



First Call for Papers

Hardened Electronics and Radiation Technology (HEART) 2025 Conference

April 7-11, 2025 in Monterey, CA

The 40th Hardened Electronics and Radiation Technology (HEART) Conference will be held April 7-11, 2025 at the Hyatt Regency Monterey in Monterey, CA. The HEART Conference and the HEART-published proceedings provide a unique, classified and export controlled colloquium for authors who desire the professional recognition associated with fully refereed publications. A Registration and Welcome Reception will be held on April 7th. The technical program will consist of seven to ten technical sessions of invited and contributed oral and poster presentations describing the latest observations in nuclear and space radiation effects, electromagnetic pulse phenomena, and survivability of hardened electronic systems and subsystems at the classified and unclassified but restricted by export control (ITAR) levels. Demonstration space will be provided for interactive computer programs. A limited number of attendees not able to attend an off-site Classified Session will be able to attend an alternate ITAR Tutorial.

Current research and development results are solicited for presentation. Of particular interest are papers describing experimental or analytical observations that are new and significant to the design, testing, or economics of hardened electronics systems, and new findings in the topics listed to the right. In addition to these specific technical areas, contributions are solicited in new and emerging technologies in related fields. Two types of technical papers are invited for consideration in the conference program. The first is classified up to the level of Secret Restricted Data (no CNWDI); the second is unclassified but restricted by export control (ITAR). Papers of special interest that are not classified or ITAR will be considered on a case-by-case basis.

Attendees must have security clearances certified by DoD and/or DOE officials to attend the classified sessions. All attendees must be US citizens or U.S. resident aliens with a Permanent Resident Card (Green Card).

Devices and Integrated Circuits

- High Performance CMOS, SOI
- Hardening by Design
- Hardening by Process
- Non Silicon Electronics:
 - SiGe, SiC, Graphene, III-V
- Materials, Carbon Nanotubes
- Damage to Materials

Optics and Electro-Optics

- Optical, IR, RF
- Integrated Sensors and Detectors
- Inertial Navigation Sensors / MEMS
- Cryogenic Circuits, Superconductivity
- Radiation Detection Systems
- Radiation Technologies

Environments and EM Effects

- Directed Energy including Lasers and HPM
- Nuclear EMP, HEMP, IEMP, SGEMP, SREMP
- Battlefield Systems and C³I

Facilities and Testing Technologies

Program Protection

- Obsolete Parts Replacement
- Reverse Engineering
- Hardware Emulation
- Software Modularity
- Anti-tamper and Counterfeit

Space Radiation

- Weapon-enhanced Space Radiation
- Space Experiments
- Space Radiation Effects
- Space Environments

Other Effects

- Thermal Mechanical Stress
- New and Emerging Technologies
- Nuclear Forensics
- Trust

STUDENT PAPERS ARE WELCOMED AND ENCOURAGED
Student presentations are considered for a Best Student Paper award

Hardened Systems and Survivability

- Radiation Environments and Criteria
- System Hardening/Validation Approaches
- System Optimization and Implementation
- Piece Part Implementation
- Hardness Assurance and Maintenance
- Hardness Assurance Methodology
- Radiation Test Protocols & Standards
- Energy Deposition Measurements
- Energy Transport Analysis
- Testability
- Test, Analysis, and Certification Methods
- HWIL Verification Methods
- Spacecraft Charging

High Performance

Computing/Demonstrations

- Advanced Simulation & Computing (ASC)
- Nuclear, Chemical, Biological, Radiological, and high Explosive (NCBRE) Analysis Toolset (NATs)
- Nuclear Capabilities Services (NuCS)
- Computer Aided Design
- Computational Aids & Tutorials

Modeling and Simulation (HW & SW)

- Pulsed Power Development
- Laboratory Sources: Radiation, HPM, DEW
- Persistent Radiation, Scintillation, Clutter, Other
- Radiation and EMP Simulator Advancements

Deadline for Receipt of Summary: September 27, 2024

Preparation of the Summary

Authors of prospective papers must prepare a single file consisting of a cover page and an informative two to four page written summary (including figures and references). Cover page must be unclassified unlimited release (UUR), a cover page template is provided on the HEART website. **Paper titles and 35-word abstracts will be printed in the Conference Program and must be unlimited release.**

The summary must include sufficient information to permit a meaningful technical review. Summary should state the purpose of the work, significant new results, and contribution to the state of the art. The level of classification can be up to Secret Restricted Data (**no CNWDI**). ITAR papers as well as unlimited release papers are also welcome. Authors are encouraged to submit classified summaries if required to permit an accurate technical review of the paper. The classification level or trade restrictions should be clearly marked on each page of the summary. **Failure to adhere to the page limit, deadlines, or other rules could result in the paper being rejected.**

Prepare your summary in single-column or IEEE Transactions on Nuclear Science (TNS) standard two-column format using 11 point or greater font size. The summary must be typed on 8 1/2" x 11" paper with 1" margins on all sides. The title with the names of the authors following should be on the first page of the summary after the cover page. Electronic ITAR summaries must use proper encryption methods. **Hard copy summaries will not be accepted.**

Please identify the classification levels of the final paper/conference presentation when submitting the summary. Speakers presenting during the classified sessions must be cleared for Secret RD. Include any other information you feel is pertinent for the paper review. **All corporate/sponsor/government information release approvals necessary to submit/present a paper must be obtained prior to each submission and is the responsibility of the author(s).**

Late News

A limited number of late-news papers, suitable for poster presentation, may be accepted. Summaries for late-news papers will be considered up to January 17, 2025. Information on submittal will be provided at a later date.

Summary Requirements

Length: two to four pages in single column or IEEE TNS standard two column format using 11 point or greater font size

Clearance: Speaker must be cleared for ITAR or SRD depending on classification level of the paper

Cover page should include:

- UUR Title
- Presenter's name, affiliation, and affiliation location
- Authors' name, affiliation, and affiliation location
- Presenter's and/or POCs telephone number and email address
- Preference for poster, oral presentation, or computer demonstration
- Classification level of final paper and presentation
- UUR 35-word abstract for brochure

All corporate/sponsor/government approvals must be obtained BEFORE sending submission.

E-Mail Summaries to Patricia St. John at:

heartconference@sandia.gov with password protection.
Call 505-284-7773 with password or send separate email.

Author Deadlines

The deadline for receipt of summaries for consideration in the Technical Program is **September 27, 2024**. All summaries received on time and in proper format will be reviewed. *Each summary must be approved by the appropriate sponsoring agency before it is submitted for HEART review. This approval process can take a long time and is the responsibility of the author(s).* Author deadline information and summary requirements are available on the website.

JRERE Publication

Acceptance of a paper by the HEART Conference also entitles the author(s) to submit the paper to the JRERE. **The full paper, cleared for release, is to be submitted for review to the JRERE Guest Editor after the HEART Conference (date TBA).** Subject to review, the paper will be published in a special HEART issue of the JRERE. Additional instructions for the full paper for the JRERE will be provided at a later date.

The initial summary and sponsor approval must be received by September 27, 2024.

2025 HEART Conference Committee

Conference Chair

Kelly Simmons-Potter
University of Arizona
kspotter@arizona.edu

Technical Program Chair

Erin Lennon
Applied Research Associates
elennon@ara.com

Short Course Chair

Heather Jiles
DTRA
heather.l.jiles.civ@mail.mil

Industrial Exhibits Chair

Tom Turflinger
Aerospace
thomas.l.turflinger@aero.org

Awards Chair

Karen Schultz Paige
Los Alamos National Laboratory
ksp@lanl.gov

Finance Chair

Kevin Fournier
Lawrence Livermore National Lab
fournier2@llnl.gov

Local Arrangements Chairs

Todd Weatherford
Naval Postgraduate School
trweathe@nps.edu

Advisor to the Chair

Teresa Farris
Archon LLC
teresa.farris@archon-llc.com

Conference Coordinator

Sue Anderson
Etcetera Events & Promotions, Inc.
Office: 303-906-4975
sue.anderson@etceteraevents.com

Security Coordinator

Danielle Perchert
Sandia National Laboratories
505-284-9589
dperche@sandia.gov

Technical Program Coordinator

Patricia St. John
Sandia National Laboratories
505-503-9977
plstjoh@sandia.gov

AV Coordinators

Martha O'Bryan & Carl Szabo
NASA
martha.v.obryan@nasa.gov
carl.m.szabo@nasa.gov