

SRF photo-injector and Booster modules at bERLinPro: Assembly and commissioning status

Tuesday, 4 October 2022 14:10 (20 minutes)

The energy recovery linac (ERL) at Helmholtz-Zentrum Berlin (HZB) is in the final stage of assembly and follow-up commissioning of the injector beam line. This injector consists of a $1.4\lambda/2$ cell SRF photo-injector and a three two cell Booster cryomodule, the latter based on a modified design of the Cornell injector cavity shape. The injector was designed for a final beam current of 100 mA and an injection energy of 6.5 MeV into the 50 MeV recirculator. Currently, we are working on assembling and commissioning of the first cryomodule, being the SRF photo-injector, which already ran in 2018 [1], received a major overhaul of mainly the SRF cavities between 2019 to 2021, so that first beam is expected towards early 2023. In parallel, preparations to assemble the Booster cryo-module are on-going as well as final preparation of the injector beam vacuum system, which receives upgrades to also serve as an ultrafast electron diffraction (UED) beam line in addition to the foreseen accelerator research program and ERL studies at HZB. In this contribution, the development and current work on the SRF photo-injector will be presented in addition to latest results of the high power conditioning of the 120 kW Booster couplers.

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Session Classification: SRF

Track Classification: SRF