

L^AT_EX SNmono Document Class

Author Instructions for – Monographs –

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Contents

1	Introduction	3
2	Best Practice Guidelines for L ^A T _E X Manuscripts	4
3	Set Up Your Book with SNmono	7
3.1	Install the SNmono Package	7
3.2	Set up your File and Document Structure	7
3.3	Initialize the Class	8
3.4	SNmono Class Options	9
3.5	Compatible Packages	12
3.6	Preparation for a possible new edition	14
4	Style Content Structures	14
4.1	Text elements	14
4.2	Mathematics elements	20
4.3	Figures, Tables and Their Captions	25
4.4	Accessibility	28
4.5	Special Layout Elements	29
4.6	Bibliography	33
4.7	Index	34
4.8	Table of Contents	35

1 Introduction

Springer Nature has developed the SNmono document class and its special features as a template to help you prepare scientific monographs in L^AT_EX that conform to Springer Nature technical requirements. The L^AT_EX authoring template SNmono is inclusive of all research disciplines and provides key placeholders for policy requirements.

The template is stylistically neutral. We recommend avoiding the introduction of any unnecessary formatting as non-standard packages and macros are frequent causes of

error. Wherever possible please do not add further packages to the template. Adhering to these guidelines will ease the production process of any accepted manuscript and help avoid misinterpretation of your \LaTeX code.

The Springer Nature `SNmono` tool package has been set up for those who are familiar with the basics of \LaTeX , and the documentation is not intended to give an introduction to \LaTeX (or \TeX). For questions about \LaTeX systems / installations or the \LaTeX mark-up language in general, visit ctan.org. There you will also find links to packages not installed on your system but required by our class file. Many \LaTeX installations allow for installing missing packages *on the fly*, i.e., if needed.

The essential reference for \LaTeX is *The \LaTeX Companion* (by F. Mittelbach and M. Goossens), Addison-Wesley, 3rd ed., 2023, but there are many other good books about \LaTeX , e.g., *Text and Math into \LaTeX* (by G. Grätzer), Springer, 6th ed., 2024 (see Text and Math into \LaTeX), or directly online the Overleaf Documentation pages.

The following sections give you detailed instructions on how to set up your files and meet Springer Nature's specific style and layout requirements. Please try to adhere to these standards right from the start and use them as a checklist before submitting the manuscript.

For our general manuscript guidelines we refer to Manuscript guidelines.

2 Best Practice Guidelines for \LaTeX Manuscripts

Please note that observing the following details in creating your manuscript will promote smooth production of your work:

- Please ensure your \LaTeX file can be compiled without errors in a recent version of \LaTeX . We recommend uploading the manuscript to Overleaf (free service) and running the compiler there.
- Please avoid including multiple levels of linked sub-files. Well-organized file structure and clear file names improve handling enormously.
- Please avoid macro packages which change standard layout and enumeration settings, such as `fancyhdr`, `a4wide`, `enumerate`, and `enumitem`. These will have to be replaced with standard settings during production.
- The use of `\def` is not recommended. Instead, please replace all instances with the appropriate `\newcommand`. This prevents existing commands being inadvertently replaced, producing unexpected errors (more explanation below).

- Please use standard L^AT_EX commands consistently for character emphasis, such as `\mathbb`, `\mathcal`, or `\mathfrak` and avoid including additional font-related packages such as `bbm`, `dsfonts`, `eucal`, `mathrsfs`, `mathabx`, and `mathtools`.
- The `\text{...}` command is recommended for text in math environments rather than `\mbox` or `\hbox` constructions.
- Please do not use `color` for emphasis in running text, particularly not the `xcolor` package (see below for further explanation). As an exception, color may be used for highlighting syntax in code listings.
- Images should always be separated from the text (using proper `\includegraphics` commands), must have a caption and must be referenced in the text. Please do not use `wrapfigure` or `subfigure`.
- Please note that where `tikz` or `xy` packages (or similar ones creating diagram-like structures) are used, the output cannot be created on the fly for all publication formats produced, but only for PDF. For all other formats, the output has to be included as an image instead (see further details below).
- Please do not use `\pageref`, as this will lead to dead links in some output formats, since page orientation is only valid for the PDF (see explanations below).
- Please avoid linking back to the manuscript from the bibliography, and do not include footnotes in the bibliography.

Why are we asking you to observe these restrictions?

We are publishing and distributing your work not only in PDF, but also in other digital/online versions such as html and epub, which are based on XML, the industry standard for data exchange. Using XML as a basis allows us to provide data to other specific interfaces such as Braille machines as well as indexing, abstracting and library services. Satisfying all the requirements of these formats dictates many of the above restrictions, as these are produced from the L^AT_EX version. The functions and packages that are not recommended in the guidelines above may work in the PDF output, but not beyond that. Although the name PDF (Portable Document Format) suggests portability, it actually depends on the output medium: a professional postscript printer might not produce the same result as a local printer at home or at a department. A prime example of the limitations is that not all aspects of the page-oriented PDF output can be mirrored in other formats. This often requires the source to be adapted to allow all output formats to be produced from it.

Examples:

- Constructs such as

```
$X+nY=0 \quad\backslash hbox{for all $n>0$}$
```

will not work properly and need to be replaced manually; instead use

```
$X+nY=0 \text{ for all } n>0$
```

to avoid nesting math environments. Note that the `\text` command also adds proper horizontal spacing.

- The command `\r` is already predefined as an internal command in `TeX`; if you want to define the set of real numbers and use, e.g., `\def\r{\mathbb{R}}`, this internal command is overwritten. If you use `\newcommand{\r}{\mathbb{R}}` for the same purpose, it will result in an error stating that `\r` is already defined. To avoid this, you could use `\newcommand{\R}{\mathbb{R}}` which would work well, but of course all instances of `\r` in your document need to be replaced by `\R`. Avoid using `\renewcommand`.
- Commands such as `\enlarge this page` or `\pagebreak`, etc. only work with a fixed output page size which is not valid for all formats. Such commands are then either ignored or produce strange breaks.
- Using too many fonts can produce errors in some output formats due to a restriction on the number of fonts that can be used simultaneously. Hence, please consider carefully which fonts are really needed and use these consistently in your manuscript. Also, please do not use fonts that have no proper postscript version as these cannot be handled by professional printers. Avoid the set of so-called Type 3 Postscript fonts, which sometimes occur in specific packages or in figures, as their characters will be omitted in the output. To check whether the document includes such Type 3 fonts, refer to the fonts tab in “Document Properties” in Adobe’s Acrobat Reader: this will list all fonts used and whether these are Type 1, True Type (both of which are ok), or Type 3.
- Colors are problematic with regard to accessibility (lack of sufficient contrast between colors) and for other output formats, as colors cannot be freely integrated there. Such passages have to be embedded as images, which in turn will reduce readability. If, nevertheless, specific colors need to be defined, please include CMYK definitions of these colors as – depending on the output – some output drivers such as professional printers cannot deal with RGB colors.
- For typesetting algorithms, please use either the `algorithms2e` package or ONE of the (`algpseudocode` OR `algcompatible` OR `algorithmic`) packages to typeset algorithm bodies and the `algorithm` package for captioning the algorithm.
- If you use the `newtxmath` package, do NOT include the `amsmath` package separately.

- Please try to avoid the `tikz`, `xy`, and `pstricks` packages if possible. These graphs/figures cannot be rendered in our other output formats, therefore can only be included there as rendered image files of a fixed resolution.
- Caution with packages which embed page-like structures within layout elements, such as `multicol` or `minipage` (sometimes used to create specific layout within `\mbox` or `\parbox`). These can cause significant problems for some output formats or can only be rendered as images.

3 Set Up Your Book with SNmono

3.1 Install the SNmono Package

The components of the SNmono tool package are:

- The Springer Nature L^AT_EX class `SNmono.cls` and BiBTeX styles `spmpsci.bst`, `spphys.bst`, `spbasic.bst` as well as the *templates* with preset class options, packages and coding examples. Make sure that you use the most recent version of the class file (version 5.15 or above).

Tip: Copy these files to your working directory, run L^AT_EX and produce your own example *.dvi or *.pdf file; rename the template file as you see fit and use it for your own input.

- *Author Instructions* (this file) with style and coding instructions, as well as descriptions of SNmono features with regards to their functionality.

Tip: Follow these instructions to set up your files, to type in your text and to obtain a consistent formal style in line with the Springer Nature layout specifications; use these pages as checklists before you submit your manuscript data. Use it as a reference if you need to alter or enhance the default settings of the SNmono document class and/or the templates.

3.2 Set up your File and Document Structure

Chapters. We recommend to save each single chapter as an individual file. Note that the first chapter needs to be Chapter 1, not Chapter 0, due to limitations in XML.

Root File and Book Structure. Set up a *root* file complete with all commands needed to invoke the class, the packages and your own declarations and commands.

Use this root file for the compilation of your manuscript.

Divide your book manuscript into three parts using the following declarations in the root file:

```
\frontmatter  
\mainmatter  
\backmatter
```

1. the *front matter* for the dedication, foreword, **preface**, **table of contents**, and lists of acronyms, figures, tables;
2. the *main matter* for the main body of your book, i.e., the parts, **chapters**, sections, . . . ;
3. the *back matter* for appendixes, glossary, **bibliography**, and index.

Insert the individual chapter files with the `\include` command.

Front matter and back matter can also use separate files as needed. Typically the minimal setup uses the boldfaced ingredients above, other material is optional.

3.3 Initialize the Class

To format a *monograph* using the default pre-set templates enter

```
\documentclass{SNmono}
```

at the beginning of your input.

If you have agreed the use of optional features with your publishing contact, enter

```
\documentclass[<options>]{SNmono}
```

at the beginning of your input and select the appropriate option from the `SNmono` class options below.

3.4 SNmono Class Options

The following SNmono class options are available if you need to alter the default layout settings of the SNmono document class. Please note that the optional features should only be chosen if instructed to do so by the publishing contact for your book.

Language for Fixed L^AT_EX Texts. In the SNmono class we have changed a few standard L^AT_EX texts (e.g., Figure to Fig. in figure captions) and assigned names to newly defined theorem-like environments so that they conform with Springer Nature style requirements.

<i>default</i>	English
<i>deutsch</i>	translates fixed L ^A T _E X texts into their German equivalent
<i>francais</i>	same as above for French
<i>italiano</i>	same as above for Italian
<i>espanol</i>	same as above for Spanish
<i>portugues</i>	same as above for (Brazilian) Portuguese

Text Style

<i>default</i>	plain text
<i>graybox</i>	automatically activates the packages <code>color</code> and <code>framed</code> and places a box with 15 percent gray shade in the background of the text when you use the SNmono environment E.g., <code>\begin{svgraybox} \\$\int f(x)dx=0\\$ \end{svgraybox}</code> results in

$$\int f(x)dx = 0$$

Vector Style in Equations. This adapts the behavior of the `\vec` command:

<i>default</i>	vectors boldfaced (<i>math style</i>), e.g., a , v
<i>vecphys</i>	vectors boldfaced italic (<i>physics style</i>), e.g., a , v
<i>vecarrow</i>	vectors with an arrow above, e.g., \vec{a} , \vec{v}

Numbering and Layout of Headings

- default* All section headings down to subsubsection level are numbered. Any second and subsequent lines in multiline numbered headings are indented. Paragraph and subparagraph headings are displayed, but not numbered. Figures, tables and equations are numbered chapterwise. Individual theorem-like environments are counted consecutively throughout the book.
- nosecnum* Sections are unnumbered. Figures, tables and equations are numbered chapterwise, including chapter number, if applicable.
- nochapnum* Chapters are unnumbered, but section headings within them are numbered. Figures, tables and equations are numbered chapterwise without any chapter number.
- nonum* No headings are numbered. Figures, tables, and equations are counted consecutively throughout the book.

Warning: Do not use \chapter*, it would mix up the numbering.

Numbering of Figures, Tables and Equations

- default* chapterwise numbering
- numart* numbers figures, tables, equations consecutively (not chapterwise) throughout the whole text, as in the standard article document class

Numbering Built-in Theorem-Like Environments. For mathematical monographs we encourage authors to use the SNmono class option *envcountsame* together with the option *envcountchap*, see below. With this setting all predefined Springer environments get a common counter with a chapter prefix and the counter is reset for each chapter.

- default* Each built-in theorem-like environment has its own counter and is numbered consecutively throughout the book without any preceding chapter or section number.
- Theorem 1** bla
- Definition 1** blabla
- Lemma 1** blablabla
- Theorem 2** doubleblabla
- envcountchap* Select as default for a book with numbered chapters. Each built-in environment has its own counter and is numbered chapterwise.

	Theorem 1.1 bla [Here the chapter number is 1]
	Definition 1.1 blabla
	Lemma 1.1 blablabla
	Theorem 1.2 doubleblabla
<i>envcountsect</i>	Each built-in environment has its own counter and is numbered <i>sectionwise</i>
	Theorem 3.1 bla [Here the section number is 3]
	Definition 3.1 blabla
	Lemma 3.1 blablabla
	Theorem 3.2 doubleblabla
<i>envcountsame</i>	All built-in environments follow a <i>single counter</i> without any chapter or section prefix, and are counted consecutively throughout the book
	Theorem 1 bla
	Definition 2 blabla
	Lemma 3 blablabla
	Theorem 4 doubleblabla
<i>envcountresetchap</i>	Each built-in environment gets its own counter that is <i>reset for each chapter</i> without any preceding chapter or section prefix
<i>envcountresetsect</i>	Each built-in environment gets its own counter that is <i>reset for each section</i> without any preceding chapter or section prefix
<i>nospthms</i>	only if you want to suppress all defined theorem-like environments and use the theorem environments of original L ^A T _E X package or other theorem packages instead. (Please check this with your publishing contact.)

Remarks

- When the option *envcountsame* is combined with the options *envcountresetchap* or *envcountresetsect* all predefined environments get the same counter; but the counter is reset for each chapter or section.
- When the option *envcountsame* is combined with the options *envcountchap* or *envcountsect* all predefined environments get a common counter with a chapter or section prefix; but the counter is reset for each chapter or section.

- Be careful not to use layout options that contradict the parameter of the selected environment option and vice versa.

Bibliography

- default* the bibliography is set as an unnumbered chapter starting on a new recto page, with automatically correct running heads and an entry in the table of contents. The list itself is set in small print and numbered with ordinal numbers.
- sectrefs* sets the bibliography as an unnumbered section, e.g., at the end of a chapter
- natbib* sorts reference entries in the author-year system (make sure that you have the natbib package by Patrick W. Daly installed. Otherwise it can be found at <https://ctan.org/pkg/natbib>.

Use the Springer class option

- oribibl* only if you want to set reference numbers in square brackets without automatic TOC entry etc., as is the case in the original L^AT_EX bibliography environment. But please note that most page layout features are nevertheless adjusted to Springer Nature requirements. (Please check usage of this option with your publishing contact.)

3.5 Compatible Packages

SNmono document class has been tested with a number of Standard L^AT_EX tools. Below we list and comment on a selection of recommended packages for preparing fully formatted book manuscripts for Springer Nature. If not installed on your system, the source of all standard L^AT_EX tools and packages is the CTAN, website ctan.org.

Invoke the packages with the command

```
\usepackage{package_name}
```

where package_name is the name of the package omitting the suffix “.sty”

Font Selection

default	Times font family as default text body font together with Helvetica clone as sans serif and Courier as typewriter font.
newtxtext.sty and newtxmath.sty	Supports roman text font provided by a Times clone, sans serif based on a Helvetica clone, typewriter faces, plus math symbol fonts whose math italic letters are from a Times Italic clone (use these if the default setting does not work on your system because the original Times fonts are not available).

If the packages ‘newtxtext.sty and newtxmath.sty’ are not already installed with your L^AT_EX they can be found at <https://ctan.org/pkg/newtx>.

If Times Roman is not available on your system you may revert to Computer Modern (CM) fonts always supplied with L^AT_EXsystems. However, the SNmono layout requires font sizes which are not part of the default set of these CM fonts.

type1cm.sty The type1cm package enhances this default by enabling scalable versions of the (Type 1) CM fonts. If not already installed with your L^AT_EX it can be found at <https://ctan.org/pkg/type1cm>

Body Text. When you select the SNmono class option [graybox] the packages framed and color are required, see Sect. 3.4

framed.sty makes it possible that framed or shaded regions can break across pages.

color.sty is part of the graphics bundle and makes it possible to select the color and define the percentage for the background of the box.

Footnotes

footmisc.sty used with style option [bottom] places all footnotes at the bottom of the page

Figures

graphicx.sty tool for including graphics files (preferably eps files)

Index

makeidx.sty provides and interprets the command \printindex which formats the externally generated index file *.ind.

`multicol.sty` balances out multiple columns on the last page of your subject index, glossary or the like

Remark. Use the *MakeIndex* program together with one of the following styles

`svind.ist` for English texts

`svindd.ist` for German texts

to generate a subject index automatically in accordance with Springer Nature layout requirements.

3.6 Preparation for a possible new edition

If you make corrections in the proofing stage in our system, we recommend that you insert them also in your own L^AT_EX files.

4 Style Content Structures

4.1 Text elements

4.1.1 General remarks

As a general rule, text, formulae, figures, and tables are typed using the standard L^AT_EX commands. The standard sectioning commands are also used.

Nevertheless, in the SNmono document class we have newly defined and enhanced a few text mode commands (e.g., `\dedication`, `\preface`, `\abstract*`, `\description` environment, . . .). Details below.

Cross-References Within Text. Please always give a `\label` where possible and use `\ref` for cross-referencing. Such cross-references may then easily be converted to hyperlinks in any electronic version of your book.

The `\cite` and `\bibitem` mechanism for bibliographic references is also obligatory.

Cross-references to particular sections, figures, tables, equations and the like should be written in full when they stand at the beginning of a sentence, but in any other position within the text they should be abbreviated as follows:

(Chapter) Chap./Chaps. (Section) Sect./Sects. (Figure) Fig./Figs.
(Page) p./pp. (Volume) Vol./Vols.

Exceptions:

1. “Table” should always be written out in full—at the beginning of a sentence as well as within it, and please use “Tables” for the plural form.
2. When referring to equations the abbreviations “Eq./Eqs.” may be used—but as a general it is sufficient to use the equation number set in parentheses, e.g., (1.45). At the beginning of a sentence you should write “Equation (1.45)”.
3. References are cited in the text simply as numbers in square brackets, e.g., [165], do not use the abbreviations “Ref./Refs.” in the middle of a sentence. Only at the beginning of a sentence should you write “Reference [165]”.

Emphasizing Text. Use the command `\emph{}` to emphasize (usually this means italicize) a selection of *individual* words. If used in a text passage in italics, the emphasized text will be typeset in roman.

Special Expressions. If a special, e.g., non-English, expression is used repeatedly, please spell it consistently throughout the book. Latin terms, e.g., “*in situ*”, should not be italicized.

List of Symbols. Please add a list of symbols or short definitions or explanations. (Even if this is not to be included in the final book, it’s a very useful tool for the copyeditor who may work on your manuscript.)

Abbreviations. Please set abbreviations such as “e.g.”, “cf.”, “et al.” and “i.e.” upright. Only abbreviations that can be found in a dictionary may be used without definition. Particular terminology that is often abbreviated should be defined on first usage.

Dashes. In Springer Nature books we differentiate between three different types of dashes, which have to be coded individually:

1. To produce a simple hyphen, used to connect or separate dependent parts of a word such as prefixes, or in compound adjectives, please enter a single keyboard hyphen without any space on either side (-).
2. To produce an en-dash, enter two single hyphens with no space on either side to stand in place of “to” in ranges, as in “Fig. 3a–c” or “... in the range 10–20 eV”, or to connect two names or words that are independent of each other, such

as “... the electron–photon interaction”. However, double-barrelled names like Levi-Civita are connected with simple hyphens.

3. To produce an em-dash—e.g., to denote an insertion within a sentence—please enter three hyphens without any spaces on either side (---).

Quotation Marks. Please use the following commands to create English-language quotation marks: ‘word’ gives ‘word’ in the output file, and ‘‘word’’ gives “word” in the output file.

Page Breaks. Please avoid manual page breaks (that is, do not use the commands \pagebreak or \eject, or space-filling commands such as \vfill). In several output formats such as html or epub, everything is put on one “page”!

Spelling Checker. If possible, please use a spell checking software prior to submitting your manuscript. If using overleaf, the desired spell-checking language can simply be chosen in the project options.

4.1.2 Frontmatter

Dedication. Use the environment syntax

```
\begin{dedication}  
<text>  
\end{dedication}
```

to typeset a dedication or quotation at the very beginning of the book.

Foreword and Preface. Use the new commands

```
\foreword  
\preface
```

to typeset a *Foreword* or *Preface* with automatically generated running heads.

Additional unnumbered chapters. Use the new commands

```
\extrachap{<heading>}  
\Extrachap{<heading>}
```

to typeset — in the front or back matter of the book—an extra unnumbered chapter with your preferred heading and automatically generated runnings heads.

\Extrachap furthermore generates an automated TOC entry.

4.1.3 Specific commands for parts and chapters

Use the new command

```
\partbacktext{<text>}
```

to typeset a text on the back side of a part title page.

Subtitles for chapter headings. Use the new command

```
\chapsubtitle{<subtitle>}
```

to typeset a possible subtitle to your chapter title. Beware that this subtitle is not transferred automatically to the table of contents.

The command must be placed *before* the \chapter command.

Alternatively use the \chapter-command to typeset your subtitle together with the chapter title and separate the two titles by a period or an en-dash.

Chapter authors. Use the new command

```
\chapauthor{<name>}
```

to typeset the author name(s) beneath your chapter title. Beware that the author name(s) are not transferred automatically to the table of contents.

The command must be placed *before* the \chapter command.

Alternatively, if the book has rather the character of a contributed volume as opposed to a monograph you may want to use the SNmult package with features that better suit the specific requirements.

Running heads for chapters and sections. In English texts all words of a heading have a leading capital letter except for articles (a, an, the), conjunctions and prepositions of up to four letters (e.g., on, of, at, to, by, and, or, but, from, with). If a heading needs more than one line please break the line at an appropriate place and position the binding word (conjunction, preposition, article, . . .) at the beginning of the new line.

It looks nicer if every heading is followed by at least a short passage of text in order to avoid simply listing headings of different levels.

If the *running head* at the tops of the page does not fit into the designated space, a shorter version has to be specified with the commands

```
\chaptermark[<toc.entry>]{<chap.heading>}  
\sectionmark[<toc.entry>]{<sect.heading>}
```

This is also the case if explicit line breaks have been inserted into the chapter or section heading or the version used for the table of contents (specified in the [] argument).

Additional special text directly after a chapter title. Use the new command

```
\motto[width]{<text>}
```

to include *special text*, e.g., mottos, slogans, between the chapter heading and the actual content of the chapter in the preferred Springer layout.

The argument {<text>} contains the text of your inclusion. It may not contain any empty lines. To introduce vertical spaces use \\ [height].

If needed, then you may indicate an alternative width in the optional argument.

Remark. The command must be placed *before* the relevant heading-command. The motto is then placed in small font on the right-hand side below the title. For example:

```
\motto{Math is great!}  
\chapter{Chapter title}
```

Abstracts for chapters. Each chapter or contribution should be preceded by an abstract (aim at 10–15 lines) that summarizes the content. The abstract will appear *online* at <https://link.springer.com/> and be available with unrestricted access. This allows unregistered users to read the abstract as a teaser for the complete chapter. As a general rule the abstracts will not appear in the printed version of the book unless it is the style of the particular volume or that of the series to which the book belongs.

Use the new commands

```
\abstract{<text>}  
\abstract*{<text>}
```

to typeset an abstract at the beginning of a chapter.

The text of \abstract* will not be depicted in the printed version of the book, but will be used for compiling html abstracts for the online publication of the individual chapters www.SpringerLink.com.

Please do not use the standard L^AT_EX environment

`\begin{abstract}... \end{abstract}` – it will be ignored when used with the `SNmono` document class!

4.1.4 Other text elements

Unnumbered run-in Headings. Use the new commands

```
\runinhead[<title>]  
\subruninhead[<title>]
```

when you want to use unnumbered run-in headings to structure your text. These headings will be typeset

bold if using `\runinhead`, resp.

bold italics if using `\subruninhead`

Small font-size text passages. Use the new environment command

```
\begin{petit}  
<text>  
\end{petit}
```

to typeset complete paragraphs in small print.

Enhanced description environment. Use the command

```
\begin{description}[<largelabel>]  
\item[<label1>] <text1>  
\item[<label2>] <text2>  
\end{description}
```

for your individual itemized lists.

The new optional parameter `[<largelabel>]` lets you specify the largest item label to two levels to appear within the list. The texts of all items are indented by the width of `<largelabel>` and the item labels are typeset flush left within this space. Note, the optional parameter will work only two levels deep.

Use the commands

```
\setitemindent{\langle largelabel\rangle}  
\setitemitemindent{\langle largelabel\rangle}
```

if you need to customize the indentation of your “itemized” or “enumerated” environments.

Exercises, Problems and Solutions. If you want to include problems or exercises in your book, it is best to position them as *unnumbered sections* at the end of the relevant chapters. If you give solutions or hints compile them in a separate *unnumbered solutions’ chapter* and position it at the end of your main text, i.e., before the bibliography.

Use the environment command

```
\begin{prob}  
 \label{\langle problem:key\rangle}  
 \langle problem text\rangle  
 \end{prob}
```

to typeset and number each problem individually.

To facilitate the correct numbering of the solutions we have also defined a *solution environment*, which takes the problem’s key, i.e., $\langle problem:key\rangle$ (see above) as argument.

Use the environment syntax

```
\begin{sol}{\langle problem:key\rangle}  
 \langle solution text\rangle  
 \end{sol}
```

to get the correct (i.e., problem =) solution number automatically.

4.2 Mathematics elements

4.2.1 General remarks on typesetting math

Please set *mathematical expressions and formulae within the running text* in math mode, i.e., $\$ \dots \$$, so that the desired spaces are set automatically.

Displayed Formulae will automatically be centered.

Multiline equations and formulas. In order to get a readable layout for your multiline equations and formulas we recommend that you use the L^AT_EX environments

- `align` resp. `align*` for aligned columns with proper horizontal spacing
- `alignat` resp. `alignat*` for aligned columns with user-defined horizontal spacing
- `multiline` resp. `multiline*` for breaking formulas into several lines
- `gather` resp. `gather*` for several centered formulas in separate lines

The `*`-versions do not include automatic formula numbers. If an equation spans more than one line place the equals sign at the beginning of the second (or subsequent) line(s); binary operators such as `+`, `-`, `*`, etc. should also appear at the beginning of the second or subsequent lines of an array, and the line should be indented to the right of the equals sign in the line before.

Please do not use the `eqnarray` environment to typeset formulas; its spacing often is not good, and formulas can overlap with equation numbers.

Please avoid sub-numbering equations (particularly, please avoid the `subeqnarray` package) as these cannot be properly shown in XML.

Please *punctuate* displayed equations in the same way as any other written statement and insert `\;` before the punctuation to add a little extra space.

Multiplication. Where a multiplication sign is essential use the command `\times` (`\times`), not `\cdot` (`\cdot`). The `\cdot` is reserved for vector dot products.

Vectors. Use the command `\vec{v}` to depict a vector. By default, vectors will be set bold face upright. For other options see page 9.

Tensors. Use the newly defined command `\tens` to depict an ordinary second-order tensor (without indices), e.g., `\tens{A}` gives `A`.

Chemical Symbols and Formulae should be set upright. Where a “`-`” is used to combine parts of chemical compounds, please use an en-dash; see page 15.

Computer Code. To display computer code in your book, we recommend the use of the `verbatim` environment.

Abbreviations such as `Ord`, `Var`, `Ker`, `const.`, etc. should be set upright.

Physical units (and their prefixes) should correspond to the SI standards and be set upright. Always put a fixed space `\,` between a number and its unit, and between elements of units. Both the “`... 3 kms-1 ...`” (note space between different units; please do not use a middot) and “`... 3 km/s ...`” styles are acceptable, but please settle for one choice and use it consistently. In headers in tables please use the “`v (m/s)`” or “`v (m s-1)`” styles, i.e., use parentheses, not brackets. Please use “`%`” without a space, e.g., “`100%`”,

and use the degree sign without a space, e.g., “19°”. For Celsius use “100°C”, i.e., no spaces.

Greek Letters. By default the `SMmono` document class depicts Greek letters as italics because they are mostly used to symbolize variables. However, when used as operators, abbreviations, physical units, etc., they should be set upright. For example, when Δ (`\varDelta`) is used to refer to an infinitesimal amount or μ (`\umu`) is used to denote micro.

All upper-case Greek letters have been defined in the document class in an *upright* version. The fonts are taken from the `TEX` alphabet. Use the command prefix

```
\var...
```

with the upper-case name of the Greek letter to set it upright, e.g., `\varDelta`, `\varSigma` results in Δ , Σ .

A number of lower-case Greek letters have been defined in the document class in an *upright* version: α , β , χ , δ , γ , ν , π , τ . The letters are taken from the PostScript Symbol font. Use the command prefix

```
\u...
```

with the lower-case name of the Greek letter to set it upright, e.g., `\uchi`, `\upi` gives χ , π .

If you need to define further commands use the syntax below as an example:

```
\newcommand{\ualpha}{\allmodesymb{\greeksym}{a}}
```

Variables should be represented by a unique single character and always, i.e., in math mode as well as in the text, be set in italics. If possible please use `\varepsilon` for ϵ and `\varrho` for ρ .

Exponential terms with long exponents or with exponents containing subscripts or superscripts should be set as “`exp(...)`”.

Subscripts and superscripts should always appear upright (use `\mathrm{}` in math mode) when they are abbreviations. If you need to depict a vector, please also use the syntax `\vec{}`. The font size will automatically be adjusted.

Differential, exponential function and imaginary unit. These should be set upright. Use the newly defined commands

\D	upright d for differential d
\I	upright i for imaginary unit
\E	upright e for exponential function

Fractions in displayed equations should be coded with `\frac`. When they appear within exponents, running text or narrow tables, they should be set with a slash. Otherwise the font size will be too small to be easily read.

Delimiters should be large enough to completely enclose their content – but no larger. We recommend using dynamic L^AT_EX input commands, e.g., `\left[` or `\right]`, `\langle` or `\rangle`, `\left|`, `\right|`, etc.

4.2.2 SNmono Theorem-Like Environments

Theorem-like Environments. For individual text structures such as theorems, definitions, etc., the SNmono document class provides numerous predefined environments (*numbered* as well as *unnumbered*) which conform with the specific Springer Nature layout requirements.

Use the environment command

```
\begin{⟨name of environment⟩} [⟨optional material⟩]
⟨text for that environment⟩
\end{⟨name of environment⟩}
```

for the newly defined *environments*.

Unnumbered environments will be produced by

`claim` and `proof`.

Numbered environments will be produced by

`case`, `conjecture`, `corollary`, `definition`, `exercise`, `lemma`, `note`, `problem`, `property`, `proposition`, `question`, `remark`, `solution`, and `theorem`.

The optional argument `[⟨optional material⟩]` lets you specify additional text which will follow the environment caption and counter.

Example. The environment

```
\begin{theorem}[Fundamental Theorem of Algebra]
```

Every non-constant single-variable polynomial with complex

```
coefficients has at least one complex root.
```

```
\end{theorem}
```

results in

Theorem 4.1 (Fundamental Theorem of Algebra) *Every non-constant single-variable polynomial with complex coefficients has at least one complex root.*

Note that the numbering follows the rules defined in the package options chosen, see page 10 ff. We used here the `envcountsect` option.

Furthermore the functions of the standard `\newtheorem` command have been *enhanced* to allow a more flexible font selection. All standard functions though remain intact (e.g., adding an optional argument specifying additional text after the environment counter).

Use the mechanism

```
\spdefaulttheorem{\langle env name \rangle}{\langle caption \rangle}{\langle cap font \rangle}{\langle body font \rangle}
```

to define an environment compliant with the selected class options and designed as the predefined theorem-like environments.

The argument `\langle env name \rangle` specifies the environment name; `\langle caption \rangle` specifies the environment's heading; `\langle cap font \rangle` and `\langle body font \rangle` specify the font shape of the caption and the text body.

Remark. If you want to use optional arguments in your definition of a theorem-like environment as done in the standard `\newtheorem` command, see below.

Use the mechanism

```
\spnewtheorem{\langle env name \rangle}{\langle numbered like \rangle}{\langle caption \rangle}{\langle cap font \rangle}{\langle body font \rangle}
```

to define an environment that shares its counter with another predefined environment `\langle numbered like \rangle`.

The optional argument `\langle numbered like \rangle` specifies the environment with which to share the counter.

Remark. If you select the class option “`envcountsame`” the only valid “numbered like” argument is `[theorem]`.

Use the defined mechanism

```
\spnewtheorem{\langle env name \rangle}{\langle caption \rangle}{[\langle within \rangle]}{\langle cap font \rangle}{\langle body font \rangle}
```

to define an environment whose counter is prefixed by either the chapter or section number (use `[chapter]` or `[section]` for `\langle within \rangle`).

Use the defined mechanism

```
\spnewtheorem*{\langle env name \rangle}{\langle caption \rangle}{\langle cap font \rangle}{\langle body font \rangle}
```

to define an *unnumbered* environment such as the pre-defined unnumbered environments *claim* and *proof*.

Use the defined declaration

```
\nocaption
```

in the argument $\{\langle \text{caption} \rangle\}$ if you want to skip the environment caption and use an environment counter only.

Use the defined environment

```
\begin{theopargself}
...
\end{theopargself}
```

as a wrapper to any theorem-like environment defined with the mechanism. It suppresses the brackets of the optional argument specifying additional text after the environment counter.

4.3 Figures, Tables and Their Captions

Figures. Figures should always be included using the standard L^AT_EX environment `figure` and the `\includegraphics` command. Recent versions of L^AT_EX can handle figures in the formats .eps, .jpg, .png, and .pdf when using the pdflatex compiler. Nevertheless, the .eps format with fonts properly embedded is our preferred format as it is best (no loss of quality) for scaling purposes. One can control the width of the figure with the optional command `[width=xx]`, where xx is the wanted width. For example,

```
\begin{figure}
\label{fig:shape}
\includegraphics[width=6cm]{123.png}
\includegraphics[width=2cm]{123.png}
\caption{Some special shape, large and small}
\end{figure}
```

results in Fig. 4.1.

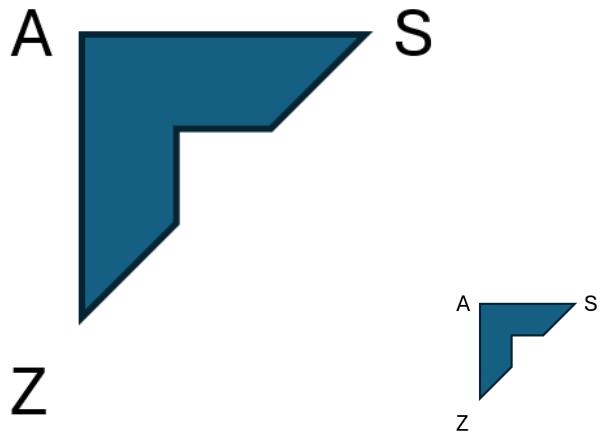


Fig. 4.1 Some special shape, large and small

Figures and their captions by default are set flushleft with the caption placed beneath the figure. If the figure width is smaller than half the text width, use the new declaration

\sidecaption[<pos>]

to move the figure caption from beneath the figure (*default*) to the lower lefthand (choose [b], see example in Fig. 4.2) resp. upper lefthand (choose [t]) side of the figure. The declaration \sidecaption must follow the \begin{figure} command and be placed before the \includegraphics command. Remember to also use the standard \caption{} command for your caption text.

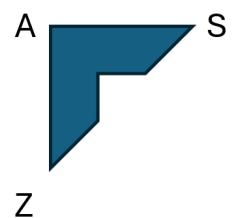


Fig. 4.2 Some special shape

“Overwide” figures should be reduced to the normal page width, or if it improves the readability, may protrude into the page margin by a maximum of 5 mm or 1 pica on each side.

Please don’t allow circumfluent text around the figures.

Color Figures. Despite the fast technical progress in digital printing the reproduction of color figures is not always possible. For example, for certain low-cost softcover versions

of a book (such as MyCopy which is available to users of libraries that purchased our ebooks) any colour figures will be converted into b/w figures or graytones for this printed version of the book.

Colors are also problematic with regard to accessibility (see also the next section). To define specific colors if absolutely needed, please include CMYK definitions of these colors. E.g.,

```
\definecolor{ultramarine}{RGB}{1,1,1}
% \definecolor{ultramarine}{cmyk}{0,0,0,1}

\textcolor{ultramarine}{Colored text}
```

For *scanned line figures* the minimum resolution in the final print size is 1200 dpi. For *scanned photos*, 300 dpi in the final size is sufficient.

Image Processing. If illustrations are to appear in *grayscale* or *black and white*, do not produce them in color. Color fields often convert to screens that are almost indistinguishable from one another. Instead of screens, whenever possible please use cross-hatching, stippling, and other dot and line patterns to differentiate among elements in an illustration. If screens must be used, they must be between 15% and 60%. Screens must be differentiated from one another by at least 15%. The lowest *line weight* is 0.5 pt in the final print size (approx. 0.15 mm).

Grids and details within the figures must be clearly readable and may not overlap.

Lettering. To add lettering, it is best to use a sans serif font; Helvetica is preferred. The font size should be approx. 2–3 mm (8–10 pt) in final print. Avoid effects such as shading, outline letters, etc. Lettering should not be added until after scanning, i.e., it should be added to the graphics file. Please do not insert any figure legends or figure headings in your illustration file.

Tables. By default, tables and their captions are justified. Please make sure that every table is *preceded* by a caption.

The layout of your tables should not contain any vertical lines. The header of the table should not contain any extra lines. “Overwide” tables should be reduced to the normal page width, or, if this is not possible, should not exceed the page width by more than 5 mm. Please find coding examples in the enclosed sample files.

Captions. Give each figure a concise caption, describing accurately what the figure depicts. It follows regular text rules for abbreviation, hyphenation, capitalization, and punctuation, however, it does not have end punctuation.

Should a figure consist of several parts, please set the names of the parts in bold face type inside the caption, e.g., **Fig. 1.1** General explanation. **a** individual description. **b** individual description.

Should you want to explain special line formats, etc. used in the figure, then please set their description in italics, e.g., **Fig. 1.1** In the upper edge the phenomenon is illustrated (*dashed line*).

If a figure is reproduced from a previous publication, include the source as the last item in the caption.

Ensure that all figures are cited in the text in sequential order. Do not write “the following figure”.

figure and table section from refguide here

Use the new declaration

`\samenumber`

within the figure and table environment – directly after the `\begin{<environment>}` command – to give the caption concerned the same counter as its predecessor (useful for long tables or figures spanning more than one page).

Use the new command

`\svhline`

for setting in tables the horizontal line that separates the table header from the table content.

4.4 Accessibility

In accordance with the EU Accessibility Act and our commitment to Accessibility at Springer Nature, your publication will need to be accessible to all readers. Your content has to adhere to the Web Content Accessibility Guidelines (WCAG) that Springer Nature follows in regard to the (technical) layout and the presentation of the electronic versions. According to these guidelines, textual substitutes are required for non-text content, such as figures. As these texts are actual content, we request that alternative texts (also known as alt texts) are submitted with your final manuscript.

Alternative text is a brief and objective description of the content of an image and/or of the purpose it serves in a digital format. Alt text is crucial for individuals using screen reader technology, as well as for those trying to comprehend the content of an image if it doesn't load.

Alt text is not the same as a caption, which typically provides information that is not already in the visual element itself.

For more tips on how to write good alt text, please check our document *How to Write Good Alt Text* on our online manuscript guidelines

Requirements for Figures: When differentiating elements in charts and graphs, do not just change the color, please do also change shapes and patterns, or provide other visual differentiation like direct segment labels.

In LaTeX you may insert your alternative texts into your manuscript using the \Description command in a `figure` environment as follows.

For regular numbered figures:

```
\begin{figure}
\centering
\includegraphics{imagename}
\Description{...}
\caption{Caption text of figure.}
\label{figlabel}
\end{figure}
```

For any unnumbered/inline figures:

```
\begin{figure}
\includegraphics{imagename}
\Description{...}
\end{figure}
```

Please inform your contact person at the publisher when submitting the manuscript if you have used this option.

Alternative Text Assistant. Springer Nature offers an Alternative Text Assistant, a tool designed to assist you in writing alternative texts. Generally, authors and editors will automatically receive a link to this tool after signing the contract. Editors are requested to forward a link to the chapter authors (description included in the tool). If necessary, you can also obtain the link from your contact person whom you correspond with during manuscript preparation after contract signing.

4.5 Special Layout Elements

In the `SNmono` document class we have defined a few special environments. They are thought for a specific type of book and **should only be used in agreement with your publishing contact**. The following commands are available:

```
\begin{trailer}{Trailer Head}...{trailer}
\begin{questype}{Questions}... \end{questype}
\begin{important}{Important}... \end{important}
\begin{warning}{Warning}... \end{warning}
\begin{programcode}{Program Code}... \end{programcode}
\begin{tips}{Tips}... \end{tips}
\begin{overview}{Overview}... \end{overview}
\begin{backgroundinformation}{Background Information}...
\end{backgroundinformation}
\begin{legaltext}{Legal Text}... \end{legaltext}
```

Examples:

```
\begin{trailer}{This is a trailer.}
Take care of proper grammar!
\end{trailer}
```

results in

This is a trailer.

Take care of proper grammar!

```
\begin{questype}{This is a question.}
Take care of proper grammar!
\end{questype}
```

results in

? This is a question.

Take care of proper grammar!

```
\begin{important}{The following is very important.}
Take care of proper grammar!
\end{important}
```

results in

> The following is very important.

Take care of proper grammar!

```
\begin{attention}{Warning.}
Take care of proper grammar!
\end{attention}
```

results in

! Warning.

Take care of proper grammar!

```
\begin{programcode}{Code example.}
Take care of proper grammar!
\end{programcode}
```

results in

Code example.

Take care of proper grammar!

```
\begin{tips}{A tip.}
Take care of proper grammar!
\end{tips}
```

results in

A tip.

Take care of proper grammar!

```
\begin{overview}{Here is an overview.}
Take care of proper grammar!
\end{overview}
```

results in

Here is an overview.

Take care of proper grammar!

```
\begin{backgroundinformation}{General background.}
Take care of proper grammar!
\end{backgroundinformation}
```

results in

General background.

Take care of proper grammar!

```
\begin{legaltext}{Legal disclaimer.}
Take care of proper grammar!
\end{legaltext}
```

results in

Legal disclaimer.

Take care of proper grammar!

Use the new command

```
\ethics{\langle heading \rangle}{\langle text \rangle}
```

Ethical disclaimer This is an ethical disclaimer.

to add corresponding text.

4.6 Bibliography

References may be *cited* in the text either by number (preferred) or by author/year.

Please make sure that all references from the list are cited in the text. Those not cited should be moved to a separate *Further Reading* section or chapter.

In mathematical texts references are often labelled as author-year acronyms. In order to achieve this simply give an optional argument to the `\bibitem` command. Always use `\bibitem` and `\cite` for cross-referencing.

When producing your bibliography please make sure that the data is complete (name and initial of author, year of publication, book title, publisher's name and place, journal name, volume number, page numbers) and up to date (e.g., edition number).

If there are several works by the same author, the following order should be used:

1. all works by the author alone, ordered chronologically by year of publication
2. all works by the author with a coauthor, ordered alphabetically by coauthor
3. all works by the author with several coauthors, ordered chronologically by year of publication.

Always use the standard abbreviation of a journal's name according to the ISSN *List of Title Word Abbreviations*, see LTWA list in the ISSN portal

The *styling* of references depends on the subject of your book:

- The two recommended styles for references in books on *mathematical, physical, statistical and computer sciences* are depicted in the reference section of the example pdf files [1–5] and [6–10]. If you use BiBTeX for generating your reference list please use one of the two Springer styles `spmpsci.bst` or `spphys.bst`.
- Examples of the most commonly used reference style in books on *Psychology, Social Sciences* are depicted in the reference section of the example pdf files [11–15].
- Examples for references in books on *Humanities, Linguistics, Philosophy* are depicted in the reference section of the example pdf files [16–20].
- Examples of the basic Springer style used in publications on a wide range of subjects such as *Computer Science, Economics, Engineering, Geosciences, Life Sciences, Medicine, Biomedicine* are depicted in the reference section of the example pdf files [21–25]. If you use BiBTeX for generating your reference list please use the Springer style `splibasic.bst`.

For your own input follow the syntax of the corresponding style examples in the pre-set template.

Please make sure that, in the individual reference citations, the initials of names do not stand alone. Please connect them to their surname with the help of the tilda ~ so that they will not be separated from each other when L^AT_EX breaks the line. The same applies to volume or page numbers.

Enhancements to the bibliography environment. The command

```
\biblstarthook{\langle text\rangle}
```

allows the inclusion of explanatory *text* between the bibliography heading and the actual list of references. The command must be placed before the `thebibliography` environment.

For chapter-wise organised bibliographies, please use the command

```
\usepackage{chapterbib}
```

in the preamble of your document.

Use the `bibliography.bib` and relevant `.bst` at the end of the chapter.

Please refer `bookbib.tex` and `chapbib.tex` for further reference.

4.7 Index

Please make sure that your entries for the book's general subject index are coded with the command `\index{}` and please check the output for any redundancy before submitting your manuscript files.

Be sure to use the style file `svind.ist` with the index processor *MakeIndex* to give your index the required Springer layout.

The declaration

```
\threecolindex
```

sets the next index following the `\threecolindex` declaration in three columns. **Please use this only after consultation with your publishing contact,**

The Springer declaration

```
\indexstarthook{\langle text\rangle}
```

allows the inclusion of explanatory *text* between the index heading and the actual list of references. The command must be placed before the `\theindex` environment.

4.8 Table of Contents

Use the command

```
\setcounter{tocdepth}{number}
```

to alter the numerical depth of your table of contents.

Use the macro

```
\calctocindent
```

to recalculate the horizontal spacing for large section numbers in the table of contents set with the following variables:

<code>\tocchpnum</code>	for the chapter number
<code>\tocsecnum</code>	section number
<code>\tocsubsecnum</code>	subsection number
<code>\tocsubsubsecnum</code>	subsubsection
<code>\tocparanum</code>	paragraph number

Set the sizes of the variables concerned at the maximum numbering appearing in the current document.

In the preamble set, e.g.,

```
\settowidth{\tocchpnum}{36.\enspace}
\settowidth{\tocsecnum}{36.10\enspace}
\settowidth{\tocsubsecnum}{99.88.77}
\calctocindent
```