



First beam commissioning of the bERLinPro superconducting radio-frequency (SRF) photoelectron gun

Thursday 25 September 2025 12:40 (15 minutes)

After about a decade of research, development and construction work, the bERLinPro Energy Recovery Linac project at HZB changed over into the commissioning phase and started the operation of the SRF photo-injector with the injection line of the accelerator. This system had already produced beam from a metal photo-cathode in 2018 [1] in a dedicated test environment and was assembled in the accelerator hall after a required refurbishment and repair program [2]. The 1.3 GHz SRF gun successfully generated first photoemission beam from a high quantum efficiency (QE) Na-based multi-alkali photocathode. In this contribution, the results of the first two measurement campaigns will be shown, including a review of the SRF design, the RF commissioning, the cavity performance, especially with respect to dark current, the cathode quantum efficiency and lifetime, as well as the measured beam parameters.

I have read and accept the Privacy Policy Statement

Yes

Footnotes

[1] A. Neumann et al., "The bERLinPro SRF Photoinjector System - From First RF Commissioning to First Beam", in Proc. 9th Int. Particle Accelerator Conf. (IPAC'18), Vancouver, BC, Canada, Apr. 4., pp. 1660-1663, doi:10.18429/JACoW-IPAC2018-TUPML053

[2] Yegor Tamashevich et al 2024 Eng. Res. Express 6 025009

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