

LCLS UEC Meeting Minutes: 2021-05-28

Present: M. Cammarata, L. Conradson, Y. Cao, G. Doumy, M. Dunne, A. Gleason, J. Kern, B. Lamesh, A. Marinelli, E. McBride, M. Mitrano, B. Ofori-Okai, C. Rajendran, D. Rolles, R. Sension, E. Snell, P. Sun, G. J. Williams

Absent: E. Biasin, T. Gorkhover, P. Jones, M. Khalil, C. Knotts, H. Wen

Guest: Alan Fry

Update from Mike:

- Congratulations to Emma on the ECA! Great news!
- Run 20 call just went out. Hopefully final call with just the copper linac
 - Deadline is July 19
- Run 21 will hopefully be able to use both copper linac and SC linac
- Had the first round of cooldown of the cryoplant. Achieved 6 K at first attempt,
- Today is the deadline for Letters of Interest for Campaign proposals
- LCLS Town Hall planned for June 22
 - Go thorough presentations of endstations as usual
 - Also give time at the town hall to the UEC to advertise the Young Investigator award, UEC elections, and users meeting
 - Possibly also use this as an opportunity for UEC to ask questions to user community
- Machine is doing okay – but suffered a series of NFS file system issues over the past two weeks. Have been able to roll back the configuration to reduce the problem, but will have to await the summer downtime for a permanent solution.
- Recently had successful XLEAP 2 color experiment, and start of the Material Science campaigns
- In terms of access and COVID restrictions, SLAC follows most conservative between county, state, and DOE
 - Already can be outside without face coverings as long as social distancing
 - User presence is allowed, subject to any restrictions associated with travel and your home organization (e.g. for international users, if you can get into the country you can get into SLAC, subject to the same rules as other staff and users).
 - Currently still only able to accommodate a restricted number of people in a hutch or control room at one time.
 - Can come on site if you are not vaccinated, but need to go through a testing regime
 - New rules are anticipated in mid-June, pending County guidance
- Waiting for FY2022 budget

Question: Are occupancy limits expected to change?

- Yes, they should. It's anticipated that requirements for social distancing, face coverings and occupancy limits to disappear – at least for vaccinated individuals. Awaiting updated County and State guidance (mid-June).

Question: How does the allocation of beamtime for ongoing campaigns

- Campaign experiments provide status reports to PRP after each beamtime. Assuming things go well, the campaign will go forward, and time will be allocated for the next run. The presumption is that campaigns will continue unless there is a clear problem.
- At the moment, not quite enough time yet has passed to determine if the steady state has been achieved. Still needs to be watched as a community, and feedback is appreciated. The SAC provides overall oversight.

Emma: Update on Climate Survey

- Discussed with Sarah Holder about putting together a climate survey for users. This is anticipated in the September timeframe.

Lelani: Users Meeting update

- List of workshops has been decided.
- Workshop Organizers have been contacted to begin assembling a detailed agenda, list of speakers, etc.
- Call for nominations for UEC
 - Bio, HCM, MEC will be open
- For Young Investigator, UEC will receive nominations by July 28 and vote for the top 3, who will present at the Users Meeting. The UEC will determine the winner after their talk on Friday

Question: For UEC nominations, former members can be nominated again by others or themselves?

- Yes

Question: Will there be any in person component to the Users Meeting

- At the moment the meeting is planned to be all virtual.
- We will look for opportunities for an in-person UEC meeting.

Alan Fry: Update on MEC Upgrade

- MEC is the first instrument to combine LCLS with high power lasers
 - High intensity fs laser for making plasmas
 - High energy ns laser for driving shocks in materials
 - Can be probed with LCLS
- Community has a strong consensus to upgrade MEC to provide state-of-the art optical lasers
- DOE approved CD-0 (critical decision 0, “mission need”) in January 2019, based on extensive input from the High Power Laser (HPL) workshops, and a National Academies’ report.
- Conceptual Design Review approved the approach in February 2021
- DOE CD-1 (critical decision 1, “design”) review planned for June 2021
- The user requirements have been translated into five representative “flagship experiments” that define a suitably broad set of configurations to cover the broad user needs.
- In addition, a “laser-only” area is required, to provide greater access to the lasers and greater flexibility.
- The facility will need to be housed in an independent cavity
 - Short pulse laser: 10 Hz, 150 J, 150 fs, 1 PW
 - This laser can be reconfigured to deliver: 10 Hz, 200 J, multi-ns, programmable pulse shape
 - Separate >kJ laser, 2w, multi-ns, programmable pulse shape, at 2 shots/hour
- Two target chambers: X-ray + lasers, and lasers only
- New system will be housed in an independent cavern with three areas – (1) laser bay, (2) X-ray / lasers target area, (3) lasers-only target area
 - X-ray target chamber will be 4m diameter with diagnostic inserters
 - Laser only target chamber can be used for diagnostic development and training of new students and experiments through the LaserNetUS program, using an MEC-scale chamber.
- Cavern is designed for to be large enough to allow upgrading of the laser systems to produce 2 independent PW short pulse lasers, or a higher energy (multi-kJ) long pulse laser

Question: If there is going to be an impact on the scientific resources elsewhere at LCLS?

- The additional funding will mean that we can hire and bring in more people.
- The MEC project is also being designed to be non-disruptive to the LCLS user program

Question: Will there be disruptions to the current MEC experimental program?

- Because the design is for an independent cavern (east of the Far Experimental Hall), MEC will be able to keep operating until the latest possible time. There will be a downtime (in the ~2026 timeframe) for MEC of up to a year during the changeover.

Question: Is there a plan for the non-MEC branches of LCLS to be able to use the MEC lasers?

- The new lasers will be housed in a new cavern, and will not be transported to the FEH. However, the new cavern is being designed to enable the broadest possible range of user science.
- Separately, high average power laser systems (100kHz class) will be installed in the FEH by the LCLS-II-HE project.

Question: What is going to happen to the current MEC space/lasers?

- Still need to determine what can be done logistically.
- Part of Hutch 6 will be used to house the new LCLS-II-HE laser systems
- The X-ray part of Hutch 6 remains open for new developments. Options will be discussed with the SAC and the user community over the coming year.

Question: What is the likelihood that the project will be funded?

- MEC-Upgrade is already a line item in Congress, and has received over \$36M funding to date – to ensure it is ready to move directly into detailed design once CD-1 is approved. The DOE process is to proceed through a series of “critical decisions” to ensure robust design readiness. Funding is allocated annually by Congress.