

Reporting Lab Results

Over the course of the semester, you will be completing three kinds of written reports for some of the labs:

- “Brief Reports” are of moderate length (3 or 4 pages) and usually contain equations and non-text elements (tables, pictures or graphs).
- “Presentation Abstracts” are shorter (1 to 1½ pages), and contain at most one or two equations and at most one non-text element.
- “Paper Abstracts” are the shortest (less than 1 page), and may not contain either equations or non-text elements.

It is important that you pay close attention to which form you are writing at each point in the course.

Each kind of report has its own function, which will be discussed in lab. As you move down the list above, less and less detail is contained in each kind of report. In a “Paper Abstract” it is important to discard inconsequential facts, include the most important facts, and to present them very succinctly. Doing this well is somewhat difficult. We will start at the top of the list and work our way down, hopefully learning to be more and more concise and precise in writing.

Here are some tips to help you with your scientific writing, regardless of the type of report:

- Probably the most important: Your purpose is **NOT** to record a sequence of events (i.e., the things you did). The focus of the writing should be the physics revealed by the experiment.
- For verb tense, use past tense for things that happened during the lab, present tense for absolute facts or conclusions.
- The title from the lab manual serves the purpose of the lab manual, which is to give a very short name by which we can conveniently refer to the lab. But this does not serve the purpose of your report. Your title should be more specific to the experiment you are reporting on, and give more information.
- Never simply list things such as equipment. Such things should be included in the context of their purpose.
- Tables are a fine way to present several numerical results that are closely related. However, they are not worthwhile if there are only a few numbers.
- You should not show the derivations of equations used, nor the intermediate steps of a numerical calculation. For the Brief Report type, you might include equations illustrating either initial assumptions or final calculations.

Assignment: Brief Report

Due at beginning of lab, September 29.

Write a *Brief Report* for the experiment that you have performed over the past two weeks. Imagine that you are reporting on your activities and results to some job supervisor. She has the same level of physics knowledge as you do, but is unfamiliar with this particular experiment.

This report will be somewhat different from the “Abstracts” described on page 7 in the Lab Manual. It should follow all the guidelines for “Abstracts” *except*:

- It may be longer, but no more than 4 pages including the graphs. This actually means that it is easier, because you don’t have to be so careful with your wording. You should also go more in depth than you would in an Abstract.
- Plots, diagrams, and equations are encouraged, rather than forbidden.

A Brief Report should include the following:

- A title block, containing the information requested in items *a*, *b*, and *d* from the Lab Manual pg. 7. Make this a section at the top of the first page; a cover page is a waste of paper for a document this short. The title block should be formatted ***as covered in lab, NOT as described in the Lab Manual.***
- Cover all the topics in the second list on the Lab Manual pg. 7.
- There should not be separate sections with subtitles. The report is not long enough to warrant that. However, do use paragraphs appropriately.
- For the *Statement of Purpose*, don't just copy or paraphrase the first sentence in the lab manual. First, that's plagiarism. Second, that sentence doesn't give a purpose. It tells you what you will do in the lab. A purpose explains ***why*** you did these things.

NOTES:

- Each student hands in a separate report
- Your supervisor does not have a lab manual. Therefore, your report should be self-contained.
- You are ***STRONGLY URGED*** to have someone proof read your report. Preferably, someone who is ***NOT IN THIS COURSE***. If they can't understand what you did, then the report fails its purpose.
- Review the section on plagiarism – manual pg. 7.
- Grammatical errors and, especially, spelling errors are very bad things. With word processors on every computer, it is very easy to check these things. Not doing so tells me that you just don't care.
- Do not use funky shortcut symbols such as \wedge for exponents or E for scientific notation or +/- for \pm . Learn to use your word processor to do these things properly.

The Report for this particular lab should include (not in order):

- Three graphs (*s* vs. *t*, *v* vs. *t*, *a* vs. *t*) **on same page** along with fit equations. These should be referred to / discussed / described in the writing. Attach these to the end of your report, labeled "Fig.1," "Fig.2," etc.; do not intermingle with text. This is still a common mode of paper presentation, and forces you to treat them properly in the text.
- Don't include your data tables. That information is best transmitted through the graphs.
- Explain in detail your method for calculating θ and the result. Uncertainty is not required. Note that this is not used to calculate acceleration, however.
- Table of four values of acceleration with uncertainties – *s* vs. *t*, *v* vs. *t*, avg. *a*, and $g \sin \theta$.
- For this report only, include the final equation (using only algebraic symbols for directly measured quantities) used to calculate your uncertainty for the last entry in your table.
- Suggested questions to address in the conclusion: Do the four results agree? Which is most reliable and why? What are the major contributions to the uncertainties, and what would therefore be the best way to improve the results? Should the four results be averaged all together? Are the different analysis methods independent? What is the acceleration of the cart? Why? Was the acceleration constant?