

Recent updates in Supertable II
Beams-doc-1934
Version 1.0

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Abstract

This document describes updates and improvements in Supertable II that were implemented in the past few months. A few new columns of information were added and some of the definitions of the quantities stored in certain older columns got changed. Some improvements were implemented as well in the framework of rebuilding Supertable II.

1. Introduction

Supertable II (see Ref. [1]) started being used officially in SDA since December 2004, after the end of the Fall 2004 shutdown. At that time Supertable II had 214 columns of information. Since then we added a few more columns which are currently located in the end of the table. In addition we have implemented some improvements in the definitions of pre-existing columns and we have improved the Supertable II building framework and documentation.

2. New columns

We have added in the end of Supertable II columns 215-224.

1) Column 215 (Hourglass factor in the end of HEP): This is a duplicate of column 125 but calculated during the last HEP set.

2) Column 216 (Shot type): Here we indicate if the store is an “Accumulator only”, a “Recycler only” or a “mixed” one. This is done on the basis of the values of the quantities `naccBunches` and `nrecBunches` which are based on the values of the state device `V:NPBSRC`.

3) Column 217 (MI 8 GeV Longitudinal sigma for Recycler bunches): This is equivalent to column 131 but for the Recycler bunches only. We are using device `I:SBD01S`.

4) Column 218 (MI 8 GeV Longitudinal sigma for Accumulator bunches): This is equivalent to column 131 but for the Accumulator bunches only. We are using device `I:SBD01S`.

5) Column 219 (pbar L emit at MI 8 GeV – Recycler) This is equivalent to column 132 but for the Recycler bunches only. It is the longitudinal emittance as measured in the end of the 8 GeV MI stage. We use device `I:SBD01E`.

6) Column 220 (pbar L emit at MI 8 GeV – Accumulator) This is equivalent to column 132 but for the Accumulator bunches only. It is the longitudinal emittance as measured in the end of the 8 GeV MI stage. We use device `I:SBD01E`.

7) Column 221 (pbar L emit at MI 150 GeV – Recycler) This is equivalent to column 133 but for the Recycler bunches only. It is the longitudinal emittance as measured in the end of the 150 GeV MI stage, right before transfer to Tevatron. We use device `I:SBD04E`.

8) Column 222 (pbar L emit at MI 150 GeV – Accumulator) This is equivalent to column 133 but for the Accumulator bunches only. It is the longitudinal emittance as measured in the end of the 150 GeV MI stage, right before transfer to Tevatron. We use device `I:SBD04E`.

9) Column 223 (pbar bunch length at MI 150 GeV, before extraction – Recycler)

This is equivalent to column 134 but for the Recycler bunches only. It is the bunch length as measured in the end of the 150 GeV MI stage, right before transfer to Tevatron. We use device I:SBD04S (right before transfer to Tevatron).

10) Column 224 (pbar bunch length at MI 150 GeV, before extraction – Accumulator)

This is equivalent to column 134 but for the Accumulator bunches only. It is the bunch length as measured in the end of the 150 GeV MI stage, right before transfer to Tevatron. We use device I:SBD04S (right before transfer to Tevatron).

3. Updated information in pre-existing columns

3.1 Sync Lite

1) For both proton and pbar emittances we now use the data from HEP set 2 for emittances reported in columns 110 (H pbar), 113 (V pbar), 116 (H proton), 119 (V proton). Before this change the proton and pbar code was pointing to “Remove Halo+12 minutes” which is not necessarily HEP Set 1. When we tried to use HEP set 1, the pbar emittances (especially the horizontal) made little sense. The Tevatron group plans on checking the possibility on moving the pbar mirror earlier so that we have valid data at least in the first HEP set. The pbar data from Remove Halo are not supposed to make sense because the mirror has not moved in yet. This refers to columns 109 and 112. These two columns will be replaced with some other quantity in the next rearrangement of Supertable columns.

2) The location of the Sync Lite data changed recently from Data Logger Inst1 to Inst3 and the code had to be modified accordingly

3.2 Calculated luminosities

1) The calculated luminosities at CDF and D0 at the beginning of HEP (columns 16, 17) and in the end of HEP (columns 28, 29) are not computed now if at least one bunch has a problem with emittances.

3.3 Efficiencies

1) The definitions of columns 151-168, 187, 189 (pbar to MI transfer efficiencies, pbar to MI acceleration efficiencies, pbar MI coalescing efficiencies, pbar to HEP overall efficiencies) have been adjusted and made consistent between the Supertable and minitables. The changes made are reflected in the “Column descriptions” definitions and all stores since 3610 (July 2004) were recomputed in a consistent way.

4. Updates in the Supertable II framework and documentation

1) We have added the feature that every time certain columns of the Supertable II are recomputed for one or more stores, a new AIDA file is generated automatically.

2) We have added a link in the SDA WEB page that helps people who try to create Supertable II plots with JAS (Java Analysis Studio).

In <http://www-bd.fnal.gov/sda/#supertable> on the left, right under "Column Descriptions", there is now another link on: "STII_Aida_Names"

This points to:

<http://www-bd.fnal.gov/SDAMisc/NewSupertableIIDescription/AllColumns.jsp> .

There, under AIDA Column Name one finds Supertable II column names which are appropriate to use within JAS.

3) The "Column Descriptions" link,

<http://www-bd.fnal.gov/SDAMisc/NewSupertableIIDescription/Column000.html> ,

has been also updated for several of the columns by adding additional useful information about the device names used in every column.

4) We have added links in the SDA WEB page which point to the "Top 10 stores by average initial luminosity" (http://www-bd.fnal.gov/SDAMisc/new_supertableII_top10ilum.html ,

http://www-bd.fnal.gov/SDAMisc/new_supertableII_top10ilum.xls), as well as "Top 10 stores by luminosity delivered to CDF" (http://www-bd.fnal.gov/SDAMisc/new_supertableII_top10dlum.html , http://www-bd.fnal.gov/SDAMisc/new_supertableII_top10dlum.xls)

5. Summary

In the next version of Supertable II we plan to use a new package "StorePhysics" for the computation of emittances. When we do that we will also make a Supertable II column rearrangement so that the newly added columns move closer to the location of other similar Columns.

References

[1] T. Bolshakov, V. Papadimitriou, Beams-doc-1332-