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Development of an Integrated Control and Monitoring System for Centralized Beam Operation at RAON

Monday 8 September 2025 16:00 (2 hours)

RAON is a heavy-ion accelerator supporting a wide range of beam energies and charge states. An integrated operational environment has been developed to enable centralized control and monitoring of accelerator systems. Machine states are defined through a structured framework combining source, machine, and beam modes, providing clear visibility of system readiness via an EPICS-based architecture. The beam permit system monitors the real-time status of cryogenics, vacuum, RF, and beam diagnostics, and inhibits beam extraction under unsafe conditions. Interlock logic is supported by a Readiness Manager and IOC monitor, while a post-mortem system captures PV data at the time of beam failure for root-cause analysis. A user interface built on the Phoebus platform offers integrated access to operation logs, alarm handling, and save-and-restore functionality. Additionally, operation time tracking and event-based logging support systematic record-keeping. This framework enhances operational efficiency and lays a foundation for future automation of beam delivery and diagnostics at RAON.

Footnotes

Funding Agency

I have read and accept the Conference Policies

Yes

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