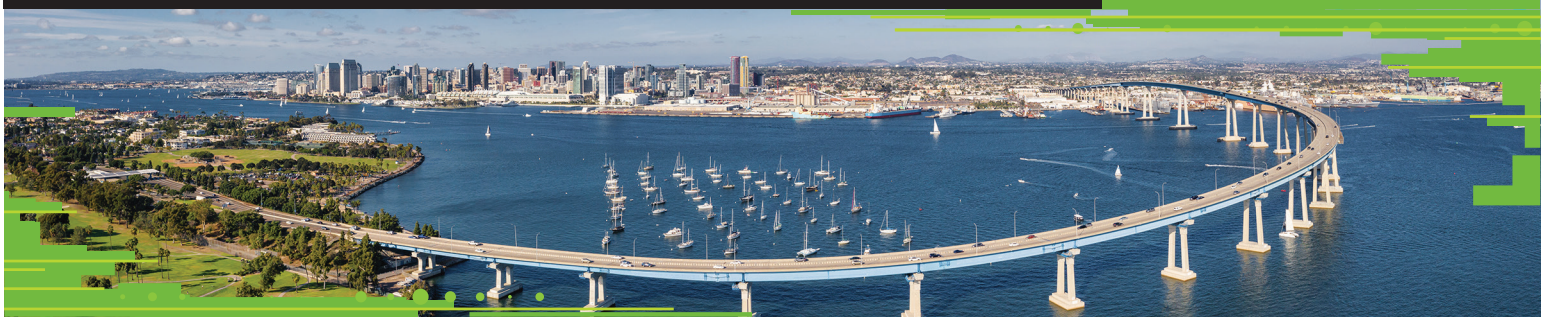
CALL FOR PAPERS

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



Developments in X-Ray Tomography XV (OP504)

Conference Chairs: **Bert Müller,** Univ. Basel (Switzerland); **Ge Wang,** Rensselaer Polytechnic Institute (United States)

Program Committee: **Felix Beckmann,** Helmholtz-Zentrum Hereon GmbH (Germany); **Graham R. Davis,** Queen Mary, Univ. of London (United Kingdom); **Francesco De Carlo,** Argonne National Lab. (United States); **Julia Herzen,** Technische Univ. München (Germany); **Atsushi Momose,** Tohoku Univ. (Japan); **Stuart R. Stock,** Northwestern Univ. (United States); **Marie-Christine A. Zdora,** Monash Univ. (Australia)

This conference is a platform for researchers active in the field of X-ray-based three-dimensional imaging to exchange on the latest progresses in instrumentation, algorithms, and applications. Thousands of X-ray computed tomography systems are currently operated in clinics, industry, and academia. While conventional attenuation-based imaging is still dominant, alternative and complementary contrast mechanisms are being actively developed and applied. The generated big datasets require state-of-the-art methods for image reconstruction and analysis. Several technical advancements are enabling or pushing applications of tomography in pathology, tissue engineering, anthropology, etc. It is increasingly common to produce impressive imagery of unique objects and derive relevant features of the underlying structures and dynamics. Multi-modal imaging, which includes synergistic and reciprocal information, has started playing an important role. The conference encourages interdisciplinary discussions and collaborations. Researchers and users are openly invited from medicine/dentistry, biology, earth and materials science, crystallography, solid-state and soft-matter physics, chemistry, computer science, engineering, and applied mathematics to present results on system and component developments, algorithmic design and optimization, performance evaluation and validation, as well as tomographic experiments and workflows. Papers are solicited on the following and related topics:

DEVELOPMENT OF X-RAY SOURCE TECHNOLOGY
- Structured emission sources
- Multi-component anodes
- Liquid metal and compact light sources
- Next-generation synchrotron radiation facilities

X-RAY OPTICS FOR NANO-TOMOGRAPHY
- X-ray optics for magnification
- Combination of refractive and diffractive lenses with reduced chromatic aberration

RECENT ADVANCES IN X-RAY DETECTOR TECHNOLOGY
- Photon-counting spectral detectors
- Virtual mono-energy imaging
- Radiation dose reduction

ALGORITHMS FOR RECONSTRUCTION, ARTEFACT CORRECTION, AND IMAGE ANALYSIS
- Image reconstruction; artifact correction
- Automatic segmentation
- Dual-energy and spectral CT
- Phase retrieval
- Density measurements including biominerals

DEEP LEARNING FOR RECONSTRUCTION AND IMAGE ANALYSIS
- Image reconstruction from noisy, incomplete and inconsistent data
- Three-dimensional image analysis
- Detection, classification, and quantification of porous media
- Management and mining of big data

MODELING AND SIMULATION FOR X-RAY-BASED TOMOGRAPHY
- Optimization of imaging protocols
- Predictions on contrast and spatial resolution
- Modeling of photon energy and photon statistics

NON-DESTRUCTIVE CHARACTERIZATION OF UNIQUE OBJECTS
- Paleontology
- Museum science
- Anthropology
- Insects and plants, and niche applications
- Implementation of temperature control and mechanical loading to samples

MICRO- AND NANO-TOMOGRAPHY IN BIOMEDICINE
- Brain imaging
- Imaging in regenerative medicine
- Characterization of soft and hard tissues in health and disease

ADDED VALUE OF COMBINING X-RAY TOMOGRAPHY WITH OTHER METHODS
- Multi-modal imaging
- Registration-based segmentation of dynamic processes
- Hierarchical imaging and interior tomography

OPEN SCIENCE AND SUSTAINABILITY
- Meta-data
- Data repositories
- Standards
- Energy-efficient strategies for big data management and large model implementation

The Developments in X-ray Tomography conference series warmly welcomes doctoral students and postdoctoral fellows in the field. To support their career advancement, the Program Committee members will again recognize and award the best poster presented by a PhD student as the first author, the best oral presentation, and the best proceedings paper using cash prizes sponsored by industry.

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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 (200-300 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/op504call**
- 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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- Only manuscripts, presentations, and posters presented at the conference and received according to publication guidelines and due dates will be published in the Proceedings of SPIE in the SPIE Digital Library
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- Conference chairs/editors may require revision before approving publication and reserve the right to reject for publication any manuscript or presentation that does not meet acceptable standards for a scientific publication
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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.

OPTICAL ENGINEERING + APPLICATIONS 2024 PROGRAM TRACK CHAIRS

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