

EXAMPLE OF HOW TO USE THE COLORADO SCHOOL OF MINES
THESIS/DISSERTATION L^AT_EX TEMPLATE TO HELP
FUTURE GRADUATE STUDENTS WITH
THE FORMATTING. H₂O

by
Graduate A. Student

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A thesis submitted to the Faculty and the Board of Trustees of the Colorado School of Mines in partial fulfillment of the requirements for the degree of Master of Science (Engineering Systems).

Golden, Colorado

Date _____

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Graduate A. Student

Signed: _____

Dr. Primary A. Advisor
Thesis Advisor

Signed: _____

Dr. Secondary B. Advisor
Thesis Advisor

Golden, Colorado

Date _____

Signed: _____

Dr. Big Boss
Department Head Title
Department of Physics

ABSTRACT

Here is the place where you will be adding an abstract for your document. The abstract should be between 200-300 words. The abstract is checked, and if your work count exceeds the 350 words it will produce an error.

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

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LIST OF SYMBOLS

Average radius of cylindrical shell	c
I have added a symbol in the Table Chapter	$\nabla\lambda$
activation energy of oxidation reaction of a-C in excited state	E_{act}^*
hello	\cdots

General Nomenclature

absorption cross section	α_σ
------------------------------------	-----------------

LIST OF ABBREVIATIONS

Bio Force Gun, Model 9000	BFG9000
Colorado School of Mines	CSM
Field flow fractionation-inductively coupled plasma-mass spectrometry	FFF-ICP-MS
Mammoth Armed Reclamation Vehicle	MARV
Stone of Jordan	SoJ

ACKNOWLEDGMENTS

I would like to thank and acknowledge <advisor> <family> <funding sources> <committee>.

For those that shall follow after.

CHAPTER 1

INTRODUCTION

This is where you would place a fun and thoughtful introduction. For example I could address why it is so important that I am working on this Thesis L^AT_EX Template? Well, it is probably so that future students that take on the challenge of writing their thesis in L^AT_EX can get through the formatting a lot quicker, in that they don't have to worry about it at all.

Here I will also add some tips: (1) Keep everything organized by 'Type'. Note that all the chapters are added in separate files in the 'chapter' directory/folder. This is such that you can stay better organized. Similarly all the figures are in the 'figure' directory, feel free to make sub folders for each chapter, and all the supporting files such as the references or the abbreviation and symbol lists are in their own folder.

(2) As you start working on this document try and keep the formatting to the end, because every time you change the text, figures or tables might move, and it is just easiest to leave that till the end. Lastly (3) this document and the accompanying files are to help beginners and experts, so if you are comfortable just go a head and get going. There is always the help guide to fall back on, and if you save a copy of the original files you can always go back and look what I presented to you.

There are some hidden chapters that are uncommented (with the % in front of them) with a lot of figure and table examples that can be use full for you if you are not sure for to scale or add them properly. Relax, and good luck.

CHAPTER 2

MY FIRST CHAPTER WITH SOME GOOD CONTENT

After creating every new chapter or heading you can add a paragraph or more of text, or you can move right into a heading or subheading.

2.1 Level 1

This is what a subsection title looks like with some text following. Here is a tip: Stay consistent. This counts for how you write your headers (all mayor words capitalize or only the first word). Below are some equations with some simple math here are three different ways to reference equations: (1) using ref gives 2.1, (2) using eqref leads to (2.2)), (3) and using the template defined Eqref gives Equation 2.3. You can not just use option (1) without indicating you are referencing an equation. Choose one and stick with it, they want you to be consistent in the way you reference Tables, Figures and equations alike. Automatically 'Table' and 'Figure' are added in fort of a reference number when you use ref{} for tables and figures (see in later chapters).

$$E = mc^2 \tag{2.1}$$

$$\nabla \times \mathbf{E} = - \frac{\partial \mathbf{B}}{\partial t} \tag{2.2}$$

beginning a sentence right after the equation tells the documents that the paragraph is continuing and this sentence does not start with any indent.

$$\begin{bmatrix} A_{11} & A_{12} \\ A_{21} & A_{22} \end{bmatrix} \mathbf{v} = \lambda \mathbf{v} \tag{2.3}$$

We can now add a sub-sub section. This is also an example of an equation that is mid paragraph. If you eliminated the space between the math environment and the next line, then there should be no indent of the line right after the equation.

2.1.1 Level 2

This is what a sub-subsection looks like with some text following. Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

We can now add a sub-sub-sub section. But before we do that I need to add some text to check if the (a) ragged right is working, and (b) if the sub-sub-sub section will be pushed to the next page if the sub heading and 2 lines don't fit on the page. Ta-Da it works.

2.1.1.1 Level 3

This does not look appealing, so you are discourage going "three deep" with headings. This does not look appealing, so you are discourage going "three deep" with headings.

2.2 Here is an example of placing a subsub-section right after the sub-section

2.2.1 Here is the title of my subsub-section. I will be referencing the current chapter number

The current chapter number is 2.

CHAPTER 3

THIS IS A LONG TITLE TO CHECK THE PROPER SPACING IN THE TABLE OF CONTENTS AND INVERSE PYRAMID ON THE CHAPTER PAGE. LETS SEE IF IT WORKS PROPERLY. WHAT IF I ADD ENOUGH TEXT SO THAT THERE ARE LIKE THREE OR FOUR LINES HERE, DOES IT CHANGE THE WAY IT LOOKS.

3.1 A Figure

Here we have a section to show off one of the xkcd comics. Figure 3.1 shows one of the comics showing the actual size of a number compared to the perceived size of a number.

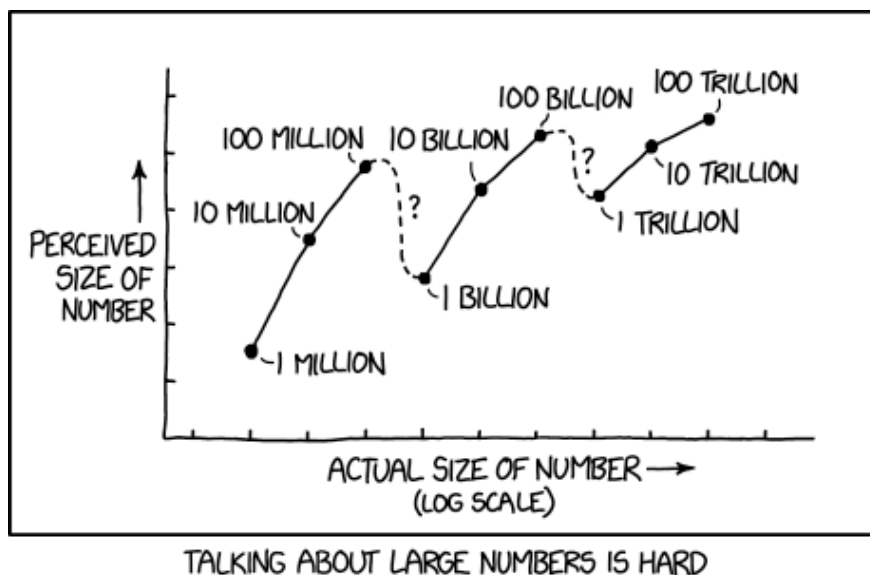


Figure 3.1 The trend of actual versus perceived size of a number. [?]. We are also going to add a relatively long caption to check if the List of Figures works properly at the beginning of the document.

3.2 Citing and referencing things

On other figure shown in Figure 3.2 shows a comic form [?]. If you want to group citations into one go, something you might do in the back ground section, you can do this by grouping multiple sources in your bibtex in the same 'cite' [? ? ? ?].

You can also reference chapter, subsections or appendices al long as you place the label properly. Here I will reference you to see Appendix A.1 to check out how to add "longtabes" into your document, another example of that is shown in a hidden chapter on tables. If you think there was something important in a previous section that you can reference them back with, Section 2.1. Or reference a chapter like Chapter 1.

Foot notes are allowed depending on the department you are working with. Please check with your advisor if you should be adding foot notes or not. Just so you have an example here is a footnote¹.

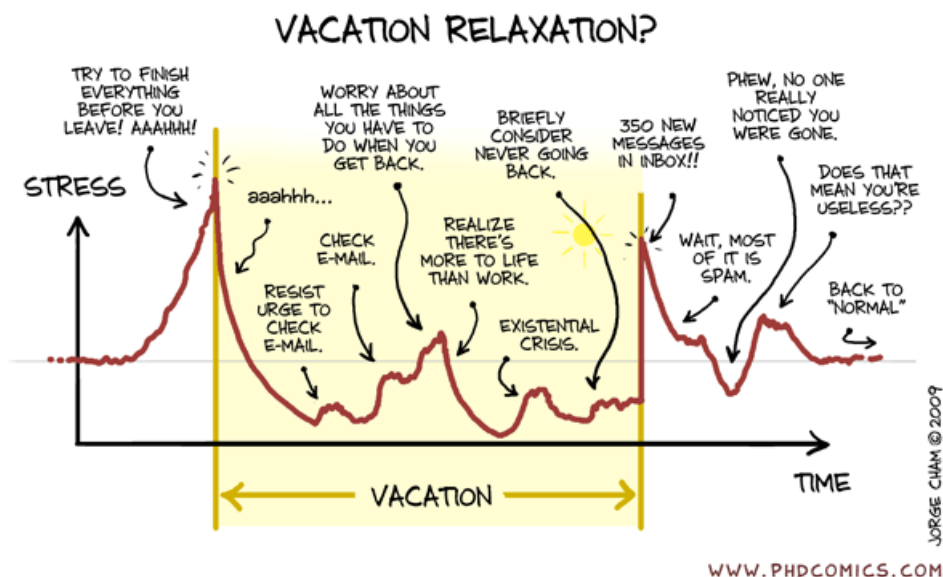


Figure 3.2 "Vacation Relaxation?" by Jorge Cham www.phdcomics.com. A nice comic from PHD Comic's. Learn more about the figure input notation in the Figure chapter, or in the hand book.

Filler Text. Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetur adipiscing elit. In hac habitasse platea dictumst. Integer tempus convallis augue. Etiam facilisis. Nunc elementum fermentum wisi. Aenean placerat. Ut imperdiet, enim sed gravida sollicitudin, felis odio placerat quam, ac pulvinar elit purus eget enim. Nunc vitae tortor. Proin tempus nibh sit amet nisl. Vivamus quis tortor vitae risus porta vehicula.

3.3 Here is a test of a really long sub-header title that should automatically follow the rules for set for the Temple Guidelines and check if it properly shows up in the table of content.

Here is a paragraph of filler text. Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

¹here is a footnote

here is an extra sentence

CHAPTER 4

YOUR JOURNAL PAPER TITLE GOES HERE

Modified from a paper to be published in The Journal of ABC².

Jane Jones^{3,4}, Sam Smith⁵, Ann Adams^{3,6}

4.1 Abstract

This is the abstract that is part of the paper. At the bottom of this page, beneath a 1.5" to 2" footnote line, can be footnotes with details of permission granted by the publisher of the paper, the author's titles and institution names, the relative contributions of each of the authors, et. If the abstract does not completely fill the page, the introduction also starts on this page. There are no page breaks between the different sections within the paper.

4.2 Introduction

The text of the introduction starts on the same page as the abstract, as long as there is room for at least two lines of text beneath the heading (This L^AT_EX template should look for this automatically.) The headings within this chapter will match the style used in the rest of the thesis. All pages of text within the paper are completely filled in.

4.3 Permissions

Make sure you have checked the journal permissions about reproducing your paper in your thesis. Make sure you put these permissions in the Appendix C.

4.4 The next section of the paper

A lot more information from the paper that is being added into this dissertation. I would add figure, tables and other materials the same way as I have been in the other section of the dissertation. The big difference between this and the other chapters is the very top with the Journal and authors centered on the page.

Here is another paragraph that is just filler text. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris.

²Reprinted with permission of J. of ABC, 25(1), 41-45.

³Graduate student and Associate Professor, respectively, at the Colorado School of Mines

⁴Primary researcher and author

⁵Different Institution and position

⁶Author for correspondence

Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

CHAPTER 5

THIS IS THE TITLE OF A PAPER INCLUDED IN A THESIS

Reproduced with the permission for The Journal of ABC. 6[1]text

Jane Jones, Sam Smith, Ann Adams

5.1 Abstract

This is the abstract that is part of the paper. If the abstract does not completely fill the page, the introduction also starts on this page. There are no page breaks between the different sections within the paper.

5.2 Introduction

The text of the introduction starts on the same page as the abstract, as long as there is room for at least two lines of text beneath the heading (This L^AT_EX template should look for this automatically.) The headings within this chapter will match the style used in the rest of the thesis. All pages of text within the paper are completely filled in.

The next chapter shows another example with some foot notes for the authors, and the permission form the journal. Here is another quick sentence to make this paragraph look longer than it actually is, and not adding any new information for you to use.

CHAPTER 6

EXAMPLES OF FIGURES

This chapter shows you some examples of figures, such as subfigures, big, and landscape figures.

6.1 Just a figure

As the subsection header states it is just a figure, Figure 6.1. But in the code it does not look like the regular 'figure' input. There is a function that allows you to input a figure, and only have part of the caption shown in the table of content, go ahead and compare the label of Figure 6.1 below and the one that popped up in the table of content.

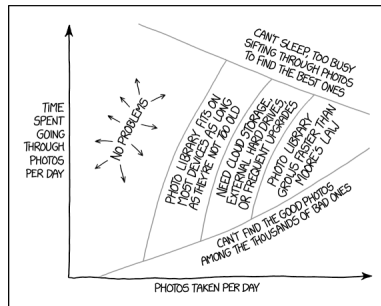


Figure 6.1 This section of the citation will appear in the List of Figure and this section is added to the citation in the text [?].

This function is useful when you have really long figure captions, and you don't need to show all of the description in the table of content.

Now I will add a figure (Figure 6.2) that will be place in the next section somewhere. Lets see what happens when I use Float Barrier.



Figure 6.2 Here is a figure that will cut through the next section.

6.2 Sub-figures

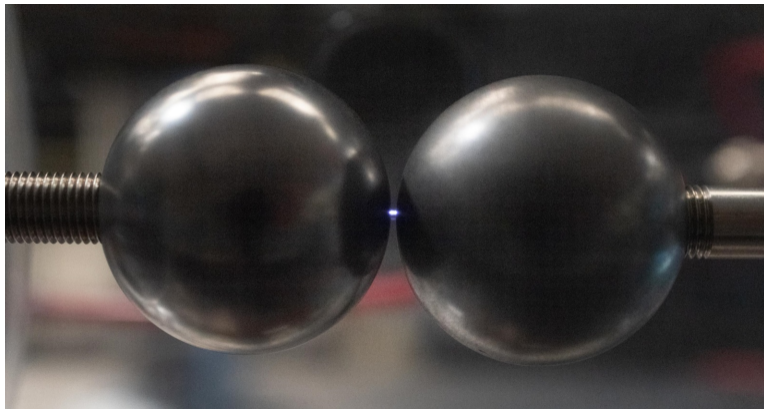
Note that both Figure 6.3 and Figure 6.4 show the same two figures with sub plots but look different in layout. Also look at where you place the 'label' in the figure, because you can also call one of the subplots, example are Figure 6.3(b) and Figure 6.4(a). The next paragraph is a bunch of non information, only to show where the two figures are going to naturally place themselves.

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

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(a) Blue Light with Interference Filter

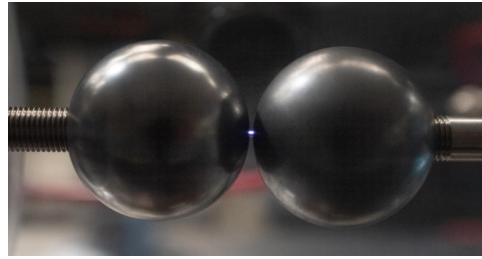


(b) Cool Sparks

Figure 6.3 Here are two images from the Durfee Research Group (a) A reflective object with something engraved in the center [?]. (b) A electrostatic discharge event occurring in air taken with a long exposure camera [?]



(a) Blue Light with Interference Filter



(b) Cool Sparks

Figure 6.4 Here are two images from the Durfee Research Group (a) A reflective object with something engraved in the center [?]. (b) A electrostatic discharge event occurring in air taken with a long exposure camera [?]

Notice the the figure with the stacked images places itself on its own page. This figure is greater than 50% of the page, so if you leave of any placement tags (like [ht]) then most of the time the figure gets moved to it's of page.

6.3 Landscape Figure

There is also an example of a really big image following soon that takes up more than 50% of the page and is in Landscape mode Figure 6.5. Note that the text wrap does not work around these landscape images, as it did for the above subplot, because Section 6.4 should be right after this line. This means you need to think about where you place these landscape figures (or tables).

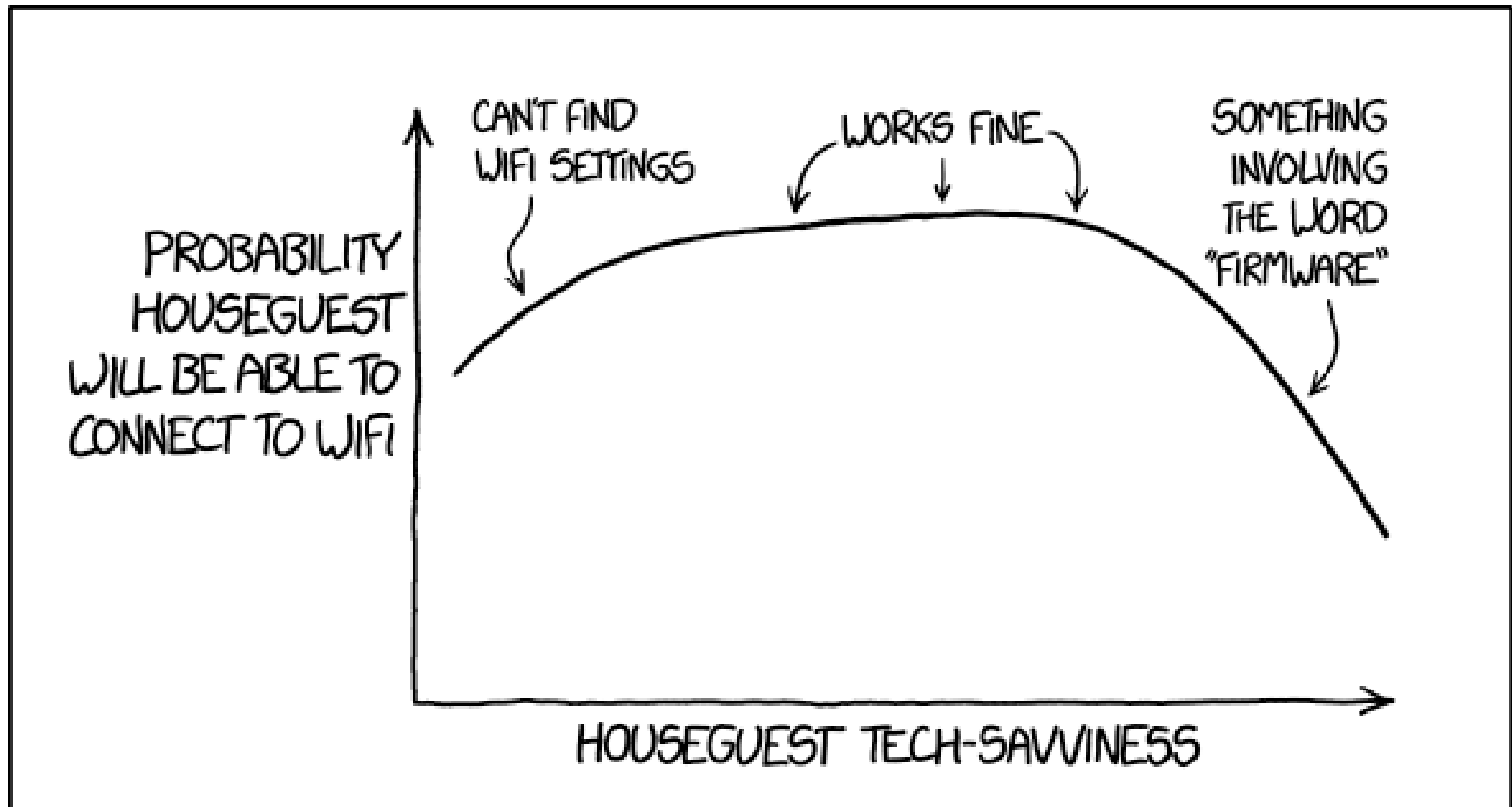


Figure 6.5 This is an example of a landscape page filled by a picture.

6.4 Here is an example that does not always work

We thought that was the end! But here I have placed a figure, Figure 6.6, and it should push itself to its own page after this page is filled up all the way. If you comment out the paragraph between here and the figure you will see that the figure is placed wrong (and got rid of the [p] on the figure).

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

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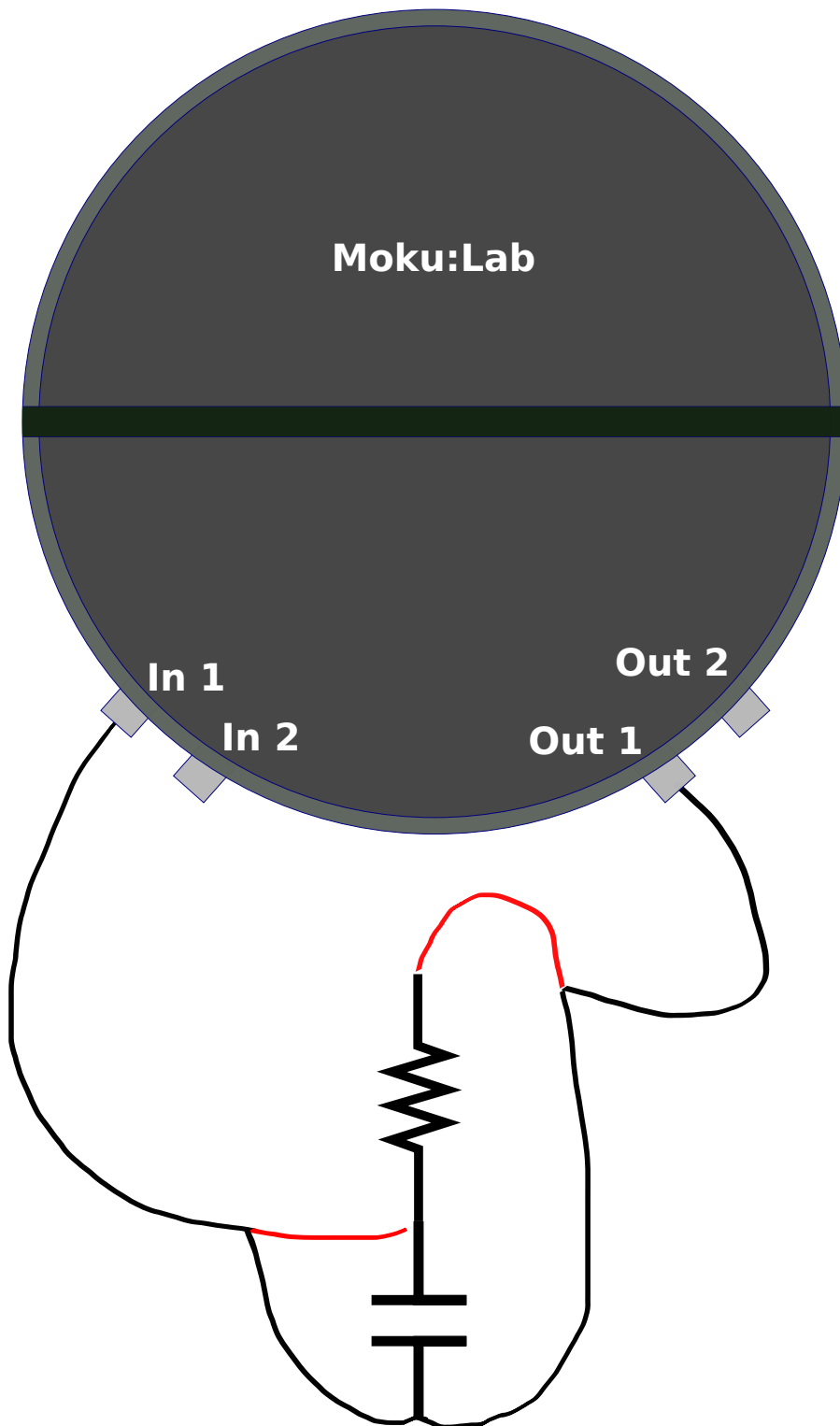


Figure 6.6 This figure will show after the current page has ended and only contain this figure on the page.
[?]

Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Here is an example of a caption and a other thins Figure 6.7

Figure 6.7 Here is a really long caption for the figure that will follow on the next page. So I have to make this caption really long. I can get this system to work but unfortunately the user will have to pay extra attention to the text wrapping because it will not do it on its own !!! This is very important. The figure is actually outside of the figure environment. So Clear the page, then insert the caption and label in the figure environment, and then clear the page again. This way you can add the [p] placement marker which will center the caption vertically on the page. Next add the figure after the second clear page with only include graphics and not in any figure environment. The image is one made by the author of this template document, Claudia Schrama, where a Moku:Lab instrument is used to analyze a circuit using the frequency response analyzer function.



CHAPTER 7

EXAMPLES OF TABLES

This chapter gives you a few examples of Tables, including a landscape table.

7.1 Just a Table

Are you really still reading this? Okay, then check out Table 7.1! Is it not just magical. But in all seriousness you do not have to read most of the text in this chapter. Most of the text by now is filler text, showing you what things should be looking like from the way the school wants you to format your dissertation.

Table 7.1 A table of tabular goodness. A lot of information in this heading to check if we get the proper response at the beginning of the document in the List of Tables

	B	b
B	BB	Bb
b	Bb	bb

7.2 Big table check

Here is a lot of filler text to check that the figure is pushed after the page and then follows that later on.
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Here is a lot of filler text to check that the figure is pushed after the page and then follows that later on.

Now I will place a table (should be larger, but this is just showing the code works) on the next page because it could be to big. Table 7.2

Afghanistan Albania Algeria Andorra Angola Antigua and Barbuda Argentina Armenia Australia
Austria Azerbaijan The Bahamas Bahrain Bangladesh Barbados Belarus Belgium Belize Benin Bhutan

Table 7.2 Table that should take up more than 50% of the page to stand on its own. Note that it is automatically placed on it's own page when leaving off the placement (eg. [ht] is removed after `\begin{table}`)

Long Table	Big Table	50% of the page	Other	And another
1	2	3	4	5
A	B	C	D	E
6	7	8	9	10
a	b	c	d	e
11	21	31	41	51
A	B	C	D	E
61	71	81	91	101
a	b	c	d	e
111	211	311	411	511
<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
611	711	811	911	1011
<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
1	2	3	4	5
A	B	C	D	E
6	7	8	9	10
a	b	c	d	e
11	21	31	41	51
A	B	C	D	E
61	71	81	91	101
a	b	c	d	e
111	211	311	411	511
<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
611	711	811	911	1011
<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>

Bolivia Bosnia and Herzegovina Botswana Brazil Brunei Bulgaria Burkina Faso Burundi Cabo Verde Cambodia Cameroon Canada Central African Republic Chad Chile China Colombia Comoros Congo, Democratic Republic of the Congo, Republic of the Costa Rica Cte d'Ivoire Croatia Cuba Cyprus Czech Republic Denmark Djibouti Dominica Dominican Republic East Timor (Timor-Leste) Ecuador Egypt El Salvador Equatorial Guinea Eritrea Estonia Eswatini Ethiopia Fiji Finland France Gabon The Gambia Georgia Germany Ghana Greece Grenada Guatemala Guinea Guinea-Bissau Guyana Haiti Honduras Hungary Iceland India Indonesia Iran Iraq Ireland Israel Italy Jamaica Japan Jordan Kazakhstan Kenya Kiribati Korea, North Korea, South Kosovo Kuwait Kyrgyzstan Laos Latvia Lebanon Lesotho Liberia Libya Liechtenstein Lithuania Luxembourg Madagascar Malawi Malaysia Maldives Mali Malta Marshall Islands Mauritania Mauritius Mexico Micronesia, Federated States of Moldova Monaco Mongolia Montenegro Morocco Mozambique Myanmar (Burma) Namibia Nauru Nepal Netherlands New Zealand Nicaragua Niger Nigeria North Macedonia Norway Oman Pakistan Palau Panama Papua New Guinea Paraguay Peru Philippines Poland Portugal Qatar Romania Russia Rwanda Saint Kitts and Nevis Saint Lucia Saint Vincent and the Grenadines Samoa San Marino Sao Tome and Principe Saudi Arabia Senegal Serbia Seychelles Sierra Leone Singapore Slovakia Slovenia Solomon Islands Somalia South Africa Spain Sri Lanka Sudan Sudan, South Suriname Sweden Switzerland Syria Taiwan Tajikistan Tanzania Thailand Togo Tonga Trinidad and Tobago Tunisia Turkey Turkmenistan Tuvalu Uganda Ukraine United Arab Emirates United Kingdom United States Uruguay Uzbekistan Vanuatu Vatican City Venezuela Vietnam Yemen Zambia Zimbabwe

7.3 Table That Spans Two Pages

Here is an example of a big table that spans two pages, in this case it is in Landscape mode. The table, Table 7.3, needs to be placed properly in the text such that there is not too much white space left on the page before it. This type of formatting should be left till you are almost done with the chapter, else you will constantly be editing the format, while you should be focusing in the content.

Table 7.3 A multipage table example to show people what to do, in case they have a really long table

Item	Color	Fruit or Veggie	Flower	Common Item ⁷	Spice	Closest Object to Me (Detail)
1	White	Cauliflower	Petunia	Towel	Asafoetida Powder	The page of the PDF on the screen, for this document. It is showing this table as it is being filled out with more useless information.
2	Yellow	-	Sunflower	Sun	Japanese Curry Powder	A dish towel, as you read this table (i hope you are not) you will notice that I am in by apartment. It is one of those super absorbent ones.
3	Orange	Orange ⁸	Ranunculus	Flame	Baharat	Oversized sunglasses that one would wear to a party. They are the ones that don't really work on any ones face, and are designed for photo booths.
4	Red	Strawberry	Anemone	Sock	Paprika	A small watering can that I use to water the three plants that I have in my apartment.
5	Purple	Egg Plant	Sea Thistle	-	-	The handles of a pair of scissors, that scissors are left-handed scissors, but I am right handed.
6	Pink	Radish	Dianthus	Shirts	Pink Peppercorns	A very old laptop that I got back in 2010. It is still working but slows down every time I turn it on.
7	Blue	Blueberry ⁹	Blue Delphiniums	Pen	Fenugreek	A round place-mat, that is the color of a blue bird day. It is made from some plastic material and spirals out ward.
8	Green	Zucchini	Cymbidium Orchid	Grass	Italian Seasoning	The zig-zag pattern on mu living room curtains. The lines are connected left to right with white zigzags in between the green ones.

⁷This was the best category that I could come up with

⁸Could I put Orange in every column of this row?

⁹Keep eating your fruit and veggies, it is good for you

Table 7.3 Continued.

one	two	three	four	five	six	seven
9	Black	Black Nebula Carrots	Calla Lily	Ink	Vanilla Bean	The table that I am working at. At it smallest it can seat 6, and at it largest it can seat 12, but I do not have that many chairs.
10	Brown	Kiwi	Bat Flower ¹⁰	Trees	Cinnamon	The spots on the giraffe statue that is next to my TV. It is super cute, and I really like to collect Giraffe shaped things.

¹⁰Only chose this one because of the COVID-19 situation

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

7.4 Long portrait table that spans multiple pages

Here are two long tables, both with lists of countries with their capital and the continent. The point of Table 7.4 and Table 7.5 is the way that they are formatted, and to present some examples of the long tables such that users understand it better.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Table 7.4 Long Table with countries (A through M), their capitals and the continent according to [?].

COUNTRY	CAPITAL	CONTINENT
Afghanistan	Kabul	Asia
Aland Islands	Mariehamn	Europe
Albania	Tirana	Europe
Algeria	Algiers	Africa
American Samoa	Pago Pago	Australia
Andorra	Andorra la Vella	Europe
Angola	Luanda	Africa
Anguilla	The Valley	North America
Antarctica	N/A	Antarctica
Antigua and Barbuda	Saint Johns	North America
Argentina	Buenos Aires	South America
Armenia	Yerevan	Europe
Aruba	Oranjestad	North America
Australia	Canberra	Australia
Austria	Vienna	Europe
Azerbaijan	Baku	Europe
Bahamas	Nassau	North America

Table 7.4 Continued.

Country	Capital	Continent
Bahrain	Manama	Asia
Bangladesh	Dhaka	Asia
Barbados	Bridgetown	North America
Belarus	Minsk	Europe
Belgium	Brussels	Europe
Belize	Belmopan	Central America
Benin	Porto-Novo	Africa
Bermuda	Hamilton	North America
Bhutan	Thimphu	Asia
Bolivia	La Paz	South America
Bosnia and Herzegovina	Sarajevo	Europe
Botswana	Gaborone	Africa
Brazil	Brasilia	South America
British Indian Ocean Territory	Diego Garcia	Africa
British Virgin Islands	Road Town	North America
Brunei Darussalam	Bandar Seri Begawan	Asia
Bulgaria	Sofia	Europe
Burkina Faso	Ouagadougou	Africa
Burundi	Bujumbura	Africa
Cambodia	Phnom Penh	Asia
Cameroon	Yaounde	Africa
Canada	Ottawa	Central America
Cape Verde	Praia	Africa
Cayman Islands	George Town	North America
Central African Republic	Bangui	Africa
Chad	NDjamena	Africa
Chile	Santiago	South America
China	Beijing	Asia
Christmas Island	The Settlement	Australia
Cocos Islands	West Island	Australia
Colombia	Bogota	South America
Comoros	Moroni	Africa
Cook Islands	Avarua	Australia
Costa Rica	San Jose	Central America
Cote d'Ivoire	Yamoussoukro	Africa
Croatia	Zagreb	Europe
Cuba	Havana	North America
Curaao	Willemstad	North America
Cyprus	Nicosia	Europe
Czech Republic	Prague	Europe
Democratic Republic of the Congo	Kinshasa	Africa
Denmark	Copenhagen	Europe
Djibouti	Djibouti	Africa
Dominica	Roseau	North America
Dominican Republic	Santo Domingo	North America
Ecuador	Quito	South America
Egypt	Cairo	Africa
El Salvador	San Salvador	Central America
Equatorial Guinea	Malabo	Africa
Eritrea	Asmara	Africa
Estonia	Tallinn	Europe

Table 7.4 Continued.

Country	Capital	Continent
Ethiopia	Addis Ababa	Africa
Falkland Islands	Stanley	South America
Faroe Islands	Torshavn	Europe
Federated States of Micronesia	Palikir	Australia
Fiji	Suva	Australia
Finland	Helsinki	Europe
France	Paris	Europe
French Polynesia	Papeete	Australia
French Southern and Antarctic Lands	Antarctica	
Gabon	Libreville	Africa
Georgia	Tbilisi	Europe
Germany	Berlin	Europe
Ghana	Accra	Africa
Gibraltar	Gibraltar	Europe
Greece	Athens	Europe
Greenland	Nuuk	Central America
Grenada	Saint Georges	North America
Guam	Hagatna	Australia
Guatemala	Guatemala City	Central America
Guernsey	Saint Peter Port	Europe
Guinea	Conakry	Africa
Guinea-Bissau	Bissau	Africa
Guyana	Georgetown	South America
Haiti	Port-au-Prince	North America
Heard Island and McDonald Islands	N/A	Antarctica
Honduras	Tegucigalpa	Central America
Hong Kong	N/A	Asia
Hungary	Budapest	Europe
Iceland	Reykjavik	Europe
India	New Delhi	Asia
Indonesia	Jakarta	Asia
Iran	Tehran	Asia
Iraq	Baghdad	Asia
Ireland	Dublin	Europe
Isle of Man	Douglas	Europe
Israel	Jerusalem	Asia
Italy	Rome	Europe
Jamaica	Kingston	North America
Japan	Tokyo	Asia
Jersey	Saint Helier	Europe
Jordan	Amman	Asia
Kazakhstan	Astana	Asia
Kenya	Nairobi	Africa
Kiribati	Tarawa	Australia
Kosovo	Pristina	Europe
Kuwait	Kuwait City	Asia
Kyrgyzstan	Bishkek	Asia
Laos	Vientiane	Asia
Latvia	Riga	Europe
Lebanon	Beirut	Asia
Lesotho	Maseru	Africa

Table 7.4 Continued.

Country	Capital	Continent
Liberia	Monrovia	Africa
Libya	Tripoli	Africa
Liechtenstein	Vaduz	Europe
Lithuania	Vilnius	Europe
Luxembourg	Luxembourg	Europe
Macau	N/A	Asia
Macedonia	Skopje	Europe
Madagascar	Antananarivo	Africa
Malawi	Lilongwe	Africa
Malaysia	Kuala Lumpur	Asia
Maldives	Male	Asia
Mali	Bamako	Africa
Malta	Valletta	Europe
Marshall Islands	Majuro	Australia
Mauritania	Nouakchott	Africa
Mauritius	Port Louis	Africa
Mexico	Mexico City	Central America
Moldova	Chisinau	Europe
Monaco	Monaco	Europe
Mongolia	Ulaanbaatar	Asia
Montenegro	Podgorica	Europe
Montserrat	Plymouth	North America
Morocco	Rabat	Africa
Mozambique	Maputo	Africa
Myanmar	Rangoon	Asia

With long tables in portrait mode you just continue the text after the table ends (if there is enough white space to fill) and if it is the end of the chapter then the white space is fine.

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

Table 7.5 Long Table with countries (N through Z), their capitals and the continent according to [?]

Country	Capital	Continent
Namibia	Windhoek	Africa
Nauru	Yaren	Australia
Nepal	Kathmandu	Asia
Netherlands	Amsterdam	Europe
New Caledonia	Noumea	Australia

Table 7.5 Continued.

Country	Capital	Continent
New Zealand	Wellington	Australia
Nicaragua	Managua	Central America
Niger	Niamey	Africa
Nigeria	Abuja	Africa
Niue	Alofi	Australia
Norfolk Island	Kingston	Australia
North Korea	Pyongyang	Asia
Northern Cyprus	North Nicosia	Europe
Northern Mariana Islands	Saipan	Australia
Norway	Oslo	Europe
Oman	Muscat	Asia
Pakistan	Islamabad	Asia
Palau	Melekeok	Australia
Palestine	Jerusalem	Asia
Panama	Panama City	Central America
Papua New Guinea	Port Moresby	Australia
Paraguay	Asuncion	South America
Peru	Lima	South America
Philippines	Manila	Asia
Pitcairn Islands	Adamstown	Australia
Poland	Warsaw	Europe
Portugal	Lisbon	Europe
Puerto Rico	San Juan	North America
Qatar	Doha	Asia
Republic of Congo	Brazzaville	Africa
Romania	Bucharest	Europe
Russia	Moscow	Europe
Rwanda	Kigali	Africa
Saint Barthelemy	Gustavia	North America
Saint Helena	Jamestown	Africa
Saint Kitts and Nevis	Basseterre	North America
Saint Lucia	Castries	North America
Saint Martin	Marigot	North America
Saint Pierre and Miquelon	Saint-Pierre	Central America
Saint Vincent and the Grenadines	Kingstown	Central America
Samoa	Apia	Australia
San Marino	San Marino	Europe
Sao Tome and Principe	Sao Tome	Africa
Saudi Arabia	Riyadh	Asia
Senegal	Dakar	Africa
Serbia	Belgrade	Europe
Seychelles	Victoria	Africa
Sierra Leone	Freetown	Africa
Singapore	Singapore	Asia
Sint Maarten	Philipsburg	North America
Slovakia	Bratislava	Europe
Slovenia	Ljubljana	Europe
Solomon Islands	Honiara	Australia
Somalia	Mogadishu	Africa
Somaliland	Hargeisa	Africa

Table 7.5 Continued.

Country	Capital	Continent
South Africa	Pretoria	Africa
South Georgia and South Sandwich Islands	King Edward Point	Antarctica
South Korea	Seoul	Asia
South Sudan	Juba	Africa
Spain	Madrid	Europe
Sri Lanka	Colombo	Asia
Sudan	Khartoum	Africa
Suriname	Paramaribo	South America
Svalbard	Longyearbyen	Europe
Swaziland	Mbabane	Africa
Sweden	Stockholm	Europe
Switzerland	Bern	Europe
Syria	Damascus	Asia
Taiwan	Taipei	Asia
Tajikistan	Dushanbe	Asia
Tanzania	Dar es Salaam	Africa
Thailand	Bangkok	Asia
The Gambia	Banjul	Africa
Timor-Leste	Dili	Asia
Togo	Lome	Africa
Tokelau	Atafu	Australia
Tonga	Nukualofa	Australia
Trinidad and Tobago	Port of Spain	North America
Tunisia	Tunis	Africa
Turkey	Ankara	Europe
Turkmenistan	Ashgabat	Asia
Turks and Caicos Islands	Grand Turk	North America
Tuvalu	Funafuti	Australia
Uganda	Kampala	Africa
Ukraine	Kyiv	Europe
United Arab Emirates	Abu Dhabi	Asia
United Kingdom	London	Europe
United States	Washington, D.C.	Central America
Uruguay	Montevideo	South America
US Minor Outlying Islands	Washington, D.C.	Australia
US Virgin Islands	Charlotte Amalie	North America
Uzbekistan	Tashkent	Asia
Vanuatu	Port-Vila	Australia
Vatican City	Vatican City	Europe
Venezuela	Caracas	South America
Vietnam	Hanoi	Asia
Wallis and Futuna	Mata-Utu	Australia
Western Sahara	El-Aain	Africa
Yemen	Sanaa	Asia
Zambia	Lusaka	Africa
Zimbabwe	Harare	Africa

CHAPTER 8

EQUATIONS: SIMPLE AND MORE COMPLICATED EXAMPLES.

Here I will add a Tip for users. If you use certain symbols frequently in your math, and they are always longer than you want to type out, you can add new command in the "my-Equations.sty" file to make things go quicker. For example, if you use a vector electric field (\mathbf{E}) often you could either

1. type out `\bf E` - or -
2. add `\newcommand{\bE}{\bf E}` to the my-Equations.sty file and type `\bE` any time you need it inside an equation environment.

Please note that there are a few examples of things that I have found use full to make short hand notation for. Always make sure to check that the command you are making does not already exist.

Here are several other examples.

8.1 Equations

Sometimes you just have a run on equation. Here are some long equation examples for Claudia Schrama's Masters Thesis [?], that was written in \LaTeX before this version of the Temple. (I am Claudia Schrama, so I have access to those text files, and I can just add them here).

I had defined a lot of bold math characters such as \mathbf{E} , \mathbf{H} , \mathbf{D} because I used a lot of the bold vector notation and having to define one bold character each time you need it is a lot more typing then I wanted to do.

8.2 Long Equation on Two Lines

Here is a long equation, showing you the structure of the polarization of light due to second harmonic generation.... Not all to important. The important this is showing you how it is formatted. This equation can not fit on one line and be with in the margins, so it is split over two lines using an align. Leaving it with only one number and not two.

$$\begin{aligned} \mathbf{P}_Q(\omega_1 + \omega_2) = \chi_Q(\omega_1, \omega_2) & \left[-\frac{2}{3}(\nabla \cdot \mathbf{E}_1)\mathbf{E}_2 + (\nabla \mathbf{E}_1) \cdot \mathbf{E}_2 + \mathbf{E}_2 \cdot (\nabla \mathbf{E}_1) \right] \\ & + \chi_Q(\omega_2, \omega_1) \left[-\frac{2}{3}(\nabla \cdot \mathbf{E}_2)\mathbf{E}_1 + (\nabla \mathbf{E}_2) \cdot \mathbf{E}_1 + \mathbf{E}_1 \cdot (\nabla \mathbf{E}_2) \right] \end{aligned} \quad (8.1)$$

This equation come from this paper [?]. If we place this equation in and 'equation' environment, the number is placed below but the equation itself goes of the page. That is why you need to write it with and align. (or other equation mode that allows for line breaks)

$$\mathbf{P}_Q(\omega_1+\omega_2) = \chi_Q(\omega_1, \omega_2) \left[-\frac{2}{3}(\nabla \cdot \mathbf{E}_1)\mathbf{E}_2 + (\nabla \mathbf{E}_1) \cdot \mathbf{E}_2 + \mathbf{E}_2 \cdot (\nabla \mathbf{E}_1) \right] + \chi_Q(\omega_2, \omega_1) \left[-\frac{2}{3}(\nabla \cdot \mathbf{E}_2)\mathbf{E}_1 + (\nabla \mathbf{E}_2) \cdot \mathbf{E}_1 + \mathbf{E}_1 \cdot (\nabla \mathbf{E}_2) \right] \quad (8.2)$$

Note that if you equation fits with in the margins, but the equation number can not go right behind it, the number will automatically be pushed to the next line. You do not have to format that in yourself. Note that this equation goes out of the margins, so there is a warning that pops up in the raw text.

SELECTED BIBLIOGRAPHY

¡Your selected bibliography would go here, a page break might also be necessary above!

APPENDIX A
MAGICAL ENCODING AWESOMENESS

Table A.1 shows how several symbols appear in the rendered document.

Table A.1 This is where we have fun testing encoding

	Normal	Math
The greater than:	\lessgtr	$>$
The less than:	\lessgtr	$<$
The tilde:	\sim	\sim

A.1 Test Appendix Sub-Section

Table A.2 is an example of a very large “longtable.”

Table A.2 Stratigraphy of the Granite Mountains and Lost Creek areas

Age	Formation ¹¹	Thickness (feet) ¹²	Thickness (feet) ¹³	Thickness (feet) ¹⁴	Aquifer? ¹⁵	Lithology
Quaternary	Alluvium	-	0-20	-	Yes	Sands and clays derived chiefly from the Tertiary formations in the area.
Paleocene	Fort Union	up to 3,000	4,650	6,500?	Yes	Consists of alternating fine to coarse grained sandstone siltstone and mudstone. Contains various layers of lignitic coal beds.
Cretaceous	Lance	1,700 to 2,700	2,950	4,000?	Yes	Interbedded sandstone, siltstone and mudstone. Gray to brownish gray. Locally carbonaceous. Sandstone is white to grayish orange.
Cretaceous	Fox Hills		550	1,800?	No	Consists of coarsening upward shale and fine-grained sand with thin coal beds near the top. Represents a transition from marine to non-marine environment. Grades into Lewis Shale at the base.
Cretaceous	Lewis Shale	1,250	1,200	1,050 to 2,000	No	Interbedded dark-gray and olive-gray shale and olive-gray sandstone.
Cretaceous	Mesaverde Group	0 to 1,000	800	300 to 500?	No	Gray to dark gray shales with interbedded buff to tan fine to medium grained sandstones.
Cretaceous	Steele and Niobrara Shales	Cody Shale 4,500 to 5,000	2,000 to 2,500	2,400 to 5,000	No	Steele shale is soft gray marine, Niobrara shale is dark gray and contains calcareous zones.
Cretaceous	Frontier	700 to 900	500 to 1,000	750 to 1,500	Yes	Gray sandstone and sandy shale.
Cretaceous	Dakota		300 to 400		Yes	Marine sandstone, tan to buff, fine to medium grained may contain carbonaceous shale layer.

¹¹Only major unconformities shown, indicated by break in table.

¹²Generalized thicknesses from.

¹³Thicknesses shown are approximate and apply to Lost Creek vicinity only.

¹⁴Thicknesses shown are from a public screened dataset of logged formation tops from the 12 townships surrounding Lost Creek.

¹⁵Aquifer designations – Lost Creek vicinity only.

Table A.2 Continued.

Age	Formation	Thickness (feet)	Thickness (feet)	Thickness (feet)	Aquifer?	Lithology
Jurassic	Nugget Sandstone	400 to 525	500		Yes	Grayish to dull red coarse grained cross-bedded quartz sandstone.
Triassic	Chugwater	1,275	1,500		No	Red shale and siltstone contains gypsum partings near the base.
Permian	Phosphoria	275 to 325	300		No	Black to dark gray shale, chert and phosphorite.
Pennsylvanian	Tensleep and Amsden and Madison	600 to 700	750		No	White to gray sandstone containing thin limestone and dolomite partings. Red and green shale and dolomite, sandstone near base.
Cambrian	Undifferentiated	900 to 1,000	1,000		No	Siltstone and quartzite, including Flathead sandstone.
Precambrian	Basement	-	-		No	Granites, metamorphic and igneous rocks.

Table A.3 Test of a small longtable on the alternate page.

1	2	3	4	5	6	7	8	9	10	11	12
A	B	C	D	E	F	G	H	I	J	K	L

A.2 This subsection will follow on a new page that is portrait

Here it is, just an example

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

APPENDIX B

SPECIAL COOLNESS.

Here is an example of added MATLAB code for a .m file (located in supporting-files/). The code can be referenced (Listing B.1).

Listing B.1: A MATLAB “Hello World“ Example

```
% Below is the example code for the absolute most popular program EVER!  
disp('Hello World');
```

APPENDIX C

COPYRIGHT PERMISSIONS

See the `.tex` file for comments on Copyright Permissions

C.1 XKCD

Here is the copy right agreement form XKCD website, Figure C.1

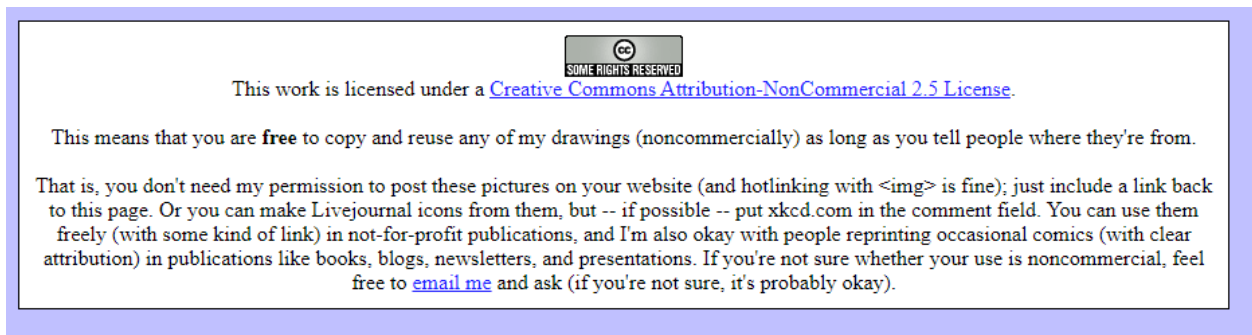


Figure C.1 Copy right permission stated on the XKCD website

C.2 Phdcomics

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I have send them the email, and can provide that proof if asked.

C.3 Journal Article 1

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