

ALS Operational Upgrades

Directly after fill with bunch equalizer OFF



Directly after fill with bunch equalizer ON



In the last few months the ALS implemented a number of operational improvements. They improve the reliability and quality of the light delivered to the users. Here are a few high-lights:

A bunch equalizer optimises injection such that the lowest-current bunches get filled. The picture shows the effect on the bunch currents. With the equalizer, the bunch currents are much more uniformly filled than before.

Tune feedback was implemented to keep the transverse betatron tunes more stable. It resulted in higher beam lifetime as well as better beam-size stability. Also, insertion devices can be compensated better, and the greater tune stability resulted in better injection efficiency.

The Low Conductivity Water (LCW) system received a major upgrade. The system was as old as the ALS itself and very inflexible in its operating parameters. The new system has better overall reliability and much better temperature stability and overall reliability. The cooling water is now also being treated with benzotriazole. This should result in reduced corrosion which has been a problem in the past; coils can run hot, for instance, because the cooling channel inside is partially or completely blocked by corrosion.

Since January the ALS has been operating with the new pseudo-single bunch mode that was described in an earlier newsletter. There have also been upgrades to the controls, the RF, and power supplies, resulting in more-maintainable systems with improved capabilities. Some improvements have been made to the vacuum system as well, resulting in lower vacuum pressure and therefore improved beam lifetime.

Over the last five years the brightness has been increased by one order of magnitude. This has been achieved by doubling the beam current and decreasing the horizontal emittance by a factor of three and the vertical one by a factor of nine.

Physical Sciences Workplace Life Committee

When the General Sciences Directorate became the Physical Sciences Directorate, the Workplace Life Committee for that Directorate changed its name accordingly. The Physical Sciences Workplace Life Committee's mission is to explore issues affecting workplace quality of life for AFRD and the Nuclear Science and Physics Divisions.

The committee consists of two members per Division plus at least one of the HR partners of these Divisions. Current members are Diana Attia, David Brown (Chair, PD), Carolyn Charles (HR), Cheng-Ju Stephen Lin (PD), Brien Ninemire (NSD), Gregory Penn (AFRD), and Ina Reichel (AFRD). The committee has been involved in diverse issues such as parking, onsite gym, and visa information resources.

There are three ways in which issues are brought to the committee:

- Feedback from division personnel
- Committee member request
- Division Director request

The committee's website at <http://workplacelife.lbl.gov/home> lists issues the committee has worked on in the past and also allows submission of issues to the committee. Any matters brought up can be handled confidentially upon request. You can also bring up any issues with one of the committee members in person. If you know of something that could improve workplace life for staff in any of the three Divisions, please contact us! We can be reached at PSWLC@lists.lbl.gov. You can also meet us in person for lunch on May 1st at noon in the Perseverance Hall Annex (54-130B). If you are new to Physics, AFRD or NSD, please come with your questions about workplace life @ lbl.

Get to Know Your Colleague: Russell Wilcox

What is your current position and what are you working on right now?

I'm an engineer, working with the Center for Beam Physics (CBP). I'm working on sub-femtosecond laser timing over fiber, and high power pulsed lasers.

Have you done other things at the Lab prior to your current activities?

I designed and built a high power pulsed laser for ALS, used on the femtosecond slicing beamline. I invented two new methods of femtosecond laser synchronization (both patented), and with our group developed laser sync systems for the LCLS FEL and RF sync for the Fermi@Elettra FEL.

What is your professional background? Where did you work before coming to the Lab?

I worked 20 years developing optical pulse generators for laser fusion at Livermore, including the master oscillator system at NIF. In between LLNL and LBNL I worked briefly at a telecom startup, developing laser systems to write highly modulated Bragg gratings into optical fibers.

Would you share a proud achievement?

The National Ignition Facility laser starts with a system of fiber lasers that generates pulses using telecom-style modulators. Doing it this way was my idea (which also had to include the subsequent amplification to mid-range energies). This room full of equipment (the "MOR") is remotely programmable and functions like a turnkey instrument, requiring little attention. It has fifty times the capability of the older technology (Nova) equivalent, which took four FTEs to run.

Ever had something go spectacularly wrong?

I joined a fiber telecom startup at exactly the time the fiber telecom bubble was popping.

What was the most amazing or coolest thing you got to do for work? Or the most amazing place you visited as part of your job?

I love giant, complex machines, and I've been able to crawl around in obscure corners of them, working on exotic subsystems I've invented. Half-buried in an electronics rack, wrenching on an RF connector, in an underground accelerator tunnel as announcements come over the P.A. in a foreign language. Ah, that's the life.

What's on your MP3 player? What did you last listen to?

No MP3. Kraftwerk live in Oakland. "Man Machine," "We Are the Robots." Traditional standards.

Is there something interesting about you that most people at the Lab don't know that you would like to share with the Division?

I draw a science fiction mini-comic series about the end of the world after this "singularity" the trans-humanists are promoting. I've sold the comics at a comic convention. It's philosophical. No one understands it.

Calendar

April 24th all day various locations Daughters and Sons to Work Day (children need to be registered in advance; Lab volunteers needed)

Link of the Month: Results from UCOP Climate Survey Released

You might remember answering the UCOP Climate Survey about a year ago. UC has finally released the results by campus. The results for all campuses can be found at <http://campusclimate.ucop.edu/results/index.html>. The ones for Berkeley Lab including information on what future plans are can be found at <https://sites.google.com/a/lbl.gov/work-environment-survey/>. A subcommittee of the Diversity & Inclusion Council is currently working on obtaining the data by Division which will be shared with Division management. The Council will also suggest an action plan to Lab management.

Thanks to Russell Wilcox for "Get to Know Your Colleague", and to David Robin for the news item on the ALS. Thanks to Joe Chew and Sam Vanecek for editing/proofreading.

Please send suggestions for news items, links or "get to know your colleague" to Ina Reichel (IReichel@lbl.gov).

