

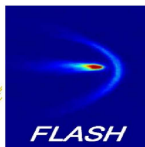
RF Deflectors

- Activities at FLASH -

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Deutsches Elektronen-Synchrotron (DESY)

IRUVX WP3 “Longitudinal Diagnostics” Meeting
27th October 2009



Outline

- 1 Overview of FLASH and the RFD Setup
 - Past FLASH Layout and RF Deflector Setup
 - Future FLASH Layout and RF Deflector Setup
- 2 Collaboration with the IRUVX WP3 “Long. Diag.” EG
 - Potential Collaboration in the Future

Past FLASH Layout and RF Deflector Setup

Present layout

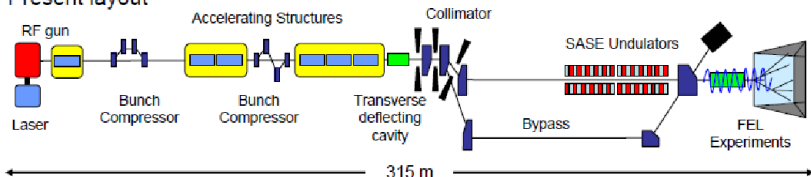


Figure: FLASH Layout Before Shutdown in 2009. (K.Honkavaara)

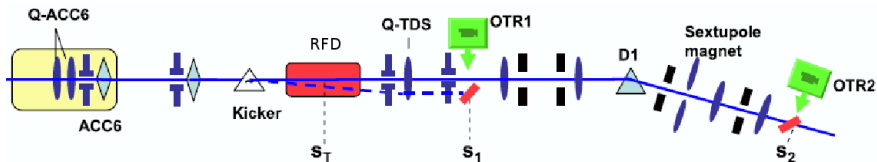
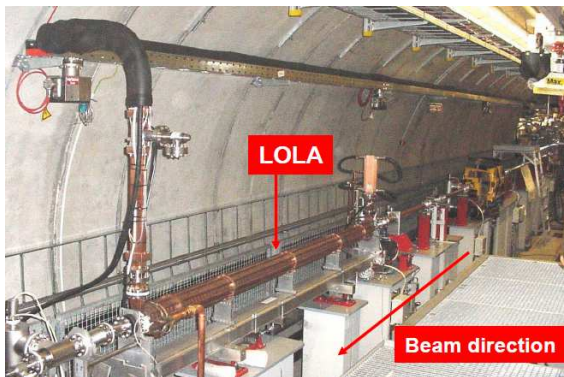


Figure: RF Deflector Setup Before Shutdown in 2009. (M. Röhrs)

LOLA-type RF Deflector (RFD)



- Manufactured in 1968 and installed at FLASH in 2003 (DESY-SLAC).
- Normal conducting (copper) waveguide structure ($\frac{2\pi}{3}$ -mode).
- Frequency of 2.856 GHz (S-Band).
- Total length of 3.6 m, and cell length of 35 mm.

Previous RFD Measurements at FLASH

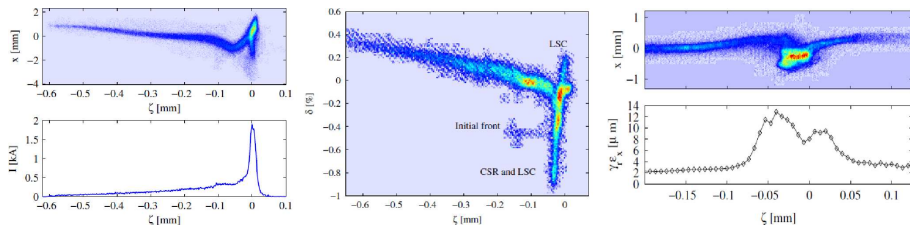


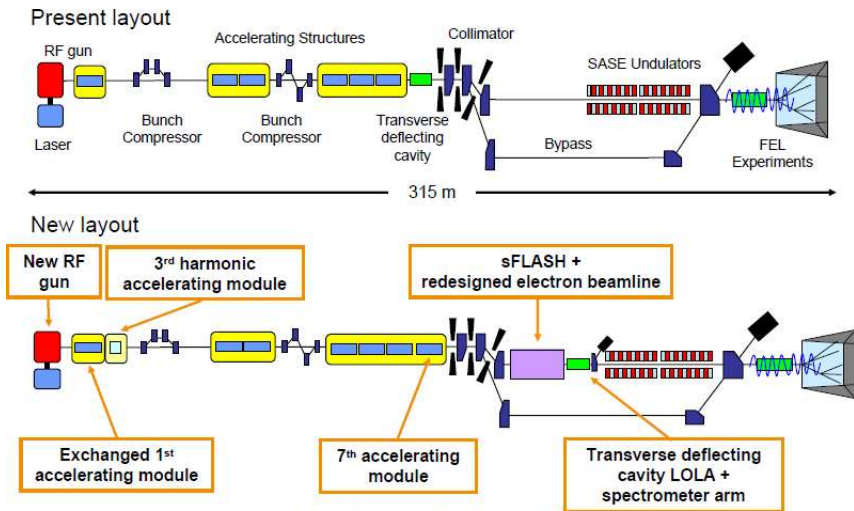
Figure: Measurements by M. Röhrs et al..

RFD measurements with high resolution

- Longitudinal beam profile (left image)
- Longitudinal phase space (middle image)
- Slice emittance (right image)

Transverse phase space determination by tomographic methods.

Future FLASH Layout



Katja Honkavaara, FLASH Seminar, March-31, 2009

Figure: FLASH Layout After Shutdown in 2009. (K.Honkavaara)

New Beamlines with Dedicated RF Deflector Setup

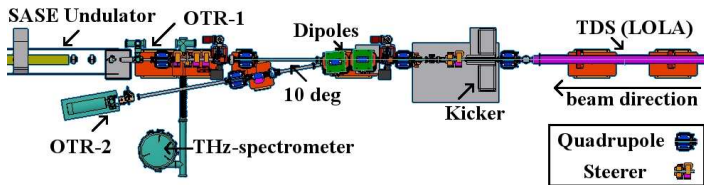


Figure: New Beamlines with RFD Setup After Shutdown in 2009.

Features and Goals

- RF Deflector “LOLA” directly in front of the FEL-Undulators.
- Dispersive beamline for longitudinal phase space measurements.
- Optics design for parasitic RFD operation with high resolution.

The new RF Deflector setup is essential for the commissioning of the third-harmonic RF system.

Potential Collaboration in the Future

Schedule in 2010

- Mount new electron beamlines including the RFD setup:
January
- Commissioning of OTR/Scintillator screen stations and optical setups:
End of January - Middle of February
- Commissioning of the RFD setup and measurement procedures:
Each possible time slot until May.
- Commissioning of the third-harmonic RF system:
May – June/July

Everybody in the IRUVX WP3 “Longitudinal Diagnostics” EG is invited to support the RFD team at FLASH!

The End

Thank you for your attention!