LCLS UEC Meeting December 8th, 2022

Present: M. Mitrano, L. Conradson, N. Hartley, M. Dunne, A. Marinelli, B. Mooers, C. Knotts, C. Rajendran, E. Biasin, G. Doumy, G. J. Williams, M. Doyle, N. Power-Riggs, P. Jones, S. Teitelbaum, U. Bergmann, Y. Cao.

Absent: E. McBride, T. Gorkhover, D. Oberthür, M. Schmidt, M. Trigo,

Director's updates

- The LCLS-II is being turned on and ramped up for its first operations. The management anticipates it being fully operation by early March 2023. The beam is now operating at 1 kHz (10 kHz at the time of writing these minutes), and the next step is to tune it through the linac up to the undulator. This tuning will take us through January 2023, accounting for the fact that there is winter break in the middle. Part of the process is finalizing the safety systems, in particular the Beam Containment System (BCS), which are complex for these intense, high rep. rate beams. The cryo-plant is very stable and the associated systems are resilient.
- Concerning scheduling, the ramp-up of LCLS-II is still compatible with a continuation of Run 21, although with some additional scheduling uncertainty. One more week of experimentation has been carved into the Run 21 schedule and a revised operations' schedule will be posted in the next two weeks.
- We are now starting to think about what Run 22 will look like. The call for proposals will go out in early/mid-January, with a proposal submission deadline in early March 2023 for experiments starting in mid-August 2023. The most complex part is how to schedule time on the new instruments (TMO and ChemRIXS). The commissioning and community-based "Early Science" experiments from April to July will inform the proposal selection process by confirming instrument specifications and highlighting current limits of the setups. For the hard X-rays there will be a dedicated beam, and operations will be more business-as-usual.
- There will be opportunities for "data-set collection proposals" (single shift, standard configuration, users bringing or mailing their sample, for short experiments or to complete prior experiments). These opportunities are valuable but require communication between users and beamline staff to fully take advantage of time and understand the scheduling/logistics opportunities and constraints. Data collection proposals undergo a separate PRP process. For more information, users are encouraged to discuss with the relevant staff, and see: https://lcls.slac.stanford.edu/proposals/data-set-collection-proposals.
- In the proposal or BeamTime Request form (BTR), users can soon expect export control screening questions, in coordination with other facilities. These questions are not LCLS/SLAC-specific, but rather now common to all the US National Laboratories and help ensure that users and the facility are protected from inadvertent missteps. Users should be aware that there are restrictions in terms of military technology. Since the research carried out by the LCLS user base is typically quite fundamental, the risk of tripping in export control regulations is quite low, but still requires these checks.

General Discussion

- **Question:** when will the electron beam be sent through the undulator?
  Answer: The best current estimate is by late January / early February, but one has still to account for the time required to shakedown the undulators and front-end. Commissioning of the undulator should be completed (at least at the level of threshold performance) by March 2023.

- **Question:** Will there be a split call for Run 22? Will there be some feedback to top ranked proposals?
  Answer: No, the timeline is not consistent with a split call (hard vs soft x-rays), since Run 22 starts very soon after Run 21, with insufficient time to run a proposal call based on emerging data from the new LCLS-II systems. The PRP will likely meet in early May, and there will be the need to factor in this uncertainty about instrument performance. PRP members will be asked to provide more nuanced feedback and consider proposal resilience to evolving offered parameters. LCLS management will then take this into account, together with the emerging performance information, to schedule an appropriate set of soft X-ray experiments. As with all new facilities, the community is asked to be as collaborative as possible to help ramp-up the capabilities to the benefit of all. The target is to use a 33 kHz rep-rate for Run 22.

- **Question:** Regarding the one-shift DCS proposals, is the offer of this mode of access motivated by users' requests or is it an initiative of the LCLS?
  Answer: Both. This mode of access has been quite successful in bioscience and MEC for some time and will be useful to address short stand-alone experiments and to wrap up data collection for selected projects.

- **Question:** For the data collection proposals is it just an initiative targeting data makeup proposals, or also open for feasibility studies?
- **Answer:** We anticipate, as in the past, mostly data makeup proposals, although feasibility studies may also be fielded. Short feasibility proposals are also very welcome as part of the regular PRP process, and of course have a higher chance of being selected in the highly constrained scheduling process, when there are competing proposals of similar scientific merit.

Newsletter Discussion

UEC Chair: There were suggestions in the past of introducing a quarterly newsletter from the UEC to the user community, with a summary of LCLS capabilities/updates, possibly divided in scientific areas. this will require a significant commitment from the UEC members. What is the best way to proceed in order to enhance the communication between UEC and User Community?

Open Discussion:

- At PSI the UEC chair takes the ownership of the UEC newsletter. If we want to follow a similar model, we (UEC) should elaborate a format.
- We thought in the past about a LCLS newsletter. This could be a case of combining forces between UEC and LCLS communications. We must make sure the content is timely and can be sustained over the long term, so that people actually read the newsletter.
- NSLS-II has a newsletter which we can circulate as a case study, EuXFEL sends updates to the User community, PSI does it as well. More locally, SSRL has a newsletter: https://www-ssrl.slac.stanford.edu/content/newsletter/2022-10-31-000000/ssrl-headline-news-vol-23-no-2-oct-sep-2022.
- The newsletter information might be sent out to the community when the PRP results come out. This would maximize the user base attention and provide the opportunity to provide statistics about the concluded call for proposals and the proposal evaluation.
- We should provide proposals evaluation statistics, perhaps link the newsletter content to the UEC page and invite users to subscribe
- A suitable format might also be the AIP's FYI, i.e. a push email with links to relevant webpages.
- A crucial consideration in selecting the newsletter content is: What is the information gap that we are trying to fill in? Are we trying to expand the user base, highlight results, or something else?

Each aim will select a different audience, and it is key to keep this in mind when writing the newsletter.

- NSLS-II provides UEC videos
  https://www.bnl.gov/video/index.php?v=792 http://nslsuec.org/events/uecshow.aspx
- In any case, a newsletter should have professionally written highlights, facility updates, and job advertising.
- We should keep the newsletter specific to LCLS, and not SLAC-wide. This would allow to highlight new capabilities, new scientific results, and to have a well-delineated UEC communication section.
- ALS offers a biweekly coffee hour as a way to connect UEC and user community
- The LCLS user office is open have a newsletter and to coordinate with the communication department. UEC Chair, vice-Chair, and LCLS User office should have a separate meeting to set a format and bring it to the rest of the UEC for discussion.

Beamtime access modes and scheduling

Question: Given the potential to nearly double the available time on the hard x-ray branch are there any thoughts about changing the format of the shifts (12hrs on/12 off) and the allocation of 3-5 shifts per experiment?
Answer: This is a good discussion topic for UEC meetings in the near future. It is true that the scheduling capacity is doubling, but funding and staff availability is still the bottleneck. We might change the distribution of the beamtime shifts, but a twofold increase of beam hours will be more difficult.

We should think harder about this issue. At SACLA, the staff can hand instruments to the users because they can be operated more easily with their scripts. LCLS still has some room for improvement in terms of user independence. This is of course a tradeoff with experiment complexity, reliability, and ambition.

Question: Are the one-shift beamtimes posing challenges for international users, who might have trouble justifying traveling to SLAC for 12 hours?
Answer: The beamtime selection for the one-shift beamtimes is blind to geography, but the reality of "who proposes what" matters to the proposing teams. We need to discuss this with operations leads, perhaps by inviting Sebastian Boutet and Matthias Kling to one of the next UEC meetings. It seems we are currently underusing these one-shift opportunities, and we need to advertise them more. In general, we need to have a conversation about new modes of usage of the LCLS beyond the standard shift format. Ideally, this discussion should take place before we schedule Run 22 in May/June 2023.

LCLS ten-year assessment

During the next UEC meeting we will discuss the need for UEC input on the document for the assessment of LCLS impact over the first decade of operation. The UEC input is urgent, as the assessment is underway and there is a first document being prepared as we speak. The LCLS director will circulate the document within the UEC, provide a deadline for feedback, and describes the assessment panel. The current members are:

- Taylor, Toni (Los Alamos) - chair
- Evans, Paul (U. Wisconsin)
- Masciovecchio, Claudio (FERMI Trieste)
- McCusker, James (Michigan State U.)
- Smith, Janet (U. Michigan)
- Vrakking, Marc (MBI Berlin)
- Wark, Justin (U. Oxford)
- Wernet, Philippe (U. Uppsala)