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SPS fast spill monitor developments

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The North Area facility (NA) receives the 400 GeV proton beam through a slow extraction process at the CERN Super Proton Synchrotron (SPS). To improve the SPS spill quality, it is crucial to monitor the spill intensity from the nA up to the µA range with a bandwidth extending from a few Hz up to several GHz along the extraction line. The most promising measurement options for this purpose are the Optical Transition Radiation-PhotoMultiplier (OTR-PMT) and the Cherenkov proton Flux Monitor (CpFM). This document presents recent improvements of both devices based on the operational experience gathered throughout the 2023 Run. It includes a detailed analysis and discussion of the present performance, comparing the capabilities of each instrument. Additionally, future ideas for multi-GHz detectors, particularly for the SHIP collaboration, are also outlined.

Footnotes

Funding Agency

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Yes

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