

MACHINE_MODEL.ELEMENT_MODELS		
P * ID	NUMBER (*,0)	
F RUNS_ID	NUMBER (*,0)	
* CREATED_BY	VARCHAR2 (30 BYTE)	
* DATE_CREATED	DATE	
UPDATED_BY	VARCHAR2 (30 BYTE)	
DATE_UPDATED	DATE	
ELEMENT_NAME	VARCHAR2 (60 BYTE)	
INDEX_SLICE_CHK	NUMBER (*,0)	
ZPOS	NUMBER	
EK	NUMBER	
ALPHA_X	NUMBER	
ALPHA_Y	NUMBER	
BETA_X	NUMBER	
BETA_Y	NUMBER	
PSLX	NUMBER	
PSI_Y	NUMBER	
ETA_X	NUMBER	
ETA_Y	NUMBER	
ETAP_X	NUMBER	
ETAP_Y	NUMBER	
R11	NUMBER	
R12	NUMBER	
R13	NUMBER	
R14	NUMBER	
R15	NUMBER	
R16	NUMBER	
R21	NUMBER	
R22	NUMBER	
R23	NUMBER	
R24	NUMBER	
R25	NUMBER	
R26	NUMBER	
R31	NUMBER	
R32	NUMBER	
R33	NUMBER	
R34	NUMBER	
R35	NUMBER	
R36	NUMBER	
R41	NUMBER	
R42	NUMBER	
R43	NUMBER	
R44	NUMBER	
R45	NUMBER	
R46	NUMBER	
R51	NUMBER	
R52	NUMBER	
R53	NUMBER	
R54	NUMBER	
R55	NUMBER	
R56	NUMBER	
R61	NUMBER	
R62	NUMBER	
R63	NUMBER	
R64	NUMBER	
R65	NUMBER	
R66	NUMBER	
LEFF	NUMBER	
SLEFF	NUMBER	
ORDINAL	NUMBER	
SUML	NUMBER	
PK_ELEMENT_MODELS (ID)		
FK_ELEMENT__FK_RUN_EL_RUNS (RUNS_ID)		
FK_RUN_ELEM_MODELS (RUNS_ID)		
FK_ELEM_MODEL ()		
IDX_ELEMENT_MODELS_ORDINAL (ORDINAL)		
PK_ELEMENT_MODELS (ID)		

MODEL_RUNS

Keeps track of each tracking "run" done by XAL GUI.

Each row in the GUI's runs table corresponds to one row of this table.

MACHINE_MODEL.RUNS		
P * ID	NUMBER (*,0)	
* CREATED_BY	VARCHAR2 (30 BYTE)	
* DATE_CREATED	DATE	
RUN_SOURCE_CHK	VARCHAR2 (60 BYTE)	
RUN_ELEMENT_DATE	DATE	
RUN_DEVICE_DATE	DATE	
COMMENTS	VARCHAR2 (200 BYTE)	
F MODEL_MODES_ID	NUMBER (*,0)	
PK_RUNS (ID)		
FK_RUNS_MODMODE (MODEL_MODES_ID)		
IDX_RUNS_RUN_SOURCE_CHK (RUN_SOURCE_CHK)		
PK_RUNS (ID)		

MACHINE_MODEL.MODEL_DEVICES		
P * ID	NUMBER (*,0)	
F RUNS_ID	NUMBER (*,0)	
F DEVICE_TYPES_ID	NUMBER (*,0)	
* CREATED_BY	VARCHAR2 (30 BYTE)	
* DATE_CREATED	DATE	
DEVICE_PROPERTY	VARCHAR2 (30 BYTE)	
DEVICE_VALUE	NUMBER	
PK_MODEL_DEVICES (ID)		
FK_MODEL_DE_FK_RUN_DE_RUNS (RUNS_ID)		
FK_MODEL_DE_FK_TYPE_D_DEVICE_T (DEVICE_TYPES_ID)		
PK_MODEL_DEVICES (ID)		
FK_TYPE_DEVICE (DEVICE_TYPES_ID)		
FK_RUN_DEVICE (RUNS_ID)		
FK_ELEM_DEVICE ()		

MACHINE_MODEL.DEVICE_TYPES		
P * ID	NUMBER (*,0)	
U * DEVICE_TYPE	VARCHAR2 (4 BYTE)	
* CREATED_BY	VARCHAR2 (30 BYTE)	
* DATE_CREATED	DATE	
UPDATED_BY	VARCHAR2 (30 BYTE)	
DATE_UPDATED	DATE	
DEFAULT_SLICING_POS_CHK	NUMBER (*,0)	
AK_UK_DEVICE_TYPE_DEVICE_T (DEVICE_TYPE)		
PK_DEVICE_TYPES (ID)		
AK_UK_DEVICE_TYPE_DEVICE_T (DEVICE_TYPE)		
PK_DEVICE_TYPES (ID)		
BMP_DEVICE_TYPES_SLICEPOS (DEFAULT_SLICING_POS_CHK)		

DEVICE_TYPES

Keeps track of the kind of device we're talking about;

E.g. MONitor (aka BPM), QUAD, XCOR etc.

In particular

DEFAULT_SLICING_POS_CHK is the number of "slices" at which optics are recorded for each device type. For a QUAD there are 3 - beginning, middle and end. For all others only 1.

MODEL_DEVICES

At SLAC this table makes a link between a device name and the model runs that have optics (Twiss and R-matrices) for that device, via a FK to device ids in the infrastructure DB. But for ESS that FK has been removed for now.

In future you will need some mechanism like that so one can query for optics based on a PV name which is in turn based on the device name. This table, with an appropriate column added to identify a device, will form the translation from device name to runs containing elements correspondinf to that device.

MACHINE_MODEL.GOLD		
P * ID	NUMBER (*,0)	
F RUNS_ID	NUMBER (*,0)	
COMMENTS	VARCHAR2 (200 BYTE)	
* CREATED_BY	VARCHAR2 (30 BYTE)	
* DATE_CREATED	DATE	
PK_GOLD (ID)		
FK_GOLD_RUNS (RUNS_ID)		
PK_GOLD (ID)		
FK_GOLD_RUNS (RUNS_ID)		

MODEL_GOLD

Which model runs have been designated by operations to be good ones, both presently and in the past.

MACHINE_MODEL.MODEL_MODES		
P * ID	NUMBER (*,0)	
F MODEL_LINES_ID	NUMBER (*,0)	
* CREATED_BY	VARCHAR2 (30 BYTE)	
* DATE_CREATED	DATE	
UPDATED_BY	VARCHAR2 (30 BYTE)	
DATE_UPDATED	DATE	
PK_MODEL_MODES (ID)		
FK_MODMODE_MODLINE (MODEL_LINES_ID)		
PK_MODEL_MODES (ID)		
FK_MODMODE_MODLINE (MODEL_LINES_ID)		
FK_MODMODE_IC ()		

MODEL_MODES

This was intended to be the cross reference between timing definitons and beampaths (so one can model different timing definitions through the same beamline). But we never used it, so this switch table is probably redundant.

MACHINE_MODEL.MODEL_LINES		
P * ID	NUMBER (*,0)	
U * MODEL_LINE_NAME	VARCHAR2 (60 BYTE)	
* CREATED_BY	VARCHAR2 (30 BYTE)	
* DATE_CREATED	DATE	
UPDATED_BY	VARCHAR2 (30 BYTE)	
DATE_UPDATED	DATE	
AK_UK_MODLINES_NAME (MODEL_LINE_NAME)		
PK_MODEL_LINES (ID)		
PK_MODEL_LINES (ID)		
AK_UK_MODLINES_NAME (MODEL_LINE_NAME)		

MODEL_LINES

The number of different desitinations or paths a bunch can take through the accelerator. At SLAC we have 4.

ELEMENT_MODELS

The Twiss parameters and R-matrices for each device element, for each run. Ie, the number of rows = roughly number of runs x number of elements in each model (so a big table).

Most devices are equiv to one elment, some devices, such correspond to >1.

For example quads correspond to 3, being the twiss and R-matrices at the begining, middle and end of the quadrupole.