
vch-book.cls

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Preface

The class file `vch-book.cls` represents an adaptation of the \LaTeX 2 ϵ -standard class file `book.cls` with the size option `10pt` to the specific requirements of book production of WILEY-VCH Verlag Berlin GmbH. It can be used through the \LaTeX -command:

```
\documentclass[fleqn, other options]{vch-book}
```

The most visible difference to the standard layout is the indentation by `3em` (or `3 \quad`) of floats (figures and tables) and mathematical environments (`\[...]`, `equation`, `multiline`, ...). To achieve this effect I have added the new floats `vchtable` and `vchfigure` which are to be used in combination with `\vchcaption`. The standard `table`, `figure`, and `\caption` commands are nevertheless still working. So if you need to place a table or figure over the full width of the page you may still use them. In order to get short captions flushed left in contrast to the standard centered form the class loads internally the `caption2.sty` package by Harald Axel Sommerfeldt with the options `nooneline`, `small`, `bf`.

If you are using an old version of `amsmath.sty` (i.e. pre 2.x) the indentation of mathematical environments will not work correctly for the `multiline`-environment. I have tested it with version 1.2d and version 2.04 of `amsmath.sty`. There is no way to fix this deficiency (see also `amsmath.bug`). So, I have to ask you to upgrade your $\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX -installation by at least downloading the new version of `amsmath.sty`.

For the layout of tables we recommend the use of `booktabs.sty` by Simon Fear. Please include it in your preamble by writing

```
\usepackage{booktabs}
\setlength{\heavyrulewidth}{0.4pt}
\setlength{\lightrulewidth}{0.4pt}
\setlength{\cmidrulewidth}{0.4pt}
```

If necessary you may also use the other \LaTeX -tabular environments.

The document font is Times at 10pt. No other size option is supported. If your installation does'nt support the use of the font times you may comment the line `\usepackage{times}` in the preamble in order to start working.

The sectioning commands have been modified so that the full name of each chapter and section will be inserted into the table of contents and the short form will be inserted into the header. A chapter always starts on the right side with `pagestyle empty`. The same is true for the table of contents, the bibliography, and the index. The index and the bibliography are automatically inserted into the table of contents. The `\subparagraph` command is not implemented.

The starting page number of a book will always be 5 (arabic). No roman page numbering will be used for the front matter.

The files are delivered in DOS/Windows, Macintosh and Unix format. If you want to use the files on another than the dedicated platform you will first have to recode them.

List of enclosed files:

- `vch-book.cls` – the class file
- `vch.ist` – the index style file
- `vchgerm.ist` – the index style file for the german language option
- `example.tex` – an example file (this file)
- `bild1.eps` – is included in `example.tex`
- `start.tex` – a root file for using `vch-book.cls`
- `citation.tex` – an example file for the `natbib` package

You may find examples of the new commands in the following chapters.

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1 Getting started with the `vch-book.cls`

In order to work with the `vch-book.cls` you will need a working $\text{\LaTeX}2_{\epsilon}$ - and $\mathcal{A}\mathcal{M}\mathcal{S}$ - \LaTeX -installation (version 2.x) plus the following files: `caption2.sty`, `multicol.sty`, and `booktabs.sty`.

If you don't want to use neither extensiv math nor floats (pictures and tables) you may also run the `vch-book.cls` under $\text{\LaTeX}2_{\epsilon}$ without the above mentioned extensions.

1.1 Differences to the standard `book.cls`

In contrast to the normal behaviour the numbers in the `enumerate` environment will always be upright. *Even if they are included in an `em` block or something similar.*

1. *first item*
2. *second item*
3. *third item*
4. *fourth item*

The sectioning commands `\chapter`, `\section`, `\subsection` etc. have been modified so that the full name of each `\chapter`, `\section...` will be inserted into the table of contents. You may provide a short version of the respective title in the optional argument of the sectioning commands. This will go as usual into the running head. Additionally you will now also be able to put text or commands into the title which then will only have an effect either in the table of contents or inside the text.¹

1.2 Application

The formatting of a section head

For example if you type:

```
\section[Application -- The formatting of a section head]
{Application\for{toc}{:~}\except{toc}{\newline}
 The formatting of a section head}
```

¹The implementation of the `\for` and `\except` commands is from the `amsbook.cls`

You will get approximately:

- In the running head:
Application – The formatting of a section head
- In the table of contents:
Application: The formatting of a section head
- In the text:
Application
The formatting of a section head

1.2.1 Optional Parameters

The default settings are: `letterpaper`, `10pt`, `twoside`, `onecolumn`, `final`, `openright`, and `twocolumnindex`.

Only `twocolumnindex` is new. The pair `twocolumnindex` and `threecolumnindex` will enable you to switch between two or three columns for the index.

If you switch from `final` to `draft` you will get in addition to the standard behaviour – the marking of overfull lines – a line with the date, the word `D R A F T` and the filename in the footer.

Please always call `vch-book.cls` with the option `fleqn` in order to get formulas flush left in contrast to centered.

1.2.2 New Commands and Environments

The `preface` environment together with the `\prefaceauthor{}` command may be used to create the preface. The syntax is simple:

Type:

```
\begin{preface}

    Your text...

    \prefaceauthor{Name of the author(s)}
                        {optional: location and date}
\end{preface}
```

The environment `thebibliography` will now take an extra optional argument for the level under which it will be included into the text. The default setting `0` will result in a bibliography which is formatted as a chapter. With `1` or `2` you will get the bibliography as a section or subsection respectively. This feature may be used for edited books if you want a bibliography after every chapter (or section). So,

- `\begin{thebibliography}{99}`
...
`\end{thebibliography}`
- or


```
\begin{thebibliography}[0]{99}
...
\end{thebibliography}
```

will result in the usual bibliography as a chapter,

- ```
\begin{thebibliography}[1]{99}
...
\end{thebibliography}
```

will result in the bibliography as a section, and
- ```
\begin{thebibliography}[2]{99}
...
\end{thebibliography}
```

will result in the bibliography as a subsection.

In every case they will automatically be included in the table of contents and also the formatting of the running heads will automatically be done. As an example see page 13. If you prefer the author, year style please refer to appendix A.

In addition to the standard `figure` and `table` environments there are now also the new `vchfigure` and `vchtable` environments included. They differ to the standard environments in being left indented by 3 em (or 3 \quad). You may use them in conjunction with `\vchcaption` in order to get this indentation also in the captions. To achieve this effect the `vch-book.cls` package is looking at run-time for the `caption2.sty` package and will load it with the options `nooneline`, `small`, `bf`. If this fails you will get a warning.

2 Edited Books

*Your Name*¹

Your Department
X-X-University
Your Country

For edited books there are two additional features available. The possibility of including the bibliography on an arbitrary level was already mentioned above. (See also section 1.2.2 on page 10.)

To get the name of the author(s) into the table of contents you may use the command `\tocauthor{The name of the author}` inside the appropriate sectioning command. The name(s) will appear in the table of contents in italics and between upright parentheses after the title of the respective chapter, section etc. If necessary you may insert a `\newline` command – which will only effect the entry in the table of contents – by using the command `\for{toc}{\newline}` before the `\tocauthor` command. Note: Do not put a `\newline` inside the `\tocauthor` command because it will then be set in the table of contents after the opening parenthesis.

After the appropriate sectioning command may follow the `\authorafterheading` command and the optional affiliation command `\affil`. In contrast to the `\tocauthor` command you may use inside both the `\authorafterheading` and `\affil` command a footnote.

As an example of a bibliography on a section level you will find at this point a list of some useful books about \LaTeX included.

The renaming of the bibliography is achieved by the \LaTeX -command

- `\renewcommand\bibname{References}` or
- `\renewcommand\bibname{Bibliography}` resp.

References

- [1] Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The \LaTeX Companion*. Addison-Wesley, Reading, MA, USA, second edition, 1994.
- [2] Michel Goossens, Sebastian Rahtz, and Frank Mittelbach. *The \LaTeX Graphics Companion: Illustrating Documents with \TeX and PostScript*. Tools and Techniques for Computer Typesetting. Addison-Wesley, Reading, MA, USA, 1997.
- [3] George Grätzer. *First steps in \LaTeX* . Birkhäuser & Springer-Verlag, 1999.

¹You may use the footnote for your current address, expression of thanks etc.

- [4] Donald E. Knuth. Virtual fonts: More fun for grand wizards. *TUGBoat*, 11(1):13–23, April 1990.
- [5] Donald E. Knuth. *The T_EXbook*. Addison-Wesley, Reading, MA, USA, 1984.
- [6] Leslie Lamport. *L^AT_EX: A Document Preparation System: User's Guide and Reference Manual*. Addison-Wesley, Reading, MA, USA, second edition, 1994.

3 Elementary Properties of Functions

3.1 Differentiation

When we introduce the derivative

$$\lim_{x \rightarrow a} \frac{f(x) - f(a)}{x - a}$$

we assume that the function is defined and continuous in a neighborhood of a .

$$f(x, y) = \sum_{n=1}^{\infty} [g_n(x) - g_{n+1}(x)]g_n(y) \tag{3.1}$$

$$f(x, y) = \sum_{n=1}^{\infty} [g_n(x) - g_{n+1}(x)]g_n(y) \sum_{n=1}^{\infty} [g_n(x) - g_{n+1}(x)]g_n(y) \sum_{n=1}^{\infty} [g_{n+1}(x)] \tag{3.2}$$

Since the function $\left| \langle \tilde{D}u, \nu \rangle \right| / \left| \tilde{D}u \right|$ is strictly positive $\left| \langle \tilde{D}u, \nu \rangle \right|$ -almost everywhere, we obtain also

$$\lim_{h \rightarrow 0} \frac{f(\tilde{u}(x) + h \frac{\left| \langle \tilde{D}u, \nu \rangle \right|}{\left| \tilde{D}u \right|}(x)) - f(\tilde{u}(x))}{h} = \frac{\left| \langle \tilde{D}u, \nu \rangle \right|}{\left| \tilde{D}u \right|}(x) \frac{\langle \tilde{D}v, \nu \rangle}{\left| \langle \tilde{D}u, \nu \rangle \right|}(x)$$

$\left| \langle \tilde{D}u, \nu \rangle \right|$ -almost everywhere in \mathbb{R}^n .

Note: If the left indentation of the last environment (it is `multline*`) differs from the indentation of formula (3.1) please download a new version of `amsmath.sty` (version 2.x).

All indentations in mathematical environments are set to 3 em minus 1.5em, i.e. if there is enough space the indentation will be 3em. Otherwise L^AT_EX will use an additional space of 1.5em before a linebreak occurs. You may observe this behaviour in formula (3.2). (Except for $\$$. . . \$$. Please use the L^AT_EX commands `\[... \]` instead.) As a reference you may use this rule:

_____This is an indentation of 3 em.

3.2 This is another section

Some Text.

This is an unnumbered section

Some Text.

3.2.1 This is a subsection

Some Text.

This is an unnumbered subsection

Some Text.

This is a subsubsection

Please use always the appropriate sectioning commands and avoid auxiliary constructs like:

Heading

Some Word →LaTeX converters will create such constructs.

This is an unnumbered subsubsection

Subsubsections and paragraphs in our book class are always unnumbered and will not be written into the table of contents. If you really have to change this behaviour you may include in your preamble the following commands:

- `\setcounter{secnumdepth}{2}` – controls how many levels of section heads are numbered.
- `\setcounter{tocdepth}{2}` – controls how many levels of section heads are included into the table of contents

This is a paragraph Some Text.

This is an unnumbered paragraph Some Text.

4 Tables and Figures

4.1 Tables

We recommend the use of `booktabs.sty` for the layout of tables to avoid using both vertical rules between columns and horizontal rules between rows. You should, however, always use the following three horizontal rules: a top rule (`\toprule`), a middle rule (`\midrule`) and a bottom rule (`\bottomrule`).

A table set using `booktabs.sty` and `vchtable` and `\vchcaption`.¹

Table 4.1: A table from the `booktabs.sty` documentation

Item		
Animal	Description	Price (\$)
Gnat	per gram	13.65
	each	0.01
Gnu	stuffed	92.50
Emu	stuffed	33.33
Armadillo	frozen	8.99

If you refer to tables or figures in the text please use the `\label` and `\ref` commands of \LaTeX . Please avoid phrases like “the following table”. The positioning of floats is highly unpredictable. But “see table 4.1 or 4.2” will remain valid even if you reorganize your text.

A table over the full `textwidth` using `table` and `\caption`.

Table 4.2: A table over the full `textwidth`

One	Two	Three	Four	Five
1	2	3	4	5
I	II	III	IV	V

¹Please use these as standard

4.2 Figures

At first a vchfigure with a vchcaption.²

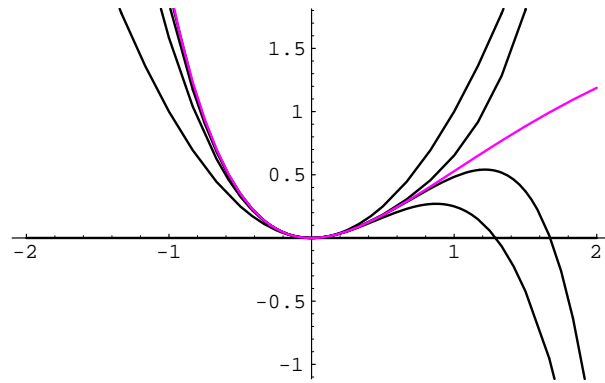


Figure 4.1: A vchfigure with a vchcaption

Now a figure with caption over the full textwidth.

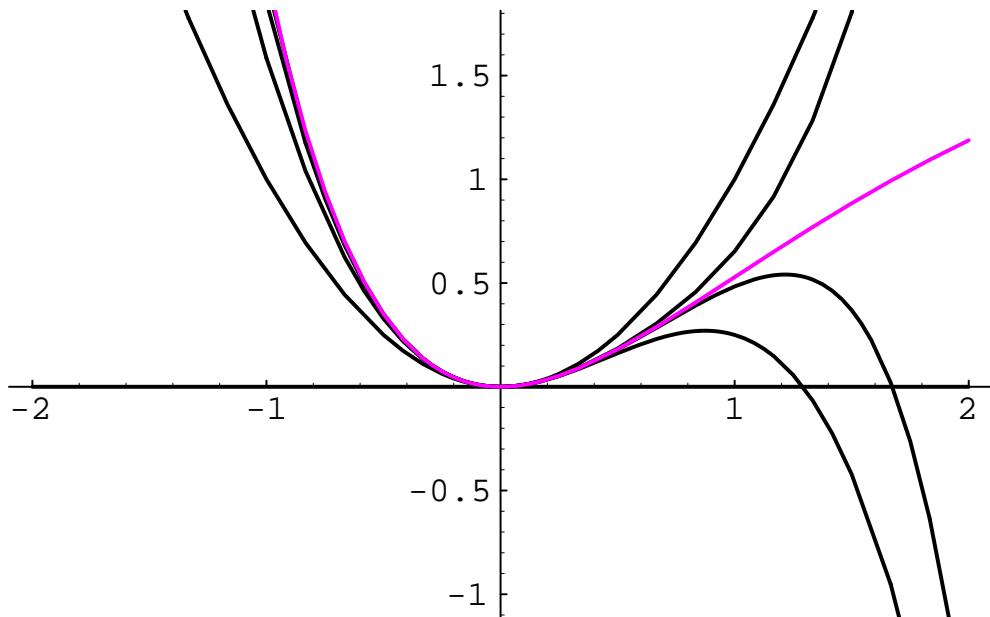


Figure 4.2: A figure with a caption

²Please use these as standard

5 Bibliographies in Monograph and Edited Books

If you are using $\text{BIB}\text{T}\text{E}\text{X}$ please use the style `plain` or `alpha`. If you prefer the author, year style please refer to appendix [A](#).

The environment `thebibliography` will take an extra optional argument for the level under which it will be included into the text. The default setting `0` will result in a bibliography which is formatted as a chapter. With `1` or `2` you will get the bibliography as a section or subsection respectively. This feature may be used for edited books if you want a bibliography after every chapter (or section). So,

- `\begin{thebibliography}{99}`
...
`\end{thebibliography}`
or
`\begin{thebibliography}[0]{99}`
...
`\end{thebibliography}`
will result in the usual bibliography as a chapter,
- `\begin{thebibliography}[1]{99}`
...
`\end{thebibliography}`
will result in the bibliography as a section, and
- `\begin{thebibliography}[2]{99}`
...
`\end{thebibliography}`
will result in the bibliography as a subsection.

In every case they will automatically be included in the table of contents and also the formatting of the running heads will automatically be done. As an example see page [13](#).

6 Making the Index

In order to suppress the first comma between the index entry and the page number please use the index style file `vch.ist` for creating the index. If you have a command line environment please type

```
makeindex -c -s vch.ist base_filename.idx
```

For german users there is the file `vchgerm.ist` included. If you have a command line environment please type

```
makeindex -c -g -s vchgerm.ist base_filename.idx
```

A tip for german users: If you are using the hyphenation marker "=" in an index entry you have to change the line `actual '='` in the index style file to e.g. `actual '*'`. Otherwise `makeindex` may cut everything before the = sign.

You may choose between two or three columns in the index by including the option `threecolumnindex` in the preamble of your document:

```
\documentclass[fleqn,threecolumnindex...]{vch-book}
```

`twocolumnindex` is the default, so you don't have to call it explicitly.

7 Troubleshooting

7.1 Error Messages

You may get the following self explanatory error messages from `vch-book.cls`:

- Option ‘a5paper’ not supported
- Option ‘b5paper’ not supported
- Option ‘11pt’ not supported
- Option ‘12pt’ not supported
- Option ‘oneside’ not supported
- Option ‘leqno’ not supported
- Optional argument of ‘thebibliography’ must be 0, 1, or 2

If your \LaTeX -installation will not find `caption2.sty` or `multicol.sty` you will get the following warnings:

- Can’t find `caption2.sty` – will use normal caption layout for oneline caption.
- Can’t find `multicol.sty` – will use normal index layout if necessary.

Please download these files before the final formatting of your text from your nearest CTAN-site¹ resp. mirror.

The web-site of the AMS² for $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\text{\LaTeX}2.x$ is

<http://www.ams.org/tex/amslatex.html>

7.2 Contact Information

Please send bug reports to `physics@wiley-vch.de`.

¹Comprehensive TeX Archive Network

²American Mathematical Society

A Alternative Bibliography Styles

A.1 The natbib-package

If you prefer author-year style citations you may achieve your preferred reference style by using the natbib-package by Patrick W. Daly. For a full documentation please refer to the package itself. Some points to be taken care of are:

- You should not use the optional argument of the bibliography environment of the vch-book.cls together with the natbib-package. The natbib-package provides its own mechanism for the placement of bibliographies on a chapter or section level.
- Because the natbib-package uses the standard L^AT_EX bibliography environment you have to provide the commands for the table of contents and the running heads yourself.

```
\cleardoublepage
\addcontentsline{toc}{chapter}{Bibliography}
\begin{thebibliography}{99}
\markboth{Bibliography}{Bibliography}
\bibitem...
```

- `\usepackage[authoryear]{natbib}` has to be called before the babel package.
- `\bibitem` now has an optional element of the form `\bibitem[short author list (year) long author list]{label}..` followed by the usual bibliography entry.
- the standard LaTeX `\cite` command is replaced by `\citet` und `\citep`. (`citet` – textual, `citep` – parenthesized entry). The starred form gives the long author list.

You may find examples of the most usual reference calls in the example file “citation.tex”.

Bibliography

- [1] W. Diffie and E. Hellman, *New directions in cryptography*, IEEE Transactions on Information Theory **22** (1976), no. 5, 644–654.
- [2] D. H. Fremlin, *Cichon's diagram*, 1983/1984, presented at the Séminaire Initiation à l'Analyse, G. Choquet, M. Rogalski, J. Saint Raymond, at the Université Pierre et Marie Curie, Paris, 23e année.
- [3] I. P. Goulden and D. M. Jackson, *The enumeration of directed closed Euler trails and directed Hamiltonian circuits by Langrangian methods*, European J. Combin. **2** (1981), 131–212.
- [4] F. Harary and E. M. Palmer, *Graphical enumeration*, Academic Press, 1973.

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