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Absolute Calibration of BSI monitors in the SPS North Area at CERN

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Developments in current and future experiments in the SPS North Area (NA) and PS East Area (EA) fixed target beam lines at CERN, including the “Physics Beyond Colliders”(PBC) program, require accurate determination of the number of protons on target (POT). The re-calibration of Beam Secondary Emission Intensity monitors (BSI), recently completed in one of the NA branches, reduced the estimated uncertainty on the absolute POT to a few percent. The calibration is based on an activation technique, applied to metal foils (Al, Cu), installed in front of the BSI and irradiated with the nominal proton intensity for a short period. The number of protons is determined from offline gamma spectrometry analysis of the foils and compared to the total integrated signal of the BSI. A description of the method, data analysis and results, will be presented and followed by considerations intended to standardise the procedure for future regular use in all SPS NA beamlines.

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Footnotes

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