

ERL test facilities

Hiroshi Kawata

Update on the KEK ERL test facility (cERL)

Gennady N. Kulipanov

Novosibirsk ERL facility

Georg Hoffstaetter

CBETA, a 4-turn ERL with FFAG arc

Dmitry Kayran

Lessons learned from BNL ERL test facility

Michaela Arnold

ERL Mode of S-DALINAC: Design and Status*

Walid Kaabi

PERLE a proposed test ERL at LAL

Andreas Jankowiak

Status of the Berlin Energy Recovery Linac Project bERLinPro

Dr. Francois Meot

ER@CEBAF, a 7+GeV Energy Recovery Experiment

Xiaoping Li

A Beam Test Facility for High Current Photoinjector and its Key Technologies Development at IHEP

Oliver started a list of parameters for:

ERL programs

- JLabFEL
- CEBAF-ER
- ERL DEMO
- ERL Upgrade
- UV FEL
- ER@CEBAF
- eIC cooler
- cERL
- EUV Source
- ALICE
- bERLinPro
- CBETA
- Cornell Light Source
- S-DALINAC
- MESA
- R&D ERL
- R&D ERL(tested)
- eRHIC ERL
- CeC @ RHIC
- LHeC
- PERLE

- APS ERL
- IHEP ERL
- Peking ERL-FEL
- SINUP
- PAPS
- BINP ERL
- BINP FEL

Parameters

- Institute
- Main application: Test Facility [TF], Light Source [LS], Physics Application
- Commissioning Start
- Operation End
- # Re-Circulations

injector

- RF type
- RF Frequency [GHz]
- Accelerating Voltage [MeV / m]
- Accelerating Structure
- Energy gain / linac [MeV]

Main linac

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- Bunch charge @ inj [pC]
- Bunch length [ps]
- Energy spread
- Transverse emittance [gamma mm mrad]
- Av. Current during the pulse @ inj [mA]
- Injector Energy [MeV]
- Max beam energy @ end of accel [MeV]
- Max beam power @ end of accel [MW]
- Max total current in cavity [mA]
- Power on dump [MW]
- Power consumption of injector [MW]
- Power consumption of Facility [MW]
- FEL section
- FEL light type
- Compton scattering
- THz
- Gas target

- Electron Source type
- Cathode type
- Cathode lifetime
- Polarization

Main international achievements:

- 1) About 0.75MW injector power
- 2) Stable DC-gun operation
- 3) Low emittance tuning
- 4) About 1MW virtual beam power
- 5) About 75mA current through SRF cavity
- 6) Applications for FEL, THz, and (Compton Backscattering)
- 7) Operation stability for many days

Main common challenges:

- 1) Operations with multi turns
- 2) Going to higher current (100mA)
- 3) Higher power (8MW in near term), (900MW for LHeC)
- 4) Polarized beams
- 5) Stable SRF microphonics
- 6) Permanent magnets and FFAG transport
- 7) Networking, sharing of information, microworkshops, commissioning sharing => set up a meeting with Florian.

Common research interests

- 1) Cathodes with higher QE, better lifetime, low thermal emittance
- 2) Polarized cathodes
- 3) Low microphonics design of cryomodules
- 4) LLRF control for high QL operation with microphonics
- 5) Multi-turn beam control
- 6) Halo control and machine protection
- 7) Benchmarking of simulations
- 8)