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CST Simulation and RF Power Calculations for 805 MHz SC LANSCE Equivalent Cavity

Tuesday 12 August 2025 16:00 (2 hours)

This paper shows a CST simulation of a 6 cell Superconducting (SC) cavity with potential application at LANSCE. Previous studies explored the Superconducting LINAC (SCL) option as a potential upgrade to the LANSCE Coupled Cavity LINAC (CCL). This SC option has the potential to improve beam availability to the LANSCE facility users by allowing the RF system to partially migrate to a modern RF power solution such as the SNS or the ESS klystron modulators. Another option that becomes available is the use of recent advances in Solid-State Power Amplifiers or SSPAs. Another important aspect of the SC option is that the removal of the CCL at $\beta=0.78$ and implementing high-gradient SC cavities provides a technically sound solution to reach beam energy up to 3 GeV within the already existing beam tunnel, making this available for the users. In addition, the current capability of 800 MeV beam can be maintained by choosing a dynamic mode of operation where only the needed SC RF structures are operated. This would allow continued use of the PSR without requiring an upgrade, while providing the 3 GeV option. This paper shows a CST simulation of a 6-cell cavity and the calculated RF power per-cavity for the SC linac structures.

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No

Would you like to submit this poster in student poster session on Sunday (August 10th)

No

Footnotes

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

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