NPIC&HMIT 2023
13th Nuclear Plant Instrumentation, Control & Human-Machine Interface Technologies

July 15–20, 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

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.

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

PUBLICATION DEADLINES

DECEMBER
ABSTRACTS SUBMISSION: Tuesday, December 6, 2022
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
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.