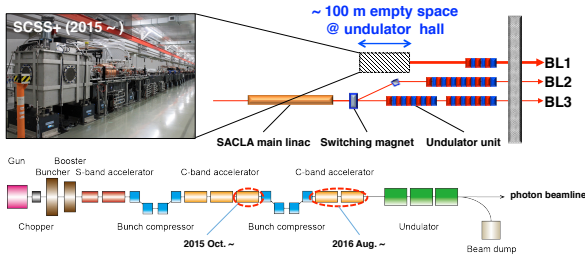


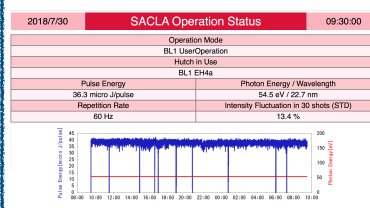
Overview of soft X-ray beamline (BL1) at SACLA

Shigeki Owada
Japan Synchrotron Radiation Research Institute (JASRI)

Re-employment of the SCSS test accelerator

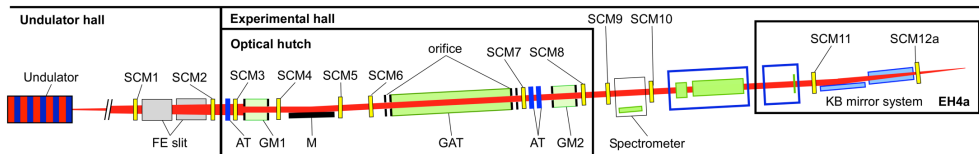


Operation Status



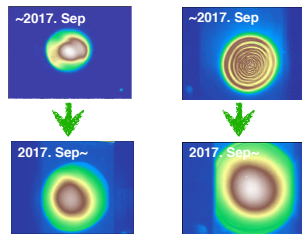
- Photon energy & pulse energy**
 - Routine operation: 40 ~ 150 eV, ~80 uJ@100 eV
 - Optional: 20~40 eV (~20 uJ), <~300 eV (3rd harmonics, < 100 nJ)
- Repetition rate**
 - Max : 60 Hz
- Pulse duration**
 - ~70 fs (FWHM)

Photon beamline



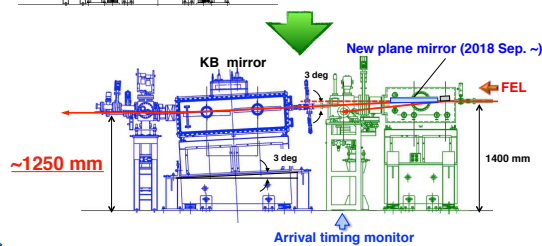
Expanding orifices at differential pumping section ($\Phi 6 \text{ mm} \Rightarrow \Phi 10 \text{ mm}$)

- Improvement of
 - Beam profile
 - Beamline throughput



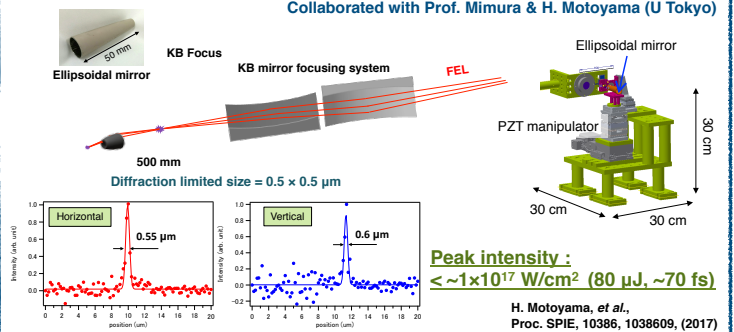
Installation of a plane mirror

- KB mirror with 1.5 deg. glancing angle
 - \Rightarrow Large aperture size & high reflectivity
 - \Rightarrow 3 deg. beam axis at the focus
- Install plane mirror (1.5 deg. glancing angle)
 - \Rightarrow **Horizontal beam axis at the focus**

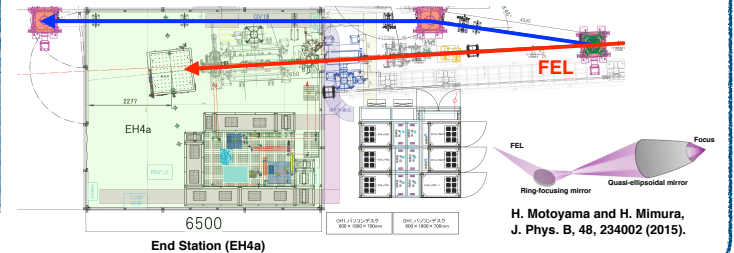


Sub 1-um focusing system (2-staged focusing system)

Collaborated with Prof. Mimura & H. Motoyama (U Tokyo)



New branch (R&D for the nano-focusing system)

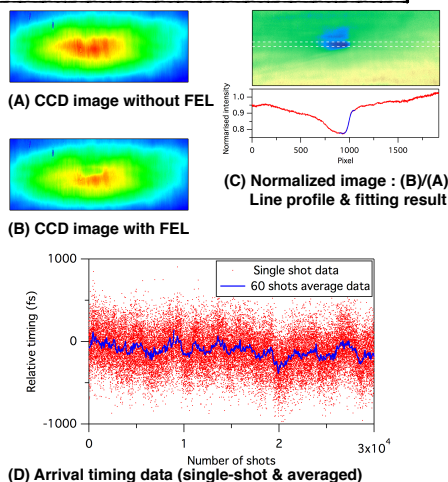
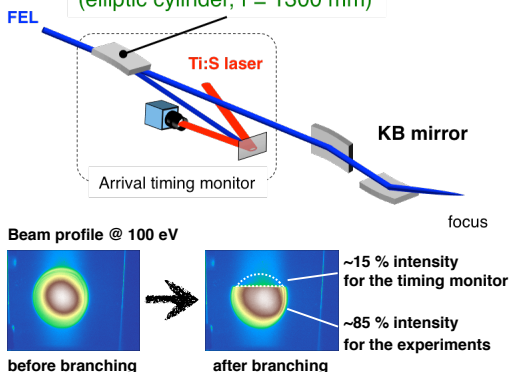


Development of the arrival timing monitor

Challenges for a timing monitor at soft X-ray FEL beamline

- Small penetration depth (~30 nm) \Rightarrow Reflectivity observation to prove surface change
- Beam branching for non-destructive diagnostic \Rightarrow Wavefront-splitting method

Beam branching mirror (elliptic cylinder, $f = 1300 \text{ mm}$)



Correlation measurement

