Contribution ID: **318** Contribution code: **FRXN01** Type: **Invited Oral Presentation**

Novel high gradient normal conducting linacs and their applications

Friday 15 August 2025 09:00 (30 minutes)

Recent SLAC research on novel design techniques for normal conducting accelerators has produced multiple new approaches to increase the gradient as well as the efficiency of these structures. Distributed coupling linacs, in which individual cells are fed through parallel power distribution manifolds, have enabled new flexibility in the optimization of the cell geometry to increase the accelerating gradient while constraining the local surface field enhancement to reduce susceptibility to breakdown. This innovation takes advantage of state-of-the-art high-power computing to fully model the linac, RF distribution network, and beam dynamics using tools like SLAC's ACE3P modeling suite. Cold copper structures are another key example of the advances at SLAC where cryogenic operation has been shown to increase the shunt impedance and reduce the breakdown rate. SLAC is actively developing these techniques and pursuing new approaches, like driving structures with very short RF pulses. Design and simulation efforts are complimented by high power testing capabilities at the NLCTA Test Facility. SLAC is investigating applying these high gradient design advances to a wide array of accelerator applications spanning discovery science, medicine, and national security.

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

I have read and accept the Privacy Policy Statement

Yes

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