

# Fix This Document

## Abstract

This paper contains intentional mistakes. Fixing them will help you learn to interpret and use Latex error messages.

## 1 Introduction

Latex is a wonderful typesetting program, however beginners often find it difficult because when something goes wrong, it takes some practice to learn how to read the error message.

A Latex error message looks like this:

```
Runaway argument?  
{article)  
! Paragraph ended before \@fileswith@options was complete.  
<to be read again>  
                                \par  
1.9
```

?

The problem here was on line 9 (**1.9**).

## 2 Math Errors

Let's look at some common math environment errors.

A mistake that happens often is using math commands outside of math mode.

- For example, using a sub or superscript  $x_i$  or  $y^2$  without the  $\$$ 's around it will cause an error.
- Another common error is to forget the ending  $\$$  in an inline formula such as  $A = \pi r^2$ , the area of a circle.
- Finally, sometimes you want to put a real  $\$$  sign in your text (as I did in the first example about), but you forget the  $\backslash$ . This makes it an inline math mode switch.

Until you learn the Latex command names, you'll probably get many errors related to the command you thought was correct.

$$\int_0^\infty \frac{dx}{1+x^2} = \frac{\pi}{2}$$

### 3 References

A numbered equation can be referred to or cited by giving it a label.

$$V(r) = \frac{\hbar^2 \ell(\ell+1)}{2mr^2} - \frac{\hbar c \alpha}{r} \tag{1}$$

Somewhere in your text you may wish to refer to this equation. You don't need to know what Eq. number it is, just its label. Refer to it with the command `Eq. (1)` and LaTeX automatically uses the correct equation number, even if you go back and add more equations later. You will need to run latex twice, once to compute the equation numbers.

However this assumes you remembered to LABEL the equation after the `\begin{equation}` environment. Notice that above, even though you have remembered to run `pdflatex` twice (right?), it still says Eq. (1). That's because you forgot to put the `\label{eq:pot}` line in the equation environment.

### 4 Tables

Errors in tables can be frustrating. Sometimes you just have to keep tweaking things until you get what you want. The rules are logical, but if you have a typo it can be hard to find.

If you have an extra `&` in your table, you will get an error like this:

```
! Extra alignment tab has been changed to \cr.  
<recently read> \endtemplate
```

```
1.100 2 & 42 & 2 & &  
35 \\
```

However, if you have too few &'s in a table or array line, **pdf $\text{\LaTeX}$**  will successfully process your document, but it won't look right. Can you spot this kind of error in the table below?

Run 1	Output	Run 2	Output
1	37	1	28
2	42	2	35
3	73	3	19
4	15	4	22

## 5 Conclusions

You will really become proficient with  $\text{\LaTeX}$  only when you have practiced using it on many documents. Although it has a somewhat steep learning curve, it is well worth it. Your documents will look very professional, impressing your professors and raising your grades. If you continue to study  $\text{\LaTeX}$  using the links in the **Resources** area of our course webpage, you will have a very powerful publication system at your disposal.

As an example, have a look at

<http://books.google.com/books?id=V48ddclvbioC>

written by two collaborators of mine. After visiting the webpage above, click **Preview Book**. Scroll through several pages, or click on a chapter and have a look.

This entire book was written using  $\text{\LaTeX}$ .