# A Sample UBC Thesis in LyX

## With a Subtitle

by

Michael M<sup>c</sup>Neil Forbes

B.Sc., The University of British Columbia, 1999
M.Sc., The University of British Columbia, 2001
Ph.D., Massachusetts Institute of Technology, 2005

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

Master of Science

in

The Faculty of Graduate Studies

(Physics)

The University Of British Columbia

September 19, 2010

# Abstract

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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.

Michael Forbes. mforbes@physics.ubc.ca

**January 2010:** The LyX version of these files is maintained by:
Christopher Barrington-Leigh, cpbl⊚wellbeing·econ·ubc·ca
Please send improvements and comments there.

# Contents

# List of Tables

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# List of Programs

# Acknowledgements

This is the place to thank professional colleagues and people who have given you the most help during the course of your graduate work.

# Dedication

The dedication is usually quite short, and is a personal rather than an academic recognition. The *Dedication* does not have to be titled, but it must appear in the table of contents. If you want to skip the chapter title but still enter it into the Table of Contents, use this command `\chapter[Dedication]{}`.

# Statement of Co-Authorship

If any part of your thesis was co-written, you must include a Co-Authorship statement which gives details of your contribution to the following areas:

- identification and design of research program

- performing the research

- data analyses

- manuscript preparation

Note that this section is the last of the preliminary pages (with lowercase Roman numeral page numbers). It must be placed *before* the \mainmatter command. After that, Arabic numbered pages will begin.

# Chapter 1

# This is a Chapter

## 1.1 A Section

Here is a section with some text. Equations look like this $y = x$.[1]

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

### 1.1.1 This is a Subsection

Here is an example of a citation: **?** ]. 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 `ubcsample.bbl` after you compile this file.[2]

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 **?** **?** **?** ]. 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: **?** **?** **?** ].

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. . .

$$f(x) = \int_{-\infty}^{\int_{-\infty}^{x} e^{-\frac{y^2}{2}} dy} e^{-z^2} dz \qquad (1.1)$$

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

---

[1]Here is a footnote.

[2]Here is another footnote.

| Phoenix | $960.35 |
|---------|---------|
| Calgary | $250.00 |

Table 1.1: Here is the caption for this wonderful table. It has not been centered and the positioning has been specified to be at the top of the page. Thus it appears above the babble rather than below where it is defined in the source file.

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 babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble.

Babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble babble.

## 1.2   Quote

> This is a small poem,
> a little poem, a Haiku,
> to show you how to.
> —Michael M$^c$Neil Forbes.

This small poem shows several features:

- The use of the `quote` and `center` environments.

- The `\newpage` command has been used to force a page break. (Sections do not usually start on a new page.)

- 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.

## 1.3   Programs

Here we give an example of a new float as defined using the `float` package. In the preamble we have use the commands

`\floatstyle{ruled} \newfloat{Program}{htbp}{lop}{[}chapter{]}`

be use for program fragments. A sample `python` program is show as Program 1.1. (Note that Python places a fairly restrictive limit on recursion so trying to call this with a large *n* before building up the cache is likely to fail unless you increase the recursion depth.) Instead of using a `verbatim` environment for your program chunks,

---

**Program 1.1** Python program that computes the Fibonacci number using memoization.

```python
def fib(n,_cache={}):
    if n < 2:
        return 1
    if n in _cache:
        return _cache[n]
    else:
        result = fib(n-1)+fib(n-2)
        _cache[n] = result
        return result
```

---

you might like to `include` them within an `alltt` envrironment by including the `\usepackage{alltt}` package (see page 187 of the LATEX book). Another useful package is the `\usepackage{listings}` which can pretty-print many different types of source code.

# Chapter 2

# 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.

For example, this chapter's title and associated table of contents heading and running header was created with
`\chapter[Another Chapter\ldots]{Another Chapter with a Very Long Chapter-name that will Probably Cause Problems}`.

Note that, according to the thesis regulations, the heading included in the table of contents must be a truncation of the actual heading.

## 2.1 Another Section

Another bunch of text to demonstrate what this file does. You might want a list for example:[1]

- 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 2.1. 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 appears on the following page.

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

---

[1]Here is a footnote in a different chapter. Footnotes should come after punctuation.
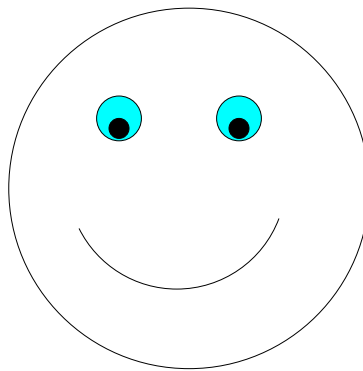
pie makes me happy!

Figure 2.1:  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 "$\pi$ 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.

`\clearpage` statement). The `\afterpage{}` command tells LATEX to issue the command after the present page has been rendered.

Figures can make a document more enjoyable as demonstrated by Figure 2.1.

## 2.2 Tables

We have already included one table: 1.1. Another table is plopped right here.

|  | Singular | | Plural | |
|---|---|---|---|---|
|  | English | **Gaeilge** | English | **Gaeilge** |
| 1st Person | at me | **agam** | at us | **againn** |
| 2nd Person | at you | **agat** | at you | **agaibh** |
| 3rd Person | at him | **aige** | at them | **acu** |
|  | at her | **aici** |  |  |

Table 2.1:  Another table.

Well, actually, as with Figure 2.1, the table does not necessarily appear right "here" because tables are also "floats". LATEX puts them where it can. Becuase of this, one should refer to floats by their labels rather than by their location. This example is demonstrated by Table 2.1. This one is pretty close, however.

Another useful package is `\usepackage{longtable}` which provides the `longtable` environment. This is nice because it allows tables to span multiple pages. Table 2.2 has been formatted this way.

Table 2.2: Feasible triples for highly variable Grid

Table 2.2: Feasible triples for highly variable Grid

| Time (s) | Triple chosen | Other feasible triples |
|---|---|---|
| 0 | (1, 11, 13725) | (1, 12, 10980), (1, 13, 8235), (2, 2, 0), (3, 1, 0) |
| 274 | (1, 12, 10980) | (1, 13, 8235), (2, 2, 0), (2, 3, 0), (3, 1, 0) |
| 5490 | (1, 12, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 8235 | (1, 12, 16470) | (1, 13, 13725), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 10980 | (1, 12, 16470) | (1, 13, 13725), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 13725 | (1, 12, 16470) | (1, 13, 13725), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 16470 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 19215 | (1, 12, 16470) | (1, 13, 13725), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 21960 | (1, 12, 16470) | (1, 13, 13725), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 24705 | (1, 12, 16470) | (1, 13, 13725), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 27450 | (1, 12, 16470) | (1, 13, 13725), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 30195 | (2, 2, 2745) | (2, 3, 0), (3, 1, 0) |
| 32940 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 35685 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| | | Continued on next page |

| Time (s) | Triple chosen | Other feasible triples |
|---|---|---|
| 38430 | (1, 13, 10980) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 41175 | (1, 12, 13725) | (1, 13, 10980), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 43920 | (1, 13, 10980) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 46665 | (2, 2, 2745) | (2, 3, 0), (3, 1, 0) |
| 49410 | (2, 2, 2745) | (2, 3, 0), (3, 1, 0) |
| 52155 | (1, 12, 16470) | (1, 13, 13725), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 54900 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 57645 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 60390 | (1, 12, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 63135 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 65880 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 68625 | (2, 2, 2745) | (2, 3, 0), (3, 1, 0) |
| 71370 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 74115 | (1, 12, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 76860 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 79605 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 82350 | (1, 12, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 85095 | (1, 12, 13725) | (1, 13, 10980), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 87840 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 90585 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 93330 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 96075 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 98820 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 101565 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 104310 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 107055 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 109800 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 112545 | (1, 12, 16470) | (1, 13, 13725), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 115290 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 118035 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 120780 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 123525 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 126270 | (1, 12, 16470) | (1, 13, 13725), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 129015 | (2, 2, 2745) | (2, 3, 0), (3, 1, 0) |
| 131760 | (2, 2, 2745) | (2, 3, 0), (3, 1, 0) |
| 134505 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 137250 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 139995 | (2, 2, 2745) | (2, 3, 0), (3, 1, 0) |
| 142740 | (2, 2, 2745) | (2, 3, 0), (3, 1, 0) |
| 145485 | (1, 12, 16470) | (1, 13, 13725), (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 148230 | (2, 2, 2745) | (2, 3, 0), (3, 1, 0) |
| 150975 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |

| Time (s) | Triple chosen | Other feasible triples |
|----------|---------------|------------------------|
| 153720 | (1, 12, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 156465 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 159210 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 161955 | (1, 13, 16470) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| 164700 | (1, 13, 13725) | (2, 2, 2745), (2, 3, 0), (3, 1, 0) |
| | | Continued on next page |

## 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 3

# 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.

# Bibliography

# Appendix A

# First Appendix

Here you can have your appendices.

# Additional Information

This chapter shows you how to include additional information in your thesis, the removal of which will not affect the submission. Such material should be removed before the thesis is actually submitted.

First, the chapter is unnumbered and not included in the Table of Contents. Second, it is the last section of the thesis, so its removal will not alter any of the page numbering etc. for the previous sections. Do not include any floats, however, as these will appear in the initial lists.

The `ubcthesis` LaTeX class has been designed to aid you in producing a thesis that conforms to the requirements of The University of British Columbia Faculty of Graduate Studies (FoGS).

Proper use of this class and sample is highly recommended—and should produce a well formatted document that meets the FoGS requirement. Notwithstanding, complex theses may require additional formatting that may conflict with some of the requirements. We therefore *highly recommend* that you consult one of the FoGS staff for assistance and an assessment of potential problems *before* starting final draft.

While we have attemped to address most of the thesis formatting requirements in these files, they do not constitute an official set of thesis requirements. The official requirements are available at the following section of the FoGS web site:

`http://www.grad.ubc.ca/students/thesis/`

We recommend that you review these instructions carefully.