使用此文档作为模板

示例及说明文档 of the kaobook 类

根据自己需要定制本页

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奥色姆曼出版社

* A LaTeX lover

kaobook 类

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Colophon
This document was typeset with the help of KOMA-Script and LaTeX using the kaobook class.
The source code of this book is available at:
https://github.com/fmarotta/kaobook
(You are welcome to contribute!)

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世界的和谐体现在形式和数量上，自然哲学的心和灵魂以及
一切诗歌都体现在数学美的概念上。

– D'Arcy Wentworth Thompson

前言

我的观点是，每个 LaTeX 极客，至少在他的一生中有一次，都觉得有必要创建自己的类: 这就是发生在我身上的事情，这就是结果，但是，这应该被看作是一个仍在进行中的工作。实际上，这个类并不完全是原创的，但它是我在许多指南、教程、博客和 text.stackexchange.com 文章中发现的所有最佳思想的混合体。特别是，主要的想法来自两个来源:

- Ken Arroyo Ohori's Doctoral Thesis, which served, with the author's permission, as a backbone for the implementation of this class;
- The Tufte-Latex Class, which was a model for the style.

本书第一章是导论，涵盖了本课程最基本的特点。接下来，有一堆章节专门讨论所有的命令和环境，你可以用来写一本书; 特别地，它将解释如何添加注释、图形和表以及引用。第二部分讨论页面布局和设计，以及其他特性，如彩色框和定理环境。

我开始写这门课是作为一个实验，因此它应该被视为。由于它一直是我个人使用的缩进，它可能不是完美的，但我发现它很满意的用途，我想让它。我分享这篇文章，希望有人能从这里找到写作的灵感。

Federico Marotta

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引言 1

1.1 主要思想

许多现代印刷教科书采用了突出的页边空白处的布局，在这里可以显示小的数字、表格、注释和几乎所有的东西。可以说，这种布局通过将主要文本与辅助材料分离来帮助组织讨论，而辅助材料同时又非常接近文本中引用它的地方。

这份文件的目的并不是要道歉，因为有许多更适合这项任务的作者; 所有这些单词的目的只是填充空间，以便读者可以看到用 kaobook 类编写的书是什么样子的。同时，我还将尝试说明类的特性。

kaobook 背后的主要思想来自于这个blog post，实际上这个类的名称是专门为这篇文章的作者 Ken Arroyo Ohori 命名的，他允许我根据他的论文创建一个类。因此，如果你想知道更多喜欢 1.5 栏布局的理由，一定要阅读他的博客文章。

您可能已经注意到，灵感的另一个来源是tuft-latex 类。设计相似的原因是很难改进已经很好的东西。但是，我认为这个类比 tuft - latex 更灵活。例如，我尝试只使用标准包，并尽可能少地从头实现;[1] 因此，只要您阅读了提供该特性的包的文档，定制任何东西都应该非常容易。

在本书中，我将阐述该类的主要特性，并提供有关如何使用和更改内容的信息。让我们开始吧。

1: 这也意味着更容易理解和贡献类开发。实际上，还有很多地方需要改进，所以如果您感兴趣，可以在 github 上查看存储库!

1.2 本类的功能

`kaobook` 类更关注文档结构，而不是样式。实际上，众所周知的 LaTeX 原则是结构和样式应该尽可能地分离 (参见第 1.2 节)。这意味着这个类将只提供命令、环境和一般情况下的机会来执行用户可能使用或不使用的操作。实际上，类中嵌入了一些样式问题，但是用户可以轻松地定制它们。

主要特点如下:

Page Layout 减少文本宽度是为了提高可读性，并为页边距留出空间，以便显示任何类型的元素。

Chapter Headings 相对于 tuft-latex，我们提供了多种章节标题可供选择; 例子将在后面的章节中看到。

Page Headers 它们跨越整个页面，包括页边距，并在双侧模式下交替显示章节和节名。[2]

Matters The commands `\frontmatter`, `\mainmatter` and `\backmatter` have been redefined in order to have automatically wide margins in the main matter, and narrow margins in the front and back matters. However, the page style can be changed at any moment, even in the middle of the document.

2: 这是 Tufte 设计的另一个不同之处。

Margin text We provide commands `\sidenote` and `\marginnote` to put text in the margins.[3]

Margin figs/tabs A couple of useful environments is `marginfigure` and `margintable`, which, not surprisingly, allow you to put figures and tables in the margins (*cfr.* 图 1.1).

Margin toc Finally, since we have wide margins, why don't add a little table of contents in them? See `\margintoc` for that.

Hyperref `hyperref` is loaded and by default we try to add bookmarks in a sensible way; in particular, the bookmarks levels are automatically reset at `\appendix` and `\backmatter`. Moreover, we also provide a small package to ease the hyperreferencing of other parts of the text.

Bibliography We want the reader to be able to know what has been cited without having to go to the end of the document every time, so citations go in the margins as well as at the end, as in Tufte-Latex. Unlike that class, however, you are free to customise the citations as you wish.

3: Sidenotes (like this!) are numbered while marginnotes are not

Figure 1.1: The Mona Lisa. https://commons.wikimedia.org/wiki/File:Mona_Lisa,_by_Leonardo_da_Vinci,_from_C2RMF_retouched.jpg

The order of the title pages, table of contents and preface can be easily changed, as in aly LaTeX document. In addition, the class is based on KOMA-Script's `scrbook`, therefore it inherits all the goodies of that.

1.3 本类未实现的功能

As anticipated, further customisation of the book is left to the user. Indeed, every book may have sidenotes, margin figures and so on, but each book will have its own fonts, toc style, special environments and so on. For this reason, in addition to the class, we provide only sensible defaults, but if these features are not nedded, they can be left out. These special packages are located in the `style` directory, which is organised as follows:

style.sty 这个包包含页面布局、页眉和页脚、章节标题和整个文档中使用的字体的规范。

packages.sty 加载额外的包，用特殊的内容来装饰写作 (例如，这里加载 `listing` 包，因为不是每本书都需要它)。还定义了一些有用的命令，用于以相同的方式打印相同的单词，例如斜体的拉丁单词或逐字的 `packages`。

references.sty 一些有用的命令来管理标签和引用，再次确保以一致的方式引用相同的元素。

environments.sty 提供特殊的环境，比如框。简单和复杂的环境都是可用的; 所谓复杂，我们的意思是它们被赋予一个计数器，浮动的，可以放在一个特殊的目录中。[4]

theorems.sty The style of mathematical environments. Acutally, there are two such packages: one is for plain theorems, *i.e.* the theorems are printed in plain text; the other uses `mdframed` to draw a box around theorems. You can plug the most appropriate style into its document.

4: 参考 第 7 章来获取更多示例。

The audacious users might feel tempted to edit some of these packages. I'd be immensely happy if they sent me examples of what they have been able to do!

In the rest of the book, I shall assume that the reader is not a novice in the use of LaTeX, and refer to the documentation of the packages used in this class for things that are already explained there. Moreover, I assume that the reader is willing to make minor edits to the provided packages for styles, environments and commands, if he or she does not like the default settings.

类选项、命令和环境

2 类选项

在本章中，我将描述最常用的选项，从 scrbook 继承的选项和特定于 kao 的选项。传递给类的选项修改其默认行为; 不过要注意，有些选项可能会导致意想不到的结果...

2.1 KOMA options

kaobook 类基于 scrbook，因此它理解您通常传递给该类的所有选项。如果您有足够的耐心，可以阅读 KOMA-Script 指南。[6] 下载。

加载类时传递给该类的每个 KOMA-Script 选项都会自动激活。此外，在 kaobook 中，一些选项修改了默认值。例如，字体大小为 9.5pt，段落之间用空格分隔，[7]没有缩进标记。

6: 指南可以从https://ctan.org/pkg/koma-script?lang=en.

7: 精确地说，段落之间用半行空格分隔:parskip 的值是 'half'。

2.2 kao options

In the future I plan to add more options to set the paragraph formatting (justified or ragged) and the position of the margins (inner or outer in twoside mode, left or right in oneside mode).[8]

I take this opportunity to renew the call for help: everyone is encouraged to add features or reimplement existing ones, and to send me the results. You can find the GitHub repository at https://github.com/fmarotta/kaobook.

8: As of now, paragraphs are justified, formatted with \singlespacing (from the setspace package) and \frenchspacing.

To Do

实现 justify 和 margin 选项。为了与 KOMA-Script 样式保持一致，它们应该接受一个简单开关作为参数，其中简单开关应该是 true 或 false，或者 KOMA-Script 支持的简单开关的其他标准值之一。有关更多信息，请参阅 KOMA-Script 文档。

The above box is an example of a kaobox, which will be discussed more thoroughly in 第 7 章 (数学及盒子) 第 25 页. Throughout the book I shall use these boxes to remarks what still needs to be done.

2.3 Other things worth knowing

A bunch of packages are already loaded in the class because they are needed for the implementation. These include:

- etoolbox
- calc

- xifthen
- xkeyval
- xparse
- xstring

Many more packages are loaded, but they will be discussed in due time. Here, we will mention only one more set of packages, needed to change the paragraph formatting (recall that in the future there will be options to change this). In particular, the packages we load are:

- ragged2e
- setspace
- hyphenat
- microtype
- needspace
- xspace
- xcolor (with options `usenames,dvipsnames`)

Some of the above packages do not concern paragraph formatting, but we nevertheless grouped them with the others. By default, the main text is justified and formatted with singlespacing and frenchspacing; the margin text is the same, except that the font is a bit smaller.

2.4 Document Structure

We provide optional arguments to the `\title` and `\author` commands so that you can insert short, plain text versions of this fields, which can be used, typically in the half-title or somewhere else in the front matter, through the commands `\@plaintitle` and `\@plainauthor`, respectively. The PDF properties `pdftitle` and `pdfauthor` are automatically set by hyperref to the plain values if present, otherwise to the normal values.[9]

There are defined two page layouts, `margin` and `wide`, and two page styles, `plain` and `fancy`. The layout basically concern the width of the margins, while the style refers to headers and footer; these issues will be discussed in 第 6 章 (Page Design) 第 21 页.[10]

The commands `\frontmatter`, `\mainmatter`, and `\backmatter` have been redefined in order to automatically change page layout and style for these sections of the book. The front matter uses the `margin` layout and the `plain` page style. In the mainmatter the margins are wide and the headings are fancy. In the appendix the style and the layout do not change; however we use `\bookmarksetup{startatroot}` so that the bookmarks of the chapters are on the root level (without this, they would be under the preceding part). In the backmatter the margins shrink again and we also reset the bookmarks root.

9: We think that this is an important point so we remark it here. If you compile the document with pdflatex, the PDF metadata will be altered so that they match the plain title and author you have specified; if you did not specify them, the metadata will be set to the normal title and author.

10: For now, suffice it to say that pages with the `margin` layout have wide margins, while with the `wide` layout the margins are absent. In `plain` pages the headers and footer are suppressed, while in `fancy` pages there is a header.

Margin stuff 3

侧记是所有 1.5 列布局书籍的一个显著特征。事实上，宽边意味着一些材料可以在那里展示。我们对所有的东西都使用边距: 旁注、边注、小目录、引文，为什么不呢?，特殊的盒子和环境。

3.1 Sidenotes

Sidenotes are like footnotes, except that they go in the margin, where they are more readable. To insert a sidenote, just use the command `\sidenote{Text of the note}`. You can specify a mark[O] with `\sidenote[mark]{Text}`, but you can also specify an offset, which moves the sidenote upwards or downwards, so that the full syntax is:

O: This sidenote has a special mark, a big O!

```
\sidenote[offset][mark]{Text}
```

If you use an offset, you always have to add the brackets for the mark, but they can be empty.[12] The format of the actual sidenote can be changed with the command `\setsidenotes`, which allows you to modify, for instance, the format of the markers and the separator between the marker and the text of the sidenote.

12: If you want to know more about the usage of the `\sidenote` command, read the documentation of the `snotez` package.

There was an alternative package, `sidenotes`, which we could have used. In the end we went for `snotez` because it was the one used in Ken Ohori's thesis, which inspired this class. The features are very similar, but one additional thing offered by `snotez` is that the offset can be specified as a multiple of `\baselineskip`. For example, if you want to enter a sidenote with the normal mark and move it upwards one line, type:

```
\sidenote[*-1][]{Text of the sidenote.}
```

Sidenotes are handled through the `snotez` package, which in turn relies on the `marginnote` package.

3.2 Marginnotes

This command is very similar to the previous one. You can create a marginnote with `\marginnote[offset]{Text}`, where the offset argument can be left out, or it can be a multiple of `\baselineskip`, *e.g.*

```
\marginnote[-12pt]{Text} or \marginnote[*-3]{Text}
```

While the command for margin notes comes from the `marginnote` package, it has been redefined in order to change the position of the optional offset argument, which now precedes the text of the note, whereas in the original version it was at the end. We have also added the possibility to use a multiple of `\baselineskip` as offset. These things were made only to make everything more consistent, so that you have to remember less things!

To Do

A small thing that needs to be done is to renew the `\sidenote` com-

mand so that it takes only one optional argument, the offset. The special mark argument can go somewhere else. In other words, we want the syntax of `\sidenote` to resemble that of `\marginnote`.

We load the packages `marginnote`, `marginfix` and `placeins`. Since `snotez` uses `marginnote`, what we said for marginnotes is also valid for sidenotes. Side- and margin- notes are shifted slightly upwards (`\renewcommand{\marginnotevadjust}{3pt}`) in order to allineate them to the bottom of the line of text where the note is issued.

3.3 Footnotes

Even though they are not displayed in the margin, we will discuss about footnotes here, since sidenotes are mainly intended to be a replacement of them. Footnotes force the reader to constantly move from one area of the page to the other. Arguably, marginnotes solve this issue, so you should not use footnotes. Nevertheless, for completeness, we have left the standard command `\footnote`, just in case you want to put a footnote once in a while.*

3.4 Margintoc

Since we are talking about margins, we introduce here the `\margintoc` command, which allows one to put small table of contents in the margin. Like other commands we have discussed, `\margintoc` accepts a parameter for the vertical offset, like so: `\margintoc[offset]`.

The command can be used in any point of the document, but we think it makes sense to use it just at the beginning of chapters or parts. In this document I make use of a KOMA-Script feature and put it in the chapter preamble, with the following code:

The font used in the margintoc is the same as the one for the chapter entries in the main table of contents at the beginning of the document.

```
\setchapterpreamble[u]{\margintoc}
\chapter{Chapter title}
```

Not only textual stuff can be displayed in the margin, but also figures. Those will be the focus of the next chapter.

* And this is how they look like. Notice that in the PDF file there is a back reference to the text; pretty cool, uh?

4 Figures and Tables

4.1 Normal figures and tables

可以像插入任何标准 LaTeX 文档一样插入数字和表。`graphicx` 包已经加载并配置好了，其图形宽度等于 textwidth，并且调整了高度以保持原始的纵横比。正如您所想象的，标题将被很好地放置在页边空白处。这是在 `floatrow` 包的帮助下实现的。

这里有一张蒙娜丽莎的照片（图 4.1）作为例子。标题格式为页边距和边注; 如果您想更改标题的某些内容，可以使用 `title` 包中的命令 command captsetup。请记住，如果您想引用一个图形，标签必须在标题之*后*出现!

Figure 4.1: It's Mona Lisa again. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

虽然标题的格式由 `title` 管理，但是它的位置由 `floatrow` 包处理。取得这样的成绩是很辛苦的，但现在我很满意。在双面模式下，标题以正确的页边距打印。

The credits for the image above the chapter title go to: Bushra Feroz — Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=68724647

插入表格和插入数字一样容易，如下面的代码所示:

```
\begin{table}
\begin{tabular}{ c c c c }
    \toprule
    col1 & col2 & col3 & col 4 \\
    \midrule
    \multirow{3}{4em}{Multiple row} & cell2 & cell3 & cell4\\ &
    cell5 & cell6 & cell7 \\ &
    cell8 & cell9 & cell10 \\
    \multirow{3}{4em}{Multiple row} & cell2 & cell3 & cell4 \\ &
    cell5 & cell6 & cell7 \\ &
    cell8 & cell9 & cell10 \\
    \bottomrule
\end{tabular}
\end{table}
```

which results in the useless 表 4.1.

Table 4.1: A useless table.

col1	col2	col3	col 4
Multiple row	cell2	cell3	cell4
	cell5	cell6	cell7
	cell8	cell9	cell10
Multiple row	cell2	cell3	cell4
	cell5	cell6	cell7
	cell8	cell9	cell10

I don't have much else to say, so I will just insert some blind text. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

4.2 Margin figures and tables

可以使用 `marginfigure` 环境插入 Marginfigures。在这种情况下，整个图片被限制在页边空白处，标题在它下面。图 1.1是这样得到的:

```
\begin{marginfigure}
    \includegraphics{monalisa}
    \caption[The Mona Lisa]{The Mona Lisa.}
    \labfig{marginmonalisa}
\end{marginfigure}
```

There is also the `margintable` environment, of which 表 4.2 is an example. Notice how you can place the caption above the table by just placing the `\caption` command before beginning the `tabular` environment. Usually, figure captions are below, while table captions are above. This rule is also respected for normal figures and tables:

the captions are always on the side, but for figure they are aligned to the bottom, while for tables to the top.

Marginfigures and tables can be positioned with an optional offset command, like so:

```
\begin{marginfigure}[offset]
    \includegraphics{images/seaside}
\end{marginfigure}
```

Offset ca be either a measure or a multiple of `\baselineskip`, much like with `\sidenote`, `\marginnote` and `\margintoc`. If you are wondering how I inserted this orange bubble, have a look at the `todo` package.

Improve this part.

Table 4.2: Another useless table.

col1	col2	col3
Multiple row	cell2	cell3
	cell5	cell6
	cell8	cell9

4.3 Wide figures and tables

Figure 4.2: 宽阔的海边，宽阔的标题。作品简介: 布什拉·费罗兹 (Bushra Feroz) 著 — 自己的工作, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=68724647

使用 `figure*` 和 `table*` 环境，您可以插入跨越整个页面宽度的数字。标题将根据口味被置于下方或上方。

您可能已经注意到了本章开头的全宽图像: 但是，它是以一种完全不同的方式设置的，您将在第 6 章中了解到这一点。现在是处理超引用的时候了。

参考文献 5

5.1 引用

要引用某人 [1, 2] 非常简单: 只需使用`\sidecite`命令。它还没有一个抵消的参数，但它可能会在未来。如您所见，该命令支持多个条目，默认情况下，它在页边空白处打印引用，并将其添加到文档末尾的参考书目中。在这个设置中，我使用了 biblatex，但是我认为这是可行的。[2] 注意，这些引用与文本没有任何关系，它们完全是随机的，因为它们只用于说明特性。

[1]: Visscher et al. (2008), 'Heritability in the genomics era–concepts and misconceptions.'
[2]: James et al. (2013), *An Introduction to Statistical Learning*
[2]: James et al. (2013), *An Introduction to Statistical Learning*

要编译包含引用的文档，您需要使用一个外部工具，对于这个类，这个工具是 biber。您需要运行以下命令 (假设您的 tex 文件名为 main.text):

```
$ pdflatex main
$ biber main
$ pdflatex main
```

5.2 术语表和索引

`kaobook` 类加载 `glossary` 和 `imakeidx` 包，您可以使用它们将词汇表和索引添加到您的图书中。例如，我以前定义了一些术语表条目，现在我将使用它们，如下所示:computer。`glossary` 还允许您使用缩略词，如下所示: 这是完整版Frame per Second (FPS)，这是简短版FPS。这些条目将出现在术语表的后面。

Unless you use Overleaf or some other fancy IDE for LaTeX, you need to run an external command from your terminal in order to compile a document with a glossary. In particular, the commands required are:[15]

15: These are the commands you would run in a UNIX system; I have no idea on how it works in Windows.

```
$ pdflatex main
$ makeglossaries main
$ pdflatex main
```

Note that you need not run `makeglossaries` every time you compile your document, but only when you change the glossary entries.

To create an index, you need to insert the command `\index{subject }` whenever you are talking about 'subject' in the text. For instance, at the start of this paragraph I would write `index{index}`, and an entry would be added to the Index in the backmatter. Check it out!

A nomenclature is just a special kind of index; you can find one at the end of this book. To insert a nomenclature, we use the package `nomencl` and add the terms with the command `\nomenclature`. We put then a `\printnomenclature` where we want it to appear.

In theory, you would need to run an external command for the index as well, but luckily the package we suggested, `imakeidx`, can compile the index automatically.

Also with this package we need to run an external command to compile the document, otherwise the nomenclature will not appear:

```
$ pdflatex main
$ makeindex main.nlo -s nomencl.ist -o main.nls
$ pdflatex main
```

These packages are all loaded in packages.sty, one of the files that come with this class. However, the configuration of the elements is best done in the main.tex file, since each book will have different entries and styles.

This brief section was by no means a complete reference on the subject, therefore you should consult the documentation of the above package to gain a full understanding of how they work.

Note that the `nomencl` package caused problems when the document was compiled, so, to make a long story short, I had to prevent `scrhack` to load the hack-file for `nomencl`. When compiling the document on Overleaf, however, this problem seem to vanish.

5.3 Hyperreferences

In this class we provide a handy sub-package to help you referencing the same elements always in the same way, for consistency across the book. First, you can label each element with a specific command. For instance, should you want to label a chapter, you would put `\labch{chapter-title}` right after the `\chapter` directive. This is just a convienence, because `\labch` is actually just an alias to `\label{ch:chapter-title}`, so it spares you the writing of 'ch'. We defined similar commands for many typically labeled elements, including:

- Page: `\labpage`
- Part: `\labpart`
- Chapter: `\labch`
- Section: `\labsec`
- Figure: `\labfig`
- Table: `\labtab`
- Definition: `\labdef`
- Theorem: `\labthm`
- Proposition: `\labprop`
- Lemma: `\lablemma`
- Remark: `\labremark`
- Example: `\labexample`
- Exercise: `\labexercise`

Of course, we have similar commands for referencing those elements. However, since the style of the reference should depend on the context, we provide different commands to reference the same thing. For instance, in some occasions you may want to reference the chapter by name, but other times you want to reference it only by number. In general, there are four reference style, which we call plain, vario, name, and full.

The plain style references only by number. It is accessed, for chapters, with `\refch{chapter-title}` (for other elements, the syntax is analogous). Such a reference results in: 第 5 章.

The vario and name styles rest upon the `varioref` package. Their syntax is `\vrefch{chapter-title}` and `\nrefch{chapter-title}`, and they result in: 第 5 章, for the vario style, and: 第 5 章 (参考文献), for the name style. As you can see, the page is referenced in `varioref` style.

The full style references everything. You can use it with `\frefch{chapter-title}` and it looks like this: 第 5 章 (参考文献) 第 15 页.

Of course, all the other elements have similar commands (*e.g.* for parts you would use `\vrefpart{part-title}` or something like that). However, not all elements implement all the four styles. The commands provided should be enough, but if you want to see what is available or to add the missing ones, have a look at the attached package.

设计和附加功能

6 Page Design

6.1 Headings

So far, in this document I used two different styles for the chapter headings: one has the chapter name, a rule and, in the margin, the chapter number; the other has an image at the top of the page, and the chapter title is printed in a box (like for this chapter). There is one additional style, which I used only in the appendix (on page 31); there, the chapter title is enclosed in two horizontal rules, and the chapter number (or letter, in the case of the appendix) is above it.[17]

17: To be honest, I do not think that mixing heading styles like this is a wise choice, but in this document I did only to show you how they look.

Every book is unique, so it makes sense to have different styles from which to choose. Actually, it would be awesome if whenever a `kao`-user designs a new heading style, he or she added it to the three styles already present, so that it will be available for new users and new books.

The choice of the style is made simple by the `\setchapterstyle` command. It accepts one option, the name of the style, which can be: 'plain', 'kao', or 'lines'.[18] If instead you want the image style, you have to use the command `\setchapterimage`, which accepts the path to the image as argument; you can also provide an optional parameter in square brackets to specify the height of the image.

18: Plain is the default LaTeX title style; the other ones are self explanatory.

Let us make some examples. In this book, I begin a normal chapter with the lines:

```
1 \setchapterstyle{kao}
2 \setchapterpreamble[u]{\margintoc}
3 \chapter{Title of the Chapter}
4 \labch{title}
```

In Line 1 I choose the style for the title to be 'kao'. Then, I specify that I want the margin toc. The rest is ordinary administration in LaTeX, except that I use my own `\labch` to label the chapter. Actually, the `\setchapterpreamble` is a standard KOMA-Script one, so I invide you to read about it in the KOMA documentation. Once the chapter

style is set, it holds until you change it.[19] Whenever I want to start a chapter with an image, I simply write:

```
\setchapterimage[7cm]{path/to/image.png} % Optionally specify the
    height
\setchapterpreamble[u]{\margintoc}
\chapter{Catchy Title} % No need to set a chapter style
\labch{catchy}
```

19: The `\margintoc` has to be specified at every chapter. Perhaps in the future this may change; it all depends on how this feature will be welcomed by the users, so keep in touch with me if you have preferences!

6.2 Headers & Footers

Headers and footers in KOMA-Script are handled by the `scrlayer-scrpage` package. There are two basic style: 'scrheadings' and 'plain.scrheadings'. The former is used for normal pages, whereas the latter is used in title pages (those where a new chapter starts, for instance) and, at least in this book, in the front matter. At any rate, the style can be changed with the `\pagestyle` command, *e.g.* `\pagestyle{plain.scrheadings}`.

In both stles, the footer is completely empty. In plain.scrheadings, also the header is absent (otherwise it wouldn't be so plain...), but in the normal style the design is reminescent of the 'kao' style for chapter titles.

To Do

The `twoside` class option is still unstable and. As always, any help will be greatly appreciated.

6.3 Table of Contents

Another important part of a book is the table of contents. By default, in `kaobook` there is an entry for everything: list of figures, list of tables, bibliographies, and even the table of contents itself. Not everybody might like this, so we will provide a description of the changes you need to do in order to enable or disable each of these entries. In the following 表 6.1, each item corresponds to a possible entry in the TOC, and its description is the command you need to provide to have such entry. These commands are specified in the attached style package,[20] so if you don't want the entries, just comment the corresponding lines.

20: In the same file, you can also choose the titles of these entries.

Of course, some packages, like those for glossaries and indices, will try to add their own entries. In such cases, you have to follow the instructions specific to that package. Here, since we have talked about glossaries and notations in 第 5 章, we will biefly see how to configure them.

In a later section, we will see how you can define your own floating environment, and endow it with an entry in the TOC.

For the `glossaries` package, use the 'toc' option when you load it: `\usepackage[toc]{glossaries}`. For `nomencl`, pass the 'intoc' option at the moment of loading the package. Both `glossaries` and `nomencl` are loaded in the attached 'packages' package.

Entry	Command to Activate
Table of Contents	`\setuptoc{toc}{totoc}`
List of Figs and Tabs	`\PassOptionsToClass{toc=listof}{\@baseclass}`
Bibliography	`\PassOptionsToClass{toc=bibliography}{\@baseclass}`

Table 6.1: Commands to add a particular entry to the table of contents.

Additional configuration of the table of contents can be performed through the packages `etoc`, which is loaded because it is needed for the margintocs, or the more traditional `tocbase`. Read the respective documentations if you want to be able to change the default TOC style.[21]

21: (And please, send me a copy of what you have done, I'm so curious!)

6.4 Page Layout

Besides the page style, you can also change the width of the content of a page. This is particularly useful for pages dedicated to part titles, where having the 1.5-column layout might be a little awkward, or for pages where you only put figures, where it is important to exploit all the available space.

In practice, there are two layouts: 'wide' and 'margin'. The former suppresses the margins and allocates the full page for contents, while the latter is the layout used in most of the pages of this book, including this one. The wide layout is also used automatically in the front and back matters.

To change page layout, use the `\pagelayout` command. For example, when I start a new part, I write:

```
\pagelayout{wide}
\addpart{Title of the New Part}
\pagelayout{margin}
```

6.5 Numbers & Counters

In this short section we shall see how dispositions, sidenotes and figures are numbered in the `kaobook` class.

By default, dispositions are numbered up to the section. This is achieved by setting: `\setcounter{secnumdepth}{1}`.

The sidenotes counter is the same across all the document, but if you want it to reset at each chapter, just uncomment the line

```
\counterwithin*{sidenote}{chapter}
```

in the `styles/style.sty` package provided by this class.

Figure and Table numbering is also per-chapter; to change that, use something like:

```
\renewcommand{\thefigure}{\arabic{section}.\arabic{figure}}
```

6.6 White Space

Attention! This section may be incomplete.

One of the things that I find most hard in LaTeX is to finely tune the white space around objects. There are not fixed rules, each object needs its own adjustment. Here we shall see how some spaces are defined at the moment in this class.

Space around figures and tables

```
\renewcommand\FBaskip{.4\topskip}
\renewcommand\FBbskip{\FBaskip}
```

Space around captions

```
\captionsetup{
    aboveskip=6pt,
    belowskip=6pt
}
```

Space around displays (*e.g.* equations)

```
\setlength\abovedisplayskip{6pt plus 2pt minus 4pt}
\setlength\belowdisplayskip{6pt plus 2pt minus 4pt}
\abovedisplayskip 10\p@ \@plus2\p@ \@minus5\p@
\abovedisplayshortskip \z@ \@plus3\p@
\belowdisplayskip \abovedisplayskip
\belowdisplayshortskip 6\p@ \@plus3\p@ \@minus3\p@
```

数学及盒子 7

7.1 定理

尽管大多数人抱怨看到一本充满公式式的书，数学却是许多书的重要组成部分。在这里，我们将说明一些可能性。我们认为定理、定义、注释和例子都应该在阴影的背景下加以强调; 然而，颜色不应该是沉重的眼睛，所以我们选择了一种淡黄色。[23]

23: 这里的所有框都是相同的颜色，因为我们不希望我们的文档看起来像Harlequin。

定义 7.1.1 *Let (X, d) be a metric space. A subset $U \subset X$ is an open set if, for any $x \in U$ there exists $r > 0$ such that $B(x, r) \subset U$. We call the topology associated to d the set τ_d of all the open subsets of (X, d).*

定义 7.1.1 是非常重要的。我不是在开玩笑，但是我插入这个短语只是为了说明如何引用定义。下面的语句在不同的环境中反复出现。

定理 7.1.1 *A finite intersection of open sets of (X, d) is an open set of (X, d), i.e τ_d is closed under finite intersections. Any union of open sets of (X, d) is an open set of (X, d).*

命题 7.1.2 *A finite intersection of open sets of (X, d) is an open set of (X, d), i.e τ_d is closed under finite intersections. Any union of open sets of (X, d) is an open set of (X, d).*

引理 7.1.3 *A finite intersection[a] of open sets of (X, d) is an open set of (X, d), i.e τ_d is closed under finite intersections. Any union of open sets of (X, d) is an open set of (X, d).*

[a] I'm a footnote

You can even insert footnotes inside the theorem environments; they will be displayed at the bottom of the box.

您可以安全地忽略定理...的内容，我假设，如果您对课本中的定理感兴趣，那么您已经了解了一些关于添加它们的经典方法。这些示例应该只显示您在这个类中可以做的所有事情。

推论 7.1.4 (Finite Intersection, Countable Union) *A finite intersection of open sets of (X, d) is an open set of (X, d), i.e τ_d is closed under finite intersections. Any union of open sets of (X, d) is an open set of (X, d).*

Proof. 证明留给读者作为一个简单的练习。提示:

水厂共当而面三张，白家决空给意层般，单重总歼者新。每建马先口住月大，究平克满现易手，省否何安苏京。两今此叫证程事元七调联派业你，全它精据间属医拒严力步青。厂江内立拉清义边指，况半严回和得话，状整度易芬列。再根心应得信飞住清增，至例联集采家同严热，地手蠢持查受立询。统定发几满斯究后参边增消与内关，解系之展习历李还也村酸。制周心值示前她志长步反，和果使标电再主它这，即务解旱八战根交。是中文之象万影报头，与劳工许格主部确，受经更奇小极准。形程记持件志各质天因时，据据极清总命所风式，气

太束书家秀低坟也。期之才引战对已公派及济，间究办儿转情革统将，周类弦具调除声坑。两了济素料切要压，光采用级数本形，管县任其坚。切易表候完铁今断土马他，领先往样拉口重把处千，把证建后苍交码院眼。较片的集节片合构进，入化发形机已斯我候，解肃飞口严。技时长次土员况属写，器始维期质离色，个至村单原否易。重铁看年程第则于去，且它后基格并下，每收感石形步而。

□

定义 7.1.2 *Let (X, d) be a metric space. A subset $U \subset X$ is an open set if, for any $x \in U$ there exists $r > 0$ such that $B(x, r) \subset U$. We call the topology associated to d the set τ_d of all the open subsets of (X, d).*

Here is a random equation, just because we can:

$$x = a_0 + \cfrac{1}{a_1 + \cfrac{1}{a_2 + \cfrac{1}{a_3 + \cfrac{1}{a_4}}}}$$

例 7.1.1 Let (X, d) be a metric space. A subset $U \subset X$ is an open set if, for any $x \in U$ there exists $r > 0$ such that $B(x, r) \subset U$. We call the topology associated to d the set τ_{d} of all the open subsets of (X, d).

备注 7.1.1 Let (X, d) be a metric space. A subset $U \subset X$ is an open set if, for any $x \in U$ there exists $r > 0$ such that $B(x, r) \subset U$. We call the topology associated to d the set τ_{d} of all the open subsets of (X, d).

As you may have noticed, definitions, example and remarks have independent counters; theorems, propositions, lemmas and corollaries share the same counter.

备注 7.1.2 Here is how an integral looks like inline: $\int_a^b x^2 dx$, and here is the same integral displayed in its own paragraph:

$$\int_a^b x^2 dx$$

We provide two files for the theorem styles: plaintheorems.sty, which you should include if you do not want coloured boxes around theorems; and mdftheorems.sty, which is the one used for this document.[24] Of course, you will have to edit these files according to your taste and the general style of the book.

24: The plain one is not showed, but actually it is exactly the same as this one, only without the yellow boxes.

7.2 Boxes & Custom Environments [25]

25: Notice that in the table of contents and in the header, the name of this section is 'Boxes & Environments'; we achieved this with the optional argument of the `section` command.

Say you want to insert a special section, an optional content or just something you want to emphasise. We think that nothing works better than a box in these cases. We used `mdframed` to construct the ones shown below. You can create and modify such environments by editing the provided file environments.sty.

盒子标题

她己道按收面学上全始，形万然许压己金史好，力住记赤则引秧。处高方据近学级素专，者往构支明系状委起查，增子束孤不般前。

相斗真它增备听片思三，听花连次志平品书消情，清市五积群面县开价现准此省持给，争式身在南决就集般，地力秧众团计。日车治政技便角想持中，厂期平及半干速区白土，观合村究研称始这少。验商眼件容果经风中，质江革再的采心年专，光制单万手斗光就，报却蹦杯材。内同数速果报做，属马市参至，入极将管医。但强质交上能只拉，据特光农无五计据，来步孤平葡院。江养水图再难气，做林因列行消特段，就解届罐盛。定她识决听人自打验，快思月断细面便，事定什呀传。边力心层下等共命每，厂五交型车想利，直下报亲积速。元前很地传气领权节，求反立全各市状，新上所走值上。明统多表过变物每区广，会王问西听观生真林，二决定助议苏。格节基全却及飞口悉，难之规利争白观，证查李却调代动斗形放数委同领，内从但五身。当了美话也步京边但容代认，放非边建按划近些派民越，更具建火法住收保步连。

如果设置了计数器，甚至可以创建自己的编号环境。

注释 7.2.1

术厂美义据那张别安响物，县交极长选行值深专质，眼心段极型新。格形连候眼王本加还题但，流但作基白具地机系，总严录件杰报前易。际取通主农题议需之从业少，江以受断件扮伴自。不度传间品全，青层自内治子，其询体员种。领角速院术计目化每具，体这常住更实记，在应争却根陕员。自传不展持心方约厂，济件过所转特济，外达才部至局。习例件气保候府社它，算际小毛相角方车次场马，难切龙弦制形界办。感头两华交务毛林回都节业点，两群月具受们即积生。调直给这着风火能圆商一，知易众美布会亲军千，件声坑志支较学。农六斯南何记子机量各然，快写线信权间越部色，象照屈型部物治地长。难要技第对老共达质标压心，才种日自针豆助养。政快下正型究条东话加争行整便，些改民流花按低重伸你。院心没离则收称革局，七件小收月通示布，导外员林村增。革电认速志海再事满传海，京深二百明家打开识连，林备转刷位体置进义。治风理年构族业酸整要第，认取历难丽园变队。

7.3 Experiments

title of margin note

使用 kaobox 盒子的边注.
(实际上, kaobox 是在 marginnote 里面!)

也可以在盒子里包装边注。我们鼓励大胆的读者尝试自己的实验，并让我知道结果。

我相信许多其他特殊的事情是可能的与类 `kaobook` 类。在开发过程中，我努力使它尽可能灵活，这样就可以不费太大力气地添加新特性。因此，我希望你们能在这门课的写作中找到最好的方式来表达自己，写一本书，写一篇报告或者写一篇论文，我也很想看看你们可以尝试的任何实验的结果。

附 录

A

Heading on Level 0 (chapter)

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

A.1 Heading on Level 1 (section)

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Heading on Level 2 (subsection)

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Heading on Level 3 (subsubsection)

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text,

you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Heading on Level 4 (paragraph) Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

A.2 Lists

Example for list (itemize)

- First item in a list
- Second item in a list
- Third item in a list
- Fourth item in a list
- Fifth item in a list

Example for list (4*itemize)

- First item in a list
  - First item in a list
    - First item in a list
      - First item in a list
      - Second item in a list
    - Second item in a list
  - Second item in a list
- Second item in a list

Example for list (enumerate)

1. First item in a list
2. Second item in a list
3. Third item in a list
4. Fourth item in a list
5. Fifth item in a list

Example for list (4*enumerate)

1. First item in a list
    a) First item in a list
        i. First item in a list
            A. First item in a list
            B. Second item in a list
        ii. Second item in a list
    b) Second item in a list
2. Second item in a list

Example for list (description)

First item in a list
Second item in a list
Third item in a list
Fourth item in a list
Fifth item in a list

Example for list (4*description)

First item in a list
    First item in a list
        First item in a list
            First item in a list
            Second item in a list
        Second item in a list
    Second item in a list
Second item in a list

参考文献

Here are the references in citation order.

[1] Peter M Visscher, William G Hill, and Naomi R Wray. 'Heritability in the genomics era–concepts and misconceptions.' In: *Nat. Rev. Genet.* 9.4 (2008), pp. 255–266. DOI: 10.1038/nrg2322 (cited on page 15).

[2] Gareth James et al. *An Introduction to Statistical Learning*. 2013 (cited on page 15).

Greek letters with pronounciation

Character	Name	Character	Name
α	alpha *AL-fuh*	ν	nu *NEW*
β	beta *BAY-tuh*	ξ, Ξ	xi *KSIGH*
γ, Γ	gamma *GAM-muh*	o	omicron *OM-uh-CRON*
δ, Δ	delta *DEL-tuh*	π, Π	pi *PIE*
ϵ	epsilon *EP-suh-lon*	ρ	rho *ROW*
ζ	zeta *ZAY-tuh*	σ, Σ	sigma *SIG-muh*
η	eta *AY-tuh*	τ	tau *TOW (as in cow)*
θ, Θ	theta *THAY-tuh*	υ, Υ	upsilon *OOP-suh-LON*
ι	iota *eye-OH-tuh*	ϕ, Φ	phi *FEE, or FI (as in hi)*
κ	kappa *KAP-uh*	χ	chi *KI (as in hi)*
λ, Λ	lambda *LAM-duh*	ψ, Ψ	psi *SIGH, or PSIGH*
μ	mu *MEW*	ω, Ω	omega *oh-MAY-guh*

Capitals shown are the ones that differ from Roman capitals.

按字母排序的索引