EN PHYS 131 - EZ01

Common Mistakes in Lab 6

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Overall, the reports were done well. Nice work! Don't forget about the lab template (link on website). It's a valuable resource when writing these reports. Below are some of the common issues I found:

- It is crucial to check whether a predicted value falls within the error range of your measurement. If you measure $9.28 \pm 0.40\ m/s^2$, then $9.81\ m/s^2$ does **NOT** fall within the error range and the value you measured is not consistent with the predicted value. The % difference is only useful if you already knew what your measurement should be.

- Plots are the best way to represent your data. It is difficult to determine what is going on from just a big table of numbers. If you show a plot of your data, you don't need to include a table of the same data (unless it is explicitly asked for).

- Apart from the title page, try not to leave big empty spaces in your reports. It looks better and saves paper. Typically, lab reports should be around 4 pages long (without the title page).

- Label equations. You can then refer to them as "Equation #" throughout your report.

- Figures and tables need short captions, and should also be labelled (ie. Figure 1, Table1, etc…). Ensure axis labels are readable and not cut-off. The same goes for LoggerPro fit boxes.

- If you need to calculate a value in the Results section, show the equation that you used. This includes error calculations!

- Watch significant figures in the errors! If your value for g is $9.28\ m/s^2$, your error shouldn't be given past the second decimal points (ie. **WRONG** $0.0287\ m/s^2$, **RIGHT** $0.03\ m/s^2$)

EN PHYS 131 - EZ01- Lab 7

Due Mon. Feb. 8 @ 5 PM

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Procedure:

1. Following the TA's demo, use obtain a spark record of the glider's motion once released. You should have ~50 points.
2. Circle and number the spark burns. Ensure there are no gaps (if so, redo 1). Select one of the points near the beginning as the origin.
3. Measure the distance to each point from the origin and input into a spreadsheet. There is a measurement error on each of these! Ignore time errors of the sparks.
4. Follow analysis in lab book. Ensure your values have the appropriate errors!
5. Answer question in lab book.

$$\bar{v} = \frac{x_i - x_0}{t_i - t_0} \qquad \bar{v}_{\text{inst}} = \frac{x_{i+1} - x_{i-1}}{t_{i+1} - t_{i-1}}$$

In report:

- 2 plots - position & instantaneous velocity vs. time
- Hand-drawn "fits" on these plots
- Schematic of apparatus.
- Average velocity over entire trip
- Tangent line estimate on position vs. time plot
- Qualitative sketch of acceleration on the velocity vs. time plot. Label regions where acceleration increases, decreases or is constant *(Hint: what affects the glider's motion? This gives 3 different regions of motion.)*
- Plot for the question in lab book.