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SLC Control Program

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Monitor Resolution in Emittance Measurement

September 6, 1990

Author: *Michael Glaviano* **Subsystem:** *SCP* **User Impact:** *small*
Panel Changes: *some* **Documents:** *no* **Help File:** *yes*

It is now possible to include a *resolution parameter* pertaining to the profile monitor or wire scanner in the calculation of sigma matrix in the emittance package. This resolution number is expressed in units of millimeters. If provided and activated, resolution numbers (one for each plane) are squared and subtracted from the C parameter of the A, B, C of the beam sigma versus quad strength parabola. Resolution may be used in either the case where A, B, and C are generated as a result of measurements or the case where these parameters are manually entered. Resolution numbers are used only in the thin lens approximation of emittance calculation. The square of a resolution number must be less than the C parameter from which it is subtracted; otherwise the resolution number is set to zero and a message is issued.

The resolution numbers are entered through the "XY RES" button on the emittance panel. To activate the use of these numbers one must also toggle the "USE RESOLU" button to "YES".

To accommodate these two new buttons, the emittance panel has been slightly rearranged.

Currently resolution numbers are specific to a given SCP and are lost whenever emittance is initialized, *e.g.* when a new monitoring device is selected. Following the next database install, these parameters will be saved in the database.

Slow Feedback Automatic Low Rate Shutoff

September 4, 1990

Author: *Ed Miller* **Subsystem:** *SLC* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *No* **Help File:** *None*

When the beam rate is reduced to less than 10 pps, there is a problem getting enough BPM readouts in a reasonable period of time to support many Slow Feedback loops. To ameliorate this difficulty, some groups of feedback loops which are normally scheduled, will not be run at such low beam rates.

Under low beam rate conditions, the RUN/NO-RUN decision is made as follows:

1. All ONE-SHOTS will RUN (but with only a single reading of BPMs)

2. SCHEDULED groups which are only Sampling and do not contain any control loops will not RUN. (These will soon be labeled by a new SAMPle state)
3. SCHEDULED groups which contain control loops will RUN (but only with a single reading of BPMs) unless the group has been specifically designated (in the database) to be suppressed at low beam rates.

Loops which do not run because of this automatic suppression at low beam rate will have a Feedback loop status message which so indicates; they will be classified on the summary display as being in a "NO-BEAM" condition.

BPM Software Update

September 12, 1990

Author: *Linda Hendrickson* **Subsystem:** *BPM* **User Impact:** *Small*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

Several minor modifications have been recently made to the BPM software.

1. The BPM Zplot and Data displays headers now show the time slot on which the measurement has been taken. In addition, the beam code, particle type and bunch have been added to the header on the BPM values text display.
2. A software bug affecting BPM averaging has been corrected. Previously if the user measured BPMs with averaging activated and then selected a different BPM measurement definition, averaging was automatically turned off but the panel incorrectly indicated that averaging was still on. In addition, BPM special displays never used BPM averaging. The panel now correctly shows the current state of averaging and averaging is also fully supported for special displays.
3. Display ranges in the special PYIELD and PEPYLD toroid displays have been modified to measure the extraction line electrons in EP01 on the same pulses as the positrons in the return line are measured. This will reduce jitter in the calculation of positron yields.

New IP Feedback Watchdog

September 13, 1990

Author: *Nan Phinney* **Subsystem:** *Final Focus* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *None*

The software which monitors the Fast Feedback micros and their devices has been broken up into separately scheduled watchdogs for each type of feedback and a new watchdog has been added to monitor beams at the IP.

The IP watchdog checks that the FB69 feedback is in the correct state. In addition, it updates the calculated Z per hour value in the database using intensities measured in FB69, current beam rate at the IP, and the last measured deflection scan widths. If either beam intensity goes to zero, or the rate goes to zero, then the ZPHR value will go to zero. This should make the deflection luminosity history plots more useful and distinguish clearly between periods when the beam is missing and periods when the operators have merely not pushed the Auto collide button for several minutes.

Along with maintaining the TMTX, TMTY, LUMM, and ZPHR values, the IP watchdog also keeps a running total of integrated Z's in a new IPBM secondary INTZ. This plot will be available from the IPBM History Panel.