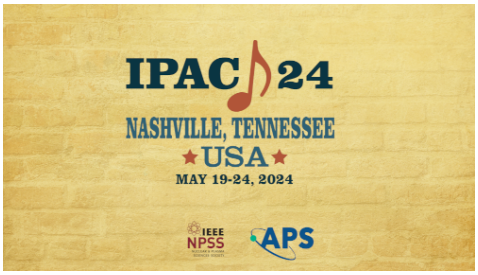

Contribution ID: **1960** Contribution code: **WEPC57** Type: **Poster Presentation**

Design and implementation of an instrumentation & control system for cathodes and radio-frequency interactions in extremes project

Wednesday, 22 May 2024 16:00 (2 hours)

The Accelerator Operations and Technology division at Los Alamos Neutron Science Center (LANSCE) is working on designing and implementing an Instrumentation and Controls System (ICS) for the Cathodes and Radio-frequency Interactions in Extremes (CARIE) project. The system will utilize open-source Experimental Physics and Industrial Control System (EPICS) developed for scientific facilities for control, monitoring, and data acquisition. The hardware form factors will include National Instrument's (NI) cRIO automation controller for industrial-like slow inputs/outputs and NI's PXIe for high-speed data acquisition for diagnostic signals featuring masked and event-based time window capture. In this paper, we will discuss the reasons that led to the design, the hardware and software design specifics, the challenges that we faced during implementation, including the EPICS device support for NI PXIe, as well as the advantages and drawbacks of our system given the experimental nature of the CARIE project.

Footnotes

Funding Agency

U.S. Department of Energy through the Los Alamos National Laboratory. Los Alamos National Laboratory is operated by Triad National Security, LLC. LA-UR-23-33888

Paper preparation format

Word

Region represented

North America

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Session Classification: Wednesday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.T02 Electron Sources