Quantum systems that compute, store, and distribute information based on quantum mechanical entanglement, superposition, and interference phenomena are being developed and realized in many physical systems, with possible commercial/industrial applications in quantum cryptography, quantum sensing, quantum communications, and quantum computation. Quantum cryptography exploits the non-cloning property of quantum states to implement secure cryptosystems, quantum sensors exploit quantum correlations to achieve a sensitivity or resolution surpassing classical systems, quantum communication exploits entanglement of quantum states for teleportation, and quantum computing utilizes the parallelism of quantum interference states for computational complexity and speed that may ultimately exceed the capability of today’s digital technology. Non-locality principles can provide a basis for robust quantum networks that can detect and defend against malicious cyberattacks.

Progress in quantum information science, sensing and computation requires multidisciplinary efforts amongst physicists, computer scientists, mathematicians, and engineers. This conference will provide a forum for discussion including theoreticians and experimentalists from these disciplines and others with interest in quantum technologies. Papers that report on new developments and breakthroughs in quantum information science, quantum sensing, quantum communication, quantum cryptography, quantum computing, and mathematical aspects of quantum computing are invited. Of particular interest are papers dealing with the following topics:

**QUANTUM INFORMATION SCIENCE**
- quantum information theory
- quantum measurement
- decoherence effects
- quantum complexity theory
- quantum algorithms.

**QUANTUM SENSORS, CLOCKS AND SYSTEMS**
- quantum magnetometers
- quantum gravimeters and gravity gradiometers
- atom-based accelerometers
- atom clocks
- quantum imaging systems
- quantum memories.

**QUANTUM COMMUNICATION, NETWORKS, AND CRYPTOGRAPHY**
- quantum networks
- quantum repeaters and memories
- entangled states and their creation
- information processing with entangled states
- teleportation
- quantum cryptography and cryptosystems
- system architecture and engineering.

**QUANTUM COMPUTING**
- solid-state computing
- ion-trap quantum computing
- neutral-atom quantum computing
- Josephson junction quantum computing
- photonic-based quantum computing
- cavity-QED quantum computing
- molecular quantum computing
- NMR quantum computing
- fault-tolerant quantum computing
- integrated photonics for quantum information processing
- single-photon sources and detectors
- classical quantum computing.

**MATHEMATICAL QUANTUM COMPUTATION**
- braid groups and topological quantum computing
- holonomic quantum computing
- quantum walks and games
- quantum cellular automata
- quantum error correction.

**CYBERSECURITY**
- secure communications
- quantum key distribution
- quantum number generation
- information sharing and secrecy
- cyber attack countermeasures.
Present your research at SPIE Defense + Commercial Sensing

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.

Important dates

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstracts Due</td>
<td>11 October 2023</td>
</tr>
<tr>
<td>Registration opens</td>
<td>8 January 2024</td>
</tr>
<tr>
<td>Authors notified and program posts online</td>
<td>15 January 2024</td>
</tr>
<tr>
<td>Submission system opens for manuscripts and poster PDFs*</td>
<td>19 February 2024</td>
</tr>
<tr>
<td>Poster PDFs due for spie.org preview and publication</td>
<td>27 March 2024</td>
</tr>
<tr>
<td>Manuscripts due</td>
<td>3 April 2024</td>
</tr>
<tr>
<td>Advance upload deadline for oral presentation slides**</td>
<td>19 April 2024</td>
</tr>
</tbody>
</table>

*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
- Application tracks
  - AI/ML: Papers that showcase the use of artificial intelligence, machine learning, and deep learning to create and implement intelligent systems
  - Microelectronics: Papers that highlight advances in materials, design, fabrication, integration and applications of silicon or compound semiconductor microelectronics for use in the security and defense sectors and the commercial marketplace.
  - Sustainability: Papers that feature solutions to achieving net zero energy consumption, waste, and carbon emissions within optics and photonics

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
- Agree to the following conditions by submitting an abstract:
  - All presenting authors, including keynote, invited, oral, and poster presenters,
  - Submission agreement
  - Consumption, waste, and carbon emissions within optics and photonics
  - Papers that feature solutions to achieving net zero energy
  - Sustainability:
  - Microelectronics:
    - Papers that highlight advances in materials, design, fabrication, integration and applications of silicon or compound semiconductor microelectronics for use in the security and defense sectors and the commercial marketplace.
  - Application tracks
    - AI/ML: Papers that showcase the use of artificial intelligence, machine learning, and deep learning to create and implement intelligent systems
    - Microelectronics: Papers that highlight advances in materials, design, fabrication, integration and applications of silicon or compound semiconductor microelectronics for use in the security and defense sectors and the commercial marketplace.
    - Sustainability: Papers that feature solutions to achieving net zero energy consumption, waste, and carbon emissions within optics and photonics

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

Increase your professional visibility and publish in the world’s largest collection of optics and photonics research. Your peers access approximately 18 million papers, presentations, and posters from the SPIE Digital Library each year.

- 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
- 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
- Conference chair/editor decision to accept or reject a manuscript, presentation, or poster for publication is final
- Authors must be authorized to provide a suitable publication license to SPIE; Authors retain copyright of all scientific material
- SPIE retains rights to distribute and market the official SPIE recording of the presentation and/or submitted video/poster
- SPIE partners with relevant scientific databases and indexes to enable researchers to easily find papers published in the Proceedings of SPIE. The databases that abstract and index these papers include Astrophysical Data System (ADS), EI Compendex, CrossRef, Google Scholar, Inspec, Scopus, and Web of Science
- More publication information available on the SPIE Digital Library

Application tracks

Listed below are the application tracks available for this meeting. An application track is a grouping of presentations on a topic of interest across all conferences. During submission of the abstract, the submitting author should select an application track if it is relevant to their research.

AI/ML: Papers that showcase the use of artificial intelligence, machine learning, and deep learning to create and implement intelligent systems

Microelectronics: Papers that highlight advances in materials, design, fabrication, integration and applications of silicon or compound semiconductor microelectronics for use in the security and defense sectors and the commercial marketplace.

Sustainability: Papers that feature solutions to achieving net zero energy consumption, waste, and carbon emissions within optics and photonics

SYMPOSIUM CHAIRS

Tien Pham
AI Assurance Solutions
Lead, The MITRE Corporation (USA)

Doug Droege
Sr. Director Technology
Integrated Mission Systems, L3Harris (USA)

SYMPOSIUM CO-CHAIRS

Ann Marie Raynal
Sandia National Labs.
(USA)

Ravi Ravichandran
BAE Systems
(USA)

Contact information

QUESTIONS?

Contact the coordinator listed in your spie.org account.

For questions about publishing or the SPIE Digital Library, contact your proceedings coordinator.