



Preparation and qualification of pre-production SSR2 jacketed cavities for PIP-II

Monday 22 September 2025 14:30 (3 hours)

The qualification of 325 MHz Single Spoke Resonators type 2 (SSR2) jacketed cavities to meet technical requirements represents a significant milestone in the development of the SSR2 cryomodules for the PIP-II Project at Fermilab. This poster reports the procedures and lessons learned in processing and preparing these cavities for horizontal cold testing prior to integration into a cavity string assembly, with a focus on addressing the field emission issues observed during the cold testing. A comprehensive root cause analysis identified critical fabrication, processing, and handling factors impacting field emission onset. New techniques were successfully developed and implemented to achieve field emission-free SSR2 cavities, and efforts were made to correlate radiation levels measured at the test stand with expected levels in the LINAC tunnel. Additionally, the evolution of field emission through assembly steps was thoroughly investigated, leading to a reassessment of design choices and enhancing our understanding of their effects on cavity performance.

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Yes

Footnotes

Funding Agency

Author: GRASSELLINO, Laura (Fermi National Accelerator Laboratory)

Co-authors: SUKHANOV, Alexander (Fermi National Accelerator Laboratory); Mr BICE, Damon (Fermi National Accelerator Laboratory); LONGUEVERGNE, David (Université Paris-Saclay, CNRS/IN2P3, IJCLab); PAS-SARELLI, Donato (Fermi National Accelerator Laboratory); Mr SANG-HOON, Kim (Facility for Rare Isotope Beams); ELLIOTT, Kyle (Facility for Rare Isotope Beams); PARISE, Mattia (Fermi National Accelerator Laboratory); XU, Ting (Facility for Rare Isotope Beams); AIAZZI, Tommaso (Fermi National Accelerator Laboratory)

Presenter: GRASSELLINO, Laura (Fermi National Accelerator Laboratory)

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