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SLC Control program

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New Deflection Values in Correlation Plots

January 17, 1990

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

New Physics variables (PHYS) have been added to the Correlation Plots to allow sampling of the fitted deflection parameters at the IP. As with the deflection scans, the four long IP BPMs are read on the same pulse (or averaged pulses) and a fit made to the data in each plane to calculate the IP Position, Incoming Angle, and Deflection Angle. The data is taken on the same pulses as any other BPM, TORO, Gated ADC or TDC data being sampled (or with the first mux setting for muxed BPMs). This will provide an additional tool to help correlate IP jitter with backgrounds or with upstream sources.

The deflection positions and angles are selected by entering PHYS as a correlation plot sample variable and then entering the desired "pseudosecondary" name. These are

IPEXPOSN - Electron X Position
IPEXANGL - Electron X Incoming Angle
IPEXDEFL - Electron X Deflection Angle

IPEYPOSN - Electron Y Position
IPEYANGL - Electron Y Incoming Angle
IPEYDEFL - Electron Y Deflection Angle

IPPXPOSN - Positron X Position
IPPXANGL - Positron X Incoming Angle
IPPXDEFL - Positron X Deflection Angle

IPPYPOSN - Positron Y Position
IPPYANGL - Positron Y Incoming Angle
IPPYDEFL - Positron Y Deflection Angle

Wild cards may be used to select all electron variables (IPE*) or all positron Y variables (IPPY*) etc. Wild cards are also supported for other PHYS variables such as FF energy and beta (*e.g.* FF11*), RTL energies (*e.g.* DR13*), or EP02 energy and energy spread (EP02*). If a ? is entered in response to the prompt, a list of all PHYS variable names will be displayed on the terminal. (PF11 will toggle to a wider Input window.)

With any of the PHYS variables, the user must select a BPM definition which includes all sampled BPMs before data acquisition.

Utility for Decoding Status Bits

January 18, 1990

Author: *Debbie Ohman* **Subsystem:** *SLC* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *Yes*

A new utility has been developed to decode the bits of various bit-mapped status secondaries into text strings. The displayed text is coler-coded to show which bits are ON for the selected device.

The buttons [DECODE STATUS BITS] and [DECODE CSTA BITS] have been added to the Magnet Diagnostics panel. The first is used to decode the HDSC (Hardware Descriptor), HSTA (Hardware Status), and STAT (Status) secondaries. The second is to decode the LGPS or STEP secondaries.

The buttons [DECODE STATUS BITS] and [DECODE DSTA BITS] have been added to the Klystron Diagnostics panel. The first is used to decode the HDSC, HSTA and STAT secondaries. The second is to decode the DSTA (Digital Status) secondary.

The display should look something like this:

STATUS BIT DISPLAY for LGPS LI10 1

BIT	HDSC (Descriptor)	HSTA (Hdwe Status)	STAT (Status)	BIT
0001		In Service	GOOD Status	0001
0002			Warning	0002
0004		OFFLINE	OFFLINE	0004
0008			In Trouble	0008
0010		Turned OFF by VAX	Is Turned OFF	0010
0020	TurnON in Reverse	Polarity Reversed	Standardize OK	0020
0040	Reversible Supply	Feedback Control	Calibration OK	0040
0080	PSC Reset Enabled	Bad RMS	BACT Drifting	0080
0100	PSC 2	Calibrate Disabled	Database Error	0100
0200	PSC 3	Perturb Disabled	DAC Error	0200
0400	PSC 2 w 2nd Input	Trim Disabled	ADC Error	0400
0800	PAU or Pulsed PSC	Standardize Disab.	OUT of Range	0800
1000	ARC Mover	NO Retry on Trim	OUT of Tolerance	1000
2000	(Reserved - IVBD)	Magnet uses IVBD	BAD Ripple	2000
4000	(Reserved - Shunt)	Shunt/Booster	BAD BACT	4000
8000		No AUTO Trim		8000

HDSC = 0080 HSTA = 4081 STAT = 0061

New Slow Feedback Loops

January 18, 1990

Author: *Mike Glaviano* **Subsystem:** *Feedback* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *None*

Four new slow feedback loops have been developed for the SLC. These are the first set of loops to take advantage of coupled models (RMAT) for the machine. Both Injection and Feedback software have been modified to allow feedback operation in regions of the machine with transverse coupling.

The first set of loops, NA12 and SA12, monitor the beams from BSY into the first north and south achromats respectively. The idea here is that the inclusion of arc BPMs will provide better resolution in determining beam energy errors than a few BSY BPMs that are currently used for the fast energy feedback. Once these new loops are operational, they will be used to periodically update the setpoint of the fast energy feedback loops.

The second set of new loops, NAFF and SAFF are intended for establishing the so-called "Massimo Criteria" for the beams traversing from the last north and south achromats into the final focus. These loops will use the BPMs in both the arcs and the final focus to compute the beam launch parameters, and will use a few movers to maintain the desired values.

As these new loops are still being tested, users should refrain from manipulating them until they are officially commissioned.

PF8 HELP Mode Bug Fix

January 18, 1990

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

Previously, if you used PF8 to jump to the Button Macro Management panel while you were in HELP mode on the original panel, the result was a confused state on the Button Macro Management panel. Now such a panel branch will act like all other panel branches, i.e., HELP mode will automatically be cancelled and the Button Macro Management panel will be brought up in a normal state.