

Weekly Report for 11/25/2013

APS Renewal and Upgrade

- Began literature review of strong coupling effects in storage rings, with an eye toward the new MBA lattice design. (Ryan Lindberg)
- This week, DOE approved that we can proceed with the RIXS beamline. RIXS was put on hold back in August, and no action taken since then on technical matters. I had to devote quite a bit of effort talking to the relevant people and getting the system going again so that we can produce the two undulators, supports, gap-separation mechanisms, and controls for RIXS on time. (Marion White)
- Additionally, working on injector needs and assumptions for the MBA. (Marion White)
- Reading the Elegant manual and planning to get my pathways figured out next week. (Marion White)
- Continue investigation on high coupling issues through machine study and reading tech note. (Aimin Xiao)

MCR Operations

Storage Ring Operations

- Assisted MCR with transition from Machine studies to User Operations. (Karen Schroeder)

Linac Operations

- Learned how to make lattice files for various linac operation energies. (Yin-e Sun)

Procedures

- Provided Bui with written instructions to turn SCU0 to incorporate into BPLD validation procedure. (Karen Schroeder)

MCR Operations administrative/misc.

- Compiled the downtime report and sent to Flood/Sajaev for presentation to OPS Directorate (Karen Schroeder)
- Reviewed and approved SR non-RSS work requested for operational period and shutdown. (Karen Schroeder)
- Produced the FY 2014 long-range schedule to incorporate Run 2014-2 for OPS directorate approval. (Karen Schroeder)

APS Machine Studies

Storage Ring Studies

- High coupling optics study (Aimin Xiao)
- Performed gap scans to update feedforward tables and returned X-ray BPMS to orbit configuration after they had been removed because of steering. (Karen Schroeder)
- Performed SR requalification testing of an operator since his ACO was absent (Karen Schroeder)

Linac Studies

- Creating Injector Studies Schedule - This schedule will include the following. (Stan Pasky)
- ? 6 hours shift for high charge injector studies with 92-nm lattices. (Stan Pasky)

- ? 6 hours for high charge injector studies with 132-nm lattice. (Stan Pasky)
- ? 6 hours for new booster xTune 14.25 lattice setup and optimization. (Stan Pasky)
- ? 3 hours for testing booster corrector new AFG module. (Stan Pasky)
- ? Run 450 MeV, 1 nC at 28 Hz to L5 dump overnight. (Stan Pasky)
- ? Test the prototype of the new Booster AFG configuration (cards, software, timing, etc). (Stan Pasky)
- ? RF Conditioning of L4 and L5 Linac for 450MeV operation. (Stan Pasky)
- ? Harmonic system one and two phase matching and beam operations. (Stan Pasky)
- ? Operator training / testing etc.... (Stan Pasky)
- Worked on tech note comparing loss rate signals from BPM and BLM data; data collected from parasitic study conducted June 13, 2012. (Jeff Dooling)

ITS Studies

- ?Photo-Cathode Gun Commissioning Plan at the Injector Test Stand? created by Yine Sun and myself is needed to insure the ITS is ready to start rf conditioning of our new photocathode gun. Not yet submitted to ICMS.. (Stan Pasky)

APS Machine Research and Development

Storage Ring Research and Development

- Met with Jeff Dooling and Jie Liu to discuss ANSIS simulations of heat deposition and diffusion in the new scraper design. Did a quick, approximate calculation of the effects in titanium, which showed 50-100% less temperature reduction due to diffusion than aluminum. (Ryan Lindberg)

Linac Research and Development

- Cleaning up alignment through the compressor, am obtaining 205 microJoules of uv according to EM2. Began using the Coherent uv camera and power meter hardware. (Jeff Dooling)
- Captured profiles of the uv after the double aperture in the transport box. (Jeff Dooling)
- Found a discrepancy in the energy per pulse reported on the Coherent FieldMax meter using the calibrated J-25HR-LE detector and the EM2 EPICS read-out based on a Moletron J8LP pyroelectric device. (Jeff Dooling)
- Drafted a task list for ITS work with W. Berg. (Jeff Dooling)
- Met with J. Belcher (AES-SI) and S. Pasky to discuss ACIS work during the shutdown and possible modification of the Annual LACIS validation procedure in APS_1196662. (Jeff Dooling)
- Numerical optimization of the photo-injector at APS linac given fixed distance between the photocathode and the first accelerating structure. Transverse phase space evolutions along the first several meters after the photocathode for various charges are studied for optimal slit-size and slit-spacing using the slit-flag transverse emittance measurement method. (Yin-e Sun)

LDRD-Related

Ultra-Low Emittance Injector

- Worked on the revisions of the high power RF conditioning and electron beam commissioning plan for the PC gun at the ITS to meet the safety requirements. (Yin-e Sun)
- Provided written specifications and on-the spot revision for the alignment group to align the PC gun and solenoid. (Yin-e Sun)

Other Research and Development

- Continued work on the mode-locked/multi-color FEL project with Sasha; the goal is to investigate a few alternative designs for publication. (Ryan Lindberg)
- Worked with Radiabeam collaborators on their proposed THz radiation source experiment at the ITS. Started numerical beam dynamics simulations using GPT which include an alpha-magnet. (Yin-e Sun)

APS Machine Software

Storage Ring

- added phase shift feature of FIR filter to P0FeedbackControl (Hairong Shang)
- wrote GUI for P0Feedback mixer delay scan, ready for test. (Hairong Shang)

Injectors

- modified BBPMHistWaveformSetup to read the x/y tune offset from injection tune controllaw instead of hard-coded. (Hairong Shang)

General

- Wrote script to calculate total energy deposition from a simulated beam dump in the modified scraper design. Will use these results to compare with ANSYS calculations. (Jeff Dooling)
- updated technote for "How to Create OAGapps Gnome Menu" (Hairong Shang)
- modified ExperimentDesigner to destroy and reopen the execution set/view window if it is already opened instead of popup an error message. (Hairong Shang)
- Fixed a bug in sddshist that caused the command line options to get swapped. (Robert Soliday)
- Helped Dooling with a script to convert SDDS to plain text. (Robert Soliday)
- Updated mpl_motif so that the z button can now be used to zoom on a selected area like the middle mouse button. (Robert Soliday)
- Updated PlotBrightness to remove warnings that were being sent to the oag account. (Robert Soliday)
- Fixed a bug in KickerAnalysis and improved an error message. (Robert Soliday)
- Had mpack installed on nike because one of the cronjobs was trying to use it to sent emails. (Robert Soliday)

Simulation Software

- Helped Cheng-Ying with a question about smoothDist6s. (Robert Soliday)

- Helped Orlandi Gian Luca (PSI) with some Shower questions on Windows. (Robert Soliday)

IOC/EPICS/Controls/Linux/Solaris/Linux Clusters/Data Loggers/Simulation software

- Updated the Switchgear logger input file per Marty Smith's request. (Robert Soliday)
- Updated the SR bunch purity logger per Karen Schroeder's request. (Robert Soliday)
- Added 35ID to the PSS warning/fault/trip logger. (Robert Soliday)
- Rebooted the lustre switch in the linux cluster because it was locked up. (Robert Soliday)
- Removed a redundant cronjob and an old cronjob on nike. (Robert Soliday)
- Updated the Soft RF SCR request file because of decommissioned PVs. (Robert Soliday)

Meetings, workshops, conferences, committees, LMS related, and reviews

- Reviewed a paper for PRST-AB (Ryan Lindberg)
- Attended shutdown planning meeting (Karen Schroeder)
- Hosted the Photo-injector Physics meeting. (Yin-e Sun)

LCLS

- Planning meetings, technical discussions, hosted undulator vacuum chamber videoconference with SLAC, attended vertical polarizing undulator spring review; preparing slides for the new LCLS-II CD-1 review. Reading their draft CDR; for the most part, handling communications. (Marion White)

Safety and Required Training

- Completed - (Stan Pasky)
- EM116 Emergency Management and Continuity General Awareness (Stan Pasky)
- JHQ100 Job and Hazard Questionnaire (JHQ) (Stan Pasky)

Miscellaneous

- Writing PA input. (Marion White)
- 1 day vacation. (Aimin Xiao)
- 2 days thanksgiving holidays. (Aimin Xiao)
- Helped Thomas Fors build SDDS on OSX. (Robert Soliday)