



Contribution ID: 351

Type: **Parallel session talk**

bERLinPro@SEALab: A contribution to European Accelerator Roadmap for ERLs

Wednesday 23 August 2023 18:15 (15 minutes)

The Berlin Energy Recovery LINAC Project (bERLinPro), a 100-mA, 50-MeV ERL design was originally conceived to demonstrate ERL technology for use in a future high-brilliance light source at HZB. This endeavor was officially ended in 2020. However, the full infrastructure for ERL operation, including cryogenics and high-power RF, the UHV vacuum system and complete beam transport is installed, and SRF systems for a photoinjector and booster are currently being assembled. bERLinPro now serves as a general accelerator test facility to explore a broadening set of technologies and applications from SRF photoinjectors and high-power SRF-based energy recovery to ultrafast electron diffraction (UED) that takes advantage of the unique properties of the SRF-based injector. To reflect this expanded focus the facility is now named SEALab: “Superconducting rf Electron Accelerator Laboratory.” Presently, the commissioning of the ca. 10-mA SRF photoinjector is under way, followed by the assembly of the booster module. In future, plans are to explore the 10 –100 mA range. In this contribution, an overview of lessons learned so far, the status of the machine, the coming commissioning steps and an outlook to midterm and future applications will be given. This includes the potential to use bERLinPro/SEALab to explore technologies and concepts that are key elements of the European Accelerator Roadmap for particle physics, e.g. explore pathways towards a more sustainable large scale science driver.

Collaboration / Activity

none

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