

LCLS Meeting Minutes

25 June 2021

Present

Leilani Conradson / Tais Gorkhover / Yue Cao / Roseanne Sension / Paul Johns / Emma McBride / Matteo Mitrano / Brittany Lamesh / Gilles Doumy / Peihao Sun / Haidan Wen / Mike Dunnes / Ben Ofori-Okai / Munira Khalil / Jackson Williams / Edward Snell / Elisa Biasin / Jan Kern / Daniel Rolles / Agostino Marinelli

Absent

Ari Gleason / Cathy Knotts / Chitra Rajendran / Marco Cammarata

Mike updates

- Facility developments: LCLS-II new cryoplant getting liquid He production for the first time, and getting commissioned before summer shutdown
- Instruments: Successful 1st beam time at the new TMO prototype MRCOFFEE “cookiebox” end station for benching marking and getting some data – to inform the design of the production endstation that will be deployed in Run 20. ChemRIXS instrument taking beam for the first time for commissioning and towards first experiment in July. qRIXS will see beam in summer / fall
- MEC-Upgrade project successfully passed its ‘Independent Cost Review (ICR)’ laser week and will go through its “Independent Project Review (IPR)’ next week – which are the final steps to inform the ability of DOE-FES to approve “Critical Decision 1 (CD-1)”, which is expected later this year
- Onsite COVID rules have been relaxed, enabling a significant increase in user presence
 - Details will be sent to all users in the coming days
 - Vaccinated people will no longer need to wear face coverings or socially distance, and there will no longer be occupancy limits. People who are not fully vaccinated or who decline to state will need to continue with a range of COVID protocols.
- Funding outlook – The first step in the FY22 budget cycle has been issued (the President’s Budget Request, PBR). Overall, this is a healthy budget for science, but there are shortfalls in a number of areas including major projects in the DOE Office of Science and for facility operations. Congress will seek to establish appropriations levels over the coming months. Continued advocacy by the UECs of the DOE User Facilities has been very helpful.
- Staffing
 - Professor Matthias Kling has been appointed as the new Division Leader for Science, Research and Development (SRD) at LCLS. Prof Kling is currently at LMU (Munich) and MPQ (Garching). He has also been appointed a Professor at Stanford and anticipates moving to LCLS in the Fall.
 - There is a significant number of new staff being hired at LCLS – partly for the new projects (LCLS-II-HE and MEC-Upgrade); partly for operations support; and partly for new scientific staff.

- New floor space for laser and beam line lab development is being created in the new Arrillaga Science Center, e.g. for the XUV beam lines, to be overseen by Prof Kling.

Users meeting planning update

- Agenda ready and platform online soon
- We need nominations for the UEC and for the LCLS Young Investigator Awards (deadline Jul 28th)
- ACTION: All UEC members should provide their nominations, and solicit further input from the user community
- Steven Johnson accepted invitation as the plenary speaker.

Accelerator R&D update by Ago Marinelli

Accelerator R&D combines short/medium-term developments with long term and exploratory studies, and also pursues basic accelerator and FEL physics.

3 broad areas of focus – (1) time-resolved capabilities (e.g. XLEAP-II, PEPPEX), seeded FELs (e.g., self-seeding and cavity-based FELs) and enhanced performance (e.g., superconducting undulators and beam shaping)

Example projects for new time-resolved capabilities:

- XLEAP-II (attosecond ESASE) to LCLS-II SXR beamline, new wigglers being commissioned
- 2-color attosecond pump probe (min delay ~100s of as)
- Dual FEL operation using ultrafast kickers
- Multi-bunch operation with copper Linac
- PEPPEX: photon-electron pump probe experiment for sub-fs resolution
- THz wiggler

In terms of beam performance, key areas of focus include

- Developing superconducting Linac and undulator
- Laser heater for fs pulse shaping

Seeded FEL can be achieved using self seeding, external seeding or based on cavities. Accelerator R&D is working on self seeding and will work towards cavity based approach.

More risky projects include e.g. few-cycle X-ray pulses.

Accelerator R&D works to educate the next generation in working with the PhD program at Stanford, and in partnership with other universities and under Office of Science graduate research program, and also through summer internships. This experience has worked well with the first batch of PhD students.

Questions raised about plasma based FEL (Gorkhover), THz wiggler and beam line (timeline and how to place the end station - Wen), THz pulse shaping (Ofori-Okai).