1 • 4:00 p.m. **Invited**

**Ultrafast Laser Surface Micro/Nano-Structuring and Applications**, *Vassilia Zorba; Lawrence Berkeley Natl. Lab, USA*. We study the interaction of femtosecond laser pulses with Si surfaces in the optical far- and near-field. The formation of biomimetic structures in the far-field leads to one of the most water repellent surfaces ever reported.

LMTuD2 • 4:30 p.m. **Invited**

**Optically-Controlled Growth of Carbon Nanotubes**, *Y. F. Lu, Y. S. Zhou, W. Xiong, M. Mahjouri-Samani, Y. Gao, M. Mitchell; Univ. of Nebraska, USA*. Controllable growth and integration of single-walled carbon nanotubes (SWNTs) were achieved using an optically controlled approach. By applying optical near-field effects in a laser-assisted chemical vapor deposition process, controllable growth of SWNTs was realized.

## Club Regent

## COSI

4:00 p.m.–5:45 p.m.

**CTuD • 3-D Imaging and PSF Design**  
*David Brady; Duke Univ., USA, Presider*

CTuD1 • 4:00 p.m. **Invited**

**Three-Dimensional Superresolution Using Single-Molecule Photoswitches and a Double-Helix PSF**, *W. E. Moerner<sup>1</sup>, Michael Thompson<sup>1</sup>, Matthew Lew<sup>1</sup>, Majid Badiestrami<sup>1</sup>, Samuel J. Lord<sup>1</sup>, Nicholas R. Conley<sup>1</sup>, Hsiao-lu D. Lee<sup>1</sup>, Sri Rama Prasanna Pavan<sup>2</sup>, Rafael Piestun<sup>1</sup>; <sup>1</sup>Stanford Univ., USA, <sup>2</sup>Univ. of Colorado at Boulder, USA*. Superresolution detail provided by fluorescence imaging of optically controllable single-molecule emitters can be extended to three dimensions using a novel double-helix point-spread function. The molecules and methods enabling this advance will be reviewed.

CTuD2 • 4:30 p.m.

**Optimization of Double-Helix Point Spread Function for Photon-Limited 3-D Imaging Systems**, *Ginni Sharma, Sri Rama Prasanna Pavan, Rafael Piestun; Univ. of Colorado at Boulder, USA*. We present a double-helix point spread function (DH-PSF) optimized for particle superlocalization in three-dimensions. The DH-PSF has the lowest Cramer-Rao bound for axial estimation. The limitations to the rotation rate are investigated.

CTuD3 • 4:45 p.m.

**Broadband Three-Dimensional Imaging Using a Double-Helix Point Spread Function**, *Sean Quirin, Rafael Piestun; Univ. of Colorado at Boulder, USA*. A double-helix point spread function is implemented for optically sensing a three-dimensional scene using an image capture device and matched post-processing. Operation characteristics of the system are presented showing precision ranging under broadband illumination.

## Cupertino

## SRS

4:00 p.m.–5:15 p.m.

**STuD • Time-Frequency and Phase-Space Methods**  
*Phil Bones; Univ. of Canterbury, New Zealand, Presider*

STuD1 • 4:00 p.m. **Invited**

**Signal Reconstruction Techniques for Optical Pulse Characterization**, *Christophe Dorrer; Lab for Laser Energetics, USA*. Optical pulse characterization techniques are reviewed in the framework of phase-space representations. The principle and field-reconstruction algorithms for spectrography, tomography, and interferometry are described.

STuD2 • 4:30 p.m.

**Iterative Phase Retrieval from Wigner Distribution Projections**, *Tatiana Alieva<sup>1</sup>, José A. Rodrigo<sup>2</sup>; <sup>1</sup>Univ. Complutense de Madrid, Spain, <sup>2</sup>Imaging and Vision Dept., Inst. de Óptica (CSIC), Spain*. The application of the Gerchberg-Saxton algorithm for phase recovery of optical field, which is an eigenfunction of the fractional Fourier transform, is considered. This analysis is useful for determination of the Laguerre-Gaussian mode topological charge.

STuD3 • 4:45 p.m.

**Experimental Reconstruction of Wigner Distribution**, *Tatiana Alieva<sup>1</sup>, Alejandro Cámara<sup>1</sup>, José A. Rodrigo<sup>2</sup>, María L. Calvo<sup>1</sup>; <sup>1</sup>Univ. Complutense de Madrid, Spain, <sup>2</sup>Imaging and Vision Dept., Inst. de Óptica (CSIC), Spain*. Flexible optical setups for the phase-space tomography are discussed. The experimental reconstruction of the Wigner distribution of an optical beam separable in the Cartesian coordinates is demonstrated.

4:30 p.m.–5:30 p.m. **Minorities and Women in OSA (MWOSA) Tea**, *Sainte Claire Room, Sainte Claire Hotel*

For FiO/LS presentations on Tuesday, see pages 56-75.

## Fall OSA Optics & Photonics Congress

### Fairfield

#### AO

#### AOTuD • System Simulation and Modeling I—Continued

#### AOTuD4 • 5:00 p.m.

Monte-Carlo Simulation of EAGLE, *Alastair G. Basden, Richard M. Myers, Timothy Butterley; Durham Univ., UK*. The EAGLE instrument for the E-ELT is a multi-IFU spectrograph that uses a MOAO system for wavefront correction. We present Monte-Carlo AO simulation results, comparisons with an analytical code and details of the simulation package.

### Belvedere

#### LM

#### LMTuD • Surface Processing and Panel Discussion on Femtosecond Laser Micromachining—Continued

#### 5:00 p.m.

#### Panel Discussion: Challenges and Opportunities in Femtosecond Laser Microfabrication

Attend the closing technical session, which will begin with two invited speakers (see LMTuD1 and LMTuD2 on page 122) and will end with an exciting panel discussion, where leaders in the field share their perspective on the most significant recent advances and the most important challenges and opportunities in femtosecond laser microfabrication.

Panel participants include:

Alan Araj; *IMRA, USA*  
 Eric Mazur; *Harvard Univ., USA*  
 Andreas Ostendorf; *Ruhr Univ. Bochum, Germany*  
 Chris Schaffer; *Cornell Univ., USA*

### Club Regent

#### COSI

#### CTuD • 3-D Imaging and PSF Design—Continued

#### CTuD4 • 5:00 p.m.

Wigner Analysis of 3-D Coherence Imaging, *Se Baek Oh, George Barbastathis; MIT, USA*. We interpret 3-D coherence imaging with Wigner analysis. The mutual intensity and the Wigner distribution function are associated with the Fourier slice theorem, where the 3-D manifold of 4-D space is sufficient for 3-D imaging.

#### CTuD5 • 5:15 p.m.

Invited

**Illuminating Cameras.** *Srinivasa Narasimhan; Carnegie Mellon Univ., USA*. Light sources and cameras are optical duals: sources emit light rays while the cameras capture them. This talk will argue that light sources can serve as better cameras advancing many computer vision technologies.

### Cupertino

#### SRS

#### STuD • Time-Frequency and Phase-Space Methods—Continued

#### STuD4 • 5:00 p.m.

The Averaged Wigner Distribution Function and Subsurface Target Detection, *Markus E. Testorf, Nadege Thirion<sup>2</sup>, Marc Sallard<sup>2</sup>; <sup>1</sup>Dartmouth College, USA, <sup>2</sup>Univ. de Toulon et du Var, LSEET, France*. The Wigner function is used for detecting subsurface targets underneath a rough surface. The target is detected by averaging the Wigner functions of the scattered field obtained with different wavelength and source configurations.

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**6:00 p.m.–7:00 p.m. OSA Annual Business Meeting, Piedmont Room, Fairmont Hotel**

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**6:00 p.m.–7:00 p.m. DLS Annual Business Meeting, California Room, Fairmont Hotel**

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**7:00 p.m.–8:30 p.m. OSA Member Reception, Ballroom, Sainte Claire Hotel**

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**7:00 p.m.–10:00 p.m. Laser Science Banquet, Gordon Biersch, 33 East San Fernando Street, San Jose, California, Phone: 408.294.6785**

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For FIO/LS presentations on Tuesday, see pages 56-75.

## Fall OSA Optics &amp; Photonics Congress

Regency Ballroom

## JOINT AO/COSI/LM

6:00 p.m.–7:30 p.m.

## JTUC • Joint AO/COSI/LM Poster Session and Welcome Reception

## AO Posters

## JTUC1

**Direct Slope Reconstruction Algorithm for Woofer-Tweeter Adaptive Optics Systems**, Chaohong Li, Nripun Sredar, Hope Queener, Kevin M. Ivers, Jason Porter; Univ. of Houston, USA. We present a direct slope reconstruction algorithm to control dual-deformable mirror adaptive optics systems. A global response matrix was derived from the response matrices of each deformable mirror. Simulation results validated this control method.

## JTUC2

**Type II Woofer-Tweeter Control for NFIRAOS on TMT**, Jean-Pierre Véran, Glen Herriot; Herzberg Inst. of Astrophysics, Canada. This paper presents a type II control architecture that will be used in NFIRAOS on TMT to control tip-tilt and the plate scale modes measured by the on-instrument wave-front sensors.

## JTUC3

**Open-Loop Shaping of a 4K MEMS with Fourier-Domain Pre-Compensation**, Lisa A. Poyneer<sup>1</sup>, Andrew Norton<sup>2</sup>, Daren Dillon<sup>2</sup>; <sup>1</sup>Lawrence Livermore Natl. Lab, USA, <sup>2</sup>UCO Lick Observatory, Lab for Adaptive Optics, Univ. of California at Santa Cruz, USA. We describe a computationally efficient Fourier-domain algorithm for influence function compensation and an improved voltage-phase calibration technique that together enable precise open-loop shaping of a 64x64 MEMS deformable mirror.

## JTUC4

**Implementing a Low Cost Upgrade of a Single Laser Guide Star Adaptive Optics System**, Mark Harrison, Tim Morris, Richard Myers; Ctr. for Advanced Instrumentation, Dept. of Physics, Durham Univ., UK. We present a method of implementing a low cost upgrade of a single laser guide star adaptive optics system using a diffractive optical element to create and recombine multiple laser guide stars.

## JTUC5

**Application of Cavity Deformable Mirror in PW Laser Facility with U-Turn Reverser**, Feng Jing, Dongxia Hu, Qihua Zhu, Wanjun Dai, Xudong Xie, Wei Zhou, Kainan Zhou, Junpu Zhao, Xiaojun Huang, Kun Zhang, Xuejun Jiang, Wu Deng; Res. Ctr. of Laser Fusion, Chinese Acad. of Engineering Physics, China. Deformable mirror is applied as cavity mirror for wavefront correction. We describe a new mathematical method to prove its feasibility and compare two different schemes of cavity deformable mirror in XG-PW facility with U-turn reverser.

## JTUC6

**Adaptive Optics Retinal Imaging System Using a Pyramid Wave-front Sensor**, Sabine Chiesa, Christopher Dainty; Applied Optics, School of Physics, Natl. Univ. of Ireland, Galway, Ireland. A pyramid wavefront sensor based adaptive optics system for retinal imaging has been constructed. We demonstrate its dynamic range for sensing and first closed-loop results.

## COSI Posters

## JTUC7

**Computational Confocal Scanning Tomography**, Keith J. Dillon, Yeshaiahu Fainman; Univ. of California at San Diego, USA. We demonstrate a technique to perform computed tomographic reconstruction of a refractive and attenuative sample using a confocal laser scanning microscope that employs a spatial heterodyne to perform coherent detection of the entire aperture signal.

## JTUC8

**Six-Dimensional Joystick Based on Detection of Optical Spot**, Meng-Che Tsai, Pin-Hao Hu; ITRI, Industrial Technology Res. Inst., Taiwan. We demonstrated a six-dimensional (6-D) joystick by using a CMOS sensor array to image the cross-spot from a LED. It is simple and cheap to sensor signals of 3-D planar and 3-D rotational motion.

## JTUC9

**Computer Generated a Three-Dimensional Holography from Two-Dimensional Photos**, Nicholas Hageman, Xiaomin Jin; California Polytechnic State Univ., USA. We present 3-D holography from 2-D photos using computer generated hologram (CGH). The photo is segment into foreground/middle-ground/background. Matlab is used to create the CGH. Both single-laser/dual-laser setups are investigated for the 3-D image recovering.

## JTUC10

**Optical Imaging of Objects in Turbid Media Using Principal Component Analysis and Time Reversal Matrix Methods**, Binlin Wu<sup>1</sup>, Mohammad Alrubaiee<sup>1</sup>, Wei Cai<sup>1</sup>, Min Xu<sup>2</sup>, Swapan K. Gayen<sup>1</sup>; <sup>1</sup>City College of New York, CUNY, USA, <sup>2</sup>Fairfield Univ., USA. Principal component analysis and time reversal matrix methods were used to develop approaches for imaging of targets in turbid media. The efficacy is demonstrated by imaging two targets embedded in intralipid-10% suspension in water.

## JTUC11

**EMCCD Based Photon Imaging in Ultra Low Light Level**, Weiji He, Qian Chen, Guohua Gu, Juanfeng Huang; Nanjing Univ. of Science and Technology, China. An EMCCD based photon imaging strategy for ultra low light level scene was present. 3-D thresholding scheme was develop and experimentally tested for distinguishing photon events above noise.

## JTUC12

**Utilization of the Laser-Induced Breakdown Spectroscopy (LIBS) for Spectrochemical Analysis of Plant Samples with High Spatial Resolution**, Jozef Kaiser<sup>1</sup>, Radomír Malina<sup>1</sup>, Jan Novotný<sup>2</sup>, David Procházka<sup>1</sup>, Karel Novotný<sup>2</sup>, Lucie Krajačarová<sup>2</sup>, Michaela Galiová<sup>2</sup>, Markéta Holdá<sup>2</sup>; <sup>1</sup>Inst. of Physical Engineering, Faculty of Mechanical Engineering, Brno Univ. of Technology, Czech Republic, <sup>2</sup>Dept. of Chemistry, Faculty of Science, Masaryk Univ., Czech Republic. The capability of laser-induced breakdown spectroscopy for elemental mapping of plant tissues is discussed in wider context. Comparison with another laser-ablation based method (LA-ICP-MS) and with synchrotron hard-X-ray radiation micro-radiography and micro-CT techniques is provided.

## JTUC13

**Computational Imaging in Machine Vision System for Automated Optical Inspection**, Nak-Hoon Ko<sup>1</sup>, Yoon-Suk Lee<sup>1</sup>, Sang-Chul Jung<sup>1</sup>, Dae-Chan Kim<sup>1</sup>, Tae-Il Cho<sup>2</sup>, Beom-Hoan O<sup>1</sup>, Se-Geum Park<sup>1</sup>, El-Hang Lee<sup>1</sup>, Seung-Gol Lee<sup>1</sup>; <sup>1</sup>Inha Univ., Republic of Korea, <sup>2</sup>Samsung Electro-Mechanics Co., Ltd., Republic of Korea. This paper describes a virtual vision inspector which can numerically calculate an image to be acquired in a machine vision system for automatic optical inspection. This program will be useful for optimizing machine vision system.

## JTUC14

**Two-Photon Near-Infrared Cancer Imaging**, Nikolay S. Makarov, Jean Starkey, Mikhail Drobizhev, Aleksander Rebane; Montana State Univ., USA. We present a way of optical detection of malignant cancer cell colonies by using multi-wavelength two-photon excited fluorescence from environmentally sensitive Styryl-9M dye, allowing distinguishing between samples containing no cells, normal cells and cancer cells.

## LM Posters

## JTUC15

**Material Modifications with Ultrafast Bessel Beams**, Veronique Zambon, Nathalie McCarthy, Michel Piché; Ctr. d'Optique, Photonique et Laser (COPL) and Dept. de Physique, de Génie Physique et d'Optique, Univ. Laval, Canada. Ultrafast Bessel beams produced by axicon focusing have a long collimation length that is advantageous for laser micromachining. We have used these beams to fabricate optical waveguides and micro-fluidic channels in transparent glass.

## JTUC16

**Scan Speed Dependence of Quill Writing with Ultrashort Laser Pulses in Fused Silica**, Matthieu Lancry, Weijia Yang, Bertrand Poumellec, Bernard Bourguignon; Univ. of Paris Sud, France. We demonstrate that the quill writing phenomenon in ultrafast laser modification of fused silica is dependent on the scan speed. The phenomenon appears when the pulse overlapping is higher than 95%.

## JTUC17

**Femtosecond Laser Fabrication and Optical Studies of Microstructures in PMMA and PDMS**, Kallepalli L. N. Deepak<sup>1</sup>, Venugopal Rao Soma<sup>2</sup>, Narayana Rao Desai<sup>1</sup>; <sup>1</sup>School of Physics, Univ. of Hyderabad, India, <sup>2</sup>Advance Ctr. of Res. in High Energy Materials (ACRHEM), Univ. of Hyderabad, India. Several microstructures, including gratings and holes, were fabricated in PMMA and PDMS using 100 fs pulses. Our results on the physical/optical studies such as fluorescence, Raman, diffraction efficiency etc. will be presented.

## JTUC18

**Dynamics of Femtosecond Laser Nanostructuring of Metals**, Taek Yong Hwang, A. Y. Vorobyev, Chunlei Guo; Inst. of Optics, Univ. of Rochester, USA. We perform a systematic study on femtosecond laser-induced nanostructures on noble metals. Our study reveals the ultrafast dynamics of nanostructural formation on metals following femtosecond laser irradiation.

## JTUC19

**Q-Switched Operation of Yb-Fiber Laser Based on the Waveguide YAG:Cr<sup>3+</sup> Saturable Absorber**, Andrey Okhrimchuk<sup>1</sup>, Alexander Shestakov<sup>2</sup>, Vladimir Mezentsev<sup>1</sup>, Vladislav Dvoryrin<sup>3</sup>, Evgeny Sholokhov<sup>4</sup>, Ian Bennion<sup>1</sup>; <sup>1</sup>Aston Univ., UK, <sup>2</sup>ELS Co., Russian Federation, <sup>3</sup>Fiber Optics Res. Ctr., Russian Acad. of Sciences, Russian Federation, <sup>4</sup>General Physics Inst., Russian Acad. of Sciences, Russian Federation. The waveguide saturable absorber is inscribed by femtosecond pulses in YAG:Cr<sup>3+</sup> crystal. Q-switch operation of a fiber laser with such saturable absorber is demonstrated for the first time.

## JTUC20

**Femtosecond Laser Ablation on Dental Resins and Biomaterials - Analysis of Ablated Profile near an Interface Using Local Effective Intensity**, Gustavo Nicolodelli, M. M. Costa, V. S. Bagnato; Physical Inst. of São Carlos, Univ. of São Paulo, Brazil. The purpose of this study was to evaluate the progression of ablation, near an interface separating two distinct media. We have used a method that correlates ablation with intensity, obtained from surface ablation data.

For FIO/LS presentations on Tuesday, see pages 56-75.

Fairfield

NOTES

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Belvedere

AOIM

8:00 a.m.–9:45 a.m.

**AWA • Semiconductor Materials**  
*Martin M. Fejer; Stanford Univ., USA, Presider*

**AWA1 • 8:00 a.m. Invited**  
**Growth of Orientation-Patterned Semiconductors for Nonlinear Optical Frequency Conversion.** *Candace Lynch<sup>1</sup>, Vladimir Tassev<sup>1</sup>, George Bryant<sup>1</sup>, Cal Yapp<sup>2</sup>, David Bliss<sup>1</sup>; <sup>1</sup>AFRL, USA, <sup>2</sup>Solid State Scientific Corp., USA.* Millimeter-thick crystals of orientation-patterned GaAs have been grown using low pressure Hydride Vapor Phase Epitaxy for use in the generation of mid-IR and THz radiation.

**AWA2 • 8:30 a.m.**  
**All-Epitaxial Growth of Low-Loss, Large-Aperture Orientation-Patterned Gallium Arsenide (OPGaAs).** *Peter G. Schunemann, Lee Mohnkern, Alice Vera, Daniel C. Creeden, Thomas M. Pollak; BAE Systems Inc., USA.* Improved reactor design and optimized process parameters have enabled all-epitaxial growth of large diameter (3-inch), large aperture (>1.5mm thick), and low-loss (<0.005cm<sup>-1</sup>) quasi-phase-matched GaAs for powerful and efficient fiber-laser-pumped mid-IR OPOs.

**AWA3 • 8:45 a.m.**  
**Efficient Mid-Infrared Optical Parametric Oscillator Based on CdSiP<sub>2</sub>.** *Peter G. Schunemann<sup>1</sup>, Leonard A. Pomeranz<sup>1</sup>, Kevin T. Zawilski<sup>1,2</sup>, Jean Wei<sup>2</sup>, Leonel Gonzalez<sup>2</sup>, Shekhar Guha<sup>2</sup>, T. M. Polak<sup>1</sup>; <sup>1</sup>BAE Systems Inc., USA, <sup>2</sup>US AFRL/RXPJ, USA.* We report the first optical parametric oscillator based on the new mid-infrared nonlinear optical crystal CdSiP<sub>2</sub>. Pumping with a 2W, 1.99-micron Tm:YALO laser produced 340 mW average power output (signal + idler) at 27% slope.

**AWA4 • 9:00 a.m.**  
**Photoluminescence of Magnetic Ion Doped Nanostructured Indium Tin Oxide Films.** *Prasanta K. Biswas, Susmita Kundu, Sunirmal Jana, Nilanjana Das, Dipten Bhattacharya; Central Glass and Ceramic Res. Inst., India.* Sol-gel based undoped and Cr(III)-, Mn(II)-doped quantum sized (2.5-15nm) indium tin oxide films were prepared. Photoluminescence intensity at ~395 nm for free exciton gradually decreases with increase in nanoclustered size for all films except Mn(II)-doped.

Club Regent

JOINT

8:00 a.m.–10:00 a.m.

**JWA • Joint AO/COSI/SRS Session**  
*Rafael Piestun; Univ. of Colorado at Boulder, USA, Presider; Julian C. Christou; Gemini Observatory, USA, Presider*

**JWA1 • 8:00 a.m. Invited**  
**Innovative Adaptive Optics and Applications.** *Christopher Dainty; Natl. Univ. of Ireland, Galway, Ireland.* We explore the possible connections between adaptive optics and computational imaging.

**JWA2 • 8:30 a.m. Invited**  
**Adaptive Regression Kernels for Image/Video Restoration and Recognition.** *Peyman Milanfar; Univ. of California at Santa Cruz, USA.* I present a nonparametric framework for locally-adaptive signal processing and analysis. Without making strong assumptions about noise/signal models, the framework is applicable to many problems including denoising, upscaling, and object detection in images and video.

**JWA3 • 9:00 a.m. Invited**  
**Light Field Photography and Microscopy.** *Marc Levoy; Stanford Univ., USA.* Light fields represent radiance as a function of position and direction in space. I describe three systems for recording and generating light fields: A camera array, a handheld plenoptic camera, and a light field microscope.

Cupertino

NOTES

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Wednesday, October 14

## Fall OSA Optics & Photonics Congress

Fairfield

Belvedere

Club Regent

Cupertino



Thank you for attending  
FiO/LS/Fall Congress.

Look for your  
post-conference survey  
via email and let us  
know your thoughts on  
the program.

### AOIM

#### AWA • Semiconductor Materials—Continued

##### AWA5 • 9:15 a.m.

**Optoelectronic Properties of Germanium Islands Formed on Silicon Using Stranski-Krastanov Growth** by MBE, *Latha Nataraj, Nathan Sustersic, Matthew Coppinger, Felipe Gerlein, James Kolodzey, Sylvain G. Cloutier; Univ. of Delaware, USA.* We report on the optoelectronic properties of bulk Germanium islands formed on silicon by Molecular Beam Epitaxy. More specifically, we will discuss the role of strains and doping in favoring efficient light-emission at telecommunication wavelengths.

##### AWA6 • 9:30 a.m.

**Substantial Enhancement in the Optical Band Gap of ZnO Films Using Ca Dopant**, *Kamakhya Prakash Misra, Atul Srivastava, R. K. Shukla, Anchal Srivastava; Univ. of Lucknow, India.* 12.72% enhancement in the band gap of ZnO thin films has been obtained using Ca dopant for the first time. The films, deposited by sol-gel method, are nanocrystalline and highly transparent in the visible region.

### JOINT

#### JWA • Joint AO/COSI/SRS Session—Continued

##### JWA4 • 9:30 a.m. **Invited**

**Adaptive Complex Field Control with an Array of Phase-Locked Fiber Collimators**, *Mikhail Vorontsov, Thomas Weyrauch, A. Beresnev, Gary W. Carhart, Ling Liu, Konley Aschenbach; Inst. for Systems Res., Univ. of Maryland at College Park, USA.* We discuss development of a coherent fiber-array system composed of fiber collimators with built-in capabilities for adaptive control of the outgoing beam complex field characteristics including wavefront phase piston, tip and tilt and amplitude.

9:00 a.m.–12:00 p.m. **Export Regulation Fundamentals for the Optics and Photonics Industry**, *Sainte Claire Room, Sainte Claire Hotel*

10:00 a.m.–10:30 a.m. **Coffee Break**, *Imperial Ballroom, Fairmont Hotel*

10:00 a.m.–4:00 p.m. **Exhibit Hall Open**, *Imperial Ballroom, Fairmont Hotel*

### NOTES

For FiO/LS presentations on Wednesday, see pages 76-99.

## Fall OSA Optics & Photonics Congress

### Fairfield

#### AO

**10:30 a.m.–11:50 a.m.**

**AOWA • High Contrast Imaging and Point Spread Function Calibration II**

*Donald Gavel; Univ. of California at Santa Cruz, USA, Presider*

**AOWA1 • 10:30 a.m.**

**Broadband Correction for High Contrast Imaging Using Two Deformable Mirrors in Series**, Tyler D. Groff<sup>1</sup>, N. Jeremy Kasdin<sup>1</sup>, Laurent Pueyo<sup>2</sup>; <sup>1</sup>Princeton Univ., USA, <sup>2</sup>JPL, USA. Presented here is a wavefront control algorithm that achieves symmetric high contrast regions using electric field estimation from the science camera. This same algorithm is then extended to broadband suppression.

**AOWA2 • 10:50 a.m.**

**Effects of Aberrations and Specimen Structure in Confocal and Two-Photon Microscopy**, Richard D. Simmonds, Tony Wilson, Martin J. Booth; Dept. of Engineering Science, Univ. of Oxford, UK. Aberrations affect the image contrast of different specimen structures in microscopes. We have modeled and observed the intensity variation for different structures and the reduction in contrast of small objects within a large background signal.

**AOWA3 • 11:10 a.m.**

**The Electric Field Conjugation: A Unified Formalism for Wavefront Correction Algorithms**, Amir Giv'oni; JPL, USA. This paper introduces a unified formalism to describe many of the high contrast correction methods, namely, phase conjugation, classical speckle nulling and energy minimization. This unified formalism led to the Electric Field Conjugation (EFC) algorithm.

### Belvedere

#### AOIM

**10:30 a.m.–11:45 a.m.**

**AWB • Laser-Material Interactions**

*Peter Moulton; Q-Peak Inc., USA, Presider*

**AWB1 • 10:30 a.m.**

**Invited**

**Optical Hyperdoping; Using Lasers to Tailor the Optoelectronic Properties of Semiconductors**, Mark Winkler, Meng-Ju Sher, Yu-Ting Lin, Eric Mazur; Harvard Univ., USA. Irradiating silicon and other semiconductors with intense femtosecond pulses in the presence of certain gases dramatically alters fundamental properties of the semiconductor and offers a new avenue for the development of optoelectronic devices.

**AWB2 • 11:00 a.m.**

**Asymmetric Writing with Scanning Direction of Femtosecond Laser in Silica Glass**, Bertrand Pommellec, Matthieu Lancry, Jean Claude Poulin; Univ. of Paris Sud, France. Surface topography in femtosecond irradiated samples that part of the shearing of the laser tracks change its sign with the change in scanning direction (pen effect or asymmetric writing), part not.

**AWB3 • 11:15 a.m.**

**Femtosecond Laser Induced Micro-Structured Silver Containing Glass as an Engineered Nonlinear Optical Material**, Jiyeon Choi<sup>1,2,3</sup>, Matthieu Bellec<sup>2</sup>, Kevin Bourhis<sup>2</sup>, Arnaud Royon<sup>2</sup>, Lionel Canioni<sup>2</sup>, Thierry Cardinal<sup>3</sup>, Evelyne Fargin<sup>3</sup>, Vincent Rodriguez<sup>2</sup>, Marc Dussauze<sup>4</sup>, Aurelien Delestre<sup>2</sup>, Martin Richardson<sup>1</sup>; <sup>1</sup>Townes Laser Inst., College of Optics and Photonics, Univ. of Central Florida, USA, <sup>2</sup>CPMOH, Univ. Bordeaux, France, <sup>3</sup>ICMCB, CNRS UPR9048, Univ. Bordeaux, France, <sup>4</sup>ISM, Univ. Bordeaux, France. The creation mechanism of femtosecond laser produced silver microstructures in silver containing zinc phosphate glass is described. Laser induced depletion in a microstructure enables second harmonic generation exhibiting 2.44 times increased second-order susceptibility than quartz.

### Club Regent

#### COSI

**10:30 a.m.–12:00 p.m.**

**CWA • Polarization Sensing and Imaging**

*Kenny Kubala; FiveFocal, USA, Presider*

**CWA1 • 10:30 a.m.**

**Full Stokes Polarimetry in near Field**, Janghwan Bae, David P. Haefner, Sergey Sukhov, Aristide Dogariu; CREOL and FPCE, College of Optics and Photonics, Univ. of Central Florida, USA. An optimization technique is demonstrated to correct for inherent errors in near-field polarimetry. Stokes analysis of electromagnetic fields in reflection geometry can be optimized based on the local degree of polarization.

**CWA2 • 10:45 a.m.**

**Joint Estimation of Stokes Images and Aberrations from Phase-Diverse Polarimetric Measurements**, John R. Valenzuela, Jeffrey A. Fessler; Univ. of Michigan, USA. A penalized likelihood algorithm for joint estimation of Stokes images and aberrations for a four channel polarimeter utilizing phase diversity is derived. System optimization is investigated using a Cramer-Rao bound. Simulation results are presented.

**CWA3 • 11:00 a.m.**

**Polarization Estimation through Computational Sensing**, Wei Wang, Timothy J. Schulz; Dept. of Electrical and Computer Engineering, Michigan Technological Univ., USA. A computational approach for estimating the degree of polarization from the speckle fluctuations of total intensity data is proposed. Maximum likelihood estimators are studied, and their performances are compared to algebraic estimators and Cramer-Rao bounds.

**CWA4 • 11:15 a.m.**

**Snapshot Spectro-Polarimetry Using Disordered Materials**, Thomas Kohlgraf-Owens, Aristide Dogariu; CREOL, College of Optics and Photonics, Univ. of Central Florida, USA. An optical field is characterized by both its spectral and polarization content. Both properties may be simultaneously estimated by analyzing intensity measurements after the interaction of the field with a disordered material.

### Cupertino

#### JOINT AO/FiO

**10:30 a.m.–12:00 p.m.**

**JWB • Advances in Adaptive Optics Imaging of the Living Retina I**

*Stephen A. Burns; Indiana Univ., USA, Presider*

**JWB1 • 10:30 a.m.**

**Off-Axis Estimation of Ocular Aberrations via Scanning Shack-Hartmann Wavefront-Sensor**, Xin Wei, Larry N. Thibos; School of Optometry, Indiana Univ., USA. We developed a Scanning Hartmann Shack wavefront sensor by coupling the Shack Hartmann aberrometer with a scanning system. This instrument measures off-axis aberration of the human eye accurately and precisely in an efficient manner.

**JWB2 • 10:45 a.m.**

**Optimal Correction of Subject Prescription on an Adaptive Scanning System for Retinal Imaging**, David Merino, Austin Roorda; School of Optometry, Univ. of California at Berkeley, USA. The effect on image quality of subject's prescription on an AOSLO is assessed. Models considering different configurations available in literature have been studied. Factors to consider when implementing these configurations on real systems are addressed.

**JWB3 • 11:00 a.m.**

**Invited**

**Adaptive Optics Psychophysics**, Heidi Hofer; Univ. of Houston, USA. Adaptive optics allows imaging of individual photoreceptors *in vivo* and viewing of arbitrary stimuli nearly free of optical blur. Combining these abilities has created new opportunities to study the retinal and neural limits on vision.

Wednesday, October 14

For FIO/LS presentations on Wednesday, see pages 76-99.

## Fall OSA Optics & Photonics Congress

### Fairfield

#### AO

#### AOWA • High Contrast Imaging and Point Spread Function Calibration II—Continued

##### AOWA4 • 11:30 a.m.

Paramaterization of the Adaptive Optics Point Spread Function, *Julian C. Christou<sup>1</sup>, Jack D. Drummond<sup>2</sup>; <sup>1</sup>Gemini Observatory, USA, <sup>2</sup>AFRL, USA.* We demonstrate how an AO PSF can be parametrized by a model comprising Airy and Lorentzian components. We compare the PSF's measured FWHM with that estimated from the Airy component of the model fit.

### Belvedere

#### AOIM

#### AWB • Laser-Material Interactions—Continued

##### AWB4 • 11:30 a.m.

Doping Dependence of the Femtosecond Laser Damage Thresholds in Silica Glasses, *Matthieu Lancry<sup>1</sup>, Weijia Yang<sup>1</sup>, Bertrand Poumellec<sup>1</sup>, Peter Kazansky<sup>2</sup>; <sup>1</sup>Univ. of Paris Sud, France, <sup>2</sup>Optoelectronics Res. Ctr., Univ. of Southampton, UK.* We observed that the first threshold (i.e. permanent isotropic index change) is not significantly dependent on the doping whereas it is the contrary for the second threshold (i.e. permanent linear birefringence).

### Club Regent

#### COSI

#### CWA • Polarization Sensing and Imaging—Continued

##### CWA5 • 11:30 a.m.

Expanded Field of View Using Polarization Multiplexing, *Kyle M. Douglass<sup>1</sup>, Thomas Kohlgraf-Owens<sup>1</sup>, Jeremy Ellis<sup>1</sup>, Cristian Toma<sup>1</sup>, Abhijit Mahalanobis<sup>2</sup>, Aristide Dogariu<sup>1</sup>; <sup>1</sup>CREOL, College of Optics and Photonics, Univ. of Central Florida, USA, <sup>2</sup>Lockheed Martin Corp., USA.* We introduce and demonstrate experimentally a method for expanding the field of view of an imaging system by multiplexing polarimetrically encoded images and decoding them with a limited number of measurements.

##### CWA6 • 11:45 a.m.

Reconstructing Anisotropic Polarizabilities from a Single Polarimetric Measurement, *David P. Haefner, Sergey Sukhov, Aristide Dogariu; CREOL, College of Optics and Photonics, Univ. of Central Florida, USA.* We show how several probability distributions can be restored from the distribution of one single observable. The method is directly applicable to polarimetric measurements with limited control over the experimental conditions.

### Cupertino

#### JOINT AO/FiO

#### JWB • Advances in Adaptive Optics Imaging of the Living Retina I—Continued

##### JWB4 • 11:30 a.m.

Experimental Test of Simulated Retinal Images Using Adaptive Optics, *Pablo De Gracia, Carlos Dorronsoro, Lucie Sawides, Enrique Gamba, Susana Marcos; Inst. de Optica, Spain.* Ocular degradation is frequently assessed convolving images with the ocular point-spread-function, estimated from the wave-aberration. Comparisons of visual acuity measured using aberrated targets (viewed through adaptive-optics corrected aberrations) and under natural aberrations reveal consistent discrepancies.

##### JWB5 • 11:45 a.m.

High Resolution Wavefront Sensing and Mirror Control for Vision Science by Quantitative Phase Imaging, *Alaster J. Meehan, Phillip Bedgood, Brendan Allman, Keith A. Nugent, Andrew B. Metha; Univ. of Melbourne, Australia.* Quantitative Phase Imaging displays attractive features for ocular wavefront aberrometry. An adaptive-optics mirror control algorithm for ophthalmoscopy is demonstrated that takes advantage of its superior lateral resolution and similar accuracy compared to Hartmann-Shack systems.

12:00 p.m.–1:30 p.m. Lunch Break (on your own)

12:00 p.m.–1:30 p.m. JWC • Joint FiO/LS Poster Session, Imperial Ballroom, Fairmont Hotel

#### NOTES

For FiO/LS presentations on Wednesday, see pages 76-99.



## Fall OSA Optics & Photonics Congress

### Fairfield

#### AO

**1:30 p.m.–3:30 p.m.**

**AOWB • Control Algorithms and Architecture**

*Richard Dekany; Caltech, USA, Presider*

**AOWB1 • 1:30 p.m. Invited**

**Control Design and Turbulent Phase Models in Adaptive Optics: A State-Space Interpretation.** *Caroline Kulcsár<sup>1</sup>, Henri-François Raynaud<sup>1</sup>, Jean-Marc Conan<sup>2</sup>, Carlos Correia<sup>2</sup>, Cyril Petit<sup>2</sup>; <sup>1</sup>Univ. of Paris, France, <sup>2</sup>ONERA, France.* A unified LQG framework is used for analyzing explicit/implicit turbulence models for AO control. Behavior and modeling assumptions of several control laws are discussed, together with associated turbulent phase space reconstruction.

**AOWB2 • 2:00 p.m. Invited**

**Predictive Fourier Wavefront Control: Theory and Observational Results.** *Lisa Poyneer<sup>1</sup>, Marcos van Dam<sup>2</sup>, Jean-Pierre Véran<sup>3</sup>; <sup>1</sup>Lawrence Livermore Natl. Lab, USA, <sup>2</sup>W. M. Keck Observatory, USA, <sup>3</sup>Herzberg Inst. of Astrophysics, Canada.* Astronomical observations at Keck and Gemini validate the fundamental frozen-flow model of Predictive Fourier Control, a computationally efficient and adaptive Kalman filtering technique for predictive wavefront control in adaptive optics.



Thank you for attending  
FiO/LS/Fall Congress.  
Look for your  
post-conference survey  
via email and let us  
know your thoughts on  
the program.

### Belvedere

#### AOIM

**1:30 p.m.–3:15 p.m.**

**AWC • Oxide Crystals**

*Peter G. Schunemann; BAE Systems, USA, Presider*

**AWC1 • 1:30 p.m. Invited**

**Hydrothermal Solubility and Crystal Growth of KBe<sub>2</sub>BO<sub>3</sub>F<sub>2</sub> (KBBF).** *Joseph W. Kolis, Colin D. McMillen; Clemson Univ., USA.* KBBF was found to have a positive solubility dependence on temperature under hydrothermal conditions explored. The hydrothermal growth of KBBF single crystals up to 15 x 10 x 4 mm<sup>3</sup> in size is demonstrated.

**AWC2 • 2:00 p.m.**

**Light Absorption and Pyroelectrically Induced Optical Damage in Nominally Undoped and Magnesium-Doped Lithium Niobate Crystals.** *Judith R. Schwesyg<sup>1,2</sup>, Martin M. Fejer<sup>1</sup>, Matthias Falk<sup>3</sup>, Carsten Langrock<sup>1</sup>, Roger K. Route<sup>1</sup>, Chris R. Phillips<sup>1</sup>, Maria Claudia C. Kajiyama<sup>2</sup>, Dieter H. Jundt<sup>3</sup>, Karsten Buse<sup>3</sup>; <sup>1</sup>E. L. Ginzton Lab, Stanford Univ., USA, <sup>2</sup>Inst. of Physics, Univ. of Bonn, Germany, <sup>3</sup>Crystal Technology, Inc., USA.* This contribution deals with light absorption and temperature change induced optical damage due to the pyroelectric effect in undoped and magnesium-doped lithium niobate crystals. This effect is different from the photorefractive optical damage.

**AWC3 • 2:15 p.m.**

**Vapor-Transport Equilibrated Lightly MgO-Doped Lithium Niobate for Nonlinear Optics.** *Rostislav V. Roussev, Roger Route, Karel Urbanek, Robert L. Byer, Martin M. Fejer; Stanford Univ., USA.* We discuss several properties of lightly-MgO-doped near-stoichiometric lithium niobate in comparison with other ferroelectric nonlinear materials. Recent results on green light generation and potential advantages over 5 mol-% MgO-doped congruent lithium niobate are described.



### Club Regent

#### COSI

**1:30 p.m.–3:15 p.m.**

**CWB • Multi Aperture Systems**

*Ravindra Anant Athale; MITRE Corp., USA, Presider*

**CWB1 • 1:30 p.m. Invited**

**A Computational Compound Imaging System Based on Irregular Array Optics.** *Jun Tanida, Keiichiro Kagawa, Keita Fujii, Ryoichi Horisaki; Osaka Univ., Japan.* A computational imaging system using compound-eye optics with irregularity can improve imaging performance especially for long distance objects. The system characteristics are analyzed and an efficient algorithm is implemented using a graphic processing unit.

**CWB2 • 2:00 p.m. Invited**

**Multiscale Optical Systems.** *David Brady; Duke Univ., USA.* Cameras capturing gigapixel or even terapixel images are enabled by lens systems combining single aperture objectives with arrays of smaller scale processing optics.



### Cupertino

#### SRS

**1:30 p.m.–3:15 p.m.**

**SWA • Phase Retrieval Methods**

*Charles L. Matson; AFRL, USA, Presider*

**SWA1 • 1:30 p.m. Invited**

**Intensity Diffraction Tomography.** *Greg Gbur; Univ. of North Carolina at Charlotte, USA.* Over the past few years, a new technique known as intensity diffraction tomography has been developed which allows phase-less reconstruction of weakly scattering objects. We review the technique and discuss recent and future developments.

**SWA2 • 2:00 p.m.**

**Phase Retrieval with a Translating Lyot Stop Coronagraph Mask in the JWST.** *Thomas P. Zielinski, James R. Fienup; Institute of Optics, University of Rochester, USA.* A phase retrieval algorithm based on transverse translation diversity is investigated as a method for retrieving the phase of the field as seen through the JWST NIRCcam coronagraph using only existing hardware.

**SWA3 • 2:15 p.m.**

Paper Withdrawn

Wednesday, October 14

For FiO/LS presentations on Wednesday, see pages 76-99.

## Fall OSA Optics & Photonics Congress

### Fairfield

#### A O

#### AOWB • Control Algorithms and Architecture—Continued

##### AOWB3 • 2:30 p.m.

A Robust, Strehl Optimal Tomographic Wavefront Control Architecture for Multi-Conjugate and Multi-Object Laser Guide Star Adaptive Optics, *Luc Gilles, Brent L. Ellerbroek; Thirty Meter Telescope, Caltech, USA.* We report on a novel robust, Strehl optimal tomographic wavefront control architecture for multi-conjugate and multi-object laser guide star adaptive optics systems.

##### AOWB4 • 2:50 p.m.

Minimum Variance Control for the Woofer-Tweeter Concept, *Carlos Correia<sup>1,2</sup>, Henri-François Raynaud<sup>2</sup>, Caroline Kulcsár<sup>2</sup>, Jean-Marc Conan<sup>1</sup>; <sup>1</sup>ONERA, France, <sup>2</sup>L2TI, Univ. Paris XIII, France.* Optimal minimum-variance control of the double stage woofer-tweeter concept in adaptive optical systems is addressed using a LQG approach. Results are shown for an infinitely-fast tweeter coupled to a slower woofer.

##### AOWB5 • 3:10 p.m.

Bulk Wind Estimator Performance for AO Systems, *Luke C. Johnson, Donald T. Gavel, Donald M. Wiberg; Ctr. for Adaptive Optics, Univ. of California at Santa Cruz, USA.* We use the Cramer-Rao lower bound to find that the error in a bulk wind estimator is dependent on both the signal-to-noise ratio at the wavefront sensor and the spatial frequency content of the wavefront.

### Belvedere

#### A O I M

#### AWC • Oxide Crystals—Continued

##### AWC4 • 2:30 p.m. Invited

Periodically Poled Crystals for Mass-Market Applications, *Dieter Jundt; Crystal Technology, Inc., USA.* Optical properties of MgO:LN crystals grown from various melts were characterized. The gained knowledge allows production of wafers with reproducible quality and makes the material well suited for use in portable laser displays.

##### AWC5 • 3:00 p.m.

Epitaxial Nd:Sapphire Films - Candidate Solid State Laser Material for 1096nm Emission, *Raveen Kumaran<sup>1</sup>, Scott E. Webster<sup>1</sup>, Shawn Penson<sup>1</sup>, Wei Li<sup>1</sup>, Thomas Tiedje<sup>2</sup>; <sup>1</sup>Univ. of British Columbia, Canada, <sup>2</sup>Dept. of Electrical and Computer Engineering, Univ. of Victoria, Canada.* Nd:Sapphire films grown by molecular beam epitaxy produce sharp emission lines due to identical-site doping not observed in bulk sapphire crystals. The 1096 nm line is a lasing candidate with an Nd:YVO<sub>4</sub>-like emission cross section.

### Club Regent

#### C O S I

#### CWB • Multi Aperture Systems—Continued

##### CWB3 • 2:30 p.m.

Parallel Optics for Improving System Matrix Condition, *Iftach Klapp, David Mendlovic; Tel Aviv Univ., Israel.* In many cases space variant (SV) image restoration is limited by the optical system matrix condition. We show how to improve this figure by the means of parallel optics for SV and space invariant cases.

##### CWB4 • 2:45 p.m.

Aberration Correction in Multiscale Lenses, *Nathan Hagen, David J. Brady; Duke Univ., USA.* Multiscale lens design splits the field into subregions and attempts to correct the local wavefront error in each subfield rather than the global error. We review design principles and aberration theory underlying the approach.

##### CWB5 • 3:00 p.m.

Experimentally Validated High-Resolution Imaging with Adaptive Multi-Aperture Folded Architecture, *Vikrant R. Bhakta, Manjunath Somayaji, Scott C. Douglas, Marc P. Christensen; Southern Methodist Univ., USA.* We present experimental results of imaging and digital super-resolution in a multi-aperture miniature folded imaging architecture called *Panoptes*. We prove the feasibility of integrating folded imagers within a steerable multi-aperture framework while maintaining thin profiles.

### Cupertino

#### S R S

#### SWA • Phase Retrieval Methods—Continued

##### SWA4 • 2:30 p.m.

A New Phase-Correlation Based Gradient Registration Approach for Phase-Retrieval with DIC and DPC, *Shalin B. Mehta, Colin J. R. Sheppard; Optical Bioimaging Lab, Div. of Bioengineering, Natl. Univ. of Singapore, Singapore.* Phase-correlation robustly detects translations and rotations between images. We extend it for registration of images acquired using varied settings of differential interference contrast (DIC) and differential phase contrast (DPC) for phase-retrieval.

##### SWA5 • 2:45 p.m.

Paper Withdrawn

##### SWA6 • 3:00 p.m.

Using Phase Retrieval to Obtain the Complete Spatio-Temporal Intensity and Phase of Ultrashort Pulses, *Pamela R. Bowlan, Rick Trebino; School of Physics, Georgia Tech, USA.* Using a Gerchberg-Saxton-like phase retrieval algorithm, we recover the spatial phase from spatio-temporal measurements of focusing ultrashort pulses made using an unstable interferometer.

3:30 p.m.–4:00 p.m. Coffee Break/Exhibits, Imperial Ballroom, Fairmont Hotel

For FIO/LS presentations on Wednesday, see pages 76-99.

Fairfield

JOINT AO/FiO

4:00 p.m.–5:30 p.m.

**JWF • Advances in Adaptive Optics Imaging of the Living Retina II**

Jungtae Rha; Medical College of Wisconsin, USA, *Presider*

**JWF1 • 4:00 p.m. Invited**

**Adaptive Optics Instrumentation**, Stephen A. Burns<sup>1</sup>, Zhangyi Zhong<sup>1</sup>, Weiyao Zou<sup>1</sup>, Cong Deng<sup>1</sup>, Daniel Ferguson<sup>2</sup>, Xiaofeng Qi<sup>1</sup>; <sup>1</sup>Indiana Univ., USA, <sup>2</sup>Physical Sciences Inc., USA. Adaptive optics imaging of the retina presents unusual design challenges. AO instruments allowing steering of the beam across the retina, large amounts of defocus, and variable pupil sizes will be discussed.

**JWF2 • 4:30 p.m.**

**A New Ferrofluid Mirror for Vision Science Applications**, Denis Brousseau<sup>1</sup>, Ermanno F. Borra<sup>1</sup>, Anna M. Ritcey<sup>1</sup>, Melanie C. Campbell<sup>2</sup>, Simon Thibault<sup>1</sup>, Julie Drapeau<sup>1</sup>, Azadeh Naderian<sup>1</sup>; <sup>1</sup>Univ. Laval, Canada, <sup>2</sup>Univ. of Waterloo, Canada, <sup>3</sup>Guelph Waterloo Physics Inst., Canada. We present a novel ferrofluid mirror design which will result in an inexpensive adaptive optics element with large stroke for use in ophthalmic imaging.

**JWF3 • 4:45 p.m. Invited**

**Adaptive Optics-OCT Imaging of the Retina**, Donald T. Miller; Indiana Univ., USA. Ultrahigh resolution OCT with adaptive optics provides unprecedented 3-D resolution of the cellular retina *in vivo*. Here we investigate the utility of this instrument for imaging individual retinal nerve fiber bundles, retinal capillaries, and photoreceptors.

**JWF4 • 5:15 p.m.**

**First-Order Design of Off-Axis Reflective Ophthalmic Adaptive Optics Systems Using Afocal Telescopes**, Alfredo Dubra<sup>1</sup>, Armando Gómez-Vieyra<sup>2</sup>, Daniel Malacara-Hernández<sup>2</sup>, David R. Williams<sup>1</sup>; <sup>1</sup>Univ. of Rochester, USA, <sup>2</sup>Ctr. de Investigaciones en Optica AC, Mexico. Expressions for minimal astigmatism in image and pupil planes in off-axis reflective afocal telescopes formed by pairs of spherical mirrors are presented and evaluated for small angles of incidence.

Belvedere

AOIM

4:00 p.m.–5:30 p.m.

**AWD • Optical Ceramics**

Candace L. Lynch; AFRL, USA, *Presider*

**AWD1 • 4:00 p.m. Invited**

**Ceramic and Glass Ceramic Phosphors for Solid State Lighting**, Setsuhisa Tanabe; Kyoto Univ., Japan. Transparent ceramic and glass ceramic phosphors containing Ce<sup>3+</sup>-doped (Y,Gd)<sub>3</sub>Al<sub>5</sub>O<sub>12</sub> were prepared and luminescent characteristics pumped with blue LED were investigated. Transparent ceramic samples without Gd showed the best luminous efficacy as a white light source.

**AWD2 • 4:30 p.m. Invited**

**Current Status of Optical Ceramics**, Akio Ikesue; World Lab Co., Ltd., Japan. We demonstrated not only high-efficiency laser generation from polycrystalline Nd:YAG ceramics, but also succeeded in fabrication of high-functional ceramic lasers such as composite, fiber, micro-sphere, and single crystal by sintering method etc.

**AWD3 • 5:00 p.m. Invited**

**Control of Defects in Laser and Scintillator Ceramics**, Romain Gaume; Stanford Univ., USA. When properly designed, optical-ceramics can yield high performance lasers and scintillators. Controlling the defects in these materials is essential to these applications. Systematic composition studies in YAG-ceramics, investigated by novel optical characterization techniques, will be presented.

**6:30 p.m.–8:00 p.m.**  
**AIOM Welcome Reception,**  
*Regency Ballroom I, Fairmont Hotel*

Club Regent

Cupertino

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Wednesday, October 14

For FiO/LS presentations on Wednesday, see pages 76-99.

## Fall OSA Optics & Photonics Congress

### Fairfield

#### A O

**8:00 a.m.–9:40 a.m.**

**AOTa • Adaptive Optics Systems II**

*Donald T. Miller; Indiana Univ., USA, Presider*

**AOTa1 • 8:00 a.m.**

**Remove Optical Vortices Using Continuous Phase Modulation**, *Mingzhou Chen, Chris Dainty; Applied Optics, School of Physics, Natl. Univ. of Ireland, Galway, Ireland.* We introduce a method to remove optical vortices from strong scintillated laser beams by vortex dipole annihilation with a continuous phase modulation. Numerical simulations and an experimental setup are also presented.

**AOTa2 • 8:20 a.m.**

**Experimental Validation of LTAO and MCAO Configurations with Optimal Control**, *Anne Costille<sup>1</sup>, Cyril Petit<sup>1</sup>, Jean-Marc Conan<sup>1</sup>, Caroline Kulcsár<sup>2</sup>, Henri-Francois Raynaud<sup>2</sup>, Thierry Fusco<sup>3</sup>; <sup>1</sup>ONERA, France, <sup>2</sup>LETI, Univ. Paris XIII, France.* We present an experimental validation of LTAO and MCAO concepts in closed-loop in laboratory. We compare the performance of LQG based optimal control and classic integrator based control in closed-loop for these configurations.

**AOTa3 • 8:40 a.m.**

**Performance Assessment of the Gemini South near Infrared Coronagraphic Imager (NICI) Adaptive Optics System**, *Christ Ftaclas, Mark Chun, Zahed Wahhaj; Inst. for Astronomy, Univ. of Hawaii, USA.* We describe the NICI adaptive correction system and characterize its spatial and temporal correction spectra by combining multi-wavelength on-sky images, phase inversion on test source images and system capture data.

**AOTa4 • 9:00 a.m.**

**Building an Open Loop Interaction Matrix for VOLT**, *David R. Andersen, Michael Fischer, Jean-Pierre Véran; Herzberg Inst. of Astrophysics, Natl. Res. Council Canada, Canada.* We explore a method for building an interaction matrix for VOLT (the Victoria Open Loop Testbed) that bypasses problems associated with optically aligning an open loop wave-front sensor to the deformable mirror.

**AOTa5 • 9:20 a.m.**

**Thermal Compensation in the LIGO Gravitational-Wave Interferometers**, *Phil Willems; LIGO Project, Caltech, USA.* Gravitational-wave (GW) interferometers, such as LIGO, are susceptible to thermal aberrations that impair their performance. We describe thermal compensation in the LIGO GW interferometers, as well as future plans toward a fully adaptive system.

**10:00 a.m.–10:30 a.m. Coffee Break, Regency and Imperial Ballroom Foyer, Fairmont Hotel**

### Belvedere

#### A I O M

**8:00 a.m.–9:30 a.m.**

**AThA • Nanostructured Materials**

*Shaya Y. Fainman; Univ. of California at San Diego, USA, Presider*

**AThA1 • 8:00 a.m. Invited**

**Optical Metamaterials**, *Xiang Zhang; Univ. of California at Berkeley, USA.* Abstract not available.

**AThA2 • 8:30 a.m.**

**Preparation of Metallo-Dielectric Diffractive and Plasmonic Structures via Self-Assembly**, *Filip Novotný, Jan Proška, Ivan Richter, Pavel Fiala; Czech Technical Univ. in Prague, Czech Republic.* Self-assembly is a prospective and cost-effective way how to obtain three-dimensional metallo-dielectric diffractive and plasmonic structures. We show utilization of self-assembly principle in preparation of highly ordered sub wavelength structures.

**AThA3 • 8:45 a.m.**

**Colloidal Metallic Nanoparticles in Ionic Liquids: New Systems for Nonlinear Optical Applications**, *Cassio E. A. Santos<sup>1</sup>, Marcio A. R. Alencar<sup>1</sup>, Luciane F. Oliveira<sup>2</sup>, Carla W. Scheeren<sup>2</sup>, Jairton Dupont<sup>2</sup>, Jandir M. Hickmann<sup>1</sup>; <sup>1</sup>Univ. Federal de Alagoas, Brazil, <sup>2</sup>Univ. Federal do Rio Grande do Sul, Brazil.* Large nonlinear optical responses were observed of Ag and Au colloidal nanoparticles dispersed in ionic liquids. These hybrid organic-metallic materials are promising candidates to the development of nonlinear optical applications.

**AThA4 • 9:00 a.m.**

**Photoluminescence Modification in Self-Assembled Fluorescent 3-D Photonic Crystals**, *Harish N. Swaha Krishnamoorthy<sup>1</sup>, Jung Hun Song<sup>2</sup>, Ilona Kretzschmar<sup>2</sup>, Vinod M. Menon<sup>1</sup>; <sup>1</sup>Dept. of Physics, Queens College of CUNY, USA, <sup>2</sup>Dept. of Chemical Engineering, City College of CUNY, USA.* Using time resolved luminescence measurements, we report 10% increase in spontaneous emission lifetime from a self-assembled 3-D photonic crystal fabricated using fluorescent polystyrene spheres with refractive index contrast of ~0.57.

**AThA5 • 9:15 a.m.**

**Far Field and near Field Properties of Triangular Metal Nanoparticle and Nanopatterns of 3-Fold Rotational Symmetry**, *Kin Hung Fung, Pratik Chaturvedi, Anil Kumar, Keng H. Hsu, Nicholas X. Fang; Univ. of Illinois at Urbana-Champaign, USA.* We study the relation between near-field enhancement and far-field extinction spectra of three-fold rotationally symmetric nanopatterns consisting of metal nano-triangles. Our symmetry analysis benefits the understanding of the plasmon resonance phenomena in these nanopatterns.

### Club Regent

#### C O S I

**8:00 a.m.–10:00 a.m.**

**CThA • New Imaging Concepts**

*Joseph N. Mait; ARL, USA, Presider*

**CThA1 • 8:00 a.m. Invited**

**Imaging Systems with Extreme Form Factors**, *James R. Leger, J. Burch; Univ. of Minnesota, USA.* We discuss theoretical and practical aspects of far-field imaging systems that are completely contained on a plane or a line. Computational imaging can potentially enhance the resolution, optical throughput, and color correction of these systems.

**CThA2 • 8:30 a.m. Invited**

**Nonlinear Imaging**, *Alexandre S. Goy, Demetri Psaltis; Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland.* We address the general problem of imaging through Kerr focusing media when filamentation occurs. Amplification of weak phase patterns is possible through such media. This may find application in surface characterization or evanescent waves detection.

**CThA3 • 9:00 a.m.**

**Transport of Intensity Imaging with Higher Order Derivatives**, *Laura Waller, Lei Tian, George Barbastathis; MIT, USA.* We introduce and test a method for improving the accuracy of phase retrieval based on transport of intensity (TIE), by using intensity measurements at multiple planes to estimate and remove artifacts from higher-order axial derivatives.

**CThA4 • 9:15 a.m.**

**Localization Precision of Three-Dimensional Superresolution Fluorescence Imaging Using a Double-Helix Point Spread Function**, *Matthew Lew, Michael A. Thompson, Majid Badieirostami, W. E. Moerner; Stanford Univ., USA.* We localize a diffraction-limited fluorescent bead to 10-20 nm in three dimensions using a double-helix point spread function and use this method to track a fluorescently tagged protein in three dimensions within a live cell.

**CThA5 • 9:30 a.m.**

**Coding and Signal Inference in Compressive Holography**, *Kerkil Choi, Ryoichi Horisaki, Daniel L. Marks, David J. Brady; Duke Univ., USA.* Compressive sensing enables highly accurate signal reconstruction from fewer measurements than the number of samples in a signal to be estimated. This paper describes a theoretical framework for 3-D tomographic reconstruction from 2-D holographic measurements.

**CThA6 • 9:45 a.m.**

**Experimental Demonstrations of Compressive Holography**, *Sehoon Lim<sup>1</sup>, Ryoichi Horisaki<sup>2</sup>, Kerkil Choi<sup>1</sup>, Daniel L. Marks<sup>1</sup>, David J. Brady<sup>1</sup>; <sup>1</sup>Duke Univ., USA, <sup>2</sup>Osaka Univ., Japan.* We demonstrate 3-D object reconstruction from a single 2-D data plane using compressive holography in Gabor and Leith-Upatneiks geometries.

*For FIO/LS presentations on Thursday, see pages 100-115.*

## Fall OSA Optics & Photonics Congress

### Fairfield

#### A O

**10:30 a.m.–11:30 a.m.**

**AOThB • System Simulation and Modeling II**

*Miska LeLouarn; European Southern Observatory, France, Presider*

**AOThB1 • 10:30 a.m.**

**An Auto-Regressive Model to Create Seeing Time Series**, *Glen Herriot<sup>1,2</sup>, Brent L. Ellerbroek<sup>2</sup>, David A. Andersen<sup>1</sup>, Matthias Schoeck<sup>2</sup>, Tony Travoignon<sup>2</sup>; <sup>1</sup>Herzberg Inst. of Astrophysics, Natl. Res. Council Canada, Canada, <sup>2</sup>Thirty Meter Telescope, Caltech, USA.* We present an auto-regressive model of atmospheric seeing versus time, based on three years' data from TMT candidate site Cerro Armazonas. The model reproduces time histories of  $r_0$ , including a floor, stable stretches, and excursions.

**AOThB2 • 10:50 a.m.**

**Improving the Accuracy of the Ultra Fast Kolmogorov Phase Screen Generator**, *Vinay B. Sriram<sup>1</sup>, David Kearney<sup>2</sup>, Ross Frick<sup>2</sup>, Oskar Mencer<sup>1</sup>; <sup>1</sup>Imperial College London, UK, <sup>2</sup>Univ. of South Australia, Australia.* In this paper we characterize the ultra fast phase screen generator's accuracy for high turbulence levels. We then present modifications which preserve the performance and improve the accuracy of the algorithm at high turbulence levels.

**AOThB3 • 11:10 a.m.**

**Hybrid Adaptive Optics Systems with Discrete-Time Atmospheric Turbulence Models**, *Douglas P. Looze; Univ. of Massachusetts at Amherst, USA.* A discrete-time model of an AO system that incorporates the intra-frame effects of the DM but uses a discrete-time model of the atmospheric effects is presented.



Thank you for attending  
FiO/LS/Fall Congress.  
Look for your  
post-conference survey  
via email and let us  
know your thoughts on  
the program.

### Belvedere

#### A I O M

**10:30 a.m.–12:00 p.m.**

**ATHB • Applications of Nanophotonics**

*Presider to Be Announced*

**ATHB1 • 10:30 a.m.** Invited

**Nanophotonics for Information Systems**, *Yeshiahu Fainman, Kazuhiro Ikeda, Dawn Tan; Univ. of California at San Diego, USA.* We explore lithography to pattern metals-dielectrics-semiconductors on various scales opening new capabilities in optics, where functionality and properties are enabled by the structure- composition and not just by the intrinsic properties of a bulk material.

**ATHB2 • 11:00 a.m.**

**All-Optical Magnetometer Based on Magnetite Core-Polymer Shell Nanocomposite Material**, *Alejandra Lopez-Santiago, Palash Gangopadhyay, Jayan Thomas, Robert A. Norwood, Nasser Peyghambarian; Univ. of Arizona, USA.* An all-optical magnetometer has been constructed based on magnetite core polymer shell nanocomposite material. A noise equivalent magnetic field sensitivity of 5 nT/√Hz was observed using a 1 μT 500 Hz control magnetic field.

**ATHB3 • 11:15 a.m.**

**Selected Applications of Atomic Layer Deposition Dielectric Nanolaminates as Functional Optical Coatings**, *Adriana Szeghalmi<sup>1</sup>, Michael Helgert<sup>2</sup>, Robert Brunner<sup>2</sup>, Mario Bretschneider<sup>3</sup>, Stephan Senz<sup>1</sup>, Ulrich Gösele<sup>1</sup>, Mato Knez<sup>1</sup>; <sup>1</sup>Max Planck Inst. of Microstructure Physics, Germany, <sup>2</sup>Carl Zeiss AG, Germany, <sup>3</sup>IFG Inst. for Scientific Instruments GmbH, Germany.* The paper discusses optical applications of atomic layer deposition. X-ray mirrors, antireflective coatings and band-pass filters were made for the visible spectral region. Coatings applied to two-dimensional shallow gratings produced tunable guided mode resonance filters.

**ATHB4 • 11:30 a.m.**

**Degenerate Two-Beam Interaction by Hologram Grating in Nano-Colloid**, *Sergej Mikhonov<sup>1</sup>, Rudolph Litvinov<sup>1</sup>, Eugene Ageev<sup>1</sup>, Sergei Shestov<sup>2</sup>, Leonid Zagrebin<sup>2</sup>; <sup>1</sup>Tomsk State Univ. of Control Systems and Radioelectronics, Russian Federation, <sup>2</sup>Ctr. of Cell-Information Medicine, Ltd., Russian Federation.* Degenerate two-beam interaction on the light wavelength in colloid with spherical nano-particles is considered. The contributions of gradient light force and light scattering in local and non-local components of the dynamic grating are carried out.

**ATHB5 • 11:45 a.m.**

**Time Domain Numerical Observation of Superluminal Pulse in Photonic Band-Gap Structures**, *Tingyi Gu, Chun Jiang; Shanghai Jiaotong Univ., China.* In this paper, we systematically study the time domain properties of superluminal light in 1-D and 2-D band-gap photonic crystals, including band diagram, transmission, group velocity, energy velocity and dwell time.

### Club Regent

#### C O S I

**10:30 a.m.–12:15 p.m.**

**CThB • Pupil Encoding Methods**

*Aristide Dogariu; CREOL, College of Optics and Photonics, Univ. of Central Florida, USA*

**CThB1 • 10:30 a.m.** Invited

**Rewriting the Rules of Imaging Design in the New Era of Electro-Optics**, *David G. Stork; Ricoh Innovations, USA.* Centuries-old rules of optics design and informal rules-of-thumb are becoming obsolete in the new era when digital image processing is included into the data path.

**CThB2 • 11:00 a.m.**

**Pupil Phase Encoding for Mitigation of Laser-Induced Saturation in Imaging Sensors**, *Joseph van der Gracht<sup>1</sup>, Lei Zhang<sup>2</sup>, Todd Torgersen<sup>3</sup>, Paul Pauca<sup>3</sup>; <sup>1</sup>HoloSpex, Inc., USA, <sup>2</sup>Agiltron, Inc., USA, <sup>3</sup>Wake Forest Univ., USA.* Wave-front coding can mitigate the harmful effects of unwanted laser illumination. The pupil phase element spreads out the focused beam and avoids detector saturation. We consider different classes of phase masks for this application.

**CThB3 • 11:15 a.m.**

**Extending Depth-of-Field: Spherical Coding Versus Asymmetric Wavefront Coding**, *Dirk Robinson, David G. Stork; Ricoh Innovations, USA.* We compare the image quality between asymmetric wavefront codings and the simple-to-manufacture spherical aberration over an extended focal range. We verify and explain the superior performance of the spherical aberration via simulation results.

**CThB4 • 11:30 a.m.**

**Experimental Validation of Extended Depth-of-Field Imaging via Spherical Coding**, *Michael D. Robinson<sup>1</sup>, Vikrant Bhakta<sup>2</sup>; <sup>1</sup>Ricoh Innovations, USA, <sup>2</sup>Souther Methodist Univ., USA.* We designed and built a spherical coded triplet imaging system and experimentally verified its extended depth-of-field imaging capabilities.

**CThB5 • 11:45 a.m.**

**Computational Differential Interference Contrast (DIC) Microscopy for Quantitative Imaging**, *Chrysanthe Preza<sup>1</sup>, Joseph A. O'Sullivan<sup>2</sup>; <sup>1</sup>Univ. of Memphis, USA, <sup>2</sup>Washington Univ. in St. Louis, USA.* We demonstrate that application of a regularized alternating minimization algorithm to DIC microscopy images results in quantitative imaging of the specimen's phase and amplitude information. The alternating minimization algorithm's robustness to noise is investigated.

**CThB6 • 12:00 p.m.**

**Off-Axis Sensor Modulation Transfer Function Measurement Using Band-Limited Laser Speckle**, *Xi Chen, Doug Fetting, Bob Gravelle, Donna Cao, Gennadiy Agranov; Aptina Imaging, USA.* We present a new methodology for measurement of off-axis sensor modulation transfer function using band-limited laser speckle and two-dimensional generalized sampling theorem. The effect of chief ray angle on sensor modulation transfer function is studied.

**12:00 p.m.–1:30 p.m. Lunch Break** (on your own)

For FiO/LS presentations on Thursday, see pages 100-115.

Fairfield

AO

1:30 p.m.–3:10 p.m.

**AOTHC • Wavefront Sensing II**

*Mikhail Vorontsov; Inst. for Systems Res., USA, Presider*

**AOTHC1 • 1:30 p.m.**

**A Linear Model for Shack-Hartmann Sensors**, Brent L. Ellerbroek; *Thirty Meter Telescope Project, Caltech, USA*. We describe a linear model for Shack-Hartmann sensors. For small wave-front aberrations, the model accounts for the effects of physical optics, extended sources, pixel sampling, and the pixel weights used to compute the gradients.

**AOTHC2 • 1:50 p.m.**

**New Modal Wavefront Sensing Employing Binary Basis Functions**, Feiling Wang<sup>1</sup>, Christopher Spivey<sup>1</sup>, Guixiong Zhong<sup>2</sup>, Yuchuan Chen<sup>2</sup>, Jing Zhao<sup>2</sup>; <sup>1</sup>Alethus LLC, USA, <sup>2</sup>Agiltron Inc., USA. Recently, a modal wavefront sensing method, with the use of binary basis functions, was proposed. In this paper we examine some of the optical arrangements for its applications and present experimental results obtained.

**AOTHC3 • 2:10 p.m.**

**Direct Wavefront Sensing in Adaptive Microscopy**, Saad A. Rahman, Alexander Jesacher, Tony Wilson, Martin J. Booth; *Dept. of Engineering Science, Univ. of Oxford, UK*. Aberrations in high resolution microscopes can be corrected using adaptive optics. We investigate theoretically and experimentally wavefront sensing using backscattered light and show its benefits and limitations for application in adaptive confocal and multiphoton microscopes.

**AOTHC4 • 2:30 p.m.**

**Scene Based Wavefront Sensing for Figure Control of Airborne and Space Optics**, Allan Wirth, Andrew Jankevics, Frank Landers; *Xinetics / Northrop Grumman, USA*. Correlation wavefront sensing is applied to the problem of figure and alignment maintenance of imaging systems on airborne and space platforms. The design of the system and results of laboratory testing are presented.

Belvedere

AIOM

1:30 p.m.–3:15 p.m.

**ATHC • Glass Synthesis and Properties**

*Jonathan Knight; Univ. of Bath, UK, Presider*

**ATHC1 • 1:30 p.m. Invited**

**Glass-Imprinting for Optical Device Fabrication**, Junji Nishii; *Hokkaido Univ., Japan*. Development of thermally durable SiC molds enabled us to imprint fine periodic structures onto a oxide glass surface. Antireflection lenses, quarter wave plates operating in visible wavelength region, could be fabricated.

**ATHC2 • 2:00 p.m.**

**Microlens Array Laser Sintered on Glass Sheets**, Changyi Lai, Vitor M. Schneider; *Corning, Inc., USA*. A new technique based on the laser vitrification of cordierite ceramic powders is used to fabricate microlenses arrays on a glass substrate. Crack free quasi-spherical lenses with good optical and surface quality are demonstrated.

**ATHC3 • 2:15 p.m.**

**Low-Loss Tin Silica Glass-Ceramic Waveguides Doped by Rare-Earth Elaborated by Sol-Gel Route**, Christophe Kinowski<sup>1</sup>, Odile Robbe-Cristini<sup>1</sup>, Van T. T. Tran<sup>1</sup>, Katarzyna Woznica-Raulin<sup>1</sup>, Sylvia Turrell<sup>1</sup>, Bruno Capoen<sup>2</sup>, Mohamed Bouazaoui<sup>2</sup>, Franck Beclin<sup>2</sup>, Maurizio Ferrari<sup>3</sup>, Shivakiran N. B. Bhaktha<sup>4,5</sup>; <sup>1</sup>LASIR, France, <sup>2</sup>PhLAM, France, <sup>3</sup>LSPES, France, <sup>4</sup>CSMFO Lab, Italy, <sup>5</sup>Dept. di Fisica, Univ. di Trento, Italy. We present recent results obtained in developing glass-ceramic waveguide based on the sol-gel techniques and activated by rare earth ions. The fabrication protocols as well as the spectroscopic assessment are reported.

**ATHC4 • 2:30 p.m. Invited**

**Progress on the Fabrication of On-Chip, Integrated Chalcogenide Glass (ChG)-Based Sensors**, Laetitia Petit<sup>1</sup>, Nathan Carlie<sup>1</sup>, Bogdan Zdyrko<sup>1</sup>, Igor Luzinov<sup>1</sup>, Kathleen Richardson<sup>1</sup>, Juejun Hu<sup>2</sup>, Anu Agarwal<sup>2</sup>, Lionel Kimerling<sup>2</sup>, Troy Anderson<sup>3</sup>, Martin Richardson<sup>3</sup>; <sup>1</sup>Clemson Univ., USA, <sup>2</sup>MIT, USA, <sup>3</sup>CREOL, Univ. of Central Florida, USA. Optical sensor technologies for chemical detection have advanced over the past decade. We report progress on the material design, fabrication and performance of high-Q chalcogenide glass resonators utilizing cavity-enhancement for high sensitivity MIR chemical sensing.

Club Regent

COSI

1:30 p.m.–3:00 p.m.

**CTHC • Imaging through Complex Media and Spectroscopy**

*Joe Van der Gracht; Holosplex, Inc., USA, Presider*

**CTHC1 • 1:30 p.m.**

**Sub-Surface Interferometric near-Field Tomography**, Dana C. Kohlgraf-Owens, David Haefner, Sergey Sukhov, Aristide Dogariu; *CREOL, College of Optics and Photonics, Univ. of Central Florida, USA*. We describe a straightforward method to recover the sub-surface topography of coated samples with sub-diffraction limited resolution. Experimental verification is accomplished using a near-field scanning optical microscope (NSOM) operated in dual mode.

**CTHC2 • 1:45 p.m.**

**Imaging through the Air-Water Interface**, Andrey V. Kanaev<sup>1</sup>, John R. Ackerman<sup>1</sup>, Erin F. Fleet<sup>2</sup>, Dean A. Scribner<sup>3</sup>; <sup>1</sup>Global Strategies Group N A Inc., USA, <sup>2</sup>NRL, USA, <sup>3</sup>Northrop Grumman Mission Systems, USA. Imaging through turbulent air-water interface presents an arduous task and recently has attracted considerable attention. We studied a solution based on atmospheric distortion correction technique and proposed to augment the approach with polarimetric imaging.

**CTHC3 • 2:00 p.m.**

**Video Enhancement through Automated Lucky-Region Fusion from a Stream of Atmospherically-Distorted Images**, Mathieu Aubailly<sup>1</sup>, Mikhail A. Vorontsov<sup>2</sup>, Gary W. Carhart<sup>2</sup>, Michael T. Valley<sup>2</sup>; <sup>1</sup>Univ. of Maryland, USA, <sup>2</sup>ARL, USA, <sup>3</sup>Sandia Natl. Labs, USA. An automated video enhancement technique based on "lucky-region" fusion is presented. The fusion parameter is automatically adjusted to imaging conditions based on analysis of source images. The technique is demonstrated experimentally on atmospherically-distorted image sets.

**CTHC4 • 2:15 p.m.**

**Computational Depth-Variant Imaging for Quantitative Fluorescence Microscopy**, Vimeetha Myneni, Chrysanthe Preza; *Univ. of Memphis, USA*. We show a performance analysis of a Depth-Variant Expectation Maximization algorithm previously developed for fluorescence microscopy concluding that a small number of point spread functions can be used for an accurate estimation result.

**CTHC5 • 2:30 p.m.**

**Adaptive Feature-Specific Spectroscopy**, Dineshbabu V. Dinakarababu, Michael E. Gehm; *Univ. of Arizona, USA*. We introduce the Adaptive Feature-Specific Spectrometer (AFSS), a chemical-detection methodology that uses an adaptively reconfigured set of signal projections to drastically shorten time-to-identification in low-SNR situations.

For FIO/LS presentations on Thursday, see pages 100-115.

Fall OSA Optics & Photonics Congress

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**AOThC • Wavefront Sensing II—Continued**

**AOThC5 • 2:50 p.m.**

**Data Compression for Nearly-Periodic Data**, *Amos Talmi<sup>1</sup>, Erez N. Ribak<sup>2,3</sup>,<sup>1</sup>Timi Technologies Ltd., Israel, <sup>2</sup>Technion-Israel Inst. of Technology, Israel, <sup>3</sup>Applied Optics, School of Physics, Natl. Univ. of Ireland, Galway, Ireland.* Shape from shade and Hartmann sensing require plenty of pixels for measurement, but many fewer can be analyzed, saving space and time. We found a method to compress large-format camera outputs with minimal accuracy loss.

**AThC • Glass Synthesis and Properties—Continued**

**AThC5 • 3:00 p.m.**

**Ultrafast Dephasing Time Measurements in a Niobic-Silicate Nanocomposite Using Incoherent Light**, *Euclides C. L. Almeida<sup>1</sup>, Leonardo de S. Menezes<sup>1</sup>, Cid B. de Araújo<sup>1</sup>, Andrey A. Lipovskii<sup>2</sup>; <sup>1</sup>Univ. Federal de Pernambuco, Brazil, <sup>2</sup>St. Petersburg State Technical Univ., Russian Federation.* We report on the measurement of a short optical dephasing time (~ 20 fs) in a glass-ceramic containing sodium niobate nanocrystals using degenerate four-wave mixing with incoherent light. The dephasing mechanisms are discussed.

**CThC • Imaging through Complex Media and Spectroscopy—Continued**

**CThC6 • 2:45 p.m.**

**Compressive Sensing Echelle Spectrometer**, *Lina Xu, Ting Sun, Kevin Kelly; Rice Univ., USA.* A compressive sensing echelle spectrometer has been built. By employing compression, we reconstructed the two dimensional echelle spectrums using the single photodetector with far fewer measurements when compared to raster scanning.

**3:30 p.m.–4:00 p.m. Coffee Break**, *Regency and Imperial Ballroom Foyer, Fairmont Hotel*

NOTES

For FiO/LS presentations on Thursday, see pages 100-115.

## Fall OSA Optics & Photonics Congress

### Fairfield

#### A O

**4:00 p.m.–5:30 p.m.**

**AOTHD • Wavefront Correction Technology**

*Malcolm Northcott; Aoptix Technologies, USA, Presider*

**AOTHD1 • 4:00 p.m. Invited**

**MEMS Wavefront Correctors**, *Thomas Bifano*<sup>1,2</sup>; <sup>1</sup>*Boston Univ., USA*, <sup>2</sup>*Boston Micromachines Corp., USA*. Deformable mirrors made using MEMS processes have become commodity products. Newer capabilities include nanometer-scale predictive open-loop control and scaling to >4000 actuators, while maintaining exceptionally low size, weight, and power.

**AOTHD2 • 4:20 p.m.**

**Optically Addressed MEMS Coupled Photodetector Spatial Light Modulator**, *Bahareh Haji-Saeed*<sup>1</sup>, *Jed Khoury*<sup>1</sup>, *Kenneth Vaccaro*<sup>1</sup>, *John Kierstead*<sup>2</sup>, *Charles Woods*<sup>1</sup>, *Andrew Davis*<sup>2</sup>; <sup>1</sup>*Sensors Directorate, AFRL, USA*, <sup>2</sup>*Solid State Scientific Corp., USA*. We are in the process of developing an all optically driven deformable mirror device through integration of an array of photodetectors with an array of MEMS deformable mirrors.

**AOTHD3 • 4:50 p.m.**

**Piezo Array Deformable Mirrors and New Associated Technologies: Spherical Shape and Tip/Tilt Mount**, *Jean-Christophe Sinquin*, *Jean-Marie Lurçon*, *Pierre Morin*; *CILAS, France*. We recall the principles, performances and main technical advantages of CILAS Piezo Array Deformable Mirrors. Then we present two new associated technologies: the possible spherical shape of these mirrors and specific tip/tilt mount.

**AOTHD4 • 5:10 p.m.**

**Fast, Robust Parameter Estimation and Open-Loop Control of Point-Actuated, Continuous-Facesheet Deformable Mirrors**, *Curtis R. Vogel*<sup>1</sup>, *Glenn Tyler*<sup>2</sup>, *Rodolphe Conan*<sup>3</sup>, *Celia Blain*<sup>3</sup>; <sup>1</sup>*Montana State Univ., USA*, <sup>2</sup>*Optical Sciences Co., USA*, <sup>3</sup>*Univ. of Victoria, Canada*. We introduce robust order N algorithms to estimate model parameters and control DMs in open loop based on the Vogel-Yang model for deformable mirrors appearing in JOSA-A, 23, pp. 1074-1081, 2006.

### Belvedere

#### A I O M

**4:00 p.m.–6:00 p.m.**

**ATHD • Optical Fibers**

*Kathleen Richardson; Clemson Univ., USA, Presider*

**ATHD1 • 4:00 p.m. Invited**

**What's the Use of Silica Microstructured Fibers?** *Jonathan Knight; Univ. of Bath, UK*. Photonic crystal materials offer opportunities to overcome the limitations of naturally-occurring optical materials. Recent developments in photonic crystal fibers formed from silica and air offer several examples.

**ATHD2 • 4:30 p.m. Invited**

**Chalcogenide Glass Fibers and Their Applications**, *Ishwar Aggarwal; NRL, USA*. IR transmitting chalcogenide glasses and fibers are being developed for numerous military, commercial and biomedical applications in the infrared region. Latest results regarding fabrication of the fibers, fiber properties and their applications will be presented.

**ATHD3 • 5:00 p.m.**

**Optical Properties of Chalcogenide-Filled Silica-Air PCF**, *Markus A. Schmidt*<sup>1</sup>, *Nicolai Granzow*<sup>1</sup>, *Lothar Wondraczek*<sup>2</sup>, *Philip St. J. Russell*<sup>1</sup>; <sup>1</sup>*Max Planck Inst. for the Science of Light, Germany*, <sup>2</sup>*Dept. of Materials Science and Engineering, Univ. of Erlangen-Nuremberg, Germany*. Sub-micron strands of Ge<sub>3</sub>As<sub>52</sub>S<sub>45</sub> glass are incorporated into hollow channels in silica-air fibers. Band gap guidance is observed in a completely filled PCF. Coupling is observed between conventional fiber core and an adjacent chalcogenide strand.

**ATHD4 • 5:15 p.m.**

**Highly Efficient 1300 nm Emission in Bismuth Doped AlGeP-Silica Fiber**, *Richard S. Quimby*<sup>1</sup>, *Roman L. Shubochkin*<sup>2</sup>, *Theodore F. Morse*<sup>2</sup>; <sup>1</sup>*Worcester Polytechnic Inst., USA*, <sup>2</sup>*Boston Univ., USA*. Bismuth doped AlGeP-silica fibers prepared by aerosol deposition have a 1300 nm emission band extending from 1100-1450 nm when pumped at 808 nm. The radiative efficiency was measured to be near unity.

**ATHD5 • 5:30 p.m. Invited**

**Bi-Doped Fibers for NIR Lasers and Amplifiers: Opportunities and Challenges**, *Evgeny M. Dianov; Fiber Optics Res. Ctr., Russian Acad. of Sciences, Russian Federation*. Recent results on Bi-doped glasses and optical fibers are reviewed. The absorption and luminescent properties of Bi-doped fibers and the results on creation of Bi-doped fiber lasers for a spectral region of 1140-1550nm are presented.

### Club Regent

#### C O S I

**4:00 p.m.–5:00 p.m.**

**CThD: COSI Panel Discussion**

End the meeting with an exciting panel discussion. In addition to reviewing some of the highlights of the meeting, this will also provide a forum to review related funding programs such as DARPA MOSAIC and some of the recommendations made by recent initiatives such as the Computational Space Telescope study.

Panel participants include:

- Ravindra Anant Athale; MITRE Corp., USA*
- David Brady; Duke Univ., USA*
- Aristide Dogariu; CREOL, College of Optics and Photonics, Univ. of Central Florida, USA*
- Michael A. Fiddy; Univ. of North Carolina at Charlotte, USA*
- Mark Allen Neifeld; Univ. of Arizona, USA*
- Rafael Piestun; Univ. of Colorado, USA*

**5:30 p.m.–8:00 p.m. Science Educators' Day**, *McCaw Hall, Frances C. Arrillaga Alumni Center, Stanford Univ., 326 Galvez Street, Stanford, California 94305, Phone: 650.723.2021*

*For FIO/LS presentations on Thursday, see pages 100-115.*



# FiO/LS/Fall Congress Key to Authors and Presiders

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 Alencar, Marcio A. R.—ATHA3  
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 Alieva, Tatiana—FWW3, STuD2, STuD3  
 Alipour, Payam—FWZ2  
 Aller-Carpentier, Emmanuel—AOTuC2  
 Allman, Brendan—JWB5  
 Allsop, T.—LMTuC6  
 Almeida, Euclides C. L.—ATHC5  
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 Alonso, Benjamin—JWC10, LSWB4  
 Alonso, Miguel A.—FWH1, FWQ2, FWW  
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 Archambault, Jean-Luc—FTuC2  
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 Assoufid, Lahsen—FThG, FThM2  
 Athale, Ravindra Anant—CThD, CWB  
 Attwood, David—FTuZ2, FThA1, FThT  
 Aubailly, Mathieu—CThC3  
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 Aviña-Cervantes, Juan G.—JWC67  
 Avlasevich, Yuri—FMH2  
 Ayala, Oscar D.—FThP6  
 Azad, Abul K.—FWO1  
 Azevedo, Antonio—FWT3  
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 Badieirostami, Majid—CThA4, CTuD1  
 Bae, Hee-Kyoung—FMJ6  
 Bae, In-Ho—JWC11  
 Bae, Janghwan—CWA1  
 Bagheri, Saeed—CTuC5  
 Bagnato, V. S.—JTuC20  
 Baig, Mirza I.—FTuC7  
 Bailey, Ryan C.—LSMC1, LSMG  
 Bajt, Saša—LSThA3  
 Baker, Henry—JWC34  
 Baker, Katherine A.—FThP3  
 Baker, Lane A.—LSMC2  
 Baker, Sarah—FWR1  
 Balakrishnan, Subramanian—JWC31  
 Balasubramanian, T.—LSTuG6  
 Baldelli, Steven—LSWH3  
 Balla, Naveen K.—LSWK5  
 Balle, S.—LSTuI4  
 Banaee, Mohamad G.—FWT2, FWT5  
 Bang, Ole—FTuD4  
 Banks, Martin—FTuA2, FTuM2, FTuF  
 Barbastathis, George—CThA3, CTuD4, FME7, FThB1, FThR3, JWC24  
 Barbieri, M.—JWD3  
 Barbosa, L. C.—FWF2  
 Barclay, Paul E.—FThU1, FWJ4, LSTuD3  
 Barea, Luis A. M.—FThO7  
 Barnakov, Yu. A.—FTuN5  
 Barnes, Michael D.—LSMB4, LSMF, LSTuA, LSTuJ, LSTuJ2, LSTuJ3  
 Barnett, Stephen—CTuC2, JTuB4, JWD4  
 Baronavski, Andrew—JWC28  
 Barreiro, Julio—JWE1  
 Barros, Gemima—FThS1  
 Barsi, Christopher—FMF1, FThX4  
 Bartal, Guy—FTuB2, FTuN2  
 Barthélémy, Alain—FWI5  
 Barthelemy, Pierre—FMC4  
 Bartoli, Filbert—FTuY5  
 Barton, Jennifer K.—FME7  
 Barty, Anton—LSThA3  
 Barty, Christopher—FMI1  
 Barviau, B.—FWD1  
 Basden, Alastair G.—AOTuD4, AOTuA5  
 Bastiaans, Martin J.—FWQ1  
 Bastin, Thierry—JWD2  
 Basurto-Pensado, Miguel A.—FTuE1  
 Batteiger, V.—LSTuB1  
 Baum, Peter—LSWJ1  
 Beausoleil, Raymond G.—FThE2, FThU1, FWJ4, FWZ5, LSTuD3  
 Beckley, Amber M.—FThL2  
 Beclin, Franck—AthC3  
 Bedgood, Phillip—JWB5  
 Beege, T.—LSMH1  
 Begue, Nathan J.—LSWH1  
 Bekker, Alexander—FWD5  
 Beliaev, Alexander—FWT1  
 Bellec, Matthieu—AWB3  
 Bello-Jiménez, Miguel A.—FThD4  
 Benner, W. H.—LSThA3  
 Bennink, Ryan S.—JMA4, JMA7  
 Bennion, Ian—JTuC19, LMTuA6, LMTuC6  
 Benson, Oliver—FWE4  
 Beresnev, A.—JWA4  
 Bergh, Magnus—LSThA3  
 Berglund, Andrew—LSWD4  
 Berkner, Kathrin—CTuC6  
 Berkovitch, Nikolai—FMH3  
 Berland, Keith—LSThB1, LSThF  
 Berova, Nina—LSMB1  
 Bertilson, M.—FThA4  
 Bertolotti, Jacopo—FMC4  
 Bewersdorf, Joerg—LSThB2, LSThD  
 Beye, M.—LSMH1  
 Bhakta, Aditya—JWC24  
 Bhakta, Vikrant R.—CThB4, CTuC4, CWB5  
 Bhaktha, Shivakiran N. B.—ATHC3  
 Bhattacharya, Dipten—AWA4  
 Bholra, Bipin—FTuB4  
 Bialczak, Radoslaw C.—JMA1  
 Biamonte, J. D.—JWD3  
 Bidlot, Jean-Raymond—FTuR1  
 Bifano, Thomas—AOTuH1, FWA2  
 Bijlani, Bhavin J.—LSWH4  
 Biondini, Gino—FTuR3  
 Bird, Mark—FTuQ4  
 Biswas, Prasanta K.—AWA4  
 Biswas, Roshni—FTuE5  
 Biswas, Raka—JWC50  
 Bizheva, Kostadinka—FTuQ4  
 Black, Kvar C. L.—JWC76  
 Blain, Celia—AOTuH4  
 Blair, David A. D.—FWT1  
 Blair, John—FTuN4  
 Blair, Loudon—FTuC2  
 Blake, Peter—FThN  
 Bland-Hawthorn, Joss—FTuD2  
 Blank, David A.—LSWC4, LSWI  
 Blinov, Boris B.—JTuB5, JTuB6  
 Bliokh, Konstantin Yu—FWP3  
 Bliokh, Yuri P.—FWP3  
 Bliss, David—AWA1  
 Bloemer, Mark J.—FThW2, FWC6  
 Blum, Christian—FWS6  
 Bobier, William R.—JWC81

- Boccaletti, Anthony—AOTuC3  
 Bockenbauer, Samuel—**JWC16**, LSTuF3  
 Bogan, Michael J.—LSThA3  
 Bohn, Paul—**LSTuF**, **LSTuF1**  
 Bokoch, Michael—JWC16  
 Bolognini, Néstor—JWC83  
 Bondar', Anatolii M.—FThS6  
 Bondu, François—**JMB4**  
 Bones, Phil—**STuA3**, **STuD**  
 Booth, Martin J.—AOThC3, AOWA2  
 Bordonalli, Aldário C.—FTuC4, **FWF2**  
 Born, Erik G.—JWC33  
 Borondics, Ferenc—LSWJ3  
 Borra, Ermanno F.—JWF2  
 Borrego Varillas, Rocío—**JWC10**, **LSWB4**  
 Bostedt, Christoph—LSThA3  
 Botten, Lindsay C.—FWF5  
 Bouazaoui, Mohamed—ATHC3  
 Boucher, Yann G.—FThO3  
 Boudouris, Bryan W.—LSWC4  
 Bouma, Brett. E.—FWV3  
 Bourguignon, Bernard—JTuC16  
 Bourhis, Kevin—AWB3  
 Boutet, Sébastien—**LSThA2**, LSThA3,  
**LSThC**  
 Bowlan, Pamela R.—**FTuO5**, **SWA6**  
 Boyd, Robert W.—FMA2, JWD4  
 Boyraz, Ozdal—**FTuE**  
 Bozek, John D.—**LSTuL1**  
 Brady, David J.—CThA5, CThA6, **CThD**,  
 CTuA3, CTuA6, **CTuD**, **CWB2**,  
 CWB4  
 Braga, R. L.—FWF2  
 Bragheri, F.—LSTuI4  
 Bratkovski, Alex—FWC5  
 Bres, Camille-Sophie—FWK2  
 Bretschneider, Mario—ATHB3  
 Brewer, C.—FTuZ2  
 Briant, T.—LSTuK1  
 Bristow, A. D.—LSWC3  
 Brito, Jose M.—JWC63  
 Brizuela, F.—FTuZ2  
 Bromberg, Yaron—FMC2, FMG4, FThX3,  
**FWD3**  
 Brooks, Aidan F.—**JWC20**  
 Brousseau, Denis—JWF2  
 Brow, Richard K.—LMTuB4  
 Brown, Dean P.—**FThL3**  
 Brown, Jacob E.—**JWC84**  
 Brown, Thomas G.—**FThL2**, FThL3  
 Brune, M.—JWE4  
 Brunner, Robert—ATHB3  
 Bryant, George—AWA1  
 Buchhave, Preben—FThR6  
 Bueno, Juan M.—LSWB4  
 Bun, Philippe—FThB4  
 Bunghardt, Kaitlin—FTuQ4  
 Bunk, Oliver—FThT1, LSTuL4  
 Burch, J.—CThA1  
 Burge, James H.—FThH3, **FThN1**  
 Burke, Daniel—**AOTuC5**  
 Burns, Stephen A.—FThQ2, **JWB**, **JWF1**  
 Buse, Karsten—AWC2  
 Busoni, Lorenzo—AOTuA3  
 Butler, Anthony—STuA3  
 Butler, Alex C.—**JWC14**  
 Butterley, Timothy—AOTuD4, AOTuA5  
 Byeon, Ji-Yeon—LSMC1  
 Byer, Robert L.—AWC3  
 Cai, Wei—JTuC10  
 Cai, ZhiPing—FThO3  
 Cakmakci, Ozan—**FThN2**, FTuT3  
 Calef, Brandoch—STuC1, **STuC5**  
 Caleman, Carl—LSThA3  
 Calhoun, T. R.—LSWC1  
 Calmano, Thomas—LMTuC2  
 Calvo, María L.—STuD3  
 Camacho, Ryan M.—LSTuE2  
 Cámara, Alejandro—STuD3  
 Campbell, Melanie C.—**FTuQ**, **FTuQ4**,  
**JWF2**  
 Camposeo, Andrea—**FThO1**, **LMTuB2**  
 Canfield, Brian K.—FWM4  
 Canioni, Lionel—AWB3  
 Cao, Donna—CThB6  
 Cao, Shaochun—**FTuW4**  
 Capasso, Federico—LSTuH2  
 Capoen, Bruno—ATHC3  
 Carbillat, Marcel—AOTuC3  
 Cardinal, Thierry—AWB3  
 Carhart, Gary W.—CThC3, JWA4  
 Carlie, Nathan—ATHC4  
 Carmon, Tal—FThO5  
 Carney, P. S.—FWH3  
 Carr, Stephen—FWI2  
 Case, Jason—FWO3  
 Cassarly, William J.—FThN5  
 Castellanos-Betran, Manuel A.—LSTuE3  
 Castro, Jose—FMB3  
 Cavalcanti, Eric G.—LSTuA4  
 Cavalcanti, Gustavo O.—FWT3  
 Cavillac, Patrick—FMI2  
 Ceballos, Daniel E.—FWP3  
 Celestre, Richard—FThT2  
 Cerdán, Luis—LSWG4  
 Cerrina, Franco—FTuS2  
 Cerullo, G.—LMTuC3  
 Cesa, Yanina—FWS6  
 Cescato, Lucila H.—JWC4  
 Cha, Myoungsik—FTuO3, JWC11  
 Chabanov, Andrey A.—FMC5, **FTuJ**  
 Chakravarty, Abhijit—FTuP5, JWC50  
 Chamanzar, Maysamreza—**FTuB7**  
 Chambaret, Jean Paul—**FMI2**  
 Chan, James—FWS2  
 Chan, Jasper—LSTuE2  
 Chan, Sze-Chun—FMD3  
 Chan, Wai L.—STuA4  
 Chang, Gee-Kung—**FMD1**, **FTuC**  
 Chang, Yu-Hsiu—JWC1  
 Chang, Z.-C.—FWC2  
 Chang-Hasnain, Connie J.—FThU5,  
 FTuW2, FWL3  
 Chao, W.—FTuZ2  
 Chao, Yu-Faye—FThL4  
 Chapman, Henry N.—LSThA3  
 Charan, Shobhit—JWC69  
 Charters, Robbie—FThE5  
 Chaturvedi, Pratik—ATHA5  
 Chaudhuri, Anabil—**FTuC6**, **FTuP**  
 Chavez Boggio, Jose M.—FML2, **FTuD2**,  
**FWE**  
 Chemla, Fanny—AOTuA5  
 Chen, Baosuan—FThX6  
 Chen, Bin—FTuE4  
 Chen, Chia-Chu—**FWG3**  
 Chen, Chia-Hsu—JWC1, JWC82  
 Chen, Hou-Tong—**FMA**, **FTuB1**, FWO1  
 Chen, Mingzhou—**AOThA1**  
 Chen, Nanguang—FThR4  
 Chen, Peilin—JWC69, JWC72  
 Chen, Qian—JTuC11  
 Chen, Xi—**CThB6**, **FTuB4**  
 Chen, Xuxing—FWK5  
 Chen, Yuchuan—AOThC2  
 Chen, Zhigang—**FThI3**, **FTuV5**, **FTuX2**,  
**JWC29**  
 Chen, Ziyang—FThX6  
 Cheng, Yang-Chun—FTuS2  
 Cheng, Yih-Shyang—**JWC5**  
 Chergui, Majed—**LSTuC1**  
 Chériaux, Gilles—FMI2  
 Cherri, Abdallah K.—**FTuW5**  
 Cherroret, Nicolas—FMC5  
 Chettiar, Uday K.—FTuN3, FTuN7  
 Chi, Wanli—FThR1, FThR5  
 Chia, Thomas—FWA4  
 Chien, Fan-Ching—**JWC69**, **JWC72**  
 Chien, Hung-Chang—FMD1  
 Chiesa, Sabine—**JTuC6**  
 Chilkoti, Ashutosh—**FTuY3**  
 Chillce, E. F.—FWF2  
 Chipman, Russell A.—FThF1, **FThF**,  
**FThL1**, **SC274**  
 Chipouline, Arkadi—FMA3, FThC3,  
 FThC6  
 Chiragh, Furqan L.—FThK1  
 Chiu, Daniel T.—**LSMG1**  
 Cho, David—LSWE1  
 Cho, Hyung Uk—**FThK2**  
 Cho, Ha Na—LSTuC4  
 Cho, Hyoung J.—FTuE1  
 Cho, MinHaeng—**LSWI1**  
 Choi, Hee Joo—**JWC11**  
 Choi, Hyunyoung—**LSWJ3**  
 Choi, Jae-Young—FThM2  
 Choi, Jiyeon—AWB3  
 Choi, Kerkil—**CThA5**, CThA6, CTuA6  
 Choi, Ki-Man—FTuP2  
 Choi, S. S.—FWC3  
 Choi, Tae-Il—JTuC13  
 Choi, Wonshik—FThB3  
 Chou, Keng Chang—**LSWE3**, **LSWK**  
 Chowdhury, Arshad—FMD1  
 Christensen, Marc P.—CTuB4, CTuC4,  
 CWB5, FThE6  
 Christodoulides, Demetrios N.—FMC2,  
 FMF4, LSMC3  
 Christou, Julian—AOTuC1, AOTuC2,  
**AOWA4**, **JWA**  
 Chu, Kaiqin—**FThR5**  
 Chu, Kengyeh K.—FWA2  
 Chu, Yizhuo—**FWT5**  
 Chubarova, E.—FThA4  
 Chumanov, George—FMH4  
 Chun, Mark—AOThA3  
 Chung, Chia-Chao—JWC82  
 Chung, Samuel—FWA1  
 Chuntonov, Lev—LSTuG4  
 Cingolani, Roberto—FThO1, LMTuB2  
 Cirino, Giuseppe A.—**JWC4**  
 Cleland, A. N.—JMA1  
 Cloutier, Sylvain G.—**AWA5**  
 Cocke, C. L.—LSTuI3  
 Coen, S.—FWD1  
 Cohadon, P.-F.—LSTuK1  
 Cohen, Adam—FWM2  
 Cohen, Offir—FWJ3  
 Cojocar, Crina M.—FThI1, FTuS4  
 Collier, John—**FMI3**  
 Collini, Elisabetta—LSWC2  
 Conan, Jean-Marc—AOThA2, AOWB1,  
 AOWB4  
 Conan, Rodolphe—AOThD4, **AOTuB2**  
 Cone, Michael T.—**FWR5**  
 Conley, Nicholas R.—CTuD1, LSWD2  
 Contag, Chris—**FTuL1**  
 Cookson, Christopher J.—FTuQ4  
 Cooper, M. L.—FML2  
 Coppey-Moisant, Maité—FThB4  
 Coppinger, Matthew—AWA5  
 Corbett, Brian—FThJ3  
 Corkum, P. B.—LMTuA1  
 Cornia, Alberto—**AOTuC3**  
 Correia, Carlos—AOWB1, **AOWB4**  
 Costa, M. M.—JTuC20  
 Costela, Angel—**LSWG4**  
 Costille, Anne—AOThA2  
 Cotter, D.—FTuW1  
 Coutts, David W.—JWC14  
 Coyle, Kevin—CTuB4  
 Cragg, George E.—LSTuJ4  
 Craig, D. Q. M.—FMK2  
 Craig, Ian M.—LSWB2  
 Creeden, Daniel C.—AWA2  
 Cristiani, I.—LSTuI4  
 Crochet, Jared—LSWJ5  
 Crognale, Claudio—**JWC48**  
 Crozier, Kenneth B.—FThB2, FTuH3,  
 FTuV2, FTuY2, **FWM1**, FWT2,  
 FWT5, **FWY**  
 Cryan, Martin J.—FMG1  
 Cui, Bianxiao—**LSThB3**

- Cui, Cuicui—FMD3  
 Cui, Meng—FWS4  
 Cundiff, S. T.—LSWC3  
 Currie, Marc—FThS3  
 Cusnir, Nicolas—FThB7
- d'Aguzzo, Giuseppe—FTuS4  
 da Costa, José A. P.—FTuX4  
 Dahan, Maxime—LSThB4  
 Dai, Lun—FTuB2  
 Dai, Wanjun—JTuC5  
 Dai, X.—LSWC3  
 Dainty, Christopher—AOTH1, AOTuC5, JTuC6, JWA1  
 Dal Negro, Luca—FML1, FML6, FTuB3, FWN  
 Dam-Hansen, Carsten—JWC3  
 Danielyan, Hakob—LSWK4  
 Danner, Aaron J.—FTuN6  
 Dantus, Marcos—FMF7, LMTuA4, LSW13  
 Das, Bhargab—JWC6  
 Das, Nilanjana—AWA4  
 Das, Sumanta—FMG5, FWI6  
 Davanco, Marcelo I.—FMG2  
 Davila-Rodriguez, Josue—FMD2, FMD5  
 Davis, Andrew—AOTH2  
 Davis, Brynmor J.—FWH3  
 Davis, J. P.—LSTuA2, LSTuI5  
 Davis, Lloyd M.—FWM4  
 Davis, Matthew J.—FWM3  
 Dazzi, A.—FMK2  
 de Araújo, Cid B.—AthC5, FThS1  
 de Araujo, Renato—JWC43  
 Deasy, Kieran—FMG3  
 de Ceglia, Domenico—FThW2, FWC6  
 DECIGO Working Group—JTuA5  
 Deepak, Kallepalli L. N.—JTuC17  
 Dégardin, Annick F.—FTuO6  
 De Gracia, Pablo—JWB4  
 Dekany, Richard—AOWB  
 Dekker, P.—LMTuC1  
 De Koninck, Yves—JWC73  
 de la Cruz Gutierrez, Manuel—JTuB2  
 Deléglise, S.—JWE4  
 Delestre, Aurelien—AWB3  
 Delfyett Jr., Peter J.—FMD2, FMD5, FWL1, FWL2, FWX4  
 Demenikov, Mads—FThX2  
 Deng, Cong—JWF1
- Deng, Wu—JTuC5  
 de Oliveira, Júlio C R. F.—FTuC4  
 D'Orazio, Antonella—FWC6  
 Dereniak, Eustace L.—FThF4  
 Derickson, Dennis J.—FMJ5  
 DeRocco, Vanessa C.—LSThD3  
 Derosa, Maria—FWT1  
 Desai, Narayana Rao—JTuC17  
 DeSoto, Michael G.—JWC75  
 de Sterke, C. Martijn—FTuD4, FTuR5, FWF5  
 Deutsch, Bradley—FTuL2  
 Devaney, Nicholas—AOTuC5  
 DeVree, Brian—JWC16  
 Dexheimer, Susan L.—LSTuG3, LSTuG5  
 Deych, Lev—FThC3, FThC6, LSTuA5  
 Di Benedetto, Francesca—FThO1  
 Di Giansante, Antonella—JWC48  
 Diagaradjane, P.—FME1  
 Dianov, Evgeny M.—AthD5  
 Dias, F.—FTuR2  
 Dickinson, Mary E.—FThV2  
 Dickson, Colin—AOTuA5  
 Diem, Max—FThV6  
 Dierolf, Martin—FThF1, LSTuL4  
 Dietrich, Matthew R.—JTuB5, JTuB6  
 Dillon, Daren—JTuC3  
 Dillon, Keith J.—JTuC7  
 Dimakis, Emmanouil—FMH4  
 DiMaria, Jeff—FMA5  
 DiMauro, Louis—LSTuI2  
 Dinakarababu, Dineshabu V.—CThC5  
 Ding, Yiwu—FTuY1  
 Dinu, Raluca—FThE3  
 Dipper, Nigel—AOTuA5  
 Ditmire, Todd—FTuK2  
 Divliansky, I. B.—FML2  
 Dixon, P. Ben—FMF8  
 Djordjevic, Ivan B.—FTuP4  
 Doerschuk, Peter—STuB3, STuB4  
 Dogariu, Aristide—CThB, CThC1, CThD, CWA1, CWA4, CWA5, CWA6, FTuU3, FWY4  
 Doherty, Andrew—JTuB1  
 Dominguez-Caballero, Jose A.—FThB1  
 Donahue, James P.—LSW12  
 Donati, Silvano—FWG5  
 Dong, Zhaogang—FWP5  
 Donner, Tobias—LSTuE3
- Doris, Ng—FWN2  
 Dorrier, Christophe—STuD1  
 Dorransoro, Carlos—JWB4  
 Dossou, Kokou B.—FWF5  
 Dotsenko, I.—JWE4  
 Douglas, Nick—FWM2  
 Douglas, Scott C.—CTuB4, CWB5  
 Douglass, Kyle M.—CWA5  
 Douillet, Denis—FM2  
 Douplik, Alexandre—FThP2  
 Dowling, Jonathan P.—LSTuA3  
 Drachev, Vladimir—FTuN3  
 Drake, Tyler K.—JWC75  
 Drapeau, Julie—JWF2  
 Drezet, A.—FWP4  
 Drobizhev, Mikhail—JTuC14  
 Drummond, Jack D.—AOWA4  
 Drummond, Peter D.—LSTuA4  
 Du, Songtao—FThD1  
 Duane, Peter—FTuV2  
 Dubov, Mykhaylo—LMTuA6, LMTuC6  
 Dubra, Alfredo—JWF4  
 Dudley, Angela—FThB6  
 Dudley, J. M.—FTuR2  
 Dumeir, Pascal—JWC73  
 Dumeige, Yannick—FThO3  
 Dumelow, Thomas—FTuX4  
 Duncan, D.—LSTuI5  
 Duncan, Jacque—FTuQ3  
 Duncan, Michael—FWO, FWV  
 Dunlop, Colin—AOTuA5  
 Dunn, Andrew K.—FME1, FME2, FTuY  
 Dunn, Douglas S.—FTuF2  
 Dunn, James—FTuS3  
 Dunningham, J.—FThU3  
 Dupont, Jairton—ATHA3  
 Durand, Fredo—CTuB1  
 Durfee, Charles G.—FWH7  
 Dürr, Hermann A.—LSMH3  
 Dussauze, Marc—AWB3  
 Dusterer, Stefan—LSThA3  
 Dvoyrin, Vladislav—JTuC19  
 Dylov, Dmitry V.—FMF1, FTuR4, FWD2, FWD6  
 Dynes, James F.—JWE2
- Early, Kevin T.—LSTuG, LSTuJ2, LSTuJ3  
 Ebbesen, Thomas W.—FWP4  
 Ebendorff-Heidepriem, Heike—FTuE3
- Ebisawa, Satoshi—JWC49, JWC52  
 Efros, Alexander L.—LSTuJ4  
 Eftekhar, Ali Asghar—FWZ2  
 Egamov, Shukhrat—FWB3  
 Egger, Robert—FTuV5, FTuX2  
 Eggleton, Benjamin J.—FTuD4, FTuR5, FWK1  
 Eichenfield, Matt—LSTuE2  
 El-Emawy, Mohamed A.—FMB4, FMB5  
 El-Ganainy, Ramy—LSMC3  
 El-Hanany, Uri—LSTuG4  
 Ellerbroek, Brent L.—AOTH1, AOTH1, AOTuD2, AOWB3  
 Elliott, Lindsay C. C.—LSTuF1  
 Ellis, Jeremy—CWA5  
 Elser, Veit—LSThA1, LSThE  
 Elshaari, Ali W.—FML3, FThU4  
 Elsner, Ann E.—FME5, FThQ2  
 Emmert, L.—FThS7  
 Emrick, Todd S.—LSTuJ2, LSTuJ3  
 Engheta, Nader—FMA7, FMH6, FTuN7  
 English, Alex—FWC2  
 Englund, Dirk—LSTuD4  
 Eom, Tae Bong—JWC11  
 Erickson, David—FWG1  
 Erie, Dorothy A.—LSThD3  
 Erramilli, Shyamsunder—FWP6  
 Erzgräber, Hartmut—FThO6  
 Esener, Sadik—FWR1  
 Esposito, Simone—AOTuA3  
 Essaian, Stepan—LSWK4  
 Evans, Philip—JMA4  
 Everitt, M.—FThU3
- Faber, C.—FWV1  
 Fabian, Rotermund—FWC1  
 Fainman, Yeshaiahu—ATHA, AthB1, FWB1, JTuC7  
 Falk, Matthias—AWC2  
 Fam, Adly T.—FTuE5  
 Fan, Shanhui—FMH2  
 Fang, Nicholas X.—ATHA5, FWB6  
 Fannjiang, Albert—STuA5  
 Faraon, Andrei—FWB5, LSTuD4  
 Fargin, Evelyne—AWB3  
 Fathi, Mohammad—FWG5  
 Fathpour, Sasan—FML, FWZ1  
 Fattal, David—FWJ4, FWT6  
 Fauchet, Philippe M.—FML4
- Faulk, Ben—FWO3  
 Favalora, Gregg E.—FTuT2  
 Fayer, Michael D.—LSWF2  
 Faylienejad, Azadeh—JWC79  
 Fecko, Christopher J.—LSThB, LSThD1  
 Fei, Yiyan—FTuY4  
 Fejer, Martin M.—AWA, AWC2, AWC3, FThS7  
 Feld, Michael—FThB3  
 Ferguson, Daniel—JWF1  
 Fernandes, Gustavo—FWZ4  
 Fernandes, Luís A.—LMTuC5  
 Fernandez-Cull, Christy—CTuA3  
 Fernando, Harendra N. J.—FThJ3, FThK6  
 Féron, Patrice—FThO3  
 Ferrando, Albert—FWH4, FWP3  
 Ferrari, Maurizio—ATHC3  
 Ferreira, Mário F.—FThI5  
 Fessler, Jeffrey A.—CWA2  
 Fetting, Doug—CThB6  
 Fiala, Jan—FWC7  
 Fiala, Pavel—ATHA2, FWS3, JWC7  
 Fiddy, Michael A.—CThD, CTuA, CTuB2  
 Fienup, James R.—FThX5, LSThE3, STuC6, SWA2  
 Figueira, David S. L.—FThO7  
 Finer, Neil—FThP3  
 Fischer, Baruch—FWD5  
 Fischer, Michael—AOTH44  
 Fischer, Peer—LSMB2  
 Fitzke, Frederick—FThQ1  
 Fleck, Andre—JWC81  
 Fleet, Erin F.—CThC2  
 Fleischer, Jason W.—FMF1, FMF4, FMF6, FThX4, FTuR4, FWD1, FWD2, FWD6, FWU  
 Fleming, G. R.—LSWC1  
 Fletcher, Luke B.—LMTuB4, LMTuC4  
 Flores-Rosas, Ariel—FThD4  
 Föhlisch, A.—LSMH1  
 Fontana, Eduardo—FWT3  
 Forbes, Andrew—FThB6  
 Forbes, Greg—FThH1  
 Ford, Joseph E.—FThP3, FWG2  
 Foster, Mark A.—FTuW3  
 Fourkas, John T.—LSWE2  
 Fournet, Dominique—FM12  
 Fournier, Florian R.—FThN5  
 Frandsen, Lars H.—FThE1

- Frank, Matthias—LSThA3  
 Franke-Arnold, Sonja—CTuC2, JTuB4, JWD4  
 Fraser, Donald—STuC7  
 Frateschi, Newton C.—FThO7  
 Frattin, Dan—CTuB4  
 Frawley, Mary—FMG3  
 Frede, Maik—JTuA2  
 Freudenthal, John—LSMF1  
 Frick, Ross—AOTHB2  
 Fritschel, Peter—JMB1  
 Fritz, David—LSMD2, LSMH  
 Fry, Edward S.—FWR5, FWX3  
 Frydman, Judith—FWM2  
 Ftaclas, Christ—AOTHa3  
 Fu, Kai-Mei C.—FThU1, FWJ4, LSTuD3  
 Fu, Xuelei—FMD3  
 Fuerbach, A.—LMTuC1  
 Fuesz, Peter—FThM4  
 Fujii, Keita—CWb1  
 Fujiwara, Masahide—FMD4  
 Fukunaga, Yukihiro—JWC74  
 Fukushima, Seiji—FThE4  
 Fung, Kin Hung—ATHa5  
 Furlan, Walter D.—FWW2  
 Fürstenberg, Alexandre—JWC16, LSTuF3  
 Fusco, Thierry—AOTHa2, AOTuA5, AOTuC3  
 Gabrielyan, Gevorg—LSWK4  
 Gaeta, Alexander L.—FTuW3, FWK  
 Gaffney, Kelly J.—LSTuD, LSWF3  
 Gagnon, Etienne—LSTuJ3  
 Gaind, Vaibhav—FTuL3  
 Galeano Zea, July A.—JWC70  
 Galembeck, André—FThS1  
 Galiová, Michaela—JTuC12, JWC18, JWC19  
 Gamba, Enrique—JWB4  
 Gan, Choon How—FWC4  
 Gan, Xuetao—JWC32  
 Gangopadhyay, Palash—ATHB2  
 Gao, Y.—LMTuD2  
 Gapontsev, Valentin—FThJ1  
 García, Olga—LSWG4  
 García-Casillas, Daniel—JWC36  
 García March, M A.—FThI6  
 Garcia-March, Miguel-Angel—FWH4  
 García-Moreno, Inmaculada—LSWG4  
 Garuccio, Augusto—FWI4  
 Gat, Omri—FWD5  
 Gaume, Romain—AWD3  
 Gavel, Donald T.—AOTuA4, AOWA, AOWB5  
 Gayen, Swapan K.—JTuC10  
 Gaylor, Thomas K.—FMJ4, FTuE7, FTuX5, FWP2  
 Gbur, Greg—FTuG, FTuG3, FWC4, SWA1  
 Gehm, Michael E.—CThC5, FWX2  
 Gelsinger, Paul J.—FME7  
 Genack, Azriel—FTuJ2, FTuJ3  
 Gendron, Eric—AOTuA5  
 Genet, C.—FWP4  
 Geng, Deli—AOTuA5  
 Genty, G.—FTuR2  
 George, Brandon—FMJ5  
 George, Nicholas—FThR1, FThR5  
 Georges, Patrick—FM12  
 Georgescu, Ionut—LSTuI1  
 Georgiev, Todor G.—CTuB3, STuA6  
 Gerke, Timothy D.—LMTuB3  
 Gerlein, Felipe—AWA5  
 Gertsvolf, M.—LMTuA1  
 Gerwe, David—STuC1  
 Ghadarghad, Shabnam—FTuV4  
 Ghosh, Sankalpa—FWJ2  
 Gibson, Stuart J.—STuB5  
 Giessen, Harald—FMH1, FTuB  
 Gill, John—CTuB4  
 Gilles, Luc—AOWB3  
 Gillet, Jeremie—JWD2  
 Gillett, G. G.—JWD3  
 Gilman, Samuel—FTuJ3  
 Gineste, Jean-Michel—FWY5  
 Ginsberg, N. S.—LSWC1  
 Ginzburg, Pavel—FMH3  
 Ginzburg, Vladislav—LSWK3  
 Girkin, John—LSMG3  
 Giuliani, G.—LSTuI4  
 Give'on, Amir—AOWA3  
 Gladden, Chris W.—FTuB2  
 Gladysz, Szymon—AOTuC1, AOTuC2, AOTuC5  
 Glebov, Leonid—FMF2, FWX5  
 Glenn, Solomon S.—FWI2  
 Gleyzes, S.—JWE4  
 Gmitro, Arthur—FWR2, FWX  
 Gnodtke, Christian—LSTuI1  
 Goggin, M. E.—JWD3  
 Goldberg, Kenneth—FThT2  
 Goldring, Damian—FMJ8  
 Goldsmith, Randall H.—LSWA4  
 Gómez, Luis A.—FThS1  
 Gómez-Vieyra, Armando—JWF4  
 Gomila, D.—FThI6  
 Gong, Wei—FThR4  
 Gong, Yiyang—FML6, FTuB3  
 Gonzalez, Leonel—AWA3  
 Goodman, Doug S.—JMA7  
 Goodwin, Peter M.—LSThF2  
 Gorshkov, Alexey V.—FThS2  
 Gösele, Ulrich—ATHB3  
 Gowing, Laura—FTuQ4  
 Goy, Alexandre S.—CThA2  
 Grace, Edward J.—FThE8, FThI2, FWE3  
 Granzow, Nicolai—ATHD3  
 Gratadour, Damien—AOTuA5  
 Gravel, Yann—FTuV1  
 Gravelle, Bob—CThB6  
 Green, Lekara—JWC13  
 Greenfield, Elad—LSMC3  
 Gregor, Markus—FWE4  
 Grenier, Jason R.—LMTuC5  
 Grice, Warren P.—JMA4, JMA7, JTuB3, JWE  
 Grier, David—FWY2  
 Grinvald, Eran—FMK3  
 Grobnic, Dan—FTuD7, FTuE2  
 Groeblicher, Simon—LSTuH1  
 Groff, Tyler D.—AOWA1  
 Grojo, D.—LMTuA1  
 Grosberg, Alexander—FWY2  
 Gross, Michel—FThB4  
 Gu, Claire—FTuE4  
 Gu, Guohua—JTuC11  
 Gu, Tingyi—ATHB5  
 Gu, Tingyi—FMB4, FMB5  
 Gu, Yalong—FTuG3  
 Gualda, Emilio J.—LSWB4  
 Gualtieri, Ellen—LSMF2  
 Guan, Weihua—FThJ2  
 Guehr, Markus—LSTuI, LSTuL  
 Guesalaga, Andres—AOTuA5  
 Guha, Shekhar—AWA3  
 Guintrand, Cyril L.—FTuI3  
 Guizar-Sicairos, Manuel—LSThE3  
 Guizard, Stéphane—LMTuA5  
 Gunaratne, Tissa C.—LMTuA4  
 Gündogan, Mustafa—FThU6  
 Gunn, Erica—LSMF1  
 Guo, Chunlei—JTuC18  
 Guo, Hong—FWL4  
 Guo, Peng—FTuW2, FWL3  
 Guo, Yuan—LSWK2  
 Gupta, Anurag—FWR6  
 Gupta, Banshi D.—FWG4, FWT  
 Gustafson, Scott B.—FME4  
 Gustafsson, Mats—LSWA5  
 Guttman, Peter—FThG1  
 Guzman, Dani—AOTuA5  
 Guzman-Sepulveda, Jose R.—JWC41  
 Haack, Karl—CTuB4  
 Haefner, David P.—CThC1, CWA1, CWA6, FWY4  
 Hagan, David J.—FThS5, LSTuG2  
 Hageman, Nicholas—JTuC9  
 Hagen, Nathan—CWB4  
 Haggerty, Bryan P.—FThQ2  
 Hahn, Megan A.—LSTuJ4  
 Hajdu, Janos—LSThA3  
 Haji-Saeed, Bahareh—AOTHd2, FTuH5, FWI1  
 Halas, Naomi—JWC60  
 Hall, Matthew A.—FWJ5  
 Hall, Victoria—LSMF2  
 Hammerer, Klemens—LSTuH1  
 Hamner, C. R.—LSTuG5  
 Han, Junbo—LSWH4  
 Han, Ting—FThE5  
 Hands, Philip J. W.—FTuM2  
 Hänsch, T. W.—LSTuB1  
 Hao, Feng—FTuB6  
 Harada, Ken-Ichi—JWE2  
 Harden, Sarah—LSMF2  
 Harding, Philip J.—FWF4  
 Harlow, Jennifer W.—LSTuE3  
 Haroche, S.—JWE4  
 Harris, S. E.—JMA2  
 Harrison, Mark—AOTuA5, JTuC4  
 Hart, Michael Lloyd—AOTuA3, AOTuD  
 Harvey, Andrew—FThX2  
 Harwell, Jennifer—FME7  
 Hasan, Tayyaba—FThP1  
 Hassey-Paradise, Ruthanne—LSMB4  
 Hastings, Jerome—LSMD1  
 Hata, Masato—FWN4  
 Hau-Riege, Stefan P.—LSThA3, LSThA4  
 Haubrich, David—FWX3  
 Haus, Joseph W.—FThD4, SC235  
 Häusler, Gerd—FWV1  
 Hawkins, Aaron R.—FMJ7  
 Hayasaki, Yoshio—LMTuA2  
 Hayat, Alex—FMG6, FMH3  
 Hayee, M. I.—FTuC3  
 Hayes, David—JWD6  
 He, Bin—FThD1  
 He, Qiong Y.—LSTuA4  
 He, Weiji—JTuC11  
 He, Xehua—FWI4  
 He, Zhusong—FWL6  
 Healy, Andrew T.—LSWC4  
 Healy, John J.—FWW1  
 Heckel, John—FMH4  
 Heckenberg, Norman R.—FWM3  
 Heidmann, A.—LSTuK1  
 Heim, Stefan—FThG1  
 Helgert, Michael—ATHB3  
 Helmerson, Kristian—FWS5, JWC60  
 Helmy, Amr S.—LSWH4  
 Hemberg, O.—FThA4  
 Henderson, Marcus H.—JWC75  
 Henry, David—AOTuA5  
 Henson, John—FMA5, FMH4  
 Herbster, Adolfo F.—FTuC4  
 Herman, Peter R.—LMTuC5  
 Hernandez, Maritza—JWE6  
 Hernandez-Romano, Ivan—FTuD6, JWC41  
 Herriot, Glen—AOTHb1, JTuC2  
 Herrmann, Daniel—FTuK3  
 Herrmann, M.—LSTuB1  
 Hertel, Tobias—LSWJ5  
 Hertz, Hans M.—FThA4  
 Hess, Samuel—FThM1, LSWA2  
 Hester, Brooke C.—JWC60  
 Hickmann, Jandir M.—ATHa3  
 Hickson, Paul—AOTuA2  
 Hill, G. A.—FMK2  
 Hill, Jarvis W.—JWC68  
 Hillmyer, Marc A.—LSWC4  
 Hirakawa, Yasuyuki—JWC74  
 Hirano, Msaaki—FTuI4  
 Ho, Phay—LSTuI3

- Ho, Seng-Tiong—FThC5, FThE3, FThK3, FThK4, FThK5, FThO4, FTuB4, FWN2, JWC53
- Hodgson, Keith O.—LSThA3
- Hoener, Matthias—LSThA3
- Hofer, Heidi—JWB3
- Hoffman, David M.—FTuM2
- Hoffman, Galen B.—FThE7
- Hoffnagle, John A.—FThH2
- Hofheinz, Max—JMA1
- Hofmann, Werner—FTuW2
- Hofmeister, William H.—FWM4
- Hofsten, O. v.—FThA4
- Hoghooghi, Nazanin—FMD5, FWL1
- Hogle, Craig W.—LSTuI3
- Holá, Markéta—JTuC12
- Holinga, George J.—LSWB1
- Holmberg, A.—FThA4
- Holt, Martin V.—FThM4
- Holy, Timothy—FThV1, JWC71
- Honjo, Toshimori—JWE2
- Horisaki, Ryoichi—CThA5, CThA6, CWB1
- Horning, Ji-Bin—JWC1
- Hossein-Zadeh, Mani—FThC4, FThU, LSTuB3
- Howell, John C.—FMF8
- Hrdlička, Aleš—JWC18
- Hsiao, Hsien-kai—FMJ1
- Hsu, Keng H.—AThA5
- Hu, Dongxia—JTuC5
- Hu, Honghua—LSTuG2
- Hu, Juejun—AThC4
- Hu, Pin-Hao—JTuC8, JWC1
- Hu, Yi—FThI3
- Hua, Hong—FTuA
- Huang, Juanfeng—JTuC11
- Huang, Simon—JWC29
- Huang, Sumei—LSTuB4, LSTuK3
- Huang, Xiaojun—FTuK4, JTuC5
- Huang, Yingyan—FThC5, FThE3, FThK3, FThK5, FThO4, FTuB4, FWN2, JWC53
- Huber, Günter—LMTuC2
- Huber, Robert—FWO4
- Hubert, Zoltan—AOTuA5
- Hughes, William L.—FWC2
- Huldt, Gösta—LSThA3
- Humble, Travis—JMA4
- Hunt, Alan J.—LSMG4
- Hunter, Jennifer—FTuQ2
- Huse, Nils—LSTuC4
- Hutsel, Michael R.—FTuE7
- Hvam, Jørn M.—FThE1
- Hwang, Taek Yong—JTuC18
- Hynes, James T.—LSWF1
- Ianoul, Anatoli—FWT1
- Ibarra-Escamilla, Baldemar—FThD4
- Ibarra-Manzano, Oscar G.—JWC67
- Ibrahim, Hany L.—FWU6
- Ice, Gene E.—FThM, FThM2
- Ignatovich, Philipp—FTuL2
- Ihee, Harry—LSMD4, LSTuC
- Iijima, Takahiro—JWC22
- Ikeda, Kazuhiro—AThB1
- Ikesue, Akio—AWD2
- Ilchenko, Vladimir S.—FThC1
- Imai, Masaaki—FTuC7
- Ingold, Kirk—JWC58
- Injeyan, Hagop—FThD2
- Isaka, Mitsuhiro—LMTuA2
- Ishibashi, Taka-aki—LSWK1
- Islam, Mohammed N.—SC326
- Isoyan, Artak—FTuS2
- Iturbe Castillo, Marcelo D.—JWC59
- Ivers, Kevin M.—JTuC1
- Iwan, Bianca—LSThA3
- Izatt, Joseph—FThQ4
- Jack, Barry—CTuC2, JTuB4, JWD4
- Jackson, Kate—AOTuB2
- Jacobson, Stephen C.—LSMC, LSMG5
- Jacques, Steven L.—FME4
- Jagtap, Vishal S.—FTuO6
- Jain, S. C.—FWG6
- James, Daniel F. V.—FWU5
- Jamula, Lindsey—LSTuC4
- Jana, Sunirmal—AWA4
- Jankevics, Andrew—AOTH4, FThD2
- Janssen, Peter—FMG, FTuR1, FWD
- Javaloyes, J.—LSTuI4
- Javidi, Bahram—FTuF1, FTuM
- Jen, Alex—FThE3
- Jeon, Tae-In—JWC26
- Jesacher, Alexander—AOTH3
- Jessup, Malcolm—JWC13
- Jevsevar, Kristen L.—JWC68
- Jha, Anand—JWD4
- Ji, Young Bin—JWC26
- Jia, Shu—FMF4, FMF6
- Jian, Fan—FTuS2
- Jiang, Chun—AThB5
- Jiang, Shibin—FTuD5
- Jiang, Xuejun—JTuC5
- Jiang, Yan—FWM2, LSWA4
- Jin, Dan—FThE3
- Jin, Xiaomin—JTuC9
- Jing, Feng—FTuK4, JTuC5
- Jing, Gaoshan—FTuY5
- Jingjing, Shi—JWC15
- Jobling, Scott M.—FThN4
- Jofre, Ana—FWO3
- Johnson, Adam M. F.—FThD2
- Johnson, Eric—FTuO1
- Johnson, Luke C.—AOTuA4, AOWB5
- Johnson, Robert—AOTuA1
- Johnson, Steven L.—LSMD3
- Johnston, Keith P.—FThP6
- Jones, Gina C.—FThD2
- Joo, Yang—JWC44
- Jordan, Andrew N.—FMF8
- Joseph, Joby—JWC6
- Joseph, Shiju—FWY5
- Joud, Fadwa—FThB4
- Jovanovic, N.—LMTuC1
- Ju, Jung Jin—JWC11
- Judge, Alexander C.—FTuD4, FTuR5
- Juette, Manuel F.—LSThB2
- Jundt, Dieter H.—AWC2, AWC4
- Jung, Sang-Chul—JTuC13
- Juodawikis, Paul W.—FWL2
- Juodkazis, Saulius—LMTuB1
- Kachkovski, Alexei D.—LSTuG2
- Kagawa, Keiichiro—CWB1
- Kahen, Keith—LSTuJ4
- Kahn, Joseph—FTuP3
- Kahr, Bart—LSMB, LSMF1
- Kaindl, Robert A.—LSWJ3
- Kaiser, Jozef—JTuC12, JWC18, JWC19
- Kaiser, Robin—FMC1
- Kajiyama, Maria Claudia C.—AWC2
- Kakur, Pawan—FTuE6
- Kalasuwan, Pruet—FMG1
- Kalinowski, Ksawery—FThI1
- Kalinski, Matt K.—LSTuL2
- Kamada, Hidehiko—JWE2
- Kanaev, Andrey V.—CThC2
- Kanai, Yoshikazu—JWC22
- Kandel, Mikhail—FTuE5
- Kandpal, Hem C.—JWC27
- Kang, Inuk—FMD6, FTuW
- Kang, Yeon Sook—FTuO3
- Kanický, Viktor—JWC18, JWC19
- Kanseri, Bhaskar—JWC27
- Kapale, Kishore T.—JWC25, JWC84, LSTuA3
- Kapteyn, Henry C.—FTuS, FTuZ1, LSTuI3
- Kapur, Pawan—FThN3, FWG6
- Karadag, Yasin—FThU7
- Karagodsky, Vadim—FThU5
- Karaiskaj, D.—LSWC3
- Karamehmedović, Emir—FThR6
- Karlsson, Magnuss—FTuD2
- Karp, Jason H.—FWG2
- Kasdin, N. Jeremy—AOWA1
- Käsebier, Thomas—FThC3, FThC6
- Kash, Jeffrey—FWO2
- Kassal, I.—JWD3
- Kasyanenko, Valeriy M.—LSWI2
- Kato, Koichi—FThE4
- Katz, Barak—FThR2
- Katz, David F.—JWC75
- Katz, Ori—FMK3, FThX3
- Kaul, Rakesh—JWC12
- Kawakita, Masahiro—FTuF3
- Kawamura, Seiji—JTua5
- Kawate, Adin—JWC28
- Kazansky, Peter—AWB4
- Kazmi, S. M. Shams—FME2
- Kazovsky, Leonid—FMD, FTuC1
- Kearney, David—AOTHB2
- Keating, Christopher S.—LSWI2
- Kellerer, Aglae—AOTuA5
- Kelley, Anne M.—LSWE, LSWH2
- Kelly, Kevin—CThC6, CTuA5, FWB
- Kewish, Cameron M.—FThT1, LSTuL4
- Khajavikhan, Mercedes—FThD3
- Khaled, Elsayed Esam M.—FWU6
- Khalil, Munira—LSTuC3, LSWC, LSWF
- Khaydarov, John—LSWK4
- Khazanov, Efim—LSWK3
- Khilo, N.—FThB6
- Khoo, Eng-Huat—FThO4
- Khounsary, Ali—FThM2
- Khoury, Jed—AOTHd2, FTuH5, FWI1
- Kibler, B.—FWD1
- Kierstead, John—AOTHd2, FTuH5, FWI1
- Kilby, Gregory—JWC58
- Kildishev, Alexander—FTuN3
- Kim, Byoung Joo—FTuO3
- Kim, Dong Jun—FMH5
- Kim, Donghyun—FMH5
- Kim, Dai-Sik—FTuN, FWC1
- Kim, Dae-Chan—JTuC13
- Kim, D. S.—FWC3
- Kim, Gun-Duk—FMJ6
- Kim, Hyunmin—FMK1
- Kim, Hyochul—FWB5
- Kim, Jungsang—FWR4
- Kim, Kyujung—FMH5
- Kim, Kyu Hyun—JWC75
- Kim, Seunghyun—FMJ2
- Kim, Sang Hoon—JWC26
- Kim, Seyoon—JWC54
- Kim, Sangin—JWC57
- Kim, Taehyun—FWR4
- Kim, Tae-Kyu—LSTuC4
- Kimble, H. Jeff—JWD1
- Kimerling, Lionel—ATHC4
- Kimori, Spencer—JWC34
- King, Jason K.—FWM4
- King, Newton—JWC13
- Kinkhabwala, Anika A.—FMH2
- Kinowski, Christophe—ATHC3
- Kinto Ramirez, Héctor—JWC55
- Kippenberg, Tobias J.—LSTuK2
- Kir'yanov, Alexander V.—FTuD3
- Kiraz, Alper—FThU6, FThU7
- Kirby, Andrew K.—FTuM2
- Kirk, Jay—FThE6
- Kirschbaum, Stefanie E. K.—LSThB2
- Kishore, Rani—JWC60
- Kissilak, Marsha L.—FTuQ4
- Kissick, David—LSMF2
- Kitur, J. K.—FTuB5
- Kivshar, Yuri S.—FThI1
- Kizek, René—JWC19
- Kjoller, K.—FMK2
- Klapp, Iftach—CWB3, STuA7
- Kley, Ernst-Bernhard—FThC3, FThC6
- Klimentov, Sergey M.—FTuD3
- Klimov, Victor I.—LSTuG7

- Kluzik, Raphael—JTuA2  
 Knauer, M. C.—FWV1  
 Knez, Mato—ATHB3  
 Knight, Jonathan—ATHC, AthD1, FTuD,  
 FWF1  
 Knoernschild, Caleb—FWR4  
 Knowlton, William B.—FWC2  
 Knünz, S.—LSTuB1  
 Ko, Nak-Hoon—JTuC13  
 Kobilka, Brian K.—JWC16  
 Koch, Karl W.—FWF3  
 Kohlgraf-Owens, Dana C.—CThC1  
 Kohlgraf-Owens, Thomas—CWA4,  
 CWA5  
 Kohli, Meenakshi—JWC25  
 Kolehmainen, Ville P.—STuA2  
 Kolis, Joseph W.—AWC1  
 Kolodzey, James—AWA5  
 Komarala, Vamsi K.—FWB7  
 Komatsu, Shinichi—JWC49, JWC52  
 Komine, Hiroshi—FThD2  
 Kondratenko, V. V.—FTuZ2  
 Koo, S. M.—FWC3  
 Koopmans, Bert—LSWJ2  
 Korkiakoski, Visa—AOTuD1  
 Korotkova, Olga—FTuG1, FTuG3, FTuU  
 Korth, William Z.—JTuA4  
 Koshel, R. John—FWR  
 Kost, Alan—FMB  
 Kostuk, Raymond K.—FMB3, FME7  
 Kottos, Tsampikos—FMC, FTuJ1  
 Kovanis, Vassilios—LSTuA7  
 Kracht, Dietmar—JTuA2  
 Krajcarová, Lucie—JTuC12, JWC19  
 Kranitzky, C.—FWV1  
 Krapf, Diego—JWC68, LSWD3  
 Krauskopf, Bernd—FThO6  
 Krauss, Todd—LSTuJ4  
 Krausz, Ferenc—FTuK3  
 Kreisler, Alain J.—FTuO6  
 Kretschmar, Ilona—ATHA4  
 Krishnamurthy, Subramanian—LSWB3  
 Krishnamurthy, Vivek—FThC5  
 Krishnan, S.—FME1  
 Krol, Denise M.—LMTuB4, LMTuC4  
 Krolikowski, Wieslaw—FThI1  
 Krous, Erik—FThS7  
 Kuang, Wan—FMJ, FWC2  
 Kubala, Kenny—CWA  
 Kudlinski, A.—FWD1  
 Kuhlicke, Alexander—FWE4  
 Kuhlmann, Marion—LSThA3  
 Kuhlmeier, Boris T.—FTuD4, FTuR5  
 Kuhn, A.—LSTuK1  
 Kularatne, Sumith A.—FTuL3  
 Kulcsár, Caroline—AOTHa2, AOWB1,  
 AOWB4  
 Kulhandjian, H.—FTuE5  
 Kulikov, Kirill—JWC65  
 Kumar, Anil—ATHA5  
 Kumar, Amrinder—FThN3  
 Kumar, Arun—FThW6, JWC40  
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 Kumar, Ranjeet—JWC62  
 Kumar, T. K. S.—JWC66  
 Kumaran, Raveen—AWC5  
 Kumaran Nair Valsala Devi, Adarsh—  
 LSTuG4  
 Kundu, Susmita—AWA4  
 Kuo, Bill Ping Piu—FWK2  
 Kupke, Renate—AOTuA4  
 Kuramochi, E.—FWV2  
 Kuranov, Roman—FThP6  
 Kurdyukov, Vladimir V.—LSTuG2  
 Kurz, Nathan—JTuB5, JTuB6  
 Kuzin, Evgeny A.—FThD4  
 Kuzucu, Onur—FTuW3  
 Kwiat, Paul G.—FThN4, JMA3, JTuB,  
 JWE1  
 Kwiecien, Pavel—FTuO7  
 Kwon, Min-Suk—FThW4  
 Kyoung, J. S.—FWC3  
 Laage, Damien—LSWF1  
 Lahini, Yoav—FMC2, FMG4, FWD3  
 Lahiri, Mayukh—FWH2, FWU4  
 Lai, Changyi—ATHC2  
 Lai, Yicheng—FThK3, FThK5  
 Laing, Anthony—FMG1  
 Lakshminarayanan, Vasudevan—JWC79,  
 JWC81  
 Lалуet, J.-Y.—FWP4  
 Lam, Edmund Y.—STuA4  
 Lam, Kit S.—FTuY4  
 Lambert, Andrew J.—STuB, STuC,  
 STuC4, STuC7  
 Lamhot, Yuval—LSMC3  
 Lan, Tzu-Hsiang—FWT4  
 Lancry, Matthieu—AWB2, AWB4,  
 JTuC16, LMTuA5  
 Landers, Frank—AOTHc4  
 Landry, James P.—FTuY4  
 Langrock, Carsten—AWC2  
 Langston, Peter—FThS7  
 Lanyon, B. P.—JWD3  
 Lanzara, Alessandra—LSWJ3  
 Lardenois, S.—FTuW1  
 Lardière, Olivier—AOTuB2  
 Larin, Kirill—FThV2, SC340  
 Larina, Irina V.—FThV2  
 Lasser, H.—FThM3  
 Latas, Sofia C. V.—FThI5  
 Laux, E.—FWP4  
 Lawall, John R.—FWI2  
 LCGT Collaboration—JTuA5  
 Leach, Jonathan—CTuC2, JTuB4, JWD4  
 Le Blanc, Catherine—FMI2  
 Leblond, Herve—FThI4  
 Lederer, Falk—FMA3  
 Lee, Byoung-Su—FWE5  
 Lee, Byoung-Ho—JWC54  
 Lee, Chee Wei—FThK3  
 Lee, Chang-Hee—FTuP1, FTuP2  
 Lee, Dongjoo—JWC17  
 Lee, El-Hang—JTuC13  
 Lee, Eui Su—JWC26  
 Lee, Hak-Soon—FMJ6  
 Lee, Hong-Shik—FWE5  
 Lee, Hsiao-lu D.—CTuD1, LSWD2  
 Lee, Joyce—FMF4  
 Lee, Jin-Hyoung—FTuN4  
 Lee, Jeunghoon—FWC2  
 Lee, Jonathan Y.—FML4  
 Lee, Kyu Jin—JWC44, JWC56, JWC57  
 Lee, Marissa K.—LSWD2  
 Lee, Sang Shin—FMD7  
 Lee, Sang-Shin—FMJ6, FWE5  
 Lee, Soonil—FWC1  
 Lee, Seung Gol—JTuC13  
 Lee, Wan-Gyu—FMJ6  
 Lee, Yoo Seung—FMD7  
 Lee, Yoon-Suk—JTuC13  
 Leger, James R.—CThA1, FThD3  
 Lehnert, Konrad W.—LSTuE3  
 Leigh, Matthew A.—JWC28  
 LeLouarn, Miska—AOTHb, AOTuD3  
 Lencina, Alberto—JWC83  
 Leniec, Monika—FThB5  
 Leon, Erich De—FME7  
 Leone, Stephen R.—LSTuL3  
 Le Roux, Brice—AOTuB3  
 Lester, Luke F.—FMB4, FMB5, FThK1,  
 LSTuA7  
 Levene, Michael J.—FThP5, FTuL,  
 FTuY6, FWA4, FWA5  
 Levi, A. F. J.—LSTuA6  
 Levin, Anat—FThR, FThX1  
 Levin, Carly—JWC60  
 Levina, Larissa—FThS5  
 Levitt, Jonathan M.—FMK3  
 Levoy, Marc—JWA3  
 Levy, Ronen—FMJ8  
 Lew, Matthew—CThA4, CTuD1  
 Lewis, Steffan A. E.—FWE3  
 Li, Chun-Fang—FTuX3, FWH5  
 Li, Chaohong—JTuC1  
 Li, Er-Ping—FThO4  
 Li, Guoqiang—FTuH1, FTuO  
 Li, H.—FTuN5  
 Li, Hongpu—FWK5  
 Li, Jieda—FThE6  
 Li, Jensen—FTuN2  
 Li, Jingjing—FWC5, FWT6  
 Li, Kaccie Y.—FWX1  
 Li, Qin—JWC15  
 Li, Rui—FML6  
 Li, Wei—AWC5  
 Li, Wen—LSTuI3  
 Li, Xin—FMF3  
 Li, Xiangyu—FThO4  
 Li, Yan—FThK1  
 Li, Zhiyong—FWT6  
 Liang, Yan—LSThB1  
 Liapis, Andreas C.—FMA2  
 Lidke, Diane S.—LSThF2  
 Lienau, Christoph—FMH, FWP1  
 Lifshitz, Efrat—LSMC3  
 LiKamWa, Patrick—FTuE1  
 Lim, Boo-Taek—FMJ6  
 Lim, Hwan Hong—FTuO3, JWC11  
 Lim, Sehoon—CThA6  
 Lim, Yongjun—JWC54  
 Lima, Francinete—FTuX4  
 Limouse, Charles—LSWD4  
 Limpert, Jens—FThJ4  
 Lin, Chang-Yi—FThK1  
 Lin, Chien-I—FWP2  
 Lin, Hong—JWC33  
 Lin, Kung-Hsuan—JWC82  
 Lin, Po-Heng—JWC82  
 Lin, Shie-Hen—JWC5  
 Lin, Yu-Ting—AWB1  
 Lin, Yang-Cheng—JWC1  
 Lin, Ziliang—JWE5  
 Lin, Zhiwei—LSW12  
 Lindblom, M.—FThA4  
 Linzon, Yoav—FThF6  
 Lipovskii, Andrey A.—ATHC5  
 Lipson, Michal—FTuW3, FWY3  
 Liška, Miroslav—JWC18, JWC19  
 Litchinitser, Natalia M.—FTuE5  
 Little, D. J.—LMTuC1  
 Littlejohn, David—LSMG3  
 Litvinov, Rudolph—ATHB4  
 Liu, Boyang—FThE3, FThK3, FThO4  
 Liu, Chian—FThM2  
 Liu, Chongyang—FWN2  
 Liu, Chien-Sheng—JWC82  
 Liu, Huikan—FMA6  
 Liu, Jun—FThE3  
 Liu, Ling—JWA4  
 Liu, Na—LSWD2  
 Liu, Rui—FWS2  
 Liu, Shuangqiang—FWL6  
 Liu, Sheng—JWC32  
 Liu, Wenjun—FThM2  
 Liu, Weiming—FTuX3  
 Liu, Xue—FThV3, FTuH2  
 Liu, Zhijun—FWZ4  
 Liu, Zhongqiang—JWC76  
 Lo, Victor L.—STuB2  
 Lock, Robynne—LSTuI3  
 Loh, Ter-Hoe—JWC53  
 Löhmus, Madis—FTuO5  
 Lombard, E.—FWP4  
 London, Richard A.—LSThA3  
 Longmore, Andy—AOTuA5  
 Loomis, Nick—FThB1  
 Looze, Douglas P.—AOTHB3  
 Lopez-Cortes, Daniel—JWC41  
 López-Mariscal, Carlos—FWM, FWS5  
 Lopez-Santiago, Alejandra—ATHB2  
 Lord, Samuel J.—CTuD1, LSWD2  
 Lou, Cibo—FThI3  
 Lou, Qihong—FThD1

- Louradour, Frederic—FWI5  
 Louri, Ahmed—FWL5  
 Love, Gordon D.—FTuM2  
 Low, Philip S.—FTuL3  
 Lozhkarev, Vladimir—LSWK3  
 Lozovoy, Vadim V.—FMF7, LMTuA4, LSWI3  
 Lu, Y. F.—LMTuD2  
 Lucero, Erik—JMA1  
 Luchansky, Matthew S.—LSMC1  
 Luckasevic, Kelly M.—JWC76  
 Lugani, Jasleen—FWJ2  
 Lukofsky, David—FThS3  
 Lumeau, Julien—FMF2  
 Lumsdaine, Andrew—CTuB3, STuA6  
 Lundeen, Jeffrey S.—FWJ3  
 Luna, Carlos E.—STuC1  
 Lundström, U.—FThA4  
 Luo, Jingdong—FThE3  
 Luo, Juntao—FTuY4  
 Luo, Xuan—CTuC3  
 Luo, Yuan—FME7  
 Lurçon, Jean-Marie—AOTuD3  
 Luther, B. M.—FTuZ2  
 Luther-Davies, Barry—FThE5  
 Luzinov, Igor—ATHC4  
 Lynch, Candace—AWA1, AWD  
 Lynn, David G.—LSThB1
- Ma, Guohong—FTuX3  
 Ma, Hyungjin—FWB6  
 Ma, Jing—FThF5  
 Ma, Lijun—JMA5  
 Ma, Li L.—FThP6  
 Ma, Ren-Min—FTuB2  
 Mabuchi, Hideo—LSWD4  
 Maccagnano-Zacher, Sara—LSTuJ4  
 MacFarlane, Duncan—FWR3, JWC9  
 Machan, Jason—FThD2  
 Mackey, Ruth—AOTuB4  
 Madden, Steve—FThE5  
 Madec, Pierre-Yves—AOTuD3  
 Mafi, Arash—FThW, FWF3, JWC38  
 Mägi, Eric C.—FTuD4, FTuR5  
 Magnusson, Robert—FTuH4, FTuY1, FWI3, JWC44, JWC56, JWC57  
 Mahalanobis, Abhijit—CWA5  
 Mahjouri-Samani, M.—LMTuD2  
 Mahler, Tom—FMC6
- Mahou, Pierre—FWJ3  
 Maia, Filipe R. N. C.—LSThA3  
 Maier, Stefan A.—FTuB6, SC324  
 Maikisch, Jonathan S.—FMJ4  
 Maire, Jérôme—AOTuC4  
 Mait, Joseph N.—CThA, CTuA3  
 Majumdar, Arka—FWB5, LSTuD4  
 Makarov, Nikolay S.—JTuC14  
 Makarova, Maria—FML6  
 Makhlouf, Houssine—FWR2  
 Malacara-Hernández, Daniel—JWF4  
 Maleki, Lute—FThC1  
 Malina, Radomír—JTuC12, JWC18  
 Malomed, Boris A.—FThF6  
 Mance, Jason—LSTuG3  
 Mandridis, Dimitrios—FMD2, FWL1, FWL2, FWX4  
 Mangalaraja, R. V.—LSTuG6  
 Manning, R. J.—FTuW1  
 Mansano, Ronaldo D.—JWC4  
 Manson, Neil B.—LSTuD3  
 Manuel, Anastacia M.—FThH3  
 Marc, Sorel—FMC2  
 Marchesini, Stefano—LSThA3  
 Marciante, John R.—FThD5, FThJ2, FTuD5  
 Marconi, Mario C.—FTuS2, FTuZ2  
 Marcos, Susana—JWB4  
 Marcus, Rudolph A.—LSTuJ1  
 Marega Jr, Euclides—JWC4  
 Marin, Emmanuel—JWC40  
 Markosyan, A.—FThS7  
 Marks, Daniel L.—CThA5, CThA6, CTuA6  
 Marks, Tobin J.—FThE3  
 Marmo, Jay—FThD2  
 Marques, Paulo V. S.—LMTuC5  
 Marshall, G. D.—LMTuC1  
 Marteaud, Michel—AOTuA5  
 Martin, Michael C.—LSWJ3  
 Martín, Virginia—LSWG4  
 Martinez, Patrice—AOTuC2  
 Martinez-Corral, Manuel—FTuF1  
 Martínez-Niconoff, Gabriel—JWC2  
 Martinez Vazquez, R.—LMTuC3  
 Martini, Giuseppe—FWG5  
 Martinis, John—JMA1  
 Masajada, Jan—FThB5  
 Maser, Jörg—FThM4
- Mathieu, François—FMI2  
 Matsko, Andrey B.—FThC1  
 Matsun, Charles L.—SWA  
 Matsukevich, Dzmitry N.—JWD6  
 Matthews, Dennis—FWS2  
 Matthews, Jonathan C. F.—FMG1  
 Maunz, Peter—JWD6  
 Maurya, Mahendra K.—JWC45  
 Mavalvala, Nergis—LSTuB, LSTuH3  
 Max, Claire E.—AOTuA4  
 Maxwell, G. D.—FTuW1  
 May-Arrijoa, Daniel A.—FTuD6, FTuD6, FTuE1, JWC41  
 Maylin, Matthew I. S.—STuB5  
 Mazur, Eric—AWB1, FWA1, LMTuA, LMTuDp  
 McCarthy, Nathalie—JTuC15, JWC73  
 McClellan, Michael—FThD2  
 McCusker, James—LSTuC4  
 McCusker, Kevin T.—JMA3  
 McDowell, Emily—FWS4  
 McEldowney, Scott—FThF1, FThL  
 McFarlane, Michelle—JWC78  
 McGuire, James P.—FTuT3  
 McHale, Kevin—LSWD4  
 McInerney, John G.—FThJ3, FThK6  
 McKinney, Wayne R.—FThT2  
 McKinstrie, Colin J.—FTuR  
 McMillan, James F.—FML5  
 McMillen, Colin D.—AWC1  
 McNally, Jim—FThG1  
 McNaught, Stuart J.—FThD2, FThJ  
 McNeil, Michael R.—JWC68  
 McNulty, Ian—FThA  
 McPhedran, Ross C.—FWF5  
 Measor, Philip—FMJ7  
 Medic, Milja—FWJ5  
 Meech, S. R.—FMK2  
 Meehan, Alaster J.—JWB5  
 Mehta, Dalip S.—JWC62  
 Mehta, Gaurav—FTuE5  
 Mehta, Monal R.—FMK7  
 Mehta, Shalin B.—FMK6, SWA4  
 Meiselman, Seth—LSTuA2  
 Mel'nikov, Igor V.—FThI4, FTuD3  
 Mele, Elisa—FThO1  
 Melis, Anastasios—FMB2  
 Mencer, Oskar—AOThB2  
 Méndez, Cruz—JWC10, LSWB4
- Méndez Otero, Maribel M.—JWC59  
 Mendlovic, David—CWB3, STuA7  
 Menezes, Leonardo de S.—ATHC5  
 Menon, Rajesh—FThA2  
 Menon, Vinod M.—ATHA4  
 Menoni, Carmen S.—FThS7, FTuS2, FTuZ2  
 Menzel, Andreas—FThT1, LSTuL4  
 Menzel, Christoph—FMA3  
 Merano, M.—FMF5  
 Merigan, William H.—FTuQ2  
 Merino, David—FWX1, JWB2  
 Mertz, Jerome—FWA2  
 Messersmith, Phillip B.—FTuL4, JWC76  
 Mestre, Michael—FThU6, FThU7  
 Metcalfe, Michael B.—FWI2  
 Metha, Andrew B.—JWB5  
 Meunier, Jean-Pierre—JWC40  
 Meystre, Pierre—LSTuE1, LSTuH  
 Mezentsev, Vladimir—JTuC19, LMTuA6, LMTuC6  
 Mezosi, G.—LSTuI4  
 Miao, Jianwei—LSThE1  
 Michalache, Dumitru—FThI4  
 Migacz, Justin—FWR4  
 Mihailov, Stephen—FTuD7, FTuE2  
 Mikaberidze, Alexey—LSTuI1  
 Mikhnov, Sergej—ATHB4  
 Milanfar, Peyman—JWA2  
 Milián, Carles—FWP3  
 Millane, Rick P.—STuB2, STuC  
 Miller, Darren—FThF4  
 Miller, David A. B.—CTuC1  
 Miller, Donald T.—AOThA, JWF3  
 Millot, G.—FWD1  
 Milner, Thomas E.—FThP6  
 Milojkovic, Predrag—CTuB4  
 Min, Changjun—FThW5  
 Mironov, Sergey—LSWK3  
 Misawa, Hiroaki—LMTuB1  
 Mishra, Vinod—FThN3  
 Mishra, Vandana—FWG6  
 Misra, Kamakhya P.—AWA6  
 Mitchell, M.—LMTuD2  
 Mitra, Anirban—FTuL2  
 Mitra, Arnab—JWC30  
 Mittleman, Daniel M.—STuA4  
 Miyoshi, Norio—JWC74  
 Mlodzianoski, Michael J.—LSThB2
- Mochi, Iacopo—FThT2  
 Mochrie, Simon—LSThC2  
 Moerner, W. E.—CThA4, CTuD1, FMH2, FWM2, JWC16, LSTuF3, LSWA1, LSWA4, LSWD2  
 Mohnkern, Lee—AWA2  
 Mohseni, M.—JWD3  
 Mokhov, Sergiy V.—FMF2, FWX5  
 Molinelli, C.—LSTuK1  
 Möller, Thomas—LSThA3  
 Momeni, Babak—FTuB7, FWZ2  
 Monken, Carlos H.—JMA6  
 Monnier, John D.—FMJ1  
 Monro, Tanya—FTuE3  
 Monroe, Christopher—JWD6  
 Montera, Dennis—AOTuA1  
 Mookherjee, S.—FML2  
 Moon, Han Seb—JWC11  
 Moon, Jin-Young—FWC1  
 Moore, Nicole J.—FWH1  
 Moore, Richard O.—FTuR3  
 Morandotti, Roberto—FMC2, FMG4, FThF6, FWD3  
 Moreno, M.—FThI6  
 Morgan, Jessica I. W.—FTuQ2  
 Morin, Pierre—AOThD3  
 Moritz, Tobias—FWS2  
 Moro, Slaven—FTuD2  
 Morris, Tim—AOTuA5, JTuC4  
 Morrison, Gregory—FThT2  
 Morrissey, F. X.—LSTuG3  
 Morrissey, Michael J.—FMG3, FThC2  
 Morse, Theodore E.—ATHD4  
 Mortier, Michel—FThO3  
 Mosallaei, Hossein—FTuV3, FTuV4  
 Moses, Edward I.—FTuK1  
 Moshchalkov, Victor—FTuB6  
 Mosk, Allard P.—FTuU2, FWF4, FWS6  
 Mouillet, David—AOTuC3  
 Moulton, Peter—AWB  
 Mouradian, Levon—FWI5  
 Mourou, Gérard—FMI2  
 Moustakas, Theodore D.—FMH4  
 Mozharov, Sergey—LSMG3  
 Mudrakola, Harsha V.—LSThB3  
 Mueller, Guido—JMB3, JTUA4  
 Mugnier, Laurent—AOTuC3  
 Mukhamedgalieva, Anel F.—FThS6  
 Mukherjee, Jayanta—FThJ3

- Mullen, Klaus—FMH2  
Muller, Matthew S.—FME5, FThQ2  
Müller, Waltraud—FThG1  
Mulvihill, Alex—JWC46  
Mun, Sil-Gu—FTuP2  
Munday, Jeremy—LSTuH2  
Muradoglu, Metin—FThU7  
Murakami, Yoshihisa—JWC22  
Murnane, Margaret M.—FTuZ1, LSTuI3  
Murphy, Thomas E.—FTuL2  
Murphy, Timothy O.—JWC28  
Murshid, Syed H.—FTuP5, JWC50, LSTuF2  
Musser, Joseph A.—FWR5, FWX3  
Muyo, Gonzalo D.—FThX2  
Myers, Richard M.—AOTuA, AOTuA5, AOTuD4, JTuC4  
Myneni, Vimeetha—CThC4  
Myslivets, Evgeny—FWK2
- Naderi, Nader A.—LSTuA7  
Naderian, Azadeh—JWF2  
Nadler, Brett R.—FWG2  
Nagasono, M.—LSMH1  
Najdek, David—FWS3  
Nalawade, Sandipan—JWC37  
Narasimhan, Srinivasa—CTuD5  
Narducci, Francesco A.—LSTuA1, LSTuA2, LSTuI5  
Narimanov, E. E.—FTuN5  
Nataraj, Latha—AWA5  
Natarajan, S. R.—LMTuC6  
Nath, Ashish Kumar—JWC12  
Ne-Te Loh, Duane—LSThA1  
Neeley, M.—JMA1  
Neifeld, Mark Allen—CThD, CTuA2, CTuC  
Nemet, Greg—LSWK4  
Nemirovsky, Yoni—LSMC3  
Neshev, Dragomir N.—FThI1  
Neto, Luiz G.—JWC4  
Neumann, Joerg—JTuA2  
Neves, Antonio A. R.—LMTuB2  
Nevet, Amir—FMG6, FMH3  
Newhouse, Rebecca—FTuE4  
Newport, David—FWY5  
Ng, Keh-Ting—JWC53  
Ng, Wei-Ren—FWX2  
Nguyen, D.—FThS7
- Nguyen, Dat—FWX4  
Nic Chormaic, Sile—FMG3, FThC2  
Nichols, Geoffrey—STuC4  
Nicolodelli, Gustavo—JTuC20  
Nielsen, Martin M.—LSTuC2  
Niinimäki, Kati—STuA2  
Nilsson, D.—FThA4  
Nilsson, Josefín—JWC78  
Ning, Yongqiang—JWC15  
Nishida, Yoshiki—JWE2  
Nishii, Junji—ATHC1  
Nitkowski, Arthur—FWY3  
Nkenke, Emeka—FThP2  
Noad, Julian—FTuW4  
Noda, Toshihiko—FMD4  
Noek, Rachel—FWR4  
Noginov, M. A.—FTuB5, FTuN5  
Noh, Jong Wook—FMJ2  
Nootz, Gero—FThS5  
Nordin, Gregory P.—FMJ2  
Nordlander, Peter—FTuB6  
Nordon, Alison—LSMG3  
Norfolk, Andrew W.—FThI2  
Northcott, Malcolm—AOTHd  
Norton, Andrew—JTuC3  
Norwood, Robert A.—ATHB2  
Notomi, Masaya—FWV2  
Novikova, Irina—FThS2  
Novotný, Filip—ATHA2  
Novotný, Jan—JTuC12, JWC18  
Novotný, Karel—JTuC12, JWC18, JWC19  
Novotný, Lukas—FTuL2  
Nugent, Keith A.—JWB5  
Numata, Hidetoshi—JWC39  
Nuñez Quintero, Jesus A.—JWC42  
Nuzzo, Valeria—FWA1  
Nývlt, Martin—FWS3, JWC64
- O, Beom-Hoan—JTuC13  
O'Brien, Jeremy—FMG1  
O'Connell, A. D.—JMA1  
O'Connor, Shane—FMJ5  
Odelius, Michael—LSWF3  
Odoi, Michael Y.—LSTuJ2, LSTuJ3  
Oh, K—FWE2  
Oh, Se Baek—CTuD4  
Oh, Sang-Min—FTuP2  
O'Hara, John F.—FWO1  
O'Hara, Ken—LSTuA8
- Ohnuki, Masayuki—FThF4  
Ohta, Jun—FMD4  
Ojeda-Castañeda, Jorge—FWQ3  
Oka, Kazuhiko—FThF4  
Okano, Fumio—FTuF3  
Okawachi, Yoshitomo—FTuW3  
Okhrimchuk, Andrey G.—JTuC19, LMTuA6  
Oliveira, Juliano R. F.—FTuC4  
Oliveira, Luciane F.—ATHA3  
Oliveira, Sergio C.—FWT3  
Oliveira, Tâmara R.—FThS1  
Olmschenk, Steven—JWD6  
Olson, Eben—FTuY6  
Olvera-Santamaría, Miguel A.—JWC2  
Orenstein, Meir—FMG6, FMH3, JWD5  
Orszag, Miguel—JWE6  
Orth, Antony—FTuH3  
Osellame, R.—LMTuC3  
Ostendorf, Andreas—LMTuD, LMTuDp  
Österberg, Ulf—FThS3  
Ostrovsky, Andrey S.—JWC2  
Ostrovsky, Dan—FWJ2  
O'Sullivan, Joseph A.—CThB5  
Otendal, M.—FThA4  
Ou, Fang—FThE3, FThO4  
Ou, Haiyan—FThE1  
Oulton, Rupert F.—FTuB2  
Ozdur, Ibrahim—FMD5, FWL1, FWL2, FWX4  
Ozharar, Sarper—FWL1, FWX4
- Padgett, Miles—CTuC2, JTuB4, JWD4  
Padhy, Bibhuti Bhushan—JWC37  
Padilha, Lazaro A.—FThS5, LSTuG2  
Padmore, Howard A.—FThT2  
Pagliara, Stefano—FThO1  
Paiella, Roberto—FMA5, FMH4  
Paillard, Jean Luc—FMI2  
Painter, Oskar J.—LSTuE2  
Palombo, Nola J.—JWC33  
Palomino Ovando, Martha Alicia—JWC55  
Pan, Xiaochuan—STuA1  
Pandiyani, Krishnamoorthy—FTuO3  
Pang, Lin—FWB1  
Paniccia, Mario—FWN3, FWZ  
Panoiu, Nicolae C.—FML5  
Pant, Ravi—FTuD4, FTuR5  
Paranjape, Amit S.—FThP6
- Parekh, Devang—FTuW2, FWL3  
Park, Doo-Jae—FWC1  
Park, H. R.—FWC3  
Park, J.—FME1  
Park, Jongchul—FTuJ3  
Park, Junghyun—JWC54  
Park, J. S.—FML2  
Park, N. K.—FWC3  
Park, Se-Geun—JTuC13  
Park, Sungnam—LSWF3  
Park, Won—FTuN4  
Parra, Sonia—FWA5  
Parthasarathy, Ashwin—FME2  
Patchkovskii, Serguei—LSTuI3  
Pate, Dinesh—FThS7  
Patel, Darayas N.—JWC13  
Patel, Monika—FWJ5  
Pauca, Paul—CThB2  
Paufique, Jerome—AOTuD3  
Paul, Thomas—FMA3  
Pavani, Sri Rama Prasanna—CTuD1, CTuD2, FMK5  
Payne, Ben—FMC3, FMC6  
Payne, Christine—LSThF1, LSWA  
Payne, J. D.—FME1  
Peceli, Davorin—LSTuG2  
Pedaci, F.—FTuZ2  
Pedersen, Christian—FThR6  
Peetrig, Benno L.—FThQ2  
Peña, Abe—FMC5  
Penson, Shawn—AWC5  
Perry, John M.—LSMG5  
Perry, Susan—FTuY5  
Persano, Luana—FThO1  
Pertsch, Thomas—FMA3, FThC3, FThC6  
Peruzzo, Alberto—FMG1  
Pervak, Vladimir—FTuK3  
Pestov, Dmitry—FMF7, LSWI3  
Peteanu, Linda—LSTuG1  
Petek, Hrvoje—LSWG1, LSWJ  
Peterhänsel, S.—FWV1  
Petermann, Klaus—LMTuC2  
Petersen, Paul Michael—JWC3  
Petit, Cyril—AOTHa2, AOWB1  
Petit, Laeticia—ATHC4  
Petrig, Benno L.—FME5  
Petroff, Pierre—FWB5  
Petrov, Nikolai I.—JWC8  
Petschulat, Jörg—FMA3
- Peyghambarian, Nasser—ATHB2, FTuT1  
Pfeiffer, Franz—FThT1, LSTuL4  
Pfrommer, Thomas—AOTuA2  
Phillips, Brian S.—FMJ7  
Phillips, Chris R.—AWC2  
Phillips, Nathaniel B.—FThI, FThS2  
Phipps, M. Lisa—LSThF2  
Piché, Michel—JTuC15  
Picozzi, A.—FWD1  
Piestun, Rafael—CThD, CTuD1, CTuD2, CTuD3, FMK5, JWA, LMTuB3  
Piksarv, Peeter—FTuO5  
Pinkse, Pepijn W. H.—FWF4  
Piracha, Mohammad Umar—FWX4  
Pires, Henrique D. L.—JMA6  
Pisignano, Dario—FThO1, LMTuB2  
Plant, Jason J.—FWL2  
Plascencia-Mora, Hector—JWC67  
Platonenko, Victor T.—LSMH4  
Plönjes, Elke—LSThA3  
Pochet, Michael C.—LSTuA7  
Podolskiy, V. A.—FTuB5  
Pogorelsky, Igor—LSMH4  
Politi, Alberto—FMG1  
Pollak, Thomas M.—AWA2, AWA3  
Polo, Marco—LMTuB2  
Polyanskiy, Mikhail N.—LSMH4  
Pomeranz, Leonard A.—AWA3  
Ponomareko, A. G.—FTuZ2  
Ponticorvo, Adrien—FME2  
Porter, Jason—FThQ3, JTuC1  
Potma, Eric Olaf—FMK1  
Pottiez, Olivier—FThD4  
Poulin, Jean Claude—AWB2  
Poumellec, Bertrand—AWB2, AWB4, JTuC16, LMTuA5  
Poustie, A. J.—FTuW1  
Poutous, Menelaos—FTuO1  
Povinelli, Michelle—FThF5  
Powell, B. J.—JWD3  
Poyneer, Lisa—AOTuB, AOTuC4, AOWB2, JTuC3  
Pozi, Francesca—FMC2  
Prasad, Sudhakar—CTuC3  
Prasada Rao, T.—LSWG3  
Prater, C.—FMK2  
Preble, Stefan F.—FML3, FThU4  
Preston, Alex—JMB3  
Preza, Chrysanthé—CThB5, CThC4



- Prieto, Camilo—JWC10  
 Proška, Jan—ATHA2  
 Procházka, David—JTUC12, JWC18  
 Przhonska, Olga V.—LSTuG2  
 Psaltis, Demetri—CThA2  
 Ptasinski, Joanna—FWB1  
 Pu, Jixiong—FThX6  
 Pu, Minhao—FThE1  
 Pueyo, Laurent—AOWA1  
 Puncken, Oliver—JTUA2  
 Purohit, Gagandeep—JWC37  
 Puvanakrishnan, P.—FME1
- Qavi, Abraham J.—LSMC1  
 Qi, Xiaofeng—JWF1  
 Queener, Hope—JTUC1  
 Quimby, Richard S.—ATHD4  
 Quinlan, Franklyn—FMD2, FWL1  
 Quirin, Sean—CTuD3
- Rabien, Sebastian—AOTuA3  
 Raday, Omri—FWN3  
 Radic, Stojan—FML2, FTuD2, FTuI1, FWK2  
 Rahman, Saad A.—AOTHc3  
 Rai, Amit—FMG5  
 Raimond, J. M.—JWE4  
 Raineri, Fabrice—FTuS4  
 Raj, Rama—FTuS4  
 Rajalingam, Dakshinamurthy—JWC66  
 Rajan, Dinesh—CTuB4  
 Rajarajan, Petchimuthu—JWC12  
 Rajeev, P. P.—LMTuA1  
 Rajeswaran, Manju—LSTuJ4  
 Rakich, Andrew—FThH4  
 Ram, Dole—FThN3  
 Ramadan, Tarek A.—FWZ3  
 Raman, Chandra—LSWD4  
 Ramírez Martínez, Daysi—JWC59  
 Ramos Mendieta, Felipe—JWC55  
 Ramos-Gonzales, R. E.—FWF2  
 Ramponi, R.—LMTuC3  
 Randone, Enrico—FWG5  
 Rangarajan, Prasanna V.—CTuCa  
 Ranitovic, Predrag—LSTu3  
 Rao, Devulapalli V.—FThF3, FThV5  
 Rarity, John G.—FMG1  
 Raskar, Ramesh—CTuA1, CTuB  
 Rasras, Mahmoud S.—FWN1
- Rath, Shyama—JWC27  
 Rativa, Diego—JWC43, JWC77  
 Ravi, Koustuban—FThK5  
 Rawal, Swati—FThX6  
 Raynaud, Henri-François—AOTHa2, AOWB1, AOWB4  
 Rayner, D. M.—LMTuA1  
 Reading, M. M.—FMK2  
 Reano, Ronald M.—FThE7  
 Rebane, Aleksander—JTUC14  
 Reichman, Wilbur—LMTuCa  
 Reid, Margaret D.—LSTuA4  
 Reinspach, J.—FThA4  
 Reis, David A.—LSMD  
 Reitze, David H.—FThK, JTUA, JTUA4  
 Rekawa, Senajith B.—FThT2  
 Ren, Xiaofan—LSTuJ4  
 Resch, Kevin J.—JWD  
 Rey, Gilles—FMI2  
 Rha, Jungtae—JWF  
 Rhee, Seuk-Joo—FTuN4  
 Rhodes, William T.—FWW1  
 Rhyner, Steven J.—FTuF2  
 Ribak, Erez N.—AOTHc5, AOTuB4  
 Rice, J. H.—FMK2  
 Rich, Wade—FThP3  
 Richardson, Kathleen—ATHc4, ATHc  
 Richardson, Martin—ATHc4, AWB3, FTuS1, FTuZ  
 Richter, C.—FWV1  
 Richter, Ivan—ATHa2, FTuO7, FWC7  
 Rickenstorff-Parrao, Carolina—JWC2  
 Ritcey, Anna M.—JWF2  
 Ritsch-Martel, Monika—CTUC2, FTuU1, FWI  
 Rivenson, Yair—CTuA4  
 Rivera, Jose G.—JWC76  
 Robbe-Cristini, Odile—ATHc3  
 Robert, Aymeric—LSThA, LSThC1  
 Robinson, Dirk—CThB3, CTuCa  
 Robinson, Ian—LSThE2  
 Robinson, Michael D.—CThB4  
 Rocca, Jorge J.—FTuS2, FTuZ2  
 Rockstuhl, Carsten—FMA3  
 Rodas, Maria—FMG1  
 Rodrigo, José A.—STuD2, STuD3  
 Rodriguez, Vincent—AWB3  
 Rogers, Lachlan J.—LSTuD3  
 Rolland, Jannick P.—FThH4, FThN2, FThN5, FTuT3
- Romero, Carolina—LSWB4  
 Romero, Jacqueline—CTUC2, JTUB4, JWD4  
 Rong, Haisheng—FWN3  
 Roorda, Austin—FThQ, FWX1, JWB2  
 Roppo, Vito—FThI1, FThW2, FTuS4  
 Rose, Volker—FThM4  
 Rosen, Joseph—FThR2, FThX  
 Rosenblum, Serge—JWD5  
 Roso, Luis—JWC10, LSWB4  
 Rossi, Vincent M.—FME4  
 Rost, Jan-Michael—LSTu1  
 Roth, Zachary—FTuO1  
 Rotschild, Carmel—LSMC3  
 Rouse, Andrew—FWR2  
 Rousset, Gérard—AOTuA5, AOTuCa  
 Roussev, Rostislav V.—AWC3  
 Route, Roger K.—AWC2, AWC3, FThS7  
 Rowan, Sheila—JTUA3  
 Roy Choudhury, Kaushik—LSTuA6  
 Royon, Arnaud—AWB3  
 Ruan, Yinlan—FThE3  
 Rubinsztein-Dunlop, Halina—FWM3  
 Rubtsov, Grigory I.—LSWI2  
 Rubtsov, Igor V.—LSWI2  
 Rudolph, W.—FThS7  
 Rumpf, Raymond—FTuO1  
 Ruschin, Shlomo—FMJ8  
 Russell, Laura—FMG3, FThC2  
 Russell, Philip S. J.—ATHD3  
 Rutkowska, Katarzyna A.—FThF6  
 Ryan, Andrew T.—JMA7
- Saalmann, Ulf—LSTuI1  
 Saari, Peeter—FTuO5  
 Saathoff, G.—LSTuB1  
 Saavedra, Carlos—JWC63  
 Saavedra, Genaro—FWW2  
 Saillard, Marc—STuD4  
 Sakata, Hironobu—FThS4  
 Sakdinawat, Anne—FThA3  
 Saleh, Bahaa E. A.—FWJ1  
 Saleh, Mohammed F.—FWJ1  
 Salem, Mohamed F.—FWU1  
 Salem, Reza—FTuW3  
 Salit, Kenneth—LSWB3  
 Salit, Mary—JTUA6, LSWB3  
 Saltiel, Solomon—FThI1
- Sampson, Philip C.—FWM4  
 Samuel, Reichel—LSWD2  
 San Román, Julio—JWC10  
 Sánchez Sánchez, Mauro—JWC47  
 Sanchez-Mondragon, Jose J.—FTuD6, JWC41  
 Sanchez-Mondragón, Javier J.—JWC67  
 Sandhu, Arvinder—LSTu3  
 Sandoghdar, Vahid—LSTuD1  
 Sandoz, Patrick—JWC70  
 Sank, D.—JMA1  
 Sankaranarayanan, Ramasubramanian—JWC31  
 Santhosh Kumar, M C.—LSWG3  
 Santori, Charles—FThU1, FWJ4, LSTuD3  
 Santos, Cassio E. A.—ATHA3  
 Santra, Robin—LSTu3  
 Saraf, Meirav—LSMC3  
 Sarangan, Andrew—SC235  
 Sarepaka, Rama Gopal V.—FThN3  
 Sargent, Edward H.—FThS5  
 Sarkisov, Sergey—JWC13  
 Sasagawa, Kiyotaka—FMD4  
 Sass, Lauryn E.—LSThD3  
 Sastikumar, Dillibabu—JWC12  
 Sastre, Roberto—LSWG4  
 Sato, Shinya—FTuC7  
 Sauvage, Jean-François—AOTuCa  
 Savchenkov, Anatoliy A.—FThC1  
 Sawides, Lucie—JWB4  
 Saykally, Richard J.—LSWB5  
 Sayrin, C.—JWE4  
 Scalora, Michael—FThW2, FTuS4, FWC6  
 Schaake, Jason—JMA4  
 Schaeffel, Frank—JWC80  
 Schaffer, Chris—LMTuB, LMTuDP  
 Scheeren, Carla W.—ATHA3  
 Scherman, Michael S.—JWC68  
 Scherz, Andreas—LSThE3  
 Scheuer, Jacob—FMJ3  
 Schlau-Cohen, G. S.—LSWC1  
 Schlotter, W. F.—LSMH1  
 Schmid, Karl—FTuK3  
 Schmid, Tobias—FThH4  
 Schmidt, Carsten—FThC3, FThC6  
 Schmidt, Holger—FMJ7  
 Schmidt, Michael—FThP2  
 Schmidt, Markus A.—ATHD3  
 Schmidt, Regine—FMG3
- Schmitt, Robert—FTuO4  
 Schmitz, Holger—LMTuA6  
 Schneeberger, Timothy—AOTuA1  
 Schneider, Gerd—FThG1  
 Schneider, Jochen R.—LSThA3  
 Schneider, Vitor M.—ATHC2  
 Schnelle, Sebastian K.—FWM3  
 Schoeck, Matthias—AOTHB1  
 Schoenlein, Robert—LSTuCa  
 Scholes, Gregory D.—LSWC2  
 Schonbrun, Ethan F.—FThB2, FTuH3, FTuY2  
 Schoonover, Robert W.—FWH3, FWH6  
 Schotland, John—STuB1  
 Schouten, Hugo F.—FWU2  
 Schowengerdt, Brian—FTuM3, FTuT  
 Schreiber, Thomas—FThJ4  
 Schulz, Timothy J.—CWA3  
 Schülzgen, Axel—FTuD1  
 Schunemann, Peter G.—AWA2, AWA3, AWC  
 Schwab, Keith—LSTuB2  
 Schwartz, Benjamin J.—LSWB2, LSWH  
 Schwartz, J. A.—FME1  
 Schwefel, Harald G. L.—FThO2  
 Schwesyg, Judith R.—AWC2  
 Scire, A.—LSTuI4  
 Scribner, Dean A.—CThC2  
 Seaman, Aden—FTuQ4  
 Sears, Christopher—FTuK3  
 Segev, Mordechai—LSMC3, LSTuG4  
 Seibert, M. M.—LSThA3  
 Seidel, David—FThC1  
 Seidelin, Jeppe D.—FThR6  
 Sendowski, Jacob—FWK3  
 Sensarn, S.—JMA2  
 Sension, Roseanne J.—LSWI4  
 Senz, Stephan—ATHB3  
 Seo, JaeTae—FWB4  
 Seo, M. A.—FWC3  
 Shaddock, Daniel—JMB2  
 Shaffner, Thomas—JWC34  
 Shah, Jay D.—LMTuA4  
 Shah Hosseini, Ehsan—FWZ2  
 Shaheen, Nicholas J.—FME6  
 Shahraam, Afshar V.—FTuE3  
 Shahriar, Selim M.—FThV3, FTuH2, JTUA6, LSWB3  
 Shainline, Jeffrey M.—FWZ4

- Shakher, Chandra—JWC62  
 Shalae, Vladimir—FTuN3  
 Shanthi, Michael S. L.—LSTuG6  
 Shapira, Ofer—FTuX, FWE1  
 Shapiro, David A.—LSThA3  
 Shapiro, Jeffrey H.—JWE3  
 Sharma, Ginni—CTuD2  
 Sharma, Pallavi—JWC66  
 Sharma, Vandana—LSTuI3  
 Sharpe, Andrew W.—JWE2  
 Shay, Lisa—JWC58  
 Shchegrov, Andrei—LSWK4  
 Shcherbakov, Alexandre S.—JWC47  
 Shealy, David L.—FThH2  
 Shemirani, Mahdieh—FTuP3  
 Shemo, David M.—FThF1  
 Shen, Yuen-Ron—LSWE1  
 Sheng, Yunlong—FThB, FTuV1  
 Shenoy, M. R.—FTuE6, FWG6  
 Sheppard, Colin J. R.—FMK6, FThR4, LSWK5, SWA4  
 Sher, Meng-Ju—AWB1  
 Sheridan, John T.—FWW1  
 Sherwood, Gizelle A.—LSTuG1  
 Shestakov, Alexander—JTuC19  
 Shestov, Sergei—AthB4  
 Shevchenko, Yanina—FTuV, FWT1  
 Shi, Chao—FTuE4  
 Shi, Jielong—FTuX3  
 Shi, Zhimin—FMA2, FWC  
 Shields, Andrew J.—JWE2  
 Shih, Min-Hsiung—FWC2  
 Shih, Yanhua—FWI4  
 Shinn, M.—FThS7  
 Shivanand,—FMA6  
 Shokooh-Saremi, Mehrdad—FTuH4, FWI3  
 Sholokhov, Evgeny—JTuC19  
 Shostka, Nataliya V.—JWC61  
 Shostka, Vladimir I.—JWC61  
 Shreve, Andrew P.—LSTuG1  
 Shu, Deming—FThM2  
 Shu, Gang—JTuB5, JTuB6  
 Shubochkin, Roman L.—AthD4  
 Shukla, R. K.—AWA6  
 Shvedov, Vladlen G.—JWC61  
 Shwartz, Sharon—LSTuG4  
 Si, Ke—FThR4  
 Siahmakoun, Azad—JWC46  
 Siebenmorgen, Jörg—LMTuC2  
 Siegel, David A.—LSWJ3  
 Siemers, Troy J.—JWC34  
 Silberberg, Yaron—FMC2, FMG4, FMK3, FThX3, FWD3  
 Silcox, John—LSTuJ4  
 Siltanen, Samuli—STuA2  
 Simmonds, Richard D.—AOWA2  
 Simpsons, Garth J.—LSMF2, LSWB, LSWH1  
 Simpson, Randy—FThD2  
 Singh, Amandeep—FThN3  
 Singh, Ganga Sharan—FThN3  
 Singh, Kehar—JWC6  
 Singh, Nahar—FTuE6, FWG6  
 Singh, Narendra—JWC69  
 Singh, Surendra—JWC30, JWC66  
 Sinha, Kanupriya—FWJ2  
 Sinha, Ravindra K.—FTuX6  
 Sinquin, Jean-Christophe—AOTHd3  
 Sirbul, Donald J.—FWR1  
 Siviloglou, Georgios A.—FMF4  
 Škerek, Marek—FWS3, JWC64  
 Skipetrov, Sergey E.—FMC5, FTuJ4  
 Skoglund, P.—FThA4  
 Skryabin, Dmitry—FWD4  
 Slattery, Oliver—JMA5  
 Sliney, David—FTuQ1  
 Slominsky, Yurii L.—LSTuG2  
 Slutsky, Boris—FWB1  
 Small, Eran—FWD3  
 Smelser, Christopher W.—FTuD7, FTuE2  
 Smestad, Greg. P.—FMB1  
 Smirnov, Vadim—FMF2, FWX5  
 Smith, Brian J.—FWJ3  
 Smith, Barbara S.—JWC68  
 Smithson, Robert L.—FTuF2  
 Smulakovsky, Vladimir—FWD5  
 Snigirev, Anatoly—FThG2  
 So, Peter T. C.—LSWK5  
 Sobhani, Heidar—FTuB6  
 Soghomonyan, Suren—LSWK4  
 Soh, Yeng Chai—FWP5  
 Sokolov, Alexei V.—FMK4  
 Sola, Íñigo—JWC10  
 Solís, Irais V.—JWC67  
 Sollee, Jeff—FThD2  
 Solomon, Christopher J.—STuB5  
 Soltani, Mohammad—FTuB7  
 Soma, Venugopal Rao—JTuC17  
 Somayaji, Manjunath—CWB5  
 Somorjai, Gabor A.—LSWB1  
 Song, Hahn Young—JWC56, JWC57  
 Song, Jung Hun—AthA4  
 Song, Seok—JWC44, JWC56  
 Sonnenschein, Yannick—FTuB6  
 Sooryakumar, R.—FThE7  
 Sooudi, Ehsan—FThK6  
 Sorel, M.—LSTuL4  
 Sorgenfrei, F.—LSMH1  
 Sorger, Volker J.—FTuB2  
 Spanner, M.—LMTuA1  
 Spears, Kenneth G.—LSWI4  
 Spence, David J.—JWC14  
 Spencer, John S.—JWC68  
 Spiller, Eberhard—LSThA3  
 Spinhirne, James—AOTuA1  
 Spivey, Christopher—AOTHc2  
 Sprenger, Benjamin—FThO2  
 Squier, Jeff A.—FWH7  
 Sredar, Nripun—JTuC1  
 Srinivasan, Kartik—FMG2  
 Srinivasan, Pradeep—FTuO1  
 Srinivasarao, Mohan—LSMF3  
 Srinam, Vinay B.—AOTHB2  
 Srivastava, Atul—AWA6  
 Srivastava, Anchal—AWA6  
 Srivastava, Triranjita—FThW6  
 Staforelli, Juan P.—JWC63  
 Staliunas, Kestutis—FThI1  
 Starkey, Jean—JTuC14  
 Starling, David J.—FMF8  
 Stay, Justin L.—FTuX5  
 Stefanov, Andre—FMG1  
 Steier, William H.—FMD7  
 Steinberg, Ben Z.—FMJ3  
 Steiner, Jason—FWR1  
 Steinvurzel, Paul—FTuY2  
 Stelzle, Florian—FThP2  
 Stepanov, Serguei—JWC36, JWC42  
 Stephenson, Gregory B.—FThM4  
 Stern, Adrian—CTuA4, FTuF1  
 Sterpone, Fabio—LSWF1  
 Stich, Dominik—LSWJ5  
 Stintz, Andreas—FMB4, FMB5  
 Stirnemann, Guillaume—LSWF1  
 Stites, Ronald W.—LSTuA8  
 Stöhr, Joachim—LSThE3  
 Stoian, Razvan—LMTuA3  
 Stolow, Albert—LSTuL3  
 Stork, David G.—CThB1, CThB3  
 Stroebele, Stefan—AOTuD3  
 Stürwald, Stephan—FTuO4  
 Subramaniam, Vinod—FWS6  
 Suck, Sarah—FThB4  
 Suda, Ryosuke—FThF4  
 Sudeep, Pallikkara K.—LSTuJ2, LSTuJ3  
 Sukhov, Sergey—CThC1, CWA1, CWA6, FWY4  
 Sukhovatkin, Vladimir—FThS5  
 Sullivan, Amy C.—FThE  
 Summers, Christopher J.—FTuN4  
 Sun, Bo—FWY2  
 Sun, Can—FTuR4, FWD2, FWD6  
 Sun, Lei—FTuD5  
 Sun, Ting—CThC6, CTuA5  
 Sun, Xiankai—FTuX1  
 Sun, Yung-Shin—FTuY4  
 Sunahara, Roger K.—JWC16  
 Sussman, Dafna—FTuQ4  
 Sustersic, Nathan—AWA5  
 Sutton, Mark—LSThC3  
 Suwal, O. K.—FWC3  
 Suyama, Kengo—JWC52  
 Svoboda, Jakub—JWC7  
 Swaha Krishnamoorthy, Harish N.—AthA4  
 Swartzlander, Jr., Grover A.—FTuG2  
 Swedov, Igor M.—FThS6  
 Szameit, Alexander—LSMC3  
 Szeghalmi, Adriana—AthB3  
 Szöke, Abraham—LSThA3  
 Taberner, Juan—JWC80  
 Tabibi, Bagher—FWB4  
 Tadanaga, Osamu—JWE2  
 Tahara, Taihei—LSWG2  
 Tahtali, Murat—STuC2  
 Taira, Yoichi—JWC39  
 Takahashi, Hiroshi—FThE4  
 Takesue, Hiroki—JWE2  
 Takeyama, Norihide—JWC22  
 Takita, Akihiro—LMTuA2  
 Takman, P.—FThA4  
 Talbot, Gordon—AOTuA5  
 Talla Mbe, J. H.—JWC23  
 Talmi, Amos—AOTHc5  
 Tamkun, Michael M.—LSWD3  
 Tamma, Vincenzo—FWI4  
 Tamma, Venkata A.—FTuN4  
 Tan, Dawn—AthB1  
 Tanabe, Setsuhisa—AWD1  
 Tanabe, T.—FWV2  
 Tanaka, Daiki—FWN4  
 Tanaka, Kazuki—FTuE4  
 Tananaev, Georgy—JWC8  
 Tang, Hong X.—LSTuH4, LSTuK  
 Tang, Kuo-Chun—LSWI4  
 Tang, Lingling—FThU2  
 Tang, Sing Hai—FTuX3  
 Tang, Xiao—JMA5  
 Tangermann-Gerk, Katja—FThP2  
 Tanida, Jun—CWB1  
 Taniyama, H.—FWV2  
 Tanner, David B.—JTuA4  
 Tanzilli, Sebastian—FWJ2  
 Tassev, Vladimir—AWA1  
 Tatic-Lucic, Svetlana—FTuY5  
 Tautz, Raphael—FTuK3  
 Tavella, Franz—FTuK3  
 Tavernarakis, A.—LSTuK1  
 Taylor, Antoinette J.—FWO1  
 Taylor, Douglas—FWS2  
 Tebaldi, Myrian—JWC83  
 Teich, Malvin C.—FWJ1  
 Terry, Neil—FME6  
 Terry, Nathan B.—LSTuA7  
 Tessier, Gilles—FThB4  
 Tessieres, Régis—FThH3  
 Testorf, Markus—CTuB2, FWQ, STuA, STuD4  
 Teufel, John D.—LSTuE3  
 Thakur, Harneet—JWC37  
 Thanthvari, Sulakshana—LSTuA3  
 Thapa, Damber—JWC81  
 Thériault, Gabrielle—JWC73  
 Thibault, Pierre—FThT1, LSTuL4  
 Thibault, Simon—JWE2  
 Thibos, Larry N.—JWB1  
 Thiess, Helge—FThM3  
 Thirion, Nadege—STuD4  
 Thomas, Jayan—AthB2  
 Thompson, John R.—JWC34  
 Thompson, Kevin P.—FThH4, FTuT3  
 Thompson, Michael A.—CThA4, CTuD1, LSWD2

- Thompson, Mark G.—FMG1  
 Thompson, Nancy—**LSThD2**  
 Thurman, Samuel T.—**STuC3**  
 Thyagarajan, Krishna—FTuE6, **FWJ2**,  
 FWG6  
 Thylen, Lars—FWC5  
 Tian, Lei—CThA3, **FThB1**  
 Tian, Zhenhua—**JWC15**  
 Tidemand-Lichtenberg, Peter L.—FThR6  
 Tiedje, Thomas—AWC5  
 Tien, Chung-Hao—FWT4  
 Timneanu, Nicusor—LSThA3  
 Tippie, Abbie E.—**STuC6**  
 Tischler, Jonathan Z.—FThM2  
 Tiwari, Umesh K.—**FTuE6**, **FWG6**  
 Tobar, Michael—**LSTuB5**  
 Todd, Stephen—AOTuA5  
 Tokuda, Takashi—FMD4  
 Tolmachev, Alexei I.—LSTuG2  
 Toma, Cristian—CWA5  
 Tomes, Matthew—FThO5  
 Torgersen, Todd—CThB2  
 Torres, Richard—FThP5, FTuY6  
 Torres, Sergio—JWC63  
 Torres-Cisneros, Miguel—JWC41, JWC67  
 Toth, Csaba—**FWA**  
 Toulouse, Jean—FTuI3  
 Toussaint, Jr., Kimani C.—FMK7, FWB2  
 Tran, Van T. T.—ATHC3  
 Trouillon, Tony—AOTHB1  
 Trébaol, Stéphane—FThO3  
 Trebino, Rick—FTuO5, JWC17, SWA6  
 Tremblay, Eric J.—FWG2  
 Treusch, Rolf—LSThA3  
 Tripathi, Santosh—**FWB2**  
 Tripathi, Saurabh M.—**JWC40**  
 Trita, A.—LSTuI4  
 Trull, Jose F.—FThI1, FTuS4  
 Tsai, Hsiu-Ming—**FThL4**  
 Tsai, Meng-Che—**JTuC8**, JWC1  
 Tsai, Tsung-Han—FThL4  
 Tschentscher, Thomas—LSThA3  
 Tseng, Shih—FThV3, FTuH2  
 Tsuda, Hiroyuki—FThE4, FWN4  
 Tu, Yanfei—**FWK4**  
 Tuchin, Valery V.—SC340  
 Tunnell, J. W.—**FME1**  
 Tünnermann, Andreas—FMA3, FThC3,  
 FThC6, FThJ4  
 Tuohimaa, T.—FThA4  
 Turaga, Diwakar—FThV1, **JWC71**  
 Turner-Foster, Amy C.—FTuW3  
 Turrell, Sylvia—ATHC3  
 Twieg, Robert J.—LSWD2  
 Tyler, Glenn—AOTHd4  
 Udem, Th—LSTuB1  
 Ukai, Kazuhiko—**FTuM1**  
 ul Hoda, Faisal—FTuC7  
 Urbanek, Karel—AWC3  
 Urbanski, Lukasz—FTuS2  
 U'Ren, Alfred B.—**FWJ**  
 Ussery, Daryl—JWC44, **JWC56**  
 Utzinger, Urs—**FME**  
 Vaccaro, Kenneth—AOTHd2  
 Vaccaro, Patrick H.—**LSMB3**  
 Vafadar, Bahereh—STuA3  
 Vahala, Kerry J.—**LSTuB1**, LSTuB3,  
**LSTuE**, LSTuE2  
 Vakoc, Ben—**FWV3**  
 Valente, Marty—**FThH**  
 Valentine, Jason—**FTuN2**  
 Valenzuela, John R.—**CWA2**  
 Valley, Marcy M.—FThD2  
 Valley, Michael T.—CThC3  
 Vallini, Felipe—FThO7  
 Valtna-Lukner, Heli—FTuO5  
 Vance, Calvin—JWC13  
 van den Broek, Johanna M.—FWS6  
 van der Gracht, Joseph—**CThC**, **CThB2**  
 van der Spoel, David—LSThA3  
 van Dijk, Thomas—**FWU2**  
 Van Dorpe, Pol—FTuB6  
 van Exter, Martin P.—FMF5, JMA6  
 van Marcos, Dam—AOWB2  
 van Ooijen, Erik D.—FWM3  
 Van Stryland, Eric W.—**FMF**, FThS5,  
 LSTuG2  
 VanNasdale, Dean A.—FME5, FThQ2  
 Vanner, Michael—LSTuH1  
 Varcoe, Benjamin—**FThU3**  
 Varela, Oscar—JWC10  
 Vasilyeu, Ruslan—FThB6  
 Vázquez de Aldana, Javier R.—LSWB4  
 Veisz, Laszlo—FTuK3  
 Veit, K.—FWV1  
 Veltkamp, Christian—JTuA2  
 Venkataraman, D.—LSMB4  
 Venugopalan, Vasani—**FThP4**, **FThV**  
 Vera, Alice—AWA2  
 Vera, Esteban—JWC63  
 Veraksa, Alexey—FThV5  
 Véran, Jean-Pierre—AOTHa4, **AOTuC**,  
 AOTuC4, AOWB2, **JTuC2**  
 Verdonck, Patrick—JWC4  
 Verellen, Niels—FTuB6  
 Verevkin, Aleksandr—FTuE5  
 Véronaud, Christophe—AOTuD1  
 Verlot, P.—LSTuK1  
 Veronis, Georgios—**FThW5**  
 Veselago, Victor—**FMA1**  
 Vettenburg, Tom—FThX2  
 Vidal, Fabrice—AOTuA5  
 Vijande, Javier—FWH4  
 Vilaseca, Ramon—FThI1, FTuS4  
 Vincenti, Maria Antonietta—FThW2,  
**FWC6**  
 Vinogradov, A. V.—FTuZ2  
 Visser, Taco D.—FWH6, FWU2  
 Vodopyanov, Konstantin—**FMK2**  
 Vogel, Curtis R.—**AOTHd4**  
 Vogt, U.—FThA4  
 Vohnsen, Brian—JWC43, **JWC77**  
 Vollmer, Frank—**LSMG2**  
 Vorobyev, A. Y.—JTuC18  
 Vorontsov, Mikhail—**AOTHc**, CThC3,  
**JWA4**  
 Vos, Willem L.—FWF4, FWS6  
 Voss, Paul—**JMA**  
 Vučković, Jelena—**FML6**, FTuB3, FWB5,  
 JWE5, LSTuD4, **SC322**  
 Vyas, Reeta—**JWC30**  
 Wachulak, Przemyslaw W.—FTuS2  
 Wagadarikar, Ashwin A.—**CTuA6**  
 Wahhaj, Zahed—AOTHa3  
 Wakaki, Moriaki—FThS4, **JWC22**  
 Waller, Laura—**CThA3**, **FThR3**  
 Walmsley, Ian A.—FWJ3, JTuB2  
 Wampler, Ronald—LSMF2  
 Wan, Wenjie—**FMF1**  
 Wanapun, Debbie—LSMF2  
 Wang, Feiling—**AOTHc2**  
 Wang, Feng—LSWE1  
 Wang, H.—JMA1  
 Wang, Hongfei—**LSWK2**  
 Wang, Jian—FThE2  
 Wang, Jing—**FtuJ2**  
 Wang, Kang—STuB3  
 Wang, Lianqi—**AOTuD2**  
 Wang, Lijun—JWC15  
 Wang, L. J.—FThO2  
 Wang, Qi—FTuX3  
 Wang, Qian—**FThK4**, FThO4, FWN2,  
 JWC53  
 Wang, Quan—JWC16  
 Wang, Quan—**LSTuF3**  
 Wang, Shih-Yuan—FWC5  
 Wang, Tianyi—FThP6  
 Wang, Ting—FTuP4  
 Wang, Wei—**CWA3**  
 Wang, Wenjie—FThI1  
 Wang, Xi—FMK4  
 Wang, Xiao—FTuK4  
 Wang, Xiaosheng—FTuV5  
 Wang, Xin—FWI3  
 Wang, Xiaosheng—JWC29  
 Wang, Xiaoyong—LSTuJ4  
 Wang, Yiliang—FThE3  
 Wang, Yu—**FTuY5**  
 Wang, Y.—FTuZ2  
 Wang, Yadong—**FWN2**  
 Wang, Yung-Hsing—**JWC1**  
 Wang, Ye—LSWB3  
 Ward, Jonathan M.—FThC2  
 Warnasooriya, Nilanthi—FThB4  
 Warren, Warren S.—**FWA3**  
 Warren-Smith, Stephen—FTuE3  
 Warwick, Tony—FThT2  
 Washburn, Adam L.—LSMC1  
 Watkins, Amy—FMG3  
 Watson, Edward—FTuF1  
 Watts, Richard—STuA3  
 Wawro, Debra—FTuY1  
 Wax, Adam—FME6, **FMK**, JWC75  
 Webb, Kevin J.—FMA6, FTuL3  
 Webb, Roderick P.—**FTuI**, **FTuW1**  
 Weber, Mark—FThD2  
 Weber, Ryan—LSWD2  
 Webster, Scott—FThS5, **LSTuG2**  
 Webster, Scott E.—AWC5  
 Weegink, Kristian—FWM3  
 Wei, Feng—LSWK2  
 Wei, Jean—AWA3  
 Wei, Wei—**FWL4**  
 Wei, Xin—**JWB1**  
 Wei, Yongqiang—FWN2  
 Weigel, Aubrey V.—JWC68, **LSWD3**  
 Weill, Rafi—**FWD5**  
 Weiss, S. B.—FThD2  
 Weitz, David A.—FTuY2  
 Wells, Nathan P.—LSThF2  
 Wells, Nathan P.—LSWC4  
 Wen, Zhiying—**STuC7**  
 Weninger, Keith R.—**LSThD3**  
 Wenner, J.—JMA1  
 Wereley, Steve—**LSMC4**  
 Werner, James H.—**LSThF2**, LSTuG1  
 Weßels, Peter—JTuA2  
 Westall, Carol A.—JWC78  
 Weyrauch, Thomas—JWA4  
 Whelan, Maurice—FWY5  
 Whitaker, John F.—FWG3  
 White, Andrew G.—**JWD3**  
 White, G. R.—LSTuI5  
 White, Madeline C.—JWC33  
 White, Tom P.—FWF5  
 Whitfield, J. D.—JWD3  
 Wiberg, Andreas O. J.—FWK2  
 Wiberg, Donald M.—AOWB5  
 Wiecezorek, Sebastian—FThO6  
 Wiederrecht, Gary—**LSWG5**  
 Wiersma, Diederik S.—**FMCA4**  
 Wikner, David A.—CTuA3  
 Wildeman, Jurjen—LSTuG1  
 Willey, Chester—**FWR3**, **JWC9**  
 Willems, Phil—**AOTHa5**  
 Williams, Charles—**FMD2**  
 Williams, David R.—FTuQ2, JWF4  
 Williams, Stanley—FWC5  
 Willner, Alan E.—FThE2, FWK3, FWZ5  
 Wilson, Bridget S.—LSThF2  
 Wilson, Tony—AOTHc3, AOWA2  
 Winarski, Robert P.—FThM4  
 Winick, Kim A.—FMJ1  
 Winkelmann, Lutz—**JTuA2**  
 Winkler, Mark—AWB1  
 Wirth, Allan—**AOTHc4**  
 Witcher, Jonathan—LMTuB4, **LMTuC4**  
 Withford, M. J.—**LMTuC1**  
 Woaf, P.—JWC23  
 Woer, Munib—FTuV2  
 Woerdman, J. P. (Han)—**FMF5**

- Wolf, Emil—**FTuO2**, FWH2, **FWU3**, FWU4  
Wondraczek, Lothar—AThD3  
Wong, Chee Wei—FML5  
Wong, Shing-Wa—FTuC1  
Wong, Wesley—**FWS1**  
Woods, Bruce W.—LSThA3  
Woods, Charles—AOTHd2, FTuH5, FWI1  
Wornell, Gregory—CTuB5  
Woznica-Raulin, Katarzyna—AThC3  
Wright, Tom—**JWC78**  
Wu, Binlin—**JTuC10**  
Wu, Benny—LSThE3  
Wu, Bing—STuA3  
Wu, Chengbiao—LSThB3  
Wu, Hao—FWL6  
Wu, Jing—**FTuV3**  
Wu, Pingfan—**FTuF2**  
Wu, Qiaofeng—**FThV4**  
Wu, Qi—FTuN4  
Wu, Wei—LSWE1  
Wu, Xiaoxia—FWK3  
Wu, Ziran—FWX2  
Wurth, W.—LSMH1
- Xiao, Fajun—FTuV5  
Xiao, Lei—FThO3  
Xiao, Min—FWB7, JWC35  
Xiao, Shumin—**FTuN3**  
Xiao-Li, Yinying—FThE2, **FWZ5**  
Xie, Xudong—**FTuK4**, JTuC5  
Xin, Hao—FWX2  
Xin, Yongchun—FThK1  
Xiong, W.—LMTuD2  
Xu, J.—FThI3  
Xu, Jun—FWB6  
Xu, Jingjun—FWK4
- Xu, Jimmy—FWZ4  
Xu, Lina—**CThC6**  
Xu, Lei—FTuP4  
Xu, Min—JTuC10  
Xu, Michelle Y.—**FThW1**, **FThW3**, **FThW7**  
Xu, Ningning—**FWB7**  
Xu, Yan-yan—LSWK2  
Xu, Zhimin—**STuA4**
- Yadav, Ram A.—JWC45  
Yadav, Tarun K.—JWC45  
Yakimenko, Vitaly—LSMH4  
Yamashita, Shinji—FTuC1  
Yamauchi, Kazuto—**FThG3**  
Yamilov, Alexey G.—**FMC3**, **FMC6**  
Yang, Changhui—**FWS4**  
Yang, Haw—**LSTuD2**, **LSWD1**  
Yang, J.—FThI3  
Yang, Kai—**FMB4**, FMB5  
Yang, Qiguang—**FWB4**  
Yang, Tianhe—**FThO5**  
Yang, Weijia—AWB4, JTuC16  
Yang, Weijian—**FTuW2**  
Yang, Wei J.—FWL3  
Yang, X.—FTuW1  
Yanik, Ahmet Ali—FMA4, **FWP6**  
Yao, Xiao Jie—JWC16  
Yapp, Cal—AWA1  
Yariv, Amnon—FTuX1, FWK3  
Yashchuk, Valeriy V.—FThT2  
Ye, Winnie N.—**FTuV2**  
Yeaton-Massey, David—JWC20  
Yegnanarayanan, Siva—FTuB7  
Yeh, Alvin T.—FThV4  
Yelleswarapu, Chandra S.—FThF3, **FThV5**  
Yen, She-Hwa—FTuC1
- Yerçi, Selçuk —FML6, FTuB3  
Yesayan, Garegin—FWI5  
Yi, Fei—**FThE3**, **FThK**  
Yi, Jong Chang—FThK2  
Yildiz, Ahmet—**LSThF3**, **LSWD**  
Yilmaz, Tolga—FWX4  
Yin, G. Y.—JMA2  
Yin, Lianghong—**FML4**  
Yokoyama, Eisuke—**FThS4**  
Yoon, Yeon-Taek—**FWE5**  
Yorulmaz, Saime C.—FThU6, FThU7  
Yoshie, Tomoyuki—**FThO**, FThU2  
Young, Michael E.—FMA7  
Younger, Eddy—AOTuA5  
Yu, Haiwu—FTuK4  
Yu, Siyuan—FMG1  
Yu, William—FWB4  
Yu, Xudong—JWC35  
Yu, Zongfu—FMH2  
Yuan, Ping—FWE6  
Yuan, Sheng—**FThT2**  
Yuan, Zhiliang—**JWE2**  
Yue, Yang—FThE2, FWZ5  
Yum, Honam—JTuA6  
Yun, Wenbing—**FThT3**  
Yuna, Ping—FWL6  
Yurke, Bernard—FWC2  
Yvind, Kresten—FThE1
- Zacarés, Mario—FWH4, FWP3  
Zadak, Avi—**FWK3**  
Zagrebini, Leonid—AThB4  
Zair, Amelle—JWC10  
Zaitsev, Oleg—**LSTuA5**  
Zam, Azhar—**FThP2**  
Zambon, Veronique—**JTuC15**  
Zambri, Roberta—FThI6, **FWY1**
- Zawilski, Kevin T.—AWA3  
Zdyrko, Bogdan—AThC4  
Zeldovich, Boris Y.—FMF2, **FWH**, FWX5  
Zeng, Xiaoming—FTuK4  
Zentgraf, Thomas—FTuB2, FTuN2  
Zepf, Matt—**FTuZ3**  
Zewe, Kelly—LSTuG1  
Zeytunyan, Aram—**FWI5**  
Zgu, G.—**FTuN5**  
Zhai, Zhaohui—FWK4  
Zhan, Qiwen—**FThF2**, SC235  
Zhang, Deming—FMB3  
Zhang, Guoquan—FWK4  
Zhang, Heyi—FWI4  
Zhang, Jin—FTuE4  
Zhang, Jing—FWE6, **JWC35**  
Zhang, Kun—JTuC5  
Zhang, Kai—LSThB3  
Zhang, Ke—LSWD4  
Zhang, Lei—CThB2  
Zhang, Lin—**FThE2**, FWZ5  
Zhang, Mathew—FThE5  
Zhang, Peng—FThI3, FTuE1, FTuX2, FTuV5, **FWE**, JWC32  
Zhang, Sheng—FTuJ3  
Zhang, Xiang—**AThA1**, FTuB2, **FTuN1**, FTuN2  
Zhang, Xuenan—FWE6  
Zhang, Xiang—**FWL5**, LSWE1  
Zhang, Yanpeng—FWB7  
Zhang, Yundong—**FWE6**, **FWL6**  
Zhang, Ying—FWP5  
Zhang, Yuhua—FWX1  
Zhang, Yan—JWC15  
Zhao, Jing—AOTHc2  
Zhao, Jianlin—FThI3, FTuV5, JWC32  
Zhao, Junpu—JTuC5
- Zhao, Yue—FMJ7  
Zheng, Yili—STuB4  
Zhong, Guixiong—AOTHc2  
Zhong, Shan—**FTuC2**  
Zhong, Zhangyi—JWF1  
Zhou, Jun—FThD1  
Zhou, Kainan—FTuK4, JTuC5  
Zhou, Kaimeng—LSMG5  
Zhou, Shuyun—LSWJ3  
Zhou, Wei—FThE7  
Zhou, Wei—JTuC5  
Zhou, Xiao-Qi—FMG1  
Zhou, X.—JWE4  
Zhou, Xibin—LSTuI3  
Zhou, Y. S.—LMTuD2  
Zhu, Diling—LSThE3  
Zhu, Qihua—FTuK4  
Zhu, Qibiao—FTuX3  
Zhu, Qihua—JTuC5  
Zhu, Xiangdong—FTuY4  
Zhu, Xin—LMTuA4  
Zhu, Yizheng—FME6  
Zhu, Zipeng—LSWJ5  
Zielinski, Thomas P.—**SWA2**  
Zinter, Joseph P.—FWA5  
Zlatanovic, Sanja—FML2, FWR1  
Zolotoyabko, Emil—LSTuG4  
Zorba, Vassilia—**LMTuD1**  
Zou, Weiyao—JWF1  
Zuegel, Jonathan D.—FTuD5  
Zuo, Yanlei—FTuK4

# FiO/LS/OSA Fall Optics & Photonics Congress Program and Exhibit Guide Addendum

**LASER SCIENCE SYMPOSIUM ON UNDERGRADUATE RESEARCH:** Please see the 6-page program in your registration bag for more information on this symposium, including the updated schedule. Note that the posters will remain in the Cupertino Room until 6:00 p.m.

## Short Course Cancellations

SC326 Patent Fundamentals  
SC322 Silicon Nanophotonics  
SC340 Tissue Optics and Optical Coherence Tomography

## What's Hot in Optics Today?

Presentation updates:

- **Seeing the (Almost) Invisible: Using Novel Nonlinear Optical Effects for Image Contrast in Biology and Medicine**, *Chris Schaffer; Cornell Univ., USA*
- **Design Events—Solar Technology: Design, Fabrication, and Testing**, *R. John Koshel; Photon Engineering LLC and College of Optical Sciences, Univ. of Arizona, USA*
- **What's Hot in Information Acquisition, Processing and Display**, *David Brady; Duke Univ., USA*
- **What's Hot in Photonics and Opto-Electronics**, *Juerg Leuthold; Univ. of Karlsruhe, Germany*
- **More to Retinal Wiring than Meets the Eye**, *Alex Wade; Smith-Kettlewell Eye Res. Inst., USA*

## Technical Group Meetings

- On Sunday, from 7:00 p.m.–8:30 p.m. in the Empire Room at the Fairmont Hotel, join the Fabrication, Design, and Instrumentation Division meeting for a special guest presentation on NIF.
- On Tuesday, from 7:00 p.m.–8:00 p.m. in the Empire Room at the Fairmont Hotel, attend the joint meeting of the Optical System Design and Characterization and Polarization Technical Groups.
- On Wednesday, from 4:00 p.m.–5:00 p.m. in the Cupertino Room at the Fairmont Hotel, join the OSA Imaging Sensing and Pattern Recognition Technical Group for an informal discussion of results presented at the COSI and SRS topical meetings and at FiO. Light refreshments will be served.

## Student Programming

The presentation by Featured OSA Traveling Lecturer: Irving Bigio scheduled for Tuesday has been cancelled. The "Painless Publishing" session is now from 9:00 a.m.–10:00 a.m. The "Career Focus: Policy in Science" session is now from 10:30 a.m.–12:00 p.m.

## Withdrawn Presentations

AO: AOTuC3, AOTHb3  
FiO: FTuY5, JWC61, JWC78, JWE6, FWC6, FWL6, FThO1  
LM: LMTuB2  
LS: LSTuA1, LSTuI4, LSWA5, LSWJ1, LSWJ4, LSWK4, LSThD2

## Session Updates

- AWA ends at 10:00 a.m.
- AWB ends at 12:00 p.m.
- AWC ends at 3:30 p.m.
- AWD ends at 6:00 p.m.
- AThA ends at 9:45 a.m.
- AOTHa ends at 10:00 a.m.
- AOTHb ends at 11:50 a.m.
- CWB ends at 3:30 p.m.
- CThC ends at 3:15 p.m.
- FTuM ends at 3:30 p.m.
- JWE ends at 5:45 p.m.
- FThO begins at 1:45 p.m.
- LSWD ends at 12:30 p.m.
- LSWJ starts at 4:30 p.m.
- SWA ends at 3:30 p.m.

## Program Additions

LS invited presentation LSWD5, **Local Structural Flexibility of Nucleic Acid Probed by a Wide Field Single Molecule FRET Imaging Technique**, *Tae-Hee Lee; Pennsylvania State Univ., USA* will be presented at 12:00 p.m. **Abstract:** A simple method to probe local structural flexibility of nucleic acid based on a wide field single molecule FRET imaging technique will be presented. Applications to DNA duplexes, ribosome complexes and nucleosomes will also be presented.

FiO invited presentation FTuF3, **Problems in Physically Based Simulations of Real-World Environments**, *Donald P. Greenberg; Program of Computer Graphics, Cornell Univ., USA* will be presented at 11:30 a.m. **Abstract:** For the design of buildings, advertising for the automotive industry, or interior design, physically-based simulations must be accurate representations of real-world environments. This heavily illustrated graphical talk identifies the unsolved research areas necessary to reach this goal and shows several compelling applications.

The talk that was originally FTuF3 is now FTuM4, **3-D TV Based on Integral Method Using Extremely High-Resolution Video System**, *Masahiro Kawakita, Jun Arai, Fumio Okano; NHK Science & Technical Res. Labs, Japan*, and will be presented at 3:00 p.m.

## Presentation Schedule Updates

AWB2, **Asymmetric Writing with Scanning Direction of Femtosecond Laser in Silica Glass**, is now AThC4 and will be presented by Matthieu Lancry on Thursday at 2:30 p.m.

AThC4, **Progress on the Fabrication of On-Chip, Integrated Chalcogenide Glass (ChG)-**

**Based Sensors**, is now AWB2 and will be presented at 11:00 a.m. on Wednesday.

AWB3, **Femtosecond Laser Induced Micro-Structured Silver Containing Glass as an Engineered Nonlinear Optical Material**, begins at 11:30 a.m.

AWB4, **Doping Dependence of the Femtosecond Laser Damage Thresholds in Silica Glasses**, begins at 11:45 a.m.

AThC5, **Ultrafast Dephasing Time Measurements in a Niobic-Silicate Nanocomposite Using Incoherent Light**, begins at 2:45 p.m.

AThD2, **Chalcogenide Glass Fibers and Their Applications**, is now AWD4 and will be presented at 5:30 p.m. on Wednesday.

FThU6, **Direct Measurement of High Q-Factors in Individual Salt-Water Microdroplets by Photothermal Tuning Spectroscopy**, is now FThU7 and will be presented at 5:45 p.m.

FThU7, **Reversible Photothermal Tuning of Single Salt-Water Microdroplets on a Superhydrophobic Surface**, is now FThU6 and will be presented at 5:30 p.m.

## Presenter Changes

- *Julian Christou; Gemini Observatory, USA* will present AOTuC1, **Differential Photometry through PDF Deconvolution and AOTuC2, Statistical Signal Enhancement in Adaptive-Optics Observations of Exoplanets.**
- *Caroline Kulcsár; LETI, Univ. Paris XIII, France* will present AOTHa2, **Experimental Validation of LTAO and MCAO Configurations with Optimal Control.**
- *David A. Andersen; Herzberg Inst. of Astrophysics, Natl. Res. Council of Canada, Canada* will present AOTHb1, **An Auto-Regressive Model to Create Seeing Time Series.**
- *Jeffrey Livas; NASA Goddard Space Flight Ctr., USA* will present JMB2, **LISA: Detecting Gravitational Waves from Space.**
- *Edvard Watson; AFRL, USA* will present FTuF1, **Three-Dimensional Sensing, Visualization, and Display by Integral Imaging.**
- *Peter (Jeff) Wisoff; Lawrence Livermore Natl. Lab, USA* will present FTuK1, **Status of the National Ignition Facility.**
- *Kishor T. Kapale; Western Illinois Univ., USA* will present JWC25, **On Simultaneous**

### Measurement of Polarization and Orbital Angular Momentum of Light

• C. Faber; *Univ. of Erlangen-Nuremberg, Germany* will present **FWV1, Deflectometry**

**Challenges Interferometry: 3-D-Metrology from Nanometer to Meter.**

• Pierre Thibault; *Paul Scherrer Inst., Switzerland* will present **FThT1, Multi-Modal Scanning X-Ray Microscopy.**

• Diego Krapp; *Colorado State Univ., USA* will present **LSWD3, Tracking Single Potassium Channels in Live Mammalian Cells.**

### Author Updates

Corrected reference 2 for **AOTbB3P**: [2] R. Holzlöhner, S. M. Rochester, D. Bonaccini Calia, D. Budker, J. M. Higbie, and W. Hackenberg, "Optimization of cw sodium laser guide star efficiency", to appear in *Astronomy and Astrophysics*, preprint: arXiv 0908.1527 <http://arxiv.org/abs/0908.1527>

Updated author information for **JTuC8, Six-Dimensional Joystick Based on Detection of Optical Spot**: Meng-Che Tsai, Pin-Hao Hu,

Yung-Hsing Wang; *ITRI, Industrial Technology Res. Inst., Taiwan.* Yung-Hsing Wang will present.

Updated author order for **JWC28, Atmospheric Propagation of Fiber and Solid State Lasers in Maritime Environments**:

Matthew A. Leigh, Timothy O. Murphy, Andrew Baranowski, Adin Kawate; *Envisioneering, Inc., USA.* Matthew Leigh will present.

Updated author information for **LSTuC1, Sub-Picosecond Intersystem Crossings and Structural Dynamics: Combined Ultrafast**

**Optical and X-Ray Absorption Studies**: C. Milne<sup>1</sup>, S. Johnson<sup>2</sup>, V. T. Pham<sup>1</sup>, A. El Nahhas<sup>1</sup>, R. van der Veen<sup>1</sup>, P. Beaud<sup>2</sup>, Ch. Bressler<sup>1</sup>, M. Chergui<sup>1</sup>; <sup>1</sup>Lab of Ultrafast Spectroscopy, Ecole Polytechnique Fédérale de Lausanne, Switzerland, <sup>2</sup>Swiss Light Source, Paul Scherrer Inst., Switzerland. Steve Johnson will present.

### Presider Updates

• Kathleen Richardson; *Clemson Univ., USA* will preside over session **AWA**.

• Martin M. Fejer; *Stanford Univ., USA* will preside over **ATHD**.

• David H. Reitze; *Univ. of Florida, USA* will preside over session **FMI**.

• Neil Terry; *Duke Univ., USA* will preside over session **FMK**.

• Se Baek Oh; *MIT, USA* will preside over session **FTuH**.

• Edward Watson; *AFRL, USA* will preside over **FTuM**.

• Roberta Zambrini; *IFISC (UIB-CSIC), Univ. Illes Balears, Spain* will preside over session **FWS**.

• Benjamin Varcoe; *Univ. of Leeds, UK* will preside over session **FThC**.

• Thomas Schreiber; *Fraunhofer Inst. Optik Feinmechanik, Germany* will preside over session **FThD**.

• Urs Utzinger; *Univ. of Arizona, USA* will preside over **FThP**.

• Andrew Harvey; *Heriot-Watt Univ., UK* will preside over session **FThR**.

• Peter Herman; *Univ. of Toronto, Canada* will preside over session **LMTuC**.

**POSTDEADLINE PRESENTATIONS:** Please see the postdeadline papers book for times and locations of postdeadline paper presentations. AO, AIOM, COSI and SRS postdeadline papers will be presented throughout the week in various oral sessions.

### New Exhibitors:

#### Laser Quantum

Table 16

Emery Court, Vale Road, Heaton Mersey

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#### finesse 10

Finesse 10W is our 532nm laser designed as a fully integratable pump source.

#### Onyx Optics, Inc.

Booth 200

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Phone: 925.833.1969

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#### Booth Move:

Wiley-Blackwell is now exhibiting in Booths 101 & 103.

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San Diego, CA 92130

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Fax: 858.630.2376

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Del Mar Photonics, Inc. product portfolio includes CW single-frequency ring Dye/Ti:Sapphire lasers and spectrometers, ultrafast solid state and fiber oscillators and amplifiers, diode pumped solid state lasers, autocorrelators, pulse pickers, fluorescence, transient spectroscopy and multiphoton microscopy systems, femtosecond and Raman ready AFM & NSOM, terahertz THz set ups, NIR-MWIR-LWIR cameras, and optical and crystal components. Contact: Del Mar Photonics Sales Team, [sales@dmphotonics.com](mailto:sales@dmphotonics.com).

A special thanks to the American Institute of Physics for their sponsorship of Wednesday's FiO Coffee Breaks.

American Institute of Physics



OSA's 93<sup>RD</sup> ANNUAL MEETING

# FRONTIERS IN OPTICS 2009

FALL 2009 OSA OPTICS & PHOTONICS CONGRESS

Adaptive Optics: Methods, Analysis and Applications (AO)

Advances in Optical Materials (AIOM)

Computational Optical Sensing and Imaging (COSI)

Signal Recovery and Synthesis (SRS)

## Postdeadline Papers

ISBN 978-1-55752-879-7

FAIRMONT HOTEL

SAN JOSE, CALIFORNIA, USA

TECHNICAL CONFERENCE: **October 11–15, 2009**

EXHIBIT: **October 13–14, 2009**

SPONSOR: OSA<sup>®</sup>



## Fall OSA Optics & Photonics Congress

• Wednesday, October 14, 2009 •

### Advances in Optical Materials

*Belvedere Room, Fairmont San Jose Hotel*

**8:00 a.m.–10:00 a.m.**

**AWA • Semiconductor Materials**

*Kathleen Richardson; Clemson Univ., USA, Presider*

**AWA7P • 9:45 a.m.**

**Molecularly Engineered Semiconductor Cluster Nanocomposites with Large Nonlinear Responses and Low Losses**, *Ronald M. Kubacki; Ionic Systems Inc., USA*. Materials can now be molecularly engineered specifically for advanced photonics. Nanocomposites enable passive waveguides with less than 0.5 dB/m loss and active sections with large (i.e. > 1,000) non linear optical responses.

*Belvedere Room, Fairmont San Jose Hotel*

**1:30 p.m.–3:30 p.m.**

**AWC • Oxide Crystals**

*Peter G. Schunemann; BAE Systems, USA, Presider*

**AWC6P • 3:15 p.m.**

**Tape Cast Composite Ceramic Er:YAG Laser**, *Nikolay Ter-Gabrielyan<sup>1</sup>, Larry D. Merkle<sup>1</sup>, Mark Dubinskii<sup>1</sup>, E. R. Kupp<sup>2</sup>, Gary L. Messing<sup>2</sup>; <sup>1</sup>US ARL, USA, <sup>2</sup>Penn State Univ., USA*. Laser operation of tape cast composite ceramic Er:YAG rod is demonstrated at 1645 nm with slope efficiency of 56.9% under the resonant pumping. This is believed to be the first reported composite ceramic Er:YAG laser.

### Computational Optical Sensing and Imaging

*Club Regent Room, Fairmont San Jose Hotel*

**1:30 p.m.–3:30 p.m.**

**CWB • Multi Aperture Systems**

*Ravindra Anant Athale; MITRE Corp., USA, Presider*

**CWB6P • 3:15 p.m.**

**Dual-Band Imaging System Based on a Compact Coaxial Folded Optic Architecture**, *R. L. Morrison<sup>1</sup>, R. A. Stack<sup>1</sup>, Gary Euliss<sup>2</sup>, R. A. Athale<sup>2</sup>, B. F. Necioglu<sup>2</sup>, R. W. Horstmeyer<sup>2</sup>, Colin Reese<sup>3</sup>; <sup>1</sup>Distant Focus Corp., USA, <sup>2</sup>MITRE Corp., USA, <sup>3</sup>U. S. Army RDECOM CERDEC Night Vision and Electronic Sensors Directorate, USA*. We present an unconventional coaxial architecture for simultaneous acquisition of images in two discrete spectral bands. The approach is realized by taking advantage of a novel annular-folded lens design previously developed under the DARPA/MONTAGE program.

### Signal Recovery and Synthesis

*Cupertino Room, Fairmont San Jose Hotel*

**1:30 p.m.–3:30 p.m.**

**SWA • Phase Retrieval Methods**

*Charles L. Matson; AFRL, USA, Presider*

**SWA7P • 3:15 p.m.**

**High Dynamic Range Image Capture with Plenoptic 2.0 Camera**, *Todor G. Georgiev<sup>1</sup>, Andrew Lumsdaine<sup>2</sup>, Sergio Goma<sup>3</sup>; <sup>1</sup>Adobe Systems, USA, <sup>2</sup>Indiana Univ., USA, <sup>3</sup>Qualcomm, USA*. We demonstrate high dynamic range (HDR) imaging with the Plenoptic 2.0 camera. Multiple exposure capture is achieved with a single shot using microimages created by microlens array that has an interleaved set of different apertures.



## Fall OSA Optics & Photonics Congress

• Thursday, October 15, 2009 •

### Adaptive Optics: Methods, Analysis and Applications

Fairfield Room, Fairmont San Jose Hotel

8:00 a.m.–10:00 a.m.

#### AOTHA • Adaptive Optics Systems II

Donald T. Miller; Indiana Univ., USA, Presider

AOTHA6P • 9:40 a.m.

**A Calibration Unit for the Rayleigh Laser Guide Stars at the LBT**, Christian Schwab<sup>1</sup>, Andreas Quirrenbach<sup>1</sup>, Wolfgang Gässler<sup>2</sup>, Diethard Peter<sup>2</sup>; <sup>1</sup>Landessternwarte, ZAH, Univ. Heidelberg, Germany, <sup>2</sup>Max Planck Inst. for Astronomy, Germany. We describe the calibration scheme and optical design of a calibration unit for the off-axis laser guide stars at LBT's ARGOS facility. Artificial stars with the desired wavefront are created using a computer generated hologram.

Fairfield Room, Fairmont San Jose Hotel

10:30 a.m.–11:50 a.m.

#### AOTHB • System Simulation and Modeling II

Miska LeLouarn; European Southern Observatory, France, Presider

AOTHB3P • 11:10 a.m.

**Optimization of cw and Pulsed Sodium Guide Star Lasers**, Ronald Holzlöhner<sup>1</sup>, Simon Rochester<sup>2</sup>, Domenico Bonaccini Calia<sup>1</sup>, Dmitry Budker<sup>2</sup>, James M. Hight<sup>3</sup>, Wolfgang Hackenberg<sup>1</sup>; <sup>1</sup>European Southern Observatory (ESO), Germany, <sup>2</sup>Univ. of California at Berkeley, USA, <sup>3</sup>Bucknell Univ., USA. We present the results of extensive Bloch equation numerical simulations, both for cw and for various pulsed laser formats and applications.

### Advances in Optical Materials

Belvedere Room, Fairmont San Jose Hotel

8:00 a.m.–9:45 a.m.

#### ATHA • Nanostructured Materials

Shaya Y. Fainman; Univ. of California at San Diego, USA, Presider

ATHA6P • 9:30 a.m.

**100-Fold Enhancement of Fluorescence Imaging by Two-Dimensional-Grating-Coupled Surface Plasmon Resonance**, Kenji Kintaka<sup>1</sup>, Xiaoqiang Cui<sup>1</sup>, Keiko Tawa<sup>1</sup>, Junji Nishii<sup>1,2</sup>; <sup>1</sup>Natl. Inst. of Advanced Industrial Science and Technology, Japan, <sup>2</sup>Hokkaido Univ., Japan. Silver-coated two-dimensional periodic structures were fabricated for high-efficiency excitation of surface plasmon resonance. The fluorescence image of labeled proteins on the periodic structure was 100 times as bright as that on a flat glass plate.

Belvedere Room, Fairmont San Jose Hotel

1:30 p.m.–3:15 p.m.

#### ATHC • Glass Synthesis and Properties

Jonathan Knight; Univ. of Bath, United Kingdom, Presider

ATHC6P • 3:00 p.m.

**Characterization of Eu<sup>2+</sup>-Doped SrMgAl<sub>2</sub>SiO<sub>7</sub> as a Novel Blue-Emitting Phosphor Synthesized through Sol-Gel Method**, Reza Salimi, Hassan Sameie, Ali A. Sabbagh Alvani, Ali A. Sarabi, Fathollah Moztafzadeh, Mohammadreza Tahriri; Amirkabir Univ. of Technology, Islamic Republic of Iran. Phase-forming process, thermal behavior of components and luminescence properties of novel blue-emitting phosphor, SrMgAl<sub>2</sub>SiO<sub>7</sub>:Eu<sup>2+</sup> were investigated. Narrow emission peak at 421 nm and nanocrystallite (30.6 nm) of final products, were attributed to the sol-gel process.

### Computational Optical Sensing and Imaging

Club Regent Room, Fairmont San Jose Hotel

1:30 p.m.– 3:15 p.m.

#### CThC • Imaging through Complex Media and Spectroscopy

Joe Van der Gracht; Holospex, Inc., USA, Presider

CThC7P • 3:00 p.m.

**A Multi-Depth Image Restoration Based on a Quartic Phase Coded Lens**, Ludovic J. Angot, Po-Chang Chen, Chuan-Chung Chang; Industrial Technology Res. Inst., Taiwan. A phase coded lens design using a quartic form derived from the spherical aberration of traditional optical systems and a method for image restoration of objects located at different distances are provided.

## Key to Authors and Presiders

(Bold denotes Presider or Presenting Author)

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