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## Status of the CARIE high gradient photocathode test facility at LANL

*Wednesday, 22 May 2024 16:00 (2 hours)*

This presentation will report on the status of assembling and commissioning of the Cathodes And Radio-frequency Interactions in Extremes (CARIE) C-band high gradient photoinjector test facility at Los Alamos National Laboratory (LANL). The construction of CARIE began in October of 2022. CARIE will house a high gradient copper RF photoinjector with a high quantum-efficiency cathode and produce an ultra-bright 250 pC electron beam accelerated to the energy of 7 MeV. The 50 MW 5.712 GHz Canon klystron will power the facility. The klystron was received and installed in fall of 2023. The WR187 waveguide line brings the power from the klystron into a concrete vault that is rated to provide radiation protection for an electron beam powers up to 20 kW. The first RF injector that was fabricated is made of copper and does not have cathode plugs. This injector will be commissioned to validate operation of the CARIE facility. The second injector that will accommodate cathode plugs and novel photocathodes was designed and will be fabricated. The status of the facility, the designs of the photoinjector and the beamline, and plans for photocathode testing will be presented.

### Footnotes

### Funding Agency

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North America

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