Contribution ID: **10** Contribution code: **THP035** Type: **Poster Presentation**

Final design of CARIE photoinjector cavity with plug insert

Thursday 14 August 2025 16:00 (2 hours)

At Los Alamos National Laboratory, we finalized the design of a 1.6-cell C-band RF photoinjector cavity for the Cathodes And Radiofrequency Interactions in Extremes (CARIE) project. The photoinjector cavity is intended to operate at 5.712 GHz, with an intense electric field on the photocathode up to 240 MV/m, producing 250-pC electron bunches at room temperature. The photoinjector cavity design focused on minimizing the peak electric and magnetic fields. The distributed RF coupling waveguide network design was optimized for achieving minimized vacuum pressure at the photocathode plug emitting surface. We report the RF simulation and vacuum simulation results of the photoinjector cavity. We also discuss the mechanical design considerations related to photocathode plug alignment, laser pipes, and baking out. The designed photoinjector cavity is currently under fabrication.

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

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I have read and accept the Privacy Policy Statement

Yes

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