A Controls Java-Based Synclite Viewer Application

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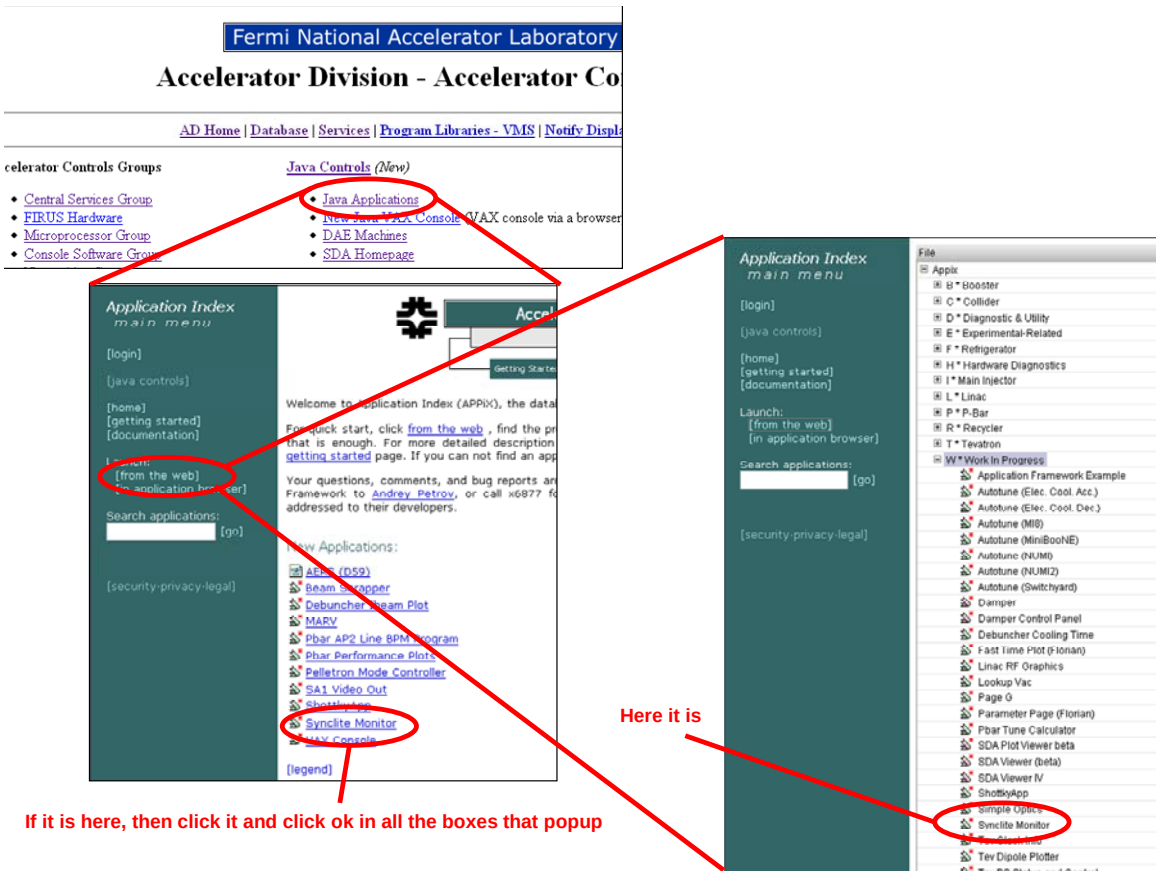
1 Introduction

The Tevatron Synclite monitor is a beam profile monitor using synchrotron radiation. The front end is a PC running Labview which does the data acquisition and display. This document describes a java-based controls application written by Alfredo Sánchez for displaying the images and profiles collected by the front end PC.

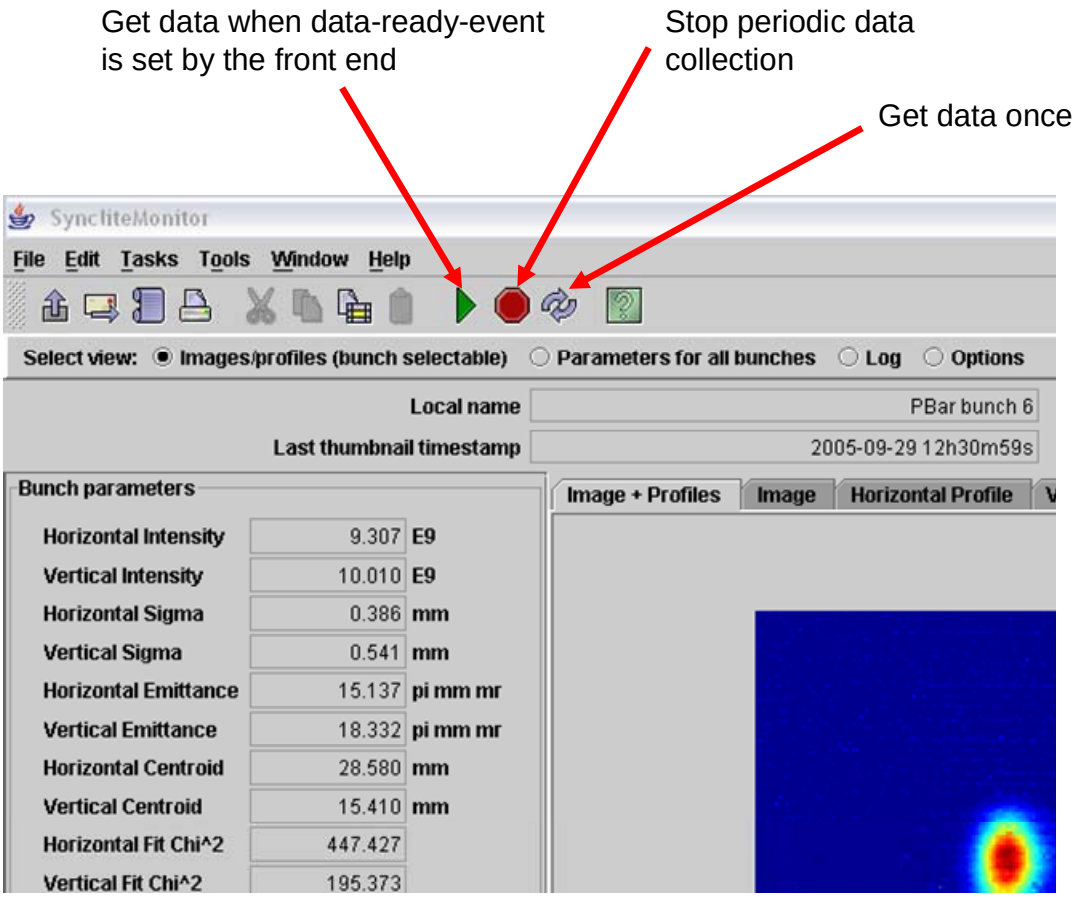
2 SyncliteMonitor

The Controls department of the Accelerator Division has developed a java framework for graphical displays and communication via ACNET. This framework handles setting up the links with the data acquisition engines and provides certain GUI features to facilitate application development. It functions in much the same way as the CLIB system.

The SyncliteMonitor application can be found on the controls website.



Once the application starts, you must tell it to start getting data from the front end. You can either click on the get once button (circular arrows), or the periodic updating button (green triangle). The periodic updating works from the T:SLRDY state device which is set by the front end when it has new data. For Synclite, this is typically once every 90 seconds or so.



2.1 View Bar

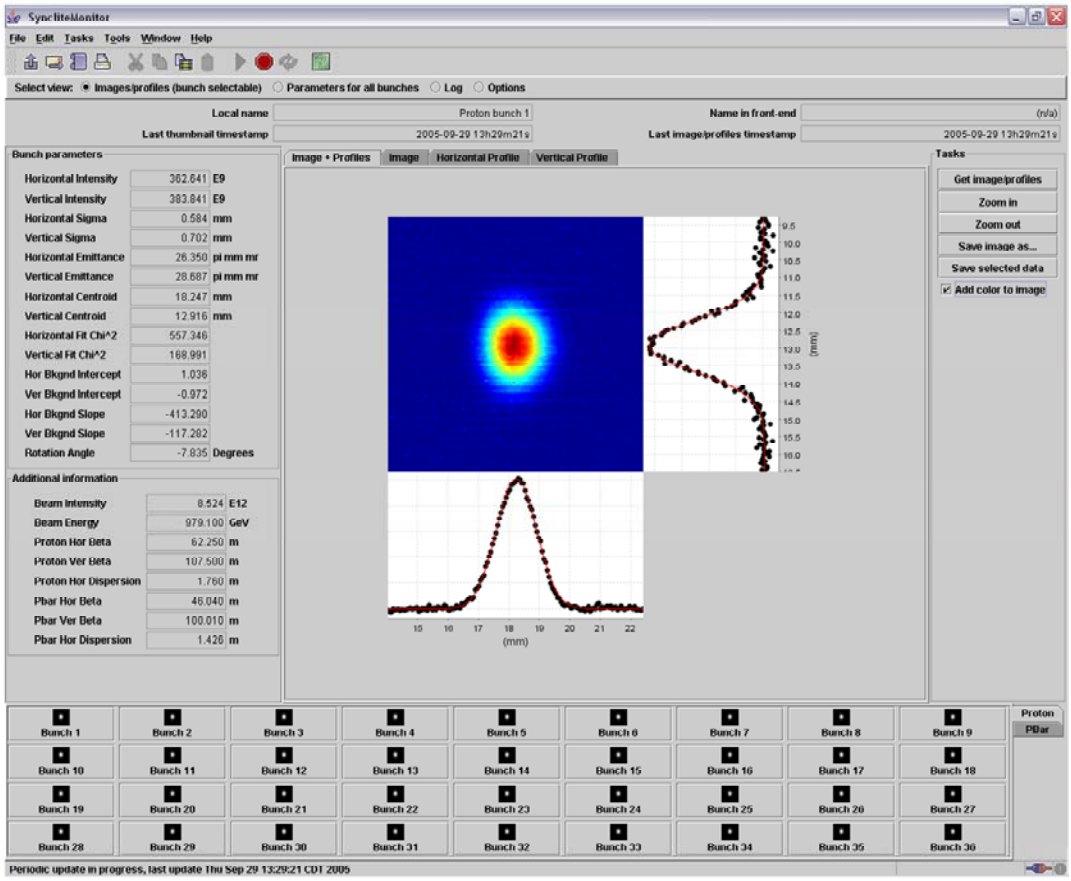
The Select View bar just under the top toolbar selects between 4 views: Images/profiles, parameters for all bunches, log, and options.

2.1.1 Images/profiles

This view displays the image and profiles for a single bunch. It also lists the parameters for the selected bunch. There are 4 choices of displays: a combination image and profile, just the image, and just each profile. These are selectable by tabs at the top of the center image pane.

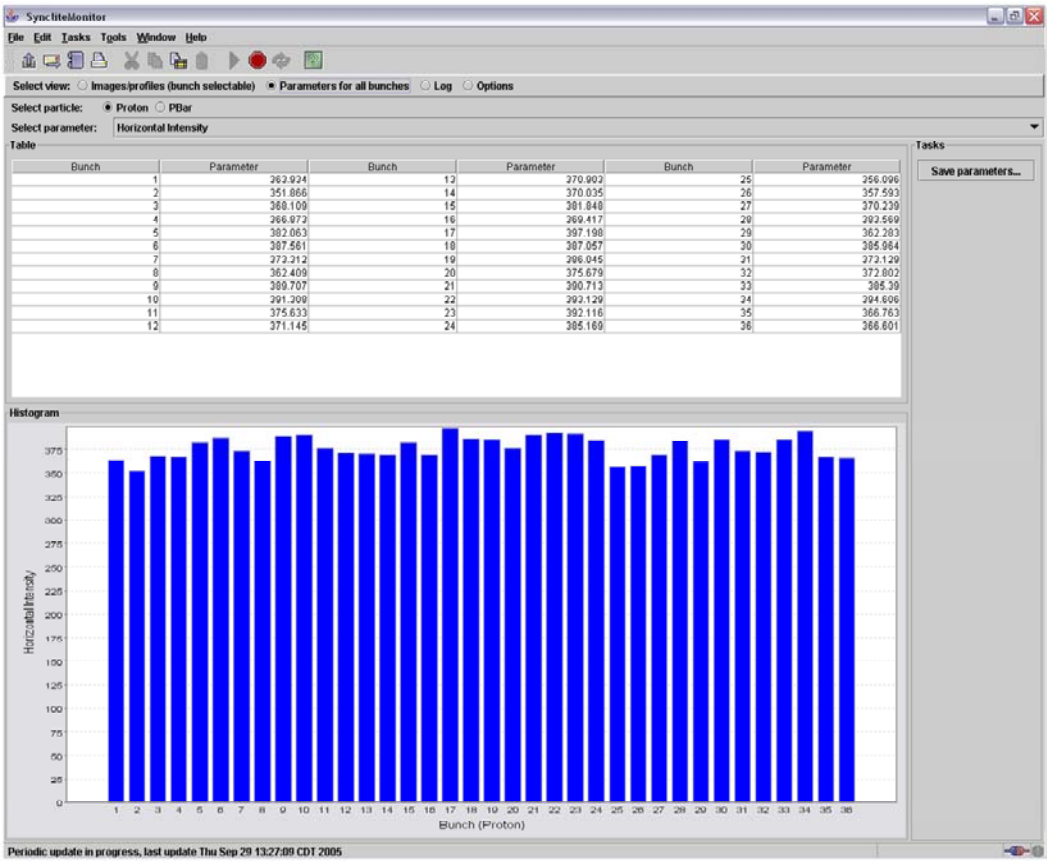
On the right are several activities that can be performed, including zooming in and out, and saving the images to a file. The image can be colorized by selecting the *Add color to image* checkbox. **Note:** If you save an image to a file, there are 2 caveats to be aware of. First, the image data is scaled to 0-255 from whatever the original data range was. Second, the data in the front end is background subtracted, implying that there are negative pixel values. When these are sent to this viewer, they are truncated at 0. So only the positive fluctuations are present.

At the bottom of the window are the thumbnail displays of all 36 bunches for the selected particle type. Clicking on one of these retrieves the image and profiles for that bunch.



2.1.2 Parameters for all bunches

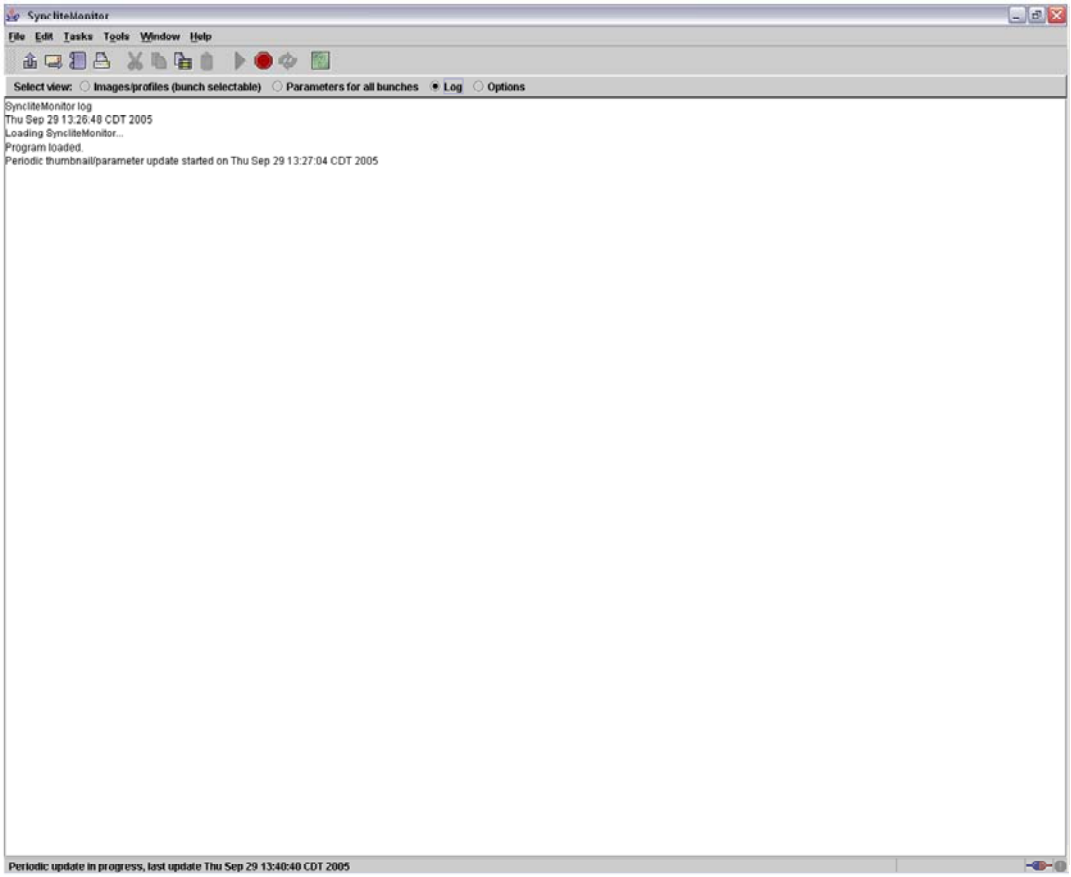
This view displays a histogram of the chosen parameter for all 36 bunches of the selected particle type. Parameter data can also be saved to a file from this view.



Bunch	Parameter	Bunch	Parameter	Bunch	Parameter
1	362.924	12	370.902	25	356.096
2	351.866	14	370.035	26	357.593
3	368.109	15	381.848	27	370.239
4	366.972	16	369.417	28	392.569
5	382.063	17	397.198	29	362.283
6	387.561	18	387.057	30	385.964
7	372.212	19	396.045	31	372.129
8	362.409	20	375.679	32	372.802
9	389.707	21	390.713	33	385.39
10	391.209	22	392.129	34	394.606
11	375.633	23	392.116	35	366.763
12	371.145	24	385.169	36	366.601

2.1.3 Log

This view is a text page displaying log messages concerning the application.



2.1.4 Options

This view has a handful of settable options regarding the display of images and such. The attenuation factors refer to the scaling of the image to conform to the PNG requirement of 0-255. Setting these to 0 autoscales the image to 255. After making a change, you must click the Apply changes button.