

# HsH-Classes — A set of $\text{\LaTeX}$ classes for use in Hochschule Hannover \*

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Maintained on <a href="https://lab.it.hs-hannover.de/qxx-tul-u1/latex-template-hsh">https://lab.it.hs-hannover.de/qxx-tul-u1/latex-template-hsh</a>
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## Contents

<b>1 The different classes</b>	<b>2</b>	5.2.1 Unknown options . . . .	10
<b>2 Document options</b>	<b>2</b>	5.2.2 Default options . . . .	10
2.1 Generic options share by all classes . . . . .	2	5.2.3 Loading the parent class . . . . .	11
2.2 Options for modifying the document . . . . .	2	5.3 Package loading . . . . .	11
2.3 Standalone specific options . .	3	5.3.1 Ensuring German works	11
<b>3 Provided commands</b>	<b>4</b>	5.3.2 Generally usefull packages . . . . .	11
3.1 Title matters . . . . .	4	5.3.3 Options for packages that could be loaded by the user . . . . .	12
3.2 Commands for document writing . . . . .	4	5.4 Custom commands . . . . .	14
3.3 Default $\text{\LaTeX}$ Commands that are modified . . . . .	4	5.4.1 Document seperation commands . . . . .	14
3.4 Micalanious commands . . . .	5	5.4.2 The Logo for Hochschule Hannover .	15
<b>4 Package loading</b>	<b>5</b>	5.4.3 Title matters . . . . .	15
4.1 Allways loaded packages . . . .	5	5.4.4 Commands for document writing . . . . .	16
4.2 Conditionally loaded Packages	5	5.4.5 Micalanious commands	17
4.3 Pre-configured, but not loaded Packages . . . . .	5	5.5 Document setup . . . . .	18
<b>5 Implementation</b>	<b>6</b>	5.5.1 Fonts and text styling .	18
5.1 Internal commands . . . . .	6	5.5.2 Page layout . . . . .	18
5.2 Option handling . . . . .	6	5.5.3 Styling $\text{\LaTeX}$ default constructs . . . . .	18
		5.5.4 Header and footer . . .	19
		5.5.5 Titlepage . . . . .	20
		5.6 Localisation . . . . .	24

## Abstract

The following documents a set of  $\text{\LaTeX}$  classes created for the Hochschule Hannover. They are intended to ease the workflow when writing documents by providing a common formatting basis that should work for pretty much everything a student will be expected to write. This can be simple one-paged documents, excercises, lab-reports, papers or bachelors and masters thesises.

The classes provide interfaces to modify commend requiriements, provide commands to get specifics like the logo and provide and pre-configure comonly needed packages. This should get you going imidealty and reduce the setuptime significantly.

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# 1 The different classes

The project classes provided by the Project all carry the HsH- prefix. Here is a list of the available classes and some explanation on when to use which class.

HsH-article	A article-class based on KOMA-Scripts scrartcl. It is designed for quick and compact documents and is useful for writing lab-protocols and alike. It does not have chapters and therefor never breaks to a new page on its own.
HsH-report	A report-class based on KOMA-Scripts scrreprt. This is probably the most useful class, as it can be used for a wide variety of documents (beginning with lab-reports and ending at complete thesis). The line between article and report is somewhat blurry, so use as you see fit.
HsH-standalone	A helper class based based on the standalone class. It is designed only for creating images as separate documents to keep things organized and compiler times low. It is useful for creating graphs, circuit diagrams or other kind of complex sub documents.

## 2 Document options

To configure the behavior and style of documents using this class, options can be passed via the `\documentclass[<options>]{<document-class>}` command.

It should be noted that all unknown keys will be passed to the parent class and a log-message issued.

### 2.1 Generic options share by all classes

These Options are available regardless of documentclass and modify common things.

fontfamily	The fontfamily= <i>&lt;opt&gt;</i> option configures which font-style is used. For convenience there are also short-forms provided. The available options are:
sans	
roman	
	sans   sans-serif A sans-serif font is used (similar to Arial)
	roman   serif A serif font is used (similar to Times-new-Roman)
language	The language= <i>&lt;opt&gt;</i> option set the main language you write in. It ensures texts like auto-generated headings are localised properly. You can pass in any language-name understood by the babel package. German is the default. For convenience there are also short-forms provided.
english	
german	
faculty	The faculty= <i>&lt;opt&gt;</i> option configures which faculties logo is used. For convenience there are also short-forms provided. The available options are:
f1	
f2	none   false A gray, non-faculty specific logo is used.
f3	
f4	1   f1 The blue logo of faculty 1 is used.
f5	2   f2 The green logo of faculty 2 is used.
	3   f3 The orange logo of faculty 3 is used.
	4   f4 The red logo of faculty 4 is used.
	5   f5 The purple logo of faculty 5 is used.

### 2.2 Options for modifying the document

The following options are only available for documents (so not utility classes).

linespacing	The linespacing= <i>&lt;opt&gt;</i> option configures the spacing in between lines. For convenience there are also short-forms provided. The available options are:
singlespacing	
onehalfspacing	
doublespacing	
	single No additional space is added in between lines.
	onehalf Aproximalty half a line of empty space is added inbetween lines.
	double About a full lineheight is left in between lines.
parskip	The parskip= <i>&lt;opt&gt;</i> option configures the spacing in between paragraphs. This is an extending option originally implemented by KOMA-Script.

<code>never</code>	No inter-paragraph spacing will be inserted even if additional vertical spacing is needed for vertical adjustment with <code>\flushbottom</code> .										
<code>never+</code>	No inter-paragraph spacing will be inserted. There must be at least a third of a line of free space at the end of a paragraph.										
<code>never*</code>	No inter-paragraph spacing will be inserted. There must be at least a quarter of a line of free space at the end of a paragraph.										
<code>...</code>	see <a href="#">KOMA-Script manual, Table 3.7</a> for more options.										
<code>headheight</code>	The <code>headheight=&lt;dim&gt;</code> option allows you to set the required size of the header. You may need to modify this if you get a <code>\headheight to low</code> error message. The emssage should tell you what value you need, but you can pass any valid length.										
<code>abstract</code>	The <code>abstract=&lt;opt&gt;</code> option allows you to configure different behaviors of the abstract. The availabel options are described below: <table> <tr> <td><code>keywords</code></td><td>Print the <code>\keywords</code> after the abstract.</td></tr> <tr> <td><code>nokeywords</code></td><td>Do <i>not</i> print the <code>\keywords</code> after the abstract.</td></tr> <tr> <td><code>totoc</code></td><td>The abstract will be listed in the table of contentes.</td></tr> <tr> <td><code>notoc</code></td><td>The abstract will <i>not</i> be listed in the table of contentes.</td></tr> </table>	<code>keywords</code>	Print the <code>\keywords</code> after the abstract.	<code>nokeywords</code>	Do <i>not</i> print the <code>\keywords</code> after the abstract.	<code>totoc</code>	The abstract will be listed in the table of contentes.	<code>notoc</code>	The abstract will <i>not</i> be listed in the table of contentes.		
<code>keywords</code>	Print the <code>\keywords</code> after the abstract.										
<code>nokeywords</code>	Do <i>not</i> print the <code>\keywords</code> after the abstract.										
<code>totoc</code>	The abstract will be listed in the table of contentes.										
<code>notoc</code>	The abstract will <i>not</i> be listed in the table of contentes.										
<code>toc</code>	The <code>toc=&lt;opt&gt;</code> option configures what is listed in the table of contents. <table> <tr> <td><code>totoc</code></td><td>The table of contentes will list itself.</td></tr> <tr> <td><code>notoc</code></td><td>The table of contentes will <i>not</i> list itself.</td></tr> <tr> <td><code>abstract</code></td><td>The abstract will be listed in the table of contentes.</td></tr> <tr> <td><code>noabstract</code></td><td>The abstract will <i>not</i> be listed in the table of contentes.</td></tr> <tr> <td><code>...</code></td><td>see <a href="#">KOMA-Script manual, Table 3.5</a> for more options</td></tr> </table>	<code>totoc</code>	The table of contentes will list itself.	<code>notoc</code>	The table of contentes will <i>not</i> list itself.	<code>abstract</code>	The abstract will be listed in the table of contentes.	<code>noabstract</code>	The abstract will <i>not</i> be listed in the table of contentes.	<code>...</code>	see <a href="#">KOMA-Script manual, Table 3.5</a> for more options
<code>totoc</code>	The table of contentes will list itself.										
<code>notoc</code>	The table of contentes will <i>not</i> list itself.										
<code>abstract</code>	The abstract will be listed in the table of contentes.										
<code>noabstract</code>	The abstract will <i>not</i> be listed in the table of contentes.										
<code>...</code>	see <a href="#">KOMA-Script manual, Table 3.5</a> for more options										
<code>todos</code>	The <code>todos</code> option is a simple switch that activates support for the <code>todonotes</code> package. It enables/disables the package as well as increasing the pagewidth to make space for the notes. You can use the commands from the package to make notes and other anotations (similar to how MS-Words comments work). When you pass <code>off</code>   <code>false</code> all the anotation will disaper from the PDF while still beeing in the source.										

**Note:** setting `todos=off` after having used the option will mostlikly produce compilation errors. These will go away after you remove the temporary files.

### Often relevant KOMA-Script options

The following options are implemented by the parrent classes and only listed here for completeness. For more detils, see [its manual](#).

<code>fontsize</code>	The <code>fontsize=&lt;size&gt;</code> options takes a size in pt. It is usually in therange of 10-12, but other sizes can work as well.
<code>paper</code>	The <code>paper=&lt;size&gt;</code> options accepts a number of options, most ISO formats are supported, but also others like <code>letter</code> or <code>legal</code> .
<code>twoside</code>	The <code>twoside</code> option sets your document up for doublesided printing. The header and footer will take this into account and binding-correction will be applide along the inner edge.
<code>BCOR</code>	The <code>BCOR=&lt;dim&gt;</code> option allows you to define a custom binding-correction. Any valid length can be put here, but to large of a value will shrink the outer margin to a not-desirable level.

## 2.3 Standalone specific options

The standalone utility class has some special options which are documented here.

<code>margin</code>	The <code>margin=&lt;dim&gt;</code> option controlls how much whicspace is added arround you standalone document. This usually looks better which is why the default is 0.25 cm, but you can supress it by passing 0 cm.
<code>multi</code>	The <code>multi=&lt;opt&gt;</code> option defines which enviroment make up a page. It can be passe more than once.

### 3 Provided commands

The classes define a set of commands which are explained in the following section.

`\HsHClassName` Each class defines the macro `\HsHClassName` to contain its classname. This is mostly useful so internals can reuse the classname, but you could also check against it if you needed to.

#### 3.1 Title matters

L<sup>A</sup>T<sub>E</sub>X has a set of default commands which are used to define data for the titlepage, like `\title` or `\author`. The classes define a few additional commands, which are documented here.

`\matrikelnr` The `\matrikelnr{<nr[, ..]>}` macro sets the matrikelnumber of the author(s). It can be a single number or a comma separated list of numbers. The numbers will be matched to the authors passed into `\author`.

`\professor` You can pass any text to `\professor{<text>}`, it will be printed on the bottom of the titlepage.

`\keywords` This macro can be used to define keywords which are relevant to your document. They will be printed as part of the abstract and be put into the PDF's meta-data.

#### Modifying the Logo

`\HsHlogoPath` The logo is loaded from a file whose name is read from `\HsHlogoPath`. Change it to use a different logo-file.

`\HsHlogoPage` As the PDF file can have multiple pages, the `\HsHlogoPage` command stores which page to load.

`\includeHsHlogohere` The macro `\includeHsHlogohere[<width>]` is used by `\maketitle` to produce the logo. But if you want it elsewhere, you can call this macro yourself.

#### 3.2 Commands for document writing

The following commands will be useful to you when writing a document.

`\declarationofauthorship` The command `\declarationofauthorship[<align>]` can be used to print a "declaration of authorship" in the current location, similar to how `tableofcontents` and `friends` work. It will produce a horizontal line, a text block containing the regulatory text and a signature block for every author. The command is localised for both English and German. Using the optional argument, you can define the positioning. Pass `t` for alignment at the top of the page and `b` for bottom alignment (*default*).

The three commands `\frontmatter`, `\mainmatter` and `\backmatter` are provided for report classes. They separate document sections and automatically set up page number styles.

`\frontmatter` `\frontmatter` sets the page numbers to capital Roman numerals. This is usually required for everything before the first chapter.

`\mainmatter` `\mainmatter` sets the page numbering to "normal" Arabic numbers. This is usually the style for the document content.

`\backmatter` `\backmatter` can be used for appendices and alike. It sets the page numbering to small Roman numerals.

#### 3.3 Default L<sup>A</sup>T<sub>E</sub>X Commands that are modified

Additionally, some of L<sup>A</sup>T<sub>E</sub>X's default commands are modified to better fit this class. This is documented here.

`\title` The `\title[<short-title>]{<title>}` command now takes an additional, optional argument. You can use it for a shorter version of your title, that will be used in the header to save on space.

`\maketitle` The `\maketitle` command if L<sup>A</sup>T<sub>E</sub>X default way to create a titlepage. We redefine it to produce a titlepage that matches the style typically used on the Hochschule Hannover. This includes the logo being printed, depending on the `f1` to `f5` document options. The command now also takes an options alignment-parameter: `\maketitle[<align>]`. You can pass `l` | `c` | `r` to get *left*, *center* or *right* alignment.

### 3.4 Miscellaneous commands

The following commands are mostly for internal use, but are part of the interface and might be useful in some cases.

`\ifsingleauthor` This allows you to check if `\author` holds one or multiple entries. Using this allows the user to display different things for these cases, for example switch words to plural, like this:  
`\ifsingleauthor{one}{multiple} person\ifsingleauthor{}{s}`

## 4 Package loading

The classes load some packages for internal use as well as loading and configuring common use packages. The details are documented in the following section.

### 4.1 Always loaded packages

`fontenc` for output encoding, set to the european characterset  
`babel` for language-specific typesetting  
`bookmark` creates bookmarks in the PDF  
`hyperref` for easy referencing and linking  
`caption` to customize captions and make references point to the beginning of the floats  
`graphicx` for importing and manipulating images  
`amsmath,amssymb,amsfonts` more options when typesetting math  
`lmodern` sets up the Latin-Modern font  
`setspace` used for configuring linespacing  
`enumitem` more powerful item-lists and enumerations

There are also some packages for internal functionality that shouldn't concern the user, but they are listed here for completeness.

`scrbase`  
`pgffor`

### 4.2 Conditionally loaded Packages

A subset of packages is only loaded (or loaded with specific options) depending on options passed to the package

`babel` gets configured depending on `language`  
`csquotes` for language-specific quotations marks  
`ziffer` only loaded for german documents, sets comma as decimal separator  
`todonotes` loaded depending on `todos`

### 4.3 Pre-configured, but not loaded Packages

These packages are configured by the class to work in a cooperative way. The user must load them manually in this preamble via `\usepackage{<pkg-name>}`, as loading them always bears additional, unnecessary overhead.

`biblatex` create a bibliography  
`siunitx` use units in text and equations  
`listings` typeset sourcecode snippets  
`csvsimple` import csv-files into tables  
`pgfplots` / `tikz` A powerful package for drawing and plotting data  
`circuitikz` A TikZ library for drawing circuits

## 5 Implementation

### 5.1 Internal commands

`\HsHClassName` The classname of specific class is stored in the `\HsHClassName` which gets used throughout the code.

```
1 \let\HsHClassName\@currname
```

There is also a second macro `\HsHClassName@ParentClass` which stores the parent classes name.

```
2 \def\HsHClassName@ParentClass{%
3 <article> scrartcl%
4 <report> scrreprt%
5 <standalone> standalone%
6 }
```

### 5.2 Option handling

The options are handled using features provided by the KOMA-Script ecosystem. To get access to this the `srcbase` package is loaded.

```
7 \RequirePackage{srcbase}
```

We also require some packages for some of the option, these are loaded next.

```
8 \RequirePackage{setspace}
```

A new family of keys is created and shared by all elements of this project. For that the `\DefineFamily` macro is used. The family name is *HsH*, matching the usual prefixes.

```
9 \DefineFamily{HsH}
```

Additionally each class-file represents a member in the family. This is defined using the `\DefineFamilyMember` macro. It's optional argument is set to the current filename by default, so we do not need to specify it, just the family name to attach it to.

```
10 \DefineFamilyMember{HsH}
```

`\HsH@Options@PassToParent` To be able to pass options to the parent class where needed easily, a command is defined. It also issues a log-message.

```
11 \newcommand{\HsH@Options@PassToParent}[1]{%
12   \ClassInfoNoLine{\HsHClassName}{passing option to parent class: #1}%
13   \PassOptionsToClass{#1}{\HsHClassName@ParentClass}%
14 }
```

`\HsH@Options@DeclareAlias` It is also useful to have short-versions of options. The following commands make it easy to declare these.

```
15 \newcommand{\HsH@Options@DeclareAlias}[3][HsH]{%
16   \DeclareOption{#2}{\FamilyExecuteOptions{#1}{#3}}%
17 }
```

`fontfamily` The first option to be defined is `fontfamily`. It's defined as a *Numerical* key so that it can accept multiple options and map them to a switch case.

```
18 \DefineFamilyKey{HsH}{fontfamily}{
19   \begingroup
20   \FamilySetNumerical{HsH}{parskip}{@tmp}{%
21     {sans}{0}, {sans-serif}{0},%
22     {roman}{1}, {serif}{1},%
23   }{#1}
24   \ifx\FamilyKeyState\FamilyKeyStateProcessed
25     \aftergroup\FamilyKeyStateProcessed
26     \ifcase\@tmp% 0
27       \endgroup
28       \renewcommand{\familydefault}{\sfdefault}
29       \if@atdocument\AfterKOMAoptions{\selectfont}\fi
30     \or% 1
31       \endgroup
```

```

32     \renewcommand{\familydefault}{\rmdefault}
33     \if@atdocument\AfterKOMAOptions{\selectfont}\fi
34     \else% should never be
35     \endgroup
36     \fi
37 \else
38 \endgroup
39 \FamilyKeyStateUnknownValue
40 \fi
41 }

```

`sans` For convinience, there are also two short-versions defined.

`roman`

```

42 \HsH@Options@DeclareAlias{sans}{fontfamily=sans}
43 \HsH@Options@DeclareAlias{roman}{fontfamily=roman}
44 \*!standalone

```

`linespacing` The linespacing options is also a *Numerical* option, mapping to three cases. They execute the appropriate commands of the setspace package.

```

45 \DefineFamilyKey{HsH}{linespacing}{
46   \begingroup
47   \FamilySetNumerical{HsH}{linespacing}{@tempa}{%
48     {single}{0},%
49     {onehalf}{1},%
50     {double}{2},%
51   }{#1}
52   \ifx\FamilyKeyState\FamilyKeyStateProcessed
53     \aftergroup\FamilyKeyStateProcessed
54     \ifcase\@tempa% 0
55       \endgroup
56       \if@atdocument\singlespacing\else\AtEndOfClass{\singlespacing}\fi
57     \or% 1
58       \endgroup
59       \if@atdocument\onehalfspacing\else\AtEndOfClass{\onehalfspacing\AfterTOCHead{\singlespacing}}\fi
60     \or% 2
61       \endgroup
62       \if@atdocument\doublespacing\else\AtEndOfClass{\doublespacing\AfterTOCHead{\singlespacing}}\fi
63     \else% should never be
64       \endgroup
65     \fi
66   \else
67     \endgroup
68     \FamilyKeyStateUnknownValue
69   \fi
70 }
71 }

```

`singlespacing` For convinience, there are also these short-versions defined.

`onehalfspacing`

`doublespacing`

```

72 \HsH@Options@DeclareAlias{singlespacing}{linespacing=single}
73 \HsH@Options@DeclareAlias{onehalfspacing}{linespacing=onehalf}
74 \HsH@Options@DeclareAlias{doublespacing}{linespacing=double}

```

`parskip` The parskip option is special in that it originally a KOMA-Script option that get expanded by this class. Only two new cases are defined here and everything unknown gets passed to the parent class.

It should also be noted that this option can't execute its code ideally, as the commands needed are only defined later when the parent class loads in. So the `\setparsizes` command is pushed into a hook.

```

75 \DefineFamilyKey{HsH}{parskip}{%
76   \begingroup
77   \FamilySetNumerical{HsH}{parskip}{@tempa}{%
78     {never+}{0},%
79     {never*}{1},%

```

```

80 }{#1}
81 \if@atdocument
82   \ClassError{\HsHClassName}{
83     option 'parskip' can only be configured in preamble!
84   }
85 \fi
86 \ifx\FamilyKeyState\FamilyKeyStateProcessed
87   \aftergroup\FamilyKeyStateProcessed
88   \ifcase\@tempa% 0
89     \endgroup
90     \AtEndOfClass{\setparsizes{\z@}{\z@}{.3333\linewidth \@plus 1fil}}
91   \or% 1
92     \endgroup
93     \AtEndOfClass{\setparsizes{\z@}{\z@}{.25\linewidth \@plus 1fil}}
94   \else% should never be
95     \endgroup
96   \fi
97 \else
98   \endgroup
99   \HsH@Options@PassToParrent{parskip=#1}
100   \FamilyKeyStateProcessed
101 \fi
102 }

```

**headheight** The headheight option just set the \headheight to the given value.

```

103 \def\HsH@opt@headheight{}
104 \FamilyStringKey{HsH}{headheight}{\HsH@opt@headheight}
105 \AtEndOfClass{%
106   \headheight=\HsH@opt@headheight%
107 }

```

**abstract** The abstract option sets multiple different switches and configurations. We first define the needed macros:

```

108 \newif\if@HsH@option@abstract@show@keywords
109 \def\HsH@abstract@heading{%
110   <article> \addsec%
111   <report> \addchap%
112 }

```

Now the actual option can be defined to handle all the cases.

```

113 \DefineFamilyKey{HsH}{abstract}{%
114   \begingroup
115     \FamilySetNumerical{HsH}{abstract}{\@tempa}{%
116       {keywords}{0},%
117       {nokeywords}{1},%
118       {totoc}{2},{toc}{2},%
119       {notoc}{3},{nottotoc}{3},%
120     }{#1}
121   \ifx\FamilyKeyState\FamilyKeyStateProcessed
122     \aftergroup\FamilyKeyStateProcessed
123     \ifcase\@tempa% 0
124       \endgroup
125       \@HsH@option@abstract@show@keywordstrue
126     \or% 1
127       \endgroup
128       \@HsH@option@abstract@show@keywordsfalse
129     \or% 2
130       \endgroup
131     \def\HsH@abstract@heading{%
132       <article> \addsec%
133       <report> \addchap%
134     }
135     \or% 3
136     \endgroup

```



```

137 \def\HsH@abstract@heading{%
138 <article> \addsec*%
139 <report> \addchap*%
140 }
141 \else% should never be
142 \endgroup
143 \fi
144 \else
145 \endgroup
146 \fi
147 }

```

toc The toc option is a KOMA-Script options we just extend. Options for the abstract and toc are added.

```

148 \DefineFamilyKey{HsH}{toc}{%
149 \begingroup
150 \FamilySetNumerical{HsH}{toc}{@tempa}{%
151 {totoc}{0},{toc}{0},%
152 {notoc}{1},{nottotoc}{1},%
153 {abstract}{2},%
154 {noabstract}{3},%
155 }{#1}
156 \ifx\FamilyKeyState\FamilyKeyStateProcessed
157 \aftergroup\FamilyKeyStateProcessed
158 \ifcase\@tempa% 0
159 \endgroup
160 \AtEndOfClass{\setuptoc{toc}{totoc}}
161 \or% 1
162 \endgroup
163 \AtEndOfClass{\unsettoc{toc}{totoc}}
164 \or% 2
165 \endgroup
166 \FamilyExecuteOptions{HsH}{abstract=totoc}
167 \or% 3
168 \endgroup
169 \FamilyExecuteOptions{HsH}{abstract=nottotoc}
170 \else% should never be
171 \endgroup
172 \fi
173 \else
174 \endgroup
175 \HsH@Options@PassToParent{toc=#1}
176 \FamilyKeyStateProcessed
177 \fi
178 }

```

For the twoside option we only redefine the default, everything else is handled by the parent class.

```

179 \DefineFamilyKey{HsH}{twoside}[semi]{%
180 \HsH@Options@PassToParent{twoside=#1,BCOR=1cm}
181 \FamilyKeyStateProcessed
182 }
183 </!standalone>

```

\HsH@opt@language First, the macro to store the languages name in is created. The default is nil, as babel will see this as no-language.

```

184 \def\HsH@opt@language{nil}

```

language The key is then defined to store its value inside the command. This allows the option to be called multiple times, but only the last set value will be passed on to babel.

```

185 \FamilyStringKey{HsH}{language}{\HsH@opt@language}

```

```

english For convinience, there are also these short-versions defined.
german 186 \HsH@Options@DeclareAlias{english}{language=english}
ngerman 187 \HsH@Options@DeclareAlias{german}{language=ngerman}
        188 \HsH@Options@DeclareAlias{ngerman}{language=ngerman}

\HsH@opt@faculty As we need a default value that is not zero, the macro needs to be defined an initialised
manually.
        189 \def\HsH@opt@faculty{1}

faculty The faculty options is once again a Numerical option, mapping the five faculties and storing
the selected one in \HsH@opt@faculty.
        190 \FamilyNumericalKey{HsH}{faculty}{HsH@opt@faculty}{%
        191   {0}{1}, {none}{1}, {false}{1}, {off}{1},%
        192   {1}{2}, {f1}{2},%
        193   {2}{3}, {f2}{3},%
        194   {3}{4}, {f3}{4},%
        195   {4}{5}, {f4}{5},%
        196   {5}{6}, {f5}{6},%
        197 }

f1 For convinience, there are also these short-versions defined.
f2 198 \HsH@Options@DeclareAlias{f1}{faculty=f1}
f3 199 \HsH@Options@DeclareAlias{f2}{faculty=f2}
f4 200 \HsH@Options@DeclareAlias{f3}{faculty=f3}
f5 201 \HsH@Options@DeclareAlias{f4}{faculty=f4}
    202 \HsH@Options@DeclareAlias{f5}{faculty=f5}

todos The boolean option todos is simply created using the commands from scrbase. Boolean
options allready default to true if called without and argument, so no need to define an
explicit alias.
        203 \FamilyBoolKey{HsH}{todos}{@todos}

For the standalone class the fontsize option is mocked to present a standardised interface.
A user might expect this option to be passable to this class and we shouldnt crete an anoying
error just for this.
        204 <*standalone>
        205 \DefineFamilyKey{HsH}{fontsize}{%
        206   \ClassInfoNoLine{\HsHClassName}{The 'fontsize' option is only a mock, its has not effect}
        207   \FamilyKeyStateProcessed
        208 }
        209 </standalone>

```

### 5.2.1 Unknown options

Unknown options will be passed to the parent class. For that a @else@ key is defined on the HsH family, which will be execute for every unknown key-value option. Unknown bare options are handled by the \DeclareOption\* command and will be passed there.

```

210 \DefineFamilyKey{HsH}{@else@}{
211   \HsH@Options@PassToParrent{#1}
212   \FamilyKeyStateProcessed
213 }
214 \DeclareOption*{
215   \HsH@Options@PassToParrent{\CurrentOption}
216 }

```

### 5.2.2 Default options

The different classes all execute a set of default options, which is handled by the following code.

```

217 \FamilyExecuteOptions{HsH}{%
218   fontfamily=sans-serif,

```

```

219 <!*standalone>
220   fontsize=11pt,
221   language=ngerman,
222 <article>   parskip=never+,
223 <report>   parskip=half+,
224   linespacing=single,
225   headheight=2.15\baselineskip,
226 </!standalone>
227 <*article | report>
228   toc=listof,
229   toc=bibliography,
230   abstract=keywords,
231 </article | report>
232   faculty=none,
233 <*standalone>
234   margin=0.25cm,
235   multi=tikzpicture,
236   multi=circuitikz,
237 </standalone>
238 }

```

Now we can process the options for the HsH family.

```
239 \FamilyProcessOptions{HsH}\relax
```

### 5.2.3 Loading the parent class

```
240 \LoadClass{\HsHClassName@ParrentClass}
```

## 5.3 Package loading

The classes load and configure some common packages to reduce the needed amount of boilerplate code in your preamble.

Additionally there are settings provided for packages that are used more rarely, but will be set up correctly if you decide to load them via `\usepackage{}`.

### 5.3.1 Ensuring German works

With modern LaTeX systems the encoding of inputfiles is UTF-8 by default, so the inputenc package is no longer required. Should the user still use a old setup or use a different encoding, he is responsible for loading inputenc himself.

The font-encoding for the pdf file is also set up to allow for the full european characterset.

```
241 \RequirePackage[T1]{fontenc}
242 \RequirePackage{type1ec}
```

To ensure localised translations of all displayed text automatically depend on the user-selected language, the babel package is loaded. This also allows for the use of the `\iflanguage` command, which is relevant later.

```
243 \RequirePackage[main=\HsH@opt@language]{babel}
```

Quotationsmarks are also very different between languages, so the following ensures the correct style for the correct language.

```
244 \RequirePackage[autostyle=true]{csquotes}
245 \MakeOuterQuote{"}
```

German uses a comma as the decimal separator, which collides with LaTeX's default english setting of using the comma as a thousands separator and therefore replacing it with some whitespace on printed version. Luckily loading the ziffer package sets this up to match the german standart.

```
246 \iflanguage{ngerman}{\RequirePackage{ziffer}}{}
```

### 5.3.2 Generally usefull packages

We load hyperref for clickable links, a interactive document outline in the PDF and configure it to write meta-data to the PDF.

```

247 (*!standalone)
248 \RequirePackage[hidelinks]{hyperref} % must load before 'bookmarks'
249 \RequirePackage{bookmark}
250 \AtBeginDocument{
251   \hypersetup{
252     pdfinfo={
253       Title={\@title},
254       Author={\@author},
255       Subject={\@subject},
256       Keywords={\@keywords}
257     }
258   }
259 }
260 \!/standalone)

```

The hyperref package has a problem when linking to images, clicking a link to one leads to the *bottom* of the float (where the caption is located), instead of to the *top*. Loading the caption package with the hypercap option fixes that.

```
261 \RequirePackage[hyperc=true]{caption}
```

To display images (mostly through the `\includegraphics` command) we require the `graphicx` package.

```
262 \RequirePackage{graphicx}
```

The `ams` family of packages contains a wide collection of math related commands that are generally useful.

```
263 \RequirePackage{amsmath,amssymb,amsfonts}
```

The `enumitem` package is very helpful for defining lists of any kind. We use it to provide a checklist implementation.

```
264 \RequirePackage{enumitem}
```

The `todonotes` package is great for annotation, but extremely expensive on compiletime. So we load it only if the user requests it. Also its commands are stubbed, so that they can be left in the sourcecode and just not output anything.

```

265 \if@todos
266   \PassOptionsToPackage{svgnames}{xcolor}
267   \AtEndOfClass{\RequirePackage{xcolor}}
268   \RequirePackage[
269     textsize=small,
270     figwidth=.6\textwidth
271   ]{todonotes}
272   \setuptodonotes{
273     backgroundcolor=orange!20!white,
274     linecolor=orange,
275     bordercolor=orange!60!white,
276   }
277 \else
278   \newcommand{\listoftodos}[1]{}
279   \newcommand{\todo}[2] [] {}
280   \newcommand{\missingfigure}[2] [] {}
281 \fi

```

Some more miscellaneous packages:

```
282 \RequirePackage{xcolor}
```

### 5.3.3 Options for packages that could be loaded by the user

Some packages are not always needed and potentially heavy to load in by default. But it's still useful to set default options for these packages.

These differ from the settings provided in `HsH-classes.cfg` in that they are defaults that apply allway and not user-configurable preferences which are user or even project specific.

For the `bibtex` we ensure the *biber* backend is selected, which matches the settings in `.latexmkrc`.

```
283 (*!article | report)
```

```

284 \PassOptionsToPackage{
285   backend=biber,
286   bibwarn=true,
287   url=true,
288   isbn=false,
289 }{biblatex}
290 \AddToHook{package/biblatex/after}{
291   \renewcommand*{\mkbibacro}[1]{\MakeUppercase{#1}}
292 }
293 </article | report>

```

For bibtex we load the free-standing units, mostly for backwards compatibility. We also ensure german language specific settings are applied.

```

294 \PassOptionsToPackage{free-standing-units}{siunitx}
295 \AddToHook{package/siunitx/after}{
296   \sisetup{
297     tight-spacing=true,
298     per-mode=symbol,
299     exponent-mode=engineering,
300     round-mode=places,
301     round-precision=3,
302   }
303   \iflanguage{ngerman}{
304     \sisetup{output-decimal-marker={,}}
305   }{}
306 }

```

For better compatibility with the listings package we load the scrhack package. We also pass some configurations to it if it gets loaded.

```

307 \RequirePackage{scrhack}
308 \AddToHook{package/siunitx/before}{\RequirePackage{xcolor}}
309 \AddToHook{package/siunitx/after}{
310   \lstset{
311     commentstyle=\color{gray},
312     keywordstyle=\color{FireBrick}\bfseries,
313     stringstyle=\color{DodgerBlue},
314     showstringspaces=false,
315     basicstyle=\ttfamily,
316     tabsize=4,
317     escapeinside={(*@){@*}},
318   }
319   \RequirePackage{lstautogobble}\lstset{autogobble=true}
320   \iflanguage{ngerman}{
321     \lstset{iterate={ö}{\ "O"}}1{Ä}{\ "A"}1{Ü}{\ "U"}1{ß}{\ "ss"}1{ü}{\ "u"}1{ä}{\ "a"}1{ö}{\ "o"}
322   }{}
323 }

```

The csvsimple is helpful when wanting to import CSV-files and display them as tables.

```

324 \PassOptionsToPackage{13}{csvsimple}
325 \AddToHook{package/csvsimple/after}{
326   \csvstyle{every csv}{separator=semicolon}
327 }

```

pgfplots is a powerful package for plotting data.

```

328 \AddToHook{package/pgfplots/after}{
329   \usepgfplotslibrary{fillbetween}
330   \usetikzlibrary{patterns}
331   \pgfplotsset{
332     compat=1.16,
333     /pgf/number format/read comma as period,
334     tick label style={font=\tiny},
335     legend style={font=\footnotesize},
336     MyPlots/.style = { % Style for all plots
337       width=.6\textwidth,
338       grid=major,

```

```

339     grid style={loosely dotted,gray!50},
340     legend pos=outer north east,
341     FM1/.style = {blue, thick, mark=x, mark size=1.5,samples=100},    % Format 1
342     FM2/.style = {orange, thick, mark=*, mark size=1,samples=100},    % Format 2
343     FM3/.style = {green, thick, mark=square*, mark size=1,samples=100}, % Format 3
344     FM4/.style = {red, thick, mark=diamond*, mark size=1,samples=100}, % Format 4
345     FM5/.style = {pink, thick, mark=triangel*, mark size=1,samples=100},% Format 5
346     errBars/.style = {error bars/.cd, y dir=both, y explicit, % ermöglicht Fehlerbalken
347         error mark options={mark size=1pt,rotate=90}},
348 }
349 }
350 \iflanguage{ngerman}{
351     \pgfplotsset{/pgf/number format/use comma}
352 }{}
353 }
354 \AddToHook{package/pgfplotstable/after}{
355     \pgfplotstableset{
356         col sep=semicolon, % global separator for csv files
357     }
358 }

```

The circuitikz needs to be configured so it matches typical European styles.

```

359 \PassOptionsToPackage{
360     european,
361     EFvoltages,
362     straightvoltages,
363     betterproportions
364 }{circuitikz}
365 \AddToHook{package/circuitikz/after}{
366     \ctikzset{
367         font=\footnotesize,
368         bipole annotation style/.style={font=\tiny ,inner sep=1pt},
369     }
370 }

```

For other packages we provide the settings more as a recommendation of what is useful. As the user might want to change these, we outsource this to a separate file and input it `\AtBeginDocument`. That way the user can just replace the file with his custom version.

```

371 \AtBeginDocument{
372     \makeatletter
373     \InputIfFileExists{HsH-classes.cfg}{
374         \ClassInfo{\HsHClassName}{Local config file HsH-classes.cfg used.}
375     }{
376         \ClassInfo{\HsHClassName}{No HsH-classes.cfg!! I hope you configured it yourself.}
377     }
378     \makeatother
379 }

```

## 5.4 Custom commands

### 5.4.1 Document separation commands

The following commands are only defined for book type classes by default. But they are also useful for the report class, so we define them in that case.

```
380 (*report)
```

`\if@mainmatter` We define a switch which stores if the document is currently at a mainmatter section. It defaults to true as the user needs to explicitly set the state to something different.

```
381 \newif\if@mainmatter\@mainmattertrue
```

As a page number change requires a fresh page, this is ensured first. We also need to make sure that on a two-sided document, the first page is always on the left.

`\frontmatter` The pagenumbering is set to capital roman numerals.

```
382 \newcommand{\frontmatter}{  
383   \if@twoside\cleardoubleoddpagel\else\clearpage\fi  
384   \@mainmatterfalse\pagenumbering{Roman}  
385 }
```

`\mainmatter` The pagenumbering is set to arabic numerals.

```
386 \newcommand{\mainmatter}{  
387   \if@twoside\cleardoubleoddpagel\else\clearpage\fi  
388   \@mainmattertrue\pagenumbering{arabic}  
389 }
```

`\backmatter` The pagenumbering is set to arabic numerals.

```
390 \newcommand{\backmatter}{  
391   \if@openright\cleardoubleoddpagel\else\clearpage\fi  
392   \@mainmatterfalse\pagenumbering{roman}  
393 }  
  
394 </report>
```

### 5.4.2 The Logo for Hochschule Hannover

The following macros are responsible for creating the logo. They load a specific page of a PDF file and display it.

`\HsHlogoPath` This macro contains the path to load the PDF from. It defaults to HSH-Logo.pdf, which is provided by this project inside the `scr/` folder.

```
395 \newcommand{\HsHlogoPath}{HSH-Logo.pdf}
```

`\HsHlogoPage` This macro stores the page to use from the PDF. It will be set via the `documentoption` `faculty`.

```
396 \newcommand{\HsHlogoPage}{\HsH@opt@faculty}
```

`\includeHsHlogohere` Calling this macro produces the logo in-place. You can specify the width as an optional argument. The default is 5cm.

If the file provided via `\HsHlogoPath` doesn't exist, the command will produce an error.

```
397 \newcommand{\includeHsHlogohere}[1][5cm]{  
398   \IfFileExists{\HsHlogoPath}{  
399     \includegraphics[width=#1,page=\HsHlogoPage]{\HsHlogoPath}  
400   }{  
401     \ClassError{\HsHClassName}{\HsHlogoPath\space not found!}{  
402       The HsH Logo is necessary for the titlepage! Try putting it next to your source file or u  
403     }  
404   }  
405 }
```

### 5.4.3 Title matters

```
406 <{*article | report}>
```

The following commands relate to the creation of the titlepage. They implement how the user can define the different data fields.

`\title` We redefine the `\title` command to take an optional argument. This is stored in the additional `\@shorttitle` macro.

```
407 \renewcommand{\title}[2][]{  
408   \gdef\@title{#2}  
409   \gdef\@shorttitle{#1}  
410 }
```

`\@shorttitle` This new macro stores a short version of the title. This will be used in places where the full title might overflow the available space.

```
411 \def\@shorttitle{\@empty}
```

`\gdef@with@and@as@comma` First we define a helpermacro that will fill a given macro while treating the `\and` command as a comma. This is needed for `\author` and `\matrikelnr` where we later treat them as comma-separated lists when the titlepage gets constructed.

```
412 \def\gdef@with@and@as@comma#1#2{{\def\and{,}\xdef#1{#2}}}
```

`\author` We redefine the `\author` command so that it sets `\@author`, but allowing for both comma and `\and` to be used as a separator.

```
413 \renewcommand{\author}[1]{\gdef@with@and@as@comma\@author{#1}}
```

The `\@author` macro is also set to `\@empty`, this makes it easier to handle it later.

```
414 \let\@author\@empty
```

`\matrikelnr` These macros set and store the matrikel-number (or set of numbers), which will be printed  
`\@matrikelnr` on the titlepage.

```
415 \newcommand{\matrikelnr}[1]{\gdef@with@and@as@comma\@matrikelnr{#1}}
```

```
416 \def\@matrikelnr{\@empty}
```

`\professor` These three macros-groups give options to the user to print peoples names on the titlepage,  
`\firstexaminer` who are relevant to the document, but not the author.

```
\secondexaminer 417 \newcommand{\professor}[1]{\gdef\@professor{#1}}
```

```
\@professor 418 \def\@professor{\@empty}
```

```
\@firstexaminer 419 \newcommand{\firstexaminer}[1]{\gdef\@firstexaminer{#1}}
```

```
\@secondexaminer 420 \def\@firstexaminer{\@empty}
```

```
421 \newcommand{\secondexaminer}[1]{\gdef\@secondexaminer{#1}}
```

```
422 \def\@secondexaminer{\@empty}
```

`\keywords` The macro-group defines and holds keywords which describe the document. They are used  
`\@keywords` when printing the abstract as well as in the PDF's meta-data.

```
423 \newcommand{\keywords}[1]{\gdef\@keywords{#1}}
```

```
424 \def\@keywords{\@empty}
```

```
425 \end{article} \end{report}
```

#### 5.4.4 Commands for document writing

`\declarationofauthorship` The declaration of authorship is not relevant for the standalone variant.

```
426 \if*!standalone
```

The `pgffor` package is required to handle the loop over the list of authors.

```
427 \RequirePackage{pgffor}
```

Now the command is defined. It takes an optional argument which defaults to `b`.

```
428 \newcommand{\declarationofauthorship}[1][b]{
```

First the argument is passed and an error raised for invalid arguments. Passing in `b` will push the declaration to the bottom of the page and add a horizontal line. Passing `t` simply adds some space.

```
429 \if#1b
```

```
430 \vspace*{\fill}
```

```
431 \hrule
```

```
432 \else\if#1t
```

```
433 \vspace*{2em}
```

```
434 \else
```

```
435 \ClassError{\HsHClassName}{Wrong Parameter for '\declarationofauthorship'}{
```

```
436 '\string\declarationofauthorship' only accepts 't' and 'b' as parameters.
```

```
437 }
```

```
438 \fi\fi
```

Now the actual declaration can be constructed. It uses the text from `\decofauthname` and `\decofauthtext`.

```
439 \vskip 3em
```

```
440 {\centering\bfseries\usekomafont{section}{\decofauthname}\par}
```

```
441 \vskip 3em
```

```
442 \decofauthtext\par
```



The last step is to loop over all authors by reading \@author and creating a signature box for each one. \thanks also needs to be cleared, as a footnote wouldn't make sense here.

```

443 \begingroup
444   \renewcommand{\thanks}{\sbox0}
445   \raggedleft
446   \foreach \tmp@ in \@author {
447     \if\tmp@\empty\else
448       \hskip 1em \parbox{4cm}{
449         \vskip 4em
450         \hrule\vskip 4pt
451         \raggedleft\footnotesize\tmp@
452       }%
453     \fi
454   }\par
455 \endgroup
456 }
```

\if@singleauthor To ensure \decofauthtext is properly spelled for one or multiple authors, we define a conditional that holds this information. Additionally we check the number of authors \AtBeginDocument and store it.

```

457 \newif\if@singleauthor
458 \AtBeginDocument{
459   \begingroup
460   \newcount\count@
461   \count@=\z@
462   \@for\tmp@:=\@author\do{\advance\count@\@ne}
463   \ifnum\count@>\@ne\global\@singleauthorfalse\else\global\@singleauthortrue\fi
464 \endgroup
465 }
```

\ifsingleauthor A macro to simply act on this condition is also provided. It will be used in text-definitions later on.

```

466 \newcommand{\ifsingleauthor}[2]{\if@singleauthor#1\else#2\fi}
```

\declarationAuthorship

```

467 \def\declarationAuthorship{%
468   \ClassWarning{\HsHClassName}{%
469     Command \string\declarationAuthorship\space is deprecate.\MessageBreak
470     Replace it with \string\declarationofauthorship.
471   }%
472   \declarationofauthorship%
473 }
474 </!stadnalone>
```

checklist (env.) Using the enumitem package, we define a helpful environment for creation checklist.

```

475 \newlist{checklist}{itemize}{2}
476 \setlist[checklist]{label=$\square$}
```

### 5.4.5 Miscellaneous commands

#### Utility commands

For writing absolute values, we provide the `\abs{⟨equ⟩}` command, which puts groable, vertical bars on both sides of the equation inside.

```

477 \newcommand{\abs}[1]{\ensuremath{\left\vert\right\vert#1\right\vert}}
```

#### Configuring mathmode-indices

The only hard requirements for documents writing on Hochschule Hannover is, that the indices in mathematic formulas must be typeset in an upright ("steil") font, not the default kursive font. We configure this by first defining a macro to replace the default `\sb` macro. We can then assign this to `_`. For that to work we need to change its catcode to make it modifiable.

**Note:** You can allways use `\sb` to use the original behaviour for special cases.

```
478 \def\@subinrm#1{\sb{\mathrm{#1}}}  
479 {\catcode'\_ =13 \global\let\_ =\@subinrm}
```

`\upsubscripts` Now we can define a command to activate this new behavior by changing the catcode of `_` to 13, which makes it a normal macro.

```
480 \newcommand\upsubscripts{\catcode'\_ =12}
```

`\normalsubscripts` To switch back we simply need to reset the catcode of `_` back to the original, which makes it a builidin operator with the default behavior.

```
481 \newcommand\normalsubscripts{\catcode'\_ =8}
```

## 5.5 Document setup

The following sets up the look and feel of the documents using this classe. All configuration and stylin is done here.

### 5.5.1 Fonts and text styling

```
482 \RequirePackage{lmodern}
```

### 5.5.2 Page layout

```
483 \<!*standalone>  
484 \areaset[current]{0.75\paperwidth}{0.8\paperheight}  
485 \if@todos  
486 \addtolength\paperwidth{5cm}  
487 \addtolength\marginparwidth{5cm}  
488 \fi  
489 \</!*standalone>
```

### 5.5.3 Styling L<sup>A</sup>T<sub>E</sub>X default constucts

#### Floats

```
490 \<!*standalone>
```

Floats should alwas prefer the *here* placement, than the *top* of the following page.

```
491 \renewcommand{\fps@figure}{h!t}  
492 \renewcommand{\fps@table}{h!t}
```

Floats should be centered by default and the width of the caption box is limited.

```
493 \g@addto@macro\@floatboxreset\centering  
494 \setcapwidth{0.8\textwidth}
```

The names of floating enviroments are redefined to show abreviations only.

```
495 \defcaptionname{english}\figurename{Fig.}  
496 \defcaptionname{german,ngerman}\figurename{Abb.}  
497 \defcaptionname{english}\tablename{Tab.}  
498 \defcaptionname{german,ngerman}\tablename{Tab.}
```

For subfigures we need to define a name used in autoreferences.

```
499 \AtBeginDocument{  
500 \makeatletter  
501 \ifpackageloaded{subfigure}{  
502 \let\subfigureautorefname\figureautorefname  
503 }{}%  
504 \makeatother  
505 }  
506 \</!*standalone>
```

#### Lists

For unordert liste the markers are redefined to look a littel nicer.

```
507 \renewcommand{\labelitemi}{\raisebox{.3ex}{\scalebox{0.7}{\bullet$}}}  
508 \renewcommand{\labelitemii}{\raisebox{.3ex}{\scalebox{0.7}{\circ$}}}  
509 \renewcommand{\labelitemiii}{\raisebox{-.1ex}{\scalebox{1.3}{\cdot$}}}  
510 \renewcommand{\labelitemiv}{\raisebox{.1ex}{-}}
```

## Abstract

We define some custom behavior for the abstract.

```
511 <!*standalone>
512 \renewenvironment{abstract}{
513   \quotation
514   \setparsizes{\z@}{\z@}{.25\linewidth \@plus 1fil}\selectfont
515   \HsH@abstract@heading{\abstractname}
516 }{%
517   \ifx\@keywords\@empty\else\if@HsH@option@abstract@show@keywords
518     \par\bigskip
519     \noindent\textbf{\keywordsname}\hskip 2em\@keywords
520   \fi\fi\par
521   \endquotation
522 }
523 </!standalone>
```

## Misc

We activate one of the commands defined above to make math-indices upright by default.

```
524 \upsubscripts
```

We want a ragged bottom instead of spreading the paragraphs over the page.

```
525 \raggedbottom
```

### 5.5.4 Header and footer

```
526 <*article | report>
```

The header and footer are styled using the low-level commands provided by the KOMA-Script package `scrlayer-scrpage`. We also disable the ruler shown in the heading of draft mode.

```
527 \RequirePackage{scrlayer-scrpage}
528 \FamilyOptions{KOMA}{headsepline,singlespacing=true}
529 \let\layercontentsmeasure\relax
```

First we define the new pagestyle `HsHheadings`.

```
530 \newpagestyle{HsHheadings}{
531   {
532     \parbox[b]{\sls@headwidth}{
533       \LaTeXraggedright
534       \ifx\@shorttitle\@empty\@title\else\@shorttitle\fi
535     }%
536   }
537   {
538     \parbox[b]{\sls@headwidth}{
539       \LaTeXraggedleft
540       \leftmark
541     }%
542   }
543   {
544     \parbox[b]{.45\sls@headwidth}{
545       \LaTeXraggedright
546       \ifx\@shorttitle\@empty\@title\else\@shorttitle\fi
547     }%
548     \hfill
549     \parbox[b]{.45\sls@headwidth}{
550       \LaTeXraggedleft
551       \headmark
552     }%
553   }
554   (\textwidth,.1pt)
555 }{
556   {\pagemark}
557   {\hfill\pagemark}
558   {\hfill\pagemark}
```

559 }

Than all generic settings are applied:

```
560 \clearpairofpagestyles
561 \ofoot*{\pagemark}
562 \pagestyle{HsHheadings}
563 <article>\automark{section}
564 <report>\automark{chapter}
565 <report>\renewcommand*{\chapterpagestyle}{HsHheadings}
566 </article|report>
```

### 5.5.5 Titlepage

`\maketitle` `\maketitle` is a wrapper for `\@maketitle` that just checks the parameter and issues an error message if it is incorrect. It also handles the different default for article or report.

```
567 <*article|report>
568 <article>\renewcommand\maketitle[1][c]{
569 <report>\renewcommand\maketitle[1][l]{
570   \if#1l\@maketitle{#1}\else%
571   \if#1c\@maketitle{#1}\else%
572   \if#1r\@maketitle{#1}\else%
573     \ClassWarning{HsHClassName}{unknown option for \maketitle}
574     \thispagestyle{empty}\null\clearpage
575   \fi\fi\fi
576 }
```

`\@maketitle` The definition of `\@maketitle` is mostly taken from the source-code of the KOMA-Script parentclass, but was modified to create the desired style.

```
577 \newtoks\@tabtoks
578 \newcommand\addtabtoks[1]{\global\@tabtoks\expandafter{\the\@tabtoks#1}}
579 \newcommand\eadddtabtoks[1]{\edef\mytmp{#1}\expandafter\addtabtoks\expandafter{\mytmp}}
580 % %%\newcommand*\resettabtoks{\global\@tabtoks{}}
581 \newcommand*\printtabtoks{\the\@tabtoks}
582 \addtokomafont{publishers}{\normalsize}
583 \g@addto@macro\titlepage{\singlespacing}
584 %
585 \renewcommand*\@maketitle[1]{
586   \expandafter\ifnum \csname scr@v03.12\endcsname>\scr@compatibility\relax
587   \else
588     \def\and{%
589       \end{tabular}
590       \hskip 1em \@plus.17fil
591       \begin{tabular}[t]{c}%
592     }
593   \fi
594 <*article>
595   \par
596   \ifx\@uppertitleback\@empty\else
597     \ClassWarning{KOMAClassName}{%
598       non empty \string\uppertitleback\space ignored
599       by \string\maketitle\MessageBreak
600       in 'titlepage=false' mode%
601     }
602   \fi
603   \ifx\@lowertitleback\@empty\else
604     \ClassWarning{KOMAClassName}{%
605       non empty \string\lowertitleback\space ignored
606       by \string\maketitle\MessageBreak
607       in 'titlepage=false' mode%
608     }
609   \fi
610 </article>
611 <report> \begin{titlepage}
612 <article> \begin{group}
```

```

613 (*report)
614   \if@titlepageiscoverpage
615     \edef\titlepage@restore{
616       \noexpand\endgroup
617       \noexpand\global\noexpand\@colht\the\@colht
618       \noexpand\global\noexpand\@colroom\the\@colroom
619       \noexpand\global\vsizethe\vsizethe
620       \noexpand\global\noexpand\@titlepageiscoverpagefalse
621       \noexpand\let\noexpand\titlepage@restore\noexpand\relax
622     }
623     \beginngroup
624     \topmargin=\dimexpr \coverpagetopmargin-1in\relax
625     \oddsidemargin=\dimexpr \coverpageleftmargin-1in\relax
626     \evensidemargin=\dimexpr \coverpageleftmargin-1in\relax
627     \textwidth=\dimexpr
628     \paperwidth-\coverpageleftmargin-\coverpagerightmargin\relax
629     \textheight=\dimexpr
630     \paperheight-\coverpagetopmargin-\coverpagebottommargin\relax
631     \headheight=0pt
632     \headsep=0pt
633     \footskip=\baselineskip
634     \@colht=\textheight
635     \@colroom=\textheight
636     \vsizethe\vsizethe
637     \columnwidth=\textwidth
638     \hsize=\columnwidth
639     \linewidth=\hsize
640   \else
641     \let\titlepage@restore\relax
642   \fi
643   \let\footnotesize\small
644   \let\footnoterule\relax
645   \let\footnote\thanks
646 \end{report}
647 \article \let\titlepage@restore\relax
648   \renewcommand*\thefootnote{\@fnsymbol\c@footnote}%
649   \let\@oldmakefnmark\@makefnmark
650   \renewcommand*\@makefnmark{\rlap\@oldmakefnmark}%
651 \article \next@tdpage
652   \ifx\@extratitle\@empty
653 \article \ifx\@frontispiece\@empty\else \mbox{}\fi
654 (*report)
655   \ifx\@frontispiece\@empty\else
656     \if@twoside\mbox{}\next@tdpage\fi
657     \noindent\@frontispiece\next@tdpage
658   \fi
659 \end{report}
660   \else
661 \article \@makeextratitle
662 (*report)
663   \noindent\@extratitle
664   \ifx\@frontispiece\@empty
665     \else
666       \next@tdpage
667       \noindent\@frontispiece
668     \fi
669     \next@tdpage
670 \end{report}
671   \fi
672 (*article)
673   \ifx\@frontispiece\@empty
674   \ifx\@extratitle\@empty\else\next@tdpage\fi
675   \else

```

```

676     \next@tpage
677     \@makefrontispiece
678     \next@tdpage
679     \fi
680     \global\@topnum=\z@
681 \end{article}
682 \setparsizes{\z@}{\z@}{\z@\@plus 1fil}\par@update@relative
683 \vspace*{1cm}
684 \begin{minipage}[t]{\textwidth}%
685     \ifx\@titlehead\@empty \else
686         \usekomafont{titlehead}{\@titlehead}%
687     \fi
688     \hfill
689 % image with referencepoint in lower left corner:
690     \raisebox{0pt}[\ht\strutbox][\dp\strutbox]{\includeHsHlogo}
691 \end{minipage}
692 \raisebox{10pt}{\rule{\textwidth}{0.5pt}}
693 \null
694 \begin{article} \vskip 2em
695 \begin{report} \vfill
696     \begin{group}
697         \if#1c\centering\fi
698         \if#1r\raggedleft\fi
699         \ifx\@subject\@empty\else
700             {\usekomafont{subject}{\@subject}\par}
701 \end{article} \vskip 1.5em
702 \end{report} \vskip 3em
703     \fi
704     {\usekomafont{title}{\huge\@title}\par}
705 \begin{article} \vskip .5em
706 \begin{report} \vskip 1em
707     {\ifx\@subtitle\@empty\else\usekomafont{subtitle}{\@subtitle}\par\fi}
708 \begin{article|report} \vskip 4em
709     {\ifx\@matrikelnr\@empty
710         \if\@author\@empty\else\usekomafont{author}{
711             \parbox{\dimexpr\linewidth}{
712                 \if#1c\centering\fi
713                 \if#1r\raggedleft\fi
714                 \@author
715             }
716         }\fi
717     \else
718         \if\@author\@empty\else
719             % sneaky comma needed after \@matrikelnr to deal with single item lists
720             \foreach \x [count=\i,evaluate=\i as \y using {\@matrikelnr,\@i-1}] in \@author {
721                 \usekomafont{author}{
722                     \def\arraystretch{1.2}
723                     \if#1l\begin{tabular}{@{}l l}\fi
724                     \if#1c\begin{tabular}{l l}\fi
725                     \if#1r\begin{tabular}{r r}\fi
726                     \printtabtoks
727                     \end{tabular}
728                 }%
729             \fi
730         \fi}
731 \begin{article} \vskip 1em
732 \begin{report} \vskip 1.5em
733     {\usekomafont{date}{\@date}\par}
734 \begin{article} \vskip 1em
735 \begin{report} \vskip \z@ \@plus3fill
736     \usekomafont{publishers}{
737         \def\arraystretch{1.2}
738         \if#1l\begin{tabular}{@{}l l}\fi

```

```

739     \if#1c\begin{tabular}{l l}\fi
740     \if#1r\begin{tabular}{r r@{}}\fi
741     \if\@professor\@empty\else\textbf{\professorname:}\&\@professor\\\fi
742     \if\@firstexaminer\@empty\else\textbf{\firstexaminername:}\&\@firstexaminer\\\fi
743     \if\@secondexaminer\@empty\else\textbf{\secondexaminername:}\&\@secondexaminer\\\fi
744     \end{tabular}
745   }
746   \ifx\@dedication\@empty\else
747     \vskip 2em
748     {\usekomafont{dedication}{\@dedication \par}}%
749   \fi
750 \end{article}
751 \par
752 \endgroup
753 \ifx\@dedication\@empty\else
754 \vskip 2em
755 \ifx\@dedication\@empty\else
756 \vskip 3em
757 \fi
758 \ifx\@dedication\@empty\else
759 \vskip 3em
760 \fi
761 \ifx\@dedication\@empty\else
762 \vskip 3em
763 \fi
764 \ifx\@dedication\@empty\else
765 \vskip 3em
766 \fi
767 \ifx\@dedication\@empty\else
768 \vskip 3em
769 \fi
770 \ifx\@dedication\@empty\else
771 \vskip 3em
772 \fi
773 \ifx\@dedication\@empty\else
774 \vskip 3em
775 \fi
776 \ifx\@dedication\@empty\else
777 \vskip 3em
778 \fi
779 \ifx\@dedication\@empty\else
780 \vskip 3em
781 \fi
782 \ifx\@dedication\@empty\else
783 \vskip 3em
784 \fi
785 \ifx\@dedication\@empty\else
786 \vskip 3em
787 \fi
788 \ifx\@dedication\@empty\else
789 \vskip 3em
790 \fi
791 \ifx\@dedication\@empty\else
792 \vskip 3em
793 \fi
794 \ifx\@dedication\@empty\else
795 \vskip 3em
796 \fi
797 \ifx\@dedication\@empty\else
798 \vskip 3em
799 \fi
800 \ifx\@dedication\@empty\else
801 \vskip 3em

```

```

802 \fi
803 \ifx\titlepage@restore\relax\else\clearpage\titlepage@restore\fi
804 \end{report}
805 \end{article} \endgroup
806 \end{report} \end{titlepage}
807 \setcounter{footnote}{0}
808 \expandafter\ifnum \csname scr@v3.12\endcsname>\scr@compatibility\relax
809 \let\thanks\relax
810 \let\maketitle\relax
811 \let\@maketitle\relax
812 \global\let\@thanks\@empty
813 \global\let\@author\@empty
814 \global\let\@date\@empty
815 \global\let\@title\@empty
816 \global\let\@subtitle\@empty
817 \global\let\@extratitle\@empty
818 \global\let\@frontispiece\@empty
819 \global\let\@titlehead\@empty
820 \global\let\@subject\@empty
821 \global\let\@publishers\@empty
822 \global\let\@uppertitleback\@empty
823 \global\let\@lowertitleback\@empty
824 \global\let\@dedication\@empty
825 \global\let\@matrikelnr\@empty
826 \global\let\@professor\@empty
827 \global\let\author\relax
828 \global\let\title\relax
829 \global\let\extratitle\relax
830 \global\let\titlehead\relax
831 \global\let\subject\relax
832 \global\let\publishers\relax
833 \global\let\uppertitleback\relax
834 \global\let\lowertitleback\relax
835 \global\let\dedication\relax
836 \global\let\date\relax
837 \global\let\matrikelnr\relax
838 \global\let\professor\relax
839 \fi
840 \global\let\and\relax
841 }
842 \end{article} \end{report}

```

## 5.6 Localisation

The following section contains language specific definitions of text used by the classes.

`\abstractname` The English word "Abstract" is preferred over the German translation.

```
843 \defcaptionname{german,ngerman}\abstractname{Abstract}
```

`\professorname` Define the commands content for the different supported languages.

```

\firstexaminername 844 \newcaptionname{english}\professorname{Professor}
\secondexaminername 845 \newcaptionname{german,ngerman}\professorname{Professor(in)/Lehrbeauftragte(r)}
846 \newcaptionname{english}\firstexaminername{First examiner}
847 \newcaptionname{german,ngerman}\firstexaminername{Erstpr{\u}fer(in)}
848 \newcaptionname{english}\secondexaminername{Second examiner}
849 \newcaptionname{german,ngerman}\secondexaminername{Zweitpr{\u}fer(in)}

```

`\decofauthname` Define the german translations for the command.

```

850 \newcaptionname{english}\decofauthname{Declaration of Authorship}
851 \newcaptionname{german,ngerman}\decofauthname{Selbstst{\u}ndigkeitserkl{\u}fung}

```

`\decofauthtext` Define the german translations for the command.

```
852 \newcaptionname{english}\decofauthtext{%
```



```

853 \ifsingleauthor{I}{We} hereby certify that the work \ifsingleauthor{I}{we}
854 \ifsingleauthor{am}{are} submitting is entirely of \ifsingleauthor{my}{our}
855 own making except where otherwise indicated. \ifsingleauthor{I}{We}
856 \ifsingleauthor{am}{are} aware of regulations concerning plagiarism,
857 including disciplinary actions that may result from it. Any use of the
858 works of any other author, in any form, is properly acknowledged at
859 their point of use.
860 }
861 \newcaptionname{german,ngerman}\decofauthtext{%
862 Hiermit best{"a}tige\ifsingleauthor{}{n} \ifsingleauthor{ich}{wir},
863 dass die folgende Arbeit eigenst{"a}ndig von \ifsingleauthor{mir}{uns}
864 allein erstellt und unter Ber{"u}cksichtigung der zur Verf{"u}gung
865 gestellten Aufgabenstellung sowie dem Arbeitsmaterial unter Angabe aller
866 verwendeten Quellen erarbeitet wurde. Die Regelungen und Konsequenzen
867 eines Plagiats, inklusive disziplinarischer Ma{"ss}nahmen, sind
868 \ifsingleauthor{mir}{uns} bewusst. Insbesondere wurden alle Zitate und
869 gedanklichen {"U}bernahmen als solche kenntlich gemacht.
870 }

```

\keywordsname Define the german translations for the command.

```

871 \newcaptionname{english}\keywordsname{Keywords}
872 \newcaptionname{german,ngerman}\keywordsname{Schl{"u}sselw{"o}rter}

```