Control System High-Level Applications

—Miscellaneous—

- “Current Monitor Offsets”
  Measures and sets the LTP, PAR, PTB, and BTS current monitor offsets.
- “Machine workspace setup”
  Allows setting up MEDM screens for operating different machines or systems.
- “Timing resets”
  Provides various timing resets for pulsed magnets and the P0 counter.
- “Tcl Knobs”
  Sets up Tcl/Tk composite knob interface based on pre-existing SDDS knobconfig files.
- “2D Slider Panel” ***NEW!***
  Allows creating and using 2 dimensional slider controls.

Control System High-Level Applications

—Miscellaneous—

- “TK Probe”
  An application to monitor and get information on process variables. Works differently from and has some information that is not available in the Epics Probe.
- “PV Oscillator”
  Allows oscillating the values of a number of process variables using a sine wave or triangle wave.
- “PV Ramper”
  Allows ramping the values of a number of process variables using a line or exponential function.
- “One variable feedback”
  Allows setting up and running a feedback loop with one actuator and one readback.

Control System High-Level Applications

—Miscellaneous—

- “ADT Filter and Run”
  Allows prefiltering ADT files and then running ADT. For example, you might want to view the SR orbit only at the B:P5 BPMs.
- “PV Search”
  Allows searching the PV database for PV names matching a specific pattern. Identifies which IOC a PV is in.
- “PV Monitor”
  Allows monitoring PV values and comparing to limits supplied by the user. Can take user-specified actions when values exceed limits.

Control System High-Level Applications

—Data Review—

- “Alarm logger review”
  A utility to review alarm logger data. This data is a 90-day record of many alarm signals throughout the facility. May also be used with your own alarm data (collected with sddsalarmlog).
- “Alarm probability analysis”
  Analyzes alarm logs to compute probability of seeing a given alarm rate. Helps you decide if an alarm rate is really cause for alarm (pun intended).
- “Search alarm review”
  A utility to search the alarm log input files for PV names. Helps you determine if and where a PV is being alarm logged.

Control System High-Level Applications

—Data Review—

- "Monitor data review"
  The primary interface to the time-series data logs. Data is organized in groups based on system and subsystem. "Preset plots" are available as well as custom plots and data exporting.
- "Extended monitor data review" ***NEW!***
  Somewhat experimental interface to time-series data logs. This tools allows reviewing data from multiple loggers, unlike the previous application.
- "Search data review"
  A utility to search the data logger input files for PV names. Helps you determine if and where a PV is being logged. Also lets you find a readback name for given PV name ("control name").

Control System High-Level Applications

—Data Review—

- “Glitch data review”
  Glitch logs are circular buffer loggers that only write data to disk when something noteworthy (e.g., a beam dump) occurs. This utility allows viewing and analyzing data from the glitch logs.
- “OPI data review”
  A utility to review load and performance data for OPIs (operator interfaces, i.e., workstations).
- “Injector Beam Time Review”
  Computes beam time in various parts of the injector.

Control System High-Level Applications

—SR Data Review—

- “SR orbit review”
  A utility to review orbit data from the logs of average orbit readbacks. Can show you the history of the orbit and orbit changes, including changes to setpoints and offsets, a movie or in terms of statistics.

- “SR orbit comparisons”
  A utility to compare the orbit during two different time intervals. Also has offsets and setpoints. Used for “my orbit now isn’t the same as it was yesterday” type of complaints.

- “SR Xray bpm review”
  A utility to review and compare X-ray BPM data from the logs of IDs and BMs. Used primarily at startup to ensure that the orbit is reasonably close to the user orbit from the last run.

Control System High-Level Applications

—SR Data Review—

- "SR Fill-to-Fill Slopes at IDs"
  A badly-named application to review data relevant to beam position at insertion devices. Allows plotting rf and x-ray BPM data, correctors, corrector changes, and implied orbit changes. Both correlation and time plots are provided.
- "Absorber water review"
  A utility to review and process data from the SR absorber water data logger. Computes temperature rise.
- "Process water review"
  A utility to review and process data from the process water data logger. Largely useless due to poor quality data.

Control System High-Level Applications

—SR Data Review—

- “SR rf Review”
  A utility to review and monitor data from storage ring rf systems. Used primarily to review OAG data logs with many customized plots. These plots are also available from the “Monitor Data Review” tool

- “SR rf 38/40 controllaw data review”
  “SR rf 36/37 controllaw data review”
  A pair of utilities to review data from the SR rf power controllaws. Can be used to post-mortem rf problems and verify that controllaw didn’t cause them.

- “SR MPS Dump Review”
  A utility to select and review data from “MPS” (Machine Protection System) dumps. Actually provides data for virtually any beam loss of more than 0.1mA.

Control System High-Level Applications

—SR Data Review—

- “HLS Data Review”
  A utility for reviewing and analyzing hydrostatic level system data. Includes averaging, Fourier analysis, and baseline subtraction for temperature and level.
- “Shutter State Query”
  A utility for determining which shutters were open during a specified time.
- “SR Vacuum/Lifetime Trending”
  A utility for displaying SR vacuum, current, and lifetime data as time or correlation plots.

Control System High-Level Applications

—Storage Ring—

- “Bunch Train”
  The storage ring bunch train injection script. Allows setting up bunch patterns for fills and also provides control of top-up injection.
- “Fill History”
  Allows reviewing, modifying, and analyzing fill history data. Computes operational statistics.
- “BTS controllaw”
  Uses sddscontrollaw for BTS trajectory control.

Control System High-Level Applications

—Storage Ring—

- “SR vertical emittance controllaw”
  Uses sddscontrollaw to control the vertical emittance via the vertical dispersion.
  Presently for studies only and incompatible with SR emittance ratio control.

- “SR emittance ratio controllaw”
  Uses sddscontrollaw to control the vertical emittance via the linear coupling.
  Presently for studies only and incompatible with SR vertical emittance control.

Control System High-Level Applications

—Storage Ring—

- “SR pem”
  The Procedure Execution Manager manager for the storage ring. Includes steering, injection tuneup, first-turn steering, septum feedforward, up/down/ condition sectors, etc.
- “Current and Lifetime History”
  A utility for reviewing storage ring current, lifetime, and mA-hours data. Used for making plots for Operations log.
- “Tune measurement”
  A utility to help with tune measurement. Archives tune data and allows review of tune history.

Control System High-Level Applications

—Storage Ring—

- “SR Scope Save/Restore”
  Provides save/restore waveforms and scope setup for the SR HP54542 scope.
- “SR Scope Waveform Archiving”
  SR HP54542 scope history creation and review utility. Allows collection of archival data for fill pattern, pulsed magnets, and other systems. Pulsed magnet data may be normalized to the setpoint and overlayed to show changes.
- “Fill predictor”
  A little application for predicting how long a fill will last until a certain current is reached.

Control System High-Level Applications

—Storage Ring—

- “Radiation monitor watchdog”
  An instance of PV monitor that looks at radiation monitors and disables pulsed magnets when radiation levels approach a trip. This is an operational convenience and is not necessary for personnel protection.

Control System High-Level Applications

—SR Knobs—

- “SR Harmonic Orbit Knobs”
  Orbit harmonics are likely shapes for orbit distortions. If you have trouble injecting, particularly at startup, this is something to try.
- “SR Tune Knobs”
  Adjustment of x and y tunes, as well as tune separation.
- “SR Bump Knobs”
  A knob screen for SR ID bumps. This application is superseeded by the PEM procedure for ID steering.
- “SR Chromaticity Knobs”
  Adjustment of x and y chromaticities. There is generally a lot of hyteresis here.

Control System High-Level Applications

—SR Knobs—

- “SR Skew Knobs”
  These skew quad harmonic knobs can be used for manual adjustment of coupling and vertical dispersion.
- “SR Quad Harmonic Knobs”
  These quadrupole harmonic knobs can be used for blind manual adjustment of beta-beats and dispersion errors.
- “SR BPM Timing Knobs”
  A knob screen for SR BPM timing. Sometimes useful if all the BPMs stop triggering due to a timing shift.

Control System High-Level Applications

—SR Physics—

- “ID Gap Scan”
  Performs ID gap scan measurements and data review. Permits measurement of the first and second field integrals of a device.
- “Aperture Scan”
  Allows one to probe for the physical aperture in an ID straight by moving the beam to the positive and negative side until the beam is lost.
- “Energy Aperture from Frequency Scan”
  Measures the energy aperture from a scan of the rf frequency.
- “Energy Aperture from Voltage Scan”
  Measures the energy aperture from a scan of the rf voltage setpoints.

Control System High-Level Applications

—SR Physics—

- “SR Dynamic Aperture”
  Scansa kicker strength while collecting BPM histories. Horizontal dynamic aperture may be deduced from the data this script collects.
- “Longitudinal Beam Spectrum”
  Assists in taking longitudinal beam motion spectrum data from the HP VSA. Sets up the VSA and provides convenience controls.
- “Beta Function Measurement”
  Makes measurements of beta functions in the storage ring at individual quadrupoles.
- “Family Beta Function Measurement”
  Makes measurements of average beta functions for quadrupole families.

Control System High-Level Applications

—SR Physics—

- “Chromaticity/Dispersion Measurement”
  Makes measurements of chromaticity and dispersion in the storage ring. Computes first- and second-order dispersion in x and y planes.
- “Horizontal Dispersion Correction”
  “Vertical Dispersion Correction”
  Allow correcting the horizontal or vertical dispersion. Uses data from chromaticity/dispersion measurement.

Control System High-Level Applications

—SR Physics—

- “Vertical Beta Function Correction”
  Allows correcting the vertical beta function measured at quadrupoles using quadrupole settings. Uses data from individual quadrupole beta function measurements.
- “Sextupole beam offset”
  Allows measuring the horizontal position of the beam in a sextupole. Uses HP VSA for tune measurement while setting sextupoles to 0 or maximum value.
- “Individual Sextupole Chromaticity”
  Measures the chromaticity due to individual sextupoles. Useful for checking the strength and polarity of the sextupoles if you have doubts.

Control System High-Level Applications

—SR Physics—

- “Lifetime data collection”
  Allows collecting various data related to lifetime measurements. Provides very precise lifetime measurements in a minimum (although not necessarily short) time.
- “Acquire ADC750 data”
  Allows acquiring data from the adc750 fast digitizer. This data can show bunch pattern or multibunch instabilities, depending on how the ADC750 is configured.
- “Generate setpoints”
  Creates snapshot and standardization files from an *elegant* parameter file. Used to set up the SR in an experimental lattice.

Control System High-Level Applications

—SR Physics—

- “Generate KnL values”
  Converts an SCR file to a file of KnL values. These values give the geometric strength of the quadrupoles and sextupoles, and can be used in modeling.
- “Make Standardization File”
  Converts an SCR file to a standardization file. Also allows the installation of the standardization file as a default. *Should be used by the SR manager or CO only.*
- “Beta Function Interpolator”
  Interpolates the beta functions at light sources and S2/S3 sextupoles using data processed from the quadrupole beta function measurement. Used for setting up the synchrotron light monitor for emittance measurement.

Control System High-Level Applications

—SR Power Supplies—

- "DC Power Supply Control"
  A utility for controlling storage-ring DC power supply convertors. *Replaced by the SR PEM.*
- "Raw Power Supply Control"
  A utility for controlling storage-ring raw power supplies. *Replaced in most applications by the SR PEM.*
- "Thick septum feedback"
  Uses sddscontrollaw to perform feedback on S:IS1 to keep the readback current stabilized. *Not presently in use.*
- "Power Supply Statistics"
  Used to collect and review statistics for DC power supply convertors. Can sometimes pinpoint a supply that is not regulating well or a magnet with an odd resistance value.

Control System High-Level Applications

—SR Power Supplies—

- “SR Power Supply Calibration”
  Used to calibrate DC PS converters, in the sense of making the CurrentAI’s match the CurrentAO’s. Also allows review of archived calibration data. Can display the nonlinearity of a supplies response to its setpoint.
- “Global Dynamic Corrector Checkout”
  “Low-level Dynamic Corrector Checkout”
  Allow checking out correctors for the realtime feedback system.
- “SR Corrector Punch Down”
  Punching down correctors means reducing them to zero setpoint. This application permits selecting which correctors to punch down and how to do it.

Control System High-Level Applications

—SR Power Supplies—

- “DAC to CurrentAO comparison”
  A utility to monitor SR power supplies for deviation of DACs from setpoints.
- “Analyze Conditioning Configuration”
  Analyzes the conditioning configuration in the IOCs for different PS families. Can help to diagnose lattice and orbit problems after supplies have been brought up.
- “Histogram Quad and Sext Data”
  A utility to collect and histogram current, voltage, and temperature data for quadrupoles and sextupoles.

Control System High-Level Applications

—SR steering—

- “SR ID P0/P1 BPM Steering”
  Allows steering the orbit at the P0 or P1 BPMs in any ID straight section. Should usually only be invoked through the SR steering PEM.
- “SR ID P2 BPM Steering”
  Allows steering the orbit at the P2 BPMs next to any ID straight section. Used for deducing offsets on P0 and P1 BPMs.
- “SR BM BPM Steering”
  “SR AM BPM Steering”
  Allow steering the orbit at the BM or AM source BPMs. Should usually only be invoked through the SR steering PEM.

Control System High-Level Applications

—SR Steering—

- “SR Steering Activity Review”
  Allows reviewing when steering was done on different beamlines.
- “SR orbit controllaw (brief)”
  A simplified version of the script that uses sddscontrollaw to correct the SR orbit.
- “SR orbit controllaw (expert)”
  A complicated version of the script that uses sddscontrollaw to correct the SR orbit. Permits control of despiking threshold, orbit correction configuration, averaging, etc.
- “SR orbit controllaw stats review”
  Allows reviewing statistics from orbit controllaw. Can be used to determine that controllaw responded to an orbit deviation rather than causing it.

Control System High-Level Applications

—SR Steering—

- “SR Orbit Correction Configuration”
  Allows configuring SR orbit correction, in terms of choosing which BPMs and correctors to use. Also allows marking BPMs and correctors as good or bad. May be used with “SR orbit controllaw (expert)” for orbit correction setup and testing.
- “SR Default Configuration History”
  Prints out the history of default orbit correction configurations.
- “B:P5 controllaw”
  Allows controlling the sddscontrollaw process that corrects the dispersion orbit using the rf frequnecy. This application compensates for the variation in the size of the APS due to tides.

Control System High-Level Applications

—SR Steering—

- “BPLD Display”
  A display of the beam position on the BPLD BPMs with an indication of trouble spots. The beam position indicators turn yellow and then red as the beam approaches the BPLD limit.
- “SR X-Ray BPM Display”
  A display of the beam position ErrorCC on the Xray BPMs with an indication of trouble spots.
- “SR Orbit BPM ADT (mswAve:x)”
  “SR Orbit BPM ADT (mswAve:x:ErrorCC)”
  Bring up Array Display Tool for SR BPMs used in orbit correction only.

Control System High-Level Applications

—SR Steering—

- “SR BPM Offset Adjustment”
  Adjusts offsets of SR BPMs as a function of current. Used during user periods to improve the performance of orbit correction.

Control System High-Level Applications

—SR BPMs—

- “BPM Address Check”
  Checks the local bus addresses of the storage ring BPMs.
- “BPM Self Test”
  Performing self-test checkouts on the storage ring BPMs. *Should not be used when beam is present!*
- “BPM Configuration”
  Permits changing settings of BPMs, such as timing, SCDU, and beam history settings, in a global, convenient fashion.
- “BPLD Trip Limits Loading”
  Allows downloading new values for BPLD trip limits based on BPM offsets in an SCR file. Used to set up BPLDs after new offsets have been measured.

Control System High-Level Applications

—SR BPMs—

- “BPLD Verification”
  Allows verifying the operation of the BPLDs by moving the beam around in insertion device straights to see when a trip occurs.
- “BPM Offset Measurement”
  Allows measuring the offsets of storage ring BPMs in certain locations in each sector.
- “BPM Intensity Effects Measurement”
  Allows collecting data on BPM response to beam intensity variation. Requires the user to employ an horizontal scraper to reduce the beam intensity. Allows processing and installation of data.

Control System High-Level Applications

—SR BPMs—

- “BPM Intensity Effects Comparison”
  Allows comparing BPM intensity effects measurement data from several scans.
- “BPM Timing Scan”
  Allows performing BPM timing scans and data analysis. This is typically used at the beginning of a run to establish BPM timing.
- “BPM Beam Motion Archiving”
  Allows acquiring data from storage ring BPM 60Hz slow history buffers. The data is analyzed to give RMS beam motion and archived. Used in a continuous loop for collection of RMS beam motion data for operations.

Control System High-Level Applications

—SR BPMs—

- “BPM Expert Slow History Data Acquisition”
  An expert utility for acquiring data from storage ring BPM slow history buffers.
- “BPM Mombo History Data Acquisition”
  Allows acquiring data from storage ring BPM 32k history buffers. These buffers are temperamental and you may have to try several before you find one that works.
- “Slow Beam Motion Monitoring”
  Allows acquiring slow (~1Hz) data from the SR msAve BPMs. Provides plots and source analysis (i.e., indication of where orbit motion originates).

Control System High-Level Applications

—SR BPMs—

- “SR BPM Statistics”
  Allows checking the readbacks of the storage ring BPMs by collecting statistics of EPICS readbacks. Checks SCDU, memory scanner, sum signal and realtime feedback related data.

Control System High-Level Applications

—SR Feedback—

Applications by J. Carwardine (PS Group)

- “SRFB Main Control”
  The main SRFB tcl control screen.
- “Corrector Drive & Error Statistics”
  Allows measuring the drive and error statistics computed by the real-time feedback system.
- “Corrector Statistics Glitch Viewer”
  Allows plotting corrector statistics glitch logs and triggering the glitch logger.
- “Orbit Motion Archiving Tool”
  Allows measuring orbit motion up to 500Hz using the DSPscope.

Control System High-Level Applications

—SR Feedback—

Applications by J. Carwardine (PS Group)

- “DSPscope Data Collection Tool”
  Allows collecting data from DSPscope at chosen sectors and with a chosen frequency range.
- “BPM & Corrector Configuration”
  Allows defining correctors and BPMs to use and generating response matrices.
- “DSPscope Save/Restore (Expert)”
  Allows saving and restoring DSPscope configurations and collecting data.
- “Response Matrix Measurement”
  Allows AC measurements of the response matrices.

Control System High-Level Applications

—SR Feedback—

Applications by J. Carwardine (PS Group).

- “P0 BPM Offset Measurement”
  Allows measuring offsets in the P0 BPMs using AC lock-in and the non-linear coupling between x & y planes.
- “BPM Gain Measurement”
  Allows measuring BPM gains using the real-time orbit feedback system. The measurements are performed using AC drive.
- “AC Corrector Drive Utility”
  Allows configuring the orbit feedback system to drive correctors with AC.

Control System High-Level Applications

—SR rf—

- “RF controllaw (hold values)”
  Brings up controllaw screens for SR gap voltage control in the hold present values mode. This is the mode commonly used in operations.
- “RF controllaw (voltage setpoints)”
  Brings up the controllaw screens for SR gap voltage control using voltage errors and setpoints. This mode is used in studies only.
- “RF controllaw mode change”
  A poorly-chosen name. This utility is used to reconfigure the RF controllaws when different RF modes (i.e., sets of klystrons) are used.

Control System High-Level Applications

—SR RF—

- “RF phase knobs”
  Allows adjusting SR rf station phase in various klystron running modes.
- “RF Save/Compare/Restore”
  An instance of the save/compare/restore (SCR) utility for the SR rf only.
- “Controllaw search”
  A utility to search for and optionally kill instances of RF sddscontrollaw running on control system workstations.
- “38/40 Controllaw data review”
  “36/37 Controllaw data review”
  Allows reviewing data from the sector 36/37 cavity controllaw. Used to determine that rf problems were not caused by controllaw.

Control System High-Level Applications

—SR rf—

- “rf Probe Calibration”
  Allows measuring and setting loss factors for the probe power readings on the storage ring rf systems.
- “rf Monitoring”
  Allows logging and plotting storage ring RF data. The same application appears under the SR data review menu.
- “rf Time Review”
  Allows computing the number hours of running hours for SR cavities.
- “Detune SR cavities””
  A utility for detuning groups of SR cavities.

Control System High-Level Applications

—PAR—

- “PAR Store/Scrub”
  A utility to maintain stored beam in the PAR to perform vacuum scrubbing.
- “PAR Orbit Correction”
  Allows correcting the PAR orbit.
- “LTP controllaw”
  Allows running sddscontrollaw in the LTP to control the trajectory and energy going into PAR.
- “LTP BPM setpoint config”
  Used for configuration of BPM setpoints in the LTP. In other words, it allows setting the desired trajectory to the present trajectory.

Control System High-Level Applications

—PAR—

- “LTP BPM/Linac RF setpoint config”
  Allows setting the desired trajectory for the LTP and Linac. A superset of the previous application.
- “PAR pem”
  The procedure execution manager for the PAR/LET, providing automated startup and shutdown of everything except RF.
- “PAR/LET Save/Compare/Restore”
  An instance of the save/compare/restore utility for the PAR and LET only.
- “PAR Scope Save/Restore”
  Allows saving and restoring the configuration of the PAR HP54542 scope. Also allows saving and reviewing data from the scope.

Control System High-Level Applications

—PAR—

- “PAR Scope Waveform History”
  Allows archiving and review of waveforms from the PAR scope, including RF and pulsed magnets. Can display pulsed magnet waveforms normalized to the setpoint, for tracking changes in response.
- “RF phase knobs”
  A knob panel for PAR rf phase control, including both RF systems individual and together.
- “Kicker timing knobs”
  A knob panel for PAR kicker timing adjustment, including individual and ganged adjustment.

Control System High-Level Applications

—PAR—

- “Efficiency monitor”
  Allows monitoring PAR efficiency, from LTP to PTB.
- “LTP emittance measurement”
  Allows emittance measurements in the LTP using the quad scan method. Emittance measurements are best done in the PAR bypass (see Linac applications).

Control System High-Level Applications

—LINAC—

- “Linac diagnostic configuration”
  Allows doing timing scans and setting averaging parameters for linac BPMs, current monitors, and Faraday cups.
- “Linac controllaw”
  Allows starting, monitoring, and controlling the horizontal and vertical trajectory control for the linac.
- “Linac Save/Compare/Restore”
  An instance of the save/compare/restore utility for the LINAC only.
- “Linac BPM Feedback Setpoints”
  Allows setting the present trajectory as the desired trajectory for the linac.

Control System High-Level Applications

—LINAC—

- “LEUTL BPM Feedback Setpoints”
  Allows setting the present trajectory as the desired trajectory for the LINAC and LEUTL.
- “Linac Trajectory Squisher”
  Allows one to reduce the linac trajectory using the squishPVs program, which is model independent. Although slower than using a controllaw, it doesn’t depend on measuring the matrix and is virtually guaranteed to work.
- “RF gun scope save/restore”
  Allows for saving and restoring scope setups and waveforms for L1:SCOPE1.

Control System High-Level Applications

—LINAC—

- “RF gun interlock”
  Monitors various rf gun related parameters. The script will command other scripts to halt and sound an alert if a problem is seen.
- “Linac phase controllaws”
  Allows starting and controling controllaw processes for the linac phase. *Presently not used but done in IOC.*
- “Linac power controllaws”
  Allows starting and controling controllaw processes for the linac power.
- “Linac emittance measurement”
  Allows making emittance measurements in the linac at various locations using the quad scan method.

Control System High-Level Applications

—LINAC—

- “Three-screen emittance measurement”
  Allows making emittance measurements in the PAR bypass using the three-screen method.
- “Linac pem”
  Provides procedures for automated startup, shutdown, and switchover of the linac, LEUTL, and guns.
- “Convert lattice to quad setpoints”
  Converts **elegant** lattice output to quadrupole setpoints. Used to set up the linac to a specific accelerator model.
- “Analyze Synchronous Linac Data”
  Allows acquisition and analysis (correlations, FFTs,...) of synchronous BPM, RF, and other data from the linac.

Control System High-Level Applications

—LINAC—

- “Acquire Linac Beam Images”
  Allows acquisition of data from linac flags, or any source that goes to the linac video digitizer. Data may be saved to files and printed.
- “CTR/CDR Alpha Magnet/Scraper Scans”
  Allows making alpha magnet and scraper scans while recording data from the coherent transition/diffraction radiation diagnostic. Used for tuning minimum bunch length from the TC RF guns.
- “Set Klystron Saturated Power”
  For a given desired power level, sets the PFN to the appropriate value such that when the desired power level is reached, the klystron is in saturation. This is the preferred way to get stable operation.

Control System High-Level Applications

—Booster—

- “Booster ramp control”
  Allows controlling and diagnosing the booster main ramped supplies. Many of these functions are superseeded by the Booster PEM procedures.
- “Booster PS FFT analysis”
  Allows collecting power supply ramp data and displaying the frequency content.
- “BTS setup/control”
  Allows setting up and controlling the BTS magnets. Used for startup and shutdown.
- “BTS BPM setpoint config”
  “PTB BPM setpoint config”
  Instances of an application that allows establishing the present trajectory in the transfer line as the desired trajectory.

Control System High-Level Applications

—Booster—

- “PTB controllaw”
  Allows starting, monitoring, and stopping horizontal and vertical trajectory control for the PTB.
- “Booster Save/Compare/Restore”
  An instance of the save/compare/restore utility for the Booster only.
- “Booster rf Save/Compare/Restore” An instance of the save/compare/restore utility for the Booster rf only.
- “Booster pem”
  Provides automated startup and shutdown of booster power supplies and rf.
- “Booster Timing”
  Allows viewing and changing Booster timing parameters.

Control System High-Level Applications

—Booster—

- “Booster Orbit Correction”
  Allows correction of the booster orbit.
  Rarely used and only by experts.
- “Booster Orbit Control Panel”
  A large control panel related to Booster orbit correction.
- “Booster Corrector Checkout”
  Allows checking the function of the Booster correctors.
- “Booster Bump Generator”
  Allows generating bumps in the Booster orbit.
- “Booster Orbit to Setpoints”
  Allows establishing the present booster orbit as the desired orbit.

Control System High-Level Applications

—Booster—

- "Injection septum feedback"
  Allows starting and controlling a feedback process that will stabilize the current readback on the injection septum.
- "Extraction septum feedback"
  Allows starting and controlling a feedback process that will stabilize the current readback on the thick extraction septum.
- "Brings up the save/restore screen for the PAR HP54542 scope."

Control System High-Level Applications

—RF Gun—

- “RF gun scope save/restore”Allows for saving and restoring scope setups and waveforms for L1:SCOPE1. (Also under LINAC.)
- “RF gun interlock”Monitors various rf gun related parameters. The script will command other scripts to halt and sound an alert if a problem is seen. (Also under LINAC.)

Control System High-Level Applications

—Save/Compare/Restore—

- “Save/Compare/Restore”
  The save/compare/restore/review (SCR) utility. Provides configuration control for essentially the entire accelerator, broken down into subsystems.
- “Save/Compare/Restore PV Search”
  Searches the SCR request files for process variables. Allows determining if and where a given PV is saved in the SCR files.
- “View SCR History”
  Permits reviewing the history of those PVS managed by the SCR. For example, you could plot the history of a given setpoint as recorded in savesets.

Control System High-Level Applications

—Save/Compare/Restore—

- “SCR Activity Review”
  Permits determining when and by whom SCR operations were done. For example, you can find out when a restore was done and who did it.
- “Save/Compare/Review”
  An instance of SCR that does not permit restoring values to the controls system. As such, it can be run by essentially anyone for review of SCR data and comparison to the present state.
- “SCR Request File Editor”
  Allows editing SCR request files. You may only edit files in your own area, not the system files. New files must be installed by other means.

Control System High-Level Applications

—Save/Compare/Restore—

- “Snapshot Sequence Recorder”
  Allows recording sequences of snapshots to document an operational procedure.
- “Snapshot Sequence Comparison”
  A companion to the snapshot sequence recorder. Allows comparing each snapshot in a previously recorded sequence to the present state of the machine.
- “Snapshot Sequence Restore”
  Allows “playing back” a sequence recorded with “Snapshot Sequence Recorder”. Can be used with “Snapshot Sequence Comparison” to see if the system response is the same.

Control System High-Level Applications

—SDDS Utilities—

- “Quick Monitor”
  An easy-to-use interface to sddsmonitor. Permits simple EPICS data collection and plotting.
- “Custom Monitor”
  Permits monitoring PVs, evaluating equations from PV values, and logging the results into an SDDS file.
- “Quick Experiment”
  An easy-to-use interface to sddsexperiment, allowing simple automated experiments.
- “Quick sddsplot”
  An easy-to-use interface to sddsplot, allowing basic plotting of data in SDDS files.

Control System High-Level Applications

—SDDS Utilities—

- “Quick sdds fitting”
  An easy-to-use interface to sddspfit, sddsexpfit, and sddsgfit, for fitting data from SDDS files to various models.
- “Edit sdds file”
  A spreadsheet application for editing SDDS files.
- “Export SDDS data”
  Allows exporting data from an SDDS file to other formats, such as spreadsheet data or text.

Control System High-Level Applications

—SDDS Utilities—

- “Quick Controllaw”
  Permits trajectory correction of a beamline using a previously computed or measured response matrix.
- “Compute Inverse Response Matrix
  Allows computing a trajectory correction matrix from a subset of correctors and BPMs in a previously measured response matrix. The response matrices are typically measured using PEM procedures.