LeCalcTest

Version 1.21
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Antiproton Longitudinal Emittance Analysis

OVERVIEW

LeCalcTest is an abbreviation of: **L**ongitudinal **e**mittance **Calc**ulation **Test**. LeCalcTest is the Windows version of the ACNET longitudinal emittance measurement that runs during shot setup. LeCalcTest provides a much more in-depth analysis than that displayed during shot setup.

This distribution of LeCalcTest includes several sample AP1 wall monitor scope trace files from Antiproton transfers from the Accumulator to the Recycler and Tevatron. These files are in the \Sample Data\ sub-directory of the directory in which LeCalcTest was installed.

INSTALLATION

Run Setup.exe – follow the installation instructions.

GETTING STARTED

Getting Data

Antiproton wall monitor data can be obtained as follows:

1.) From an ACNET console, read an archived shot data record using the P207 console application.
2.) Once a shot data record is displayed, click on the "E-mail Data" button and enter your email address at the prompt. The data record will be emailed to you.
3.) Open the emailed record in your email browser and save the email as a text file to your hard drive.
4.) This file is now readable by LeCalcTest.
NOTE: There is no need to remove the e-mail header lines from the file.

Analyzing Wall monitor Data

1) Read in a scope trace file by going to the File menu and selecting **Open…**
Select one of the files in the Sample Data folder or a file that has been obtained from the P207 ACNET console application (see "Getting Data" above).

2.) The longitudinal emittance calculation is performed automatically when a scope trace data file is read or when any parameters affecting the calculation are changed. The results of the longitudinal emittance analysis appear in the Calculation Results tree on the right side of the screen.

3.) If you interrupt on one of the "2.5 MHz Bunch N" items in the results tree, the display will zoom to the N^{th} 2.5 MHz bunch.

4.) You can zoom in to the N^{th} 53 MHz bunch by interrupting on the "Bunch N" item in the tree for that bunch.

5.) You can also zoom in on any part of the graph using the magnifying glass tool on the tool bar above the graph.

CAUTION on printing: There is a bug in ChartFX (the ActiveX control used for plotting the scope trace data). If you print the chart while it is zoomed with the magnifying glass tool you will either get the entire zoomed chart (many pages) or something other than what you've zoomed in on (one page, but the wrong thing).

If you want to print a zoomed chart, it is recommended that you zoom in according to steps 3) or 4) above.

6.) Plotting Options: Line colors and widths as well as marker types sizes and colors can be changed by opening the Plot Options dialog from the Options Menu.

Miscellaneous

I am in the process of writing a help file. Since this is not nearly as fun as writing the code, it will be a while before it is ready to go.

Updates can be downloaded from:
http://www-bdnew.fnal.gov/pbar/organizationalchart/werkema/LongEmit.htm