

STATUS OF THE NSLS-II BOOSTER CONTROL SYSTEM

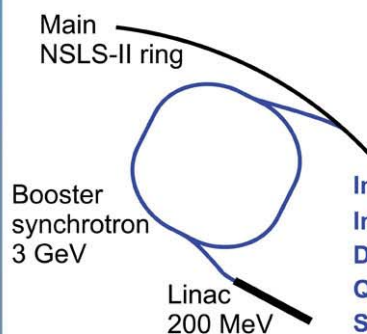


S. Karnaev, P. Cheblakov, A. Derbenev, R. Kadyrov,
S. Serednyakov, E. Simonov, BINP, Russia



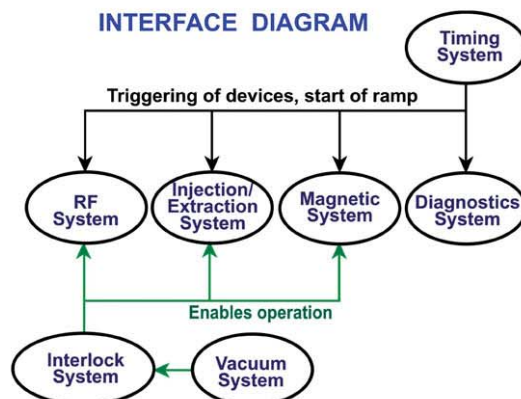
M. Davidsaver, J. De Long,
BNL, USA

BOOSTER PARAMETERS



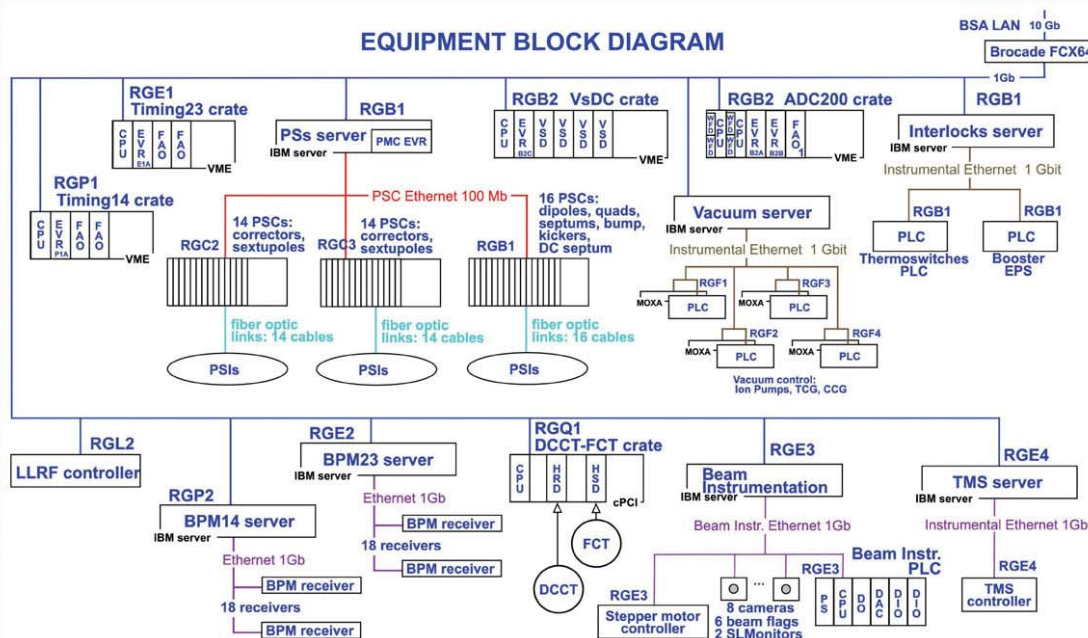
Cycle frequency: 1 / 2 Hz
Circumference: 158.4 m
(264 RF separatrices)
Current: 20 mA (100 bunches)
Bunch number: 1 / 80 - 150
Acceleration time: 300 msec
Injection: single / double in 100 msec
Inj/Extr pulsed power supplies: 9
Dipoles: combine functions, 3 families
Quadrupoles: 3 families
Sextupoles: 8 + 8
Correctors: 20 X-, 16 Y-direction

CONTROL SYSTEM PARTS



CONTROL SYSTEM COMPOSITION

EQUIPMENT BLOCK DIAGRAM



RG*# - rack group *, rack #

IBM server - IBM System x3250 M3
PLC - Allen-Bradley PLC chassis
VME CPU - MVME3100 controller
PLC CPU - 1769-L32E controller

PSC - Power Supply Controller
PSI - Power Supply Interface
BPM - Beam Position Monitor
DCCT - DC Current Transformer
FCT - Fast Current Transformer
TMS - Tunes Measurement System

EVR - MRF EVR230RF
FAO - MRF fan-out
VSD - Volt-second digitizer
WFD - 200 MHz waveform digitizer
HRD - high-resolution 24-bit digitizer
HSD - high-speed 8Gs digitizer

SOFTWARE

SOFTWARE ARCHITECTURE

Applications Level

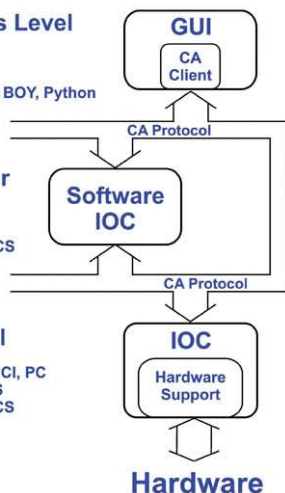
HW platform: PC
OS: Linux
SW platform: CSS BOY, Python

Middle Layer

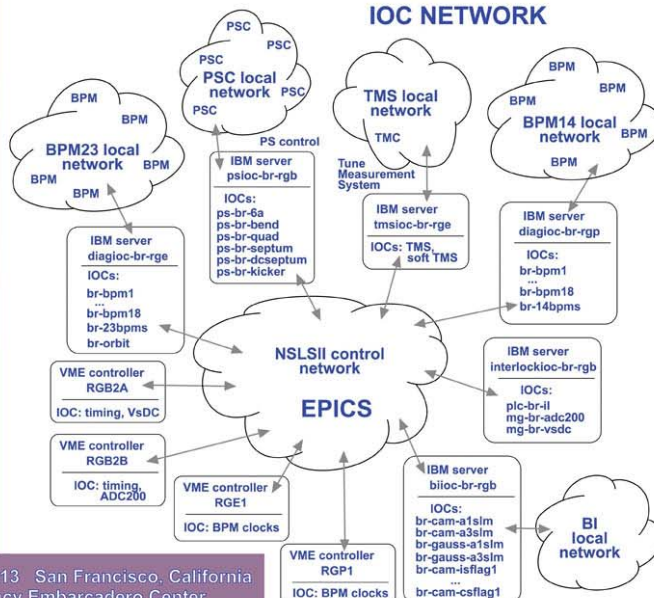
HW platform: PC
OS: Linux
SW platform: EPICS

Server Level

Platform: VME, cPCI, PC
OS: Linux, RTEMS
SW platform: EPICS



IOC NETWORK



SET OF APPLICATIONS

CSS screens:

PSs engineering control
TMS engineering
BPMs engineering
Vacuum monitoring and control
Interlock monitors
Flags observation and control
Beam current monitor
Tunes monitor
Beam orbit observation
Beam stacking monitor
Booster PSs monitor
Booster RF monitor and control

Python scripts:

PSs ramp control
Save/Restore
Live compare
Auto tuning



October 6-11, 2013 San Francisco, California
The Hyatt Regency Embarcadero Center
e-mail: skarnaev@gmail.com