

# Setting up a data taking procedure

## Phys150 Special topics

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## Review: Developing a more rigorous data taking plan

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We can't just make one measurement and be done.

Suppose you wanted to test whether there is a day-night difference. It would be simple to tell if it completely goes away, just with LEDs. But could you confidently observe a 10% difference? 1% difference?

Could be fooled by varying ambient light getting into leaks.

Maybe the bias voltage or threshold voltages drift a bit.

Maybe there are temperature dependencies.

A careful measurement requires controlling for all these things, by measuring them.

So we want to be able to take a large number of individual measurements and use them to extract a conclusion. Typically this means measure rate as a function of  $X$ ,  $R(X)$ , to determine its dependence, but also measure and control for other dependencies such as  $R(Y)$ ,  $R(Z)$ ,  $R(t)$ ,  $R(T)$ , ...

# Homework

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This week's homework assignment was to write a summary of what cosmic ray property you want to measure and a sketch of how you will do it.

I'm happy to talk about your idea.

Today 2-3pm in Zoom

Wednesday 12-2 or 4-5 by appointment (email me).

For lab this week, set up your data taking tools and take an overnight run. Analyze the time stability thinking about statistical and systematic uncertainties. Due next (now this) Friday.

We'll do some of that today.

Some missing lab work.

Some good lab work. (See examples page.)

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Comment on ambiguity of assignments.

# Where to put the data

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Demo creation of these directories.

Description of this is in my ELog [here](#)

# Results of an overnight run

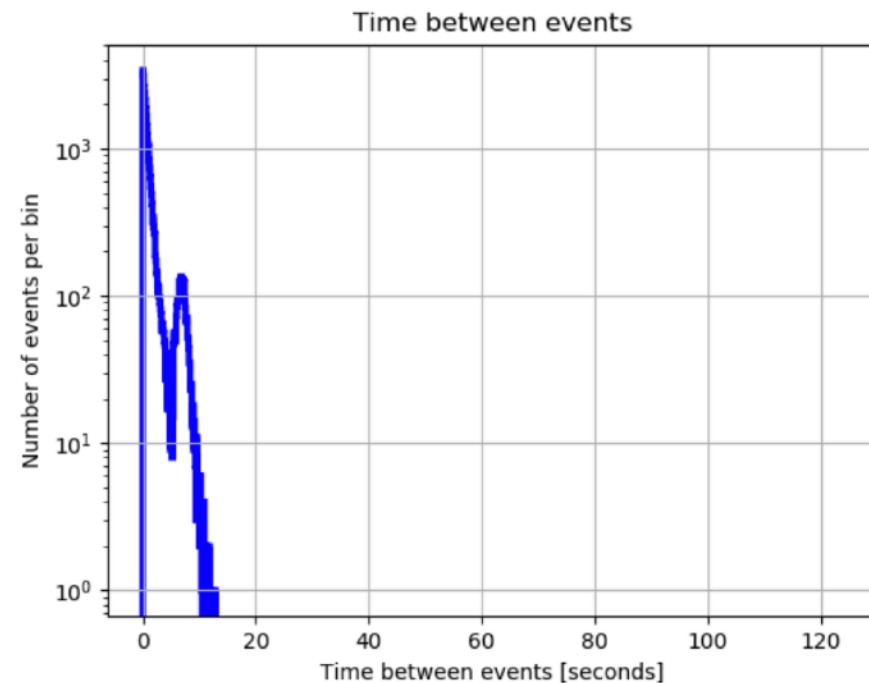
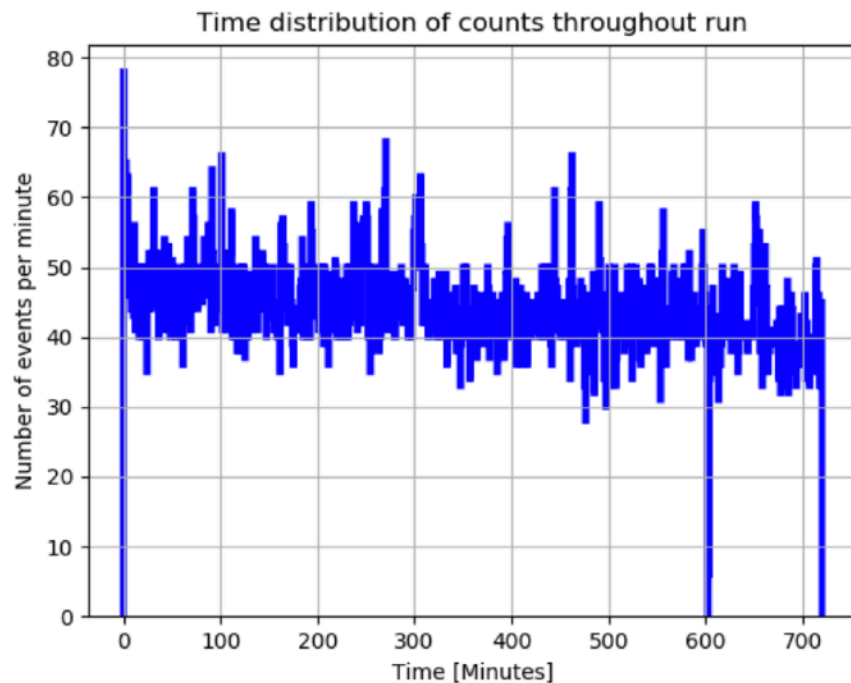
Hmm. There are several things going on...

Next time we will talk about an improvement to understand the data better.

## Cosmic run number 1: Do a first test run

Run started at Mon 25 Jan 2021 11:16:54 PM PST

Plots updated Tue 26 Jan 2021 11:17:29 AM PST



```
1 : Mon 25 Jan 2021 11:16:54 PM PST : Starting run, runtime=0 desc=Do a first test run
1 : Tue 26 Jan 2021 07:51:23 AM PST : Open curtains
1 : Tue 26 Jan 2021 09:00:58 AM PST : Notice bright sun is hitting the readout end of the bars
1 : Tue 26 Jan 2021 09:11:25 AM PST : Bars are now well into the shade
1 : Tue 26 Jan 2021 09:24:44 AM PST : Messed around with the CosmicRunSummary code that caused temporary delays in data taking code
1 : Tue 26 Jan 2021 11:17:22 AM PST : Run ended normally upon command
```