Signal Recovery and Synthesis (SRS)

Topical Meeting and Tabletop Exhibit

Technical Conference: October 13–14, 2009
The Fairmont San Jose
San Jose, California, USA

Postdeadline Submission Deadline: September 21, 2009 12:00 p.m. EDT (16.00 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

General Chair
Markus E. Testorf, *Dartmouth College, USA*
Program Chairs
Mark Anastasio, *Illinois Inst. of Technology, USA*
Charles Matson, *US ARL, USA*

About SRS

Signal recovery and synthesis is concerned with methods for obtaining the best estimate of an image from the data and constraints at hand. The topical area is important to many fields of optics, as well as a broader constituency due to its interdisciplinary nature; examples include image reconstruction from Fourier intensity measurements, superresolution, tomographic reconstruction and blind deconvolution. This topical meeting is concerned with theory, algorithms, computations, and applications of signal recovery and synthesis in optics and other disciplines.

Topics to be Considered

- Theory
  - Stable inversion of ill-posed problems
  - Image quality analysis/metrics
  - Complexities and uncertainties in image/signal formation
  - Regularization concepts (for example: Total Variation, Bayesian, sparsity)
- Algorithms/Approaches
  - Phase retrieval
  - Superresolution
  - Tomography
  - Spatially-varying deblurring
- Computation
  - Computational methods and implementations, including parallel processing
  - Minimization methods for non-convex problems
  - Accelerating convergence of iterative algorithms
- Applications
  - Imaging through turbulence
  - Imaging of, or through, scattering media
  - Imaging with the use of scattered fields
  - Quantum-limited imaging

About Signal Recovery and Synthesis (SRS)

Signal recovery and synthesis is concerned with methods for obtaining the best estimate of an image from the data and constraints at hand. The topical area is important to many fields of optics, as well as a broader constituency due to its interdisciplinary nature; examples include image reconstruction from Fourier intensity measurements, superresolution, tomographic reconstruction and blind deconvolution. This topical meeting is concerned with theory, algorithms, computations, and applications of signal recovery and synthesis in optics and other disciplines. Specifically, technical advances in the following and related areas are solicited:

- Theory
    - Stable inversion of ill-posed problems
    - Image quality analysis/metrics
    - Complexities and uncertainties in image/signal formation
    - Regularization concepts (for example: Total Variation, Bayesian, sparsity)
- Algorithms/Approaches
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Program Committee

General Chair

Markus E. Testorf, *Dartmouth College, USA*

Program Chairs

Mark Anastasio, *Illinois Inst. of Technology, USA*
Charles Matson, *US ARL, USA*

Committee Members

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Philip J. Bones, *Univ. of Canterbury, New Zealand*
Yoram Bresler, *Univ. of Illinois at Urbana, USA*
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Rick P. Millane, *Univ. of Canterbury, New Zealand*
Michael C. Roggeman, *Michigan Technical Univ., USA*
Brian J. Thelen, *Michigan Tech Research Inst., USA*

Special Events

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

Joint AO/COSI/SRS Session

JWA1, **Innovative Adaptive Optics and Applications**, *Christopher Dainty; Natl. Univ. of Ireland Galway, Ireland*

JWA2, **Adaptive Regression Kernels for Image/Video Restoration and Recognition**, *Peyman Milanfar; Univ. of California at Santa Cruz, USA*

JWA3, **Light Field Photography and Microscopy**, *Marc Levoy; Stanford Univ., USA*

JWA4, **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*

Invited Speakers

STuA1, **Image Reconstruction from Highly Sparse Data in Advanced Tomographic Imaging**, *Xiaochuan Pan; Univ. of Chicago, USA*

STuB1, **Inverse Problems with Interior Control**, *John Schotland; Univ. of Pennsylvania, USA*

STuC1, **Information Theoretic Image Quality Evaluation**, *David Gerwe; Boeing Co., USA*

STuD1, **Signal Reconstruction Techniques for Optical Pulse Characterization**, *Christophe Dorrer; Lab for Laser Energetics, USA*

SWA1, **Intensity Diffraction Tomography**, *Greg Gbur; Univ. of North Carolina at Charlotte, USA*

OSA's 93RD ANNUAL MEETING AND EXHIBIT

FRONTIERS IN OPTICS 2009

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

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.

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EXHIBIT AND CONFERENCE INFORMATION

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

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- Adaptive Optics: Methods, Analysis and Applications (AO)
- Advances in Optical Materials (AIOM)
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- 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

1st 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

1st 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.

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 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.

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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.

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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 | **URL:** 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 µJ).

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OSA Corporate Member

Booth 211

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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_2, 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

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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.

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Fianium Ltd.

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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

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United Kingdom
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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
URL: 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 wavelegth 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

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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
URL: 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
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Email: info@laserfest.org | **URL:** www.laserfest.org

Sponsored by Founding Partners, The Optical Society, the American Physical Society and SPIE, LaserFest is a yearlong celebration of the 50th 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 | **URL:** 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^2, CaF^2, 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

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OPN

Table 17

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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

OSA Corporate Member

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

Optikos Corporation is the world's largest manufacturer of equipment for the measurement of optical image quality and a leading provider of optical product development services. As the world leader in the field of MTF testing, Optikos offers complete solutions for both component and system level tests on imaging systems operating from the ultraviolet to the far infrared. Optikos's product line includes testing suites for measuring the performance of optical and electro-optical imaging systems.

Optimax Systems, Inc.

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Table 9

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Established in 2004 by The Optical Society (OSA), the OSA Foundation (OSAF) is a charitable organization dedicated to supporting programs that: advance youth science education, provide optics education and resources to underserved populations, provide career and professional development resources and support awards and honors that recognize technical and business excellence. Over the last six years, the OSAF has funded over 150 grant programs that have benefited thousands of individuals in more than 40 countries.

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Booth 203

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

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Photonics Media

Booth 302

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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

Physics Today is the #1 publication for the physical sciences worldwide. Read by 125,000 scientists and engineers, *Physics Today* penetrates research labs better than other scientific trade publications.

PolarOnyx, Inc.

Booth 202

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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 | **URL:** www.svc.org

Vision of the Society of Vacuum Coaters: To be the global source for learning, applying and advancing vacuum coating, surface engineering, and related technologies. Mission of the Society of Vacuum Coaters: To foster technical excellence by providing a global forum to inform and educate the members, the technical community, and the public on all aspects of vacuum coating, surface engineering and related technologies. Visit the SVC Web Site at www.svc.org.

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
URL: http://photonics.stanford.edu

SPRC builds strategic partnerships between the Stanford photonics research community and member companies. SPRC, one of the largest photonics programs in the US, brings together approximately 200 core photonics professors, graduate students and postdoctoral research associates in the Schools of Engineering, Humanities & Sciences, and Medicine.

Swamp Optics, LLC

OSA Corporate Member

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
Email: linda.trebino@swampoptics.com

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

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Booth 214

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Thorlabs

OSA Corporate Member

Booth 107

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Phone: 973.300.3000 | **Fax:** 973.300.3600
Email: sales@thorlabs.com | **URL:** www.thorlabs.com

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University of Arizona College of Optical Sciences

Booth 205

1630 E University Blvd. | PO Box 210094
Tucson, AZ 85721-0094
Phone: 520.621.4111 | **Fax:** 520.626.1480
URL: www.optics.arizona.edu

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University of Rochester, The Institute of Optics

Booth 105

Wilmot Bldg., R.C. | Rochester, NY 14627
Phone: 585.275.2322 | **Fax:** 585.271.1027
Email: gayle@optics.rochester.edu
URL: www.optics.rochester.edu

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Booth 200

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Zygo Corporation

Booth 206

21 Laurel Brook Road | Middlefield, CT 06455
Phone: 860.347.8506 | **Fax:** 860.347.3869
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Agenda of Sessions — Sunday, October 11

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

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

Agenda of Sessions — Monday, October 12

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

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

Agenda of Sessions — Tuesday, October 13

	Empire	Crystal	Gold	Valley	California	Glen Ellen
7:00 a.m.–5:30 p.m.	**Registration,** *Market Street Foyer, Fairmont Hotel*					
8:00 a.m.–10:00 a.m.	**FTuA: 3-D Entertainment in the Marketplace** (ends at 9:30 a.m.)	**FTuB: Plasmonic Emitters and Resonators**	**JTuA: Gravitational Wave Interferometers II** (Joint FiO/LS) (ends at 10:15 a.m.)	**FTuC: Optical Communication** (ends at 10:15 a.m.)	**FTuD: Novel Fiber Devices I**	**JTuB: Entanglement Generation and Measurement II** (Joint FiO/LS)
8:00 a.m.–9:30 a.m.	**OSA Young Professionals Networking Event with Corporate Members,** *Courtyard Atrium, Sainte Claire Hotel*					
9:00 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*					
10:30 a.m.–12:00 p.m.	**FTuF: 3-D Capturing, Visualization and Displays**	**FTuG: Wavefront Design for Information Transport and Sensing I** (ends at 11:45 a.m.)	**FTuH: Diffractive and Holographic Optics I**	**FTuI: All-Optical Signal Processing I**	**FTuJ: Anderson Localization II**	**FTuK: High Peak Power Laser Technology II**
12:00 p.m.–1:30 p.m.	**Exhibit Only Time,** *Imperial Ballroom, Fairmont Hotel*					
12:00 p.m.–2:00 p.m.	**1st 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)*					
1:30 p.m.–3:30 p.m.	**FTuM: Emerging 3-D Display Technologies and Research Frontiers I** (ends at 3:00 p.m.)	**FTuN: Negative Index Materials and Cloaking**	**FTuO: Diffractive and Holographic Optics II**	**FTuP: Optical Access**	**FTuQ: Light in the Eye**	**FTuR: Rogue Waves and Related Phenomena**
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*					
4:00 p.m.–5:30 p.m.	**FTuT: Emerging 3-D Display Technologies and Research Frontiers II**	**FTuU: Wavefront Design for Information Transport and Sensing II**	**FTuV: Metamaterials in Emerging Technologies**	**FTuW: All-Optical Signal Processing II**	**FTuX: Novel Optics of Periodic Structures**	**FTuY: Optical Biosensing** (ends at 5:45 p.m.)
4:30 p.m.–5:30 p.m.	**Minorities and Women in OSA (MWOSA) Tea,** *Sainte Claire Room, Sainte Claire Hotel*					
6:00 p.m.–7:00 p.m.	**OSA Annual Business Meeting,** *Piedmont Room, Fairmont Hotel*					
6:00 p.m.–7:00 p.m.	**DLS Annual Business Meeting,** *California Room, Fairmont Hotel*					
6:00 p.m.–7:30 p.m.	**JTuC: Joint AO/COSI/LM/SRS Welcome Reception and Poster Session,** *Regency Ballroom, Fairmont Hotel*					
7:00 p.m.–8:30 p.m.	**OSA Member Reception,** *Ballroom, Sainte Claire Hotel*					
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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				Fall OSA Optics & Photonics Congress			
				AO	LM	COSI	SRS
Atherton	**Sacramento**	**Piedmont**	**Hillsborough**	**Fairfield**	**Belvedere**	**Club Regent**	**Cupertino**
Registration, *Market Street Foyer, Fairmont Hotel*							
FTuE: Fiber Optics Sensors	**LSTuA: General Laser Science**	**LSTuB: Cavity Optomechanics I**	**LSTuC: Ultrafast X-Ray Science III**	**AOTuA: Adaptive Optics Systems I** (ends at 9:50 a.m.)	**LMTuA: Fundamentals of Femtosecond Laser Interactions with Materials**	**CTuA: Computational Imaging and Compressive Sensing**	**STuA: Imaging from Limited and Compressed Data**
OSA Young Professionals Networking Event with Corporate Members, *Courtyard Atrium, Sainte Claire Hotel*							
Student Programming: Painless Publishing, Science Policy and OSA Traveling Lecturer, *Regency Ballroom II, Fairmont Hotel*							
Coffee Break, *Imperial Ballroom, Fairmont Hotel*							
Exhibit Hall Open, *Imperial Ballroom, Fairmont Hotel*							
FTuL: Molecular Imaging and Nanomedicine	**LSTuD: Photophysics of Quantum Dots and Nanostructures I**	**LSTuE: Cavity Optomechanics II**	**LSTuF: Micro- and Nanofluidics III**	**AOTuB: Wavefront Sensing I**	**LMTuB: Three-Dimensional Micromachining with Femtosecond Lasers**	**CTuB: Light Field Representations**	**STuB: Inverse Scattering**
Exhibit Only Time, *Imperial Ballroom, Fairmont Hotel*							
1st International OSA Student Chapter Solar Mini-Car Final Races, *Imperial Ballroom, Fairmont Hotel*							
OSA Fellow Member Lunch, *Silicon Valley Capital Club, 50 W. San Fernando, Suite 1700, San Jose, California 95113, Phone: 408.971.9300*							
Lunch Break *(on your own)*							
FTuS: Short Wavelength Generation and Applications I: From EUV to X-Rays (ends at 3:15 p.m.)	**LSTuG: Optoelectronic Materials Characterization** (ends at 3:45 p.m.)	**LSTuH: Cavity Optomechanics III**	**LSTuI: High Field Dynamics I**	**AOTuC: High Contrast Imaging and Point Spread Function Calibration I** (ends at 3:10 p.m.)	**LMTuC: Fabrication of Waveguides with Femtosecond Laser Systems**	**CTuC: Constraints on Imaging**	**STuC: Atmospheric Imaging**
Coffee Break/Exhibits, *Imperial Ballroom, Fairmont Hotel*							
Meet the Editors of the APS Journals, *Bamboo Lounge, Fairmont Hotel*							
FTuZ: Short Wavelength Generation and Applications II: Spectroscopy and Microscopy	**LSTuJ: Photophysics of Quantum Dots and Nanostructures II**	**LSTuK: Cavity Optomechanics IV** (ends at 5:15 p.m.)	**LSTuL: High Field Dynamics II** (ends at 5:45 p.m.)	**AOTuD: System Simulation and Modeling I** (ends at 5:20 p.m.)	**LMTuD: Surface Processing and Panel Discussion on Femtosecond Laser Micromachining** (ends at 6:00 p.m.)	**CTuD: 3-D Imaging and PSF Design** (ends at 5:45 p.m.)	**STuD: Time-Frequency and Phase-Space Methods** (ends at 5:15 p.m.)
Minorities and Women in OSA (MWOSA) Tea, *Sainte Claire Room, Sainte Claire Hotel*							
OSA Annual Business Meeting, *Piedmont Room, Fairmont Hotel*							
DLS Annual Business Meeting, *California Room, Fairmont Hotel*							
JTuC: Joint AO/COSI/LM/SRS Welcome Reception and Poster Session, *Regency Ballroom, Fairmont Hotel*							
OSA Member Reception, *Ballroom, Sainte Claire Hotel*							
Laser Science Banquet, *Gordon Biersch, 33 East San Fernando Street, San Jose, California, Phone: 408.294.6785*							

Agenda of Sessions — Wednesday, October 14

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

Key to Shading

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

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

Agenda of Sessions — Thursday, October 15

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

Key to Shading

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

			Fall OSA Optics & Photonics Congress		
			AO	AIOM	COSI
Glen Ellen	**Atherton**	**Sacramento**	**Fairfield**	**Belvedere**	**Club Regent**
Registration, *Market Street Foyer, Fairmont Hotel*					
FThE: Integrated Optics	**LSThB: Single-Molecule Biophysics III**	**FThF: Polarization and Birefringence in Optical Design I**	**AOThA: Adaptive Optics Systems II** (ends at 9:40 a.m.)	**AThA: Nanostructured Materials** (ends at 9:30 a.m.)	**CThA: New Imaging Concepts**
Coffee Break, *Regency and Imperial Ballroom Foyer, Fairmont Hotel*					
FThK: Optoelectronics	**LSThD: Single-Molecule Biophysics IV**	**FThL: Polarization and Birefringence in Optical Design II** (ends at 11:45 a.m.)	**AOThB: System Simulation and Modeling II** (ends at 11:30 a.m.)	**AThB: Applications of Nanophotonics**	**CThB: Pupil Encoding Methods** (ends at 12:15 p.m.)
Lunch Break *(on your own)*					
FThQ: Molecular Imaging in the Eye	**LSThF: Single-Molecule Biophysics V** (ends at 3:00 p.m.)	**FThR: Computational Imaging and Photography I**	**AOThC: Wavefront Sensing II** (ends at 3:10 p.m.)	**AThC: Glass Synthesis and Properties** (ends at 3:15 p.m.)	**CThC: Imaging through Complex Media and Spectroscopy** (ends at 3:00 p.m.)
Coffee Break, *Regency and Imperial Ballroom Foyer, Fairmont Hotel*					
FThV: Microscopy and OCT II	**FThW: Plasmonic Waveguides and Devices** (ends at 5:45 p.m.)	**FThX: Computational Imaging and Photography II**	**AOThD: Wavefront Correction Technology** (ends at 5:30 p.m.)	**AThD: Optical Fibers**	**CThD: COSI Panel Discussion** (4:00 p.m.–5:00 p.m.)
Science Educators' Day, *McCaw Hall, Frances C. Arrillaga Alumni Center, Stanford Univ., 326 Galvez Street, Stanford, California 94305, Phone: 650.723.2021*					

Fairfield — AO

8:00 a.m.–9:50 a.m.
AOTuA • Adaptive Optics Systems I
Richard M. Myers; Univ. of Durham, UK, Presider

AOTuA1 • 8:00 a.m. Invited
A New Sodium Guidestar Adaptive Optics System for the Starfire Optical Range 3.5m Telescope, *Robert Johnson[1], Dennis Montera[1], Timothy Schneeberger[2], James Spinhirne[2]; [1]Starfire Optical Range, AFRL/DES, USA, [2]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[1], Sebastian Rabien[2], Simone Esposito[3], Lorenzo Busoni[3]; [1]Steward Observatory, Univ. of Arizona, USA, [2]Max-Planck-Inst. fuer Extraterrestrische Physik, Germany, [3]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 testbed 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, Presider

LMTuA1 • 8:00 a.m. Invited
Intense Field Science in Dielectrics, *M. Gertsvolf[1,2], D. Grojo[1], M. Spanner[1], P. P. Rajeev[1], P. B. Corkum[1,2], D. M. Rayner[1]; [1]Natl. Res. Council Canada, USA, [2]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, Presider

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[1], David Brady[1], David A. Wikner[2], Joseph N. Mait[2]; [1]Duke Univ., USA, [2]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, Presider

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[1], Ville P. Kolehmainen[1], Samuli Siltanen[2]; [1]Univ. of Kuopio, Finland, [2]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[1], Wai Lam Chan[2], Daniel M. Mittleman[2], Edmund Y. Lam[1]; [1]Dept. of Electrical and Electronic Engineering, Univ. of Hong Kong, Hong Kong, [2]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 Fannjiang; 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.

Fairfield	Belvedere	Club Regent	Cupertino
AO	LM	COSI	SRS

AOTuA • Adaptive Optics Systems I—Continued

AOTuA5 • 9:30 a.m.
CANARY: An On-Sky Laser Guide Star Multiple Object AO Demonstrator, *Tim Morris[1], Zoltan Hubert[2], Richard Myers[1], Eric Gendron[2], Andy Longmore[3], Gerard Rousset[2], Gordon Talbot[1], Thierry Fusco[4], Nigel Dipper[1], Fabrice Vidal[2], David Henry[3], Damien Gratadour[2], Tim Butterley[1], Fanny Chemla[2], Dani Guzman[1], Eddy Younger[1], Aglae Kellerer[2], Mark Harrison[1], Michel Marteaud[2], Deli Geng[1], Ali Basden[1], Andres Guesalaga[5], Colin Dunlop[1], Stephen Todd[3], Colin Dickson[3]; [1]Univ. of Durham, UK, [2]Observatoire de Paris, France, [3]UK Astronomy Technology Ctr., UK, [4]ONERA, France, [5]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.

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[1], Stéphane Guizard[2], Bertrand Poumellec[1]; [1]Univ. of Paris Sud, France, [2]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.

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.

STuA • Imaging from Limited and Compressed Data—Continued

STuA6 • 9:30 a.m.
Superresolution with Plenoptic 2.0 Cameras, *Todor G. Georgiev[1], Andrew Lumsdaine[2]; [1]Adobe Systems, USA, [2]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.

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[1], Marco Polo[1,2], Antonio A. R. Neves[1], Roberto Cingolani[1], Dario Pisignano[1,2]; [1]Natl. Nanotechnology Lab, CNR-INFM, Italy, [2]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[1], Michael A. Fiddy[2]; [1]Dartmouth College, USA, [2]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[1], Andrew Lumsdaine[2]; [1]Adobe, USA, [2]Indiana Univ., USA.* Derivation and analysis of sampling patterns of traditional and focused plenoptic cameras show the former rotates pixels Π/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[1,2], John Gill[1], Dan Frattin[1], Kevin Coyle[1], Karl Haack[1], Marc P. Christensen[2], Dinesh Rajan[2], Scott Douglas[2]; [1]Northrop Grumman Info. Systems, USA, [2]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 am. 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.

Fairfield	Belvedere	Club Regent	Cupertino
AO	LM	COSI	SRS

AOTuB • Wavefront Sensing I—Continued

AOTuB4 • 11:40 a.m.
Off-Axis Beacon Sharpening, *Erez N. Ribak[1,2], Ruth Mackey[2]; [1]Technion-Israel Inst. of Technology, Israel, [2]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.

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[1], Jon J. Witcher[1], Denise M. Krol[1], Richard K. Brow[2]; [1]Univ. of California at Davis, USA, [2]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.

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.

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[1,2], Stuart J. Gibson[1], Matthew I. S. Maylin[1]; [1]Univ. of Kent, UK, [2]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. 1st 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.

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[1], Julian Christou[2]; [1]European Southern Observatory, Germany, [2]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[1], Patrice Martinez[1], Emmanuel Aller-Carpentier[1], Julian Christou[2]; [1]European Southern Observatory, Germany, [2]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[1,2], Laurent Mugnier[1], Jean-François Sauvage[1], Thierry Fusco[1], Marcel Carbillet[3], David Mouillet[4], Gérard Rousset[2], Anthony Boccaletti[2]; [1]ONERA Chatillon, France, [2]Observatoire de Meudon, LESIA, France, [3]Lab Fizeau, Univ. de Sophia-Antipolis, France, [4]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[1], B. Jack[1], J. Leach[1], J. Romero[1], S. Franke-Arnold[1], M. Ritsch-Marte[2], S. M. Barnett[3]; [1]Univ. of Glasgow, UK, [2]Innsbruck Medical Univ., Austria, [3]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[1], Carlos E. Luna[1], Brandoch Calef[2]; [1]Boeing Directed Energy Systems, USA, [2]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.

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[1], Jean-Pierre Véran[2], Lisa A. Poyneer[3]; [1]Univ. of Montreal, Canada, [2]Herzberg Inst. of Astrophysics, Canada, [3]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[1], Nicholas Devaney[1], Szymon Gladysz[2], Chris Dainty[1]; [1]Natl. Univ. of Ireland, Galway, Ireland, [2]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, *Luís A. Fernandes[1,2], Jason R. Grenier[1], Peter R. Herman[1], J. Stewart Aitchison[1], Paulo V. S. Marques[2]; [1]Univ. of Toronto, Canada, [2]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 π 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[1], Geoffrey Nichols[2]; [1]Australian Defence Force Acad., Univ. of New South Wales, Australia, [2]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.

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 Vérinaud; 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, *Lianqi 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 Paufique, 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[1], Michael Thompson[1], Matthew Lew[1], Majid Badieirostami[1], Samuel J. Lord[1], Nicholas R. Conley[1], Hsiao-lu D. Lee[1], Sri Rama Prasanna Pavani[2], Rafael Piestun[2]; [1]Stanford Univ., USA, [2]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 Pavani, 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[1], José A. Rodrigo[2]; [1]Univ. Complutense de Madrid, Spain, [2] 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[1], Alejandro Cámara[1], José A. Rodrigo[2], María L. Calvo[1]; [1]Univ. Complutense de Madrid, Spain, [2] 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.

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 Arai; *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[1], Nadege Thirion[2], Marc Saillard[2]; [1]Dartmouth College, USA, [2]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.

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

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

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

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*

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

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 use 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[1], Andrew Norton[2], Daren Dillon[2]; [1]Lawrence Livermore Natl. Lab, USA, [2]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 Wavefront 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[1], Mohammad Alrubaiee[1], Wei Cai[1], Min Xu[2], Swapan K. Gayen[1]; [1]City College of New York, CUNY, USA, [2]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 threholding 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[1], Radomír Malina[1], Jan Novotný[1], David Procházka[1], Karel Novotný[2], Lucie Krajcarová[2], Michaela Galiová[2], Markéta Holá[2]; [1]Inst. of Physical Engineering, Faculty of Mechanical Engineering, Brno Univ. of Technology, Czech Republic, [2]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[1], Yoon-Suk Lee[1], Sang-Chul Jung[1], Dae-Chan Kim[1], Tae-Il Choi[2], Beom-Hoan O[1], Se-Geun Park[1], El-Hang Lee[1], Seung Gol Lee[1]; [1]Inha Univ., Republic of Korea, [2]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[1], Venugopal Rao Soma[2], Narayana Rao Desai[1]; [1]School of Physics, Univ. of Hyderabad, India, [2]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^{4+} Saturable Absorber, *Andrey Okhrimchuk[1], Alexander Shestakov[2], Vladimir Mezentsev[1], Vladislav Dvoyrin[3], Evgeny Sholokhov[4], Ian Bennion[1]; [1]Aston Univ., UK, [2]ELS Co., Russian Federation, [3]Fiber Optics Res. Ctr., Russian Acad. of Sciences, Russian Federation, [4]General Physics Inst., Russian Acad. of Sciences, Russian Federation.* The waveguide saturable absorber is inscribed by femtosecond pulses in YAG:Cr^{4+} 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

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[1], Vladimir Tassev[1], George Bryant[1], Cal Yapp[2], David Bliss[1]; [1]AFRL, USA, [2]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^{-1}) quasi-phasematched GaAs for powerful and efficient fiber-laser-pumped mid-IR OPOs.

AWA3 • 8:45 a.m.
Efficient Mid-Infrared Optical Parametric Oscillator Based on $CdSiP_2$, *Peter G. Schunemann[1], Leonard A. Pomeranz[1], Kevin T. Zawilski[1,2], Jean Wei[2], Leonel Gonzalez[2], Shekhar Guha[2], T. M. Pollak[1]; [1]BAE Systems Inc., USA, [2]US AFRL/RXPJ, USA.* We report the first optical parametric oscillator based on the new mid-infrared nonlinear optical crystal $CdSiP_2$. 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

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

Fairfield	Belvedere	Club Regent	Cupertino
	AOIM	JOINT	

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.

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.

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.

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[1], N. Jeremy Kasdin[1], Laurent Pueyo[2]; [1]Princeton Univ., USA, [2]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 Give'on; JPL, USA.* This paper introduces a unified formulism 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 Poumellec, 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[1,2,3], Matthieu Bellec[2], Kevin Bourhis[3], Arnaud Royon[2], Lionel Canioni[2], Thierry Cardinal[3], Evelyne Fargin[3], Vincent Rodriguez[4], Marc Dussauze[4], Aurelien Delestre[3], Martin Richardson[1]; [1] Townes Laser Inst., College of Optics and Photonics, Univ. of Central Florida, USA, [2]CPMOH, Univ. Bordeaux, France, [3]ICMCB, CNRS UPR9048, Univ. Bordeaux, France, [4]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.

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

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[1], Jack D. Drummond[2]; [1]Gemini Observatory, USA, [2]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[1], Weijia Yang[1], Bertrand Poumellec[1], Peter Kazansky[2]; [1]Univ. of Paris Sud, France, [2]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[1], Thomas Kohlgraf-Owens[1], Jeremy Ellis[1], Cristian Toma[1], Abhijit Mahalanobis[2], Aristide Dogariu[1]; [1]CREOL, College of Optics and Photonics, Univ. of Central Florida, USA, [2]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 a 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 Gambra, Susana Marcos; Inst. de Óptica, 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 Bedggood, 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.

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[1], Henri-François Raynaud[1], Jean-Marc Conan[2], Carlos Correia[2], Cyril Petit[2]; [1]Univ. of Paris, France, [2]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[1], Marcos van Dam[2], Jean-Pierre Véran[3]; [1]Lawrence Livermore Natl. Lab, USA, [2]W. M. Keck Observatory, USA, [3]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.

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 $KBe_2BO_3F_2$ (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^3 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[1,2], Martin M. Fejer[1], Matthias Falk[3], Carsten Langrock[1], Roger K. Route[1], Chris R. Phillips[1], Maria Claudia C. Kajiyama[3], Dieter H. Jundt[3], Karsten Buse[2]; [1]E. L. Ginzton Lab, Stanford Univ., USA, [2]Inst. of Physics, Univ. of Bonn, Germany, [3]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 NIRCam coronagraph using only existing hardware.

SWA3 • 2:15 p.m.
Paper Withdrawn

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.

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

Fairfield — AO

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[1,2], Henri-François Raynaud[2], Caroline Kulcsár[2], Jean-Marc Conan[1]; [1]ONERA, France, [2]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 — AOIM

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[1], Scott E. Webster[1], Shawn Penson[1], Wei Li[1], Thomas Tiedje[2]; [1]Univ. of British Columbia, Canada, [2]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_4-like emission cross section.

Club Regent — COSI

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 — SRS

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.

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[1], Zhangyi Zhong[1], Weiyao Zou[1], Cong Deng[1], Daniel Ferguson[2], Xiaofeng Qi[1]; [1]Indiana Univ., USA, [2]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[1], Ermanno F. Borra[1], Anna M. Ritcey[1], Melanie C. Campbell[2,3], Simon Thibault[1], Julie Drapeau[1], Azadeh Naderian[1]; [1]Univ. Laval, Canada, [2]Univ. of Waterloo, Canada, [3]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[1], Armando Gómez-Vieyra[2], Daniel Malacara-Hernández[2], David R. Williams[1]; [1]Univ. of Rochester, USA, [2]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.

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^{3+}-doped $(Y,Gd)_3Al_5O_{12}$ 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

NOTES

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

Fairfield

AO

8:00 a.m.–9:40 a.m.
AOThA • Adaptive Optics Systems II
Donald T. Miller; Indiana Univ., USA, Presider

AOThA1 • 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.

AOThA2 • 8:20 a.m.
Experimental Validation of LTAO and MCAO Configurations with Optimal Control, *Anne Costille[1], Cyril Petit[1], Jean-Marc Conan[1], Caroline Kulcsár[2], Henri-Francois Raynaud[2], Thierry Fusco[1]; [1]ONERA, France, [2]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.

AOThA3 • 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.

AOThA4 • 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.

AOThA5 • 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.

Belvedere

AIOM

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[1], Marcio A. R. Alencar[1], Luciane F. Oliveira[2], Carla W. Scheeren[2], Jairton Dupont[2], Jandir M. Hickmann[1]; [1]Univ. Federal de Alagoas, Brazil, [2]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[1], Jung Hun Song[2], Ilona Kretzschmar[2], Vinod M. Menon[1]; [1]Dept. of Physics, Queens College of CUNY, USA, [2]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

COSI

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, Demitri 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[1], Ryoichi Horisaki[2], Kerkil Choi[1], Daniel L. Marks[1], David J. Brady[1]; [1]Duke Univ., USA, [2]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.

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

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

Fairfield

AO

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[1,2], Brent L. Ellerbroek[2], David A. Andersen[1], Matthias Schoeck[2], Tony Travouillon[2]; [1]Herzberg Inst. of Astrophysics, Natl. Res. Council Canada, Canada, [2]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[1], David Kearney[2], Ross Frick[2], Oskar Mencer[1]; [1]Imperial College London, UK, [2]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

AIOM

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, *Yeshaiahu 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/$\sqrt{\text{Hz}}$ 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[1], Michael Helgert[2], Robert Brunner[2], Mario Bretschneider[3], Stephan Senz[1], Ulrich Gösele[1], Mato Knez[1]; [1]Max Planck Inst. of Microstructure Physics, Germany, [2]Carl Zeiss AG, Germany, [3]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 Mikhnov[1], Rudol'ph Litvinov[1], Eugene Ageev[1], Sergei Shestov[2], Leonid Zagrebin[2]; [1]Tomsk State Univ. of Control Systems and Radioelectronics, Russian Federation, [2]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 systemically 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

COSI

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[1], Lei Zhang[2], Todd Torgersen[3], Paul Pauca[3]; [1]HoloSpex, Inc., USA, [2]Agiltron, Inc., USA, [3]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[1], Vikrant Bhakta[2]; [1]Ricoh Innovations, USA, [2]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[1], Joseph A. O'Sullivan[2]; [1]Univ. of Memphis, USA, [2]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 Fettig, 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[1], Christopher Spivey[1], Guixiong Zhong[2], Yuchuan Chen[2], Jing Zhao[2]; [1]Alethus LLC, USA, [2]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[1], Odile Robbe-Cristini[1], Van T. T. Tran[1], Katarzyna Woznica-Raulin[1], Sylvia Turrell[1], Bruno Capoen[2], Mohamed Bouazaoui[2], Franck Beclin[3], Maurizio Ferrari[4], Shivakiran N. B. Bhaktha[4,5]; [1]LASIR, France, [2]PhLAM, France, [3]LSPES, France, [4]CSMFO Lab, Italy, [5]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, *Laeticia Petit[1], Nathan Carlie[1], Bogdan Zdyrko[1], Igor Luzinov[1], Kathleen Richardson[1], Juejun Hu[2], Anu Agarwal[2], Lionel Kimerling[2], Troy Anderson[3], Martin Richardson[3]; [1]Clemson Univ., USA, [2]MIT, USA, [3]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; Holospex, 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[1], John R. Ackerman[1], Erin F. Fleet[2], Dean A. Scribner[3]; [1]Global Strategies Group N A Inc., USA, [2]NRL, USA, [3]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[1], Mikhail A. Vorontsov[2], Gary W. Carhart[2], Michael T. Valley[3]; [1]Univ. of Maryland, USA, [2]ARL, USA, [3]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.

Fairfield

AO

AOThC • Wavefront Sensing II—Continued

AOThC5 • 2:50 p.m.
Data Compression for Nearly-Periodic Data, *Amos Talmi[1], Erez N. Ribak[2,3]; [1]Timi Technologies Ltd., Israel, [2]Technion-Israel Inst. of Technology, Israel, [3]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.

Belvedere

AIOM

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[1], Leonardo de S. Menezes[1], Cid B. de Araújo[1], Andrey A. Lipovskii[2]; [1]Univ. Federal de Pernambuco, Brazil, [2]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.

Club Regent

COSI

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.

Fairfield

AO

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[1-2]; [1]Boston Univ., USA, [2]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[1], Jed Khoury[1], Kenneth Vaccaro[1], John Kierstead[2], Charles Woods[1], Andrew Davis[2]; [1]Sensors Directorate, AFRL, USA, [2]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[1], Glenn Tyler[2], Rodolphe Conan[3], Celia Blain[3]; [1]Montana State Univ., USA, [2]Optical Sciences Co., USA, [3]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

AIOM

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[1], Nicolai Granzow[1], Lothar Wondraczek[2], Philip St. J. Russell[1]; [1]Max Planck Inst. for the Science of Light, Germany, [2]Dept. of Materials Science and Engineering, Univ. of Erlangen-Nuremberg, Germany.* Sub-micron strands of $Ge_3As_{52}S_{45}$ 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[1], Roman L. Shubochkin[2], Theodore F. Morse[2]; [1]Worcester Polytechnic Inst., USA, [2]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

COSI

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

(Bold denotes presider or presenting author. Presentation numbers are listed in alphabetical order.)

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Abell, Josh—FMH4
Abi-Salloum, T. Y.—LSTuA2
Abolghasem, Payam—**LSWH4**
Abramochkin, Eugeny—FWW3
Accardi, Anthony—**CTuB5**
Achermann, Marc—**LSWG, LSWJ4**
Ackerman, John R.—CThC2
Acremann, Yves—**LSMH2**
Adam, Vojtěch—JWC19
Adams, Daniel E.—**FWH7**
Adato, Ronen—FWP6
Adhikari, Rana—**JMB**, **JTuA1**, JWC20
Adibi, Ali—FTuB7, FWF6, FWZ2
Adkins, Sean—**AOTuB1**
Adler, Werner—FThP2
Agarwal, Anu—AThC4
Agarwal, Girish S.—FMG5, FWI6, JWD2, LSTuB4, LSTuK3
Ageev, Eugene—AThB4
Aggarwal, Ishwar—**AThD2**
Agranov, Gennadiy—CThB6
Agrawal, Govind P.—FML4, FWU1
Aguilar-Soto, Jose G.—FTuE1
Aguilera-Gómez, Eduardo—JWC67
Ahamad, Nur—FWT1
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Ahmed, Nisar—FTuC3
Ahn, Yeong-Hwan—**FWC1**
Ahn, Yeonghwan—**FWP**
Aiello, A.—FMF5
Aitchison, J. S.—FThW1, FThW3, FThW7, LMTuC5
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Akozbek, Neset—FThW2
Al-Qasimi, Asma—**FWU5**
Al-Zayed, Ayman S.—FTuW5
Albert, Jacques—**FWG**, **FWT1**
Albuquerque, Eudenilson L.—FTuX4
Aleksoff, Carl C.—FThO5
Alencar, Marcio A. R.—AThA3
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Alic, Nikola—FML2, FTuD2, FWK2, **FWL**
Alieva, Tatiana—**FWW3**, **STuD2**, **STuD3**
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Amann, Markus C.—FTuW2
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An, S.—FWE2
Andegeko, Yair—FMF7
Andersen, David A.—AOThB1
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Anderson, E. H.—FTuZ2
Anderson, Monte D.—**JWC21**
Anderson, Matt E.—**FThB7**
Anderson, Ryan—**FMJ2**
Anderson, Troy—AThC4
Anderson, Trevor—LSThD3
Anguita, Jaime A.—**FTuC5**
Ansmann, M.—JMA1
Antonio-Lopez, Jose E.—FTuD6
Apiratikul, Paveen—**FTuI2**
Applegate, Brian E.—FThV4
Arabi, Hesam—**FWE2**
Arai, Alan—**LMTuDP**
Arai, Jun—FTuF3
Arain, Muzammil A.—**FThS**, **JTuA4**
Archambault, Jean-Luc—FTuC2
Archer, Rod—**FTuA1**
Arjmand, Arghavan—LSWH4
Arnold, Stephen—LSMG2
Arnoldus, Henk F.—FMF3
Arrizón, Victor—JWC2
Arroyo Carrasco, M. L.—JWC59
Artal, Pablo—LSWB4
Artar, Alp—**FMA4**
Artioukov, I. A.—FTuZ2
Aschenbach, Konley—JWA4
Aschieri, P.—FWD1
Ashok, M.—LSTuG6
Askari, Murtaza—**FWF6**
Aslanov, Emil—JWC8
Asman, Charles P.—FThD2
Asobe, Masaki—JWE2
Aspelmeyer, Markus—**LSTuH1**
Aspuru-Guzik, A.—JWD3
Assoufid, Lahsen—**FThG**, FThM2
Athale, Ravindra Anant—**CThD**, **CWB**
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Aubailly, Mathieu—**CThC3**
Audebert, Patrick—FMI2
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Avlasevich, Yuri—FMH2
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Azad, Abul K.—FWO1
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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
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Barnakov, Yu. A.—FTuN5
Barnes, Michael D.—**LSMB4**, **LSMF**, **LSTuA**, **LSTuJ**, LSTuJ2, LSTuJ3
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Baronavski, Andrew—JWC28
Barreiro, Julio—JWE1
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Barthelemy, Pierre—FMC4
Bartoli, Filbert—FTuY5
Barton, Jennifer K.—FME7
Barty, Anton—**LSThA3**
Barty, Christopher—**FMI1**
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Basden, Alastair G.—**AOTuD4,** AOTuA5
Bastiaans, Martin J.—**FWQ1**
Bastin, Thierry—JWD2
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Baum, Peter—**LSWJ1**
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Beckley, Amber M.—**FThL2**
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Beeck, T.—LSMH1
Begue, Nathan J.—LSWH1
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Beliaev, Alexander—FWT1
Bellec, Matthieu—AWB3
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Benner, W. H.—LSThA3
Bennink, Ryan S.—JMA4, **JMA7**
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Benson, Oliver—FWE4
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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**
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Bhakta, Vikrant R.—CThB4, CTuC4, **CWB5**
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Bhattacharya, Dipten—AWA4
Bhola, Bipin—FTuB4
Bialczak, Radoslaw C.—JMA1
Biamonte, J. D.—JWD3
Bidlot, Jean-Raymond—FTuR1
Bifano, Thomas—**AOThD1,** FWA2
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Biondini, Gino—FTuR3
Bird, Mark—FTuQ4
Biswas, Prasanta K.—**AWA4**
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Bizheva, Kostadinka—FTuQ4
Black, Kvar C. L.—**JWC76**
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Blair, Loudon—FTuC2
Blake, Peter—**FThN**
Bland-Hawthorn, Joss—FTuD2
Blank, David A.—**LSWC4, LSWI**
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Bliss, David—AWA1
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Bohn, Paul—**LSTuF**, **LSTuF1**
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Botten, Lindsay C.—FWF5
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Bourhis, Kevin—AWB3
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Bozek, John D.—**LSTuL1**
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Bragheri, F.—LSTuI4
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Brewer, C.—FTuZ2
Briant, T.—LSTuK1
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Brizuela, F.—FTuZ2
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Bryant, George—AWA1
Buchhave, Preben—FThR6
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Bunghardt, Kaitlin—FTuQ4
Bunk, Oliver—FThT1, LSTuL4
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Byer, Robert L.—AWC3

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Carbillet, Marcel—AOTuC3
Cardinal, Thierry—AWB3
Carhart, Gary W.—CThC3, JWA4
Carlie, Nathan—AThC4
Carmon, Tal—FThO5
Carney, P. S.—FWH3
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Cerrina, Franco—FTuS2
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Chang, Z.-C.—FWC2
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Chiu, Daniel T.—**LSMG1**
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Cho, Hyung Uk—**FThK2**
Cho, Ha Na—LSTuC4
Cho, Hyoung J.—FTuE1
Cho, MinHaeng—**LSWI1**
Choi, Hee Joo—**JWC11**
Choi, Hyunyong—**LSWJ3**
Choi, Jae-Young—FThM2
Choi, Jiyeon—AWB3
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Choi, S. S.—FWC3
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Choi, Wonshik—FThB3
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Chowdhury, Arshad—FMD1
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Cloutier, Sylvain G.—**AWA5**
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Collier, John—**FMI3**
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Corbett, Brian—FThJ3
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Cristiani, I.—LSTuI4
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Delestre, Aurelien—AWB3
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Dereniak, Eustace L.—FThF4
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de Sterke, C. Martijn—FTuD4, FTuR5, **FWF5**
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Devaney, Nicholas—AOTuC5
DeVree, Brian—JWC16
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Diagaradjane, P.—FME1
Dianov, Evgeny M.—**AThD5**
Dias, F.—FTuR2
Dickinson, Mary E.—FThV2
Dickson, Colin—AOTuA5
Diem, Max—**FThV6**
Dierolf, Martin—FThT1, LSTuL4
Dietrich, Matthew R.—JTuB5, JTuB6
Dillon, Daren—JTuC3
Dillon, Keith J.—**JTuC7**
Dimakis, Emmanouil—FMH4
DiMaria, Jeff—FMA5
DiMauro, Louis—**LSTuI2**
Dinakarababu, Dineshbabu 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.—LSWI2
Donati, Silvano—**FWG5**
Dong, Zhaogang—**FWP5**
Donner, Tobias—LSTuE3
Doris, Ng—FWN2
Dorrer, Christophe—**STuD1**
Dorronsoro, Carlos—JWB4
Dossou, Kokou B.—FWF5
Dotsenko, I.—JWE4
Douglas, Nick—FWM2
Douglas, Scott C.—CTuB4, CWB5
Douglass, Kyle M.—**CWA5**
Douillet, Denis—FMI2
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**
Dufour, 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
Düsterer, 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.—AOThB1, **AOThC1**, 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
Fettig, 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—AOThA4
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—FMI2
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—LSTuI3
Gaind, Vaibhav—**FTuL3**
Galeano Zea, July A.—**JWC70**
Galembeck, André—FThS1
Galiová, Michaela—JTuC12, **JWC18**, JWC19
Gambra, 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
Gaylord, 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—FMI2
Georgescu, Ionut—LSTuI1
Georgiev, Todor G.—**CTuB3**, **STuA6**
Gerke, Timothy D.—LMTuB3
Gerlein, Felipe—AWA5
Gertsvolf, M.—LMTuA1
Gerwe, David—**STuC1**
Ghadarghadr, 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
Groeblacher, 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**
Guttmann, 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
Horng, 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, Filipp—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—AOThC4, FThD2
Janssen, Peter—**FMG, FTuR1, FWD**
Javaloyes, J.—LSTuI4
Javidi, Bahram—**FTuF1**, **FTuM**
Jen, Alex—FThE3
Jeon, Tae-In—**JWC26**
Jesacher, Alexander—AOThC3
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
Juodawlkis, 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, Mercedeh—**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 Ramírez, 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
Kisilak, 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
Kretzschmar, 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
Kuhlmey, 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
Kumar, Prem—**FMG, FWJ5**, LSWB3
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
Laluet, J.-Y.—FWP4
Lam, Edmund Y.—STuA4
Lam, Kit S.—FTuY4
Lambert, Andrew J.—**STuB**, STuC2, **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, Byoungho—**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—LSWI2
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, Rudol'ph—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**
Lõhmus, 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—AOThD3
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, Euclydes—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**
Matson, 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-Arrioja, 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
Mookherjea, 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 F.—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.—FTuI2
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, Asish 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, Josefin—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**
Novotny, 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**
Ostrowsky, 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**
Pandiyan, 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**
Pozzi, Francesca—FMC2
Prasad, Sudhakar—**CTuC3**
Prasada Rao, T—**LSWG3**
Prater, C.—FMK2
Preble, Stefan F.—FML3, FThU4
Preston, Alix—**JMB3**
Preza, Chrysanthe—**CThB5**, **CThC4**

Prieto, Camilo—JWC10
Proška, Jan—AThA2
Procházka, David—JTuC12, JWC18
Przhonska, Olga V.—LSTuG2
Psaltis, Demitri—**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.—**CTuC4**
Ranitovic, Predrag—LSTuI3
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—**FTuX6**
Raynaud, Henri-François—AOThA2, AOWB1, AOWB4
Rayner, D. M.—**LMTuA1**
Reading, M. M.—FMK2
Reano, Ronald M.—**FThE7**
Rebane, Aleksander—JTuC14
Reichman, Wilbur—LMTuC4
Reid, Margaret D.—LSTuA4
Reinspach, J.—FThA4
Reis, David A.—**LSMD**
Reitze, David H.—**FTuK**, **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**, **AThD**
Richardson, Martin—AThC4, **AWB3**, **FTuS1**, **FTuZ**
Richter, C.—FWV1
Richter, Ivan—AThA2, FTuO7, **FWC7**
Rickenstorff-Parrao, Carolina—JWC2
Ritcey, Anna M.—JWF2
Ritsch-Marte, Monika—CTuC2, **FTuU1**, **FWI**
Rivenson, Yair—CTuA4
Rivera, Jose G.—JWC76
Robbe-Cristini, Odile—AThC3
Robert, Aymeric—**LSThA**, **LSThC1**
Robinson, Dirk—**CThB3,** CTuC6
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, Jacquiline—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—LSTuI1
Roth, Zachary—FTuO1
Rotschild, Carmel—LSMC3
Rouse, Andrew—FWR2
Rousset, Gérard—AOTuA5, AOTuC3
Roussev, Rostislav V.—**AWC3**
Route, Roger K.—AWC2, AWC3, FThS7
Rowan, Sheila—**JTuA3**
Roy Choudhury, Kaushik—**LSTuA6**
Royon, Arnaud—AWB3
Ruan, Yinlan—**FTuE3**
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—LSTuI3
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—LSTuI3
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—AOTuC3
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—**LSTuC4**
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
Shalaev, 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**
Simpson, 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**
Sirbuly, Donald J.—FWR1
Siviloglou, Georgios A.—FMF4
Škereň, 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
Sonnefraud, Yannick—FTuB6
Sooryakumar, R—FThE7
Sooudi, Ehsan—**FThK6**
Sorel, M.—LSTuI4
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**
Sriram, 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—LSTuI3
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

Tabernero, Juan—**JWC80**
Tabibi, Bagher—FWB4
Tadanaga, Osamu—JWE2
Tahara, Tahei—**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—JWF2
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
Tolmachov, 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
Travouillon, 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, Vasan—**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
Vérinaud, 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
Wieczorek, Sebastian—FThO6
Wiederrecht, Gary—**LSWG5**
Wiersma, Diederik S.—**FMC4**
Wikner, David A.—CTuA3
Wildeman, Jurjen—LSTuG1
Wildey, 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**
Woafo, P.—JWC23
Wober, 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, Changhuei—**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, Yeo-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
Zadok, Avi—**FWK3**
Zagrebin, Leonid—AThB4
Zaïr, Amelle—JWC10
Zaitsev, Oleg—**LSTuA5**
Zam, Azhar—**FThP2**
Zambon, Veronique—**JTuC15**
Zambrini, 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, **FWF,** 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**.
- *Edward 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 Krapf; Colorado State Univ., USA* will present **LSWD3, Tracking Single Potassium Channels in Live Mammalian Cells**.

Author Updates

Corrected reference 2 for **AOThB3P**: [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 Baronavski, 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[1], S. Johnson[2], V. T. Pham[1], A. El Nahhas[1], R. van der Veen[1], P. Beaud[2], Ch. Bressler[1], M. Chergui[1]; [1]Lab of Ultrafast Spectroscopy, Ecole Polytechnique Fédérale de Lausanne, Switzerland, [2]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.

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

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OSA's 93RD 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

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[1], Larry D. Merkle[1], Mark Dubinskii[1], E. R. Kupp[2], Gary L. Messing[2]; [1]US ARL, USA, [2]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[1], R. A. Stack[1], Gary Euliss[2], R. A. Athale[2], B. F. Necioglu[2], R. W. Horstmeyer[2], Colin Reese[3]; [1]Distant Focus Corp., USA, [2]MITRE Corp., USA, [3]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[1], Andrew Lumsdaine[2], Sergio Goma[3]; [1]Adobe Systems, USA, [2]Indiana Univ., USA, [3]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.

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[1], Andreas Quirrenbach[1], Wolfgang Gässler[2], Diethard Peter[2]; [1]Landessternwarte, ZAH, Univ. Heidelberg, Germany, [2]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[1], Simon Rochester[2], Domenico Bonaccini Calia[1], Dmitry Budker[2], James M. Higbie[3], Wolfgang Hackenberg[1]; [1]European Southern Observatory (ESO), Germany, [2]Univ. of California at Berkeley, USA, [3]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[1], Xiaoqiang Cui[1], Keiko Tawa[1], Junji Nishii[1,2]; [1]Natl. Inst. of Advanced Industrial Science and Technology, Japan, [2]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^{2+}-Doped $SrMgAl_2SiO_7$ as a Novel Blue-Emitting Phosphor Synthesized through Sol-Gel Method, *Reza Salimi, Hassan Sameie, Ali A. Sabbagh Alvani, Ali A. Sarabi, Fathollah Moztarzadeh, 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, $SrMgAl_2SiO_7:Eu^{2+}$ 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)

Adam, Roman—PDPA1
Adamo, Giorgio—**PDPB1**
Aeschlimann, Martin—PDPA1
Afek, Itai—**PDPA9**
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Alonso, Miguel A.—**PDPC4**
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Divliansky, Ivan B.—PDPB3
Dubinskii, Mark—**AWC6P**

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Knight,Jonathan—**AThC**
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Murnane, Margaret M.—PDPA1

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Raj, Kannan—PDPB5
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Rocca, Jorge J.—PDPA2
Rochester, Simon—AOThB3P

Sabbagh Alvani, Ali A.—AThC6P
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Stack, R A.—CWB6P
Sundheimer, Michael—PDPC5

Tahriri, Mohammadreza—**AThC6P**
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Taylor, Luke R.—PDPA4
Ter-Gabrielyan, Nikolay—AWC6P
Thacker, Hiren—PDPB5
Tsai, Hsiu-Ming—**PDPC1**

U'Ren, Alfred B.—**PDPA8**

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Xu, Yong—PDPB2

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Zhang, Xiang—PDPB7
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Zlatanovic, Sanja—PDPB3