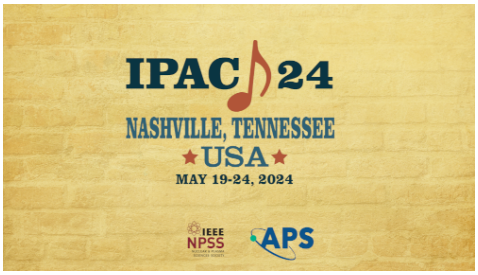

Contribution ID: **1678** Contribution code: **THPC51** Type: **Poster Presentation**

Mitigation of beam coupling impedance for the wire scanners in the CERN Super Proton Synchrotron

Thursday, 23 May 2024 16:00 (2 hours)

The beam wire scanners of the CERN Super Proton Synchrotron (SPS) experienced multiple failures of their carbon wires caused by the high-intensity beam during a very short period in April 2023. Different modifications of the existing instrument were therefore studied to reduce the beam-induced power without compromising its functionality nor negatively affecting the beam coupling impedance. Amongst these options were the implementation of ferrite absorbers, a change of the scanner mechanism and the installation of an RF coupler in the vacuum tank. In this paper, we introduce the electromagnetic simulation results for the installed ferrite loads and the RF coupler, as well as their impact on the on-axis beam impedance. The final improvement for the configuration to be installed during the end-of-year stop of the accelerator will be summarized.

Footnotes

Funding Agency

CERN

Paper preparation format

LaTeX

Region represented

Europe

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Presenter: VOLLINGER, Christine (European Organization for Nuclear Research)

Session Classification: Thursday Poster Session

Track Classification: MC5: Beam Dynamics and EM Fields: MC5.D04 Beam Coupling Impedance Theory, Simulations, Measurements, Code Development