

*Project Management**John Galayda*

Dave Dowell of Boeing will join SLAC on 1 October. Dave has been active in FEL research since he joined Boeing in 1987. He has worked closely with the SSRL Gun Test Facility team over the past few years; thus he is already known to be a highly competent researcher and a good guy to work with. We look forward to his arrival.

Jerry Hastings of Brookhaven National Laboratory will join SSRL on the 15th of October. He will be an Assistant Director at SSRL. Jerry is also well known to LCLS personnel, as a member of the LCLS Scientific and Technical Advisory Committees. He is co-author of the X-ray Laser Physics proposal, one of the six "first experiments" proposed for the LCLS. He is widely recognized for his major contributions to the instrument design and development of experimental techniques used at Brookhaven's National Synchrotron Light Source, where he worked on the construction of the first NSLS beamlines and went on to lead the beamline R&D group. Jerry can be counted upon to bring ingenuity, energy and enthusiasm to the LCLS and SPPS efforts as well as to SSRL.

The next meeting of the LCLS Technical Advisory Committee is scheduled for 10-11 December 2001. Dave Attwood has asked to be relieved of his duties on the TAC. We are grateful to him for his contributions to our first TAC meetings.

I am pleased to announce that Joerg Rossbach has joined the TAC. Joerg heads the TTF and TESLA FEL efforts at DESY. His experience and ongoing involvement in planning FEL user facilities will be a tremendous asset to the TAC and to the LCLS.

*Photoinjector R&D News**J. Clendenin*

The source of debris that was accumulating on the GTF laser rod faces is still unknown, but the rate of accumulation decreased sufficiently to allow some additional operation the first couple weeks of August.

It is now clear from PARMELA simulations that the proper matching into the booster is critical to achieve the lowest emittance. The earlier anomaly in the simulation results in which the 4-ps emittance was higher than 2-ps is now explained by the former being grossly mismatched.

A last-minute attempt to get useful data for the FEL01 GTF paper was made. The laser output was not sufficient to operate with 4-ps pulses, but there was sufficient energy for 2-ps pulses at 200-300 pC per pulse. An attempt was made to measure the transverse emittance out of the booster for several values of the booster gradient in order to compare matching effects. Also, a quick measurement was made with an injection angle of 30°

instead of 40°. These measurements gave ambiguous results and will need to be repeated in more detail and under more carefully controlled conditions.

The Hadron sub-picosecond streak camera is now operational and laser temporal profiles have been recorded. The settings we have been using for “2-ps”(“4-ps”) FWHM now measure 1.8 (4.3) ps.

The comparison of PARMELA and PIC code results (E. Colby, V. Ivanov, C. Limborg) for emission near the cathode continues to expose interesting features. PARMELA appears to significantly underestimate the image charge forces. This could explain the difference already observed between the measured and simulated energy spread out of the booster.

Two papers related to the photoinjector were presented at FEL01 (20-24 August in Darmstadt). P.R. Bolton, et al., “Photoinjector design for the LCLS,” is now available in preprint form as SLAC-PUB-8962 or arXiv:physics/0108048 and soon as LCLS-TN-01-05.

The GTF is now turned off until SPEAR is operating normally, probably sometime in October. Laser stability and damage threshold studies are now underway. Soon we will start the laser upgrade: the SHG “afterburner” the add-on amplifier stage. In parallel the GTF control system will be upgraded.

The 120 Hz gun review will be September 11-12 at SLAC.

*Linac*

*Vinod Bharadwaj*

The whole LCLS accelerator design and Parmela output file has been sent to Torsten Limberg and Philippe Piot at DESY. They have agreed to run their start-to-end simulation codes on the LCLS design. Their simulations use Elegant for the accelerator, but model CSR with TraFiC4. We hope to compare these new results with the Elegant CSR results.

Other analytical and numerical studies are continuing with help from Gennady Stupakov, Sam Heifets, Bob Warnock, and Karl Bane. The LCLS compressor designs may change as our understanding of the CSR micro-bunching improves.

The Injector and Linac groups have instituted a series of LCLS Layout meetings. These meetings are held once a week and discuss how much of the detailed design of the LCLS can be started in preparation for CD-2 which is presently slated for next April.