A Sample Thesis

With a Subtitle

by

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Submitted to the Department of Physics and Astronomy
on May 31, 2015, in partial fulfillment of the
requirements for the degree of
Master of Science

Abstract

The `genthesis.cls` LaTeX class file and accompanying documents, such as this sample thesis, are distributed in the hope that it will be useful but without any warranty (without even the implied warranty of fitness for a particular purpose). For a description of this file's purpose, and instructions on its use, see below.

These files are distributed under the GPL which should be included here in the future. Please let the author know of any changes or improvements that should be made.

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Thesis Supervisor: Frank Wilczek
Title: Herman Feshbach Professor of Physics

Chapter 1

Table of Contents

Chapter 2

List of Tables

Chapter 3

List of Figures

Chapter 4

Preface

These papers have been published earlier. . . .

Chapter 5

Acknowledgements

Thank you mother here.

Disclaimer

The `mitthesis` LaTeX class and the accompanying sample files are *unofficial* and are not supported by the Massachusetts Institute of Technology. While I have attempted to make the style file and sample files conform to all of the requirements set forth by the library, you should always consult one of the library staff members for assistance with problems *before* starting final draft. You should be able to find the thesis requirements at one of the following sites:

```
http://libraries.mit.edu/archives/thesis-specs/
http://libraries.mit.edu/archives/index.html
```

Table 5.1:   Potential sources of information regarding thesis preparation at MIT.

Chapter 6

A Japanese Introduction

> This is a small poem,
> a little poem, a Haiku,
> to show you how to.
> —Michael Forbes.

This small poem shows several features:

- The `\newpage` command has been used to force a page break.

- The pagestyle has been set to suppress the headers using the command `\thispagestyle{plain}`. Note that using `\pagestyle{plain}` would have affected all of the subsequent pages.

- The `\chapter[Poem]{A Japanese Introduction}` command has been used with an optional argument to generate a title and to list this "chapter" in the table of contents as "Poem". If one did not desire to have an entry in the table of contents, then one would just use the starred command `\chapter*{}`. The use of an optional argument is useful for long chapter and section titles that take up too much space in the table of contents.

Part I

Thesis

Chapter 7

This is a Chapter

7.1   A Section

Here is a section with some text. Equations look like this $y = x$.

   This is an example of a second paragraph in a section so you can see how much it is indented by.

7.1.1   This is a Subsection

Here is an example of a citation: [1]. The actual form of the citation is governed by the bibliographystyle. These citations are maintained in a BIBTeX file `sample.bib`. You could type these directly into the file. For an example of the format to use look at the file `mitsample.bbl` after you compile this file.

   This is an example of a second paragraph in a subsection so you can see how much it is indented by.

This is a Subsubsection

Here are some more citations [2–4]. If you use the `natbib` package with the `sort&compress` option, then the following citation will look the same as the first citation in this section: [2–4].

   This is an example of a second paragraph in a subsubsection so you can see how much it is indented by.

This is a Paragraph   Paragraphs and subparagraphs are the smallest units of text. There is no subsubsubsection etc.

This is a Subparagraph   This is the last level of organisation. If you need more than this, you should consider reorganizing your work. . .

$$f(x) = \int_{-\infty}^{\int_{-\infty}^{x} e^{-\frac{y^2}{2}} \mathrm{d}y} e^{-z^2} \mathrm{d}z \tag{7.1}$$

   In order to show you what a separate page would look like (i.e. without a chapter heading) I must type some more text. Thus I will babble a bit and keep babbling for at least one more page. . . What you should notice is that the chapter titles appear substantially lower than the continuing text. Babble babble babble babble babble babble babble babble babble babble babble

Phoenix	$960.35
Calgary	$250.00

Table 7.1:   Here is the caption for this wonderful table.Text of Caption

babble babble.

Babble babble.

Chapter 8

Another Chapter with a Very Long Chapter-name that will Probably Cause Problems

This chapter name is very long and does not display properly in the running headers or in the table of contents. To deal with this, we provide a shorter version of the title as the optional argument to the `\chapter[]{}` command.
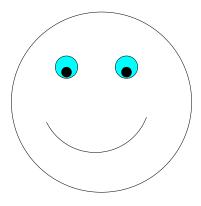
8.1 Another Section

Another bunch of text to demonstrate what this file does. You might want a list for example:

- An item in a list.

- Another item in a list.

An Unnumbered Section That is Not Included in the Table of Contents

Here is an example of a figure environment. Perhaps I should say that the example of a figure can be seen in Figure 8.1. Figure placement can be tricky with LaTeX because figures and tables are treated as "floats": text can flow around them, but if there is not enough space, they will appear later. To prevent figures from going too far, the `\afterpage{\clearpage}` command can be used. This makes sure that the figure are typeset at the end of the page (possibly appear on their own on the following pages) and before any subsequent text.

The `\clearpage` forces a page break so that the figure can be placed, but without the the `\afterpage{}` command, the page would be broken too early (at the `\clearpage` statement). The `\afterpage{}` command tells LaTeX to issue the command after the present page has been rendered.

pie makes me happy!

Figure 8.1:   This is a figure of a happy face with a `psfrag` replacement. The original figure (drawn in xfig and exported to a .eps file) has the text "pie makes me happy!". The `psfrag` package replaces this with "π makes me happy!". Note that we have used the optional argument for the caption command so that only a short version of this caption occurs in the list of figures.

Be careful when using the "here" placement option `\begin{figure}[ht]` that you place the figure between paragraphs in your text, otherwise LaTeX might actually insert it in the middle of a sentence (which does not look very good and is frowned upon by the editors!)

An Unnumbered Subsection

Note that if you use subsections or further divisions under an unnumbered section, then you should make them unnumbered as well otherwise you will end up with zeros in the section numbering.

Chapter 9

Landscape Mode

The landscape mode allows you to rotate a page through 90 degrees. It is generally not a good idea to make the chapter heading landscape, but it can be useful for long tables etc.

This text should appear rotated, allowing for formatting of very wide tables etc. Note that this might only work after you convert the `dvi` file to a postscript (`ps`) or `pdf` file using `dvips` or `dvipdf` etc. This feature is provided by the `lscape` and the `pdflscape` packages. The latter is preferred if it works as it also rotates the pages in the pdf file for easier viewing.

Bibliography

[1] Michael McNeil Forbes and Ariel R. Zhitnitsky. Dark antimatter as a galactic heater: X-rays from the core of our galaxy. *JCAP*, 0801:023, 2008.

[2] L. D. Landau and E. M. Lifshitz. *Quantum Mechanics: Non-relativistic theory*, volume 3 of *Course of Theoretical Physics*. Pergamon Press, Oxford; New York, third edition, 1989, c1977.

[3] R. D. Peccei. Special topics: The strong CP problem. In C. Jarlskog, editor, *CP violation*. World Scientific, Singapore, January 1989.

[4] M. S. Turner. Dark matter, dark energy and fundamental physics. astro-ph/9912211, December 1999.

Appendix A

First Appendix

Here you can have your appendices. Note that if you only have a single appendix, you should issue `\renewcommand{\appendicesname}{Appendix}` before calling `\appendix` to display the singular "Appendix" rather than the default plural "Appendices".

Appendix B

Second Appendix

Here is the second appendix.