

Weekly Report for 11/17/2014

Highlights

- This is a four-week report. (Kathy Harkay)
- Wrote first draft of SCU1 Commissioning Plan (beam part). (Kathy Harkay)
- Presented three talks at SCU1 Physics Readiness Review. (Kathy Harkay)
- Presented talk at Physics of Photocathodes for Photoinjectors (P3) Workshop (LBNL). (Kathy Harkay)

APS Renewal and Upgrade

- Attended diffraction limited workshop. (Louis Emery)
- Participated in DLSR workshop Nov 19-21. (Kathy Harkay)
- Continue injection/IBS simulation. Set up blues account with help of Michael and Yipeng. (Aimin Xiao)
- Performance evaluations of V6 lattice with canted orbit at 7 IDs. (Yipeng Sun)
- MOGA optimization of V6 lattice, with octupoles. (Yipeng Sun)
- Tuning of V6 lattice for better performance (lifetime and DA). (Yipeng Sun)

MCR Operations

Storage Ring Operations

- Investigated anomalous heating in the SCU0 that was reported by D. Robinson (11/20). Looked for clues over the past two runs and found a kink in the LHe pressure on 11/3 after almost a week of steady-state operation. Found temperature changes in the 4-K circuit but no evidence of changes in the beam heating (chamber temps and vacuum). Shared data with Y. Ivanyushenkov and D. Robinson. (Kathy Harkay)

Linac Operations

- With Yine Sun, completed low-level rf measurements of the thermionic gun 3G3. (Jeff Dooling)

APS Machine Studies

Storage Ring Studies

- Took local impedance data for ID4 with more point and a second time with a 0.6 mm y-bump. Saw that the 10 mA charge would drop to 5 mm at the extreme bumps. Added to the processing script for local impedance written by Sajaev. (Louis Emery)
- Discussed current scan of tunes with studiers in MCR. (Louis Emery)
- Participated the SCU0 quench test (Oct 28) with L. Emery and A. Xiao. (Kathy Harkay)
- Carried out single bunch studies with R. Lindberg, C-Y Yao and B-x. Yang. We acquired bunch length and tune data for up to 10 mA. (Kathy Harkay)
- Built new correction tables for IEX with Quasi on. (Aimin Xiao)
- Measured S1B:P1/S2A:P1 and S29B:P1/S30A:P1 and installed to UBOP. (Aimin Xiao)

- Made -30 urad x steering for ID29 user. (Aimin Xiao)
- Develop experiment-designer for tune scan studies. (Yipeng Sun)

Linac Studies

- Held Injector Studies Planning meeting Friday to integrate RadiaBeam work with pc gun alignment and other injector studies for the December injector studies period. (Jeff Dooling)

APS Machine Research and Development

Storage Ring Research and Development

- Met with Lindberg and Sun to review impedance and rf heating slides for SCU1 physics review the next day. Helped with X. Sun's presentation with the addition of Monte Carlo power calculations. Attended review of SCU1 physics. Discussed suspect HOM calculation results of CST with Xiang Sun, and some ways to reduce doubt for modes of higher frequency. (Louis Emery)
- Talked to A. Xiao about ID4 VC installation, and possible realigning and retuning of CPU and ID4-DS respectively. (Louis Emery)
- Determined that ID28 VC will still be needed for diagnostics group testing of new bpm electronics. So we won't be removing it in Dec for impedance reduction. (Louis Emery)
- Read the MAX-IV paper on harmonic cavity simulation. (Louis Emery)
- Chair a review of S35 revolver ID installation. Discussed multipole requirements and dipole error rate limit with I. Vasserman. (Louis Emery)
- Gave to Harkay a list of required machine setup activities for an emergency recovery timetable for SCU1. (Louis Emery)
- Incorporated feedback comments into SCU1 PRD. (Kathy Harkay)
- Wrote final draft of SCU1 commissioning plan (CP). Beam part is virtually completed. Cryomodule part will be updated with data from SCU1 bench tests. Developed fallback options; a plan needs to be discussed among many groups. (Kathy Harkay)
- Prepared three talks for SCU1 Physics Readiness review: SCU1 PRD, SCU1 ray tracing (engineering and physics), and SCU1 commissioning plan and fallback options. Preparation involved discussions with S. Shastri (user requirements), J. Lerch (who provided the engineering ray tracing), Y. Ivanyushenkov, and J. Grimmer (on CP). (Kathy Harkay)
- Met with J. Lerch and described the vertical steering limits for SCU1. He will carry out vertical ray tracing in order to investigate the effect of the 1-mm aperture mismatch at the SS-AI joint in the beam vacuum chamber. I told him L. Boon's result for the old SCU0 chamber (25 % of power is lost at 1-mm step). Asked J. Lerch to investigate whether SCU0 chamber is the same as the SCU1 chamber (i.e. does it have a 1-mm step). (Kathy Harkay)
- Analyzed SCU0 operational statistics for Jan 2013 to Oct 2014 and prepared several summary slides for E. Gluskin, per his request. (Kathy Harkay)

Linac Research and Development

- Made access into the linac tunnel during machine studies to continue pc gun alignment work. Had previously aligned beam through the 3 chambers in the laser room and replaced uv-only coated flats with double-wavelength coated mirrors to allow better green transmission. (Jeff Dooling)

- Could not find uv beam in tunnel, but did focus virtual cathode camera to allow for remote alignment. (Jeff Dooling)
- Attended PC Gun meeting Wednesday. (Jeff Dooling)

ITS Research and Development

- Worked with APS and RadiaBeam personnel on the THz experiment in the ITS. (Jeff Dooling)
- Conducted radiation measurements with beam directed in three different directions. With HP, verified radiation levels in the laser room were low enough to begin THz experiment. (Jeff Dooling)

Other Research and Development

- PhD Thesis: Read L. Boon's thesis and provided her with extensive comments. Reviewed her defense oral presentation and provided her with extensive notes. She was very well prepared and successfully defended her thesis on Nov 17. (Kathy Harkay)
- Cathode R&D: Replied to J. Bisognano about using the WIFEL SRF gun for possibly testing the IIT SC photocathode. It turns out the gun is not well suited for this application since the cathode is room temperature in the design. (Kathy Harkay)
- LDRD graphene: Submitted FY14 annual report, which was prepared by R. Gulotty and A. Sumant (CNM). (Kathy Harkay)

APS Machine Software

AOP Applications Software

- Worked with Gregory Fystro to automate VNC connections to various scopes. (Robert Soliday)
- Updated OAGapps by adding the PC Gun top level menu item per Pasky's request. (Robert Soliday)
- Completed work on the APSSstatus android application. (Robert Soliday)
- Created Google Play account for ASDAOP android applications and updated the uploaded the APSSstatus app. (Robert Soliday)
- Updated DataLoggerViewer to force it to check every sample interval to see if the PVs are being logged at a faster interval. It then plots those instead. (Robert Soliday)

Storage Ring

- Updated the list of active correctors and sqew quads in the SR up-down double sector machine procedure. (Robert Soliday)
- PSS systems in 21ID, 30ID, 33BM and 33ID have been upgraded and the code in PSSGlobalWatchdog has been changed to work with the upgraded systems. (Robert Soliday)
- Updated APSMpSRCheckFlags because of different flag PVs. (Robert Soliday)
- Added additional emails addresses to the notification list for PSS and FEEPS faults and warnings logged by the PSSGlobalWatchdog application. (Robert Soliday)

Injectors

- Updated the LTP startup machine procedure. It now turns the L3:AM1 on and sets it to 63 amps.

After the conditioning is complete, it turns the L3:AM1 off. (Robert Soliday)

- Updated fixedCurrent by changing the default value of the RG2 heater current at exit. (Robert Soliday)
- Updated APSMpBoosterPSSetNoPower by commenting out the resumption of bcontrol at the last step. (Robert Soliday)
- Looked into a PEM issue that turned out to be two different processes running at the same time both sending values to L3:AM1. (Robert Soliday)

General

- Updated FACL_Management so that the execution bit isn't altered on files. (Robert Soliday)
- Fixed a bug in sdds2spreadsheet when using stdout. (Robert Soliday)
- Helped Dooling with a complex sddsplot command. (Robert Soliday)
- Helped Sereno create a script to create an SDDS file filled with zeros. (Robert Soliday)
- Improved sddscontour's detection of xyz data that does not form a grid pattern. (Robert Soliday)
- Tested SDDS software with the new EPICS Base release candidate 3.15.1-rc1. (Robert Soliday)

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

- Updated PVs in various data loggers. (Robert Soliday)
- Got quote for an upgrade to the Lustre file system on the linux cluster. (Robert Soliday)
- Installed new RAID card in cluster. (Robert Soliday)
- Started logging the PVs on the weed cluster power strips. (Robert Soliday)
- Added a weed account for Alexei Blednykh (Robert Soliday)
- Updated the linux cluster to install the a security fix for the shellshocked bug. (Robert Soliday)
- Worked with Brian Pruitt to replace power connectors on two power strips in the linux cluster that were discolored from excess heat. (Robert Soliday)
- Identified how to build for OSX 10.8 and earlier and made special releases of Elegant and SDDS for these systems. (Robert Soliday)
- Ordered and installed, with the help of Brian Pruitt, 2 new power distribution units for the linux cluster to spread out the load. (Robert Soliday)
- Installed a new GdfidL version on the linux cluster. (Robert Soliday)

Publications, papers and report

- Prepared new figure for quench test with RTFB turned on for SCU0 journal paper. (Kathy Harkay)
- Submit Revision for AOP-TN-2014-049. (Yipeng Sun)

Web Site

- Changed our technical note submission software for ICMS to use the TLS security protocol because the SSLv3 protocol was disabled due to a vulnerability. (Robert Soliday)

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

- Attended EPICS classes. (Robert Soliday)
- Submitted my written input to the report of the Program Advisory Committee for the BNL Accelerator Test Facility experimental program. (Kathy Harkay)
- Participated in Physics of Photocathodes for Photoinjectors (P3) Workshop at LBNL (Nov 3-5). Presented a talk on how we computed the beam emittance from ARPES data for the MgO/Ag system (data from PNNL; published in PRL 112, 067601 (2014)). (Kathy Harkay)
- Participated in Diffraction Limited Storage Rings workshop organizing committee meetings. Organized speakers from IHEP and one from APS. Drafted the workshop goals and other info and provided slides to S. Streiffer (for presentation) and to P. Littlewood's office through D. Haeffner (for background). (Kathy Harkay)
- Organized a B&A seminar for S. Sasaki, Hiroshima U, for Nov 25. (Kathy Harkay)
- Attended DLSR 2014 workshop hold at APS (Aimin Xiao)

Safety and Required Training

- Took required training classes. (Robert Soliday)
- Finished ESH377, EM116 training. (Aimin Xiao)

Miscellaneous

- Helped Vladimir Litvinenko (BNL) with Elegant on OSX. (Robert Soliday)
- Helped Jose Ibanez (IAA-CSIC) with OAGTclTk on openSUSE linux. (Robert Soliday)
- Looked into SVN problems with our code repository. (Robert Soliday)
- Helped David Lopez (FNAL) with Elegant. (Robert Soliday)
- Helped Chen Xue (BioCAT) with compiling burt with SDDS support. (Robert Soliday)
- Helped Chris Hall (Colorado State) build Pelegant. (Robert Soliday)
- Helped Lenkszus with a question about Latex. (Robert Soliday)
- Helped Kensuke Homma (Hiroshima Univ.) with elegant on OSX. (Robert Soliday)
- Attended ASD coffee with lab director. (Louis Emery)
- Finished refereeing of NIM-A paper. (Louis Emery)
- Helped elegant user on bunch length and FTABLE simulation. (Aimin Xiao)