

# stmtext class description

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`stmtext` is a wrapper documentclass around a selection of existing class layouts for L<sup>A</sup>T<sub>E</sub>X. Additionally, it allows quick access to the modules of `stmlatex`.

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## 1. About

`stmdtext` is supposed to be an easy-to-use interface to several other document classes with the additional use of the modules of `stmdlatex`. The class addresses users who want to use certain features without initially worrying about their implementation. However, there will most certainly come a point in the learning curve of a  $\text{\LaTeX}$  user where this documentclass becomes insufficient. That's what's wanted. Maybe, until this point, the class has helped to bring some possibilities of  $\text{\LaTeX}$  closer.

The goal is to make  $\text{\LaTeX}$  functionalities available to the user. It is not intended to make any changes to the document layout, despite loading the underlying document classes. The rest of the layout can be freely changed by the user.

The complete class and module system can be found at

<https://github.com/raedma/stmdlatex>

## 2. Options

This section describes the class options. All options are key-value-options, meaning they are set using the definition `KEY=VALUE`. It must be noted that these options can not represent the full features of the module packages. In case more advanced options are required make sure to have a look at the individual package descriptions and consider loading them individually. Maybe you find what you need.

### 2.1. Overview

This overview contains the most important informations about package options. If there are additional comments about individual options an additional section is created for their description.

**Boolean options** These options can only have the values `true` or `false`.

Table 1: Boolean class options

Key	Default value	Description
<code>attachfile</code>	<code>false</code>	Load the <code>attachfile</code> package at the correct position relative to <code>stmdhyperref</code>
<code>bibliography</code>	<code>false</code>	Load the <code>bibliography</code> package
<code>calc</code>	<code>false</code>	Load the <code>calc</code> package at the correct position relative to <code>stmdtikz</code>
<code>cleverref</code>	<code>false</code>	Load the <code>cleverref</code> package at the correct position relative to <code>stmdhyperref</code>
<code>color</code>	<code>true</code>	Load the <code>stmdcolors</code> package

continued ...

...continued

Key	Default value	Description
<code>conditionallox</code>	<code>true</code>	Load the <a href="#">stmconditionallox</a> package
<code>conditionalloxnewpage</code>	<code>true</code>	Set the value of the <code>newpage</code> option in the <code>stmconditionallox</code> package
<code>date</code>	<code>false</code>	Load the <a href="#">stmdate</a> package
<code>glossaries</code>	<code>false</code>	Load the <a href="#">stm glossaries</a> package
<code>index</code>	<code>false</code>	Load the <a href="#">stmindex</a> package
<code>hyperref</code>	<code>true</code>	Load the <a href="#">stmhyperref</a> package
<code>listings</code>	<code>false</code>	Load the <a href="#">stm listings</a> package
<code>math</code>	<code>false</code>	Load the <a href="#">stm math</a> package
<code>plots</code>	<code>false</code>	Load the <a href="#">stm plots</a> package
<code>tabular</code>	<code>false</code>	Load the <a href="#">stm tabular</a> package
<code>tikz</code>	<code>false</code>	Load the <a href="#">stm tikz</a> package
<code>units</code>	<code>false</code>	Load the <a href="#">stm units</a> package

**String options** These options have strings as values. Possible arguments are listed. The default is underlined.

Table 2: String class options

Key	Values	Description
<code>language</code>	<code>german <u>english</u></code>	Document language, Load the <code>stm language</code> package with this option
<code>layout</code>	<code>standard dlr <u>koma</u></code>	Document layout
<code>type</code>	<code>article <u>report</u> book</code>	Base document type

The following options are only available for `layout=dlr` which uses the RM-LaTeX based document classes.

Table 3: Additional string class options for `layout=dlr`

Key	Values	Description
<code>institute</code>	<u>FA-STM</u>	See the <a href="#">RM-LaTeX</a> documentation for alternatives
<code>site</code>	<u>BS</u>	See the <a href="#">RM-LaTeX</a> documentation for alternatives

## 2.2. Option attachfile

The package [attachfile](#) is one of the packages that has to be loaded at a specific relative position to [hyperref](#). Thus, this option is only relevant in case the Option `hyperref`

from section 2.7 is used.

### 2.3. Option `cleveref`

The package `cleveref` is one of the packages that has to be loaded at a specific relative position to `hyperref`. Thus, this option is only relevant in case the Option `hyperref` from section 2.7 is used.

### 2.4. Option `conditionallox`

In case the option `conditionallox` is used, the document has to be compiled at least three times.

### 2.5. Option `glossaries`

Setting `glossaries=true` loads the `stmglossaries`. Thus, the user is able to use the glossary entries from the package as described in the package documentation.

In case the `arara` package is used for the build automation of the  $\text{\LaTeX}$  document, add

```
arara: makeglossaries
```

in the build automation part of your preamble. That way, the glossaries are automatically compiled during your document creation.

For the glossaries to show up in your document, simply place the commands to print the glossary entries of your choice at the location in your document where you want them to show up, e.g.

```
\printstmacronyms  
  
\printstmscalarglossary  
\printstmvectorglossary  
\printstmmatrixglossary  
\printstmstatglossary  
\printstmindexglossary  
\printstmexponentglossary  
\printstmoperatorglossary
```

or

```
\printstmacronyms  
\printallstmsymbols
```

In case no entries are defined, the lists are simply omitted in your document.

## 2.6. Option index

### 2.6.1. Base package issues

There are issues with the `nonewpage` option of the base package. Thus, currently, there is no chance to disable that an index is created on a new page.

### 2.6.2. Individual indices

In case it is desired to use other than the default index settings, e.g. create a new index next or replacing the standard, it is recommended to load `stmttext` with the option `index=false` and loading the index individually. Otherwise, there might be conflicts in case `tikz=true` is used in combination.

```
\documentclass[%  
  ...  
  index=false,%  
  ...  
{stmttext}  
  
...  
  
% replace standard index  
\usepackage[  
  standard=false  
{stminindex}  
  
...  
  
% Must come after \makeindex, e.g. from stminindex  
\usepackage{stmtikzexternalization}
```

## 2.7. Option hyperref

<https://tex.stackexchange.com/a/26592>

## 2.8. Option layout

This class is supposed to be an interface between different class bundles. Currently, this class offers an interface to the standard L<sup>A</sup>T<sub>E</sub>X class bundle (`article`, `report`, `book`), the KOMA-script bundle (`scrartcl`, `scrreprt`, `scrbook`) and the RM-L<sup>A</sup>T<sub>E</sub>X bundle.

It is not the goal to implement all options of all classes rather than to allow an easy switch for standard documents. In case you miss an option for a specific bundle, feel free to implement it.

## 2.9. Other options

All other options not explicitly list in section 2.1 are passed to the underlying document class. Thus, it has to be made sure that the underlying document class understands these options. At this point, switching the argument in the `Option layout` may lead to problems in case the options is specific to a document class.

## 3. Usage

### 3.1. type-independent document structure

[coseoul](#) package

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## A. The code

### A.1. stmtext.cls

```
1 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
2 % Header %
3 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
4 %
5 % This is a document class for structural mechanics
6 % documentation
7 %
8 % Usage
9 % - Premble:
10 % - \documentclass{stmtext}
11 %
12 % Revisions: 2019-11-25 Martin Raedel <martin.raedel@dlr.de>
13 % Initial draft
14 %
15 % Contact: Martin Raedel, martin.raedel@dlr.de
16 % DLR Lightweight Systems
17 %
18 % __|__
19 % /_/_/_/
20 % www.dlr.de/sy/en | DLR
21 %
22 % Copyright (C) 2019-... DLR Lightweight Systems
23 %
24 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
25 % Content %
26 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
27
28 % Declare that this style file requires at least LaTeX version 2e.
29 \NeedsTeXFormat{LaTeX2e}
30
31 % Provide the name of your page, the date it was last updated, and a
32 % comment about what it's used for
33
34 % -----
35 % Package
36 % -----
37
38 \@ifpackageloaded{kvoptions}{\RequirePackage{kvoptions}}%
39 \@ifpackageloaded{ifthen}{\RequirePackage{ifthen}}%
```

```

40
41 % -----
42 % Options base
43 % -----
44
45 \SetupKeyvalOptions{%
46   family=stmttextbase,%
47   prefix=stmttextbase@,%
48   setkeys=\kvsetkeys,%
49 }
50
51 % String options
52 \DeclareStringOption[report]{type}
53 \DeclareStringOption[koma]{layout}
54
55 % Process options
56 \ProcessKeyvalOptions{stmttextbase}
57
58 % -----
59 % Options
60 % -----
61
62 \SetupKeyvalOptions{%
63   family=stmttext,%
64   prefix=stmttext@,%
65   setkeys=\kvsetkeys,%
66 }
67
68 % Bool option
69 \DeclareBoolOption[false]{bibliography}
70 \DeclareBoolOption[true] {color}
71 \DeclareBoolOption[true] {conditionallox}
72 \DeclareBoolOption[true] {conditionalloxnewpage}
73 \DeclareBoolOption[false]{date}
74 \DeclareBoolOption[false]{glossaries}
75 \DeclareBoolOption[false]{index}
76 \DeclareBoolOption[true] {indexstandard}
77 \DeclareBoolOption[true] {hyperref}
78 \DeclareBoolOption[false]{listings}
79 \DeclareBoolOption[false]{math}
80 \DeclareBoolOption[false]{plots}
81 \DeclareBoolOption[false]{tabular}
82 \DeclareBoolOption[false]{tikz}
83 \DeclareBoolOption[true] {tikzexternalization}

```

```

84 \DeclareBoolOption[false]{units}
85
86 %
87 \DeclareStringOption[english]{language}
88
89 % DLR options
90 \DeclareStringOption[FA-STM]{institute}
91 \DeclareStringOption[BS]{site}
92
93 % Options that are dependent of the position of hyperref
94 \DeclareBoolOption[false]{attachfile}
95 \DeclareBoolOption[false]{cleveref}
96
97 % Options that are dependent of the position of tikz
98 \DeclareBoolOption[false]{calc}
99
100 % any other options are passed to the base class
101 \DeclareDefaultOption{%
102   \ifthenelse{\equal{\stmttextbase@type}{article}}{%
103     \ifthenelse{\equal{\stmttextbase@layout}{standard}}{%
104       \PassOptionsToClass{\CurrentOption}{article}%
105     }{%
106       \ifthenelse{\equal{\stmttextbase@layout}{dlr}}{%
107         \PassOptionsToClass{\CurrentOption}{dlrartcl}%
108       }{%
109         \ifthenelse{\equal{\stmttextbase@layout}{koma}}{%
110           \PassOptionsToClass{\CurrentOption}{scrartcl}%
111         }{%
112           }{}%
113       }
114     }
115   \ifthenelse{\equal{\stmttextbase@type}{report}}{%
116     \ifthenelse{\equal{\stmttextbase@layout}{standard}}{%
117       \PassOptionsToClass{\CurrentOption}{report}%
118     }{%
119       \ifthenelse{\equal{\stmttextbase@layout}{dlr}}{%
120         \PassOptionsToClass{\CurrentOption}{dlrreprt}%
121       }{%
122         \ifthenelse{\equal{\stmttextbase@layout}{koma}}{%
123           \PassOptionsToClass{\CurrentOption}{scrreprt}%
124         }{%
125           }{}%
126       }
127     }

```

```

128 \ifthenelse{\equal{\stmttextbase@type}{book}}{%
129   \ifthenelse{\equal{\stmttextbase@layout}{standard}}{%
130     \PassOptionsToClass{\CurrentOption}{book}%
131   }{}%
132   \ifthenelse{\equal{\stmttextbase@layout}{dlr}}{%
133     \PassOptionsToClass{\CurrentOption}{dlrbook}%
134   }{}%
135   \ifthenelse{\equal{\stmttextbase@layout}{koma}}{%
136     \PassOptionsToClass{\CurrentOption}{scrbook}%
137   }{}%
138 }{}%
139 }
140
141 % Process options
142 \ProcessKeyvalOptions{stmttext}
143
144 % -----
145 % Base class
146 % -----
147
148 \ifthenelse{\equal{\stmttextbase@type}{article}}{%
149   \ifthenelse{\equal{\stmttextbase@layout}{standard}}{%
150     \LoadClass{article}
151   }{}%
152   \ifthenelse{\equal{\stmttextbase@layout}{dlr}}{%
153     \LoadClass{dlrartcl}
154     \RequirePackage{auxhook}
155   }{}%
156   \ifthenelse{\equal{\stmttextbase@layout}{koma}}{%
157     \LoadClass{scrartcl}
158     \RequirePackage{auxhook}
159   }{}%
160 }{}%
161 \ifthenelse{\equal{\stmttextbase@type}{report}}{%
162   \ifthenelse{\equal{\stmttextbase@layout}{standard}}{%
163     \LoadClass{report}
164   }{}%
165   \ifthenelse{\equal{\stmttextbase@layout}{dlr}}{%
166     \LoadClass{dlrreprt}
167     \RequirePackage{auxhook}
168   }{}%
169   \ifthenelse{\equal{\stmttextbase@layout}{koma}}{%
170     \LoadClass{scrreprt}
171     \RequirePackage{auxhook}

```

```

172   }{}%
173 }{}%
174 \ifthenelse{\equal{\stmttextbase@type}{book}}{%
175   \ifthenelse{\equal{\stmttextbase@layout}{standard}}{%
176     \LoadClass{book}
177   }{}%
178   \ifthenelse{\equal{\stmttextbase@layout}{dlr}}{%
179     \LoadClass{dlrbook}
180     \RequirePackage{auxhook}
181   }{}%
182   \ifthenelse{\equal{\stmttextbase@layout}{koma}}{%
183     \LoadClass{scrbook}
184     \RequirePackage{auxhook}
185   }{}%
186 }{}%
187
188 % -----
189 % Commands for communality between document classes
190 % -----
191
192 % Commands for the standard document classes
193 \ifthenelse{\equal{\stmttextbase@layout}{standard}}{%
194
195   \@ifundefined{subtitle}{\def\subtitle#1{\gdef\@subtitle{#1} }}%
196   \def\@subtitle{}{}%
197
198 }{}%
199
200 % Commands for DLR document classes
201 \ifthenelse{\equal{\stmttextbase@layout}{dlr}}{%
202
203   \dlrinstitute{\stmttext@institute}%
204   \dlrsite      {\stmttext@site}%
205
206 }{}%
207
208 % Commands from RM-LaTeX that other classes need to understand
209 \ifthenelse{%
210   \equal{\stmttextbase@layout}{standard} \OR%
211   \equal{\stmttextbase@layout}{koma}%
212 }{%
213
214   % These commands are created to allow for an easy switch between
215   % dlrreprt and bootstrap_dlrreprt.

```

```

216
217 \@ifundefined{subject}{ \def\subject#1{\gdef\@subject{#1} }%
218 \def\@subject{}}{}%
219 \@ifundefined{keywords}{ \def\keywords#1{\gdef\@keywords{#1} }%
220 \def\@keywords{}}{}
221 \@ifundefined{restrictions}{\def\restrictions#1{\gdef\@restrictions
222 {#1} }%
223 \def\@restrictions{}}{}
224 \@ifundefined{author}{ \def\author#1{\gdef\@author{#1} }%
225 \def\@author{}}{}
226 \@ifundefined{coauthor}{ \def\coauthor#1{\gdef\@coauthor{#1} }%
227 \def\@coauthor{}}{}
228 \@ifundefined{savedby}{ \def\savedby#1{\gdef\@savedby{#1} }%
229 \def\@savedby{}}{}
230 \@ifundefined{approvedby}{ \def\approvedby#1{\gdef\@approvedby{#1}
231 }%
232 \def\@approvedby{}}{}
233 \@ifundefined{releasedby}{ \def\releasedby#1{\gdef\@releasedby{#1}
234 }%
235 \def\@releasedby{}}{}
236 \@ifundefined{contactname}{ \def\contactname#1{\gdef\@contactname
237 {#1} }%
238 \def\@contactname{}}{}
239 \@ifundefined{telnumber}{ \def\telnumber#1{\gdef\@telnumber{#1} }%
240 \def\@telnumber{}}{}
241 \@ifundefined{faxnumber}{ \def\faxnumber#1{\gdef\@faxnumber{#1} }%
242 \def\@faxnumber{}}{}
243 \@ifundefined{email}{ \def\email#1{\gdef\@email{#1} }%
244 \def\@email{}}{}
245 \@ifundefined{reportno}{ \def\reportno#1{\gdef\@reportno{#1} }%
246 \def\@reportno{}}{}
247
248 % From dlrinstitutes.sty
249 \@ifundefined{institute}{ \def\institute#1{\gdef\@institute{#1} }%
250 \def\@institute{}}{}
251 \@ifundefined{site}{ \def\site#1{\gdef\@site{#1} }%
252 \def\@site{}}{}
253
254 % The command for the second titlepage
255 \newcommand{\secondpage}{}%
256 \newcommand{\printsecondpage}{}%
257 }{
258 \RequirePackage{dlrsecondpage}

```

```

256
257 }
258
259 % -----
260 % Base packages
261 % -----
262
263 \PassOptionsToPackage{%
264     language=\stmtext@language,%
265 }{stm\language}%
266 \RequirePackage{stm\language}
267
268 % Must come after language
269 \ifstmtext@bibliography
270     \RequirePackage{stmbibliography}
271 \fi
272
273 \ifstmtext@color
274     \RequirePackage{stmcolors}
275 \fi
276
277 \ifstmtext@conditionallox
278     \RequirePackage[%
279         newpage={\ifstmtext@conditionalloxnewpage true\else false\fi},%
280     ]{stmconditionallox}
281 \fi
282
283 \ifstmtext@date
284     \RequirePackage{stmdate}
285 \fi
286
287 % This must be loaded ahead of tikz externalization
288 \ifstmtext@index
289     \PassOptionsToPackage{%
290         standard={\ifstmtext@indexstandard true\else false\fi},%
291     }{stmindex}%
292     \RequirePackage{stmindex}
293 \fi
294
295 \ifstmtext@listings
296     \RequirePackage{stm\listings}
297 \fi
298
299 \ifstmtext@math

```

```

300 \RequirePackage{stmmath}
301 \fi
302
303 \ifsttext@plots
304 \RequirePackage{stmplots}
305 \fi
306
307 \ifsttext@tabular
308 \RequirePackage{stmtabular}
309 \fi
310
311 % Must be loaded before tikz
312 \ifsttext@calc
313 \RequirePackage{calc}
314 \fi
315
316 \ifsttext@tikz
317 \PassOptionsToPackage{%
318 externalization={\ifsttext@tikzexternalization true\else false\fi},
319 %
320 }{stmtikz}%
321 \RequirePackage{stmtikz}
322 \fi
323
324 \ifsttext@units
325 \RequirePackage{stmunits}
326 \fi
327 % -----
328 % Packages with dependencies
329 % -----
330
331 % -----
332 % Coseoul to get a level-independent document structure
333 % -----
334
335 \RequirePackage{coseoul}
336
337 \newcommand{\basetoclevelnr}[1]{#1}
338 \ifthenelse{\equal{\sttextbase@type}{article}}{%
339 \renewcommand{\basetoclevelnr}{5}%
340 }{}%
341 \ifthenelse{\equal{\sttextbase@type}{report}}{%
342 \renewcommand{\basetoclevelnr}{6}%

```



```

343 }{}%
344 \ifthenelse{\equal{\stmttextbase@type}{book}}{%
345   \renewcommand{\basetoclevelnr}{7}%
346 }{}%
347
348 \setcounter{currentlevel}{\basetoclevelnr}
349
350 % -----
351 % Commands dependent of the document base type
352 % -----
353
354 \ifthenelse{\equal{\stmttextbase@type}{article}}{%
355
356 }{}%
357 \ifthenelse{\equal{\stmttextbase@type}{report}}{%
358
359 }{}%
360 \ifthenelse{\equal{\stmttextbase@type}{book}}{%
361
362   % http://mirrors.ctan.org/macros/latex/contrib/biblatex/doc/biblatex.pdf#subsubsection.3.1.2
363   \ExecuteBibliographyOptions{%
364     refsection=part,% Individual bibliography for each part
365   }
366
367 }{}%
368
369 % -----
370 % Put stuff in the TOC
371 % -----
372
373 \ifthenelse{%
374   \equal{\stmttextbase@layout}{dlr} \OR%
375   \equal{\stmttextbase@layout}{koma}%
376 }{%
377   \KOMAOptions{%
378     bibliography=totoc,%
379     %figures=plain,%
380     %fleqn,% not supported in KOMA options
381     listof=totoc,%
382   }%
383 }{}%
384
385 \ifthenelse{%

```

```

386 \equal{\stmtextbase@layout}{standard}%
387 }{%
388
389 %\@ifpackageloaded{biblatex}{
390 %\PassOptionsToPackage{toc=bib}{biblatex}
391 %}{%
392 \PassOptionsToPackage{%
393     nottoc,%
394     notbib,%
395 }{tocbibind}
396 \RequirePackage{tocbibind}
397 %}
398 }{}%
399
400 % -----
401 % Hyperref - make sure it is loaded as the last package
402 % -----
403
404 \ifstmtext@hyperref
405 %\makeatletter
406
407 \@ifpackageloaded{etoolbox}{}{%
408 \RequirePackage{etoolbox}
409 }
410
411 %\AtBeginDocument{
412 \AtEndPreamble{
413
414 %
415 \RequirePackage{stmhyperref}
416
417 % After hyperref for links to work
418 % dependency on babel language
419 \ifstmtext@glossaries
420 \RequirePackage{stmglossaries}
421 \fi
422
423
424 \ifstmtext@attachfile
425 \RequirePackage{attachfile}
426 \fi
427
428 \ifstmtext@cleveref
429 \RequirePackage{cleveref}

```

```

430     \fi
431   }
432   %\makeatother
433 \else
434   \ifstmtext@attachfile
435     \RequirePackage{attachfile}
436   \fi
437
438   \ifstmtext@cleveref
439     \RequirePackage{cleveref}
440   \fi
441 \fi
442
443 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
444 % That's it %
445 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
446
447 % Finally, we'll use \endinput to indicate that LaTeX can stop reading
448 % this file. LaTeX will ignore anything after this line.
449 \endinput

```