SACLA Beam Performance

Our facility has provided simultaneous operations of three FEL beamlines (BL1, BL2, and BL3) using pulse-by-pulse switching of the beam route and maintained stable and high-performance soft and hard XFELs for user experiments throughout the year [1-3]. The net user time in FY2018 across user shifts for these beamlines is expected to exceed 6000 hours, with high levels of laser performance and availability. In order to provide innovative experimental opportunities and to improve the experimental efficiency using XFELs with a narrow bandwidth, a self-seeded XFEL scheme with a reflective geometry was developed [4]. Test experiments using self-seeded XFELs began in autumn 2018 with a plan to release this optional mode to experimental users in early 2019. Figures 1 and 2 show schematic drawings of the reflection self-seeding scheme and the typical spectrum of the self-seeded XFEL, respectively.

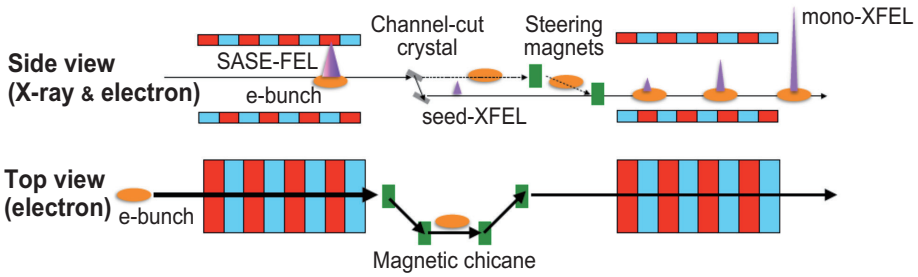

Fig. 1. Schematic drawings of the reflection self-seeding scheme.

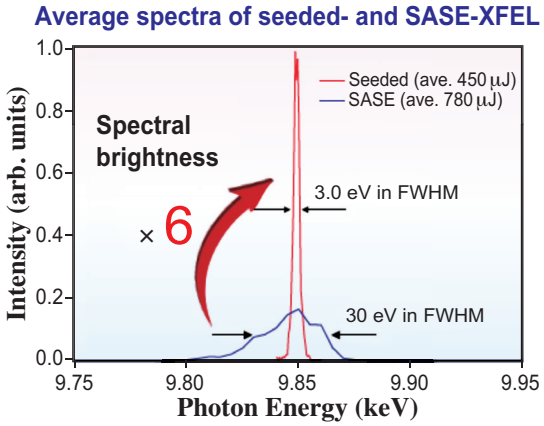

Fig. 2. Typical spectrum of the self-seeded XFEL. The red and blue lines show the averaged spectra of seeded and SASE XFELs, respectively.

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References

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