

Format for Lab Reports

R. Forrest
University of Houston
Phys 3313
(1/21/2016)

The purpose of this document is to serve as an example of the proper style for lab reports. This document uses the AIP template in Microsoft Word. Remember to summarize your numerical results here in the abstract, with numerical error and units. The abstract should not exceed 100 words.

I. Introduction

The purpose of this document is to give an example of the style for your lab reports. All lab reports should be in the style of a Journal of Applied Physics paper. You can achieve this using the AIP style Template download, for TEX or Microsoft Word, at the [website](http://publishing.aip.org/publishing/authors/sample-manuscripts) <http://publishing.aip.org/publishing/authors/sample-manuscripts>. This document was prepared using the above template in Microsoft Word. The line spacing was changed to single, and the column format set to two-columns from the Introduction forward.

In your introduction, give the background of your experiment, and state the purpose of your experiment.

II. Theory

Explain the theory involved in your experiment. Include all equations you will use, defining all variables. For example, Newton's second law states that force, \mathbf{F} , is given by

$$\mathbf{F} = m\mathbf{a}, \quad (1)$$

where m is the mass of an object and \mathbf{a} is its acceleration. Equations only need to be

numbered if you'll be referring back to them later in the report.

Be sure to include references. You might refer to a book¹, a web site², or a paper³.

Further information about paper styles is available at <http://publishing.aip.org/authors/preparing-your-manuscript>, and <http://www.jurp.org/Resources/about/preparingamanuscript.pdf>. Templates are available at <http://www.phys.uh.edu/~rforrest/>.

III. Experiment

Here you give the details of what you did. If you deviated from what was expected, explain why. Include diagrams of the apparatus. Do not give a numbered list of steps, explain using sentences.

IV. Results & Analysis

Give your results. Include units. A paragraph always comes before a table or figure. It's best to put all data in a table or in a plot, which ever is most practical. Remember that the whole report should be four pages or less. All tables and figures must have names and captions, as in Table 1 and Figure 1, below. Notice that Figure

headings go below the figure, and table headings go above the table. Also, all tables and figures must be mentioned in the text, as in the previous sentence.⁴

Table 1. An example table of fictitious data. V is the voltage measured across an imaginary resistor, I is the measured current.

Run #	V (mV)	I (A)
1	25	0.10
2	59	0.22
3	100	0.40

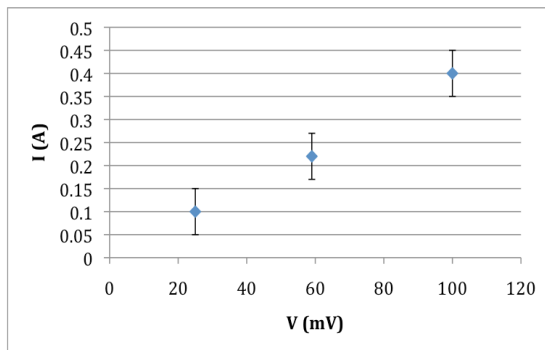


Figure 1. Current versus voltage for an imaginary resistor. The error in the current measurements is assumed to be 0.05 A.

The Analysis section describes your calculations, and gives the results. This section may be combined with Results, stand alone, or be combined with the Discussion section. Give as many details as are practical (within 4 page limit). Typically one example calculation is acceptable. You should refer back to the equations from the Theory section, no need to repeat them again. Include error analysis.

V. Discussion

Discuss your calculated results. Are they as you expected? Do they match the accepted values? Are discrepancies within the calculated errors? Discuss the source of errors, difficulties you had with the lab, and suggested improvements.

VI. Conclusions

This is a summary of your report. Repeat your final calculated results again, with error. Did you satisfy the purpose of the experiment, as stated in the Introduction? Summarize your comments from the Discussion.

¹ D. Halliday, R. Resnick, J. Walker,

Fundamentals of Physics, (Wiley, Jefferson City, 2011).

² American Institute of Physics, “AIP Style Guide”, accessed 1/2012,

<http://www.aip.org/pubservs/style/4thed/toc.html>.

³ R. Verre, K Fleischer, O. Ualikbe, I. V. Shvets, *Appl. Phys Lett.*, **100**, 31102, (2012).