Standard LaTeX Book

The Author

The Date

Contents

Preface

This is the preface. It is an unnumbered chapter. The [markboth] TEX field at the beginning of this paragraph sets the correct page heading for the Preface portion of the document. The preface does not appear in the table of contents.

Introduction

The introduction is entered using the usual chapter tag. Since the introduction chapter appears before the [mainmatter] TEX field, it is an unnumbered chapter. The primary difference between the preface and the introduction in this shell document is that the introduction will appear in the table of contents and the page headings for the introduction are automatically handled without the need for the [markboth] TEX field. You may use either or both methods to create chapters at the beginning of your document. You may also delete these preliminary chapters.

Part I

The First Part

Chapter 1

Standard LaTeX Book

This document illustrates the appearance of a book created with the shell **Standard LaTeX Book**. The shell automatically adds blank pages after the title page, the table of contents, the preface, and where necessary to ensure that new chapters begin on odd-numbered pages. The shell doesn't contain an abstract. Blank pages carry headers and page numbers.

The standard LaTeX shells provide the most general and portable set of document features. You can achieve almost any typesetting effect by beginning with a standard shell and adding LaTeX packages as necessary.

The document class base file for this shell is `book.cls`. This typesetting specification supports a number of class options. To see the available class options, choose Typeset, choose Options and Packages, select the Class Options tab, and then click the Modify button. This shell uses the default class options.

The typesetting specification for this shell document uses these options and packages with the defaults indicated:

Options and Packages	**Defaults**
Document class options	Standard
Packages:	
amsfonts	None
amsmath	Standard

Example 1-1

Let H be a Hilbert space, C be a closed bounded convex subset of H, T a nonexpansive self map of C. Suppose that as $n \to \infty$, $a_{n,k} \to 0$ for each k, and $\gamma_n = \sum_{k=0}^{\infty} (a_{n,k+1} - a_{n,k})^+ \to 0$. Then for each x in C, $A_n x = \sum_{k=0}^{\infty} a_{n,k} T^k x$ converges weakly to a fixed point of T .

The numbered equation

$$u_{tt} - \Delta u + u^5 + u\,|u|^{p-2} = 0 \text{ in } \mathbf{R}^3 \times [0, \infty[\tag{1.1}$$

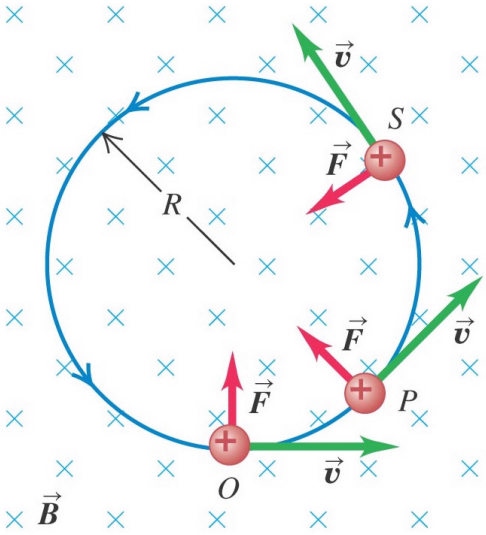

Figure 1.1: una figura

is automatically numbered as equation 3.1.

El resultado anterior se puede utilizar para obtener el campo eléctrico en un punto sobre un eje que pasa por el centro del disco y es perpendicular al plano del mismo. Para ello, en la ecuación (??), se hace $a = 0$ y $b = R$, resultando que

$$V = 2\pi k\sigma \left[\sqrt{R^2 + z^2} - z.\right]$$

El campo del disco se calcula como sigue:

$$\mathbf{E} = -\frac{\partial V}{\partial z}\mathbf{k} = 2\pi k\sigma \left[1 - \frac{z}{[R^2 + z^2]^{1/2}}\right]\mathbf{k} \tag{1.2}$$

Mediante la ecuación (1.2) se puede obtener el campo eléctrico de un plano no conductor que tiene una densidad superficial de carga uniforme, σ. Para tal fin podemos considerar que un plano es un disco cuyo radio tienede a infinito. Entonces, haciendo que R tienda a infinito en la ecuación (2.4.3), el segundo término del miembro deredcho de esta acuación tienede a cero y resulta que el campo del plano es

$$\mathbf{E} = -\frac{\partial V}{\partial z}\mathbf{k} = 2\pi k\sigma\mathbf{k} = \frac{\sigma}{2\epsilon_o} \tag{1.3}$$

Este campo es independiente de las coordenadas, es perpendicular al plano se dice que es uniforme. Dicho campo se representa por líneas que se dirigen perpendicularmente hacie el plano si σ es negativa y en dirección opueta si σ es positiva.

■

Example 1-2

En primer lugar se obtendrá el potencial en un punto P_1 que est´sa fuera de la esfera, es decir $R \geq a$. Se dividide la esfera en anillos y se ha tomado uno de radio d y área ds como se muestra en la figura (b). Si dQ es la carga del anillo el potencial que el origina en P_1 es:

$$dV = \frac{kdQ}{r} \tag{1.4}$$

El área del anillo es $dS = (2\pi d)(ad\theta) = (2\pi asen\theta)(ad\theta) = 2\pi a^2 sen\theta d\theta$, *mientras que su carga es*

$$dQ = \sigma dS = \sigma 2\pi a^2 sen\theta d\theta \tag{1.5}$$

Por otra parte, aplicando el teorema del coseno, de la figura (a) se deduce que

$$r = \sqrt{a^2 + R^2 - 2aR\cos\theta} \tag{1.6}$$

donde θ varía desde 0 hasta π. Reemplazando (1.5) y (1.6) en (1.4) e integrando se obtiene que

$$V = \int_0^{\pi} \frac{\sigma 2k\pi a^2 sen\theta d\theta}{\sqrt{a^2 + R^2 - 2aR\cos\theta}} \tag{1.7}$$

Haciendo el cambio de variable.

$$u = \sqrt{a^2 + R^2 - 2aR\cos\theta} \tag{1.8}$$

$$du = \frac{aRsen\theta d\theta d}{\sqrt{a^2 + R^2 - 2aR\cos\theta}}$$

$$\frac{sen\theta d\theta}{\sqrt{a^2 + R^2 - 2aR\cos\theta}} = du/aR \tag{1.9}$$

Además, si $\theta = 0$, entonces

$$u = \sqrt{a^2 + R^2 - 2aR\cos 0} = \sqrt{a^2 + R^2 - 2aR} = \sqrt{(R-a)^2} = |R-a| = R-a; \tag{1.10}$$

si $\theta = \pi$, entonces

$$u = \sqrt{a^2 + R^2 - 2aR\cos\pi} = \sqrt{a^2 + R^2 + 2aR} = \sqrt{(R+a)^2} = R + a \tag{1.11}$$

De esta manera, reemplazando (1.9) en (1.7) y haciendo los cambios de límite para u, resulta que

$$V = \frac{\sigma 2\pi k a^2}{aR} \int_{R-a}^{R+a} du = k\frac{\sigma 4\pi a^2}{R} = \frac{kQ}{R} \tag{1.12}$$

donde se hizo $Q = \sigma 4\pi a^2$, ya que $4\pi a^2$ es el área de la superficie esférica.

■

Chapter 2

Using This Shell

The front matter of this shell has a number of sample entries that you should replace with your own. Replace the body of this document with your own text. To start with a blank document, you may delete the preliminary chapters and the text in this document. Do not delete the [mainmatter] TEX field found above in a paragraph by itself or the numbering of different objects will be wrong.

Changes to the typeset format of this shell and its associated LATEX formatting file (`book.cls`) are not supported by MacKichan Software, Inc. If you want to make such changes, please consult the LATEX manuals or a local LATEX expert.

If you modify this document and export it as "Standard LaTeX Book.shl" in the `Shells\Standard LaTeX` directory, it will become your new Standard LaTeX Book style shell.

Chapter 3

Features of This Shell

3.1 Section Heading

Use the Section tag for major sections, and the Subsection tag for subsections.

3.1.1 Subsection

This is just some harmless text under a subsection.

Subsubsection

This is just some harmless text under a subsubsection.

Subsubsubsection This is just some harmless text under a subsubsubsection.

Subsubsubsubsection This is just some harmless text under a subsubsubsubsection.

3.2 Tags

You can apply the logical markup tag *Emphasized*.

You can apply the visual markup tags **Bold**, *Italics*, Roman, Sans Serif, *Slanted*, Small Caps, and `Typewriter`.

You can apply the special mathematics-only tags $\mathbb{BLACKBOARD\ BOLD}$, $\mathcal{CALLIGRAPHIC}$, and $\mathfrak{fraktur}$. Note that blackboard bold and calligraphic are correct only when applied to uppercase letters A through Z.

You can apply the size tags tiny, scriptsize, footnotesize, small, normalsize, large, Large, LARGE, huge and Huge.

This is a Body Math paragraph. Each time you press the Enter key, Scientific WorkPlace switches to mathematics mode. This is convenient for carrying out "scratchpad" computations.

Following is a group of paragraphs marked as Short Quote. This environment is appropriate for a short quotation or a sequence of short quotations.

> The only thing we have to fear is fear itself. *Franklin D. Roosevelt,* Mar. 4, 1933
>
> Ask not what your country can do for you; ask what you can do for your country. *John F. Kennedy,* Jan. 20. 1961
>
> There is nothing wrong with America that cannot be cured by what is right with America. *William J. "Bill" Clinton,* Jan. 21, 1993

The Long Quotation tag is used for quotations of more than one paragraph. Following is the beginning of *Alice's Adventures in Wonderland* by Lewis Carroll:

> Alice was beginning to get very tired of sitting by her sister on the bank, and of having nothing to do: once or twice she had peeped into the book her sister was reading, but it had no pictures or conversations in it, 'and what is the use of a book,' thought Alice 'without pictures or conversation?'
>
> So she was considering in her own mind (as well as she could, for the hot day made her feel very sleepy and stupid), whether the pleasure of making a daisy-chain would be worth the trouble of getting up and picking the daisies, when suddenly a White Rabbit with pink eyes ran close by her.
>
> There was nothing so very remarkable in that; nor did Alice think it so very much out of the way to hear the Rabbit say to itself, 'Oh dear! Oh dear! I shall be late!' (when she thought it over afterwards, it occurred to her that she ought to have wondered at this, but at the time it all seemed quite natural); but when the Rabbit actually took a watch out of its waistcoat-pocket, and looked at it, and then hurried on, Alice started to her feet, for it flashed across her mind that she had never before seen a rabbit with either a waistcoat-pocket, or a watch to take out of it, and burning with curiosity, she ran across the field after it, and fortunately was just in time to see it pop down a large rabbit-hole under the hedge.
>
> In another moment down went Alice after it, never once considering how in the world she was to get out again.

Use the Verbatim tag when you want LaTeX to preserve spacing, perhaps when including a fragment from a program such as:

```
#include <iostream>        // < > is used for standard libraries.
void main(void)            // "main" method always called first.
{
  cout << "Hello World.";  // Send to output stream.
}
```

3.3 Mathematics and Text

Let H be a Hilbert space, C be a closed bounded convex subset of H, T a nonexpansive self map of C. Suppose that as $n \to \infty$, $a_{n,k} \to 0$ for each k, and $\gamma_n = \sum_{k=0}^{\infty} (a_{n,k+1} - a_{n,k})^+ \to 0$. Then for each x in C, $A_n x = \sum_{k=0}^{\infty} a_{n,k} T^k x$ converges weakly to a fixed point of T .

The numbered equation

$$u_{tt} - \Delta u + u^5 + u\,|u|^{p-2} = 0 \text{ in } \mathbf{R}^3 \times [0, \infty[\tag{3.1}$$

is automatically numbered as equation 3.1.

3.4 Lists Environments

You can create numbered, bulleted, and description lists using the Item Tag popup list on the Tag toolbar.

1. List item 1
2. List item 2
   (a) A list item under a list item.
   The typeset style for this level is different than the screen style. The screen shows a lower case alphabetic character followed by a period while the typeset style uses a lower case alphabetic character surrounded by parentheses.
   (b) Just another list item under a list item.
      i. Third level list item under a list item.
         A. Fourth and final level of list items allowed.

- Bullet item 1
- Bullet item 2
  – Second level bullet item.
    * Third level bullet item.
      · Fourth (and final) level bullet item.

Description List Each description list item has a term followed by the description of that term. Double click the term box to enter the term, or to change it.

Bunyip Mythical beast of Australian Aboriginal legends.

3.5 Theorem-Like Environments

The following theorem-like environments (in alphabetical order) are available in this style.

theoremhis is an acknowledgement

theoremhis is an algorithm

theoremhis is an axiom

theoremhis is a case

theoremhis is a claim

theoremhis is a conclusion

theoremhis is a condition

theoremhis is a conjecture

theoremhis is a corollary

theoremhis is a criterion

theoremhis is a definition

Example 3-1

This is an example ■

theoremhis is an exercise

theoremhis is a lemma

Proof. This is the proof of the lemma.

theoremhis is notation

theoremhis is a problem

theoremhis is a proposition

theoremhis is a remark

theoremhis is a summary

theoremhis is a theorem

Proof of the Main Theorem. This is the proof.

Appendix A

The First Appendix

The appendix fragment is used only once. Subsequent appendices can be created using the Chapter Section/Body Tag.

Afterword

The back matter often includes one or more of an index, an afterword, acknowledgements, a bibliography, a colophon, or any other similar item. In the back matter, chapters do not produce a chapter number, but they are entered in the table of contents. If you are not using anything in the back matter, you can delete the back matter TEX field and everything that follows it.