

LCLS UEC Meeting, February 20, 2015

Steve Johnson, Mike Dunne, Alan Fry, Petra Fromme, Philippe Wernet, Eddie Snell, Nicholas Kelez, Peter Weber, Jan Luning, Daniel Rolles, Amedeo Perazzo, Richard Sandberg, Gianluca Gregori, Bill White, David Fritz, Cathy Knotts.

Update from LCLS Director: LCLS Director Mike Dunne provided feedback from the LCLS-II science opportunities workshops held February 9-13, 2015. Mike reported that 414 people were registered; he was pleased with the turnout and the user participation at the workshop. (Some illness was reported among some staff and participants; this is being investigated by the local health department). The purpose of the workshop was to identify scientific opportunities for LCLS over the next several years. LCLS is currently going over the output of plenary and breakout sessions to produce a draft document in March. This would be reviewed by the LCLS Scientific Advisory Committee (SAC) in April. The report would then be sent to DOE and then to the wider scientific community. Output will directly impact LCLS short-term planning of new instruments and strategic developments, rebalancing strategic R&D and inform where we recruit new staff as well as inform LCLS long-range strategic plans and investment priorities.

Stanford Guest House: Plans are being discussed to build a second guest house which could triple the number of guest rooms available at SLAC National Accelerator Laboratory within the next 2-3 years (with possible plans to add a third guest house in the future). The user community will continue to have input. The UEC requested that SLAC work to keep prices down and services optimal.

LCLS space: Mike reported that LCLS is revamping facilities to allocate space for a user rest area next to the kitchen area in the NEH Bldg. 950. Other modifications are planned to improve user amenities and storage.

SUSB: Construction is underway on the new SLAC Scientific User Support Building (SUSB) which will include a new conference center, cafeteria, and offices for Visitor, User and Employee (VUE) on-boarding and badging. SLAC anticipates that the SUSB will be ready in Fall 2015. In the interim, there are limited options for food at SLAC. Lunch can be ordered weekdays through the EAT club, but food trucks are no longer an option at SLAC. The UEC requests that the SUSB include an area that offers 24/7 access to food vending for users and staff who work evenings, weekends and holidays.

DOE Review: LCLS expects to soon receive the DOE triennial review which was conducted in June 2014.

Organizational Update: Mike gave an update on changes in the organizational structure of SLAC and LCLS. A new Science directorate has been created at SLAC with divisions for Bioscience (S. Wakatsuki), Chemical Science (T. Heinz), Materials Science (T. Devereaux), High Energy Density Science (S. Glenzer), Elementary Particle Physics (J. Hewett), Particle Astrophysics & Cosmology (T. Abel) and Applied Programs (M. Hartney). The intention is to facilitate development of scientific programs that are well allied to activities at lab. A new Technology & Innovation Division (M. Fazio) was also created that will include RF Accelerator Research & Engineering (C. Burkhart) and Research Electronics & Software (G. Haller); advanced instrumentation and detector systems will report under Gunther Haller.

<https://www6.slac.stanford.edu/about/organization.aspx>

Within LCLS, Bill White will serve as the Deputy for Operations. Aymeric Robert will assist Bill White in leading the Science, Research and Development (SRD) Division. Amedeo Perazzo is now part of the LCLS

management team, heading the Controls and Data Systems (CDS) Division for more integrated LCLS control systems. LCLS is recruiting for someone to provide senior oversight of detector development and deployment to fit under Bill White's SRD program. The sample environment activities of Dan DePonte are now part of the SRD group for a more integrated approach. There is an open position for MEC Department Head as Phil Heimann moved on the LCLS II project.

SLAC has a heavily matrixed structure, and management wants to create a culture and approach that spans across facilities for more integration and balance looking from the requirements, systems, engineering perspective of what is needed going forward. A new LCLS group has been formed to facilitate these types of interactions across SLAC and to prepare for LCLS II; the LCLS Systems Engineering and Facility Integration group will be led by David Fritz and Nickolas Kelez.

The UEC requested that external groups be included in future activities for the new bio beam lines and plans for MEC (in addition to Stanford and Berkeley); users from other institutions are eager to get more involved in the development and plans. Mike reiterated that LCLS is interested in getting broad input from the community. He is working to provide clarity about roles and how decisions will be made without showing preference to any particular institutions or communities. While he plans to consult and engage input from the UEC, SAC and other advisory groups, Mike stated that the decisions about LCLS strategies and investments lie within the LCLS management.

The UEC expressed concern that the quality and quantity of LCLS beam time scientific support is decreasing. Users noted that many of the beam line scientists are working at their limits. In addition to the regular beam time, a number of new, interesting and challenging projects have been started (4.5, SPI, LCLS II, etc.) . Two more senior scientists are leaving (Christoph Bostedt is moving to Chicago; Henrik Lemke is moving to Swiss FEL). Mike wants a healthy and productive scientific staff who also provide outstanding user support. He is working to identify actions to help provide a more clear career path for LCLS scientists which is difficult to do at such a young facility. He expects that there will continue to be some staff turnover as new facilities develop worldwide. There is a natural career path for scientists to join, learn and gain experience at new facilities like LCLS and then accept offers when recruited from other international facilities as they prepare for or begin user operations. Mike is trying to squash staff burnout, increase LCLS efficiency, provide cross training and back up for serge in various areas. He is putting procedures in place for scientists to pursue their own science and to support user experiments. Mike wants to bring in more young people, including students, RAs and post docs to learn from and help share the LCLS user support load with mid career and more senior staff. Students from Stanford or SLAC could be paid postdocs working a day a week at LCLS to provide user support; this would also provide learning opportunities for students, experience with user experiments, and interactions with user teams. This often provides opportunities for students to build relationships which creates career paths at SLAC or with external user groups.

The UEC noted that the layoffs in 2014 were perceived as detrimental to staff morale and to the overall user support. Laid off staff had emails immediately terminated, which prevented them from communicating with colleagues, continuing to work collaboratively on data analysis or papers. At other facilities, staff scientists establish external email accounts so that can continue collaborative work after they leave. The UEC was concerned that LCLS scientists felt disposable, not respected, and lacked security at SLAC. The UEC asked what could be done to repair this situation, specifically if scientists could get a yearly contract with an option to renew year to year in order to provide some stability to staff? Mike reported that the layoffs were very difficult and were unfortunately necessary due to the budget realities experienced by LCLS as well as many other labs and user facilities across the DOE complex. Mike

is working to develop a more clearly defined career path for LCLS scientists, but SLAC does not have the flexibility to provide a guaranteed contract to staff.

The UEC asked if there are resources to build a buffer to help staff to bridge transitions during difficult budget and staffing changes. Rather than giving laid off staff no notice that their employment was terminated, users suggested that, similar to universities, a half year buffer period would help create a more positive transition for staff (while continuing to access collaborative data, work on papers and presentations which would help them identify and obtain new positions elsewhere). Without this type of buffer, staff who have to leave the lab with no advance notice are at a significant disadvantage when searching for a future position. SLAC and Stanford have stringent requirements related to layoffs, which prevent advance notification. However, advance notices were provided about budget concerns and the possibility of layoffs with opportunities for interested staff to request voluntary layoffs (which help to reduce involuntary layoffs). Also, terminated staff were given a severance package based on the length of service to help during their transition. With the new organizational structure, SLAC intends to help scientists get more involved in other science areas to expand their interactions and open up new opportunities for interdisciplinary science.

MEC: Alan Fry discussed standard beam and diagnostic configurations at MEC to optimize user access and operations efficiency. The challenge is that every experiment requires labor intensive work to reconfigure equipment. The plan is to develop several standard configurations for part of the MEC beam time; some beam time would remain available for unique experiments and configurations. Alan plans to schedule similar experiments back to back to reduce set up, support and technical risk and increase useable hours to users. By setting up standardized configurations, LCLS will be able to schedule and support MEC more efficiently. Alan anticipates that this change would open up opportunities for more diverse group of scientists to use LCLS because they would not need to identify and bring in their own experts to set up and support unique configurations. LCLS wants to socialize this idea and seeks input from both the UEC and with the broader user community.

Proposal Review Process: The UEC wanted to discuss the proposal review process and to request clarity from LCLS on ethics policies related to peer review. Users commented that many proposals are in the top ranking but don't get beam time without a clear understanding of what was lacking or what could have been proposed differently for a favorable review and beam time. Some UEC members requested that the original peer review reports be sent to the users to help them understand the review as well as any perceived weaknesses in their proposals so that they can revise and improve their future proposals. Users also want to know their exact ranking to understand if they were near the top or bottom of the ranking (e.g., not just in the top 30-40%). Mike reported the original peer comments and rating are intended only for consideration among the review panel and not to be sent to the proposal team. Any ratings by peer reviewers are only preliminary and often change when the reviewers get together to discuss the proposals and collectively determine the ranking. The PRP has a difficult job and has to use their judgment to determine the best science in front of them at each cycle. Recently, LCLS has begun to assign LCLS scientists to serve as independent facility 'secretaries' to answer technical questions from the PRP and to help document details of proposal review discussions.

Some users asked if LCLS will consider improving the score for proposals near the bubble and keep these to be considered in the next scheduling cycle. Mike reported that at this stage in LCLS's development, it was essential to consider only new proposals for each proposal round.

LCLS plans to develop and provide ethical guidelines for the confidential peer review process going forward. LCLS desires absolute trust, integrity and transparency in the peer review process understanding that the PRP has a very difficult job to consider and rank all the proposals submitted to LCLS. PRP members work in the best interest of the LCLS as well their individual scientific fields.

The UEC wanted to clarify PRP member rotations. Mike stated his desire to continually refresh the PRP with new people to gain fresh insights while also retaining the benefits of some returning members to provide continuity and long term knowledge of previous review discussions over several meetings. To accomplish this, LCLS will continue to periodically bring in new members and rotate off some PRP members. The PRP will continue to be tasked to consider what are the most scientifically exciting research areas? In which areas can LCLS potentially have significant impact? How can LCLS best balance access? How can potential barriers be lowered to help bring in new, diverse users?

Beamtime Allocation: The UEC requested that users be able to provide input into beam time scheduling to avoid conflicts and to optimize their access to the LCLS (considering user teaching obligations, presentations at scientific meetings, etc.). David explained that scheduling is an extremely complicated process, with multi-dimensional criteria and numerous checks and balances. For standard configurations, there may be opportunities for users to provide input into preferred dates; however, criteria are too heavily constrained for most experiments to navigate around user date preferences.

To develop the schedule, LCLS scientists try to work the highest ranked proposals into a schedule that optimally utilizes available beam time, consecutively accommodates experiments with similar needs, concurrently accommodates experiments that can use multiplexing, minimizes dead time needed to change equipment configuration or focus, coordinates major configuration changes when staff are available for support, and coordinates experiments that require facility development effort.

Some users asked about switching to an 8-hour shift schedule, which would require 7-8 days per experiment. This would likely reduce overall user data collection time and significantly increase staff effort needed to switch between beam parameters at shift changes (30- 60 minute to tune beam to parameters and set up beam line for users). In addition, special configurations (self seeding, 2 color pulses) can take several hours to configure.

With the plan to increase standard configurations, LCLS expects to improve efficiency. LCLS will continue to explore beam time scheduling options and greater flexibility in the allocation and duration of beam time.

Status/performance of LCLS: The Delta undulator is still in an R&D testing regime, with ambiguous data to date. The goal is to build out a short segment for proof of principle to inform staff for LCLS II (whether to build afterburner for LCLS II). Beam just starts to lase before it reaches this segment. This is a prototype device with possible opportunities to extend for additional segments of the linac (resources and time will be needed to plan and construct devices).

Self-seeding is still in the debugging stage and not yet a robust configuration ready for user operations. LCLS plans to continue this over the summer. There is a fine line when LCLS is comfortable promoting new developments and when to offer new technology to users. Ideally, LCLS wants to keep users informed and engage users in user assisted commissioning, but they need to manage expectations and can't guarantee performance when trying out new capabilities.

Plans for the Annual Users' Conference, October 7-10, 2015: The annual users' meeting is an ideal time for a critical mass of users to be in the same location at the same time to learn about new capabilities, discuss ideas and form collaborations. The UEC strongly encourages LCLS and SLAC science divisions to be more involved and participate in the annual conference. Cathy encouraged UEC and LCLS staff to send suggestions for workshops, session topics, talks, keynote speakers. The UEC felt that the last meeting was very successful with good momentum and good workshops with excellent speakers. The UEC suggested that new speakers be identified for the next meeting.

Some users felt that the MEC laser workshop was disconnected when held on the Stanford campus. Philippe encouraged UEC members to suggest workshop topics and speakers and to be more involved in organizing workshops. Contact LCLS UEC Vice Chair Petra Fromme with suggestions; Petra will represent the LCLS user community on the annual users' conference organizing committee. Petra mentioned her interest in sessions on biosystems, time resolved measurements with biomolecules, the SPI initiative, and crystallography. Ideally, the users' conference would be held in a larger venue than last year rather than having overflow in a second room. Since the new SLAC conference center is not likely to be ready by early October 2015, the larger venue may not be ready until the 2016 users conference.