



Contribution ID: 424

Type: **Poster Presentation**

First Results from a Nb₃Sn-Coated 1.5-Cell 650 MHz SRF Cavity for Cryogen-Free Industrial Accelerators

Fermilab is advancing the development of a compact, high-power electron beam accelerator using superconducting radio frequency (SRF) technology as a non-radioactive alternative to traditional radiological sources. The current design targets continuous-wave (CW) operation at 1.6 MeV and 20 kW. To ensure suitability for industrial environments, the system is being designed for cryogen-free operation, driving the adoption of a novel Nb₃Sn-coated 1.5-cell SRF cavity operating at 650 MHz.

This contribution reports on the fabrication, surface preparation, and Nb₃Sn coating process of the cavity, as well as first results from vertical test stand (VTS) measurements performed in a liquid helium bath. These initial tests mark a key milestone toward demonstrating the viability of conduction-cooled Nb₃Sn SRF cavities for industrial-scale deployment.

Please consider my poster for contributed oral presentation

No

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

No

Footnotes

Funding Agency

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Yes

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