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Traveling Wave excitation results in SRF Cavity With a Feedback Waveguide at 2K.

Tuesday 12 August 2025 14:30 (20 minutes)

Conventional SRF cavities are used in standing wave regime and are limited by surface fields to ˜50 MV/m. In order to overcome this limit, Superconducting Traveling Wave (SCTW) cavity was proposed as it allows to achieve ˜1.5 times higher accelerating gradient operating at lower phase advance per cell, thus improving transit time factor. However, power recirculation through a feedback waveguide is required to maintain cavity efficiency. Funded by the U.S. Department of Energy's SBIR program, Euclid Techalbs, in collaboration with Fermilab, demonstrated in the past the surface processing capability of a single-cell prototype with a feedback waveguide. Subsequently, a 3-cell prototype was designed and fabricated to demonstrate a traveling wave regime in SRF cavity with a feedback waveguide at cryogenic temperatures and the highest gradients. Previously, we have demonstrated the feasibility of traveling wave excitation and control at 2K in the cavity with highly loaded QL=1e6, which is typical for high current machines. Here we present our recent results of traveling wave control with a more challenging smaller bandwidth.

Please consider my poster for contributed oral presentation

Yes

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

No

Footnotes

Funding Agency

DOE SBIR

I have read and accept the Privacy Policy Statement

Yes

Author: KOSTIN, Roman (Euclid Techlabs (United States))

Presenter: JING, Chunguang (Euclid Techlabs (United States))

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