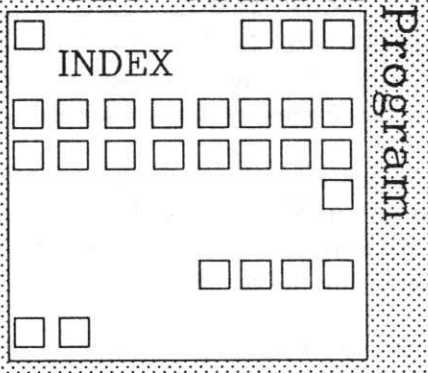
Index Panel



Slac's Software Engineering newsletter

February 10, 1989 | All That Fits is News to Print | Vol. 3, No. 6

Matlab

February 2, 1988

Author: *Keith Jobe* | **Subsystem:** *None* | **User Impact:** *Varies*
Panel Changes: *N/A* | **Documents:** *Yes* | **Help File:** *Yes*

Matlab is back and working with our VAX Cluster, CPUs, and even VMS Version 5!

The Matlab program and toolbox as provided by the vendor is initialized from the USERLOGIN command file that most users include in their LOGIN command file. Additionally, most MCC users have had access to additional tools, which have been loaded from the SLCOPS login file. This has been changed.

The SLC specific tools, which include database access (read only) and history buffer sampling are now loaded as part of the standard USERLOGIN initialization for all users; some users will want to remove specific references to [RKJ.MATLAB]... from their personal login files. These additional tools have been moved to a general directory on the SLC user disk: `USER_DISK_SLC:[MATLAB]`.

A brief introduction to the SLC toolbox is in the file AAA.DOC. Help for all tools may be obtained using MATLAB's own help facility. Additional documentation of Matlab exists in prior editions of THE INDEX PANEL, the other ".DOC" files in the Matlab directory, and from THE PRO-MATLAB USERS GUIDE, available from The Mathworks Inc.

Licensing Notes: SLAC has licensed PRO-MATLAB to run on both the MCC VAX and the SLC VAX, however we have only obtained the CONTROL TOOLBOX and the SYSTEM IDENTIFICATION TOOLBOX licenses for the SLC VAX. As a result, some of the features of Matlab are unavailable from the MCC VAX.

If there are any problems related to Matlab, or specifically to the functions in the SLC Toolbox, please call me or send mail; also, if there are any additional tools which you have developed, and you would like to share, please be in touch.

Online Lattice Matching

February 6, 1989

Author: *M. Glaviano* | **Subsystem:** *SCP* | **User Impact:** *New Feature*
Panel Changes: *Yes* | **Documents:** *Yes* | **Help File:** *Yes*

The first version of the Online Lattice Matching software (also known as beta matching) is now available on MCC. The facility uses modelling programs to provide online beamline matching and optics fitting for the SLC. Currently the only modelling program supported is COMFORT. Matching for coupled regions will be

available after DIMAD has been added to the control software. In addition to accepting fitting conditions interactively from the user, the program is also capable of using lattice parameters as computed by the emittance measurement package.

To reach the program, after selecting the desired modelling region from the MODEL INDEX panel, select the OPTICS and then the LATTICE MATCING panel. For the details of the program as well as extensive help on using the facility consult the Functional Specifications manual, copies of which may be obtained by contacting me at x3407.

Note: the software is currently declawed. You may calculate matching conditions, but the software will NOT change any magnet settings nor trim them. One may of course manually dial the computed values and trim. This allows for a period of safe online experimentaion before the auto–matching capability is implemented.

Auto Trim of Magnets After Crate Cycling

February 8, 1989

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

The software for controlling Magnets and other Analog devices has been modified to restore the BDES or VDES settings after Crate power is cycled. This software feature had been disabled because of problems with some supplies such as the Blowtorch Quads which should not be trimmed automatically. A new HSTA bit (8000 Hex) has been defined to identify devices which may not be auto-trimmed. This bit has been turned on for all QUADS in LI01 and LI02. Area managers should ensure that the bit is turned on for any other devices which should not be Auto-trimmed.

Certain devices such as LGPS controlled magnets cannot be restored automatically because cycling power automatically turns Off the LGPS. The software will not attempt to Trim these magnets nor any associated Shunt or Booster supplies, nor any devices with Trim disabled (HSTA 400 Hex). Other devices which are turned On or Off remotely through the Digital Control system may also require manual reset by operations. Standardized devices will lose the STDZ_OK bit when power is cycled.

Injection Calculations with R-Matrices

February 8, 1989

Author: *Michael Glaviano* **Subsystem:** *SCP* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *Yes* **Help File:** *None*

It is now possible to use R-matrices (RMAT) in addition to the Twiss parameters to perform injection calculations. The main advantage of this new feature is the ability to calculate injection parameters (and also do feedback) for regions with inaccurate Twiss based models such as in the Arcs. Although the software has been modified, there are currently no valid R-matrices in the data base, but will be available shortly.

A new button has been added to the Injection Panel to select Injection's initialization mode. The choices are RMAT and TWSS, and The default (set at scp initialization) is TWSS. To set the initialization mode, press the button labelled "MODEL". You will be prompted for each bunch. A carriage return response keeps the current value.

R-Matrix Utilities for Injection and Steering

February 9, 1989

Author: *S. Moore* **Subsystem:** *SLC* **User Impact:** *Small*
Panel Changes: *Some* **Documents:** *No* **Help File:** *No*

A set of R-Matrix utilities was released in order to accommodate the needs of Injection and Steering initialization. Currently, only the Injection panel (see above) allows for selecting the desired initialization mode – either 'TWSS', which uses database TWISS parameters for the model, or 'RMAT', which uses database R-Matrices.

This release also forms the basis for the forthcoming version of the Steering facility that uses R-Matrx based models of the accelerator. The main advantage of the new software will be the ability to steer in regions with cross-plane coupling such as in the Arcs.

Correlation Plots Changes

February 9, 1989

Author: *Linda Hendrickson* **Subsystem:** *CRR* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *No* **Help File:** *Yes*

Several changes have been made to correlation plots software which correct previous problems and improve functionality.

1. The color-coding scheme has been changed to include bad data values in the plots with color-coding according to data status. The plot character for graphs also indicates the data status.

STATUS	COLOR	PLOT CHARACTER
Good Data	Green	*
Bad Data Acquisition	Cyan	B
Excluded By User	Blue	E
Rejected By Data Filtering	Red	F

2. It is no longer possible or necessary to enter the configuration number for injection. When injection parameters are used in correlation plots, the last loaded configuration for the appropriate region will be used. If the last loaded configuration is a scratch configuration, it is necessary to load a normal configuration before correlation plots will work.

3. Previously, when multiple feedback values for a single feedback group were plotted, separate feedback acquisitions were made for each variable, sometimes providing inconsistent results. The software has been changed to make a one-shot call to feedback for all variables in a feedback group so that the data comes back from the same pulse.

4. Modifications has been made to improve handling of control-C. Previously, control-C was not always recognised by the software. These changes should result in improvement in other functions as well as correlation plots.

5. Previously, fit results and step variable information were not being printed on the Versatec. In addition, the VERSA ALL plots option resulted in part of the time stamp being cut off. These problems have been fixed. (Caters 5775 and 5617).

6. The formatting of fit coefficients has been fixed to allow printing of very large or small numbers. In addition, the number of significant digits printed has been reduced. (Cater 4486).

7. Previously, when WIRE data was plotted in correlation plots with NAVG greater than 1, the RMS was not returned correctly and the plot was not produced. This has been fixed (Cater 5578). (Note that it is still not possible to take WIRE data from the BPM panels, and Cater 4637 remains open.)

CAR Counter Display

February 9, 1989

Author: *Terri Lahey* **Subsystem:** *CARs* **User Impact:** *Small*
Panel Changes: *Few* **Documents:** *None* **Help File:** *None*

The CAR COUNTER DISPLAY has been modified to maintain totals of the GOOD and BAD counters in the database, and to display the current and the total counters. Also displayed is the time of the last zero and clear of the CAR hardware counters (which is the previous time that the CAR COUNTER DISPLAY ran). The last new field is the time of the last CLEAR CAR TOTALS, as described below.

To clear the total CAR COUNTERS in the database, access a new button on the All Micros panel, called CLEAR CAR TOTALS. This clears the totals in the database, and saves the time of the clear operation for the specified CAR.

A new database primary, CAR, has been created to support these changes.

Magnet Control Problem Solved

February 9, 1989

Author: *N. Spencer* **Subsystem:** *Accelerator* **User Impact:** *None*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

The problem that was reported where it was impossible to control magnets in any micro after LI09 had died and the magnet display remained green even though setpoints (BDES) and actual values (BACT) were different was traced to a bug in DBEX (the database executive program). The condition occurred if for any micro a Database Timeout occurred on IPL. This bug has been fixed.

SLC COMMISSIONING CALENDAR †

	THURSDAY Feb. 16	FRIDAY Feb. 10	SATURDAY Feb. 11	SUNDAY Feb. 12	MONDAY Feb. 13	TUESDAY Feb. 14	WEDNESDAY Feb. 15
OWL	$e^- \rightarrow$BSY Φ Linac 06: NPI e^- $\rightarrow$SPEAR	* SLC West A	* SLC West A	* SLC West A	* SLC West A 0600 NPI e^- $\rightarrow$SPEAR 8: End NE11 Run	NPI e^- $\rightarrow$SPEAR SLC West A 06: NPI e^- $\rightarrow$SPEAR	NPI e^- $\rightarrow$SPEAR SLC West A 06: NPI e^- $\rightarrow$SPEAR
DAY	06:00 NDR 12:00 MCC DBGEN SARC-SFF (Align)	0800-2000 N/S DR. Drip Hot Checks * SARC-SFF (Align)	* SLC West A	0800-2000 N/S DR. Drip Hot Checks *	SLC West A BAS II Mode BSY Mag. Test LI25-30 60 Hz Certify ARC, FF, PPS	07-15: BSY Access BAS II Mode SLC West SARC-FF(Align) Permitted Access	07-15: BSY, LI28 Access SLC-DBGEN SARC-SFF (Align)
SWING	18: NPI e^- $\rightarrow$SPEAR Φ Linac	* Lock SARC, SFF SLC West A	* SLC West A	* SLC West A	1800 NPI e^- $\rightarrow$SPEAR SLC West A	Full Mode 18: NPI e^- $\rightarrow$SPEAR SLC West A	Full Mode 18: NPI e^- $\rightarrow$SPEAR SLC West A $e^- \rightarrow$BSY

*: NPI $e^- \rightarrow$ESA, $e^- \rightarrow$SPEAR.

2/9: SLC West (CID, NDR, e^+, SDR, $e^\pm$ Beams to BAS II Dump).

SPEAR-SSRL e^- Fills at 06:00 and 18:00.

3/7–3/9: Sector 30 Collimator Inst.

VAX Work:
- 785 Removal
- COW→VAX Ports
- Graphics→Imagen
- Async D.B. Update Micro Job

† This calendar is provided for informational purposes only. Neither the Software Engineering Group nor the SLC management accept any responsibility for its accuracy. Schedule subject to change without notice. Departures are from NPI at 120 times per second and CID at 20 times per second.