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Optical beam loss monitor installed at the SPS extraction region

Monday 8 September 2025 16:00 (2 hours)

An optical beam loss monitor (oBLM) has recently been installed at the extraction region of the Super Proton Synchrotron (SPS) at CERN. The oBLM offers a new method for detecting beam losses at the SPS by utilizing the Cherenkov radiation emitted during beam loss interactions with an optical fibre. This setup should allow to measure losses continuously over a large section of the accelerator, thus minimising the non-linearities caused by the finite coverage of the currently installed ionisation chambers. Due to the high radiation levels and low expected signals at this location, special care was taken during the procurement process to maximise the signal levels while at the same time extending the lifetime of the system as much as possible. The rationale behind the choice of specific components is discussed, highlighting their advantages compared to other options. Furthermore, initial measurements of beam loss during extraction are presented, and the system's ability to provide real-time diagnostics for beam protection and machine optimization investigated.

Footnotes

Funding Agency

I have read and accept the Conference Policies

Yes

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