# The stb-thesis class*

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**Abstract**

The stb-thesis class is provided to typeset theses and dissertations that conform to the requirements of Stellenbosch University, South Africa.

The class file stb-thesis.cls is based on the standard LaTeX book class. It is primarily concerned with the formatting of the front matter such as the title page, abstract, etc. It also works together with the babel package to provide language language options to typeset documents in Afrikaans or in English.

*This class has version number v1.3, last revised 2023/09/01.

†Any help with proofreading this document will be appreciated.

# Contents

**1 User Interface** **4**
1.1 stb-thesis class file . . . 4
1.1.1 The stb-thesis options: . . . 4
1.1.2 LaTeX class options: . . . 6
1.2 Required Packages . . . 7
1.2.1 Language setup . . . 7
1.2.2 Input font encoding . . . 7
1.2.3 Output font encoding . . . 8
1.2.4 Mathematics . . . 8
1.2.5 Graphics and Color . . . 8
1.2.6 Line spacing . . . 9
1.2.7 Paragraph indent and spacing . . . 9

**2 Front matter** **10**
2.1 Title page . . . 10
2.2 Declaration page . . . 12
2.3 Copyright Information . . . 12
2.4 Abstract . . . 12
2.5 Acknowledgements, Dedications, etc. . . . 14

**3 Back Matter** **14**
3.1 Bibliography/List of References . . . 14

**4 Implementation: stb-thesis** **16**
4.1 Identification . . . 16
4.2 External packages . . . 16
4.3 Options . . . 16
4.3.1 Language options . . . 16
4.3.2 Thesis type options . . . 19
4.3.3 Page layout options . . . 20
4.3.4 Process package options . . . 20
4.4 Temporaries . . . 20
4.5 Page layout . . . 21
4.5.1 A5 type block area . . . 21
4.5.2 Golden section type block area . . . 21
4.5.3 Wide type block area . . . 22
4.6 Utility commands . . . 22
4.7 Front pages . . . 23
4.7.1 Title page . . . 23
4.7.2 Copyright page . . . 28
4.7.3 Declaration page . . . 28
4.7.4 Abstract page . . . 29
4.7.5 Table of contents . . . 30
4.7.6 List of figures . . . 30
4.7.7 List of tables . . . 30
4.8 Back matter . . . 31
4.8.1 Bibliography . . . 31
4.8.2 Index . . . 32

4.9 Page markup . . . . . 32
4.9.1 Headers and footers . . . . . 32
4.9.2 Chapter and section headings . . . . . 33
4.9.3 Floats and float pages . . . . . 34
4.9.4 Captions . . . . . 35

# 1 User Interface

## 1.1 stb-thesis class file

The stb-thesis.cls class is loaded in the document preamble with

```
\documentclass[12pt,oneside,openany,a4paper, %... Global layout
               afrikaans,UKenglish,          %... Global language options
               masters-t, goldenblock        %... stb-thesis options
              ]{stb-thesis}
```

### 1.1.1 The stb-thesis options:

**Document type options:** This options for the stb-thesis class/style are for specific formatting of the title and abstract pages of the different document types.

`masters-a`: An assignment masters degree.

`masters-t`: A thesis masters degree.

`PhD`: A PhD dissertation.

**Type block sizes:** The ISO A4 paper size (297.3 mm × 210.2 mm) is not ideally suited for typesetting off books. The *A5 type block* (fig 1) and the *golden ratio type block* (fig 2) are layouts designed by the great typographer Jan Tschichold which adheres to the classic typographic principals.[1] A 12 pt font size is recommended for most fonts. The following options are provided as part of the stb-thesis class/style options:

`a5block`: ISO A4 paper with A5 type block

`goldenblock`: ISO A4 paper with golden ratio type block,

`wideblock`: Type block with 25 mm borders

`stdblock`: Standard LaTeX type block [default].

The user can set up custom page layouts if needed. The setup depends on the class file used. The following example is for a page with 30 mm margins all around.

```
\documentclass[a4paper,⟨options⟩]{stb-thesis}
\usepackage[hmargin={30mm,30mm},
            vmargin={30mm,30mm}
           ]{geometry}
```

[1] The Tschichold designs have a 3:5 ratio between the inner and outer margins. The stb-thesis package employs a symmetric layout

Table 1: Page layout parameters

| | A5 type block (`a5block`) | | Golden section type block (`goldenblock`) | |
|---|---|---|---|---|
| Page width | $W$ | = 210,2 mm | $W$ | = 210,2 mm |
| Page height | $H = \sqrt{2}\,W$ | = 297,3 mm | $H = \sqrt{2}\,W$ | = 297,3 mm |
| Block width | $w = H/2$ | = 148,7 mm | $w = 2W/3$ | = 140,1 mm |
| Block height | $h = W$ | = 210,2 mm | $h = H - W/3$ | = 227,2 mm |
| Side margin | $s = (W - w)/2$ | = 30,8 mm | $s = W/6$ | = 35,0 mm |
| Top margin | $t = 3(H - h)/8$ | = 32,7 mm | $t = 3W/24$ | = 26,3 mm |
| Foot margin | $f = 5(H - h)/8$ | = 54,4 mm | $f = 5W/24$ | = 43,8 mm |

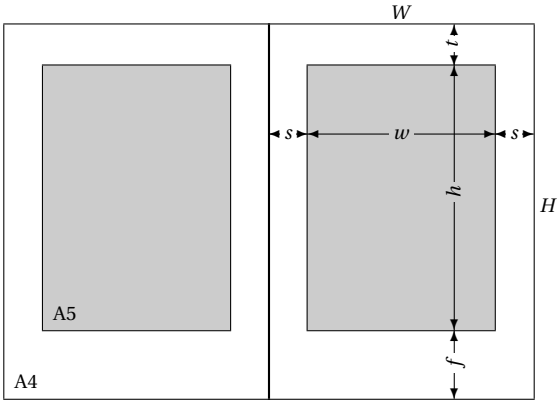


Figure 1: ISO A4 paper with A5 type block (`A5block`)

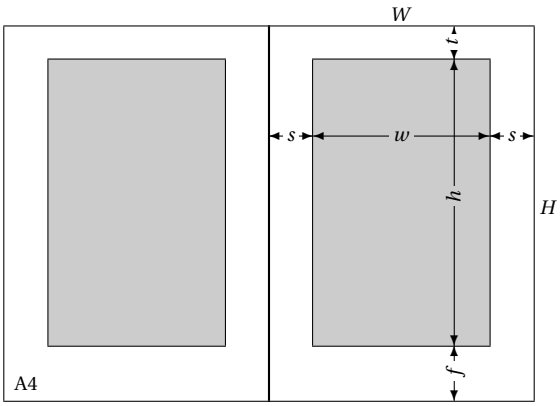


Figure 2: ISO A4 paper with golden ratio type block (`goldenblock`)

### 1.1.2 LaTeX class options:

The gray boxes are the LaTeX default options, while boxed options are the preferred options of stb-thesis package.

`10pt`, `11pt`, `12pt`: Sets the size of the main font in the document. The preferred font size depends very much on the font type. For Computer Modern (the default LaTeX font) is 11 or 12 points the most legible option on an A4 paper size.

`a4paper`, `a5paper`, `b5paper`, `letterpaper`, `executivepaper`, `legalpaper`: Defines the paper size. In South Africa is the ISO A4 paper size the standard.

`fleqn`: Typesets displayed formulae left-aligned instead of centred. This option is a matter of personal taste.

`leqno`: Places the numbering of formulae on the left hand side instead of the right. This is the traditional layout of the American Mathematical Society.

`onecolumn`, `twocolumn`: Instructs LaTeX to typeset the document in one column or two columns. The University of Stellenbosch Engineering theses are traditionally single column documents.

`twoside`, `oneside`: Specifies whether double or single sided output should be generated. Note that this option concerns the style of the document only. The option `twoside` does not tell the printer you use that it should actually make a two-sided printout. If a printer with double sided printing capability is available, then this option can be used.

`openright`, `openany`: Makes chapters begin either only on right hand pages or on the next page available. Selection of `openright` depends on the selection of the `twoside` option.

## 1.2 Required Packages

### 1.2.1 Language setup

LaTeX provides for a variety of languages. It set up hyphenation patterns and defines language specific output such as chapter names, etc. The default language is American style English, while the South African English is the United Kingdom style. Language selections must be loaded with the babel package. Load language option global to be visable of other language dependant packages such as varioref. The last language declared is the default document language.

```
\documentclass[⟨options⟩, afrikaans, UKenglish]{stb-thesis} % English default
\usepackage{babel}
```

or

```
\documentclass[⟨global options⟩, UKenglish, afrikaans]{stb-thesis} % Afrikaans default
\usepackage{babel}
```

Languages can be made active with the `\selectlanguage{⟨lang-name⟩}` command from babel. In the stb-thesis class, a command

`\AorE` `\AorE{⟨Afr-teks⟩}{⟨Eng-text⟩}`

is provided that types one of the two arguments, depending on whether `afrikaans` is the active language or not.

Environments for changing the language options locally are also provided in stb-thesis (if languages are installed with babel).

`Afr` (*env.*) `Eng` (*env.*)

| | |
|---|---|
| `\begin{Afr}` | `\begin{Eng}` |
| *Afr-teks ...* | *Eng-text ...* |
| `\end{Afr}` | `\end{Eng}` |

With the `afrikaans` option of babel the character `"` is made active. One of the reasons for this is that in the Afrikaans language a word with a dieresis can be hyphenated just before the letter with the umlaut, but the dieresis has to disappear if the word is broken between the previous letter and the accented letter, for example 'geëerd' becomes 'ge-eerd'. It is extremely important that the commands `"a`, `"e`, ..., are used in Afrikaans documents, and not `\"e`, etc., and neither the direct input of ë with `Alt+137` (if `latin1` input encoding is selected).

The `afrikaans` option sometimes has problems with the hyphenation of the very long words. The simplest way to correct a wrongly hyphenated word is to include the discretionary hyphen command `\-` in the word: e.g.: `kom\-buis\-kas`. Words that are incorrectly hyphenated and appear frequently within the document can be put into a list of exceptions in the preamble of the document:

```
\hyphenation{Kom-buis-kas  ...}
```

It is also important to note that words that contain `"e`, etc. must be hyphenated by hand when they are near linebreaks, for example: koëffisiëntematriks

```
ko"ef\-fisi"en\-te\-mat\-riks
```

### 1.2.2 Input font encoding

In Afrikaans there are many words containing characters such as é, ô, à, ï, etc. These characters can be included directly in the input text file, except ä, ë, ï, ö and ü, which need to be inserted as `"a`, ..., for proper hyphenation (see previous section). If the Western European input encoding (latin1) is loaded, LaTeX will recognizes these characters.

```
    \usepackage[latin1]{inputenc}
```

For a unicode file format

```
    \usepackage[utf8]{inputenc}
```

### 1.2.3 Output font encoding

The classic TEX Computer Modern fonts contain only 126 characters (7-bit) per font set (OT1 encoding). It does not contain glyphs for characters such as ê. These characters are formed by two characters that are overprinted (^ + e). The result is that Afrikaans words such as *"koëffisiëntematriks,"* are not hyphenated automatically. The solution is to use the T1 encoding scheme with 256 character (8-bit) font sets.

Postscript Type 1 and TrueType fonts can be configured, with the aid of TEX's virtual font mechanism, to be available for LATEX. Font handling can be switched to T1 encoding (if you have the Postscript fonts).

The XELATEX typesetting system supports the full unicode font technologies.

```
usepackage{iftex}
ifxetex
   \usepackage[math-style=TeX, bold-style=TeX]{unicode-math}
   \setmainfont{Cambria}%.......................   (Windows)
   \setsansfont[Scale=MatchLowercase]{Calibri}
   \setmonofont[Scale=MatchLowercase]{Consolas}
   \setmathfont{Cambria Math}
   \defaultfontfeatures{Ligatures=TeX}
   \let\bm\symbfit%.............................. Bold math
else
   \usepackage{textcomp}%........................ Additional text symbols
   \usepackage[T1]{fontenc}%..................... Type 1 outline fonts
   \usepackage{bm}%.............................. Bold math fonts
fi
```

### 1.2.4 Mathematics

Normal LATEX contains many math typesetting commands and environments, but for serious mathematical typesetting you need to load the American Mathematical Society (AMS) math packages. The AMS packages also include additional math symbols, but load them only if really necessary, because they are very big.

```
    \usepackage[⟨options⟩]{amsmath}
    \usepackage{amssymb}  % only if necessary
    \usepackage{bm}       %.. Bold math characters (after fonts)
```

Bold math symbols can be obtained with the AMS command `\boldsymbol` or with the more advanced `\bm` command form the bm package. The unicode-math package are a number of math formatting command. See documentation.

### 1.2.5 Graphics and Color

The graphicx package is needed by the stb-thesis package to format the title page and must be loaded in the document preamble. The color package is optional, but very useful.

```
\usepackage[⟨options⟩]{graphicx}
\usepackage[⟨options⟩]{color} % or xcolor
```

If you need display drivers (such as `dvips`, pdftex, etc.) different from the default options, is it important that they are passed on to all the packages as a global option. With the MiKTEX this is achieved with the standard configuration file.

### 1.2.6 Line spacing

The guidelines for University of Stellenbosch theses dictates that either single, one-halve or double line spacing be used. Line spacing can be obtained with the `setspace` packages. With this package, footnotes and captions are still single spaced, while no additional vertical spacing is added around display math or in lists.
One and a half lines spacing for `stb-thesis.cls`:

```
\documentclass[⟨options⟩]{stb-thesis}
\usepackage[onehalfspacing]{setspace}%.. Line spacing
  :
\begin{document}
     \frontmatter
     \begin{singlespace}
        \TitlePage%..................... Single spaced title page
     \end{singlespace}
       :
```

### 1.2.7 Paragraph indent and spacing

The conventional way of typesetting running text has no separation between paragraphs, and the first line of each paragraph in a block of text indented. It is sometimes required that paragraphs are separated with a blank line and without any first line indent. This can be obtained with the `parskip` package.

```
\documentclass[⟨options⟩]{stb-thesis}
\usepackage{parskip}%......... Paragraph spacing + zero indent
```

Please note that this is not recommended for theses containing large amounts of mathematics, because it is difficult, if not impossible, to see where a new paragraph starts between equations.

# 2 Front matter

## 2.1 Title page

The title page is inserted on the first page of a document with the command

\TitlePage `\TitlePage`

Depending on the selected options, the following commands are used to set the contents of the title page:

***Title***

The title of the document is inserted on the front page as well as on the abstract pages of Masters or PhD theses.

`\title{⟨title text⟩}`

For a Masters or PhD thesis, the title must make provisions for both languages.
For an English document:

```
\title{\AorE{ Geforseerde Partikelvloei\\[1ex]
             \normalfont\small\itshape(‘‘Forced Granular flow’’)}
            {Forced granular flow}}
```

and for an Afrikaans document

```
\title{\AorE{Geforseerde Partikelvloei}
            {Forced granular flow\\[1ex]
            \normalfont\small\itshape(‘‘Geforseerde Partikelvloei’’)}}
```

***Author***

`\author{⟨short name⟩}{⟨full names⟩}`

Provides the author name not only for the title page, but for various other places in the document.

```
\author{J.\ Smith}{John Smith}
```

***Faculty***

\faculty `\faculty{⟨faculty name⟩}`

The faculty must be included in Afrikaans and English for Masters and PhD documents.

```
\faculty{\AorE{Fakulteit Ingenieurswese}%
              {Faculty of Engineering}}
```

***Degree***

\degree `\degree{⟨abbvr⟩}{⟨full name⟩}`

The degree or subject names. Please refer to the yearbook for the *correct* names. The degree names must be available in Afrikaans and English.

```
\degree{\AorE{MIng (Meg)}
            {MEng (Mech)}}
       {\AorE{Magister in Ingenieurswese (Meganies)}
            {Master of Engineering (Mechanical)}}
```

***Supervisor/Co-supervisor***

| | | | |
|---|---|---|---|
| `\supervisor` | `\supervisor[`⟨*align*⟩`]{`⟨*name*⟩`}` | or | `\supervisor{`⟨*name*⟩ `\and` ⟨*name*⟩`}` |
| `\cosupervisor` | `\cosupervisor{`⟨*name*⟩`}` | or | `\cosupervisor{`⟨*name*⟩ `\and` ⟨*name*⟩`}` |

The `\studyleader` and `\supervisor` commands are synonyms and the output depends on the document type. The commands also have a starred (∗) form that stack the names of multiple supervisors. The `\and` has an optional argument, e.g.: `\and [1ex]`, for spacing in a stacked environment.

```
\supervisor{Dr.\ D.N.J.\ Els}
```
→ Supervisor: Dr. D.N.J. Els

or

```
\supervisor{Dr.\ D.N.J.\ Els
              \and
            Mnr.\ J.\ Smith}
```
→ Supervisors: Dr. D.N.J. Els<br>Mnr. J. Smith

or

```
\supervisor*{Dr.\ D.N.J..\ Els
               \and[0ex]
             Mnr.\ J.\ Smith}
```
→ Supervisors:<br>Dr. D.N.J. Els<br>Mnr. J. Smith

For a co-supervisor

```
\supervisor{Dr.\ D.N.J.\ Els}
\cosupervisor{Mnr.\ J.\ Smith}
```
→ Supervisor: Dr. D.N.J. Els<br>Co-supervisor: Mnr. J. Smith

or

```
\supervisor{%
   Prof A.H.\ Basson\\[.5ex]
   Mechanical Engineering\\
   Stellenbosch University}
\cosupervisor{%
   Prof P.A.\ Vermeer\\[.5ex]
   Institut f\"ur Geotechnic\\
   Universit\"at Stuttgart}
```
→ Supervisor: Prof A.H. Basson<br>Mechanical Engineering<br>Stellenbosch University<br>Co-supervisor: Prof P.A. Vermeer<br>Institut für Geotechnic<br>Universität Stuttgart

or

```
\supervisor*[c]{%
   Prof A.H.\ Basson\\[.5ex]
   Mechanical Engineering\\
   Stellenbosch University}
\cosupervisor{%
   Prof P.A.\ Vermeer\\[.5ex]
   Institut f\"ur Geotechnic\\
   Universit\"at Stuttgart}
```
→

| Supervisor: | Co-supervisor: |
|---|---|
| Prof A.H. Basson | Prof P.A. Vermeer |
| Mechanical Engineering | Institut für Geotechnic |
| Stellenbosch University | Universität Stuttgart |

***Date***

`\date{⟨month⟩}{⟨year⟩}`

The date when the document is handed in. The arguments must be numerical,

```
\date{10}{2003}
```
→ October 2003

***Sponsor***

Sponsors such as the NRF requires an acknowledgement on the title page

`\SetSponsor` `\SetSponsor{⟨text⟩}`

```
\SetSponsor{The financial assistance of the National Research Foundation (NRF) towards
    this research is hereby acknowledged. Opinions expressed and conclusions arrived
    at, are those of the author and are not necessarily to be attributed to the NRF.}
```

## 2.2 Declaration page

Every thesis and dissertation *must* include a declaration page. The `\DeclarationPage` command set the required text in the default language and output the copyright statement.

`\DeclarationPage` `\DeclarationPage`
`\DeclarationDate` `\DeclarationDate{⟨date⟩}`

## 2.3 Copyright Information

The copyright information in a thesis or dissertation is compulsory from 2007. It is added to the bottom of the declaration page. The default copyright holder is the University of Stellenbosch.

The default copyright holder can be changed with:

`\SetCopyrightHolder` `\SetCopyrightHolder{⟨new copyright holder⟩}`

The copyright output can be switched of with

`\SetCopyrightOff` `\SetCopyrightOff`

## 2.4 Abstract

An `abstract` environment is provided that prints a page containing all the thesis information.

`\address` `\address{⟨full address⟩}`

The address must be included in Afrikaans and English for Masters and PhD documents.

```
\address{\AorE{Departement Siviele Ingenieurswese,\\ Stellenbosch Universiteit,\\
               Privaatsak X1, 7602 Matieland, Suid Afrika.
               }{%
               Department of Civil Engineering,\\ Stellenbosch University,\\
               Private Bag X1, 7602 Matieland, South Africa.}}
```

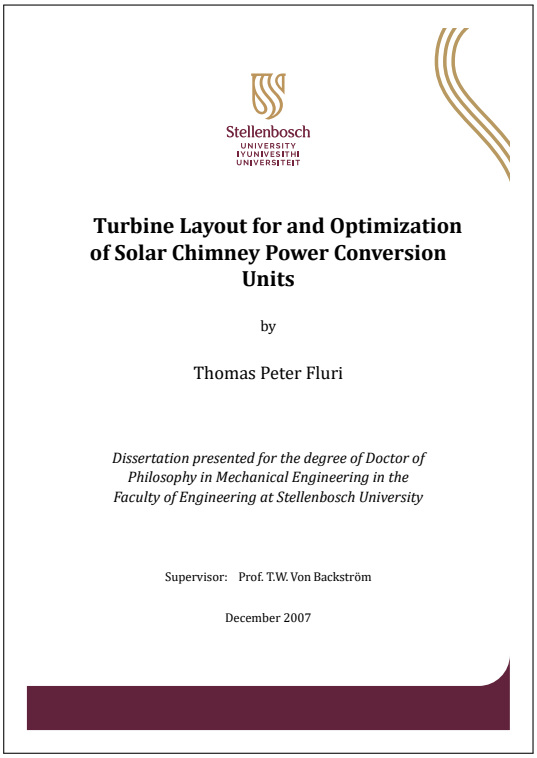


Figure 3: Title page with `PhD` option

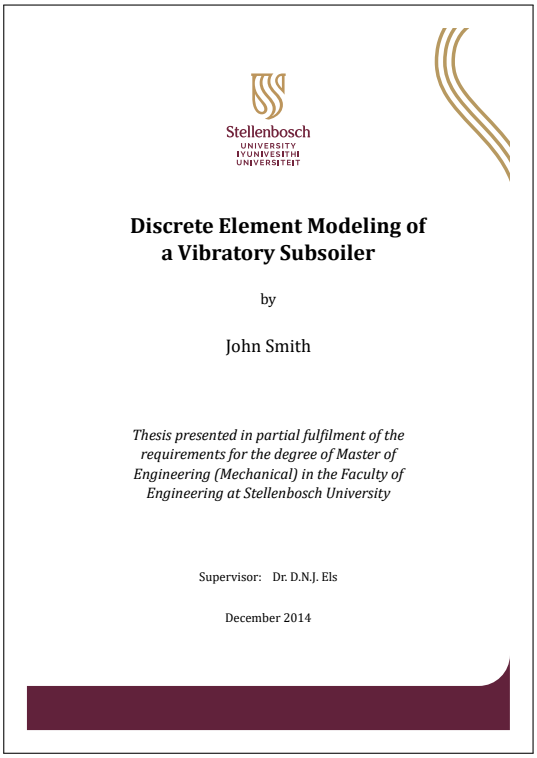


Figure 4: Title page with `master-t` option

Figure 5: Title page with `masters-a` option for a masters assignment project

The layout of an abstract for a report differs from that of a thesis or a dissertation. It is also important to note that theses and dissertations require an English and an Afrikaans abstract.

`abstract` (*env.*)

| | |
|---|---|
| `\begin{abstract}` | `\begin{abstract}[⟨language⟩]` |
| Text in default language ... | Text in ⟨*language*⟩ ... |
| `\end{abstract}` | `\end{abstract}` |

If the traditional abstract page is preferred, then use a normal chapter

```
\chapter{Abstract}
This thesis ...
```

## 2.5 Acknowledgements, Dedications, etc.

Acknowledgements, etc. can be included in the front matter of a document after a `\chapter` command, e.g.:

```
\chapter{Acknowledgements}
I would like to express my sincere gratitude ...
```

# 3 Back Matter

## 3.1 Bibliography/List of References

The stb-bib package formats bibliographies for theses and dissertations of the University of Stellenbosch. It is language sensitive and provides the correct output for both Afrikaans and English theses.

**Bibliography:** The list of all the citations in numerical order of citation, e.g.:

1. Rhodes, M. *Introduction to Particle Technology.* Wiley, New York (1998).
2. Cleary, P.W. The filling of dragline buckets. *Mathematical Engineering in Industry,* vol. 7, no. 1 (1998), pp. 1–24.

**List of References:** For author-year citations, all the citations sorted in alphabetic order, e.g.:

Cleary, P.W. (1998). The filling of dragline buckets. *Mathematical Engineering in Industry,* vol. 7, no. 1, pp. 1–24.

Rhodes, M. (1998). *Introduction to Particle Technology.* Wiley, New York.

The default name in the stb-thesis package is “Bibliography”. To change this to “List of References” (for a thesis), we have to overrule the babel setup. Make the following declarations

```
\documentclass[12pt,oneside,openany,a4paper,%... Layout
               afrikaans,UKenglish,%.............. Global language drivers
               masters-t,a5block %.............. Type and layout
              ]{stb-thesis}

\usepackage{babel}%............................. Language setup
  :
\usepackage{stb-bib}%........................... Bibliography
   \bibliographystyle{stb-bib-eng-a}%.......... Auhor-year style
   \addto{\captionsafrikaans}{\renewcommand{\bibname}{Lys van Verwysings}}
   \addto{\captionsUKenglish}{\renewcommand{\bibname}{List of References}}
```

References to the pages or sections of citations, can be included with the backref package. The backref package loaded as part of hyperref or on its own.:

```
\iftrue
    \usepackage[backref=page]{hyperref}%.... Hyperlinks & backreferences
\else
   \usepackage[pageref]{backref}%.......... Citation backreferences
\fi
\renewcommand*{\backrefalt}[4]{%
    \ifcase #1 (Not cited.)%
    \or        (Cited on page~#2.)%
    \else      (Cited on pages~#2.)%
    \fi}
```

An example is:

Rhodes, M. (1998). *Introduction to Particle Technology.*
Wiley, New York. (Cited on pages 13 and 15.)

# 4 Implementation: stb-thesis

## 4.1 Identification

```
⟨*cls⟩
\NeedsTeXFormat{LaTeX2e}[2020/08/10]
\def\STB@basetype{book}
\ProvidesClass{stb-thesis}[\STBTfiledate
                           \STBTfileversion
                           Stellenbosh Thesis class (DNJ ELS)]
```

## 4.2 External packages

We need the calc and ifpdf packages.

```
\RequirePackage{calc}
\RequirePackage{ifpdf}
```

`\phantomsection` A command needed, if the hyperref package is used, for putting before certain `\addcontentsline` commands.

```
\providecommand{\phantomsection}{}
```

We need the graphicx package and it must be loaded by the user in the document preamble.

```
\AtBeginDocument{%
   \@ifpackageloaded{graphicx}{}{%
   \ClassError{stb-thesis}{You must load the graphicx package}{}}}
```

## 4.3 Options

### 4.3.1 Language options

***Utility commands:***

Utility commands and environments to make local language changes.

`\STB@AFRstr` String in the right catcode for tests against `\languagename`.

```
\edef\STB@AFRstr{\string afrikaans}
```

`\AorE` Command `\AorE{`⟨*Afr*⟩`}{`⟨*Eng*⟩`}` to type text depending on the active language.

```
\newcommand{\AorE}[2]{%
   \ifx\STB@AFRstr\languagename #1\else #2\fi}
```

`Afr` (*env.*) Makes an Afrikaans environment inside an English document.

```
\newenvironment{Afr}%
    {\ifx\languagename\STB@AFRstr\relax\else
       \selectlanguage{afrikaans}%
     \fi}%
    {}
```

`\STB@ENGstr` Make provisions for all the different types of English. The command is reset within the options.

```
\newcommand*\STB@ENGstr{}
\let\STB@ENGstr=\relax
```

`Eng` (*env.*) Makes an English environment inside an Afrikaans document.

```
\newenvironment{Eng}%
    {\ifx\relax\STB@ENGstr\relax\else
        \ifx\languagename\STB@ENGstr\relax\else
           \edef\STB@tempa{\noexpand\selectlanguage{\STB@ENGstr}}%
           \STB@tempa
        \fi
     \fi}%
    {}
```

***Marker commands:***

Commands of which the contents are defined later.

```
\newcommand\DegreeName{%
    \ClassWarning{stb-thesis}{No degree or subject supplied}%
    \textfb{[No degree!]}}
\newcommand\DegreeNameLong{%
    \ClassWarning{stb-thesis}{No degree or subject supplied}%
    \textfb{[No degree!]}}
```

***Language commands:***

Declare all the language specific text in separate macros, enabling language changes with the `babel` package commands.

Predefine the language commands to prevent accidental overwrite when loaded from external files.

```
\newcommand*\STBName{}
\newcommand*\AuthByTxt{}
\newcommand*\StudyLeaderType{}
\newcommand*\StudyLeadersType{}
\newcommand*\CoStudyLeaderType{}
\newcommand*\CoStudyLeadersType{}
\newcommand*\SupervisorType{}
\newcommand*\SupervisorsType{}
\newcommand*\CoSupervisorType{}
\newcommand*\CoSupervisorsType{}
\newcommand*\TypeAssignment{}
\newcommand*\TypeThesis{}
\newcommand*\TypePhD{}
\newcommand*\CopyrightHolder{}
\newcommand*\CopyrightTxt{}
\newcommand*\CopyrightAnot{}
\newcommand*\Signat{}
\newcommand*\Datetxt{}
\newcommand*\MasterDescript{}
\newcommand*\PhDDescript{}
\newcommand*\ThesisDeclare{}
\newcommand*\MonthName{}
\newcommand*\DeclarationName{}
\newcommand*\AbstractName{}
```

Input all the language setting form external files

```
\InputIfFileExists{stb-thesis.afr}
   {\ClassInfo{stb-thesis}{Input file 'stb-thesis.afr' loaded}}
   {\ClassError{stb-thesis}{No file 'stb-thesis.afr'}{}}

\InputIfFileExists{stb-thesis.eng}
   {\ClassInfo{stb-thesis}{Input file 'stb-thesis.eng' loaded}}
   {\ClassError{stb-thesis}{No file 'stb-thesis.eng'}{}}
```

Set English as default if no language option is selected.

```
\STBextrasenglish
\STBcaptionsenglish
```

### *Set language options*

`\STB@addto` A redefinition of the babel `\addto` command (taken from varioref).

```
\def\STB@addto#1#2{%
  #2%
  \@temptokena{#2}%
  \ifx#1\relax
    \let#1\@empty
  \fi
  \ifx#1\undefined
     \edef#1{\the\@temptokena}%
  \else
     \toks@\expandafter{#1}%
     \edef#1{\the\toks@\the\@temptokena}%
  \fi
  \@temptokena{}\toks@\@temptokena}
```

`\STB@addlangextras` `\STB@addlangcaptions` Add the language definitions to `\extras`⟨*lang*⟩ and `\captions`⟨*lang*⟩ at the beginning of the document after babel.

```
\newcommand\STB@addlangextras[2]{%
   \AtBeginDocument{%
      \expandafter\STB@addto\csname extras#1\endcsname #2}}
\newcommand\STB@addlangcaptions[2]{%
   \AtBeginDocument{%
      \expandafter\STB@addto\csname captions#1\endcsname #2}}
```

Set all the different English language options.

```
\DeclareOption{english}{%
   \edef\STB@ENGstr{\string english}%
   \STB@addlangextras{english}{\STBextrasenglish}%
   \STB@addlangcaptions{english}{\STBcaptionsenglish}}
\DeclareOption{UKenglish}{%
   \edef\STB@ENGstr{\string UKenglish}%
   \STB@addlangextras{UKenglish}{\STBextrasenglish}%
   \STB@addlangcaptions{UKenglish}{\STBcaptionsenglish}}
\DeclareOption{USenglish}{%
   \edef\STB@ENGstr{\string USenglish}%
   \STB@addlangextras{USenglish}{\STBextrasenglish}%
   \STB@addlangcaptions{USenglish}{\STBcaptionsenglish}}
\DeclareOption{british}{%
```

```
101   \edef\STB@ENGstr{\string british}%
102   \STB@addlangextras{british}{\STBextrasenglish}%
103   \STB@addlangcaptions{british}{\STBcaptionsenglish}}
```

Set Afrikaans language option.

```
104 \DeclareOption{afrikaans}{%
105   \STB@addlangextras{afrikaans}{\STBextrasafrikaans}%
106   \STB@addlangcaptions{afrikaans}{\STBcaptionsafrikaans}}
```

### 4.3.2 Thesis type options

`\if@Masters` Flag for `masters-a` and `masters-t` options.

```
107 \newif\if@Masters
108 \@Mastersfalse
```

`\if@PhD` Flag for `PhD` option.

```
109 \newif\if@PhD
110 \@PhDfalse
```

`\ThesisType` Global headings that are set according to the thesis type options.
`\SupervisorText`
`\SupervisorsText`
`\CoSupervisorText`
`\CoSupervisorsText`

```
111 \newcommand{\ThesisType}{}
112 \newcommand{\SupervisorText}{}
113 \newcommand{\SupervisorsText}{}
114 \newcommand{\CoSupervisorText}{}
115 \newcommand{\CoSupervisorsText}{}
```

`masters-a:` Masters with and assignment.

```
116 \DeclareOption{masters-a}{%
117   \renewcommand{\ThesisType}{\TypeAssignment}%
118   \renewcommand{\SupervisorText}{\SupervisorType}%
119   \renewcommand{\SupervisorsText}{\SupervisorsType}%
120   \renewcommand{\CoSupervisorText}{\CoSupervisorType}%
121   \renewcommand{\CoSupervisorsText}{\CoSupervisorsType}%
122   \@Masterstrue
123   \@PhDfalse}
```

`masters-t:` Masters with a thesis.

```
124 \DeclareOption{masters-t}{%
125   \renewcommand{\ThesisType}{\TypeThesis}%
126   \renewcommand{\SupervisorText}{\SupervisorType}%
127   \renewcommand{\SupervisorsText}{\SupervisorsType}%
128   \renewcommand{\CoSupervisorText}{\CoSupervisorType}%
129   \renewcommand{\CoSupervisorsText}{\CoSupervisorsType}%
130   \@Masterstrue
131   \@PhDfalse}
```

`PhD:` PhD dissertation.

```
132 \DeclareOption{PhD}{%
133   \renewcommand{\ThesisType}{\TypePhD}%
134   \renewcommand{\SupervisorText}{\SupervisorType}%
135   \renewcommand{\SupervisorsText}{\SupervisorsType}%
136   \renewcommand{\CoSupervisorText}{\CoSupervisorType}%
137   \renewcommand{\CoSupervisorsText}{\CoSupervisorsType}%
138   \@Mastersfalse
139   \@PhDtrue}
```

### 4.3.3 Page layout options

Intercept 2-column requests.

```
\DeclareOption{twocolumn}{}
```

`\if@ABlock` `\if@GBlock` `\if@WBlock` Flags for `a5block`, `goldenblock` and `wideblock` options.

```
\newif\if@ABlock
\newif\if@GBlock
\newif\if@WBlock
\@ABlockfalse
\@GBlockfalse
\@WBlockfalse
```

`a5block`: An A5 type block area.

```
\DeclareOption{a5block}{%
    \PassOptionsToClass{a4paper}{\STB@basetype}%
    \@ABlocktrue
    \@GBlockfalse
    \@WBlockfalse}
```

`goldenblock`: A golden section type block area.

```
\DeclareOption{goldenblock}{%
    \PassOptionsToClass{a4paper}{\STB@basetype}%
    \@GBlocktrue
    \@ABlockfalse
    \@WBlockfalse}
```

`wideblock`: A type block with 25 mm margins.

```
\DeclareOption{wideblock}{%
    \PassOptionsToClass{a4paper}{\STB@basetype}%
    \@GBlockfalse
    \@ABlockfalse
    \@WBlocktrue}
```

`stdblock`: Standard LaTeX type block area.

```
\DeclareOption{stdblock}{%
   \@GBlockfalse
   \@ABlockfalse
   \@WBlockfalse}
```

### 4.3.4 Process package options

```
\DeclareOption*{\PassOptionsToClass{\CurrentOption}{\STB@basetype}}
\ExecuteOptions{masters-t}
\ProcessOptions*\relax
\LoadClass[oneside,openany]{\STB@basetype}
```

## 4.4 Temporaries

```
\newlength{\STB@tdima}
\newlength{\STB@tdimb}
\newsavebox{\STB@tboxa}
\newsavebox{\STB@tboxb}
\newcounter{STB@tcnta}
\newcounter{STB@tcntb}
```

## 4.5 Page layout

`\FixVertParams` Reset all the vertical parameters for a page layout.

```
\newcommand\FixVertParams[1]{%
    \normalsize
    \setlength\STB@tdima{\textheight-\topskip}%
    \setcounter{STB@tcnta}{\STB@tdima}
    \setcounter{STB@tcntb}{\baselineskip}
    \setcounter{STB@tcnta}{\value{STB@tcnta}/\value{STB@tcntb}}
    \setlength\textheight{\baselineskip*\value{STB@tcnta}+\topskip}%
    \setlength\STB@tdima{\paperheight-\textheight}%
    \setlength\topmargin{#1\STB@tdima-\headheight-\headsep-1in}%
    \@settopoint\topmargin}
```

`\FixHorizParams` Reset all the horizontal parameters for a page layout.

```
\newcommand\FixHorizParams[1]{%
    \@settopoint\textwidth
    \setlength\STB@tdima{\paperwidth-\textwidth}%
    \if@twoside
        \setlength\oddsidemargin{#1\STB@tdima-1in}%
    \else
        \setlength\oddsidemargin{.5\STB@tdima-1in}%
    \fi
    \@settopoint\oddsidemargin
    \setlength\evensidemargin{\STB@tdima-\oddsidemargin-2in}%
    \@settopoint\evensidemargin
    \setlength\marginparwidth{\evensidemargin+1in-\marginparsep-1cm}%
    \@settopoint\marginparwidth}
```

### 4.5.1 A5 type block area

```
\if@ABlock
    \setlength\paperheight  {297.3mm}
    \setlength\paperwidth   {210.2mm} % A4 paper
    \setlength\textwidth    {.5\paperheight}
    \setlength\textheight   {\paperwidth}
    \setlength\marginparsep {7\p@}
    \setlength\marginparpush{7\p@}
    \FixVertParams{0.375}
    %\FixHorizParams{0.375}
    \FixHorizParams{0.5}% Changed in v3.0
    \ifpdf
       \setlength\pdfpagewidth{\paperwidth}
       \setlength\pdfpageheight{\paperheight}
    \fi
\fi
```

### 4.5.2 Golden section type block area

```
\if@GBlock
    \setlength\paperheight  {297.3mm}
    \setlength\paperwidth   {210.2mm} % A4 paper
    \setlength\textheight   {0.747547\paperheight}
    \setlength\textwidth    {0.666667\paperwidth}
```

```
    \setlength\marginparsep {7\p@}
    \setlength\marginparpush{7\p@}
    \FixVertParams{0.375}
    %\FixHorizParams{0.375}
    \FixHorizParams{0.5}% Changed in v3.0
    \ifpdf
       \setlength\pdfpagewidth{\paperwidth}
       \setlength\pdfpageheight{\paperheight}
    \fi
\fi
```

### 4.5.3 Wide type block area

```
\if@WBlock
    \setlength\paperheight  {297.3mm}
    \setlength\paperwidth   {210.2mm} % A4 paper
    \setlength\textheight   {\paperheight-50mm}
    \setlength\textwidth    {\paperwidth-50mm}
    \setlength\marginparsep {7\p@}
    \setlength\marginparpush{7\p@}
    \FixVertParams{0.5}
    \FixHorizParams{0.5}
    \ifpdf
       \setlength\pdfpagewidth{\paperwidth}
       \setlength\pdfpageheight{\paperheight}
    \fi
\fi
```

## 4.6 Utility commands

`\STB@ifempt` Test for a empty argument (Wilson, Arseneau in ifmtarg)

```
\begingroup
   \catcode`\Q=3
   \long\gdef\STB@ifempt#1{\STB@xifempt#1QQ\@secondoftwo\@firstoftwo\@nil}
   \long\gdef\STB@xifempt#1#2Q#3#4#5\@nil{#4}
\endgroup
```

`TB@adjustwidth` (*env.*) Adjust the width of a paragraph.

```
\newenvironment{STB@adjustwidth}[2]{%
   \begin{list}{}{%
      \setlength{\topsep}{0pt}%
      \setlength{\partopsep}{0pt}%
      \setlength{\leftmargin}{#1}%
      \setlength{\rightmargin}{#2}%
      \setlength{\listparindent}{\parindent}%
      \setlength{\itemindent}{\parindent}%
      \setlength{\parsep}{\parskip}%
      }%
   \item[]}{\end{list}}
```

`SetMargins` (*env.*) Adjust the margins of a paragraph. The parameter #1 and #2 are the left and right margins of the paragraph.

```
\newenvironment{SetMargins}[2]%
  {\setlength{\STB@tdima}{-1in-\hoffset-\oddsidemargin}%
```

```
  \setlength{\STB@tdimb}{-\STB@tdima}%
  \addtolength{\STB@tdima}{#1}%
  \addtolength{\STB@tdimb}{-\paperwidth+\textwidth+#2}%
  \begin{STB@adjustwidth}{\STB@tdima}{\STB@tdimb}%
 }%
 {\end{STB@adjustwidth}}
```

## 4.7 Front pages

### 4.7.1 Title page

`STB@titlepage` (*env.*) Make a single column empty page with predefined margins

```
\begin{STB@titlepage}{⟨top⟩}{⟨bottom⟩}{⟨left⟩}{⟨right⟩}
   ⟨title page⟩
\end{STB@titlepage}
```

```
\newenvironment{STB@titlepage}[4]
 {\cleardoublepage
  \if@twocolumn
     \@restonecoltrue\onecolumn
  \else
     \@restonecolfalse\newpage
  \fi
  \thispagestyle{empty}%
  \setcounter{page}\@ne
```

Set the top margin by moving the starting point up.

```
  \setlength{\STB@tdima}{1in+\voffset+\topmargin+\headheight+\headsep+\topskip}%
  \setlength{\STB@tdimb}{#1 -\STB@tdima}%
  \vspace*{\STB@tdimb}%
```

Set the bottom margin by enlarging the page

```
  \addtolength{\STB@tdima}{\textheight-\paperheight-\topskip}%
  \addtolength{\STB@tdima}{#2}%
  \enlargethispage{-\STB@tdima}%
```

Set the left and right margins by putting the contents in a list environment with widened margins.

```
  \setlength{\STB@tdima}{-1in-\hoffset-\oddsidemargin}%
  \setlength{\STB@tdimb}{-\STB@tdima}%
  \addtolength{\STB@tdima}{#3}%
  \addtolength{\STB@tdimb}{-\paperwidth+\textwidth+#4}%
  \begin{STB@adjustwidth}{\STB@tdima}{\STB@tdimb}%
 }%
 {\end{STB@adjustwidth}%
  \if@restonecol\twocolumn \else \newpage \fi
  \if@twoside\else
     \setcounter{page}\@ne
  \fi}
```

Undefine the standard title page.

```
\let\maketitle\relax
```

### *The title page*

\STB@frntpage Full page graphics for frontpages
\STB@putfrntpage

```
\newcommand\STB@frntpage{%
   \includegraphics[width=\paperwidth,height=\paperheight]{stb-thesis-frntp.pdf}}
\newcommand\STB@putfrntpage{%
   \AddToHookNext{shipout/background}{\put(0mm,-\paperheight){\STB@frntpage}}}
```

\TitlePage The `\TitlePage` command set the full front page for the US theses. All margins, spacing and font sizes must be set inside this command.

```
\newcommand{\TitlePage}{%
  \STB@putfrntpage
  \begingroup
     \let\footnote\relax
     \begin{STB@titlepage}{6cm}{4.5cm}{2.5cm}{2.5cm}%
        \centering
        \vfil
        \vspace{20mm}
       {\LARGE \@title \par}
        \vspace{2em}
        \if@Authorpresent
           {\large \AuthByTxt\par}
            \vspace{2em}
           {\Large
            \lineskip .75em\relax%
            \begin{tabular}[t]{c}%
               \STB@authorlong
            \end{tabular}\par}%
            \vfill
            \vfill
        \fi
       {\large\slshape
        \begin{STB@adjustwidth}{1.5cm}{1.5cm}
           \centering\STB@ThesisDescript
        \end{STB@adjustwidth}\par}
        \vfill
        \vfill
       {\normalsize \STB@spvset \par}
        \vspace{2em}
       {\normalsize \STB@date\par}%
       {\footnotesize \STB@sponsor \par}
     \end{STB@titlepage}%
  \endgroup
  \global\let\TitlePage\relax
  \setcounter{footnote}{0}%
  \global\let\thanks\relax
  \global\let\@thanks\@empty
%  \global\let\and\relax
  }
```

### *Author block*

```
\newif\if@Authorpresent
```

```
\@Authorpresentfalse
\renewcommand\author[2]{%
   \@Authorpresenttrue%
   \gdef\STB@author{#1}%
   \gdef\STB@authorlong{#2}}
\newcommand\STB@author{%
    \ClassWarning{stb-thesis}{No author supplied}}
\newcommand\STB@authorlong{%
    \ClassWarning{stb-thesis}{No author supplied}}
```

### *Thesis description*

```
\newcommand{\STB@ThesisDescript}{}
```

\ThesisDescript

```
\newcommand\ThesisDescript[1]{%
   \long\gdef\STB@ThesisDescript{#1}}

\if@Masters
   \ThesisDescript{\MasterDescript}
\fi
\if@PhD
    \ThesisDescript{\PhDDescript}%
\fi
```

### *Degree*

See beginning of class for \DegreeName and \DegreeNameLong.

```
\newcommand\degree[2]{%
   \gdef\DegreeName{#1}%
   \gdef\DegreeNameLong{#2}}
```

### *Address and faculty*

\address

```
\newcommand\address[1]{\gdef\STB@address{#1}}

\newcommand\STB@address{%
    \ClassWarning{stb-thesis}{No institutional address supplied}}
```

\faculty

```
\newcommand\faculty[1]{\gdef\FacultyName{#1}}

\newcommand\FacultyName{%
    \ClassWarning{stb-thesis}{No faculty name supplied}%
    \textbf{[No faculty name supplied!]}}
```

### *Supervisor or study leader*

\ifSTB@spvpresent
\ifSTB@cospvpresent

```
\newif\ifSTB@spvpresent\STB@spvpresentfalse
\newif\ifSTB@cospvpresent\STB@cospvpresentfalse
```

```
\newif\ifSTB@spvmult\STB@spvmultfalse
\newif\ifSTB@cospvmult\STB@cospvmultfalse
\newif\ifSTB@spvrows\STB@spvrowsfalse

\newcommand\STB@spv{}
\newcommand\STB@cospv{}
\newcommand*\STB@spvalign{l}
```

`\supervisor`

```
\newcommand{\supervisor}{%
   \@ifstar{\STB@spvrowsfalse\@supervisor}%
           {\STB@spvrowstrue\@supervisor}}

\newcommand{\@supervisor}[2][l]{%
   \STB@ifempt{#2}{}{\STB@spvpresenttrue}%
   \renewcommand*\STB@spvalign{#1}%
   \renewcommand\STB@spv{#2}}
```

`\cosupervisor`

```
\newcommand{\cosupervisor}[1]{%
   \STB@ifempt{#1}{}{\STB@cospvpresenttrue}%
   \renewcommand\STB@cospv{#1}}
```

`\STB@spvset`

```
\newcommand{\STB@spvset}{%
    \ifSTB@spvrows
        \STB@spvrows
    \else
        \STB@spvcols
    \fi}

\newcommand\STB@spvrows{%
    \edef\STB@beginTab{\noexpand\begin{tabular}[t]{@{}\STB@spvalign @{}}}%
    \edef\STB@endTab{\noexpand\end{tabular}}%
    \STB@spvmultfalse
    \sbox{\STB@tboxa}{%
        \let\and\STB@spvand%
        \STB@beginTab\STB@spv\STB@endTab}%
    \STB@cospvmultfalse
    \sbox{\STB@tboxb}{%
        \let\and\STB@cospvand%
        \STB@beginTab\STB@cospv\STB@endTab}%
    \ifSTB@spvpresent
        \begin{tabular}{@{}ll@{}}
             \ifSTB@spvmult\SupervisorsText\else\SupervisorText\fi
             & \usebox{\STB@tboxa}\\
             \ifSTB@cospvpresent%
                  \noalign{\vskip 1ex}
                  \ifSTB@cospvmult\CoSupervisorsText\else\CoSupervisorText\fi
                & \usebox{\STB@tboxb}
             \fi
        \end{tabular}
   \fi}
```

```
\newcommand\STB@spvcols{%
    \edef\STB@beginTab{\noexpand\begin{tabular}[t]{@{}\STB@spvalign @{}}}%
    \edef\STB@endTab{\noexpand\end{tabular}}%
    \STB@spvmultfalse
    \sbox{\STB@tboxa}{%
        \let\and\STB@spvand%
        \STB@beginTab\STB@spv\STB@endTab}%
    \STB@cospvmultfalse
    \sbox{\STB@tboxb}{%
        \let\and\STB@cospvand%
        \STB@beginTab\STB@cospv\STB@endTab}%
    \ifSTB@spvpresent
        \STB@beginTab
            \ifSTB@spvmult\SupervisorsText\else\SupervisorText\fi\\[1ex]
             \usebox{\STB@tboxa}
        \STB@endTab
    \fi
    \ifSTB@cospvpresent
        \hspace{2em}%
        \STB@beginTab
            \ifSTB@cospvmult\CoSupervisorsText\else\CoSupervisorText\fi\\[1ex]
             \usebox{\STB@tboxb}
        \STB@endTab
    \fi}
\newcommand*{\STB@spvand}[1][0pt]{%
      \global\STB@spvmulttrue%
      \\[#1]%
      \ignorespaces}
\newcommand*{\STB@cospvand}[1][0pt]{%
      \global\STB@cospvmulttrue%
      \\[#1]%
      \ignorespaces}
\let\studyleader\supervisor
\let\promotor\supervisor  %Backward compatibility
```

### *Date*

```
\newcount\STB@month
\newcount\STB@year
\STB@month=0
\STB@year=\number\year
\def\STB@date{\MonthName{\STB@month}\ \number\STB@year}
\newcommand{\setdate}[2]{%
   \STB@ifempt{#1}{\STB@month=0}{\STB@month=#1}%
   \STB@year=#2
   \gdef\STB@date{\MonthName{\STB@month}\ \number\STB@year}}
```

### *Sponsor*

`\SetSponsor` Sponsors such as the NRF requests an acknowledgement on the title page.

```
\newcommand\STB@sponsor{\vspace{2em}}
\newcommand\SetSponsor[1]{%
    \renewcommand\STB@sponsor{\vspace{2em}\par\parbox{\linewidth}{#1}}}
```

### 4.7.2 Copyright page

From 2007 the copyright declaration must be at the bottom of the declaration page.

`\CopyrightPage`

```
\newcommand\CopyrightPage[1][\CopyrightHolder]{%
   %\clearpage
   %\thispagestyle{empty}
   %\mbox{}\par\vfill
   %\begin{center}
   %   \CopyrightTxt\ \copyright\ \number\STB@year\ #1\\
   %   \CopyrightAnot
   %\end{center}
   %\vfill\mbox{}\par
   %\clearpage
   }
```

`\SetCopyrightHolder` Macro to change the default copyright holder.

```
\newcommand\SetCopyrightHolder[1]{%
   \renewcommand\CopyrightHolder{#1}}
```

`\SetCopyrightOff` Switch copyright output off.

```
\newif\ifSTB@Copyright
\STB@Copyrighttrue
\newcommand\SetCopyrightOff{%
   \STB@Copyrightfalse}
```

### 4.7.3 Declaration page

`\DeclarationDate` Optional commands to insert a signature and a signed date on declaration page.

```
\let\STB@DeclDate\@empty
\newcommand{\DeclarationDate}[1]{%
    \renewcommand\STB@DeclDate{#1}}
```

```
\newcommand\STB@putdecldate{%
        \vspace{1cm}
        \noindent
        \begin{minipage}{.5\textwidth}
            \noindent
            \ifx\STB@DeclDate\@empty\relax\else
                \phantom{\Signat:}~\hfill\makebox[0pt][c]{\STB@DeclDate}\hfill\mbox{}\\[-.5\baselineskip]
            \fi
            \Datetxt:~ \dotfill\mbox{}\par
        \end{minipage}
        \par}
```

`\DeclarationPage` Set up the declaration page. The `\ThesisDeclare[`⟨*declaration*⟩`]` command has an optional argument to set a different declaration.

```
\newcommand{\DeclarationPage}[1][\ThesisDeclare]{%
   \if@twocolumn
      \@restonecoltrue\onecolumn
   \else
      \@restonecolfalse
   \fi
```

```
\par
\thispagestyle{plain}%
\chapter*{\DeclarationName}%
\declaremark
%\phantomsection
%\addcontentsline{toc}{chapter}{\DeclarationName}%
#1\par
\STB@putdecldate
\ifSTB@Copyright
    \mbox{}\par
    \vfill
    \vfill
    \noindent\CopyrightTxt\ \copyright\ \number\STB@year\ \CopyrightHolder\\
    \noindent\CopyrightAnot
    \vfill
    \mbox{}\par
\fi
\if@restonecol\twocolumn\fi}
```

### 4.7.4 Abstract page

`abstract` (*env.*) Provides the environment

```
\begin{abstract}[⟨lang⟩]
   ⟨abtract text⟩
\end{abstract}
```

to typeset the abstract. A different language can be selected with the optional argument to the environment.

```
\newenvironment{abstract}[1][\languagename]%
  {\edef\@tempa{\expandafter\string #1}%
   \ifx\@tempa\languagename\relax\else
     \edef\@tempa{\noexpand\selectlanguage{#1}}\@tempa%
   \fi
  \if@twocolumn
     \@restonecoltrue\onecolumn
  \else
     \@restonecolfalse
  \fi
  \par
  \chapter*{\AbstractName}%
  \abstractmark
  %\phantomsection
  %\addcontentsline{toc}{chapter}{\AbstractName}%
      \begin{center}
         {\large\bfseries \@title \par}
          \medskip
         {\lineskip .75em\relax%
          \begin{tabular}[t]{@{}c@{}}%
             \STB@author
          \end{tabular}\par}
          \smallskip
         {\small\itshape\STB@address\par}
```

```
           \smallskip
          {\ThesisType: \DegreeName\par}
           \smallskip
          {\STB@date\par}
       \end{center}
    \if@restonecol\twocolumn\fi%
    }{}
```

### 4.7.5 Table of contents

\tableofcontents

```
\renewcommand\tableofcontents{%
   \if@twocolumn
      \@restonecoltrue\onecolumn
   \else
      \@restonecolfalse
   \fi
   \chapter*{\contentsname}%
   \tocmark
   %\phantomsection
   %\addcontentsline{toc}{chapter}{\contentsname}%
   \@starttoc{toc}%
   \if@restonecol\twocolumn\fi}
```

### 4.7.6 List of figures

```
\renewcommand\listoffigures{%
    \if@twocolumn
      \@restonecoltrue\onecolumn
    \else
      \@restonecolfalse
    \fi
    \chapter*{\listfigurename}%
    \lofmark
    \phantomsection
    \addcontentsline{toc}{chapter}{\listfigurename}%
    \@starttoc{lof}%
    \if@restonecol\twocolumn\fi
    }
\renewcommand*\l@figure{\@dottedtocline{1}{0em}{3em}}
```

### 4.7.7 List of tables

```
\renewcommand\listoftables{%
    \if@twocolumn
      \@restonecoltrue\onecolumn
    \else
      \@restonecolfalse
    \fi
    \chapter*{\listtablename}%
    \lotmark
    \phantomsection
    \addcontentsline{toc}{chapter}{\listtablename}%
    \@starttoc{lot}%
```

```
581     \if@restonecol\twocolumn\fi}
582 \let\l@table\l@figure
```

## 4.8 Back matter

### 4.8.1 Bibliography

\bibsection natbib uses the \bibsection command. We change the thebibliography to use it also.

```
583 \providecommand\bibsection{}%
584 \AtBeginDocument{%
585   \renewcommand{\bibsection}{%
586      \chapter*{\bibname}%
587      \bibmark
588      \phantomsection
589      \addcontentsline{toc}{chapter}{\bibname}}%
590   }
```

hebibliography (*env.*) The environment is a mixture of code from book.cls and natbib

```
591 \renewenvironment{thebibliography}[1]{%
592   \bibsection
593   \parindent \z@
594   \bibpreamble
595   \bibfont
596   \list{\@biblabel{\@arabic\c@enumiv}}%
597        {\settowidth\labelwidth{\@biblabel{#1}}%
598         \leftmargin\labelwidth
599         \advance\leftmargin\labelsep
600         \@openbib@code
601         \usecounter{enumiv}%
602         \let\p@enumiv\@empty
603         \renewcommand\theenumiv{\@arabic\c@enumiv}}%
604   \sloppy
605   \clubpenalty4000
606   \@clubpenalty \clubpenalty
607   \widowpenalty4000%
608   \sfcode‘\.\@m}
609  {\def\@noitemerr{\@latex@warning{Empty ‘thebibliography’ environment}}%
610   \endlist
611   \vskip-\lastskip}
```

\bibfont Command to change font sizes.

\bibpreamble The user can add stuff before the bibliography.

```
612 \let\bibfont\relax
613 \let\bibpreamble\relax
```

\setbiblabel A user command to change the bib label format .

```
614 \newcommand*{\setbiblabel}[1]{%
615   \renewcommand*{\@biblabel}[1]{#1}}
616 \setbiblabel{[#1]\hfill}
```

### 4.8.2 Index

theindex (*env.*)

```
\renewenvironment{theindex}
   {\if@twocolumn
       \@restonecolfalse
    \else
       \@restonecoltrue
    \fi
    \columnseprule \z@
    \columnsep 35\p@
    \twocolumn[\@makeschapterhead{\indexname}]%
    \indexmark
    \phantomsection
    \addcontentsline{toc}{chapter}{\indexname}
    \thispagestyle{plain}
    \parindent\z@
    \parskip\z@ \@plus .3\p@\relax
    \let\item\@idxitem}
   {\if@restonecol
       \onecolumn
    \else
       \clearpage
    \fi}
```

## 4.9 Page markup

### 4.9.1 Headers and footers

\STB@headfnt Font for running headers.

\STB@numfnt Font for running header numbers.

```
\newcommand*{\STB@headfnt}[1]{{\slshape\small#1}}
\newcommand*{\STB@numfnt}[1]{{\normalsize\bfseries#1}}
```

Define the `stb-thesis` page style

*Headers for normal book class*

```
\if@twoside
   \def\ps@STBthesis{%
      \def\@evenhead{\STB@numfnt{\thepage}\hfil\STB@headfnt{\leftmark}}%
      \def\@oddhead{\STB@headfnt{\rightmark}\hfil\STB@numfnt{\thepage}}%
      \let\@oddfoot\@empty
      \let\@evenfoot\@empty
      \let\@mkboth\markboth
      \def\chaptermark##1{%
         \markboth{\MakeUppercase{%
            \ifnum \c@secnumdepth >\m@ne
               \if@mainmatter
                  \@chapapp\ \thechapter. \ %
               \fi
            \fi
            ##1}}{}}%
      \def\sectionmark##1{%
```

```
         \markright{\MakeUppercase{%
            \ifnum \c@secnumdepth > \z@
               \thesection. \ %
            \fi
            ##1}}}%
      \def\declaremark{\markboth{\MakeUppercase{\DeclarationName}}{}}%
      \def\abstractmark{\markboth{\MakeUppercase{\AbstractName}}{}}%
      \def\tocmark{\markboth{\MakeUppercase{\contentsname}}{}}%
      \def\lofmark{\markboth{\MakeUppercase{\listfigurename}}{}}%
      \def\lotmark{\markboth{\MakeUppercase{\listtablename}}{}}%
      \def\bibmark{\markboth{\MakeUppercase{\bibname}}{}}%
      \def\indexmark{\markboth{\MakeUppercase{\indexname}}{}}%
      }
\else
   \def\ps@STBthesis{%
      \def\@oddhead{\STB@headfnt{\rightmark}\hfil\STB@numfnt{\thepage}}%
      \let\@oddfoot\@empty
      \let\@mkboth\markboth
      \def\chaptermark##1{%
         \markright{\MakeUppercase{%
            \ifnum \c@secnumdepth >\m@ne
               \if@mainmatter
                  \@chapapp\ \thechapter. \ %
               \fi
            \fi
            ##1}}}%
      \def\declaremark{\markright{\MakeUppercase{\DeclarationName}}}%
      \def\abstractmark{\markright{\MakeUppercase{\AbstractName}}}%
      \def\tocmark{\markright{\MakeUppercase{\contentsname}}}%
      \def\lofmark{\markright{\MakeUppercase{\listfigurename}}}%
      \def\lotmark{\markright{\MakeUppercase{\listtablename}}}%
      \def\bibmark{\markright{\MakeUppercase{\bibname}}}%
      \def\indexmark{\markright{\MakeUppercase{\indexname}}}%
      }
\fi
```

Redefine the `plain` page style.

```
\def\ps@plain{%
   \let\@mkboth\@gobbletwo
   \let\@oddhead\@empty
   \let\@evenhead\@empty
   \def\@oddfoot{\reset@font\hfil\STB@numfnt{\thepage}\hfil}%
   \let\@evenfoot\@oddfoot
   }
```

The default page style.

```
\pagestyle{STBthesis}
```

### 4.9.2 Chapter and section headings

```
\newcommand{\STB@headfamily}{\normalfont\rmfamily}
```

```
\def\section{%
   \@startsection{section}{1}%
                 {\z@}%
                 {-3.5ex plus -1ex minus -.2ex}%
```

```
                {2.3ex plus .2ex}%
                {\STB@headfamily\Large\bfseries\raggedright}}

\def\subsection{%
   \@startsection{subsection}{2}%
                {\z@}%
                {-3.25ex plus -1ex minus -.2ex}%
                {1.5ex plus .2ex}%
                {\STB@headfamily\large\bfseries\raggedright}}%

\def\subsubsection{%
   \@startsection{subsubsection}{3}%
                {\z@}%
                {-3.25ex plus -1ex minus -.2ex}%
                {1.5ex plus .2ex}%
                {\STB@headfamily\normalsize\bfseries\raggedright}}

\def\paragraph{%
   \@startsection{paragraph}{4}%
                {\z@}%
                {3.25ex plus 1ex minus .2ex}%
                {-1em}%
                {\STB@headfamily\normalsize\bfseries}}

\def\subparagraph{%
   \@startsection{subparagraph}{5}%
                {\parindent}%
                {3.25ex plus 1ex minus .2ex}%
                {-1em}%
                {\STB@headfamily\normalsize\bfseries}}
```

### 4.9.3 Floats and float pages

```
\setcounter{topnumber}{3}
\setcounter{bottomnumber}{2}
\setcounter{totalnumber}{4}
\setcounter{dbltopnumber}{3}

\renewcommand{\topfraction}{.85}
\renewcommand{\bottomfraction}{.7}
\renewcommand{\textfraction}{.1}
\renewcommand{\floatpagefraction}{.7}
\renewcommand{\dbltopfraction}{.85}
\renewcommand{\dblfloatpagefraction}{.7}

\setlength{\floatsep}{15pt plus 12pt}
\setlength{\textfloatsep}{\floatsep}
\setlength{\intextsep}{\floatsep}
\setlength{\dblfloatsep}{15pt plus 12pt}
\setlength{\dbltextfloatsep}{15pt plus 12pt}

\setlength{\@fptop}{0pt plus1fil}
\setlength{\@fpbot}{0pt plus1fil}
\setlength{\@fpsep}{8pt plus1fil}
\setlength{\@dblfptop}{0pt plus1fil}
\setlength{\@dblfpbot}{0pt plus1fil}
\setlength{\@dblfpsep}{8pt plus1fil}
```

### 4.9.4 Captions

Figures and tables use the same caption command in the standard book.cls. This causes problems with spacing, because figure captions are normally below the figure while table captions are above the table. Make the spacing equal.

Set parameters for stb-thesis.cls.

```
\setlength{\abovecaptionskip}{0.5\baselineskip}
\setlength{\belowcaptionskip}{0.5\baselineskip}
```

`\@makecaption` Redefine the caption output.

```
\long\def\@makecaption#1#2{%
  \vskip\abovecaptionskip
  \sbox\@tempboxa{\small{\bfseries #1:} #2}%
  \ifdim \wd\@tempboxa >\hsize
    \unhbox\@tempboxa\par
  \else
    \global \@minipagefalse
    \hb@xt@\hsize{\hfil\box\@tempboxa\hfil}%
  \fi
  \vskip\belowcaptionskip}
```

⟨/cls⟩

The end of this class.

# Change History


v1.0
General: Initial version . . . . . 1
v1.1
General: Change licence to CC BY 4.0 . . . . . 1
v1.2
General: Change front page graphics . . . . . 1
Requires Latex 2020/08/10 . . . . . 16
`\STB@frntpage`: Front page watermark graphics . . . . . 24
`\STB@putfrntpage`: Front page watermark graphics . . . . . 24
v1.3
General: Chance TOC frontmatter entries . . . . . 1
`abstract`: Remove addconentsline . . . . . 29
`\DeclarationPage`: Remove addconentsline . 28
`\tableofcontents`: Remove addconentsline . 30


# Index

Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.


**Symbols**

`\@ABlockfalse` 144, 155, 160, 164
`\@ABlocktrue` . . . . . 149
`\@Authorpresentfalse` . . . . 338
`\@Authorpresenttrue` . . . . . 340
`\@GBlockfalse` 145, 150, 159, 163
`\@GBlocktrue` . . . . . 154
`\@Mastersfalse` . . . . . 108, 138
`\@Masterstrue` . . . . . 122, 130
`\@PhDfalse` . . . . . 110, 123, 131
`\@PhDtrue` . . . . . 139
`\@WBlockfalse` 146, 151, 156, 165
`\@WBlocktrue` . . . . . 161
`\@biblabel` . . . . . 596, 597, 615
`\@dblfpbot` . . . . . 749
`\@dblfpsep` . . . . . 750
`\@dblfptop` . . . . . 748
`\@evenfoot` . . . . . 645, 696
`\@evenhead` . . . . . 642, 694
`\@fpbot` . . . . . 746
`\@fpsep` . . . . . 747

\@fptop ..... 745
\@makecaption ..... 753
\@makeschapterhead ..... 625
\@oddfoot ... 644, 672, 695, 696
\@oddhead ..... 643, 671, 693
\@settopoint .....
... 185, 187, 194, 196, 198
\@supervisor .... 375, 376, 377
\@thanks ..... 334
\@title ..... 306, 529

**A**

\abovecaptionskip .... 751, 754
abstract (env.) ..... 513
\abstractmark .... 525, 662, 683
\AbstractName .....
.... 60, 524, 527, 662, 683
\address ..... 359
\AddToHookNext ..... 297
Afr (env.) ..... 16
\and ..... 335, 395, 399, 417, 421
\AorE ..... 14
\AuthByTxt ..... 38, 309
\author ..... 339

**B**

\belowcaptionskip .... 752, 762
\bibfont ..... 595, 612
\bibmark ..... 587, 666, 687
\bibname .... 586, 589, 666, 687
\bibpreamble ..... 594, 612
\bibsection ..... 583, 592
\bottomfraction ..... 735

**C**

\chapter .....
497, 524, 550, 562, 576, 586
\chaptermark ..... 647, 674
\ClassInfo ..... 62, 65
\contentsname 550, 553, 663, 684
\CopyrightAnot .... 52, 464, 508
\CopyrightHolder .....
..... 50, 458, 470, 507
\CopyrightPage ..... 458
\CopyrightTxt ..... 51, 463, 507
\CoStudyLeadersType ..... 42
\CoStudyLeaderType ..... 41
\cosupervisor ..... 381
\CoSupervisorsText .....
111, 121, 129, 137, 407, 432
\CoSupervisorsType .....
..... 46, 121, 129, 137
\CoSupervisorText .....
111, 120, 128, 136, 407, 432
\CoSupervisorType .....
..... 45, 120, 128, 136

**D**

\Datetxt ..... 54, 486
\dblfloatpagefraction ... 739
\dblfloatsep ..... 743
\dbltextfloatsep ..... 744
\dbltopfraction ..... 738
\DeclarationDate ..... 475
\DeclarationName .....
.... 59, 497, 500, 661, 682
\DeclarationPage ..... 489
\declaremark .... 498, 661, 682
\degree ..... 356
\DegreeName ..... 31, 357, 538
\DegreeNameLong ..... 34, 358

**E**

Eng (env.) ..... 23
\enlargethispage ..... 281
environments:
abstract ..... 513
Afr ..... 16
Eng ..... 23
SetMargins ..... 259
STB@adjustwidth ..... 248
STB@titlepage ..... 267
thebibliography ..... 591
theindex ..... 617
\evensidemargin .. 195, 196, 197

**F**

\faculty ..... 362
\FacultyName ..... 362, 363
\FixHorizParams .....
186, 207, 208, 222, 223, 237
\FixVertParams 176, 206, 221, 236
\floatpagefraction ..... 737
\floatsep ..... 740, 741, 742
\footnotesize ..... 328

**H**

\hspace ..... 430

**I**

\if@ABlock ..... 141, 199
\if@Authorpresent .... 308, 337
\if@GBlock ..... 141, 214
\if@mainmatter ..... 650, 677
\if@Masters ..... 107, 350
\if@PhD ..... 109, 353
\if@restonecol ..... 289,
512, 542, 555, 567, 581, 633
\if@WBlock ..... 141, 229
\ifpdf ..... 209, 224, 238
\ifSTB@Copyright ..... 471, 503
\ifSTB@cospvmult . 369, 407, 432
\ifSTB@cospvpresent .....
..... 366, 405, 429
\ifSTB@spvmult ... 368, 403, 425
\ifSTB@spvpresent 366, 401, 423
\ifSTB@spvrows ..... 370, 385
\indexmark ..... 626, 667, 688
\indexname .. 625, 628, 667, 688
\InputIfFileExists .... 61, 64

**L**

\l@figure ..... 569, 582
\l@table ..... 582
\languagename 15, 17, 25, 513, 515
\linewidth ..... 457
\listfigurename .....
..... 562, 565, 664, 685
\listoffigures ..... 556
\listoftables ..... 570
\lofmark ..... 563, 664, 685
\lotmark ..... 577, 665, 686

**M**

\maketitle ..... 293
\marginparpush ... 205, 220, 235
\marginparsep 197, 204, 219, 234
\marginparwidth ..... 197, 198
\MasterDescript ..... 55, 351
\MonthName ..... 58, 450, 454

**N**

\newcounter ..... 174, 175
\noalign ..... 406

**P**

\pagestyle ..... 698
\parbox ..... 457
\pdfpageheight ... 211, 226, 240
\pdfpagewidth .... 210, 225, 239
\phantomsection .... 9, 499,
526, 552, 564, 578, 588, 627
\PhDDescript ..... 56, 354
\ProcessOptions ..... 168
\promotor ..... 445
\ps@plain ..... 691
\ps@STBthesis ..... 641, 670
\put ..... 297

**Q**

\Q ..... 244

**S**

\sectionmark . . . . . 655
\selectlanguage . . . . 18, 26, 516
\setbiblabel . . . . . 614
\SetCopyrightHolder . . . . . 469
\SetCopyrightOff . . . . . 471
\setdate . . . . . 451
\setlength . . 178, 182, 183, 184, 188, 190, 192, 195, 197, 200, 201, 202, 203, 204, 205, 210, 211, 215, 216, 217, 218, 219, 220, 225, 226, 230, 231, 232, 233, 234, 235, 239, 240, 250, 251, 252, 253, 254, 255, 256, 260, 261, 276, 277, 282, 283, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752
SetMargins (env.) . . . . . 259
\SetSponsor . . . . . 455
\Signat . . . . . 53, 484
\STB@addlangcaptions . . . . . 82, 91, 95, 99, 103, 106
\STB@addlangextras . . . . . 82, 90, 94, 98, 102, 105
\STB@address . . . . 359, 360, 536
\STB@addto . . . . . 69, 84, 87
STB@adjustwidth (env.) . . . . 248
\STB@AFRstr . . . . . 13, 15, 17
\STB@author . . . . . 341, 343, 533
\STB@authorlong . . 314, 342, 345
\STB@basetype . . . . . 3, 148, 153, 158, 166, 169
\STB@beginTab . . . . 391, 396, 400, 413, 418, 422, 424, 431
\STB@Copyrightfalse . . . . . 474
\STB@Copyrighttrue . . . . . 472
\STB@cospv . . 372, 383, 400, 422
\STB@cospvand . . . . 399, 421, 440
\STB@cospvmultfalse . . . . . 369, 397, 419
\STB@cospvmulttrue . . . . . 441
\STB@cospvpresentfalse . . 367
\STB@cospvpresenttrue . . . 382
\STB@date . . . 327, 450, 454, 540
\STB@DeclDate 475, 477, 483, 484
\STB@endTab . . . . . 392, 396, 400, 414, 418, 422, 427, 434
\STB@ENGstr . . . . . 21, 24, 25, 26, 89, 93, 97, 101
\STB@frntpage . . . . . 294
\STB@headfamily . . . . . 699, 705, 711, 717, 723, 729
\STB@headfnt 638, 642, 643, 671
\STB@ifempt . 243, 378, 382, 452
\STB@month 446, 448, 450, 452, 454
\STB@numfnt . . . . . 638, 642, 643, 671, 695
\STB@putdecldate . . . . . 478, 502
\STB@putfrntpage . . . . . 294, 299
\STB@sponsor . . . . 328, 455, 457
\STB@spv . . . . 371, 380, 396, 418
\STB@spvalign 373, 379, 391, 413
\STB@spvand . . . . . 395, 417, 436
\STB@spvcols . . . . . 388, 412
\STB@spvmultfalse 368, 393, 415
\STB@spvmulttrue . . . . . 437
\STB@spvpresentfalse . . . . 366
\STB@spvpresenttrue . . . . . 378
\STB@spvrows . . . . . 386, 390
\STB@spvrowsfalse . . . . 370, 375
\STB@spvrowstrue . . . . . 376
\STB@spvset . . . . . 325, 384
\STB@tboxa 172, 394, 404, 416, 426
\STB@tboxb 173, 398, 408, 420, 433
\STB@tdima . . . . . 170, 178, 179, 183, 184, 188, 190, 192, 195, 260, 261, 262, 264, 276, 277, 279, 280, 281, 282, 283, 284, 286
\STB@tdimb . . 171, 261, 263, 264, 277, 278, 283, 285, 286
\STB@tempa . . . . . 26, 27
\STB@ThesisDescript . . . . . 321, 347, 349
STB@titlepage (env.) . . . . . 267
\STB@xifempt . . . . . 245, 246
\STB@year . . . . . 447, 449, 450, 453, 454, 463, 507
\STBcaptionsafrikaans . . . 106
\STBcaptionsenglish . . . . . 68, 91, 95, 99, 103
\STBextrasafrikaans . . . . . 105
\STBextrasenglish . . . . . 67, 90, 94, 98, 102
\STBName . . . . . 37
\STBTfiledate . . . . . 4
\STBTfileversion . . . . . 5
\studyleader . . . . . 444
\StudyLeadersType . . . . . 40
\StudyLeaderType . . . . . 39
\supervisor . . . . . 374, 444, 445
\SupervisorsText . . . . . 111, 119, 127, 135, 403, 425
\SupervisorsType . . . . . 44, 119, 127, 135
\SupervisorText . . . . . 111, 118, 126, 134, 403, 425
\SupervisorType 43, 118, 126, 134

**T**

\tableofcontents . . . . . 544
\textbf . . . . . 365
\textfb . . . . . 33, 36
\textfloatsep . . . . . 741
\textfraction . . . . . 736
\thanks . . . . . 333
thebibliography (env.) . . . . 591
theindex (env.) . . . . . 617
\ThesisDeclare . . . . . 57, 489
\ThesisDescript . . 348, 351, 354
\ThesisType . . . . . 111, 117, 125, 133, 538
\TitlePage . . . . . 298
\topfraction . . . . . 734
\TypeAssignment . . . . . 47, 117
\TypePhD . . . . . 49, 133
\TypeThesis . . . . . 48, 125

**V**

\value . . . . . 181, 182
\vfil . . . . . 304

**Y**

\year . . . . . 449