

# **A Controls Java-Based Synclite Viewer Application**

Randy Thurman-Keup

Alfredo Sánchez<sup>1</sup>

AD / Instrumentation Department

September 29, 2005

BEAMS-DOC-1973-V1

---

<sup>1</sup> Summer student in 2005.

# 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.

The image shows two screenshots from the Fermi National Accelerator Laboratory website. The top screenshot is the 'Accelerator Division - Accelerator Controls' page, which has a navigation bar with links: AD Home, Database, Services, Program Libraries - VMS, and Notify Display. Below this, there's a section for 'Accelerator Controls Groups' with links to Central Services Group, FIRUS Hardware, Microprocessor Group, Console Software Group, and Java Controls (New). The 'Java Controls (New)' link is circled in red. Below it, a list of links includes Java Applications, New Java FAX Console, DAE Machines, and SDA Homepage. The 'New Java FAX Console' link is also circled in red. A red arrow points from this link to the bottom screenshot.

The bottom screenshot is the 'Application Index main menu'. It has a sidebar with links: [login], [java controls], [home], [getting started], [documentation], [search], [from the web], [in application browser], [security:privacy:legal], and [legend]. The '[from the web]' link is circled in red. A red arrow points from this link to the right side of the page. The right side of the page is titled 'Application Index' and contains a list of applications. The 'Synclite Monitor' application is circled in red. A red arrow points from the text 'Here it is' to this application. Another red arrow points from the text 'If it is here, then click it and click ok in all the boxes that popup' to the 'Synclite Monitor' application.

Application Index  
main menu

[login]  
[java controls]  
[home]  
[getting started]  
[documentation]  
[search]  
[from the web]  
[in application browser]  
[security:privacy:legal]  
[legend]

Welcome to Application Index (APPIX), the data  
For quick start, click [from the web](#), find the pr  
that is enough. For more detailed description  
[getting started](#) page. If you can not find an app  
Your questions, comments, and bug reports are  
Framework to [Andrey Petrov](#), or call x6877 f  
addressed to their developers.

Java Applications:  
[AEPS \(DS9\)](#)  
[Beam Skipper](#)  
[Debuncher Beam Plot](#)  
[MARV](#)  
[Pbar AP2 Line BPM Program](#)  
[Pbar Performance Plots](#)  
[Pelletron Mode Controller](#)  
[SA1 Video Out](#)  
[ShotWedge](#)  
[Synclite Monitor](#)  
[Tev Console](#)

Application Index  
main menu

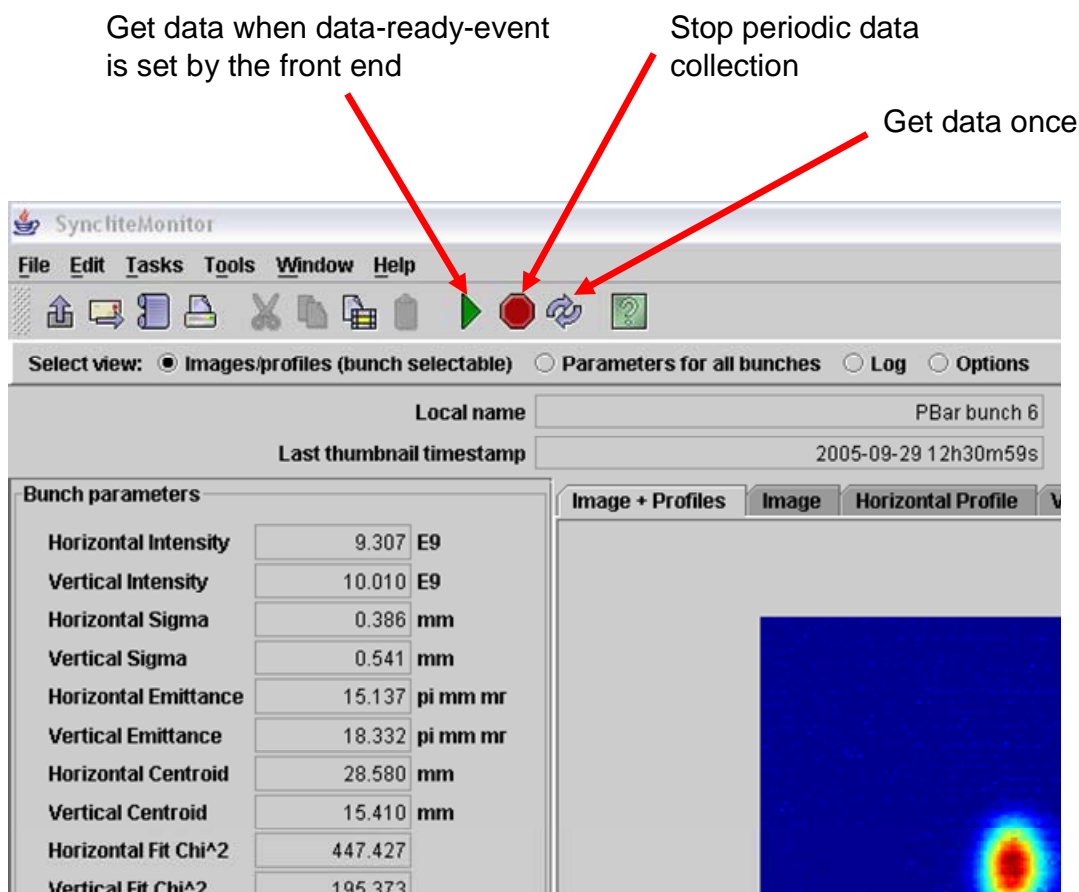
[login]  
[java controls]  
[home]  
[getting started]  
[documentation]  
Launch:  
[from the web]  
[in application browser]  
Search applications:  
[go]  
[security:privacy:legal]

File  
 Appix  
 B \* Booster  
 C \* Collider  
 D \* Diagnostic & Utility  
 E \* Experimental-Related  
 F \* Refrigerator  
 H \* Hardware Diagnostics  
 I \* Main Injector  
 L \* Linac  
 P \* P-Bar  
 R \* Recycler  
 T \* Tevatron  
 W \* Work In Progress  
 Application Framework Example  
 Autotune (Elec. Cool. Acc.)  
 Autotune (Elec. Cool. Dec.)  
 Autotune (MIB)  
 Autotune (MiniBooNE)  
 Autotune (NUMT)  
 Autotune (NUMT2)  
 Autotune (Switchyard)  
 Damper  
 Damper Control Panel  
 Debuncher Cooling Time  
 Fast Time Plot (Pionant)  
 Linac RF Graphics  
 Lookup Vac  
 Page 0  
 Parameter Page (Florian)  
 Pbar Tune Calculator  
 SDA Plot Viewer beta  
 SDA Viewer (beta)  
 SDA Viewer IV  
 ShotWedge  
 Simple Opus  
 Synclite Monitor  
 Tev Dipole Plotter

Here it is

If it is here, then click it and click ok in all the boxes that popup

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

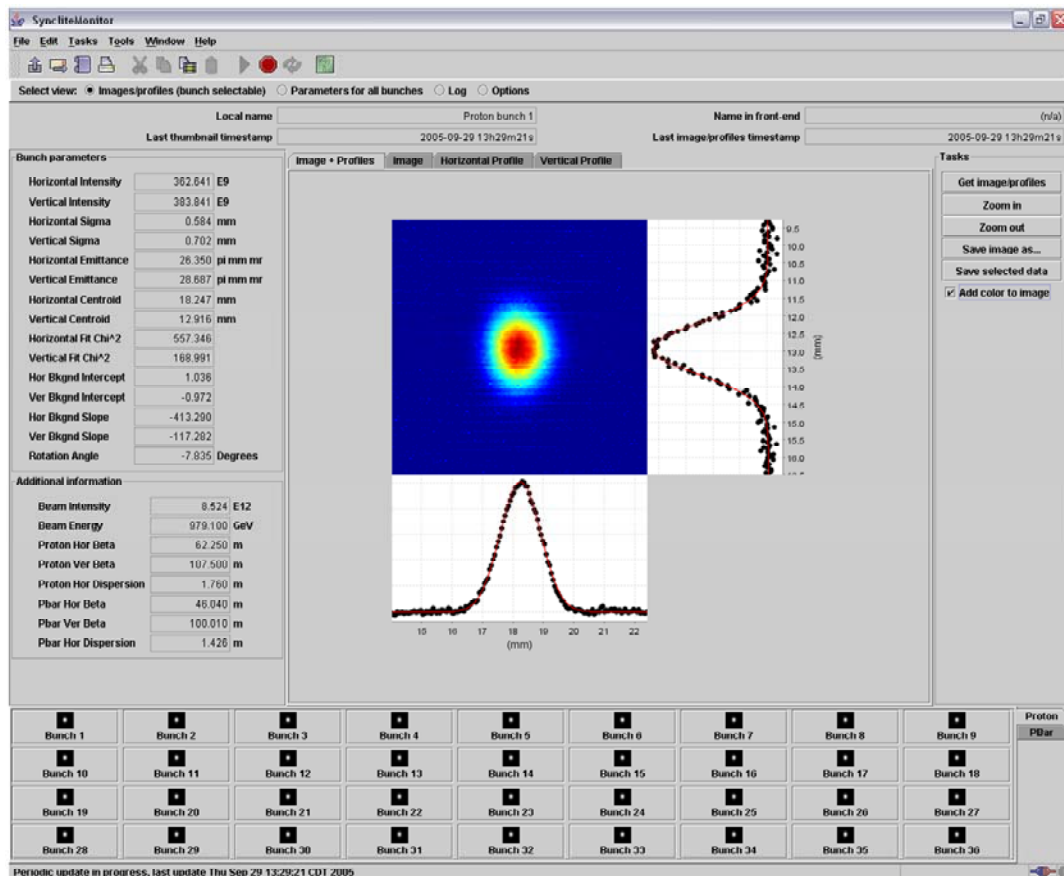
The Select View bar just under the top toolbar selects between 4 views: Images/profiles, parameters for all bunches, log, and options.

### 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.

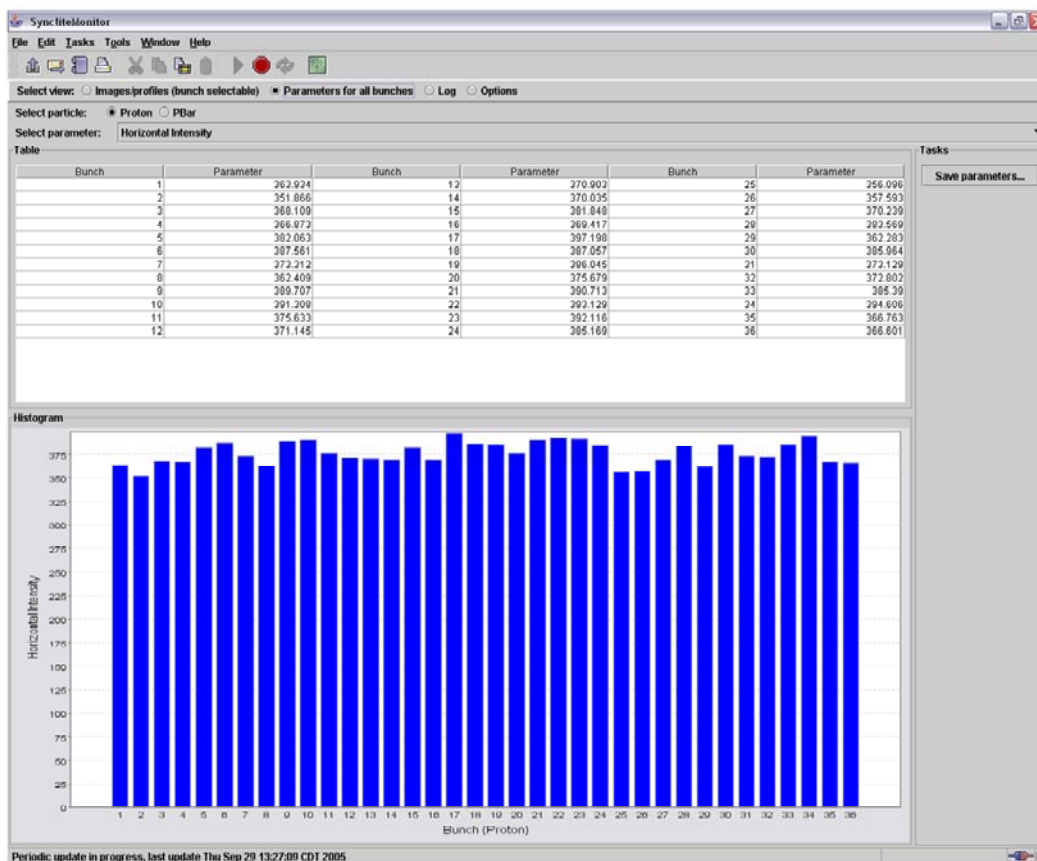
On the right are several activities that can be performed, including zooming in and out, and saving the images to a file. The image can be colorized by selecting the *Add color to image* checkbox. **Note:** If you save an image to a file, there are 2 caveats to be aware of. First, the image data is scaled 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.



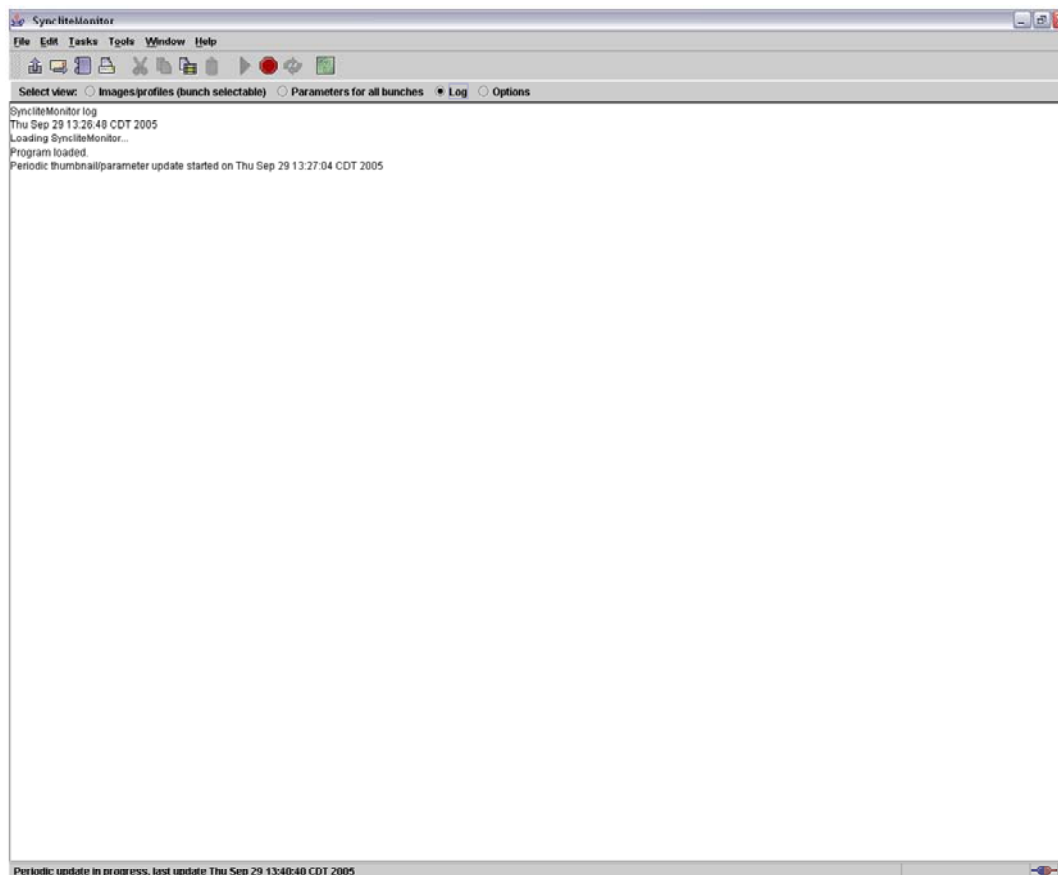
## 2.1.2 Parameters for all bunches

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.



### 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.

