Hola Milagro Collaborators!

My name is Angela Marotta and I'm a UC Irvine undergraduate working under Dr. Garaung Yodh and Dr. Anthony Shoup. I'm launching a new website, which you can find at http://hep.ps.uci.edu/~amarotta/pmt_plot_stuff/scaler_data/text_or_plot.html

The purpose of this website is to help make the study of scaler data easier for anyone in the Milagro collaboration. It allows the user to define a graph by pointing and clicking instead of having to write a program to do it. The user can also choose to have text output of rates along with certain other factors (such as air pressure) in nice neat columns which can then be imported easily to Excel or any other program for study.

This program features graphical output in the form of a scatter plot, a running average, and a profile histogram. It can plot up to five different rates as well as one addition (such as air pressure, or outside temperature) on the same graph. There is an option to add a second graph with up to two rates plus one addition on it. The user may also graph their chosen rates against that addition. In the text section, the user may choose up to five different rates along with three additions, each of which would fill a column.

**To create a plot**

On the first page, choose plot and then click the continue button. On the next page click whether you would prefer to enter the date in Julian date format or calendar format. Next, click the continue button. The next page is the meat of the program. First, enter the date in the format that you have chosen. The next section of the page is divided into two columns, Graph one and Graph two. For Graph one, it is mandatory to choose at least one data type. Graph two is optional; if you want to see a graph just underneath the first one then you should fill out this section (this is useful if you want to see two rates close-up that are on different scales). For the data type you have the option of pmt-integral, pmt-differential, raw trigger, and gated trigger. Pmt-integral lets you enter a range of pmt's to be summed in the following format:

startpmt:endpmt

If you wish to see the rates for one pmt only, choose pmt-differential and choose a pmt number. For raw trigger and gated trigger, there is no need to enter any numbers.

The next two boxes ask you if you would like to choose from a list of additions and what you would like to see on the x-axis. If you choose to add one of the options to your plot and select Julian date as the x-axis, that option will be plotted along with your rates against the Julian Date. However you may also choose to plot your rates against

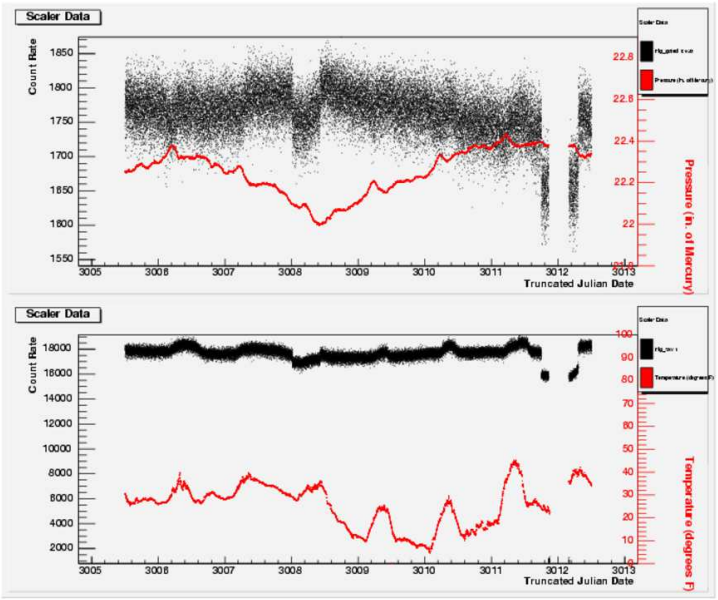
your addition.

Next, you will be asked for a range of counts. If you leave the zeros, the graph will autoscale. If you give a range of counts, that is what you will see on the y-axis.

Finally, you will be asked for what kind of plot you would like to see. A scatter plot is just a plot of the points as they are. A running average takes the first seven points, averages them, and returns that average as the first point. Next it takes points 2 through 8 and averages those to be the second point. It does the same for the third point (average of points 3 through 9) and so on. The error bars represent the standard deviation of each point. Finally, a profile histogram seperates the data into bins along the x and y axes and plots them.

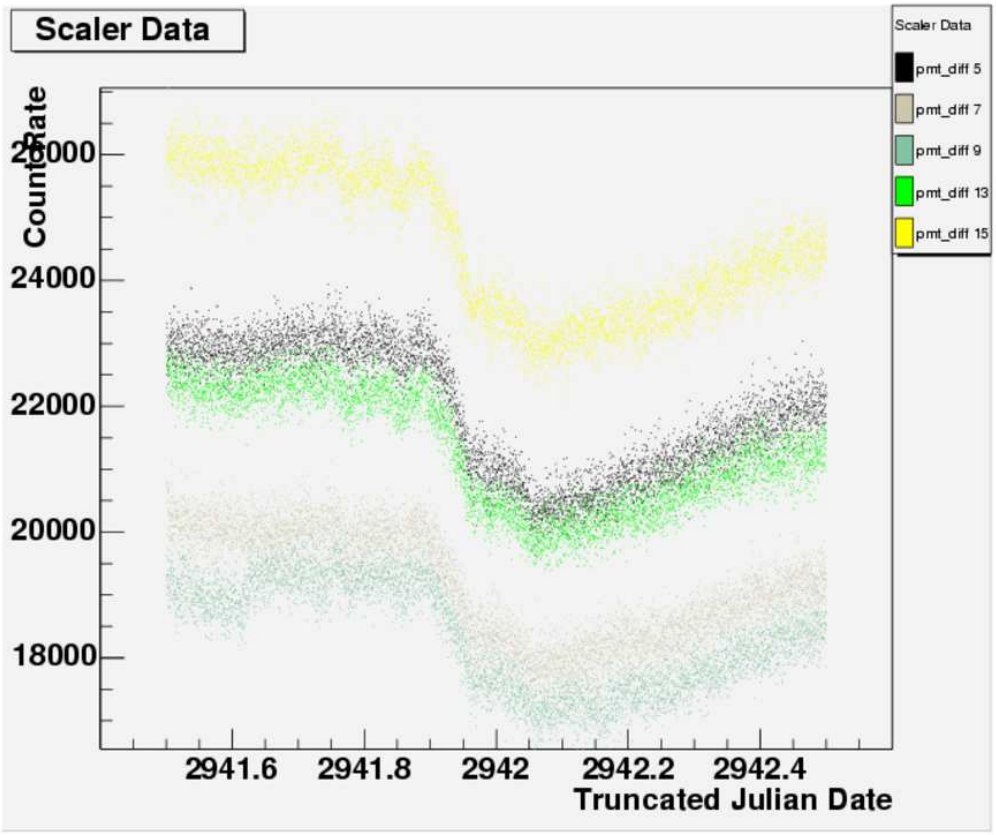
**Two Examples**

Supppose I wanted to compare the gated trigger rate, the raw trigger rate, the outside temperature, and the air pressure for the first week of January 2004. In order to do this, I would choose gated trigger for the first data type on Graph one and raw trigger for the first data type on Graph two. Then for the additions, I would add Air Pressure in one column and Outside Temperature in the other. My output would then be:




The first graph shows the gated trigger rates and pressure against the Truncated Julian Date. The second graph shows the raw trigger rate and the temperature against the Truncated Julian Date. Now they are easily compared.

Suppose that I wanted to see five different pmt's rates. I would just choose pmt-differential for all the data types and type in the numbers of pmt's that I would like to see. If I had chosen pmt's 5,7,9,13, and fifteen for October 29$^{th}$ 2003, it would look like this: These were both scatter plots using the autoscaling.




The text section is similar to the graphical section except that it is simpler. There is no option for a second set of data, but you may choose up to three additions. The first column of output will be the Julian Date, followed by the rates, and finally the addditions. Everything will be given in the order that you've specified. The number of columns of rates will correspond to the number of rates that you've chosen, and the number of columns of additions will correspond to the number of additions that you've chosen.

This program was written for you to help make your research easier, but it is still a work in progress. If you run across anything in the program that you don't understand or if there is a problem with

the program, or you would like to see something added to it, please don't hesitate to email me at amarotta@hep.ps.uci.edu.

Thank you for your time,

Angela Marotta, UCI undergraduate