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Status of the low-Z SPS slow extraction electrostatic septum development

Thursday 5 June 2025 15:30 (2 hours)

The impact of high-flux protons on beam loss during slow extraction from the SPS to the North Area has been discussed, and improvements have been proposed focusing on reducing activation, lifetime reduction, and anode body distortion. The conducted studies shall demonstrate the feasibility of replacing the stainless-steel tank, flanges, and anode body with low-Z materials. A reduced-length prototype was fabricated to demonstrate mechanical, electrical, and vacuum performance. The paper presents the vacuum vessel development from the reduced-length prototype to the full-length setup, including numerical analysis.
Prototype qualification tests, including vacuum performance, leak-tightness, high-voltage feedthrough performance, and deformation during evacuation, will be discussed to confirm that the tank remains within predicted non-linear buckling limits.

Footnotes

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Europe

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