Weekly Report for 05/04/2015

APS Renewal and Upgrade

• Added the option to ping or shake the beam to L. Wang's ion code. The simulation shows that a substatial amount of ions can be lost during the shaking, and that it can lead to coupled oscillations between the beam and ions that persist for a long time. (Joe Calvey)

• Obtained a strong-strong code (FASTION) developed at CERN and modified at Cornell, for modeling incoherent ion effects. (Joe Calvey)

• Read a paper by P. Tavares about detecting bremsstrahlung radiation due to ions with a gamma-ray counter. It also discusses multiple ionization, which is usually ignored, but could result in fewer ions being trapped. Working on an anlytical model of this effect. (Joe Calvey)

• Discussed plans for the Injector Working Group with K. Harkay and C.Y. Yao. (Joe Calvey)

• Helped M. Sangroula get set up to run Microwave Studio. Discussed impedance modeling issues with him, CY Yao, R. Lindberg, and X. Sun. (Joe Calvey)

• Spent first week in Richmond, VA attending the IPAC conference. (Ryan Lindberg)

• Presented 3 posters, attended many talks and poster sessions, and discussed physics. (Ryan Lindberg)

• Continued on Injection simulation. (Aimin Xiao)

• Written a report in support of Injector Upgrade Working Group. This report cover items for the linac. (Stan Pasky)

MCR Operations

Storage Ring Operations

• Tested FO cable and detectors for fast BLMs installed in SCU1 with A. Brill. (Jeff Dooling)

Procedures

• Created a L3 RF Conditioning Guide for operators. This provides step by step conditioning instructions for L3 for the purpose of maintaining readiness for K2 down operations. (Stan Pasky)

• Created a Linac RF conditioning guide for L4 and L5 high power rf conditioning during the Injector Studies Periods. (Stan Pasky)

• ACIS RF Area Tunnel Search (APS_1192811) (Randy Flood)

• RF Test Stand ACIS Operation (APS_1192560) (Randy Flood)

• Operation of the Linac/PAR ACIS (APS_1192894) (Randy Flood)

• Operation of the Injector Test Stand ACIS (APS_1191879) (Randy Flood)

• ACIS Controlled Access (APS_1192895) (Randy Flood)

MCR Operations administrative/misc.

• Coordinated replacement of MCR work stations (Randy Flood)

• Worked on AOP restructuring plans (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)

APS Machine Studies

Linac Studies

• RG2 studies. (Stan Pasky)

• The outcome was the creation of the gun optimization procedure. This procedure has the ability to adjust gun line corrector and quads to obtain highest charge at the bunch compressor current monitor automatically, followed by beam matching for best transport to the PAR. Should be a useful tool at startup for both guns. (Stan Pasky)

APS Machine Research and Development

Storage Ring Research and Development

• Created an input file for the current APS for L. Wang's ion code. In 324 bunch mode, the simulation predicts the beam should be unstable. (Joe Calvey)

• Investigating the possibility of beam blowup during an ID chamber impedance measurement using elegant. (Joe Calvey)

• Started setting up elegant simulations of the APS ring including transverse feedback. (Ryan Lindberg)

Booster Research and Development

• Continued simulations of the booster including impedance. (Ryan Lindberg)

Linac Research and Development

• Wednesday and Thursday, traveled to Fermilab with spare ("new") pc gun regen laser pump diodes for testing at Jihao Ruan's laboratory. (Jeff Dooling)

• Removed pump diodes ("used") from pump heads in preparation for testing at Fermilab. (Jeff Dooling)

• Noticed a greenish-blue material covering the surface of the laser rods. (Jeff Dooling)

APS Machine Software

Storage Ring

• added S28 bpms to holdVCPosition per Diag request, ready for test. (Hairong Shang)

Injectors

• Created a multiple PEMtool for the PCGun. (Stan Pasky)

• APSMpPG1_SwitchToL3Down - This is a Linac Waveguide Switch procedure. This procedure will first attenuate L3 rf power followed by taking its modulator to ready-to-pulse. Then it will position S-band switch 4, to position 2 restoring (Mode 0)or K3 Down. See Linac Waveguide Switches MEDM Display for position chart and rack indication. MEDM display (ACIS_LP_WG.adl) for details. (Stan Pasky)

• APSMpPG1_SwitchToNormalModeForBeamlineConditioning - This is a Linac Waveguide Switch procedure only for (Mode 4) or K3-->Normal mode for beamline conditioning operation. This procedure will first attenuate L3 rf power followed by taking its modulator to ready-to-pulse. Then it will position S-band switches 4 to position 1. See Linac Waveguide Switches MEDM display for position chart and rack indication. (ACIS_LP_WG.adl) for details. (Stan Pasky)

• PCGun_StartupWithPS - This procedure calls PCGUN_Startup and APSMpLStartUpPS. This procedure will shutdown the RFGUN, startup the PCGUN, and condition the needed power supplies in the linac. You may also want to run the LEUTL_SetupForUndulatorHallStudies procedure to condition the power supplies beyond the linac. (Stan Pasky)

• tested PC gun laser cleaning test with M3 mirrow, script passed test. Will replace it with M1 mirror for real laser cleaning. (Hairong Shang)

General

• wirte elog for booster ramp time shift delay study. (Hairong Shang)

• working on sddsfresnel2d, finished rectangular aperture implementation, ready for test. (Hairong Shang)

• debugged three-screen-emittance measurement script, which does not work in some cases -- have not found the problem yet. will continue to debug. (Hairong Shang)

• started working on measureLinacEmittance to add correctors per CY's request. (Hairong Shang)

• searched and studied 2d-convolution, looking for a fast method for 2d-convolution, plan to implement 2d convolution. (Hairong Shang)

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

• Started building EPICS 3.14.12.5 and associated libraries (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

• Preparing three papers for IPAC2015. (Yipeng Sun)

• Worked on draft of article discussing fast BLM calibration for ICFA-DBN. (Jeff Dooling)

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

• Attended IPAC15 conference. Presented 3 posters. (Aimin Xiao)

• Attend IPAC2015. (Yipeng Sun)

• Present three posters for IPAC2015. (Yipeng Sun)

• Attended state of the lab and ALD announcements (Randy Flood)

• Attended PAS management meeting (Randy Flood)

• User beam stability meeting (Randy Flood)

• Met with new Grainger account manager (Randy Flood)

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

Safety and Required Training

- Completed - (Stan Pasky)
- ESH108400 Building/Facilities Safety Orientation - Building 400 (Stan Pasky)
- ESH108411 Building/Facilities Safety Orientation - Building 411 (Stan Pasky)