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Development Status of Beam Loss Monitor for Korea 4GSR

Thursday, November 14, 2024 1:00 PM (1h 30m)

The Beam Loss Monitor (BLM) is crucial for protecting accelerator components from high-energy ionizing radiation unexpectedly generated around the beam path. We have developed a cost-effective BLM for the new-generation synchrotron, Korea 4GSR. The BLM is utilized organic scintillator blocks, optical fibers, and a CMOS camera, to determine the location of beam loss with a low temporal resolution of 2~10 ms. The scintillation blocks installed along the beam path emit visible light proportional to the ionization energy transferred from the beam loss radiation. The light emitted from each detector is transmitted through optical fibers and collected into bundles to form a 2D fiber cross-section array, which is imaged by the digital CMOS camera at a sampling speed of 100 Hz. Additionally, the DAQ includes an LED for detector and cable testing. The performance of this BLM is currently testing at PLS-II. Six detectors are installed near the beam chamber, and the DAQ is set at a device shed, these are connected by a maximum 72 meter optical fiber. This presentation will provide details of the system's development, along with preliminary test results from the PLS-II facility.

Paper submission Plan

Yes

Best Presentation

No

Contribution track

ICABU WG2. Beam Physics, Diagnostics & Novel Techniques

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