

## Polarization: Measurement, Analysis, and Remote Sensing XIII

Monday - Tuesday 16 - 17 April 2018

### Conference Sessions At A Glance

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**1:** Measurements and Applications  
**2:** Polarization System Design and Instruments I  
**3:** Polarization System Design and Instruments II  
**4:** Active Sensing  
**5:** Analysis and Simulation I  
 Defense + Commercial Sensing Plenary Session  
**6:** Atmospheric Effects  
**7:** Analysis and Simulation II  
 Poster Session

### Important Dates

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Abstract Due:  
 9 October 2017

Author Notification:  
 11 December 2017  
 Notifications will be sent no later than 12/15/17

Manuscript Due Date:  
 21 March 2018

### Conference Committee

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#### Conference Chairs

[David B. Chenault](#), Polaris Sensor Technologies, Inc. (United States)  
[Dennis H. Goldstein](#), Polaris Sensor Technologies, Inc. (United States)

#### Program Committee

[Julia Craven](#), Sandia National Labs. (United States)  
[Michael G. Gartley](#), Rochester Institute of Technology (United States)  
[Viktor Gruyev](#), Univ. of Illinois at Urbana-Champaign (United States)  
[Kristan P. Gurton](#), U.S. Army Research Lab. (United States)

Program Committee continued...

[Neelam Gupta](#), U.S. Army Research Lab. (United States)  
[Charles Kim](#), Northrop Grumman Electronic Systems (United States)  
[Michael W. Kudenov](#), North Carolina State Univ. (United States), College of Optical Sciences, The Univ. of Arizona (United States)  
[Joao M. Romano](#), U.S. Army Armament Research, Development and Engineering Ctr. (United States)  
[Joseph A. Shaw](#), Montana State Univ. (United States)  
[J. Scott Tyo](#), UNSW Canberra (Australia)

#### MONDAY 16 APRIL

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### Session 1: Measurements and Applications

Monday 16 April 2018  
 8:10 AM - 10:00 AM  
 Location: Ballroom Level, Naples 1


 Session Chair: [David B. Chenault](#), Polaris Sensor Technologies, Inc. (United States)

#### Overview of polarimetric thermal imaging for biometrics *(Invited Paper)*

Paper 10655-1

Time: 8:10 AM - 8:40 AM

Author(s): Shuowen Hu, U.S. Army Research Lab. (United States); Nathaniel J. Short, Booz Allen Hamilton Inc. (United States); Kristan P. Gurton, Benjamin S. Riggan, U.S. Army Research Lab. (United States)


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#### Short-wave infrared Mueller matrices and polarization parameters for in vivo skin surface reflectance

Paper 10655-2

Time: 8:40 AM - 9:00 AM

Author(s): Lisa Li, Russell A. Chipman, College of Optical Sciences, The Univ. of Arizona (United States)


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#### Polarized single-scattering phase function determined for a common reflectance standard from bidirectional reflectance measurements

Paper 10655-3

Time: 9:00 AM - 9:20 AM

Author(s): Thomas A. Germer, National Institute of Standards and Technology (United States)


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#### Extinction ratio measurements on high purity linear polarizers

Paper 10655-4

Time: 9:20 AM - 9:40 AM

Author(s): Michael Kraemer, Tom G. Baur, Meadowlark Optics, Inc. (United States)

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**Achromatic ferroelectric liquid crystal polarization rotator**

Paper 10655-5

Time: 9:40 AM - 10:00 AM

Author(s): Neil Rebolledo, Dmitri Kyle, Meadowlark Optics, Inc. (United States); Daniel Phipps, Meadowlark Optics (United States)

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**Coffee Break 10:00 AM - 10:25 AM**

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**Session 2:  
Polarization System Design and Instruments I**

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Monday 16 April 2018

10:25 AM - 12:05 PM


Location: Ballroom Level, Naples 1

Session Chair: [Viktor Gruev](#), Univ. of Illinois at Urbana-Champaign (United States)**Polarization considerations in the multi-angle imager for aerosols (MAIA)**

Paper 10655-7

Time: 10:25 AM - 10:45 AM


Author(s): Julie M. Gillis, Russell A. Chipman, College of Optical Sciences, The Univ. of Arizona (United States); David J. Diner, Jet Propulsion Lab. (United States); Matthew B. Dubin, College of Optical Sciences, The Univ. of Arizona (United States)

[Add To My Schedule](#) **Channeled polarimetry using spectrally resolved longitudinal spatial coherence interferometry**

Paper 10655-8

Time: 10:45 AM - 11:05 AM

Author(s): Ethan R. Woodard, Michael W. Kudenov, North Carolina State Univ. (United States)

[Add To My Schedule](#) **Full Stokes polarization spectral imaging****(Canceled)**

Paper 10655-9

Time: 11:05 AM - 11:25 AM


Author(s):

**Acousto-optic tunable filter based spectropolarimeter for extraction of Stokes and Mueller matrices**

Paper 10655-10

Time: 11:25 AM - 11:45 AM


Author(s): Narasimha S. Prasad, NASA Langley Research Ctr. (United States); Feng Jin, Brimrose Corp. of America (United States); Emir Y. Haskovic, Brimrose Technology Corp. (United States); Susan Kutcher, Sudhir B. Trivedi, Jolanta Soos, Brimrose Corp. of America (United States)

[Add To My Schedule](#) **Underwater geolocalization via polarization information (Conference Presentation)**

Paper 10655-35

Time: 11:45 AM - 12:05 PM

Author(s): Viktor Gruev, Univ. of Illinois (United States); Samuel Powell, The Univ. of Queensland (Australia); Roman Garnett, Washington Univ. in St. Louis (United States); Justin Marshall, The Univ. of Queensland (Australia); Charbel Rizk, Johns Hopkins Univ. (United States)

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**Lunch Break 12:05 PM - 1:05 PM**

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**Session 3:  
Polarization System Design and Instruments II**

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Monday 16 April 2018

1:05 PM - 2:25 PM


Location: Ballroom Level, Naples 1

Session Chairs: [David B. Chenaault](#), Polaris Sensor Technologies, Inc. (United States) ; [Dennis Goldstein](#), Polaris Sensor Technologies, Inc. (United States)**Biologically inspired imaging sensors for multi-spectral and polarization imagery**

Paper 10655-11

Time: 1:05 PM - 1:25 PM


Author(s): Missael Garcia, Tyler Davis, Univ. of Illinois (United States); Radoslav Marinov, Washington Univ. in St. Louis (United States); Steven Blair, Viktor Gruev, Univ. of Illinois (United States)

[Add To My Schedule](#) **Performance of a microgrid polarizer array employing a micro-optic registration element**

Paper 10655-12

Time: 1:25 PM - 1:45 PM


Author(s): Greg A. Finney, Christopher M. Persons, Dane J. Phillips, IERUS Technologies, Inc. (United States)

[Add To My Schedule](#) **Residual interpolation for 3-micropolarizer design of division of focal plane polarization image sensors**

Paper 10655-13

Time: 1:45 PM - 2:05 PM


Author(s): Ashfaq Ahmed, Hong Kong Univ. of Science and Technology (Hong Kong, China); Xiaojin Zhao, Shenzhen Univ. (China); Viktor Gruev, Univ. of Illinois (United States); Amine Bermak, Hamad Bin Khalifa Univ. (Qatar)

[Add To My Schedule](#) **Long wave infrared spectropolarimetric directional reflectometer (Conference Presentation)**

Paper 10655-14

Time: 2:05 PM - 2:25 PM

Author(s): Charles F. LaCasse, Kyle H. Fuerschbach, Julia M. Craven, Jacob W. Segal, John D. van der Laan, Jeremy B. Wright, Steven M. Grover, Jessica M. Pehr, Thomas A. Reichardt, Thomas J. Kulp, Sandia National Labs. (United States)

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## Session 4: Active Sensing

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Monday 16 April 2018

2:25 PM - 3:05 PM


Location: Ballroom Level, Naples 1

Session Chair: [Charles Kim](#), Northrop Grumman Electronic Systems (United States)**Single-pulse Mueller matrix polarimeter for rapid scene characterization LADAR**

Paper 10655-15

Time: 2:25 PM - 2:45 PM

Author(s): Christian K. Keyser, Air Force Research Lab. (United States); Khanh Nguyen, Torch Technologies (United States); Arielle Adams, Engility Corp. (United States); Richard K. Martin, Air Force Institute of Technology (United States)

[Add To My Schedule](#) **Development and qualification of the beam dithering units for the GEDI Altimeter Mission (Canceled)**

Paper 10655-16

Time: 2:45 PM - 3:05 PM

Author(s):

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**Coffee Break 3:05 PM - 3:30 PM**

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## Session 5: Analysis and Simulation I

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Monday 16 April 2018

3:30 PM - 4:30 PM

Location: Ballroom Level, Naples 1

Session Chair: [Michael G. Gartley](#), Rochester Institute of Technology (United States)**Channel-first design of modulated polarimeters**

Paper 10655-17

Time: 3:30 PM - 3:50 PM


Author(s): Jiawei Song, Israel J. Vaughn, Andrey S. Alenin, UNSW Canberra (Australia); Michael E. Gehm, Duke Univ. (United States); J. Scott Tyo, UNSW Canberra (Australia)

[Add To My Schedule](#) **What are the fundamental limits of passive polarization imaging?**

Paper 10655-18

Time: 3:50 PM - 4:10 PM

Author(s): François Goudail, Matthieu Boffety, Lab. Charles Fabry (France)

[Add To My Schedule](#) **A new analytical relationship linking polarization and reflectivity (Canceled)**

Paper 10655-20

Time: 4:10 PM - 4:30 PM

Author(s):

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## Defense + Commercial Sensing Plenary Session

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Monday 16 April 2018  
5:00 PM - 7:00 PM  
Location: Ballroom Level, Osceola Ballroom C

[Plenary Session and Presentation details](#)

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TUESDAY 17 APRIL

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## Session 6: Atmospheric Effects

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Tuesday 17 April 2018  
8:00 AM - 10:10 AM  
Location: Ballroom Level, Naples 1

Session Chair: [Joseph A. Shaw](#), Montana State Univ. (United States)


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### All-sky polarization measurements of the total solar eclipse on 21 August 2017 (*Invited Paper*)

Paper 10655-21

Time: 8:00 AM - 8:30 AM

Author(s): Laura M. Eshelman, Martin Jan Tauc, Montana State Univ. (United States); Taiga Hashimoto, Hokkaido Univ. (Japan); Preston Hooser, Montana State Univ. (United States); Kendra Gillis, William Weiss, Brigham Young Univ.-Idaho (United States); Bryan Stanley, Colorado State Univ. (United States); Glenn E. Shaw, Univ. of Alaska Fairbanks (United States); Joseph A. Shaw, Montana State Univ. (United States)


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### Study of natural down-welling sky light with imaging spectro-polarimeter

Paper 10655-22

Time: 8:30 AM - 8:50 AM

Author(s): Adam Smith, Joseph L. Pezzaniti, David B. Chenault, Polaris Sensor Technologies, Inc. (United States); art Iompado, Polaris Sensor Technologies (United States)


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### Imaging through haze using multispectral polarization imaging method

Paper 10655-23

Time: 8:50 AM - 9:10 AM

Author(s): Mohamed El Ketara, Sebastien Breugnot, Bossa Nova Technologies (United States)


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### Cloud thermodynamic phase detection with a 3-channel shortwave infrared polarimeter

Paper 10655-24

Time: 9:10 AM - 9:30 AM

Author(s): Martin Jan Tauc, Carol L. Baumbauer, Benjamin Moon, Andrew M. Abel, David W. Riesland, Laura M. Eshelman, Wataru Nakagawa, Joseph A. Shaw, Montana State Univ. (United States)


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### Acquisition sensor technologies for improved performance in adverse weather conditions

Paper 10655-25

Time: 9:30 AM - 9:50 AM

Author(s): Greg A. Finney, Christopher M. Persons, IERUS Technologies, Inc. (United States); Brett H. Hokr, U.S. Army Space and Missile Defense Command (United States)


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### Design and testing of an active polarization imager at SWIR wavelengths for imaging in highly scattering environments (Conference Presentation)

Paper 10655-26

Time: 9:50 AM - 10:10 AM

Author(s): John D. van der Laan, Jeremy B. Wright, Karl R. Westlake, Sandia National Labs. (United States)

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Coffee Break and Dedicated Exhibition Time 10:10 AM - 11:00 AM

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## Session 7: Analysis and Simulation II

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Tuesday 17 April 2018  
11:00 AM - 11:40 AM  
Location: Ballroom Level, Naples 1

Session Chair: [Michael W. Kudenov](#), North Carolina State Univ. (United States)

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### Estimating the relative water content of leaves in a cotton canopy II (Canceled)

Paper 10655-28

Time: 11:00 AM - 11:20 AM


Author(s):

**Overview of visualization strategies for polarimetric imaging data**

Paper 10655-29

Time: 11:20 AM - 11:40 AM

Author(s): Andrew Kruse, The Univ. of New South Wales (Australia); Andrey S. Alenin, Israel J. Vaughn, J. Scott Tyo, UNSW Canberra (Australia)

[Add To My Schedule](#) **Monolithic intrinsic coincident polarimeter using organic photovoltaics**

Paper 10655-36

Time: 11:00 AM - 11:20 AM

Author(s): Ruonan Yang, North Carolina State Univ (United States); Pratik Sen, Brendan O'Connor, Michael W. Kudenov, North Carolina State Univ (United States)

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## Session PTue: Poster Session

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Tuesday 17 April 2018

6:00 PM - 8:00 PM

Location: Ballroom Level, Osceola Ballroom C

All symposium attendees – You are invited to attend the evening Interactive Poster Session to view the high-quality posters and engage the authors in discussion. Enjoy light refreshments while networking with colleagues in your field. Authors may set up their posters between 10:00 am and 5:00 pm the day of their poster session. Special daytime previewing prior to the session from 10:00 am to 5:00 pm. Attendees are required to wear their conference registration badges to access the Osceola Ballroom to view the posters.

Posters that are not set up by the 5:00 pm cut-off time will be considered no-shows, and their manuscripts may not be published. Poster authors should accompany their posters from 6:00 to 8:00 pm to answer questions from attendees. All posters and other materials must be removed no later than 8:30 pm. Any posters or materials left behind at the close of the poster session will be considered unwanted and will be discarded. SPIE assumes no responsibility for posters left up after the end of each poster session.

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**Anomaly detection of passive polarimetric LWIR augmented LADAR**

Paper 10655-30

Time: 6:00 PM - 8:00 PM


Author(s): Jarrod P. Brown, Air Force Research Lab. (United States); Rodney G. Roberts, Florida State Univ. (United States); Chad M. Welsh, Darrell B. Card, Christian K. Keyser, Air Force Research Lab. (United States)

[Add To My Schedule](#) **Compact LWIR polarimeter for cirrus ice properties**

Paper 10655-31

Time: 6:00 PM - 8:00 PM


Author(s): Kira Hart, Russell A. Chipman, College of Optical Sciences, The Univ. of Arizona (United States); Dong L. Wu, NASA Goddard Space Flight Ctr. (United States)

[Add To My Schedule](#) **A dual wave infrared imaging polarimeter**

Paper 10655-33

Time: 6:00 PM - 8:00 PM

Author(s): Joseph L. Pezzaniti, Polaris Sensor Technologies, Inc. (United States); Brett Hokr, U.S. Army Space and Missile Defense Command (United States); Jenny Niles, jkbj (United States); Rich P. Edmondson, Michael E. Roche, Lisa Blackwell, Polaris Sensor Technologies, Inc. (United States)

[Add To My Schedule](#) **Visible spectrum polarization characterization of *Equus zebra hartmannae* hide**

Paper 10655-34

Time: 6:00 PM - 8:00 PM

Author(s): Bridget Lyons, Torch Technologies (United States); Dennis Goldstein, Air Force Research Lab. (United States)

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