

LCLS UEC Meeting Minutes

August 9th, 2024

Present: Nicholas Hartley, Chitra Rajendran, Alfred Zong, Benjamin Ofori-Okai, Elisa Biasin, Natalia Powers-Riggs, Silvia Pandolfi, Leilani Conradson, Mike Dunne, Brandon Tan, Robert Schoenlein, Paul Jones

Director's Update:

Run 23 starts in Fall 2024. Finishing up installation activities for HE. SC linac restarts 2nd week of October. Issuing detailed schedule for soft x-ray program in run 23. Starting with "cookie box" in TMO, and transitioning back to magnetic bottle, with some commissioning.

ChemRIXS back to user science, Q-RIXS commissioned this run.

Townhall *Tuesday, Aug 20, 9AM* pacific time for 2 hours. Updates on Facility Status, esp. soft x-ray instruments. Run 24 is the first call without XPP, so XPP-type experiments will move to XCS.

Run 24 goes from March 2024 to the next shutdown (July 4th). Last time, July 4th was going to be the start of the LCLS-II-HE downtime. We are delaying the start of the long downtime. It's now the end of November, for a few more months of operation of the superconducting linac. This allows a short Run 25 along with the copper linac from September-November.

Soft X-Ray endstations still be online during the long shutdown, using beam from the copper linac to the LCLS-II interaction areas.

LCLS User meeting updates:

192 registrations, 17 posters as of 8/7/2024 (more to come). Lelani and team is working on Exhibitor Equipment. Event website is updated – UEC will give comments on the website. If there is enough (>10 papers) interest in a special issue for JSR (Journal of Synchrotron Radiation), we will proceed with a special issue. It's not a formal proceedings, it's a special issue so not everyone is required to publish. The nature of the workshop has been pre-publication research, workshops, and announcements rather than reporting completed work.

Discussion and comments on special issue

- At this stage, we should have a survey to poll interest in the user base.
- One option is to submit something to the user's meeting.
- Survey for next year would be a good idea, rather than to push it through.
- Make sure that people are still willing to attend User's meeting if they are not presenting, e.g. to attend workshops and learn, network, or receive updates on facilities.
- Publish 1 year after user's meeting (after next year?). Strikes a balance between proceedings (where a conclusion has to be ready now) and motivation to finish the work on

e.g. last year's poster. JSR doesn't do proceedings, PNAS would take proceedings. This is a collection of papers (completed work)

- Is the journal open to more technical papers (technical updates on LCLS, e.g. updates from beamline staff on new instrumentation)
 - o The main part is the updates from instrumentation side.
 - o Main part is – what are updates from facility, what can be done here? Gives an update to users who did not attend as an archival source of the machine status over the years, in addition to informal discussion.
 - o We should discuss it with LCLS staff, writing a yearly review of technical status is interesting but takes a significant amount of LCLS/SSRL staff time.
 - o Is once a year too often? Maybe every two years?
 - o What if there's not a paper in the normal sense, but there's an update of status of the machine?
 - o Can we publicly post presentations to broaden access to facility/instrument updates?

UEC Awards:

Young Investigator: 5 nominations. Will send a poll around to UEC members and aim to invite top two candidates by the end of next week. All seem excellent, and none have previously been invited to give a talk at the User Meeting.

User Recognition: Two nominations this year. Last year we gave it to a scientist at XPP.

UEC Nominations: We have at least one nomination for every vacancy, but only a single nominee for the Student and CSD Representatives. Nominations are now closed, but more will be solicited for those two roles specifically.

Future of LCLS Campaigns (Bob Schoenlein)

Goal of campaigns is to expand on existing PRP proposal criteria and review. In contrast to Dominant LCLS model is single "one-off" experiments, campaigns supports comprehensive research efforts. Scientific scope and impact above typical LCLS research proposal, but needs LCLS instrumentation, expertise. Value of collaboration between LCLS facility and staff (strategic interest, interest to BES science mission, strategic collaboration with area of facility expertise).

Review is PRP-plus, so review of PRP augmented by SAC input on oversight/portfolio. Regular status and updates and research report at SAC and PRP each run.

Review criteria is similar to individual proposal but at greater scale. Research milestones and objectives are important (since it's an extended program). Does the research team have the scope for a successful program? Very similar to regular PRP proposal criteria.

Different "flavors" of campaigns: Major instrumentation development (LCLS-led), high-impact science, major new user instrument (close LCLS partnership for ops support, logistics).

Currently we have eight campaigns. 1 AMO, 2 HCM, 1 BIO, 3 CHM.

Attosecond Science, Quantum Materials, Topological Materials, Photosynthesis PSII, Quantum Enzyme catalysis, etc.

Considering how to transition campaigns back to regular PRP proposals. Need to consider productivity (have goals been, is campaign on track), impact (is campaign introducing new science to LCLS), duration (beamtime is generally 8-10 beamtimes), change in landscape (e.g. cryo-EM emerging as an alternative), etc.

Outlook: For considering new campaign calls, an important consideration is fundamental research in support of EERCs/EFRCs. Note DOE-FES directed 50% beamtime in inertial confinement fusion.

Target grand challenge areas, SLAC/Stanford major scientific initiative areas, Community input: LCLS UEC & SAC, where are emerging user campaigns viable?

Timeline of campaigns – some have performed 8-10 experiments and so are looking to be wrapped up in/after run 25. Others are waiting on high repute capabilities, and so have had very few beamtimes.

This next SAC meeting, should we roll off some of the more mature campaigns for those areas that can make good use of the Copper linac (120 Hz) during the downtime? What areas will make good use of a campaign-style approach?

Has the impact been higher for one-off experiments: Yes, esp. for the structural bio campaigns, but yes there are several where the progress would not have been possible with one-off experiments.

Toni Taylor's panel report discussed this in the 10-year overview of LCLS and its scientific impact.

Q: Does the PRP review the proposal at a different level/rigor? – A: It guides people's approach. You don't have to "sell" your individual proposal so hard, where experiments don't have an immediate impact, and e.g. one needs to be able to have consistent access.

New users come from campaigns, because they can collaborate with existing, experienced users.

Q: For bringing in new users, is it valuable to invite regular users to invite new users to join a proposal? A: That's already a consideration for the PRP. Q: Will the campaign structure be rolled out for MeV-UED? A: Campaigns are not restricted to a single instrument. Some campaigns can take advantage of the UED instrument, even though it's primarily through the LCLS PRP.

Mike Dunne: Considering a "super-campaign" that includes LCLS, MeV-UED, cryo-em, SSRL, etc.

Q: What does the DOE-FES allocation to 50% of IFE research interface to a PRP that's mostly focused on BES-based scientific needs? A: In that case, it made sense to allocate 50% of beamtime to IFE at the request of the sponsoring agency. The level of access to MEC is already somewhat restrictive, given the number of available experiments.

Q: Doing an instrument development approach is much more helpful, working at MEC has a learning curve on its own, so having the campaign structure would be valuable.

Next month we will have a meeting with the UEC, to give updates on the MEC-U project to see how the project join.