Weekly Report for 10/13/2014

Highlights

• Researched dual-dielectric coax parameters and developed a scan program that helps to locate a right parameters for the Kyrocera feedthrough design. Compared impedance and field results with CST simulation results. (Chih-Yuan Yao)

• Worked on prepare a bunch-by-bunch feedback filter generation tool for Ryan's stability simulation. (Chih-Yuan Yao)

APS Renewal and Upgrade

• Looked at MBA injection Lambertson magnet layout. (Aimin Xiao)

• Found a bug inside Touschek simulation, fixed. Start simulation with low coupling lattice. (Aimin Xiao)

• Draw plan on future MBA simulation study. (Aimin Xiao)

• Tuning of V6 lattice for better performance (lifetime and DA). (Yipeng Sun)

• MOGA optimization of V6 lattice, with octupoles. (Yipeng Sun)

• Began updating the impedance model to the version 6 lattice. Verified previous results. (Ryan Lindberg)

MCR Operations

Booster Operations

• Investigated ramp correction waveform errors during energy saving mode. Some of the filters updated after 2048-data points converion were not tested for energy saving mode and had to be rolled back. (Chih-Yuan Yao)

PAR Operations

• Investigated a PAR scope error message that prevent from using it with Rob Keane. (Chih-Yuan Yao)

Linac Operations

• Held a meeting with representatives of the SI Group and Operations to ask if the ACIS shutter between the laser room and the linac tunnel could be opened for low-power laser testing while in Authorized Access mode. (Jeff Dooling)

• Presently the shutter can only opened be in Beam Permit or Controlled Access. Wish to open the shutter when the pcgun laser is off. Submitted an Engineering Change Request to SI. (Jeff Dooling)

• With S. Shoaf (AES-CTL) verified that the ACIS shutter between the laser room and linac tunnel opens once the PV describing the condition of the LASER GV Test Mode was removed from the Boolean calculation. (Jeff Dooling)

• The PV has apparently been removed from the database. (Jeff Dooling)

• Having an issue triggering the pc gun laser; laser operates normally with LINAC BEAM triggering but in Test Stand RF mode. N. Arnold (AES-CS) commented that significant changes to RF timing had taken place recently. (Jeff Dooling)

• AES/SI Engineering Change Request - The L1:PC1:GV2, known as the PC Gun Gate Valve, cannot sustain beam generated by the new PC Gun. Therefor if the PC Gun can produce beam and

the PC Gun Gate Valve is closed, beam production must be disabled. Beam can be disabled by removing the ACIS enables to the L3 RF Amplifier and the L:LR:GV1 (Laser Gate Valve). (Stan Pasky)

• It is also desirable to run beam to a diagnostic when the PC Gun Gate Valve is closed. This is accomplished by steering the beam away from the valve using the L1:PC1:BM1. (Stan Pasky)

• woked with vacuum group to prepare 3G3 (that was installed at RG2 in previous run) for LLRF measurement at the vacuum lab. Discussed with colleagues and developed a plan for the LLRF measurements to be performed on 3G3 -- using troque value 0.4 and 0.6 inch lbs to tighten the cathode assembly to the back plate as there are some suspicion about possible movements in that area during operations. (Yin-e Sun)

• Took the opportunity of an open RG fun, worked with diagnostic group to measure dimensions of the RF gun that was not easily accessible before. (Yin-e Sun)

ITS Operations

• 3G1 Thermionic Gun was completed on 10/14/2014 (Stan Pasky)

• Previous thermal stress tests on similar guns have created a standard for testing refurbished thermionic rf guns. This type of testing provides us with evidence of whether the thermal stresses will translate into mechanical stresses that distort the gun cathode and or the gun back plane. This is noticeable by a scope signature of distortion observed in the reflected power waveform shape. (Stan Pasky)

• The stress test performed on the 3G1 gun consist of cycling the gun between zero and 300 mA where the time the gun is ?Off? and then back ?On? is approximately one hour. Doing so allows the gun body and internal components to cool. During the one hour cooling periods, the heater power is reduced to ~3 watts. (Stan Pasky)

• This gun is now ready to be used to support the RadiaBeam THz experiment followed by becoming a APS spare. (Stan Pasky)

Training

• Created a new PAR re-qualification test to meet the Operational two year requirement. This requal. is taken by ACO's and and crew member every two years. (Stan Pasky)

MCR Operations administrative/misc.

• Participated in the ISO -9000 audit for the MCR (Randy Flood)

• Participated in an installation design review for the Thz source (Randy Flood)

• Approved operators' time cards (Randy Flood)

• Approved vacation requests, set up coverage and updated the online schedule (Randy Flood)

• Approve CTLs, IT and Other work requests (Randy Flood)

• Review and clean the asdops mail account at least twice (Randy Flood)

• Check the status of open RMD's (Randy Flood)

APS Machine Studies

Storage Ring Studies

• Checked IEX PS Quasi control with M. Smith and B. Deriy. (Aimin Xiao)

• Performed high coupling optics operation study, analyzed data. Results are very encouraging. (Aimin Xiao)

• SR studies on momentum aperture measurement, chromaticity measurement to investigate lifetime change. (Yipeng Sun)

• Measured P0 feedback S2 drive amplifier power and determined that it is a problem. (Chih-Yuan Yao)

• Investigated a P0 feedback related beam injection fluctuation during topup. It was later traced to a feature in the P0 feedback screen that turned off P0 feedback function during topup inhibit period (30 ms). (Chih-Yuan Yao)

• Developed an experimentDesigner config that collects scope signal of topup beam history with FPGA tune data. (Chih-Yuan Yao)

Booster Studies

• Checked and tuned up booster beam during start up. Found that RF5 mod anode setpoint was low. (Chih-Yuan Yao)

• Investigated booster injection controllaw longitudinal data with Aditya Goel. (Chih-Yuan Yao)

PAR Studies

• Investigated PAR low effiiency problem during start up and tuned up beam. The problem appeared to be linac related. (Chih-Yuan Yao)

Linac Studies

• Took part in Injector Studies Planning meetingTuesday; particularly focusing on pcgun laser alignment work in the linac tunnel. Discussed alignment work further at the PC Gun meeting Wednesday. (Jeff Dooling)

• Creating the Injector Studies Schedule for November 5th - 11th. This schedule is intended to support machine studies request as well as verify machine performance like the bi-annual kicker validations. (Stan Pasky)

ITS Studies

• Oversee the ITS beamline configuration change to support the Radia Beam THz experiment sometime in November.. (Stan Pasky)

APS Machine Research and Development

Storage Ring Research and Development

• With help from J. Grimmer and crew, moved the FO BLM from the upstream ID to the downstream ID. (Jeff Dooling)

• During the same access with assistance from A. Brill (ASD-DIA), retrieved two unused Cerenkov detectors from the downstream end of ID4. These units will be used for spare parts. (Jeff Dooling)

• Wrote specs for new data conversion board that is part of the P0 feedback sample frequency

upgrade project for SLS. (Chih-Yuan Yao)

• Continue work on improvement of sr tune and chrom measurement program with Hairong and Louis. (Chih-Yuan Yao)

• Continued impedance analysis of S35 absorber. (Ryan Lindberg)

Booster Research and Development

• Investigated BM 1Hz stability (Chih-Yuan Yao)

Linac Research and Development

• Performed ASTRA simuatlions from cathode to the end of the dipole magnet. Derived dipole current needed to protect the gate valve upstream of L1AS1 during PC gun operations. Communicated the results with power group for the purchase of a transducer. Documented work. (Yin-e Sun)

ITS Research and Development

• Participated in THz/RadiaBeam conference call Monday and internal meeting Wednesday. (Jeff Dooling)

• looked into RadiaBeam THz alpha-magnet chamber design, communicated with RadiaBeam physicist to understand what's needed for tuning the beam for their THz experiment. (Yin-e Sun)

• Provided information on the beamline magnets positions. (Yin-e Sun)

• Measured quadrupoles to ensure that they are wired properly and labelled those to be installed for consistent quadrupole polarities along the beamline. (Yin-e Sun)

• Sat in on the installation readiness review for the THz experiment at the ITS. (Ryan Lindberg)

APS Machine Software

Storage Ring

• removed monopulse from SR BPM status management tool since there are no more monopulse BPM now. (Hairong Shang)

• continue working on SRGrixXBPMCalibration, tested step 1 to 3, implemented Step 4 for vertical beam scan and Step 5 for horizontal beam scan, ready for test. (Hairong Shang)

• replaced the enable/disable button in SRDispChromMeas for changing P0 feedback gain by a checkbutton to avoid confusion. (Hairong Shang)

• added 0.01mm to devicelimit for setting minimum gaps, and added gap lock status tests to gap scans, tested mobo gap scan and successfully collect xbpm data, installed gap scan scripts and PEM. (Hairong Shang)

• worked with CY on fixing the problem of VSA-MXA tune measurement that sometimes it could not catch the good data, through debugging and testing, we found that this problem was caused reducing P0feedback gain, there was no waiting after reducing P0 feedback gain, instead the data was collected right away. Moved the waiting time after scope setup to after reducing P0 feedback gain, and fixed the problem. (Hairong Shang)

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

• Administer the EPICS CVS repository to ensure current versions are installed and conflicts are

tracked down and eliminated. (Randy Flood)

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

• Served as judges for poster competitions, on Postdoctoral Research and Career Symposium. (Yipeng Sun)

• Attending BiWeekly PCGun meetings. (Stan Pasky)

• Interviewed a candidate the ASD postdoc search. (Yin-e Sun)

Miscellaneous

• Administer multiple mailing lists and the elegant forum (Randy Flood)