LCLS UEC Meeting March 21st, 2023

Present: M. Mitrano, L. Conradson, N. Hartley, U. Bergmann, T. Gorkhover, E. Biasin, M. Schmidt, B. Mooers, M. Dunne, M. Trigo, D. Oberthür, M. Doyle, N. Power-Riggs, G. Doumy, A. Marinelli, S. Teitelbaum, C. Rajendran

Absent: Y. Cao, G. J. Williams, E. McBride, C. Knotts, P. Jones

Director's updates

- **Beamtime Scheduling:** (Note that all dates below are nominal and subject to change) The turn-on of LCLS II will happen in early April, nominally April 7th when the accelerator is expected to produce beam. The cryoplant has been working all the time. By end of April/early May, the electron beam will be tuned to achieve its required performance parameters. The next phase will involve tuning the undulator to its performance parameters, nominally until June 7th, but potentially up to mid-July. Once the undulator is tuned, there will be TMO commissioning with the high repetition rate beam (gradually ramped up to 33 kHz). After TMO commissioning, the beam will be delivered upstairs to NEH2.2 for the ChemRIXS and qRIXS commissioning. This stage will be followed by the early science phase at TMO and ChemRXS. TXI commissioning will follow at a later date. The update since last UEC meeting is that now there is a formal DOE approval to execute this program, based on a "Corrective Action Plan" in response to the recent accident at SLAC. There is not yet a published schedule for operations on the Cu linac, but this is expected in the next couple of weeks.
- **Budget:** the presidential budget request (PBR) is now public and contains details about proposed budgets for national facilities. The operations funding for light sources comes as a block and it is up to DOE to redistribute it across the facility portfolio. The presidential request for the five BES Light Sources (including LCLS) corresponds to a safe and reasonable use of the facility at 90% utilization, which is consistent with our joint request. DOE has been receptive to the arguments of the light sources needing increased funding. The issue is now with Congress, which determines the appropriations for FY24, and can be affected by wider political considerations. As an example. the House is exploring proposals keep funding at the FY23 levels, or even to reduce funding to FY22 levels with cuts to non-defense budget. This would not be sustainable for LCLS or the other light sources. One possibility is that there is no political agreement on the budget and we go into FY24 with a continuing resolution at FY23 levels. While DOE and BESAC have been receptive to the requests of the user base, the UEC discussed getting in touch with Congressional representatives to convey the support of the user community for the PBR.
- **Facility operations metric:** For many years, there has been a facility metric associated with the *"availability"* of the accelerator (namely the fraction of hours the accelerator is operational compared to the predicted value), which is derived from the high-energy physics community and is typically very high (~95%) in reliable accelerators. However, it should be noted that this does not translate into a metric for health of the scientific system. Light sources are robust, they run, but it is important to develop an objective new objective metric capturing the scientific health of a light source. The proposed metric is *"utilization"*. In other words, if a facility is fully funded, how many beam hours is it able to run? This figure of merit accounts for the staffing and utilization (and lack thereof). If one quantifies the actual hours available for use, LCLS is at about 70%.
- Another important goal is to assess the quality of science we do. DOE is convinced of the strength of the LCLS program, but we now must convey this concept to congress. How do you evaluate how good the science is? At DOE's request, Stanford assembled an external panel which produced a decadal report on LCLS publications to date and their integrated impact. In summary, the report states that the LCLS has been transformational and DOE can now use this as evidence for future support and development of the facility.

General discussion

Question: Is the report available?
Answer: Yes, Leilani will send it around to the UEC. Note that it is not yet public.

Question: Concerning the budget, can foreign users advocate for LCLS funding?
Answer: Yes. The main letter for the user community is signed by UEC chairs and vice Chairs, but foreign users are invited to voice support for the LCLS program. It is a strength of the LCLS that it has impact on scientific communities beyond the U.S.

Question: Is it true that there might be a restart of Run 21 experiments with the Cu linac before the summer shutdown?
Answer: This is correct, likely in May/June/July.

Question: The LCLS II commissioning phase will feature early science. Is it a user assisted commissioning with preselected users?
Answer: Yes, to some extent. The 'early science' phase follows the technical commissioning of the instrument, with the objective of delivering exciting science as part of a user-assisted commissioning activity to ensure each instrument is ready to be transferred to the PRP open-access phase. The early science will be inserted in the schedule as soon as the LCLS II schedule is published.

Question: Why is there downtime in the provisional schedule?
Answer: The downtime is driven by the re-certification of the Cu Linac in the summer, which is mandatory.

Question: There is confusion about the fact that there is a call for regular proposal and a new call for data collection (e.g. single shifts/contingency shifts) coming in April. How will this work?
Answer: Details are to be defined in the next few days. This is a new initiative, aimed at increasing the awareness and benefits of "small-scale" proposals that seek to complete a prior dataset, or deliver a result within a more constrained scope than for a full experiment. Duplication of proposals should be avoided. Further information will be sent to the user community in the next few days.

Question: What about "Contingency shifts"?

Answer: Contingency shifts are not something that users would request via PRP but rather something that is directly allocated in response to emerging events. There are some downsides, such as more gaps in the schedule, but increased flexibility could be beneficial to the user communities.

Question: Should the UEC letter to Congress contain language about the utilization metric?
Answer: Yes, and the LCLS can provide data, although as a federally-funded entity LCLS cannot participate in lobbying activities.

Update on 2023 Users' meeting workshops

We are currently at nine workshop proposals: MEC current science, MCE-U Scientific Development, Scientific Opportunities at the Tender X-ray Instrument, Data Analysis at LCLS, New Data Stream for LCLS-II, TR-SFX versus TR-cryoEM, pump laser needs, quantum materials at NEH2.2, round table.

One concern is that many instruments have not seen much beamtime since the last users' meeting. The scientific discussions should be different, maybe including a roundtable session to establish future research priorities.

Comment: there are videos for the data analysis session from last year, but these have not been published. Natalia will help with the next data analysis workshop. We also need suggestions for plenary speakers.