

LCLS UEC discussion topics

- Experiment/configuration standardization
- Standardize and establish reliable x-ray beam diagnostics (SXR, AMO and CXI flux)
- PRP process
- LCLS-II and LCLS-I
- Our favorite evergreen...

LCLS UEC discussion topics

Experiment/configuration standardization

- How many proposals requested this?
 - *As presented the following day, 68 of the 173 proposals were consistent with a ‘standard configuration’*
- Does it make use of beamtime more efficient?
 - *Yes – the idea is to decrease the setup and changeover time [note added: the number of experiments in FY13 and FY14 was 73 and 75 respectively. This is anticipated to rise to 113 in FY16. Of this 50% increase, roughly half is anticipated to be due to the implementation of ‘standard configurations’ (with the other half being due to the increased number of experimental weeks)*
- How is “efficiency” measured or which metrics were defined?
 - *Ultimately, in terms of the number of experiments fielded and in the scientific output (# publications, etc).*
- Does it help improving support (for both expt. scientists and users)?
 - *The idea is that a standard configuration experiment will need less support, allowing staff time to be redirected to areas that are non-standard, or require help. This is in the context of the transition to LCLS-II, where it is essential that funds (and personnel) be released from operations and directed to developing the facility, to allow full exploitation of the new source.*
 - *LCLS is hiring two new scientists to provide support across the different instrument areas (to rove from one area to another, based on demand), to improve our ability to respond to peaks in demand in a given area.*
- We see a chance to improve support for non-experienced users (certainly this shouldn’t be used to reduce staff)
 - *Yes – a key advantage of this approach is that it should lower the “barrier to entry” for less experienced users, allowing the fielding of samples in a pre-established experimental area.*
 - *Alongside this, LCLS has launched a strategic initiative to enhance its data acquisition and analysis tools and techniques, to provide a broader suite of capabilities for user groups that may not have the internal capability to develop them alone. One aspect of this will be the development of online data analysis tools. This initiative seeks to build from the work underway elsewhere (e.g. CAMERA at LBL, and scikit-xray at BNL).*
 - *Plan to send a survey to users to solicit feedback on what is the highest priority for such developments.*
- No standard configuration for AMO + optical lasers at SXR?
 - *No standard configuration for AMO this initial trial. The proposal is to alternate between SXR and AMO, but will seek advice based on the level of success in this first round.*
- Are certain standard configuration preferred/enforced?
 - *The idea is to cycle around regularly-used configurations, to avoid biasing toward one area or another (integrated over time).*
- How and when is this be communicated?
 - *We will rotate through standard configurations, advertised in the calls for proposals. LCLS is open to suggestions leading up to each call.*
- Often they rely on results/work by users
 - *Important to ensure that any original user publication is cited, when used more widely by the community (e.g. in a standard configuration)*

LCLS UEC discussion topics

Standardize and establish reliable x-ray beam diagnostics

- Photon flux, Focus size/shape, Spectrum, Average and (for selected beamlines/applications) shot to shot
- Necessary to plan the beamtime
- Monitor over time (every 3 months?)
 - Agreed that more time needs to be devoted to these topics.
 - The best information at any given point in time is invariably via the POC
 - Note: work was done on XPP and AMO to get absolute calibration of how many photons are interacting with the samples
- Are the web pages up to date (MEC user comment from 1.9.2015)?
 - Again, the best information is via the POC. In the specific case of the comment on the MEC laser, there was a partial failure of the pump laser that halved the energy of the system. This fault was traced and fixed.
- Develop standardized tools
 - There is always a trade off between calibration/characterizing vs. developing new capabilities. User feedback is that we maybe need to focus more on characterization. This will be addressed.
 - LCLS working on making beam tuning more automated and repeatable
- Commissioning time for experiment scientists?

Photon flux at SXR, AMO and CXI

- What is the flux actually?
- Has it been reliably measured?
- What is the explanation for the apparent reduction over the years?
- What is the planned solution?
 - SXR beamlines have suffered degradation due to mirror contamination. This is at the 10's % level.
 - Working on moving and cleaning mirrors in situ to improve flux. Tests on B4C mirrors look promising.
 - For hard X-ray, a new suite of HOMS mirrors are on order, to be installed in early 2017. This will significantly reduce the clipping, and improve the transmission.

LCLS UEC discussion topics

- PRP process
 - Conflict of Interest Statement
 - Suggest to hand out with proposals to the referees (not later)
 - Suggest to publish on the web
 - This is now done. See LCLS website
 - Scheduling the process
 - Submit proposal for run x is earlier than performing beamtime in run x-1. Can you make the process more time efficient to avoid this?
 - There is pressure on both ends, hard to avoid this problem without squeezing the preparation time for run x-1,
 - Will try to squeeze time from submission to notification
 - Note added: Deadline for Run14 submissions moved from mid-December to 6 Jan, and now 11 Jan (following user feedback)
 - Communicating review results
 - Suggest to notify users with proposals ranked less than 40% immediately after review (before others) To allow preparing better proposal for next run
 - Will publish rejections asap

LCLS UEC discussion topics

LCLS-II

- Will the planned end stations be funded (see „bad experience“ at LCLS-I due to problems arising from LUSI not having been funded)
 - Agreement with DOE was there would not be LUSI-II, but that the operations program would fund the required developments. We are currently in negotiation with DOE as to the details. Options were published in July on the LCLS website, and emailed to all users (“Strategic Facility Development Plan”). The scale and pace of implementation of this plan will depend on funding. Need community feedback, not just we want all, but what are the priorities. This is the central topic of the LCLS Scientific Advisory Committee (SAC) meeting in October.
- The motivation for tender x-rays doesn’t seem well documented, the case doesn’t appear to be well supported
 - This case was explored in the “LCLS-II Science Opportunities” document (aka the ‘red book’). Following this, there is a workshop at the Users Meeting to further develop the best path forward. Community interest in the different areas helps drive the relative priority (and phasing) of the instruments.
- Are the planned detector developments sufficient?
 - Significant work is needed in detector development, with the most urgent need being for high rep-rate systems for soft-xr-ay imaging and reaction microscope experiments; as well as multi-kHz large area pixel array detectors for tender and hard x-ray experiments.
 - A detector development plan was presented to our external review committee (LDAC) in September, and will be reviewed by the SAC in October.
 - Again we need user community feedback here. Gabriella Carini has the lead role for identifying our detector requirements, and initiating the required R&D and deployment.

LCLS-I

- Will the frequency be increased to 360 Hz (strong support)?
 - There is a concept for how to achieve this. It requires the middle kilometer of the linac to be integrated. This is only an option following the conclusion of FACET.
 - For now, the priority is to exploit LCLS-II when it comes on line (e.g. new instruments, detectors, pump/probe laser systems, data systems, etc), and to ensure more robust operation of the LCLS-I Cu linac.
- What are the plans for improving the LCLS-I accelerator (we have the impression is got forgotten or wasn’t well communicated)
 - Details are provided in the “LCLS Strategic Facility Development Plan”. Significant work is underway on improving its stability, extending its energy (recently was able to drive 12.8 keV photons), adopting multi-pulse modes of operation, increasing its per-pulse energy (now delivers 5 mJ, compared to typically 3 mJ last year)
 - Also plans to deliver the LCLS-I beam into both new undulators, which will increase the per-pulse energy compared to today, as well as extending the photon energy to 25 keV
- What are the shut-down plans? Can they be coordinated with SwissFEL and EU-XFEL?
 - Details are on the LCLS website (“long range schedule”). Shutdowns are Dec 2016 – Jun 2017, and Jun 2018 – Jun 2019.
- Are there plans to increase the flux at LCLS-I?
 - Yes – as noted above, recently moved from 3mJ to 5mJ. We anticipate 7-8 mJ with LCLS-II soft-x-ray undulator

LCLS UEC discussion topics

- The SLAC guest house (not a Stanford Hotel)
 - Price
 - Availability
 - What is the status on plans for a guest house?
 - Survey went out, response was ‘yes we want a new guest house’. This is now being explored with Stanford.
 - We understand that price is a major issue
 - Ultimately, this is a business decision from a private company