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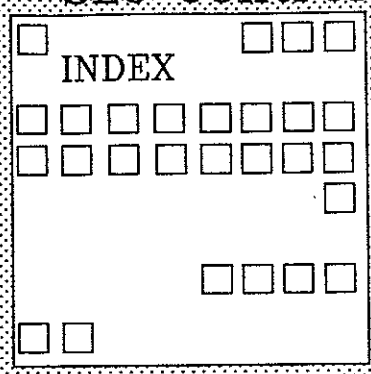
SLC's Software Engineering Newsletter

SLC Control Program



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Online DIMAD

April 4, 1990

Author: *Stephanie Allison*
Subsystem: *Modelling*
User Impact: *Small*
Panel Changes: *Few*
Documents: *Yes*
Help File: *Yes*

DIMAD, a program for modelling and studying charged particle beam lines, is now available from the SCP. DIMAD computes a fully coupled model (6×6 matrix) and is thus more suitable for regions of SLC with cross plane coupling such as the arcs, final focus, and north RTL and sector 2 of linac which have been upgraded to transport polarized beams. The existing modelling program, COMFORT, provides more flexibility for modelling of storage rings and should still be used for the damping rings.

The main purpose of online DIMAD is to provide a transport matrix (RMAT) for every element in the specified model region. Operationally, DIMAD's behavior is identical to COMFORT. It is a stand–alone process and gets its input from the OPTICS panel including user-selected options, initial Twiss parameter values, model section(s), and fitting information. The device configuration for each model section is obtained from the ASCII or compiled skeleton files (both COMFORT and DIMAD use the same skeleton decks), and dynamic device quantities are obtained from the SLC database, unless the user has requested that design values be used. DIMAD then calculates and outputs an R-matrix file and, for non-ring regions, a Twiss parameter file. For debugging the model skeleton files and examining DIMAD output, a model skeleton echo file and computation output file are provided, if [USE COMPLD SKELTN] is toggled off.

A new button, [MODEL PROGRM] has been added to the MODEL OPTICS panel allowing the selection of either COMFORT or DIMAD. The optics software uses this selection to send the modelling run request to the correct program when [RUN MODEL PROGRM] button is pressed. The [PUT MODEL IN DB] button also depends on the program selection, and either Twiss parameters (COMFORT) or R-matrices (DIMAD) are put in the database. The model log display available from the MODEL LOG PANEL indicates which model has been loaded.

For plotting the R-matrix elements, new buttons, [SELECT RMAT ELEMNT] and [PLOT RMAT ELEMNT] are provided and appear when DIMAD is selected. When pressing the [SELECT RMAT ELEMNT] button, the user must type in the indices of the element of interest (i.e., 11 for R(1,1), 16 for R(1,6)). Both indices must be integers between 1 and 6, since the R-matrix is a 6×6 array.

When plotting Twiss parameters, values calculated by either DIMAD or COMFORT are used, depending on the selected model program. The [SELECT TWISS PARAM] and [PLOT TWISS PARAM] buttons are not visible for damping ring model regions when DIMAD is selected.

The buttons for displaying storage ring calculated parameters [DISPLY MACHIN PARAM], [DISPLY DNUDQ], and [DISPLY SYNCH INTGRL] are visible only for damping ring model regions when COMFORT is selected.

Detailed information for each button on the MODEL OPTICS panel can be obtained using the SCP HELP facility.

History Buffer Data

April 4, 1990

Author: *Ralph Johnson* **Subsystem:** *All* **User Impact:** *Some*
Panel Changes: *None* **Documents:** *No* **Help File:** *No*

The history buffer facility has been enhanced to support a variety of wild cards in the device specification. As a result all Operations–related history buffer files have been reorganized. These files will be recompiled "automatically" after a new database has been generated to guarantee that they include all new device units. This should minimize the number of occasions when a newly installed device is not found in any history buffer file. The files may now specify ALL* for micros and channels, or ranges of micros, or display groups with or without associated micro ranges. Note that new primaries or secondaries must still be specifically added to the files before the data will be saved.

Additionally, the name of the history file which contains a given device is no longer needed for obtaining the device's history data. This should eliminate the occasional problem of a wrong file name being used when selecting a device. When using the general purpose history plot panel, it is no longer necessary to select a file name unless a non–standard user–specific file is required. Should a file name be already selected on this panel, it can be cleared by responding to the file name prompt with NONE or with " (2 single quotes) or ' ' (2 single quotes separated by a space).

To find the file containing a given device, the files are searched in the order of their installation. If there is data for a given device in a special file as well as in a standard operations file, you must supply the file name.