

# 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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## 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 formating 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 therefore 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=opt` 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=opt` 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`

**todos** The todos option is a simple switch that activates support for the todonotes 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 annotations (similar to how MS-Words comments work). When you pass `off` | `false` all the annotation will disappear from the PDF while still being in the source.

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

## 2.2 Options for modifying the document

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

**linespacing** The `linespacing=opt` 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` Approximately half a line of empty space is added in between lines.

`double` About a full line height is left in between lines.

**parskip** The `parskip=opt` option configures the spacing in between paragraphs. This is an extended 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 message 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 available 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 contents.</td></tr> <tr> <td><code>notoc</code></td><td>The abstract will <i>not</i> be listed in the table of contents.</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 contents.	<code>notoc</code>	The abstract will <i>not</i> be listed in the table of contents.		
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<code>notoc</code>	The abstract will <i>not</i> be listed in the table of contents.										
<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 contents will list itself.</td></tr> <tr> <td><code>notoc</code></td><td>The table of contents will <i>not</i> list itself.</td></tr> <tr> <td><code>abstract</code></td><td>The abstract will be listed in the table of contents.</td></tr> <tr> <td><code>noabstract</code></td><td>The abstract will <i>not</i> be listed in the table of contents.</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 contents will list itself.	<code>notoc</code>	The table of contents will <i>not</i> list itself.	<code>abstract</code>	The abstract will be listed in the table of contents.	<code>noabstract</code>	The abstract will <i>not</i> be listed in the table of contents.	<code>...</code>	see <a href="#">KOMA-Script manual, Table 3.5</a> for more options
<code>totoc</code>	The table of contents will list itself.										
<code>notoc</code>	The table of contents will <i>not</i> list itself.										
<code>abstract</code>	The abstract will be listed in the table of contents.										
<code>noabstract</code>	The abstract will <i>not</i> be listed in the table of contents.										
<code>...</code>	see <a href="#">KOMA-Script manual, Table 3.5</a> for more options										

### Often relevant KOMA-Script options

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

<code>fontsize</code>	The <code>fontsize=&lt;size&gt;</code> options takes a size in pt. It is usually in the range 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 double-sided printing. The header and footer will take this into account and binding-correction will be applied 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 too 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 controls how much whitespace is added around your standalone document. This usually looks better which is why the default is 0.25 cm, but you can suppress it by passing 0 cm.
<code>multi</code>	The <code>multi=&lt;opt&gt;</code> option defines which environment makes up a page. It can be passed more than once.

## 3 Provided commands

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

<code>\HsHClassName</code>	Each class defines the macro <code>\HsHClassName</code> to contain its class name. This is mostly useful so internals can reuse the class name, 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 her.

- `\matrikelnr` The `\matrikelnr{<nr[, ..>}` macro sets the matrikelnumber of the author(s). It can be a single number or a comma seperated 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 titelpage.
- `\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 whos name is read from `\HsHlogoPath`. Change it to use a different logo-file.
- `\HsHlogoPage` As the PDF file can hae 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 cann call this macro yourself.

### 3.2 Commands for document writing

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

- `\declarationofauthorship` The command `\declarationofauthorship[<align>]` can be used to print a "declatation 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 separete document section and automatically set up `pagenumer` styles.
- `\frontmatter` `\frontmatter` set the pagenumers to capital roman numerals. This is usually required for everything before the first chapter.
- `\mainmatter` `\mainmatter` sets the pagenumbering to "normal" arabic numbers. This is usually the style for the document content.
- `\backmatter` `\backmatter` can be used for appendixes and alike. It sets the pagenumbering 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>Xs default commands are moddified 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 sytel typically used on the Hochschule Hannover. This incudes the logo beeing printed, depending on the `f1` to `f5` documentoptions. The command now also takes an options alignment-parameter: `\maketitle[<align>]`. You can pass `l` | `c` | `r` to get *left*, *center* or *right* alignment.

## 4 Package laoding

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

## 4.1 Allways loaded packages

fontenc for output encoding, set to the european characterset  
babel for langauge-specific typesetting  
bookmark creates bookmoarks 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

There are also some packages for internal functionalaty that shouln't conserne the user, but they are listed here for completteness.

scrbase  
pgffor

## 4.2 Conditionally loaded Packages

A subset of packages is only loaded (or loaded with specifig 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 seperator  
todonotes loaded depending on todos

## 4.3 Pre-configured Packages

These packages are coonfigured by the class to work in a cooperative way. The user must load them in this preable via `\usepackage{<pkg-name>}` however, as loading them allways bears additional, unnecicary overhead.

# 5 Implementation

## 5.1 Internal commands

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

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

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

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

## 5.2 Option handling

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

```
7 \RequirePackage{scrbase}
```

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 convenience, 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 option 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
64 \else% should never be
65 \endgroup
66 \fi
67 \else
68 \endgroup
69 \FamilyKeyStateUnknownValue
70 \fi
71 }

```

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

```

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

```

`parskip` The `parskip` option is special in that it originally is a KOMA-Script option that gets 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 immediately, 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 sets 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@chap{\addchap*}

```

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

```

110 \DefineFamilyKey{HsH}{abstract}{%
111   \begingroup
112   \FamilySetNumerical{HsH}{abstract}{@tempa}{%
113     {keywords}{0},%
114     {nokeywords}{1},%
115     {totoc}{2},{toc}{2},%
116     {notoc}{3},{nottotoc}{3},%
117   }{#1}
118   \ifx\FamilyKeyState\FamilyKeyStateProcessed
119     \aftergroup\FamilyKeyStateProcessed
120     \ifcase\@tempa% 0
121       \endgroup
122       \@HsH@option@abstract@show@keywordstrue
123     \or% 1
124       \endgroup
125       \@HsH@option@abstract@show@keywordsfalse
126     \or% 2
127       \endgroup
128       \def\HsH@abstract@chap{\addchap}
129     \or% 3
130       \endgroup
131       \def\HsH@abstract@chap{\addchap*}
132     \else% should never be
133       \endgroup
134     \fi
135   \else
136     \endgroup
137   \fi
138 }

```

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

```

139 \DefineFamilyKey{HsH}{toc}{%
140   \begingroup
141   \FamilySetNumerical{HsH}{toc}{@tempa}{%
142     {totoc}{0},{toc}{0},%
143     {notoc}{1},{nottotoc}{1},%
144     {abstract}{2},%
145     {noabstract}{3},%
146   }{#1}
147   \ifx\FamilyKeyState\FamilyKeyStateProcessed
148     \aftergroup\FamilyKeyStateProcessed
149     \ifcase\@tempa% 0
150       \endgroup
151       \AtEndOfClass{\setuptoc{toc}{totoc}}
152     \or% 1
153       \endgroup
154       \AtEndOfClass{\unsettoc{toc}{totoc}}
155     \or% 2
156       \endgroup
157       \FamilyExecuteOptions{HsH}{abstract=totoc}
158     \or% 3

```

```

159     \endgroup
160     \FamilyExecuteOptions{HsH}{abstract=nottotoc}
161     \else% should never be
162     \endgroup
163     \fi
164     \else
165     \endgroup
166     \HsH@Options@PassToParrent{toc=#1}
167     \FamilyKeyStateProcessed
168     \fi
169 }

```

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

```

170 \DefineFamilyKey{HsH}{twoside}[semi]{%
171   \HsH@Options@PassToParrent{twoside=#1,BCOR=1cm}
172   \FamilyKeyStateProcessed
173 }
174 \!/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.

```
175 \def\HsH@opt@language{nil}
```

`language` The key is than defined to store its value inside the command. This allows the option to be called multiple time, but only the last set value will be passed on to bable.

```
176 \FamilyStringKey{HsH}{language}{\HsH@opt@language}
```

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

```

german 177 \HsH@Options@DeclareAlias{english}{language=english}
ngerman 178 \HsH@Options@DeclareAlias{german}{language=ngerman}
179 \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 initalised manually.

```
180 \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`.

```

181 \FamilyNumericalKey{HsH}{faculty}{HsH@opt@faculty}{%
182   {0}{1}, {none}{1}, {false}{1}, {off}{1},%
183   {1}{2}, {f1}{2},%
184   {2}{3}, {f2}{3},%
185   {3}{4}, {f3}{4},%
186   {4}{5}, {f4}{5},%
187   {5}{6}, {f5}{6},%
188 }

```

`f1` For convinience, there are also these short-versions defined.

```

f2 189 \HsH@Options@DeclareAlias{f1}{faculty=f1}
f3 190 \HsH@Options@DeclareAlias{f2}{faculty=f2}
f4 191 \HsH@Options@DeclareAlias{f3}{faculty=f3}
f5 192 \HsH@Options@DeclareAlias{f4}{faculty=f4}
193 \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.

```
194 \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 should create an annoying error just for this.

```

195 <*standalone>
196 \DefineFamilyKey{HsH}{fontsize}{%
197   \ClassInfoNoLine{\HsHClassName}{The 'fontsize' option is only a mock, its has not effect}
198   \FamilyKeyStateProcessed
199 }
200 </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 executed for every unknown key-value option. Unknown bare options are handled by the `\DeclareOption*` command and will be passed there.

```

201 \DefineFamilyKey{HsH}{@else@}{
202   \HsH@Options@PassToParrent{#1}
203   \FamilyKeyStateProcessed
204 }
205 \DeclareOption*{
206   \HsH@Options@PassToParrent{\CurrentOption}
207 }

```

### 5.2.2 Default options

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

```

208 \FamilyExecuteOptions{HsH}{%
209   fontfamily=sans-serif,
210 <!*standalone>
211   fontsize=11pt,
212   language=ngerman,
213 <article> parskip=never+,
214 <report> parskip=half+,
215   linespacing=single,
216   headheight=2.15\baselineskip,
217 </!standalone>
218 <*article | report>
219   toc=listof,
220   toc=bibliography,
221   abstract=keywords,
222 </article | report>
223   faculty=none,
224 <*standalone>
225   margin=0.25cm,
226   multi=tikzpicture,
227   multi=circuitikz,
228 </standalone>
229 }

```

Now we can process the options for the `HsH` family.

```

230 \FamilyProcessOptions{HsH}\relax

```

### 5.2.3 Loading the parent class

```

231 \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.

```
232 \RequirePackage[T1]{fontenc}
233 \RequirePackage{type1ec}
```

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

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

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

```
235 \RequirePackage[autostyle=true]{csquotes}
236 \MakeOuterQuote{"}
```

German uses a comma as the decimal separator, which collides with L<sup>A</sup>T<sub>E</sub>Xs 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.

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

### 5.3.2 Generally usefull packages

We load hyperref for clickable links and configure it to write meta-date to the PDF.

```
238 \RequirePackage[hidelinks]{hyperref} % must load before 'bookmarks'
239 \RequirePackage{bookmark}
240 <{*!standalone}
241 \AtBeginDocument{
242   \hypersetup{
243     pdfinfo={
244       Title={\@title},
245       Author={\@author},
246       Subject={\@subject},
247       Keywords={\@keywords}
248     }
249   }
250 }
251 </!standalone>
```

The todonotes package is greate for anotation, but extremly expensive on compiletime. So we load it only if the user requests it. Also its commands are stubed, so that they can be left in the sourcecode and jut not output anything.

```
252 \if@todos
253   \PassOptionsToPackage{
254     textsize=small,
255     figwidth=.6\textwidth
256   }{todonotes}
257   \RequirePackage{todonotes}
258 \else
259   \newcommand{\listoftodos}[1]{}
260   \newcommand{\todo}[2] []{}
261   \newcommand{\missingfigure}[2] []{}
262 \fi

263 \RequirePackage[hypcap=true]{caption}
264 \RequirePackage{graphicx}
265 \RequirePackage{amsmath,amssymb,amsfonts}
266 \RequirePackage{svgnames}{xcolor}
```

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

Some package are not always needed and potentially heavy to load in by default. But its still usefull 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 selcted, which matches the settings in `.latexmkrc`.

```
267 (*article|report)
268 \PassOptionsToPackage{backend=biber}{biblatex}
269 \AtBeginDocument{
270   \makeatletter
271   \@ifpackageloaded{biblatex}{
272     \renewcommand*{\mkbibacro}[1]{\MakeUppercase{#1}}
273   }{}%
274   \makeatother
275 }
276 \end{document}
```

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

```
277 \PassOptionsToPackage{free-standing-units}{siunitx}
278 \AtBeginDocument{
279   \makeatletter
280   \@ifpackageloaded{siunitx}{
281     \iflanguage{ngerman}{
282       \sisetup{output-decimal-marker={,}}
283     }{}
284   }{}
285   \makeatother
286 }
```

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

```
287 \RequirePackage{scrhack}
288 \AtBeginDocument{
289   \makeatletter
290   \@ifpackageloaded{listings}{
291     \RequirePackage{lstautogobble}\lstset{autogobble=true}
292     \iflanguage{ngerman}{
293       \lstset{iterate={Ö}{\0}}{Ä}{\A}{Ü}{\U}{ß}{\ss}{ü}{\u}{ä}{\a}{ö}{\o}
294     }{}
295   }{}
296   \makeatother
297 }
```

The circuitikz needs to be configure so it matches typical european styles.

```
298 \PassOptionsToPackage{european,EFvoltages,straightvoltages,betterproportions}{circuitikz}
```

For other packages we provide the settings more as a recommendation of what is usefull.

As the user might want to change these, we outsource this to a separat file and input it `\AtBeginDocument`. That way the user can just replace the file with his custom version.

```
299 \AtBeginDocument{
300   \makeatletter
301   \InputIfFileExists{HsH-classes.cfg}{
302     \ClassInfo{\HsHClassName}{Local config file HsH-classes.cfg used.}
303   }{
304     \ClassInfo{\HsHClassName}{No HsH-classes.cfg!! I hope you configered it yourself.}
305   }
306   \makeatother
307 }
```

## 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.

```
308 \*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.

```
309 \newif\if@mainmatter\@mainmattertrue
```

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

`\frontmatter` The pagenumbers are set to capital roman numerals.

```
310 \newcommand{\frontmatter}{
311   \if@twoside\cleardoubleoddpage\else\clearpage\fi
312   \@mainmatterfalse\pagenumbering{Roman}
313 }
```

`\mainmatter` The pagenumbers are set to arabic numerals.

```
314 \newcommand{\mainmatter}{
315   \if@twoside\cleardoubleoddpage\else\clearpage\fi
316   \@mainmattertrue\pagenumbering{arabic}
317 }
```

`\backmatter` The pagenumbers are set to arabic numerals.

```
318 \newcommand{\backmatter}{
319   \if@openright\cleardoubleoddpage\else\clearpage\fi
320   \@mainmatterfalse\pagenumbering{roman}
321 }
```

```
322 \*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.

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

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

```
324 \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 5 cm.

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

```
325 \newcommand{\includeHsHlogohere}[1][5cm]{
326   \IfFileExists{\HsHlogoPath}{
327     \includegraphics[width=#1,page=\HsHlogoPage]{\HsHlogoPath}
328   }{
329     \ClassError{\HsHClassName}{\HsHlogoPath\space not found!}{
330       The HsH Logo is necessary for the titlepage! Try putting it next to your source file or u
331     }
332   }
333 }
```

### 5.4.3 Title matters

334 (\*article | report)

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

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

335 \let\@author\@empty

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

336 \renewcommand{\title}[2][]{

337 \gdef\@title{#2}

338 \gdef\@shorttitle{#1}

339 }

`\@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.

340 \def\@shorttitle{\@empty}

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

341 \newcommand{\matrikelnr}[1]{\gdef\@matrikelnr{#1}}

342 \def\@matrikelnr{\@empty}

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

`\secondexaminer` 343 \newcommand{\professor}[1]{\gdef\@professor{#1}}

`\@professor` 344 \def\@professor{\@empty}

`\@firstexaminer` 345 \newcommand{\firstexaminer}[1]{\gdef\@firstexaminer{#1}}

`\@secondexaminer` 346 \def\@firstexaminer{\@empty}

347 \newcommand{\secondexaminer}[1]{\gdef\@secondexaminer{#1}}

348 \def\@secondexaminer{\@empty}

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

349 \newcommand{\keywords}[1]{\gdef\@keywords{#1}}

350 \def\@keywords{\@empty}

351 \end{article} | report)

### 5.4.4 Commands for document writing

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

352 (\*!standalone)

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

353 \RequirePackage{pgffor}

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

354 \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.

355 \if#1b

356 \vspace\*{\fill}

357 \hrule

358 \else\if#1t

359 \vspace\*{2em}

360 \else

361 \ClassError{\HsHClassName}{Wrong Parameter for '\declarationofauthorship'}{

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

363 }

364 \fi\fi

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

```
365 \vskip 3em
366 {\centering\bfseries\usekomafont{section}{\decofauthname}\par}
367 \vskip 3em
368 \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.

```
369 \begingroup
370 \renewcommand{\thanks}{\sbox0}
371 \raggedleft
372 \foreach \tmp@ in \@author {
373 \if\tmp@empty\else
374 \hskip 1em \parbox{4cm}{
375 \vskip 4em
376 \hrule\vskip 4pt
377 \raggedleft\footnotesize\tmp@
378 }%
379 \fi
380 }\par
381 \endgroup
382 }
```

`\ifsingleauthor` 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.

```
383 \newif\ifsingleauthor
384 \AtBeginDocument{
385 \begingroup
386 \newcount\count@
387 \count@=\z@
388 \@for\tmp@:=\@author\do{\advance\count@\@ne}
389 \ifnum\count@>\@ne\global\singleauthorfalse\else\global\singleauthortrue\fi
390 \endgroup
391 }
```

define the localised texts

```
392 \newcommand{\decofauthname}{Declaration of Authorship}
393 \newcaptionname{english}\decofauthname{Declaration of Authorship}
394 \newcaptionname{german,ngerman}\decofauthname{Selbstst\"andigkeitserkl\"arung}
395 %
396 \newcommand{\decofauthtext}{Language not supported!}
397 \newcaptionname{english}\decofauthtext{%
398 \ifsingleauthor{I}\else{We}\fi\space hereby certify that the work \ifsingleauthor{I}\else{we}
399 \ifsingleauthor{am}\else{are}\fi\space submitting is entirely of \ifsingleauthor{my}\else{our}
400 making except where otherwise indicated. \ifsingleauthor{I}\else{We}\fi\space
401 \ifsingleauthor{am}\else{are}\fi\space aware of regulations concerning plagiarism, including
402 disciplinary actions that may result from it. Any use of the works of any other author, in a
403 is properly acknowledged at their point of use.
404 }
405 \newcaptionname{german,ngerman}\decofauthtext{%
406 Hiermit best\{"a\}t\ifsingleauthor\else{n}\fi\space \ifsingleauthor{ich}\else{wir}\fi, dass
407 folgende Arbeit eigenst\{"a\}ndig von \ifsingleauthor{mir}\else{uns}\fi\space allein erstellt
408 unter Ber\{"u\}cksichtigung der zur Verf\{"u\}gung gestellten Aufgabenstellung sowie dem Arbeit
409 unter Angabe aller verwendeten Quellen erarbeitet wurde. Die Regelungen und Konsequenzen ein
410 Plagiats, inklusive disziplinarischer Ma\{"s\}nahmen, sind \ifsingleauthor{mir}\else{uns}\fi
411 bewusst. Insbesondere wurden alle Zitate und gedanklichen \{"U\}bernahmen als solche kenntlich
412 }
```

`\declarationAuthorship`

```
413 \def\declarationAuthorship{%
414 \ClassWarning{\HsHClassName}{%
```

```

415 Command \string\declarationAuthorship\space is deprecate.\MessageBreak
416 Replace it with \string\declarationofauthorship.
417 }%
418 \declarationofauthorship%
419 }
420 </!standalone>

```

## 5.4.5 Micalanious commands

### Utility commands

For writing absolout values, we provide the `\abs{ $\langle equ \rangle$ }` command, which puts groable, vertical bars on both sides of the equation inside.

```

421 \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 typset 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 than assign this to `_`. For that to work we need to change its catcode to make it modifyable.

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

```

422 \def\@subinrm#1{\sb{\mathrm{#1}}}
423 {\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.

```

424 \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.

```

425 \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

```

426 \RequirePackage{lmodern}

```

### 5.5.2 Page layout

```

427 <!*standalone>
428 \areaset[current]{0.75\paperwidth}{0.8\paperheight}
429 \if@todos
430 \addtolength\paperwidth{5cm}
431 \addtolength\marginparwidth{5cm}
432 \fi
433 </!standalone>

```

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

#### Floats

```

434 <!*standalone>

```

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

```

435 \renewcommand{\fps@figure}{h!t}
436 \renewcommand{\fps@table}{h!t}

```

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

```

437 \g@addto@macro\floatboxreset\centering
438 \setcapwidth{0.8\textwidth}

```

The names of floating environments are redefined to show abbreviations only.

```
439 \defcaptionname{english}\figurename{Fig.}
440 \defcaptionname{german,ngerman}\figurename{Abb.}
441 \defcaptionname{english}\tablename{Tab.}
442 \defcaptionname{german,ngerman}\tablename{Tab.}
```

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

```
443 \AtBeginDocument{
444   \makeatletter
445   \@ifpackageloaded{subfigure}{
446     \let\subfigureautorefname\figureautorefname
447   }{}%
448   \makeatother
449 }
450 \</!standalone>
```

## Lists

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

```
451 \renewcommand{\labelitemi}{\raisebox{.3ex}{\scalebox{0.7}{\bullet$}}}
452 \renewcommand{\labelitemii}{\raisebox{.3ex}{\scalebox{0.7}{\circ$}}}
453 \renewcommand{\labelitemiii}{\raisebox{.1ex}{-}}
454 \renewcommand{\labelitemiv}{\raisebox{-.1ex}{\scalebox{1.3}{\cdot$}}}
```

## Abstract

We define some custom behavior for the abstract.

```
455 \defcaptionname{german,ngerman}\abstractname{Abstract}
456 \newcaptionname{english}\keywordsname{Keywords}
457 \newcaptionname{german,ngerman}\keywordsname{Schl{"u}sselw{"o}rter}
458 \renewenvironment{abstract}{
459   \quotation
460   \setparsizes{\z@}{\z@}{.25\linewidth \@plus 1fil}\selectfont
461   \HsH@abstract@chap{\abstractname}
462 }{%
463   \ifx\@keywords\@empty\else\if@HsH@option@abstract@show@keywords
464     \par\bigskip
465     \noindent\textbf{\keywordsname}\hskip 2em\@keywords
466   \fi\fi\par
467   \endquotation
468 }
```

## Misc

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

```
469 \upsubscripts
```

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

```
470 \raggedbottom
```

The ruler shown in the top and left margin with the draft option is removed.

```
471 \let\layercontentsmeasure\relax
```

## 5.5.4 Header and footer

```
472 (*article | report)
```

The header and footer are styled using the low-level commands provided by the KOMA-Script package scrlayer-scrpage.

```
473 \RequirePackage{scrlayer-scrpage}
474 \FamilyOptions{KOMA}{headsepline,singlespacing=true}
```

First we define the new pagestyle HsHheadings.

```
475 \newpagestyle{HsHheadings}{
476   {
477     \parbox[b]{\sls@headwidth}{
```

```

478     \LaTeXraggedright
479     \ifx\@shorttitle\@empty\@title\else\@shorttitle\fi
480 }%
481 }
482 {
483     \parbox[b]{\sls@headwidth}{
484         \LaTeXraggedleft
485         \leftmark
486     }%
487 }
488 {
489     \parbox[b]{.45\sls@headwidth}{
490         \LaTeXraggedright
491         \ifx\@shorttitle\@empty\@title\else\@shorttitle\fi
492     }%
493     \hfill
494     \parbox[b]{.45\sls@headwidth}{
495         \LaTeXraggedleft
496         \headmark
497     }%
498 }
499 (\textwidth,.1pt)
500 }{
501     {\pagemark}
502     {\hfill\pagemark}
503     {\hfill\pagemark}
504 }

```

Then all generic settings are applied:

```

505 \clearpaairofpagestyles
506 \ofoot*{\pagemark}
507 \pagestyle{HsHheadings}
508 <article>\automark{section}
509 <report>\automark{chapter}
510 <report>\renewcommand*{\chapterpagestyle}{HsHheadings}
511 </article|report>

```

### 5.5.5 Titlepage

`\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.

```

512 <*article|report>
513 \newcommand{\professortext}{Professor}
514 \newcommand{\firstexaminertext}{First examiner}
515 \newcommand{\secondexaminertext}{Second examiner}
516 \newcaptionname{english}\professortext{Professor}
517 \newcaptionname{english}\firstexaminertext{First examiner}
518 \newcaptionname{english}\secondexaminertext{Second examiner}
519 \newcaptionname{german,ngerman}\professortext{Professor(in)/Lehrbeauftragte(r)}
520 \newcaptionname{german,ngerman}\firstexaminertext{Erstpr{\u}fer(in)}
521 \newcaptionname{german,ngerman}\secondexaminertext{Zweitpr{\u}fer(in)}
522 \newtoks\@tabtoks
523 \newcommand\addtabtoks[1]{\global\@tabtoks\expandafter{\the\@tabtoks#1}}
524 \newcommand\eadddtabtoks[1]{\edef\mytmp{#1}\expandafter\addtabtoks\expandafter{\mytmp}}
525 %%\newcommand*\resettabtoks{\global\@tabtoks{}}
526 \newcommand*\printtabtoks{\the\@tabtoks}
527 \addtokomafont{publishers}{\normalsize}
528 \g@addto@macro\titlepage{\singlespacing}
529 %
530 <article>\renewcommand\maketitle[1][c]{
531 <report>\renewcommand\maketitle[1][l]{
532     \expandafter\ifnum \csize scr@v@3.12\endcsname>\scr@compatibility\relax
533     \else
534         \def\and{%
535             \end{tabular}

```

```

536     \hskip 1em \@plus.17fil
537     \begin{tabular}[t]{c}%
538   }
539   \fi
540 (*article)
541   \par
542   \ifx\@uppertitleback\@empty\else
543     \ClassWarning{\KOMAClassName}{%
544       non empty \string\uppertitleback\space ignored
545       by \string\maketitle\MessageBreak
546       in 'titlepage=false' mode%
547     }
548   \fi
549   \ifx\@lowertitleback\@empty\else
550     \ClassWarning{\KOMAClassName}{%
551       non empty \string\lowertitleback\space ignored
552       by \string\maketitle\MessageBreak
553       in 'titlepage=false' mode%
554     }
555   \fi
556 (/article)
557 (report) \begin{titlepage}
558 (article) \begin{group
559   \let\@param#1
560   \ifx\@param\@empty
561     \ClassError{\myClassName}{\maketitle\space with empty option}{
562       \maketitle[] has been called (with an empty parameter), this doesn't work.
563       Use \maketitle instead.
564     }
565   \fi
566 (*report)
567   \if@titlepageiscoverpage
568     \edef\tITLEPAGE@restore{
569       \noexpand\endgroup
570       \noexpand\global\noexpand\@colht\the\@colht
571       \noexpand\global\noexpand\@colroom\the\@colroom
572       \noexpand\global\vsizethe\vsizethe
573       \noexpand\global\noexpand\@titlepageiscoverpagefalse
574       \noexpand\let\noexpand\tITLEPAGE@restore\noexpand\relax
575     }
576   \begin{group
577     \topmargin=\dimexpr \coverpagetopmargin-1in\relax
578     \oddsidemargin=\dimexpr \coverpageleftmargin-1in\relax
579     \evensidemargin=\dimexpr \coverpageleftmargin-1in\relax
580     \textwidth=\dimexpr
581     \paperwidth-\coverpageleftmargin-\coverpagerightmargin\relax
582     \textheight=\dimexpr
583     \paperheight-\coverpagetopmargin-\coverpagebottommargin\relax
584     \headheight=0pt
585     \headsep=0pt
586     \footskip=\baselineskip
587     \colht=\textheight
588     \colroom=\textheight
589     \vsizethe\textheight
590     \columnwidth=\textwidth
591     \hsizethe\columnwidth
592     \linewidth=\hsizethe
593   \else
594     \let\tITLEPAGE@restore\relax
595   \fi
596   \let\footnotesize\small
597   \let\footnoterule\relax
598   \let\footnote\thanks

```

```

599 </report>
600 <article> \let\titlepage@restore\relax
601 \renewcommand*\thefootnote{\@fnsymbol\c@footnote}%
602 \let\@oldmakefnmark\@makefnmark
603 \renewcommand*{\@makefnmark}{\rlap{\@oldmakefnmark}}%
604 <article> \next@tdpage
605 \ifx\@extratitle\@empty
606 <article> \ifx\@frontispiece\@empty\else \mbox{}\fi
607 <*report>
608 \ifx\@frontispiece\@empty\else
609 \if@twoside\mbox{}\next@tpage\fi
610 \noindent\@frontispiece\next@tdpage
611 \fi
612 </report>
613 \else
614 <article> \@makeextratitle
615 <*report>
616 \noindent\@extratitle
617 \ifx\@frontispiece\@empty
618 \else
619 \next@tpage
620 \noindent\@frontispiece
621 \fi
622 \next@tdpage
623 </report>
624 \fi
625 <*article>
626 \ifx\@frontispiece\@empty
627 \ifx\@extratitle\@empty\else\next@tdpage\fi
628 \else
629 \next@tpage
630 \@makefrontispiece
631 \next@tdpage
632 \fi
633 \global\@topnum=\z@
634 </article>
635 \setparsizes{\z@}{\z@}{\z@\@plus 1fil}\par@updaterelative
636 \vspace*{1cm}
637 \begin{minipage}[t]{\textwidth}%
638 \ifx\@titlehead\@empty \else
639 \usekomafont{titlehead}{\@titlehead}%
640 \fi
641 \hfill
642 % image with referencepoint in lower left corner:
643 \raisebox{0pt}[\ht\strutbox][\dp\strutbox]{\includeHsHlogo}
644 \end{minipage}
645 \raisebox{10pt}{\rule{\textwidth}{0.5pt}}
646 \null
647 <article> \vskip 2em
648 <report> \vfill
649 \begingroup
650 \if\@param c\centering\fi
651 \if\@param r\raggedleft\fi
652 \ifx\@subject\@empty\else
653 {\usekomafont{subject}{\@subject}\par}}
654 <article> \vskip 1.5em
655 <report> \vskip 3em
656 \fi
657 {\usekomafont{title}{\huge\@title}\par}}
658 <article> \vskip .5em
659 <report> \vskip 1em
660 {\ifx\@subtitle\@empty\else\usekomafont{subtitle}\@subtitle\par\fi}
661 <article | report> \vskip 4em

```

```

662     {\ifx\@matrikelnr\@empty
663       \if\@author\@empty\else\usekomafont{author}{
664         \parbox{\dimexpr\linewidth}{
665           \if\@param c\centering\fi
666           \if\@param r\raggedleft\fi
667           \@author
668         }
669       }\fi
670     \else
671       \if\@author\@empty\else
672         % sneaky comma needed after \@matrikelnr to deal with single item lists
673         \foreach \x [count=\i,evaluate=\i as \y using {\@matrikelnr,}\i-1]] in \@author {
674           \usekomafont{author}{
675             \def\arraystretch{1.2}
676             \if\@param l\begin{tabular}{@{}l l}\printtabtoks\end{tabular}\fi
677             \if\@param c\begin{tabular}{l l}\printtabtoks\end{tabular}\fi
678             \if\@param r\begin{tabular}{r r@{}}\printtabtoks\end{tabular}\fi
679           }%
680         \fi
681       \fi}
682 <article>       \vskip 1em
683 <report>        \vskip 1.5em
684 { \usekomafont{date}{\@date\par}}
685 <article>       \vskip 1em
686 <report>        \vskip \z@ \@plus3fill
687   \usekomafont{publishers}{
688     \def\arraystretch{1.2}
689     \if\@param l\begin{tabular}{@{}l l}\fi
690     \if\@param c\begin{tabular}{l l}\fi
691     \if\@param r\begin{tabular}{r r@{}}\fi
692     \if\@professor\@empty\else\textbf{\professortext:}&\@professor\\\fi
693     \if\@firstexaminer\@empty\else\textbf{\firstexaminertext:}&\@firstexaminer\\\fi
694     \if\@secondexaminer\@empty\else\textbf{\secondexaminertext:}&\@secondexaminer\\\fi
695     \end{tabular}
696   }
697 <*article>
698   \ifx\@dedication\@empty\else
699     \vskip 2em
700     { \usekomafont{dedication}{\@dedication \par}}%
701   \fi
702 </article>
703   \par
704   \endgroup
705 <article>       \vskip 2em
706 <report>        \vskip 3em
707 <article>       \ifx\titlepagestyle\@empty\else\thispagestyle{\titlepagestyle}\fi
708   \@thanks\global\let\@thanks\@empty
709 <*report>
710   \vfill\null
711   \if@twoside
712     \@tempswattrue
713     \expandafter\ifnum \@nameuse{scr@v@3.12}>\scr@compatibility\relax
714   \else
715     \ifx\@uppertitleback\@empty\ifx\@lowertitleback\@empty
716       \@tempswafalse
717     \fi\fi
718   \fi
719   \if@tempswa
720     \next@tpage
721     \begin{minipage}[t]{\textwidth}
722       \@uppertitleback
723     \end{minipage}\par
724   \vfill

```

```

725     \begin{minipage}[b]{\textwidth}
726     \@lowertitleback
727     \end{minipage}\par
728     \@thanks\global\let\@thanks\@empty
729     \fi
730   \else
731     \ifx\@uppertitleback\@empty\else
732       \ClassWarning{\KOMAClassName}{%
733         non empty \string\uppertitleback\space ignored
734         by \string\maketitle\MessageBreak
735         in 'twoside=false' mode%
736       }
737     \fi
738     \ifx\@lowertitleback\@empty\else
739       \ClassWarning{\KOMAClassName}{%
740         non empty \string\lowertitleback\space ignored
741         by \string\maketitle\MessageBreak
742         in 'twoside=false' mode%
743       }
744     \fi
745   \fi
746   \ifx\@dedication\@empty
747   \else
748     \next@tdpage\null\vfill
749     {\centering\usekomafont{dedication}{\@dedication \par}}%
750     \vskip \z@ \@plus3fill
751     \@thanks\global\let\@thanks\@empty
752     \cleardoubleemptypage
753   \fi
754   \ifx\titlepage@restore\relax\else\clearpage\titlepage@restore\fi
755 \
```

```

756 \endgroup
757 \end{titlepage}
758 \setcounter{footnote}{0}
759 \expandafter\ifnum \csname scr@v03.12\endcsname>\scr@compatibility\relax
760   \let\thanks\relax
761   \let\maketitle\relax
762   \let\@maketitle\relax
763   \global\let\@thanks\@empty
764   \global\let\@author\@empty
765   \global\let\@date\@empty
766   \global\let\@title\@empty
767   \global\let\@subtitle\@empty
768   \global\let\@extratitle\@empty
769   \global\let\@frontispiece\@empty
770   \global\let\@titlehead\@empty
771   \global\let\@subject\@empty
772   \global\let\@publishers\@empty
773   \global\let\@uppertitleback\@empty
774   \global\let\@lowertitleback\@empty
775   \global\let\@dedication\@empty
776   \global\let\@matrikelnr\@empty
777   \global\let\@professor\@empty
778   \global\let\author\relax
779   \global\let\title\relax
780   \global\let\extratitle\relax
781   \global\let\titlehead\relax
782   \global\let\subject\relax
783   \global\let\publishers\relax
784   \global\let\uppertitleback\relax
785   \global\let\lowertitleback\relax
786   \global\let\dedication\relax
787   \global\let\date\relax

```

```

788 \global\let\matrikelnr\relax
789 \global\let\professor\relax
790 \fi
791 \global\let\and\relax
792 }
793 </article | report>

```

## 6 Change History

v1.00		better font-scaling . . . . .	11
General: Initial Version. Official first		Refactor for classoptions and other	
release . . . . .	1	basic improvments . . . . .	1
v2.00		removed the inputenc package, as	
General: This version changes the		utf8 is now default . . . . .	11
default build-system to latexmk . . .	1		
v2.01		v3.01	
\declarationAuthorship: Deprecate		abstract: Added option . . . . .	8
\declarationAuthorship, as it got		toc: Added options (extends	
replaced by		KOMA-Script) . . . . .	8
\declarationofauthorship . . . . .	15	v3.02	
v3.00		faculty: missing comma caused 1 to	
General: added typelec package to get		not work . . . . .	9