Lab #2 – IP

The picture below shows the general setup for this experiment.

Section E.1

Paragraph 3

Logger Pro lists the *standard deviation* of the measured acceleration and the mean acceleration for the N data points in your Region Of Interest. You must report the uncertainty in the mean acceleration, the *standard error* in a_{meas}. As described in Appendix V.B.1.3, the standard error δa is related to the standard deviation σ_a by

$$\delta a = \sigma_a / \text{sqrt}(N).$$

Fill in the blank report

You may either download and edit the document, or neatly hand-write your words, equations, and numbers into the blanks in the pages provided in Appendix IX, then scan it and upload it to Canvas in a pdf format.

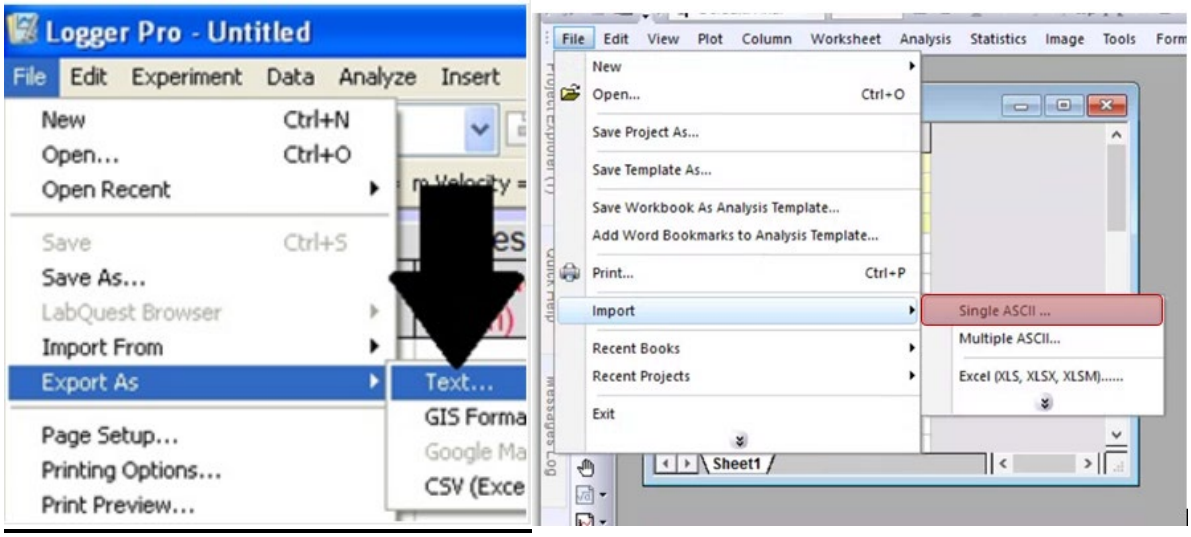
Lab 2 IP - Origin Guide

Here is a visual aide to help you through Mechanics Lab 2 - Inclined Plane!

Section E1:

1. After you take your data in Logger Pro, go to *File-->Export (As)-->Text*. You will get a dialogue box asking where to save it. Name it and save it to your file on the

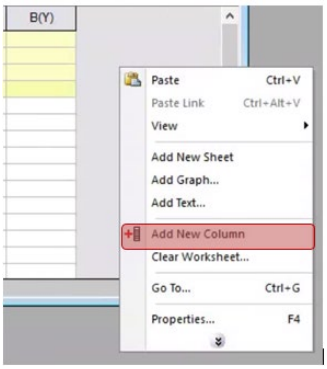
L:/ Drive. You may need to choose *.txt* from the drop down menu below the name of the file if it shows something like *.xls* or otherwise.



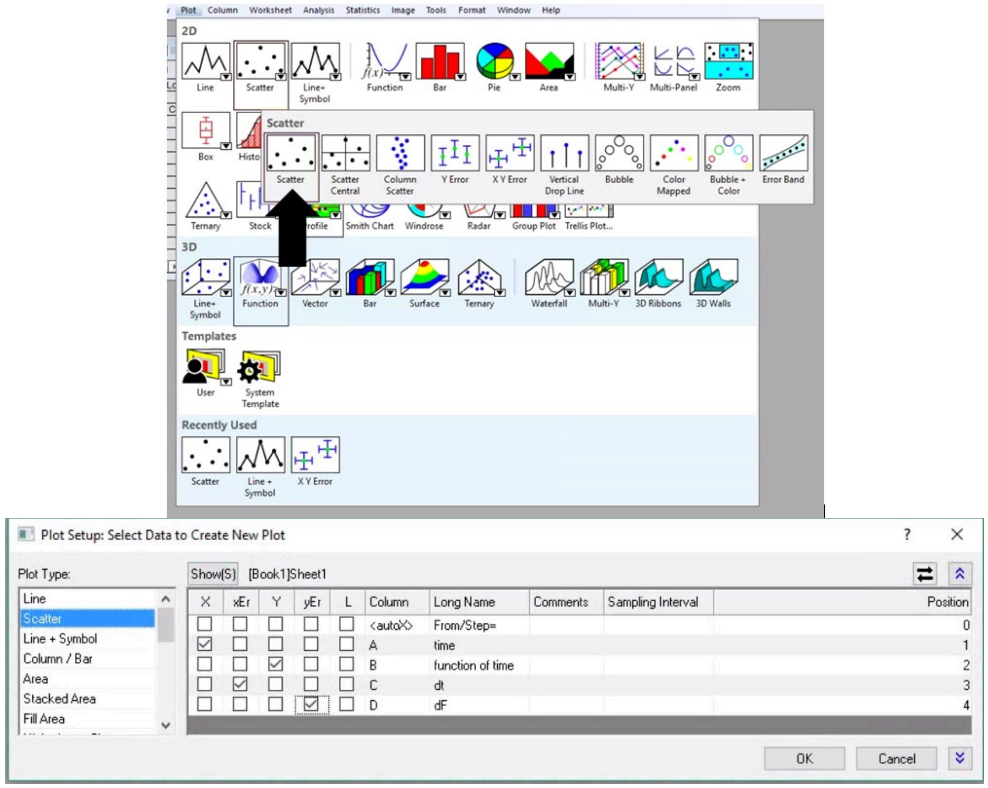
2. Go to Origin and select *File-->Import-->Single ASCII*. Find your file and select it. Your data should be in Origin now.
    a. **IF you receive an error about the file not being imported correctly**, chances are you did not open the correct logger pro file when you first began the lab. When in Logger Pro, go to Open, then select *Programs(P:/)-->Logger Pro 3-->_Mech Labs-->IP*. Sadly, you will have to re-take your data, or spend 30 minutes removing empty lines by hand.

3. If you still have columns for *Time(not t)* and *Gate State*, delete them. Also, remove any data at the top or bottom of your data that appears incorrect. You should not usually remove more than 5 lines each, however.

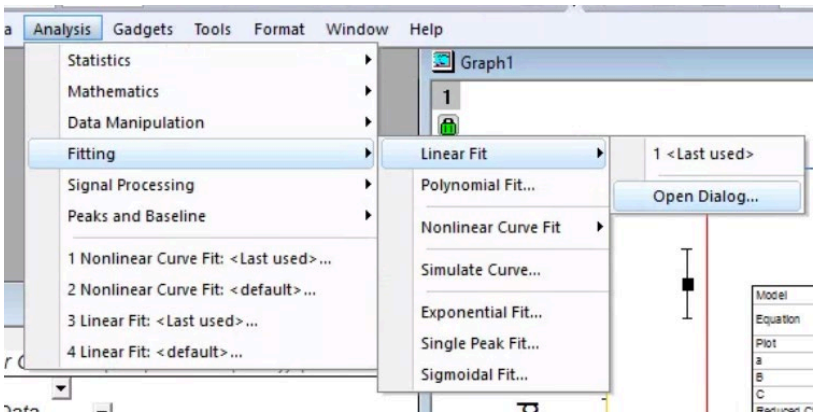
4. Right-click in the area around your data and select *Add New Columns* from the list. Once you have this new column, Fill all of the values in that column with .008, since that is the assumed error in all of your velocity measurements.



5. Go to *Plot-->Symbol-->Scatter*. In the new window, Select the *t* data as the X data and select *velocity* as the y. Make sure to select your errors in time and velocity for *Xer* and *Yer* respectively. If you have an *Add* button, press the double arrow button on the bottom right, and then press OK.



6. Once you get your graph, you need to fit a line. Go to *Analysis-->Fitting--> Linear Fit(-->Open Dialogue)*. For this lab, the resulting dialogue box can be completely ignored, and you can safely press *OK* immediately.



7. Clean up the graph and save it to the L: drive, so that you can get it on your computer and then attach it to your report. Make sure that you label your axes

with the quantities plotted and their units, you give your graph a title, and write your names on the graph, as well.