Weekly Report for 08/10/2015

APS Renewal and Upgrade

• Running simulations to determine whether higher pressure or larger beam emittance (e.g. during commissioning) could lead to ion instability in the APS-U. (Joe Calvey)

• Created input files for the PAR for the CERN FASTION code. Preliminary results show emittance growth and tune spread. (Joe Calvey)

• MOGA optimization of alternate upgrade lattices with high beta insertion at injection septum. (Yipeng Sun)

• Completed simulation of HV feedthrough simulation of two design proposals and communicated to the vendor. (Chih-Yuan Yao)

• Worked with Frank Westferro and Leonard Morrison on refining fast kicker design, especially the blade interface. (Chih-Yuan Yao)

• Investitated LTP dipole 1Hz operation issues. (Chih-Yuan Yao)

MCR Operations

Storage Ring Operations

• Investigated a SR beam loss that is believed to relate to P0 feedback. Checked timing and restored system. (Chih-Yuan Yao)

Linac Operations

• Received new Picomotor MultiAxis Driver; working with S. Shoaf to verify operation of the driver. (Jeff Dooling)

• Checked operation of the low-power beam alignment procedure with G. Markovich; must wait until linac tunnel is in Authorized Access to fully test. (Jeff Dooling)

• Wrote a script to calculate UV beam properties (pulsewidth and energy) based on IR input. (Jeff Dooling)

Training

• Attended EEO/AA training (Randy Flood)

• Attended training on new FMS request system (Randy Flood)

MCR Operations administrative/misc.

• 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)

APS Machine Studies

Storage Ring Studies

• Measured lifetime as a function of chromaticity. (Yipeng Sun)

• Assisted Louis SR beam depoliration study. (Chih-Yuan Yao)

• Presented results of abort kicker study conducted August 4 with K. Harkay and V. Sajaev. (Jeff Dooling)

PAR Studies

• Measured beam size along the PAR cycle at different bunch charge. Also measured bunch length using a photodiode. Attempted to mitigate blowup by driving away ions using bunch shaking. (Joe Calvey)

• Performed PAR ion effect and store mode studies with Kathy and Joe. Achieved a stored beam charge of ~25 nC. (Chih-Yuan Yao)

APS Machine Research and Development

Booster Research and Development

• Tested a single stripline configuration for booster tune measurement so the bunch cleaning vertical stripline can be removed. (Chih-Yuan Yao)

• Reviewed booster corrector ramps and provided the info to Al for his AFG upgrade study. (Chih-Yuan Yao)

PAR Research and Development

• Discussed PAR vacuum simulations with J. Carter. (Joe Calvey)

• Tested new fast photo diode based bunch length measurement for the PAR. Got much better signal than previous result. Tried two different fitting algorithm to derive bunch sigma but did not achieve the desired improvement. (Chih-Yuan Yao)

Linac Research and Development

• Presented laser status at the PIP meeting showing that the recently-align regen is now generating IR pulsewidths of 1.5 ps, FWHM. The request was made to lengthen the UV pulse to 1.5 ps, rms. (Jeff Dooling)

• Using the SSA, measured pw versus compressor path length to determine where to set the compressor HRR. (Jeff Dooling)

• PW vs. compressor path length was found to closely follow a hyperbolic curve as would be expected for the focus of a Gaussian beam near a waist. (Jeff Dooling)

APS Machine Software

AOP Applications Software

• Make a GUI tool with Hairong to run booster VSA with socket so it won't hang up frequently. (Chih-Yuan Yao)

Storage Ring

• tested ID gap close/open pems with SCU1 on and off, worked fine. However, Karen found that SCU1 was turned on when doing full gap scan for ID01us. Ran single gap scan of ID01us with Karen, however, it worked fine. Will monitor Karen's gap scan for ID01us on next machine study. (Hairong Shang)

• per Aimin's request, added turn off SCU1 in open ID gaps pem and go to 60mm gap pem. (Hairong Shang)

Injectors

- improved, tested and installed boosterVSAControl, added Repeat on/off button and "Save Data" button to save the waveform into a file. (Hairong Shang)

- did booster DC ramp study with CY, scanned booster orbit and improved a lot, the current waveform was much more stable after B2C8H scan. (Hairong Shang)

- wrote ramploadnew for loading the booster corrector ramp table into Shifu's new IOCs, tested and worked fine. Modified related booster corrector ramp loading application to use ramploadnew, preparing for Booster corrector new AFG commissioning. (Hairong Shang)

- per CY's request, changed S:P0FB:WFAve[XY] to the average value of the waveform instead of rms in measuring P0 Feedback tune. (Hairong Shang)

General

- continue testing sdds2dfft with bigger matrices, the results agree with matlab. And fixed bug for inverse 2dfft. (Hairong Shang)

- For par bunch length measurement, created input file, variable script and measurment script for sddsoptimize to fit the gaussian input signal through comparing the convolution of gaussian input and impulse response with the signal response (Varying the gaussian sigma, timeshift and impulse RC) (Hairong Shang)

- added sorting for ulong and ushort data type to sddssort. (Hairong Shang)

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

- Fixed a data glitch in the SR fill history tool (Randy Flood)

- Administer the EPICS CVS repository to ensure current versions are installed and conflicts are tracked down and eliminated. (Randy Flood)

Publications, papers and report

- Reviewed a paper for PRST-?AB. (Yipeng Sun)

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

- Participated in a meeting about waterproofing the Booster tunnel (Randy Flood)

- Attend shutdown planning meetings (Randy Flood)

- Presented stats and operational issues to Ops Directorate meeting (Randy Flood)

- Present progress report of high charge injector studies at upgrade physics meeting. (Chih-Yuan Yao)

Safety and Required Training

- Monitored annual evacuation drill (Randy Flood)

- ESH700 Radiological Worker Training Level I. (Yipeng Sun)

Miscellaneous

- Ordered and received a lab laptop and crypto-card. (Joe Calvey)

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