SACLA Users' Meeting 2021
Breakout Sessions

Breakout Sessions A

Japan Standard Time (JST)	09:00 – 11:30 March 10
Greenwich Mean Time (GMT)	00:00 – 02:30 March 10
Pacific Standard Time (PST)	16:00 – 18:30 March 9

Session A1: "Capability of time-resolved experiments using optical and XFEL pulses"
Session A2: "Experimental platforms with high-power optical lasers: current and future"
Session A3: "Current status and prospects of X-ray detectors at SACLA"

Breakout Sessions B

Japan Standard Time (JST)	13:00 – 15:00 March 10
Greenwich Mean Time (GMT)	04:00 – 06:00 March 10
Pacific Standard Time (PST)	20:00 – 22:00 March 9

Session B1: "Short- and long-term requirements from users for hard X-ray beamlines"
Session B2: "Advanced science by frontier spectroscopies with soft X-ray FEL"
Session B3: "Enhancement of user supports for efficient production of outstanding research results" (Language: Japanese)

A1: Synchronized optical lasers
"Capability of time-resolved experiments using optical and XFEL pulses"

Organizers: T. Sato (LCLS) and T. Togashi (SACLA)

Synchronized optical lasers are significant for opening up the new scientific capability with time-resolved measurements in XFEL. In this session, the following issues are going to be discussed for the precise operation of the optical lasers in each XFEL facility.

- Precise synchronization and timing control
- Short pulse operation
- Expanding wavelength region, MIR, THz
- Scientific capability for pump-probe experiments

Program

9:00-10:10
Pump-probe capabilities at XFEL facilities

Timing stabilization of a femtosecond optical laser at SACLA
T. Togashi (SACLA)

Development of pump&probe capabilities for ultrafast phenomena
T. Sato (LCLS)

Pump-probe capabilities of SPB/SFX at European XFEL
T. Sato (European XFEL)

Femtosecond x-ray liquidography experiments at SACLA and PAL-XFEL
H. Ki (IBS)

10:15-11:10
Science cases of optical pump experiments

Ultrafast photoelectron spectroscopy of Rydberg Xe+ by using EUV-FEL and synchronized NIR laser pulses
M. Fushitani (Nagoya Univ.)

Using intense infrared pulses to drive quantum materials into new states probed by X-rays
R. Prasankumar (LANL)

Ultrafast lattice dynamics triggered by infrared to THz pulses
T. Suzuki (Univ. Tokyo)

11:10-11:30
Round table discussion Chair: T. Sato (LCLS)

A2: High-power optical lasers
"Experimental platforms with high-power optical lasers: current and future"

Organizers: N. Ozaki (Osaka Univ.) and K. Sueda (SACLA)

As the main goal, this breakout session will discuss future improvements and upgrades to the experimental platforms with high-power optical lasers (nanosecond/femtosecond lasers) at SACLA. As an introduction, the current status and capabilities of the platforms will be introduced from the facility, followed by the reports on the typical experimental methods and recent results from the representative users. A virtual tour of the platforms is arranged at the end of the session.

Program

9:00-9:25
Introduction
N. Ozaki (Osaka Univ.)

Facility report
Current status of experimental platforms with high-power lasers at SACLA
K. Miyanishi (SACLA)

9:25-10:10
Typical experimental methods and results

High-power nanosecond laser
X-ray diffraction measurements
~Kinetics of phase transformation in SiO_2~
G. Morard (Univ. Grenoble Alpes)

High-resolution X-ray imaging
~Triggering Star formation: from the cosmos to the laboratory~
B. Albertazzi (Ecole Polytechnique)

High-power femtosecond laser
Small-angle X-ray scattering
~Expansion measurement of sub-micron rod targets~
Y. Sakawa (Osaka Univ.)

10:10-11:00
Round table discussion Chair: N. Ozaki (Osaka Univ.)

11:00-11:30
Virtual tour of the experimental platforms SACLA Staff

A3: Detectors
"Current status and prospects of X-ray detectors at SACLA"

Organizers: T. Hatsui (SACLA) and T. Osaka (SACLA)

This breakout session aims to share the current status and prospects of X-ray detectors at SACLA. In the initial part of the session, SACLA staff overview detectors currently available at SACLA and introduce specifications of new detectors underdeveloped, such as CITIUS. Then, representative users from various scientific fields will share how to use them and analyze experimental data, and make requests on the new detectors for improving data quality and opening up new opportunities. Participants will be encouraged to provide feedback, inputs, and ideas to the facility in the round table discussion.

Program

9:00-9:20
Introduction
Overview of detectors at SACLA and introduction of new detectors under development
T. Kameshima and T. Hatsui (SACLA)

9:20-10:20
Inputs from user communities

XRD for solid-state physics	M. Trigo (SLAC)
XPCS/XSVS	Y. Shinohara (ORNL)
Protein crystallography	K. Hirata (RIKEN)
Coherent diffractive imaging	T. Kimura (Univ. Tokyo)

10:20-11:00
Round table discussion Chair: T. Hatsui (SACLA)

B1: Hard X-ray FEL beamlines (BL2/3)
"Short- and long-term requirements from users for hard X-ray beamlines"

Organizers: Y. Nishino (Hokkaido Univ.) and I. Inoue (SACLA)

This breakout session aims to discuss future directions of hard XFEL beamlines (BL2 and BL3). In the initial part of the session, SACLA staff member reports (i) recent activities for generating tailor-made XFEL beams via machine-learning techniques and (ii) technical seeds for future source developments (high flux, high photon energy, short pulse, high repetition rate, etc.). Then, representative users from various scientific fields will identify present limitations and future prospects of XFEL experiments and make requests for improvement of photon beam qualities in future source upgrades. Participants will be encouraged to provide feedback, inputs, and ideas to the facility in the round table discussion.

Program

13:00-13:25
Introduction
Short- and long-term development plans for hard XFEL sources — I. Inoue and T. Inagaki (SACLA)

13:25-14:10
Inputs from user communities

Chemistry	S. Nozawa (KEK)
Biological imaging	A. Suzuki (Hokkaido Univ.)
Protein crystallography	S. Iwata (Kyoto Univ.)
High energy density science	N. Ozaki (Osaka Univ.)
Solid-state physics	R. Fukaya (KEK)
Nonlinear optics	K. Tamasaku (RIKEN)

14:10-15:00
Round table discussion — Chair: Y. Nishino (Hokkaido Univ.)

B2: Soft X-ray FEL beamline (BL1)
"Advanced science by frontier spectroscopies with soft X-ray FEL"

Organizers: I. Matsuda (Univ. Tokyo) and Y. Kubota (SACLA)

Soft X-ray FEL (SXFEL) is an ultrahigh brilliant soft X-ray source with ultrashort pulse-width, ultrahigh spatial coherence, and tunability of photon energy. At SACLA SXFEL beamline (BL1), novel experimental techniques are developed to unveil unique electronic states in matters. In this breakout session, the recent achievements will be presented and their future uses will be discussed with participants, including distinguished researchers from various fields.

Program

13:00-13:10
From facility side

Recent progress and development plans of SACLA BL1
Y. Kubota (SACLA)

13:10-14:10
From user side

Development of soft X-ray FEL focusing system using a Wolter mirror
H. Motoyama (Univ. Tokyo)

Some examples of soft X-ray second harmonic generation
C. Schwartz (UC Berkeley)

Development of time-resolved soft X-ray absorption spectroscopy for liquid sample
H. Iwayama (IMS)

Observation and application of ultrafast magnetism
A. Tsukamoto (Nihon Univ.)

14:10-15:00
Round table discussion Chair: I. Matsuda (Univ. Tokyo)

B3: Experimental support and information sharing (Language: Japanese)
"Enhancement of user supports for efficient production of outstanding research results"

Organizers: H. Yoneda (UEC) and Y. Inubushi (SACLA)

The session aims to discuss user support including the information provision and the experimental assistance for the efficient production of outstanding research at SACLA. The support activities will be presented from the SACLA facility members and suggestions to the facility will be proposed from the users of several scientific fields. We will expect inclusive discussions to promote future SACLA facility in this breakout session. Please note that the language of this particular session is Japanese.

Program

13:00-13:30

Introduction	H. Yoneda (UEC)
Activities of the facility	Y. Inubushi (SACLA)

13:30-14:30

Inputs from user communities

Pump-probe experiments	M. Suzuki (JASRI)
Reply from the facility	SACLA staff
High-power laser experiments	K. Shigemori (Osaka Univ.)
Reply from the facility	SACLA staff
Serial femtosecond crystallography	E. Nango (Tohoku Univ.)
Reply from the facility	SACLA staff
Applications of high-intense XFEL pulses	H. Yoneda (UEC)
Reply from the facility	SACLA staff

14:30-15:00

Round table discussion	Chair: H. Yoneda (UEC)