

Strategies for mitigating residual magnetic field effect on pre-production PIP-II SSR2 cryomodule performance

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This paper outlines the strategy aimed at mitigating the adverse effects of residual magnetic fields on the performance of pre-production SSR2 superconducting cavities within the context of the PIP-II project at Fermilab. Residual magnetic fields can significantly impact cavity performance, leading to reduced quality factor. To address this challenge, our strategy integrates various approaches including magnetic shielding, careful selection of materials, quality controls aimed at measuring magnetic permeability, magnetic hygiene to reduce residual magnetic field at the installation phase. Additionally, experimental studies are being planned to analyze the behavior of the cavities under different magnetic field conditions, and the effectiveness of advanced demagnetization procedures.

Footnotes

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