

Low frequency 113 MHz SRF gun with room temperature photocathode for Coherent electron Cooling experiment (CeC-X)

High-current low-emittance CW electron beams are of great importance for the existing and future DOE facilities, medical, industrial and security applications. The CW superconducting radiofrequency (SRF) electron photoinjector is one of the most advanced, but also one of the most challenging, technologies promising to deliver such beams. While SRF technology is paving the way for future accelerators, the compatibility of the SRF environment with complex photocathodes remains on the forefront of modern accelerator science, and many important questions remain unanswered. In this talk we will dive into the details of the design and operation of the BNL 113 MHz SRF gun that has demonstrated exceptional performance delivering high charge electron bunches (up to 20 nC/bunch) and low transverse emittances, while operating for months with a single photocathode.

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