

6th Call for Proposals for User Experiments at the European XFEL

The European X-Ray Free-Electron Laser Facility (European XFEL, <https://www.xfel.eu>) encourages the scientific community worldwide to submit proposals for User Experiments via the [User Portal to the European XFEL \(UPEX\)](#) **until Wednesday 11 December 2019 16:00 (local Hamburg/Schenefeld time – Central European Time CET)**

Beamtime will be allocated to successful proposals from July to November 2020 at the following scientific instruments:

- **Single Particles, Clusters, and Biomolecules and Serial Femtosecond Crystallography (SPB/SFX)** at Beamline SASE1 (in user operation since September 2017)
https://www.xfel.eu/facility/instruments/spb_sfx
- **High Energy Density Matter (HED)** at Beamline SASE2 (in user operation since May 2019)
<https://www.xfel.eu/facility/instruments/hed>
HED aims at both scientific and advanced commissioning proposals. Community proposals are especially welcome.
- **Materials Imaging and Dynamics (MID)** at Beamline SASE2 (in user operation since March 2019)
<https://www.xfel.eu/facility/instruments/mid>
- **Spectroscopy and Coherent Scattering (SCS)** at Beamline SASE3
<https://www.xfel.eu/facility/instruments/scs>
(in user operation since December 2018)
- **Small Quantum Systems (SQS)** at beamline SASE3
<https://www.xfel.eu/facility/instruments/sqs>
(in user operation since November 2018)

Instrument overview: <https://www.xfel.eu/facility/instruments>

The scientific instruments are at different stages of advancement. **Please check with the relevant instrument team about feasibility conditions for this call before submitting a proposal.** Please also inquire with the instrument team for more information about planned user community projects. Contact:

- **SPB/SFX:** spb.sfx@xfel.eu
- **HED :** ulf.zastra@xfel.eu
- **MID :** mid-info@xfel.eu
- **SCS :** scs@xfel.eu
- **SQS :** michael.meyer@xfel.eu

All proposals submitted in this call will be reviewed for their scientific quality by panels of international experts and, in addition, checked for safety and feasibility conditions.

Proposals shall consider the **specific** conditions expected for this allocation period.

Verification about specific feasibility conditions with the instrument teams is nevertheless required.

6 th Call for Proposals - specific conditions (7/2020 – 11/2020)		
SASE FEL	SASE 1/SASE 2	SASE 3
Photon energy [keV]	5 – 24	0.5 – 3.0
Max. mean pulse energy *[mJ]	0.2 – 4	1 – 10
Bunch duration [rms fs]	10 – 25	10 – 25
Max. intra-train frequency [MHz]	4.5	4.5
Typ. number of pulses* *	400	400

* Pulse energy depends on bunch charge, electron energy and photon energy.

** Bunch distribution: 400 X-ray pulses per instrument assume equal distribution at 2.25 MHz operation. This number additionally depends on specific conditions of operation, e.g. by radiation safety for the instrument hutches. Higher or smaller numbers will follow from higher/smaller intra-train frequency. Max. 2250 electron bunches within 500 μ s are available for distribution to the instruments (4.5 MHz).

Explanations:

1. The above parameters correspond to the *standard* SASE operation mode.
2. The following *special* modes are available, but require more tuning and are less reliable:

- a. Hard X-ray Self-Seeding (SASE2; 8- 10 keV);
- b. Hard X-ray 2-color w. variable delay (SASE2; 6 – 10 keV; 0 – 0.5 ps)

Experiments requesting these *special* modes should address the development of new techniques and fields and are expected to involve large communities and facility staff. If included in final schedule, then continued (24-hour shift) operation will be planned.

3. Pulse energy depends on bunch charge (higher \rightarrow more), electron energy (higher \rightarrow more) and photon energy (higher \rightarrow less). For operation with x-rays above 20 keV photon energies more tuning time will be needed, pulse energies will depend on the status of FEL tuning and will be (significantly) less than 1 mJ. Due to the complexity, continued (24-hour shift) operation will be planned.

User pages

More practical information for users can be found here: <https://www.xfel.eu/users>

Travel funding to users

- Travel funding and living subsistence is available for a specified number of users affiliated with organizations based in the member countries of European XFEL. Further details are available here: https://www.xfel.eu/users/user_guide/funded_user_travel
- Also for this call, limited funding for scientists from organizations in non-member countries is also available through the EU support programme CALIPSOplus (<http://www.calipsoplus.eu/>).

European XFEL User Office

Email: useroffice@xfel.eu

Phone: +49 (0)40 8998-6937 or -6767