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CERN Secondary Emission Monitor Response: Insights from Artificial Neural Networks

Monday 8 September 2025 16:00 (2 hours)

Secondary electron emission monitors are installed in CERN's North Area to assess the transmission of primary particles over time. In this study, we use artificial neural networks to investigate the relative influence of beam current transformer signals, historical dose, vacuum history, and beam loss monitor signals, on the secondary electron emission monitor's response. We detail the calibration methods used and investigate the long-term trends of the secondary emission monitor signal to beam current transformer ratio, observing changes over several years. The performance of the artificial neural network is evaluated and discussed. Our findings offer insights into the reliability and maintenance of secondary electron emission monitors, highlighting the relative importance of surrounding factors in absolute calibration and interpreting the monitor's signal as a beam diagnostic tool.

Footnotes

Funding Agency

I have read and accept the Conference Policies

Yes

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