

Weekly Report for 03/24/2014

Highlights

- Attended 2014 April APS meeting. Presented poster on photocathode emittance using ARPES. Served on Career Panel by invitation from the APS Forum on Graduate Student Affairs. (Kathy Harkay)
- Participated in all-day physics discussions with Roberto Kersevan (CERN) relating to the CESR Synrad code and the benchmark with the Cornell synrad3d code. (Kathy Harkay)
- Successfully tested IRamp, a current reference ramp correction program, with Hairong Shang. The new program produced similar performance as the original VRamp, but has the potential of using non-linear ramps. (Chih-Yuan Yao)

APS Renewal and Upgrade

- Attended the MBA Vacuum Reivew. (Kathy Harkay)
- Participated in all-day physics discussions with Roberto Kersevan (CERN) relating to the CESR Synrad code and the benchmark with the Cornell synrad3d code, with several others in the MBA vacuum group (one day prior to the review). (Kathy Harkay)
- Discussed surface roughness with J. Carter and Ben Stillwell, correcting some assumptions. This is in connection with simulating the synchrotron radiation heating along a 6-mm ID chamber in the MBA ring. (Kathy Harkay)
- Prepared presentation for APSU pulsed injection CDR review. Had a dry run (Aimin Xiao)
- Using ELEGANT Genetic algorithm to minimize tune shift in APS upgrade lattice, to improve dyanmic aperture. (Yipeng Sun)
- MOGA optimization of APS upgrade lattice. (Yipeng Sun)
- Completed a 3.0mm-blade fast kicker simulation with Xiang Sun. The resut will be presented at the technical review of MBA upgrade. (Chih-Yuan Yao)
- Prepared slides for injection system review of MBA upgrade. (Chih-Yuan Yao)

MCR Operations

Storage Ring Operations

- Assisted the MCR with turning beam over to the Users after machine studies (Karen Schroeder)
- Responded to 31-ID's request for information regarding their steering error. (Karen Schroeder)
- Discussed putting back S1ID:P1 back into orbit correction with Sereno. Sent information on what we plan on doing next machine studies period to beamline personnel. Requested and received information on gap position/ID in use which appears to be compatible with the plan. (Karen Schroeder)

Procedures

- Updated the PAR requalification test. (Stan Pasky)

MCR Operations administrative/misc.

- Prepared the Beamline Downtime report and either gave to Flood for presentation or presented myself at OPS Directorate (Karen Schroeder)

- Approved non-RSS SR work requests and discussed the LOTO requirements with several individuals. (Karen Schroeder)

APS Machine Studies

Storage Ring Studies

- Worked with F. Lenkszus, R. Laird, and K. Harkay to understand timing of the IK5 kicker system with respect to the MPS trigger. Found a 0.348 ms delay which would explain the absence of effect of IK5 with MPS trigger event. (Jeff Dooling)
- Will try to test this new timing in an upcoming Machine Studies. (Jeff Dooling)
- Setup RHB lattice; Perform orbit switch from 324 to RHB. (Aimin Xiao)
- Performed detail Touschek lifetime measurement with tune knob, results will be compared with simulation. (Aimin Xiao)
- Performed gap scans to update ID Gap Feedforward tables and restored BPMs (Karen Schroeder)
- Took orbit response measurement and tunes to track the difference in quadrupoles after conditioning. (Karen Schroeder)
- Discussed Diagnostics blade re-alignment procedure with Sereno. Provided information and suggestions. (Karen Schroeder)
- Assisted Louis in his SR injection study with pinger. (Chih-Yuan Yao)

Linac Studies

- Placed the RG2 kicker timing at its optimum trigger point for beam operations. (Stan Pasky)
- Updated pv's in PEMtool. (Stan Pasky)

ITS Studies

- Maintaining Schedule (Stan Pasky)

APS Machine Research and Development

Storage Ring Research and Development

- Met with R. Kersevans on Monday prior to the MBA vacuum review the Tuesday. Discussed MOLFLOW and how it can be incorporated to try and explain gas bremsstrahlung power dependence with beam current. (Jeff Dooling)
- Also discussed the idea of using 4.7 eV photons (Nd:Glass 4th harmonic) to measure gas desorption at low photon energies. (Jeff Dooling)
- Provides design parameters and ordered parts for S31 new stripline with Xiang Sun and Leonard Morrison, which will be installed in Dec/Jan shutdown. (Chih-Yuan Yao)
- Upgraded MXA signal analyzer of SR tune measurement system to Win7.0/SSD. And worked with Hairong and Agilent reps to develop remote programs for the MXA. (Chih-Yuan Yao)

Booster Research and Development

- Made a plan with Nick Sereno and Diag group to upgrade half of the booster BPMs to BSP-100,

which will support orbit correction and turn-by-turn history. (Chih-Yuan Yao)

Linac Research and Development

- Found interference while trying to insert the laser vacuum mirror assembly into the ITS beamline laser port cube. (Jeff Dooling)
- Operated pcgun laser at 10 and 15 Hz. (Jeff Dooling)
- Worked on virtual cathode camera; aligned the VC beam to see an image directly on the VC camera CCD. (Jeff Dooling)

Other Research and Development

- Cathode R&D: Presented LDRD status at a special ASD Management Meeting, using Chunxi Wang's slides on the technical aspect. Added budget status. (Kathy Harkay)
- Cathode R&D: Discussed LDRD status with vacuum tech J. Zientek and grad student R. Gulotty. (Kathy Harkay)

APS Machine Software

Storage Ring

- Wrote a script to make a waterfall plot of intensity vs bunch vs turn number for the SCU0 beam loss monitor signals. Gave J. Dooling some plots. (Kathy Harkay)
- improved FPGABpmTurnHistor: 1) added 2 Hz continuous trigger, 2) added option for plotting FFT data, 3) added checking if the output files are empty to make sure that the data is being written to output file. 4) now it creates the output directory if it does not exist instead of bump with errors. (Hairong Shang)
- added changing ID29 to user mode in switching to user mode pem since the global switching command did not work for ID29. (Hairong Shang)

Injectors

- converting compute-Booster-current RMS script into C, preparing for importing the code into IOC, not done yet. (Hairong Shang)
- removed switching link for booster injection control law for IRamp since it uses the VRamp injection control law now, and added bringing up the auto ramp correction GUI to APSPmpSwitchToIRamp and APSPmpSwitchToVRamp pem. (Hairong Shang)
- added "VRamp" or "IRamp" to runcontrol description when running booster ramp correction with VRamp or IRamp. (Hairong Shang)
- continue Booster IRamp Studies. (Hairong Shang)

General

- Went through the SDDS code and updated and simplified the makefiles and ensured that everything built properly on all the systems that it should, including vxWorks. (Robert Soliday)
- studied the MXA scope documentation and query commands for tune measurement, however, most of them did not work now after the operating system of scope was upgraded to windows 7. Technical support will come onsite next week to look into the problem (Hairong Shang)

- added MCS gnome menu per Stan Pasky's request. (Hairong Shang)

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

- Copied all of Chae's files from the cluster to an external drive for him. (Robert Soliday)
- Implemented a workaround for a DNS problem that was causing long timeouts for ssh on the cluster. (Robert Soliday)

Publications, papers and report

- 90 pm Alternate H7BA Lattice towards off-axis accumulation with 3-section Longitudinal Gradient Dipoles, AOP-TN-2014-017 (Yipeng Sun)
- Yipeng Sun (March 28, 2014) (Yipeng Sun)

Web Site

- Maintain NGSR wiki site. (Yipeng Sun)
- Fixed the APS-U automated document uploads to ICMS. (Robert Soliday)
- Installed various Linux OSes inside of VirtualBox on my desktop computer. (Robert Soliday)
- Ensured all the Linux RPMs on our web site were up to date. (Robert Soliday)

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

- Started to review a proposal submitted to DOE/BES on photocathode R&D. (Kathy Harkay)
- Reviewed a proposal submitted to the ATF and recommended approval, serving on BNL ATF Program Advisory Committee. (Kathy Harkay)
- Attended shutdown planning meeting (Karen Schroeder)
- Attended installation readiness review for APS-U modified front ends at 27-ID and 35-ID. Discussed the effect a delay in tunnel closure would have if the shutdown work could not be completed in time. (Karen Schroeder)
- Peer reviewed a paper on PLS bunch-by-bunch feedback system for TNS. (Chih-Yuan Yao)
- Attended a file server design review meeting. (Robert Soliday)

Safety and Required Training

- Took Counterintelligence, Classification, Export Control and Security Refresher (Karen Schroeder)

Miscellaneous

- Took 2 days vacation off. (Aimin Xiao)
- Discussed the plans to remove the middle stand in the S35-ID straight with Merritt, Grimmer and Sereno. (Karen Schroeder)
- Locating miscellaneous equipment for the "Property Tracking System" (Inventory) (Stan Pasky)