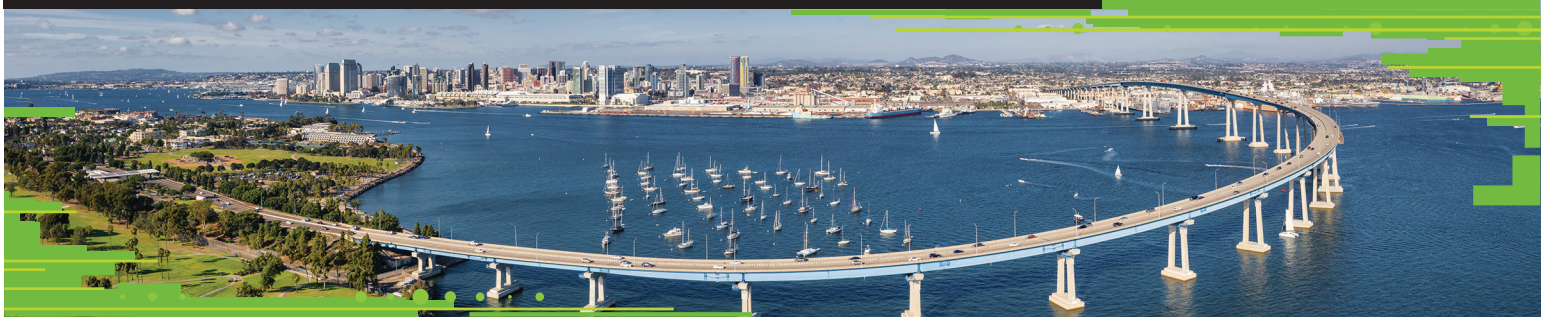
CALL FOR PAPERS

SPIE. OPTICS+ PHOTONICS
OPTICAL ENGINEERING + APPLICATIONS

18 - 22 August 2024
San Diego Convention Center
San Diego, California, United States

Submit abstracts by
**7 February 2024**



# Unconventional Imaging, Sensing, and Adaptive Optics 2024 (OP432)

*Conference Chairs:* **Jean J. Dolne,** The Boeing Co. (United States); **Santasri R. Bose-Pillai,** Air Force Institute of Technology (United States); **Matthew Kalensky,** Naval Surface Warfare Ctr. Dahlgren Div. (United States)

*Program Committee:* **James R. Fienup,** The Institute of Optics, Univ. of Rochester (United States); **Victor L. Gamiz,** Zimagine Innovations LLC (United States); **Stanislav V. Gordeyev,** Univ. of Notre Dame (United States); **Brett H. Hokr,** EO Solutions LLC (United States); **Kenneth J. Jerkatis,** Ball Aerospace (United States); **Matthew Kemnetz,** Air Force Research Lab. (United States); **Svetlana L. Lachinova,** Coherent Corp. (United States); **Casey J. Pellizzari,** U.S. Air Force Academy (United States); **Cameron J. Radosevich,** Sandia National Labs. (United States); **Mark F. Spencer,** Joint Directed Energy Transition Office (United States); **Jonathan Wells,** Naval Information Warfare Ctr. Atlantic (United States); **Steven M. Zuraski,** Air Force Research Lab. (United States)

The objective of this conference is to bring together researchers interested in the development of unconventional imaging, sensing, and adaptive-optics technology. Therefore, we seek papers that:

- use unconventional means of data collection, data processing, and interpretation;
- address laboratory-, space-, airborne-, sea-, and ground-based systems;
- deal with distributed-volume aberrations, high-speed aberrations, scattering media, speckle phenomena, etc.;
- seek to design effective and efficient algorithms for processing different kinds of available data; and
- obtain solutions to many kinds of imaging, sensing, and adaptive-optics applications.

Papers from industry, academia, government, and other research organizations are welcome on the following and related areas:

**IMAGING**

- 3D imaging
- applications in remote sensing, medicine, biology, geophysics, defense, etc.
- biological and molecular imaging
- coded-aperture imaging
- computational imaging
- computationally efficient imaging algorithms
- experimental results or hardware related to the implementation of unconventional imaging systems
- imaging approaches using artificial intelligence, such as machine learning and deep learning.
- imaging from active or passive illumination
- imaging from diversity measurements, including phase diversity, polarization diversity, aperture diversity, wavelength diversity, etc.
- imaging from image-plane measurements, pupil-plane measurements, or both
- imaging from synthetic aperture ladar and inverse synthetic aperture ladar systems
- imaging of or through turbulent, refracting, or highly scattering media
- imaging using ultrafast pulses
- imaging using unconventional optical design
- information-theoretic limits for image recovery and synthesis
- inverse problems using probabilistic and Bayesian methods
- low-light imaging
- mm wave imaging
- multispectral and hyperspectral imaging
- nanoimaging
- non line of sight imaging
- phase retrieval, super resolution, and deconvolution
- profile inversion
- radar, lidar, and sonar imaging
- synthetic aperture imaging
- system modeling and regularization
- wavefield propagation.

**SENSING**

- advances in autonomous vehicle sensing
- advances in coherent-detection approaches
- advances in compressive sensing
- advances in computer vision
- advances in digital holography
- advances in direct-detection approaches
- advances in event-based cameras
- advances in Geiger-mode cameras
- advances in gradient, curvature, and interferometric wavefront sensors
- advances in plenoptic cameras
- advances in ptychography
- advances in tomography
- applications in remote sensing, medicine, biology, geophysics, defense, etc.
- characterization of aero effects
- characterization of compressible and chemically reacting flows
- characterization of extinction
- characterization of jitter
- characterization of turbulence
- characterization of wind
- chemical and biological sensing
- coded-aperture sensing
- computational sensing

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- computationally efficient sensing algorithms
- experimental results or hardware related to the implementation of unconventional sensing systems
- information-theoretic limits for sensing recovery and synthesis
- low-light sensing
- sensing approaches using artificial intelligence, such as machine learning and deep learning.
- sensing from active and passive approaches
- sensing using ultrashort pulses
- wavefront sensing.

**ADAPTIVE OPTICS**

- active and passive tracking
- adaptive-optics approaches using artificial intelligence, such as machine learning and deep learning.
- advances in active and passive flow control
- advances in deformable mirrors, fast-steering mirrors, phase modulators, spatial-light modulators, etc.
- advances in non-mechanical beam steering
- advances in phased arrays and tiled arrays
- applications such as long-range imaging, retinal imaging, confocal microscopy, ultrashort pulse shaping, fiber coupling, laser communications, laser designation, astronomy, power beaming, beam cleanup, laser cavities, etc.
- compensation of aero effects
- compensation of deep turbulence
- compensation of jitter
- computational adaptive optics
- developments in adaptive-predictive control theory and simulations
- developments in scaling-law and wave-optics theory and simulations
- extended-beacon approaches
- multi-conjugate approaches
- ophthalmological approaches
- reconfigurable diffractive optical systems
- wavefront reconstruction
- woofer-tweeter approaches.

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# Present your research at SPIE Optics + Photonics

Below are abstract submission instructions, the accompanying submission agreement, conference presentation guidelines, and guidelines for publishing in the Proceedings of SPIE on the SPIE Digital Library. Submissions subject to chair approval.

SPIE. OPTICS+ PHOTONICS

**ABSTRACT SUBMISSION GUIDELINES**

## Important dates

| | |
|---|---|
| Abstracts due | 7 February 2024 |
| Registration opens | April 2024 |
| Authors notified and program posts online | 29 April 2024 |
| Submission system opens for manuscripts and poster PDFs* | 17 June 2024 |
| Poster PDFs due for spie.org preview and publication | 24 July 2024 |
| Manuscripts due | 31 July 2024 |
| Advance upload deadline for oral presentation slides** | 16 August 2024 |

**Contact author or speaker must register prior to uploading*

***After this date slides must be uploaded onsite at Speaker Check-In*

## What you will need to submit

- Title
- Author(s) information
- Speaker biography (1000-character max including spaces)
- Abstract for technical review (200-30a0 words; text only)
- Summary of abstract for display in the program (50-150 words; text only)
- Keywords used in search for your paper (optional)
- Check the individual conference call for papers for additional requirements (i.e. extended abstract PDF upload for review or instructions for award competitions)

Note: Only original material should be submitted. Commercial papers, papers with no new research/development content, and papers with proprietary restrictions will not be accepted for presentation.

## How to submit your abstract

- Visit the conference page: **www.spie.org/op432call**
- You may submit more than one abstract but submit each abstract only once
- Click the "Submit An Abstract" button on the conference page
- Sign in to your SPIE account or create an account if you do not already have one
- Follow the steps in the submission wizard until the submission process is completed

## Submission agreement

All presenting authors, including keynote, invited, oral, and poster presenters, agree to the following conditions by submitting an abstract:

- Register and pay the author registration fee
- Oral presenters: recording and publication of your onsite presentation (slides synched with voice) for publication in the Proceedings of SPIE in the SPIE Digital Library
- Poster presenters: submit a poster PDF by the advertised due dates for publication in the Proceedings of SPIE in the SPIE Digital Library; poster PDFs may also be published and viewable in the spie.org program during and immediately after the event. Each poster must have a unique presenter; one person may not present more than one poster per session
- Email messaging for the conference series
- Submit a manuscript by the advertised due date for publication in the Proceedings of SPIE in the SPIE Digital Library
- Obtain funding for registration fees, travel, and accommodations
- Attend the meeting
- Present at the scheduled time

## Review and program placement

- To ensure a high-quality conference, all submissions will be assessed by the conference chair/editor for technical merit and suitability of content
- Conference chairs/editors reserve the right to reject for presentation any paper that does not meet content or presentation expectations
- Final placement in an oral or poster session is subject to chair discretion

## Publication of Proceedings in the SPIE Digital Library

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- More publication information available on **SPIEDigitalLibrary.org**

## Contact information

For questions about your presentation, submitting an abstract, or the meeting, contact your Conference Program Coordinator.

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