

# L<sup>A</sup>T<sub>E</sub>X Template

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## 1 Introduction

Welcome to the wonderful world of L<sup>A</sup>T<sub>E</sub>X! This is meant to be a template for you to model future lab reports, papers, etc. on. While very basic, L<sup>A</sup>T<sub>E</sub>X has a wide range of flexibility in producing professional-looking scientific papers.

To compile the document, you will need to go to the terminal. Get yourself into the folder where your .tex document lives. In the terminal, type the following command:

```
kdouglass@phys8:~$ pdflatex LaTeXtemplate
```

A whole bunch of gibberish will print to the terminal window, most of which you can ignore (unless it is an error message — cannot ignore those!). When successfully compiled, there will be a PDF of your document. To open it, you can type

```
kdouglass@phys8:~$ open LaTeXtemplate.pdf
```

L<sup>A</sup>T<sub>E</sub>X ignores white space, or at least most of it. A blank line separates two paragraphs. Otherwise, you can have multiple lines in a single paragraph — L<sup>A</sup>T<sub>E</sub>X does not really care. To find out many details of L<sup>A</sup>T<sub>E</sub>X, please bookmark and use the L<sup>A</sup>T<sub>E</sub>X wikibook: <http://en.wikibooks.org/wiki/LaTeX>.

### Why use L<sup>A</sup>T<sub>E</sub>X?

Many of you are probably wondering why you would want to learn something like L<sup>A</sup>T<sub>E</sub>X instead of just using Microsoft Word or the like. After all, it is not too

difficult to include equations and pictures in Word documents, and the results look pretty darn nice.

For one thing, L<sup>A</sup>T<sub>E</sub>X allows you to easily modify articles for different journal formats. That

`documentclass`

command that starts the document can be used to easily format an article for different journals (which can be a pain). Second, it is soooooo much easier to include mathematical equations in a L<sup>A</sup>T<sub>E</sub>X document — all you need to do is type out the equation! No mouse clicks required. You can also number the equations for reference. It is also really easy to include figures and tables, including captions and labels (for reference in the text).

## 2 Equations

This is how you include an equation in “display mode” with a reference number:

$$E = mc^2 \tag{1}$$

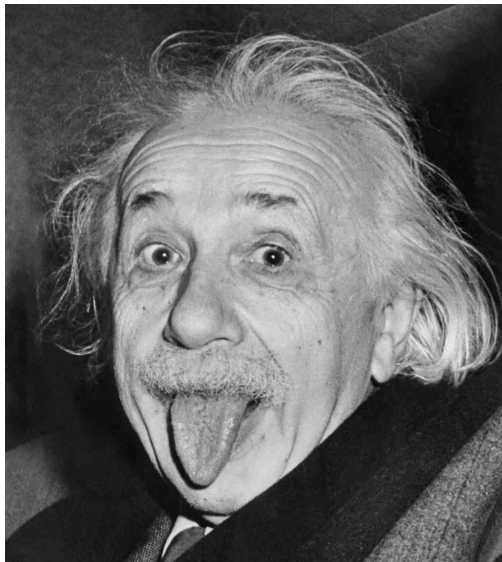
We can refer to Eqn. 1 in the text, making it much easier to clarify from where your calculations are coming. When you have any references, you will have to compile your file twice for all the references to be loaded (when there is a problem, the reference will be filled with a bunch of ???). Or, we can make the equation un-numbered:

$$f(x) = \int_0^2 x^2 dx$$

Or we can put an equation in-line, if we do not want  $x = a$  to be too much of a big deal.

### 3 Graphics

To include an image without any caption, you just need



If you want to have a caption as well, you need to create a figure.

Again, we can refer to Fig. 1 in the text. Figures are not necessarily put in the same location in the document as where you include them in the .tex document. Rather,  $\LaTeX$  places them in the closest best place, which might be at the beginning or end of a page. You can force something to be placed somewhere, but be careful!  $\LaTeX$  has control of this for a reason — it normally knows best.

### 4 Tables

Tables are not quite as easy to create in  $\LaTeX$ , but they are not impossible. A simple table might be

1		2		3
4		5		6
7		8		9



Figure 1: This is an image of the Bullet Cluster, a famous collision between two galaxies. It is one of the biggest sources for the argument for dark matter.

If you want to make the table also with a caption (turning it into a float, just as Fig. 1, you will need to put it inside the table environment. More details on this are in the wikibook.