

UEC Teleconference – November 13th, 2017

Attendees: Mike Dunne, Christoph Bostedt, Richard Sandberg, Petra Fromme, Félicie Albert, Bruce Doak, Arianna Gleason, Ross Harder, Lois Pollack, David Reis, Roseanne Sension, Klaus Sokolowski-Tinten, Dave Bushnell, Leilani Conradson, Paul Jones

Absent: Lin X. Chen, Kristoffer Haldrup, Michael Meyer, Artem Rudenko

Agenda:

- 1) Welcome new UEC members, general questions for the existing UEC or Mike Dunne (5 mins)
- 2) Facility update from Mike Dunne (10 mins)
- 3) Update on shutdown and/or additional run plans from LCLS, virtual users meeting prior to potential next proposal deadline (10 mins)
- 4) Lessons learned from the 2017 Users Meeting and long range planning for 2018 (10 mins)
- 5) Report from and discussion about SAC (Arianna Gleason represented UEC) (10 mins)
- 6) Report from and discussion about computing workshop (Richard Sandberg represented UEC) (10 mins)

Postponed to next meeting:

- 7) Involvement in the national user organization SSURF (5 mins)
- 8) UEC composition, student members, representatives for data analysis, etc.
- 9) UEC role and activities during shut down
- 10) Feedback from Users' Survey regarding Proposal Review Process

1) Welcome to new members

Christoph Bostedt:

- Excited to have a larger UEC with more diverse representation – mix of facilities & academic, 40% female, US/international. **New Members:**
 - Félicie Albert – LLNL, representing MEC
 - Lin X. Chen – ANL, representing CSD
 - Michael Meyer – European XFEL, representing AMO
 - Lois Pollack – Cornell University, representing BIO
 - David Reis – SLAC/Stanford University (SIMES, PULSE) representing MEC
 - Artem Rudenko – Kansas State University, representing AMO
 - Roseanne Sension - University of Michigan, representing CSD
- Christoph presented a brief overview of the UEC – its role as representatives of the user community, responsible for bringing items to the attention of LCLS management, engaging the user community and organizing the annual meeting, among other duties.
- He reminded the UEC of the outstanding question of how we make the user community more aware of UEC activities and responsibilities?
- Nominations for UEC Vice Chair: Multiple nominations received for Arianna Gleason; at this stage she is the only formal candidate.

ACTION:

UEC members should vote for a candidate for Vice-Chair (either Arianna or a write-in) by close of business on Wednesday November 15th.

2) Facility Update

Mike Dunne: Thanks Christoph & welcome to all new UEC members. Brief facility update:

- **Split & Delay at XCS** – Good progress being made, with observation of interference, and improved stability. Still awaiting some hardware improvements in January.
- **Sub-femtosecond performance**
 - (a) Results now published that demonstrate ~220 attosecond single isolated spike performance in the Hard X-Ray region:
<https://link.aps.org/doi/10.1103/PhysRevLett.119.154801>
 - (b) Separately, demonstration of Hard X-Ray performance at ~400 attoseconds using the “Slotted foil” technique. This is important as it offers the potential for dual pulse operation:
Appl. Phys. Lett. **111**, 151101 (2017); <https://doi.org/10.1063/1.4990716>
 - **XLEAP** (soft x-ray sub-femtosecond program)
 - This development is progressing well, although not yet at the stage of producing sub-fs pulses.
 - Routinely achieving laser-electron interaction and clearly see lasing on the spikes. Achieved a large energy modulation at the end of the undulator (~5 to 10 MeV) using space-charge. However, at this point the laser power is not enough to give attosecond pulses using eSASE
 - The laser is pretty stable and the interaction setup time is ~30 to 60 minutes.
 - Future plans: stretch the pulse more, finish amplifier 3, make larger spot in amp 2, build a FROG and improve compression.
 - The AMO side needs work to improve laser/x-ray overlap. The VMI itself is working well.
- **New engineering leadership at LCLS:** Chief engineer Nicholas Kelez recently stepped down from his role at LCLS (to a 20% role, to spend time with a quantum computing company). Two new recruits have been appointed:
 - Nadine Karita (previously with the LSST and LUSI projects) will take over as Technical Director for our LCLS-II instrument development program (L2S-I)
 - Alan Conder (previously with LLNL) will take over as the LCLS Chief Engineer
- **BES Ultrafast Round table**
 - DOE-BES recently organized a “round table” on ultrafast science, led by program managers Helen Kerch and Tom Settersten
 - This is seeking to identify emerging research opportunities where the BES community can make best-use of LCLS-II, complemented by other ultrafast methods.
 - The LCLS community should pay close attention to these developments, and possible funding opportunities that may arise.

3) Update on shutdown and/or additional run plans from LCLS

- Mike outlined provisional plans for LCLS operations over the next 2 years, and will be able to issue formal information by mid-December.
 - One option is the possibility of inserting an additional “Run 17” before the 1-year shutdown. This is currently being explored with BES.

- The UEC noted the benefits of this, if it proves to be possible, and discussed how such a Run could be targeted.
- Mike noted that the feedback from the SAC was to recommend an emphasis for high-risk/high-gain experiments, using recently provided features such as XLEAP and split-and-delay, as well as experiments focusing on preparing LCLS-II capabilities.

ACTION:

- **UEC to provide feedback to Mike on Run 17 priorities, if it proves to be possible**
- **If Run 17 is to be scheduled, then LCLS should hold a Virtual Users' Meeting in January (before the call for proposals deadline) to communicate priorities, explain new instrument functionality, and answer questions.**

4) Lessons learned from the 2017 Users Meeting and planning for 2018

- The UEC discussed lessons learned from 2017, and possible changes for the 2018 workshop, including:
- Overall, the previous Users' Meeting (2016 and prior) had too many workshops that ran in parallel. 2017 had fewer, better attended workshops. However, the overall balance is still tricky. The first day (Wednesday) seemed to have low attendance, whereas Friday was very active with high engagement. There was relatively low attendance from bio community – perhaps not enough sessions that appeal to that community. One suggestion was for time-resolved studies for bio and non-bio be combined, as in previous years?
- There was deliberate overlap with the High Power Laser (HPL) workshop, which resulted in more involvement from MEC community, but the overlap was logistically challenging. Overlap by one day, not two might be better, with coordinated schedules for plenary/workshops to fit both groups (perhaps plenary on Day 1, or mornings of 1st and 2nd days instead of full day on Day 2?)
- The “Awardee talks” were very well received and successful – lots of positive feedback on this, perhaps allot more time to awardees?
- Live-streamed sessions – 286 total views; need to determine how many unique viewers.
- Holding the meeting in September worked well; better than in October, including allowing DOE presence. SSRL also agrees that late September works best.
- There was a question of coordination with the ALS User Meeting, wherein ALS prefer to keep their meeting in October. This could still be back-to-back in principle (subsequent weeks).

ACTIONS:

- **Leilani to report how many viewers watched Live Stream of plenary**
- **Finalize dates for 2018 Users' Meeting - coordinate with HPL workshop – 1-day overlap, and communicate dates to ALS.**
- **Send proposals for meeting schedule to UEC Vice Chair – they will work with SSRL Vice Chair on the meeting.**

5) LCLS Scientific Advisory Committee

- The LCLS SAC meeting was held on 19-20 October. The key topics covered were:
 - LCLS-II “First Experiments” planning, and associated facility development priorities
 - Early science process for LCLS-II (with the intent to organize collaborative teams via Letters-Of-Intent for the initial few months)
 - Strategic access to LCLS (proposed new mode of access, for multi-experiment campaigns)
 - Reviewing beamline performance
 - Enabling user science via new approaches to Experimental Design

- Review of the R&D portfolio
- Update on LCLS-II-HE
- R&D plans for low-emittance Injector development

ACTIONS:

- **Mike Dunne to develop a UEC paper on the topics of “early science” and “strategic access” for the next meeting**
- **Paul Fuoss to present to the UEC on the topic of “experiment design” to improve the user interface in readiness for LCLS-II**

6) LCLS-II Data Systems review

- SLAC convened an external review of its plans for Data Systems for LCLS-II, with regard to the required systems for high repetition rate detection, data reduction, real-time data analysis, and longer-term data interpretation and storage, along with the required compute power, networking, and storage systems.
- This review was chaired by John Sarrao (LANL), with participation by senior leaders from ESnet, NERSC, ORNL, LBNL, BNL, ANL, LANL, with DOE observers.
- LCLS-II and LCLS-II-HE will generate TB of data per second, which requires a step-change in our approach to every element of the data pipeline.
- There are many topics here of direct interest to the UEC and wider user community – in particular the plans for data reduction, online analysis, and data retention.
- LCLS has been reaching out to the user community over the past few months (via Chris O’Grady), but many areas are not engaging yet – likely due to a lack of realization of the scale of the change in data systems for LCLS-II. As such, a more targeted approach is likely required.

ACTIONS

- **Provide more information on LCLS data system plans on the website**
- **Include this as a topic in a Virtual Users’ Meeting (Town Hall)**

Postponed to next meeting:

7) Involvement in the national user organization SSURF (5 mins)

- We formerly had ex-officio member on UEC from the NUFO national users’ organization (Norah Berrah). This was very valuable. Consideration should be given to how we interact with SSURF.

8) UEC composition, student members, representatives for data analysis, etc.

9) UEC role and activities during shut down

10) Feedback from Users’ Survey regarding Proposal Review Process

- ACTION: Richard Sandberg to share results from the users’ survey with UEC.