

- A. Due in class Wed 11/7/2012, AND upload to BB before class** (look under “assignments”, and use the “browse” button to upload. An honest attempt earns 10% of the points on this lab. Content will not be graded. It needn't be polished at this stage.

**Rationale for this assignment:** All science writing, especially experimental data acquisition, relies heavily on figures, graphs and tables. It is these that leave the lasting impression and that form the basis for the text, so we want to get this basis right!

On Wednesday 11/7/2012, please come to class a hard copy of your analyzed results:

- (1) A graphical representation of the angular position *vs.* time data, with annotations that describe how you measured quantities.
  - (2) A tabular representation of the period *vs.* amplitude data.
  - (3) A graphical representation of the period *vs.* amplitude data.
- Use a graphics package or spreadsheet for graphs and tables. MS Excel is a good choice.

Label the class copy with a random 5-digit number and remember it, so you can retrieve your work at the end of class, by which time it should have some helpful comments on it. In your lab groups, you will discuss the presentation of the data and provide constructive, critical comment as feedback on the (anonymous) work of another group. As you go along, note important merits and demerits of the data presentation on the papers, and also summarize important things for later discussion with the class. Together we will discuss a set of criteria that constitute good data presentation.

- B. Due Fri 11/7/2012 - upload to BB 5pm. This is a “mini-report”. Use complete sentences, and think about clarity of prose and figures; your presentation is a good fraction of the grade (see rubric).** I estimate about a page for #2 & 4, maybe up to 2 pages for #3, about half a page each for #5 & 6.

1. Coversheet: Name, Date, Title of the work, acknowledgements, including group members.
2. Present a graph of the raw data (position *vs.* time), briefly explaining the data (your audience is a PH21x student). Why is it important to include this graph in a report?
3. Present a tabular version and a graphical version of the analyzed data (period *vs.* amplitude). Explain how you went about the analysis, and comment on features of the analysis, including possible sources of error. Why is it important to include all this information?
4. Use the result from hw 1, #2 to find the small-angle period  $T_0$ , using a series expansion. You will have to decide how far to take the expansion. (Hint: You need only to find  $T_0$ , not corrections to  $T_0$ ). Measure the necessary parameters and calculate  $T_0$  for your experiment. What is the purpose of this exercise?
5. Use Mathematica to evaluate the exact integral to find  $T(\theta_{\max})$  for a number of values of  $\theta_{\max}$ . How many did you choose and why? Decide how best to display these results for the most impact.
6. Present a 1-paragraph summary of the work you have presented above.