



NPIC&HMIT 2023

13th Nuclear Plant Instrumentation, Control & Human-Machine Interface Technologies

July 15–21, 2023 | Knoxville, Tennessee, USA | Knoxville Convention Center

Co-located with PSA 2023 ans.org/meetings/npic13psa2023/



CALL FOR PAPERS

EXECUTIVE CHAIRS

General Chair

Jamie Coble, University of Tennessee

Technical Program & Publication Chair

Vivek Agarwal, Idaho National Laboratory

Instrumentation & Controls Technical Chair

Daniel G. Cole, University of Pittsburgh

Human Factors Technical Co-Chairs

Jonghyun Kim, Chosun University, S. Korea

Lou Martinez, Kairos Power

PUBLICATION DEADLINES

DECEMBER	→	ABSTRACTS SUBMISSION: Tuesday, December 6, 2022
DECEMBER	→	ABSTRACT REVIEW NOTIFICATION: Monday, December 19, 2022
MARCH	→	FULL PAPERS SUBMISSION: Tuesday, March 07, 2023
APRIL	→	FULL PAPER REVIEW ACCEPTANCE NOTIFICATION: Monday, April 10, 2023
MAY	→	FINAL CAMERA-READY PAPERS SUBMISSION: Monday, May 1, 2023

ABOUT THE MEETING

This topical meeting is the 13th in a series organized by ANS's Human Factors, Instrumentation & Controls Division (HFICD). Authors are invited to participate in the International Topical Meeting on Nuclear Plant Instrumentation, Control, and Human-Machine Interface Technologies (NPIC & HMIT 2023).

Sponsored by the American Nuclear Society (ANS), NPIC & HMIT is the de facto forum for nuclear instrumentation and control and human factors engineering professionals to meet with leaders in industry and academia, discover the state of the technology, exchange information, and discuss future directions.

The meeting welcomes the submission of full-length technical papers, which will be peer reviewed and published as conference proceedings. Accepted papers must be presented at the meeting to be included in the conference proceedings. Papers will be scheduled for either podium or poster presentation at the discretion of the meeting organizers. Detailed information and announcements regarding the conference will be posted on ans.org/meetings/npichmit13/

ABSTRACT GUIDELINES

Maximum of one page identifying title, authors, affiliations, and three paragraphs (total fewer than 500 words) describing the key concepts of the paper. A wide range of topic areas are highlighted on the second page of this call for papers. Authors are encouraged to submit papers on these proposed topics as well as others. The abstract template is on the [NPIC&HMIT 2023 Resources page](#).

FULL PAPER SUBMISSION

Authors of accepted abstracts will be invited to submit full papers. Full papers must describe work that is new, significant, and relevant to the meeting. The limit for full-paper submissions is 10 pages. For papers exceeding 10 pages, page charges are \$100/page for p. 11 and above. Authors of accepted papers must agree to register and attend the conference and present their papers. Papers that are not presented in person at the conference will not appear in the final conference publication.

SUBMIT AN ABSTRACT

epsr.ans.org/meeting/?m=364

PROGRAM SPECIALIST

Janet Davis
708-579-8253
jdavis@ans.org



NPIC&HMIT 2023

13th Nuclear Plant Instrumentation, Control & Human-Machine Interface Technologies

July 15–21, 2023 | Knoxville, Tennessee, USA | Knoxville Convention Center

Co-located with PSA 2023 ans.org/meetings/npic13psa2023/



SUGGESTED TOPICS

IC. INSTRUMENTATION AND CONTROLS (I&C)

- IC1: Advanced I&C for Fuel Cycles
- IC2: Advanced Sensor Technology
- IC3: Advanced Surveillance, Diagnostics, and Prognostics
- IC4: Autonomous Control and Operation
- IC5: Cyber-Informed Engineering for Nuclear I&C
- IC6: Cybersecurity of I&C Systems
- IC7: Cybersecurity in Wireless Technologies, Digital I&C, and Digital Twins
- IC8: Data Analytics, Machine Learning, and Artificial Intelligence
- IC9: Digital Control System Applications
- IC10: Digital Twins and their Applications
- IC11: Digital System Reliability
- IC12: Diversity and Defense in Depth
- IC13: Education and Training of I&C Professionals
- IC14: Electromagnetic Compatibility (EMC) and EMI/RFI Issues
- IC15: Field Programmable Gate Arrays
- IC16: General Sessions in I&C
- IC17: Hazard and Failure Mode Analysis in Digital Systems
- IC18: I&C for Advanced Reactors
- IC19: I&C for Flexible Plant Operations
- IC20: I&C for Mobile Reactor Technologies
- IC21: I&C for Decommissioning of Reactor Technologies
- IC22: I&C Modernization
- IC23: I&C Regulations, Standards, and Guidelines
- IC24: Integrated Energy Systems
- IC25: Managing and Preserving I&C Knowledge and Competence
- IC26: Modeling Digital I&C Systems in PRA/PSA
- IC27: Next Generation I&C
- IC28: Nuclear Data Digitalization, Architecture, and Infrastructure Requirements
- IC29: On-line Monitoring for Maintenance Optimization
- IC30: Robotics in Nuclear
- IC31: Research Reactor I&C
- IC32: Safety Critical Software
- IC33: Sensor and Instrumentation for Physical Security of Nuclear Reactor
- IC34: Structural Health Monitoring
- IC35: Uncertainty Quantification of Artificial Intelligence and Machine Learning
- IC36: Uncertainty Propagation in Digital Twins
- IC37: Validation & Verification of Artificial Intelligence and Machine Learning
- IC38: Validation & Verification of Digital Twins
- IC39: Wireless Technologies for Nuclear Facilities

HF. HUMAN FACTORS (HF)

- HF1: Advances in Human Factors Engineering (HFE) Design and Analysis Tools and Methods
- HF2: Advanced Visualization
- HF3: Alarm Systems
- HF4: Application of Virtual and Augmented Realities to Nuclear Power Plants
- HF5: Cognitive Systems Engineering
- HF6: Computerized Procedures and Digital Instructions
- HF7: Concepts of Operation for Advanced and Small Modular Reactors
- HF8: Control Room Modernization
- HF9: General Sessions in Human Factors
- HF10: HF in Cybersecurity
- HF11: HF in Communications
- HF12: HF in Operation and Maintenance (O&M)
- HF13: HF in Training and Education
- HF14: HFE in Advanced Control Rooms
- HF15: HFE in Advanced and Small Modular Reactors
- HF16: HFE for Configuration Management
- HF17: HFE Standards and Guidelines
- HF18: HFE Verification and Validation
- HF19: Human-Automation Interaction
- HF20: Human Performance Evaluation and Monitoring
- HF21: Human Reliability Analysis
- HF22: Human-System Interface Design
- HF23: Operator Aids and Support Systems
- HF24: Operation of Hybrid Control Rooms
- HF25: Operating Experience
- HF26: Soft Controls
- HF27: Staffing and Qualification of Personnel
- HF28: Task Analysis and Function Allocation
- HF29: Use of Simulation for Human Factors Engineering
- HF30: Workstation and Workplace Design

NOTE: The topics listed above are not the final session titles; they are provided just as a guide. The NPIC&HMIT 2023 Technical Program Committee will be happy to expand the areas and include new sessions into the program. Please contact the Technical Program Chair vivek.agarwal@inl.gov to discuss new and alternative concepts.