

Developer's Guide on SJTUBeamer MIN

Log Creative

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1 Preface

SJTUBeamer `\MIN` is a presentation template based on `beamer` package in \LaTeX , to fulfill the enthusiasm of those SJTU users to present their content nicely, benefiting from the technology of \TeX typesetting engine.

This is a Developer's Guide on SJTUBeamer `\MIN`. The document is written in English because the operation in this guidance could be dangerous. Be careful when playing with those macros.

SJTUBeamer `\MIN` — the minimal work set of SJTU VI

<code>\MIN</code>	- <i>minimal</i> :	minimal work set of SJTU VI.
<code>\MIN</code>	- <i>minimalism</i> :	designed in the style of minimalism.
<code>\MIN</code>	- <i>minimum</i> :	minimum shapes to show your content.

2 Compilation

Most problems come from \LaTeX compilation. The required packages are in the following list.

<code>pgfplots</code>	<code>tikz</code>	<code>xcolor</code>
<code>pgfplotstable</code>	<code>sansmath</code>	<code>tcolorbox</code>
<code>ctex</code>	<code>biblatex</code>	<code>beamer</code>

The detailed description is documented below.

2.1 MiK \TeX

All required packages will be automatically installed if you are using MiK \TeX [1]. And if you want to use the `latexmk` command, please install Perl[2] first. And the compilation command for SJTUBeamer `\MIN` is as follows:

```
latexmk -pdf main -interaction=nonstopmode
```

2.2 \TeX Live

Since some packages are not default installed in the full release of \TeX Live, you have to install the packages manually.

On Ubuntu, you could install `pgf` and `xcolor` and other drawing packages through the following command[3]:

```
sudo apt install texlive-pictures
```

To typeset Chinese characters, you would better use `CJKutf8` package (in `SJTUBeamer` `[MIN]`, set `[cjk=true]`), since it is compatible with all platforms and multiple language support. Surround `CJK` environment to make it work and remember to move all the Unicode characters in the permeable to the `CJK` environment^[4]:

```
\begin{document}
\begin{CJK}{UTF8}{gbsn}
  \institute[]{}
  \title{}
  \subtitle{}
  \author{}
  \date{}
  % your content here ...
\end{CJK}
\end{document}
```

However, if you stick into `ctex`, you can install through `tlmgr`. If that works, then we call it a day.

```
sudo tlmgr install ctex
```

Sometimes, you installed an old `TeX Live`, and you have to upgrade the `tlmgr` for the new version. And the process could be very buggy, since the following warning may be shown:

```
unexpected return value from verify_checksum: -5
```

and to upgrade the `tlmgr` is painful on Ubuntu. You should add the following content to `/etc/profile/`, which will add the newest path when the system is booting up^[5]:

```
export PATH=/usr/local/texlive/2021/bin/x86_64-linux:
/usr/local/texlive/:$PATH
```

Reboot your computer if necessary. Then the compile system will be moved to the newer version of `TeX Live`. Try to install the corresponding packages through the GUI interface of `tlmgr`:

```
sudo tlmgr update --self
sudo tlmgr gui
```

And if you encountered that

```
Critical Package ctex Error: CTeX fontset 'fandol' is
unavailable in current(ctex) mode.
```

You have to modify your compiling program from pdfL^AT_EX to XeL^AT_EX by adding the following magic command on the first line:

```
% !TeX TS-program = xelatex
```

2.3 Boost Up

However, it has been tested that the compilation on SJTUBeamer MIN is slow. Since the complex patterns have to be rendered in vector shapes and the bibliography requires multiple times of compilation, the time could be wasted on some repetitive works.

This scenario could be improved by enable `[pattern=none]` option on SJTUBeamer MIN and enable `[draft]` option on beamer. The former one will disable all the pattern rendering, and the latter one will ignore all the TOC (table of contents) generating.

The project has been implanted to Overleaf. Here is the link [\[6\]](#). And to make that works, the compilation on T_EX Live 2021 has to be implemented. And it is discovered that setting the document information outside the `document` environment will cause a significantly longer compiling time, which may be caused by some improper settings in C_TE_X package. The workaround of that is to follow the setup mentioned in CJK settings: put that info into the body of document[\[4\]](#).

Currently, CI is available on Github Actions by compiling on LuaL^AT_EX. SJTUBeamer MIN uses `xu-cheng/latex-action@v2` for the compilation docker [\[7\]](#) and relocates the compiling folder to `src/`. After compiling, output the PDF artifact. See `.github/workflows/main.yml` for details.

At the same time, AutoBeamer[\[8\]](#) is making its own effort on generating beamer code automatically by some replacing strategies. You could preview your beamer code through conversion on Markdown or the article L^AT_EX code.

Furthermore, there is space for boosting up the beamer compilation time by making use of multi-core processors. Since it is a frame-based document, and the connection between each frame is loose (only some page numbers and citations need to be calculated), the multi-threaded compilation is possible for the `beamer` class. You can glimpse the multi-threaded processing for L^AT_EX from the package `animate`. In fact, the author created some batch compiling work[\[9\]](#) together with the `-Parallel` parameter in PowerShell 7 to make full use of the concurrent computer architecture.

3 Modular Architecture

By the recommendation from `beamer` package[\[3\]](#), SJTUBeamer MIN uses the same modular architecture to build the template. Like it is in Java, to let the `beamer` template locate your theme, the style file has to be in the standard name.

Notice that there are some dependencies (logo files) in the `vi/`. Copying the `vi` folder is necessary. Or you could define the location of the logo file by giving `\logo{\includegraphics{logo.pdf}}`.

.sty File	Description
beamercolorthemeSJTUBeamermin.sty	Define global color schemes.
beamerfontthemeSJTUBeamermin.sty	Set the font format.
beamerinnerthemeSJTUBeamermin.sty	Specifies all parts inside a frame.
beamerouterthemeSJTUBeamermin.sty	The frame header and bottom bar.
beamerthemeSJTUBeamermin.sty	Entry point of the theme.

main.tex			
beamerthemeSJTUBeamermin.sty			
colortheme.sty	fonttheme.sty	outertheme.sty	innertheme.sty
logo.pdf			

3.1 Theme

The main theme file `beamerthemeSJTUBeamermin.sty` is the entry point of the theme template. For users, after acquiring the `beamer` package, `\usetheme` command will serve as the caller of the theme.

```
\documentclass{beamer}
\mode<presentation>
\usetheme{SJTUBeamermin}
```

And this file will preprocess the option passed to the theme. Some options will be affected immediately, while others will get processed in the sub-style files.

theme.sty	colortheme.sty	color
lang	fonttheme.sty	
cjk	outertheme.sty	pattern,navigation,lang
gbt	innertheme.sty	pattern,color,lang
<i>other settings</i>		

3.2 Color

The color style file `beamercolorthemeSJTUBeamermin.sty` is the color setup of the template. Most color schemes are derived from the basic color of SJTU VI[10]. And to adapt the color definitions of `beamer`, the corresponding interface is mapped, see 17.2 in [3].

As it is mapped to those `beamer` interfaces, to use the color, you have to declare the color struct first by

```
\usebeamercolor{palette primary}
\color{palette primary.bg}
```

interface	color=	red	blue
palette primary	cprimary	#004098	#9E1F36
palette secondary	csecondary	#298626	#F28101
palette tertiary	ctertiary	#004D4B	#FED201
palette quaternary	cquaternary	#FFFFFF	#000000

or simply

```
\usebeamercolor[bg]{palette primary}
```

However, there are scenarios where you cannot put temporary variables in some package options since it expands to `\color{\color{mycolor}}`. In this complex case, the redefinition of those standard colors is required. And that's the reason why `innertheme.sty` gets `color`.

3.3 Font

The font style file `beamerfontthemeSJTUBeamermin.sty` provides the font style of the beamer. In SJTUBeamer `MIN`, serif math font is used by

```
\usefonttheme{professionalfonts}
```

which will tell beamer not to meddle with the specific font (in this case, math font) to the sans serif one.

It is especially useful if you don't want to create more compilation errors since some engine doesn't support sans serif math font. The workaround for that is to introduce the package below:

```
\RequirePackage[eulergreek]{sansmath}
```

And SJTUBeamer `MIN` does both.

3.4 Outer

The outer style file `beamerouterthemeSJTUBeamermin.sty` contains the layout of frames. The recommended setup is as follows:

Components	SJTUBeamer <code>MIN</code>
head- and footline	•
sidebars	
logo	•
frame title	•

3.5 Inner

The inner style file `beamerinnerthemeSJTUBeamermin.sty` will customize the main components.

Components	SJTUBeamer MIN
Title and part pages	•
Itemize	•
Enumerate	
Description	
Block	•
Theorem and proof	
Figures and tables	•
Footnotes	•
Bibliography entries	

Outer theme and inner theme are the core files for SJTUBeamer MIN, which will be discussed in the following content.

4 Compatibility

Since the vision of L^AT_EX is to build an open-source typesetting system for multi-platforms and beamer is on top of that to create an easy-to-configure interface on building presentations, SJTUBeamer MIN follows the footsteps to make its best on compatibility.

4.1 Beamer Interface

Beamer has designed a system of modern interfaces for those theme creators. SJTUBeamer MIN has already followed the modular architecture, as is shown in Section 3.

And there are more APIs in beamer for each corresponding theme style. There are mainly three ways to modify a theme:

1. **Want to use presets.** Read Part III in the documentation of beamer package [3]. You can acquire the doc by the terminal command:

```
texdoc beamer
```

Then, you could choose to use some preset theme, or call the macro to control the appearance of each component.

2. **Want a complete modification.** Read the source code of beamer package [3]. If no additional theme is used, beamer will assume you are creating a theme from `default`. And refer to the corresponding theme file suffixed by `default` will give you the bottom mechanism to implement components.

3. **Want to solve difficult problems.** Go to \TeX Stack Exchange [11] for help. Always search before you ask. Then you could probably find some patches and magical formulas to tackle the issue since \TeX is a Turing-complete language.

4.2 Mainstream Packages

Mainstream \LaTeX packages are used to make sure the choice on marcos is maintained currently. Since some engine doesn't support **GhostScript** well (*e.g.* \XeLaTeX), **SJTUBeamer** [MIN] (as well as **beamer**) uses PGF as the backend for graphics in PostScript. And half of the jobs are done on graphics to implement the requirements of VI.

SJTUBeamer [MIN] doesn't use too many rasterized pictures, since they are not flexible. You could get the Adobe Illustrator files on VI website[10]. **SJTU VI** goes minimalism so that it could be implemented by package **TikZ** (which is on top of PGF). You could almost draw any vectorized shapes by referring to **TikZ** documentation [12]. In short, **TikZ** uses node-edge system to create graphs and many Computer Science pictures can be drawn in such a system[13]. And if you don't want to mess around with the thousand pages of documentation, **TikZEdt** could help you create that in a WYSIWYG(what you see is what you get) way[14], which is a tool to make drafts on patterns.

SJTUBeamer [MIN] also uses additional packages like PGFPLOTS and PGFPLOTSTABLE to draw highly personalized statistic graphs and layout table from CSV (Comma-Separated Values) respectively. As is mentioned, the author created a tool PGFPLOTSEDIT to help such graphs in an interactive way[9].

Code blocks are drawn by package **tcloborbox**, which is also a powerful toolkit to make customized boxes[15]. This is almost the most elegant way to make colorful boxes in the current \LaTeX system.

Some of the packages have been studied by author in \LaTeX Sparkle Project[4]. You can check that out to learn more.

4.3 Engine Support

To be clear, **SJTUBeamer** [MIN] is not adapt to all kinds of compilers in the current \LaTeX world.

	Windows	Unix
$\text{\pdfLaTeX}(\text{\CTeX})$	✓	
$\text{\pdfLaTeX}(\text{\CJK})$	✓	✓
\XeLaTeX	◇	✓
\LuaLaTeX	◇	◇

*✓ is fully available, while ◇ will have font issues.

SJTUBeamer [MIN] make its effort on engine support in the following ways:

1. **Use beamer interface.** As is mentioned in Section 4.1, SJTUBeamer MIN will not create its macro unless there is no substitute in the current version of beamer or it is a common method to implement some features. A good example for this is to make a bottom page, SJTUBeamer MIN mimicked `\maketitle` command to implement `\makebottom` command. A good outcome is that the style file could be separately used with low coupling.
2. **Use mainstream packages.** Mentioned in Section 4.2, mainstream packages are widely accepted in many engines. Some top-level macros are used to increase the readability of the source code, i.e., PGF is lengthy and hard to be maintained.
3. **Use old-fashioned TeX code.** If there is a nice way to implement in TeX, then go TeX. TeX is a box-based typesetting system, which may be mentioned in many Computer Science books. And L^ATeX is on top of that to provide clear-to-read macros. In some scenarios, the native `\vbox` and `\hbox` command could help calculate the position of characters in a more controllable way. But it is certainly painful to learn. The TeX Book[16] is the classic to learn that, but Notes On Programming in TeX[17] is more recommended in modern L^ATeX.

5 Implementation

Now, you may still be confused about how to create a beamer template. Here is a good material about it for a lead-in[18], which provides a brief overview. And this part is only focusing on the implementation of SJTUBeamer MIN.

5.1 Color Theme

5.1.1 Option Declaration

Color theme gets the `color` option only to select different color scheme.

```
1 \DeclareOptionBeamer{color}{\def\beamer@sjtubeamermin@color{#1}}
2 \def\beamer@sjtubeamermin@colorblue{blue}%
3 \def\beamer@sjtubeamermin@colorred{red}%
4 \ExecuteOptionsBeamer{color=blue}
5 \ProcessOptionsBeamer
```

5.1.2 Beamer Color Interface

Load the common color library for sjtubeamermin.

```
6 \RequirePackage{SJTUcolordef}
```

Map the defined color in `SJTUcolordef` to the interface of beamer color. Especially, the `structure` interface could not derived from the color palette.

```
7 \setbeamercolor{palette primary}{bg=cprimary,fg=white}
8 \setbeamercolor{palette secondary}{bg=csecondary,fg=white}
```

```

9 \setbeamercolor{palette tertiary}{bg=ctertiary,fg=white}
10 \setbeamercolor{palette quanternary}{bg=,fg=cquanternary}
11 \setbeamercolor{structure}{fg=cprimary}

```

This part defines the color scheme of title.

```

12 \setbeamercolor{background canvas}{bg=white}
13 \setbeamercolor{logo}{use={palette primary},bg=,fg=palette primary.fg}
14 \setbeamercolor{normal text}{fg=black,bg=black!40}
15 \setbeamercolor*{block title}{parent=structure}
16 \setbeamercolor{titlelike}{parent={palette primary}}
17 \setbeamercolor{title}{fg=cprimary,bg=}
18 \setbeamercolor{subtitle}{fg=csecondary,bg=}

```

This part defines the color of block title.

```

19 \setbeamercolor{block title}{fg=white,bg=cprimary!90}
20 \setbeamercolor{block title alerted}{use=alerted text,
21 fg=white,bg=csecondary}
22 \setbeamercolor{block title example}{use=example text,
23 fg=cquanternary,bg=ctertiary}

```

This part defines the color of block body.

```

24 \setbeamercolor{block body}{parent=normal text,use=block title,
25 bg=block title.bg!30}
26 \setbeamercolor{block body alerted}{parent=normal text,
27 use=block title alerted,bg=block title alerted.bg!30}
28 \setbeamercolor{block body example}{parent=normal text,
29 use=block title example,bg=block title example.bg!30}

```

This part defines the color of footline.

```

30 \setbeamercolor{section in head/foot}{use={palette primary},
31 fg=palette primary.bg,bg=}

```

This part defines the color of part page, section page, and subsection page.

```

32 \setbeamercolor{part title}{parent={palette primary}}
33 \setbeamercolor{section title}{parent={palette secondary}}
34 \setbeamercolor{subsection title}{parent={palette tertiary}}

```

Set the emphasized color and redefine the emphasizing command to make the text both italic for ASCII character and colored in the middle color of cprimary and csecondary.

The redefinition is required since beamer class has redefined the `\emph` command to make it not nested. According to LearnLaTeX.org, the emphasized color is defined to make contrast in presentation.

For ASCII character, the italic part dominates, as it is quite different from the normal roman font. As for chinese character, the color part dominates, since it is often in bolder shape and changing to other font will make the layout messy.

```

35 \setbeamercolor{emph}{use={palette primary,palette secondary},
36 fg=palette primary.bg!50!palette secondary.bg}
37 \renewcommand<>{\emph}[1]{%
38 {\only#2{\usebeamercolor[fg]{emph}\itshape}#1}%
39 }

```

As is native to beamer, you could also use `\alert` command to highlight the text. The color is redirected to the cprimary.

```
40 \setbeamercolor{alerted text}{fg=palette primary.bg}
```

5.2 Font Theme

Use `professionalfonts` font theme to compress all formula environments, which is in serif font style.

```
41 \usefonttheme{professionalfonts}
```

Use `sansmath` package to support sans serif math font in some blocks, e.g., PGFPlotsTable.

```
42 \RequirePackage[eulergreek]{sansmath}
```

Set the font size to normal size for the number indication in part page, section page, and subsection page.

```
43 \setbeamerfont{part name}{size=\normalsize}
```

```
44 \setbeamerfont{section name}{size=\normalsize}
```

```
45 \setbeamerfont{subsection name}{size=\normalsize}
```

Set the font size in the footnote to footnotesize.

```
46 \setbeamerfont{footnote}{size=\footnotesize}
```

5.3 Inner Theme

A beamer inner theme dictates the style of the frame elements traditionally set in the “body” of each slide. These include:

- title, part, and section pages;
- itemize, enumerate, and description environments;
- block environments including theorems and proofs;
- figures and tables; and
- footnotes and plain text.

5.3.1 Package Dependencies

```
47 \RequirePackage{pgfplots}
```

```
48 \RequirePackage{array}
```

```
49 \RequirePackage{colortbl}
```

```
50 \RequirePackage{booktabs}
```

```
51 \RequirePackage{pgfplotstable}
```

```
52 \RequirePackage{tcolorbox}
```

```
53 \RequirePackage{multicol}
```

5.3.2 Option Declaration

`lang` Specify the language of this beamer, which will affect the version of the loaded logo.

```

54 \DeclareOptionBeamer{lang}{\def\beamer@sjtubeamermin@lang{#1}}
55 \def\beamer@sjtubeamermin@langcn{cn}%
56 \def\beamer@sjtubeamermin@langen{en}%

```

pattern The pattern mode, which will affect the pattern generation in the title page.

```

57 \DeclareOptionBeamer{pattern}{\def\beamer@sjtubeamermin@pattern{#1}}
58 \def\beamer@sjtubeamermin@patternnone{none}%
59 \def\beamer@sjtubeamermin@patternntitle{title}%
60 \def\beamer@sjtubeamermin@patternall{all}%

```

color The selected color theme, which will affect the color in the title page, bottom page and the inner highlighter.

```

61 \DeclareOptionBeamer{color}{\def\beamer@sjtubeamermin@color{#1}}
62 \def\beamer@sjtubeamermin@colorblue{blue}%
63 \def\beamer@sjtubeamermin@colorred{red}%

```

The default default setting will get executed here before the settings defined by the user got processed.

```

64 \ExecuteOptionsBeamer{
65   lang=cn,
66   color=blue,
67   pattern=all
68 }
69 \ProcessOptionsBeamer

```

5.3.3 Shape Dependencies

Load the shape package from SJTivishape. To provide the logo, stamp array, and stampline (stampbox is not included).

```

70 \RequirePackage{SJTUvishape}

```

5.3.4 Title Page

Declare two fadings: center fade and fade right. The center fade provides a radial fading on the right side of the title page. The fade right provides a linear fading to avoid the collision on the text in the left.

```

71 \tikzfading[
72   name=center fade,
73   inner color=transparent!0,
74   outer color=transparent!15
75 ]
76 \tikzfading[
77   name=fade right,
78   left color=transparent!0,
79   right color=transparent!100
80 ]

```

Define the title page template.

```
81 \defbeamertemplate*{title page}{sjtubeamermin}[1] []
82 {
83   \vbox{}
```

The background of the title page is implemented by a TikZ rectangle, which avoids the changing on `background canvas` beamer color.

In this definition environment, you could not change the beamer color. The older version redefines `\maketitle` command and switches the `background canvas` color, which is harmful for decoupling.

Use TikZ rectangle also avoids the unexpected shift because the risk of redefining the internal command is avoided. If there is any text before the title page, the `\maketitle` will start from a new page.

```
84   \usebeamercolor{palette primary}
85   \begin{tikzpicture}[overlay]
86     \fill [palette primary.bg] (-0.2*\the\paperwidth,-1*\the\paperheight)
87       rectangle (1*\the\paperwidth, 0.2*\the\paperheight);
88   \end{tikzpicture}
```

If it is in draftmode, no pattern will get rendered.

```
89   \ifbeamer@draftmode%
```

Otherwise, the fade tile of stamp array will get covered on top of the background rectangle. `stamp array` is defined in `SJTUvishape`. Then, a fade right covers this array layer and a center fade covers the previous result.

```
90   \else%
91     \ifx\beamer@sjtubeamermin@pattern\beamer@sjtubeamermin@patternnone%
92     \else%
93     \begin{tikzpicture}[overlay]
94       \stamparray{20pt}
95       {(-0.2*\the\paperwidth,-1*\the\paperheight)}
96       {(1*\the\paperwidth, 0.2*\the\paperheight)}
97       \fill [bg,path fading=fade right]
98         (-0.2*\the\paperwidth,-1*\the\paperheight) rectangle
99         (1*\the\paperwidth, 0.2*\the\paperheight);
100      \fill [bg,path fading=center fade,xshift=-10pt,yshift=-20pt]
101        (0.2*\the\paperwidth,0) circle [radius=\the\paperwidth];
102    \end{tikzpicture}
103    \fi%
104  \fi%
```

Set a constraint in the vertical mode to make the following contents centered in the middle of the slide.

```
105   \vfill
106   \begingroup
107     \centering
```

`resizebox` is used to adapt to all size of logo into 1cm height one. And it is the same in outer theme to make a 0.7cm logo. The institute is in \TeX code for typesetting. `\beamer@shortinstitute` meta is used to avoid compressing on `\par`, while `\insertinstitute` will force the input to spread on one single line.

The mode to use is depended on the `language` option. Super small font could be made by `fontsize`.

```

108 \usebeamercolor{titlelike}
109 \begin{beamercolorbox}{logo}
110 \vskip8pt
111 \hbox{
112   \hskip4.5pt{\resizebox{!}{1cm}{\insertlogo}}
113   \ifx\insertinstitute\@empty%
114   \else
115     {\hskip3pt \vrule width0.5pt}\hskip7pt
116     \ifx\beamer@sjtubeamermin@lang\beamer@sjtubeamermin@langcn%
117       \vbox{
118         \fontsize{13pt}{0pt}\selectfont
119         \insertinstitute
120         \par\noindent\vskip0.15em
121         \fontsize{5pt}{0pt}\selectfont
122         \textsc{\insertshortinstitute}
123         \baselineskip 3.2pt
124         \par~
125       }
126     \else%
127       \vbox to 1cm{
128         \vfill
129         \vbox{
130           \offinterlineskip
131           \noindent \strut
132           \baselineskip 0pt \lineskip -2pt
133           \scriptsize\textsc{\beamer@shortinstitute}
134           \strut
135         }
136         \vfill
137       }
138     \fi%
139   \fi%
140 }
141 \vskip8pt
142 \end{beamercolorbox}

```

Insert title, subtitle, author, and date.

```

143 \begin{beamercolorbox}[sep=8pt,#1]{title}
144   \usebeamercolor[fg]{palette primary}
145   \usebeamerfont{title}\inserttitle\par%
146   \ifx\insertsubtitle\@empty%
147   \else%
148     \vskip0.25em%
149     {\usebeamerfont{subtitle}\insertsubtitle\par}%
150   \fi%
151 \end{beamercolorbox}%
152 \vskip1em\par
153 \begin{beamercolorbox}[sep=8pt,#1]{author}

```

```

154     \usebeamerfont{author}\insertauthor
155   \end{beamercolorbox}
156   \begin{beamercolorbox}[sep=8pt,#1]{date}
157     \usebeamerfont{date}\insertdate
158   \end{beamercolorbox}

```

Here insert the titlegraphic. The node position is set to `above left` to make sure the bottom of the picture is aligned to the bottom of the date line.

```

159   \begin{tikzpicture}[overlay,yshift=0.77em]
160     \node [above left] at (0.88*\the\paperwidth,0)
161       {\usebeamerfont{fg}{titlegraphic}\inserttitlegraphic};
162   \end{tikzpicture}
163 \endgroup
164 \vskip0.5em
165 \vfill
166 }

```

5.3.5 Part Page

Define the `part page` beamer template.

```

167 \defbeamer-template*{part page}{sjtubeamermin}[1] []
168 {
169   \vfill
170   \vskip 8pt
171   \begin{group}

```

Print the number of this part. If it is in Chinese, the translated version is printed.

```

172   \begin{beamercolorbox}[sep=16pt,right,#1]{part title}
173     \hfill\usebeamerfont{part name}
174     \ifx\beamer@sjtubeamermin@lang\beamer@sjtubeamermin@langcn%
175       第~\insertromanpartnumber~部分
176     \else%
177       \partname~\insertromanpartnumber
178     \fi%
179     \par\vskip4pt
180     \usebeamerfont{part title}\insertpart\par

```

Since navigation bar is packaged, to modify the color, you have to change the `section in head/foot` beamer color. Here, the first move is to save the current color to a temporary variable. After the insertion, the previous color should be restored.

```

181   \hbox to \textwidth{
182     \usebeamerfont{footline}%
183     \setbeamercolor{temp}{fg=section in head/foot.fg}
184     \setbeamercolor{section in head/foot}{use=palette primary,
185       fg=palette primary.fg,bg=}
186     \hfill
187     \insertnavigation{0.4\textwidth}
188     \hspace*{1cm}
189     \setbeamercolor{section in head/foot}{fg=temp.fg}

```



```

190     }
191     \end{beamercolorbox}
192 \endgroup
193 \vfill
194 }

```

Redirect the part command to make a part page.

```

195 \AtBeginPart{
196   \begin{frame}
197     \partpage
198   \end{frame}
199 }

```

5.3.6 Section Page and Subsection Page

Define the common `\sectionblock` command to make the section block.

```

200 \def\sectionblock#1{
201   \begin{beamercolorbox}[sep=12pt,right,#1]{section title}
202     \usebeamerfont{section name}
203     \ifx\beamer@sjtubeamermin@lang\beamer@sjtubeamermin@langcn%
204       第~\insertsectionnumber~节
205     \else%
206       \sectionname~\insertsectionnumber
207     \fi%
208     \par\vskip4pt
209     \usebeamerfont{section title}\insertsection\par
210   \end{beamercolorbox}
211 }

```

Define the section page beamer template.

```

212 \defbeamertemplate*{section page}{sjtubeamermin}[1] []
213 {
214   \vfill
215   \begingroup
216     \sectionblock{#1}
217   \endgroup
218   \vfill
219 }

```

Define the subsection page beamer template.

```

220 \defbeamertemplate*{subsection page}{sjtubeamermin}[1] []
221 {
222   \vfill
223   \begingroup
224     \sectionblock{#1}
225     \begin{beamercolorbox}[sep=8pt,right,#1]{subsection title}
226       \usebeamerfont{subsection name}
227       \ifx\beamer@sjtubeamermin@lang\beamer@sjtubeamermin@langcn%
228         第~\insertsubsectionnumber~小节
229       \else%
230         \subsectionname~\insertsubsectionnumber

```

```

231     \fi%
232     \par\vskip 4pt
233     \usebeamerfont{subsection title}\insertsubsection\par
234   \end{beamercolorbox}
235 \endgroup
236 \vfill
237 }

```

5.3.7 Itemize Environments

Set the item marker to circle and set the marker for section and subsection in TOC (Table of Contents) to circle.

```

238 \setbeamertemplate{items}[circle]
239 \setbeamertemplate{sections/subsections in toc}[circle]

```

5.3.8 Block Environments

Introduce SJTUcolordef package. The user-defined block environment should use the hard-coded color. Otherwise it will have side effect on displaying.

```

240 \RequirePackage{SJTUcolordef}

```

\highlight Highlight the given text. Create a primary color background block with white as foreground.

```

241 \newtcbbox{\highlight}[1][cprimary]{
242   on line,
243   arc=0pt,
244   colback=#1,
245   colupper=white,
246   boxrule=0pt,
247   boxsep=0pt,
248   left=4pt,
249   right=4pt,
250   top=2pt,
251   bottom=2pt
252 }

```

\paragraph Use **\highlight** macro for making contrast. Since beamer has deleted **\paragraph** macro in this class, this template defines a macro for that to indicate it is another point and more paragraph-like. It is useful for the migration from **article** class.

```

253 \def\paragraph#1{\highlight{#1}~}

```

Introduce the library from tcolorbox to make code blocks. **listingsutf8** is used to receive UTF-8 input.

```

254 \tcbuselibrary{skins}
255 \tcbuselibrary{listingsutf8}

```

Declare the basic listing highlighter. **columns** is set to **flexible** to avoid ugly grid alignment. **breaklines** is set to enable line wrapping.

```

256 \lstset{
257   basicstyle=\ttfamily\small,
258   keywordstyle=\color{cprimary},%
259   stringstyle=\color{csecondary},%
260   commentstyle=\color{ctertiary!80!gray},%
261   columns=flexible,
262   extendedchars=false,
263   showstringspaces=false,
264   showspaces=false,
265   breaklines
266 }

```

codeblock Code block environment is made for presenting code in an obvious way. Two parameters are required. The first parameter is passed to listing, which mostly sets the language to highlight, see the **listings** package for more details. And the second parameter receives the title to make.

```

267 \newtcblisting{codeblock}[2][]{
268   listing only,
269   listing engine=listings,
270   listing options={
271     #1,%
272     numbers=left,
273     numberstyle=\color{cprimary!80}\ttfamily\scriptsize,
274     numbersep=5pt,
275   },
276   enhanced,
277   sharp corners,
278   top=0mm,
279   bottom=0mm,
280   title=#2,
281   colback=cprimary!5,
282   colframe=cprimary!80,
283   overlay={
284     \begin{tcbclipinterior}\fill[cprimary!20]%
285       (frame.south west) rectangle ([xshift=5mm]frame.north west);
286     \end{tcbclipinterior}
287   }
288 }

```

5.3.9 Figures

stampbox Make a stampbox border, which is a decoration advice from SJTU VI. It has the dependency on **stampline** from **SJTUvishape** package.

```

289 \newcolorbox{stampbox}[1][cprimary]{%
290   capture=hbox,
291   enhanced,
292   frame empty,
293   interior empty,
294   sharp corners,

```

```

295 top=2pt,bottom=2pt,left=2pt,right=2pt,
296 borderline={4pt}{0pt}{
297   #1,
298   line width=0.5pt,
299   decoration={
300     stamp line,
301     segment length=8pt,
302     path has corners=true,
303   },
304   decorate
305 }
306 }

```

Set the default visual theme for PGFPLOTS. The cycle list is set to the current color theme. And lines on the graph is optimized to make it clear for presentation. The predefinition on the height is made to avoid the overfullbox on the vertical side.

```

307 \pgfplotsset{
308   compat=newest,
309   every axis/.style={
310     font=\small\sffamily\sansmath,
311     cycle multi list={
312       mark options={thick}\nextlist
313       mark list\nextlist
314       cprimary,csecondary,ctertiary\nextlist
315     },
316     height=0.5*\the\paperheight,
317     axis line style={
318       cprimary,
319       thin
320     },
321     every tick label/.style={
322       cprimary,
323       font=\small,
324       /pgf/number format/assume math mode=true
325     },
326     grid style={cprimary!10},
327     tick style={cprimary!50},
328     minor tick style={cprimary!30},
329     xlabel style={cprimary},
330     ylabel style={cprimary},
331     zlabel style={cprimary},
332     legend style={
333       draw={cprimary},
334       thin,
335       nodes={cprimary}
336     },
337     thick,
338   },
339 }

```

5.3.10 Tables

Two macros are defined to make the header colored.

```
340 \def\zapcolorreset{\let\reset@color\relax\ignorespaces}
341 \def\colorrows#1{\noalign{\aftergroup\zapcolorreset#1}\ignorespaces}
```

Set the style of PGFPLOTSTABLE. The `\colorrows` macro here is used for making the header colored. The `booktabs` line is used to create a professional look.

```
342 \pgfplotstableset{
343   col sep=comma,
344   every table/.style={
345     font={\small\sffamily\sansmath},
346   },
347   every head row/.style={
348     before row={
349       \arrayrulecolor{cprimary}
350       \toprule
351       \colorrows{\color{cprimary}}
352     },
353     after row={
354       \midrule
355       \colorrows{\color{black}}
356     },
357   },
358   every last row/.style={
359     after row=\bottomrule
360   },
361 }
```

5.3.11 Footnotes

Define the footline beamer template. The format is slightly changed from the original beamer definition.

```
362 \defbeamer*template*{footnote}{\sftubeamermin}
363 {
364   \usebeamerfont{footnote}
365   \parindent 0.5em\noindent%
366   \raggedright
367   \hbox to 1.5em{\hfil\insertfootnotemark}\insertfootnotetext\par%
368 }
```

5.3.12 Bottom Page

`\bottompage` Define the macro `\bottompage` to create the ending frame.

```
369 \def\bottompage{
  Enter vertical mode.
370   \vbox{}
```

Create the background canvas and the three overlapping circles in the right. Use `scope` to define the influence range. And use `\clip` to make the clipping in the current range.

```

371 \usebeamercolor{palette primary}
372 \usebeamercolor{palette secondary}
373 \begin{tikzpicture}[overlay,yshift=-80pt]
374   \def\w{\the\paperwidth}%
375   \def\h{\the\paperheight}%
376   \fill [palette primary.bg] (-0.2*\w,-1*\h) rectangle (1*\w, 0.5*\h);
377   \begin{scope}[fill=palette primary.bg!50!black,fill opacity=0.15]
378     \clip (0.63*\w,1.05*\h) circle (1*\h);
379     \fill (0.14*\w,-0.95*\h) circle (1.67*\h);
380   \end{scope}
381   \begin{scope}[fill=palette secondary.bg!50!palette primary.bg!70!white,
382     fill opacity=0.15]
383     \clip[xshift=26pt] (0.95*\w,-0.67*\h) circle (1.17*\h);
384     \fill
385       (0.14*\w,-0.95*\h) circle (1.67*\h)
386       (0.63*\w,1.05*\h) circle (1*\h);
387   \end{scope}
388 \end{tikzpicture}

```

Insert the logo in the crossing center of the overlapping circles.

```

389 \vfill
390 \begingroup
391   \raggedleft
392   \resizebox{!}{1cm}{\insertlogo}

```

Inset the “thank you” quote and the title of this beamer. Notice that three `\vfill` divide the frame into three portions with final adjust using `\vskip`.

```

393 \vfill
394 \vskip6em
395 \begin{beamercolorbox}[sep=8pt]{title}
396   \usebeamercolor[fg]{palette primary}
397   \usebeamerfont{title}\noindent
398   \ifx\beamer@sjtubeamermin@lang\beamer@sjtubeamermin@langcn
399     谢谢
400   \else
401     Thank You
402   \fi
403   \vskip1em%
404   \usebeamerfont{subtitle}\insertauthor~$\cdot$\inserttitle
405 \end{beamercolorbox}%
406 \vfill
407 \vskip3.5em
408 \endgroup
409 }

```

`\makebottom` The standard interface for making the bottom page in this template. Since there is no standard interface in beamer, the macro mimicked `\maketitle` macro to

provide such an interface.

```
410 \def\makebottom{
411   \ifbeamer@inframe%i
412   \bottompage%
413   \else%
414   \frame{\bottompage}%
415   \fi%
416 }
```

5.4 Outer Theme

A **beamer** outer theme dictates the style of the frame elements traditionally set outside the body of each slide: the head, footline, and frame title.

5.4.1 Option Declaration

lang Receive the language option.

```
417 \DeclareOptionBeamer{lang}{\def\beamer@sjtubeamermin@lang{#1}}
418 \def\beamer@sjtubeamermin@langcn{cn}%
419 \def\beamer@sjtubeamermin@langen{en}%
```

pattern Sets the pattern visibility in the title page and the header of each slide.

```
420 \DeclareOptionBeamer{pattern}{\def\beamer@sjtubeamermin@pattern{#1}}
421 \def\beamer@sjtubeamermin@patternnone{none}%
422 \def\beamer@sjtubeamermin@patterntitle{title}%
423 \def\beamer@sjtubeamermin@patternall{all}%
```

navigation Set the style of navigation bar.

tools The default navigation tools provided by **beamer** package, with the page number provided.

subsections The subsection progress bar, like the headline in **miniframe** outer theme.

pages The page number and the total page number only.

```
424 \DeclareOptionBeamer{navigation}{\def\beamer@sjtubeamermin@navigation{#1}}
425 \def\beamer@sjtubeamermin@navigationtools{tools}%
426 \def\beamer@sjtubeamermin@navigationsubsections{subsections}%
427 \def\beamer@sjtubeamermin@navigationpages{pages}%
```

Set up the default options of the outer theme. And then process the setting passed to the outer theme.

```
428 \ExecuteOptionsBeamer{
429   lang=cn,
430   pattern=all,
431   navigation=tools
432 }
433 \ProcessOptionsBeamer
```

5.4.2 Sidebar

Clear the original definition of sidebar first. Then append the page info to the footline, which could avoid collision on footnote.

```
434 \setbeamertemplate{sidebar right}{}{}
```

If the `navigation` option is set to `subsections`, then by calling `\insertnavigation` method embeded in beamer class, a subsection navigation toolbar could be generated. You could change the width of the subsection navigation bar in the first parameter of `\insertnavigation` command.

Hide the navigation info automatically when detecting that it is a part page, since there is a navigation bar in that page (defined in the inner theme). However, `\ifnum` may introduce some extra spacing, thus the top margin and the bottom margin could be a little bit different.

```
435 \ifx\beamer@sjtubeamermin@navigation\beamer@sjtubeamermin@navigationsubsections%
436   \addtobeamertemplate{footline}{
437     \vskip 4pt
438     \vbox{}
439     \ifnum\beamer@partstartpage=\c@page %
440       \else
441         \par\hfill\insertnavigation{0.4\paperwidth}\hspace*{0.1cm}
442       \fi
443     \par
444     \vskip 10pt
445     \vbox{}
446   }{}
```

Else, the option could be either `tools` or `pages`.

```
447 \else
```

Define the `\pagenumbering` macro to insert both the current page number and the total page number. With the proper font and color setting from `footline` and raise a little bit by a `\raisebox`.

```
448 \def\pagenumbering{
449   \raisebox{1.2pt}[0pt][0pt]{
450     \usebeamerfont{footline}
451     \usebeamercolor{footline}
452     \color{footline.fg!50}
453     \insertframenumber/\inserttotalframenumber
454     \hspace*{0.5em}
455   }
456 }
```

Append the page number info into the navigation symbols, which will be called by the `tools` option.

```
457 \addtobeamertemplate{navigation symbols}{}{
458   \hspace{1em}%
459   \pagenumbering
460 }%
```


Then, for different option, the visual could be different. As always, the toolbar should be hidden if it is a part page. But for `tools` option, use the `navigation symbols` template defined above. For `pages` option, use the `\pagenumbering` macro only.

```

461 \addtobeamertemplate{footline}{
462   \ifnum\beamer@partstartpage=\c@page %
463   \else%
464     \hfill%
465     \ifx\beamer@sjtubeamermin@navigation\beamer@sjtubeamermin@navigationtools%
466       \usebeamertemplate***{navigation symbols}%
467     \else
468       \pagenumbering%
469     \fi
470   \fi%
471   \hspace*{0.1cm}\par
472   \vskip 4pt
473 }{}
474 \fi%
```

5.4.3 Shape Dependencies

Load the shape package from SJTIvishape. To provide the logo and stamp array.

```

475 \RequirePackage{SJTIvishape}
```

5.4.4 Frame Title

Define the fade left little fading for frame title. To create a mask on the stamp array pattern.

```

476 \tikzfading[
477   name=fade left little,
478   right color=transparent!0,
479   left color=transparent!10
480 ]
```

Define the beamer template `frametitle`. Some code is from the original beamer definition on `frametitle` (LPPL-1.3c).

```

481 \defbeamertemplate*{frametitle}{sjtubeamermin}[1][left]
482 {%
483   \ifbeamercolorempy[bg]{frametitle}{}{\nointerlineskip}%
484   \@tempdima=\textwidth%
485   \advance\@tempdima by\beamer@leftmargin%
486   \advance\@tempdima by\beamer@rightmargin%
487   \begin{beamercolorbox}[sep=0.3cm,#1,wd=\the\@tempdima]{frametitle}
488     \begingroup
489     \usebeamerfont{frametitle}%
490     \ifbeamer@draftmode%
491     \else%
```

If it is not in draft mode, then the pattern on the section start page will get rendered. And the pattern height is the same as that of background color block, depend on whether there is a subtitle on that page.

Notice that it is not defined by the final calculation from LaTeX itself – it is rather hard coded.

TODO: There is a potential risk that if the text is longer than one line, the height could be wrong. That's the reason why it is only rendered in the section start page – to avoid such edge case as much as possible.

```

492     \ifx\beamer@sjtubeamermin@pattern\beamer@sjtubeamermin@patternall
493     \ifnum\beamer@sectionstartpage=\c@page %
494     \begin{tikzpicture}[overlay]
495         \ifx\insertframesubtitle\@empty%
496             \def\h{-0.11*\the\paperheight}
497         \else
498             \def\h{-0.125*\the\paperheight}
499         \fi
500         \usebeamercolor{palette primary}
501         \stamparray{20pt}
502             {(-0.05*\the\paperwidth,\h)}
503             {(\the\paperwidth,0.05*\the\paperheight)}
504         \fill [bg,path fading=fade left little] (-0.05*\the\paperwidth,\h)
505             rectangle (\the\paperwidth,0.05*\the\paperheight);
506     \end{tikzpicture}
507 \fi
508 \fi

```

Insert title and subtitle and make spacing depend on the existence of subtitle.

```

509 \fi%
510 \vbox{}
511 \ifx\insertframesubtitle\@empty\vskip-2pt%
512 \else\vskip-1ex\fi%
513 \if@tempswa\else\csname beamer@fte#1\endcsname\fi%
514 \strut\insertframetitle\strut\par%
515 {%
516     \ifx\insertframesubtitle\@empty%
517     \else%
518     {
519         \usebeamerfont{framesubtitle}
520         \usebeamercolor[fg]{framesubtitle}
521         \strut\insertframesubtitle\strut\par
522     }%
523     \fi
524 }%
525 \vskip-1ex%
526 \endgroup%

```

Finally, add the logo to the upper right corner. It will be scaled to a 0.7cm height one by using `\resizebox`.

```

527 \raggedleft%
528 \beginngroup

```

```

529 \ifx\insertframesubtitle\@empty\vskip-2.5ex%
530 \else\vskip-3.5ex\fi%
531 {\resizebox{!}{0.7cm}{\insertlogo}}\hspace*{2ex}%
532 \endgroup%
533 \ifx\insertframesubtitle\@empty%
534 \else\vskip0.5ex\fi%
535 \if@tempswa\else\vskip-.3cm\fi%
536 \end{beamercolorbox}%
537 }

```

5.5 Parent Theme

The primary job of this package is to load the component sub-packages of the SJTUBeamer `MIN` theme and route the theme options accordingly. It also provides some custom commands and environments for the user.

This declares that the following setup is available for all modes.

```
538 \mode<all>
```

5.5.1 Option Declaration

navigation Change the appearance of the navigation bar, which will affect in the outer theme.

```

539 \DeclareOptionBeamer{navigation}{
540 \PassOptionsToPackage{navigation=#1}{beamerouterthemesjtubeamermin}
541 }

```

lang Set the language of this beamer. Two options are provided:

cn Chinese. The loaded logo will be the original one. And the package for chinese character support (CTEXor CJK) will be loaded as well. The bibliography will also get affected.

en English. The loaded logo will be the English one.

This option will get passed to both inner and outer theme.

```

542 \DeclareOptionBeamer{lang}{
543 \def\beamer@sjtubeamermin@lang{#1}
544 \PassOptionsToPackage{lang=#1}{beamerouterthemesjtubeamermin}
545 \PassOptionsToPackage{lang=#1}{beamerinnerthemesjtubeamermin}
546 }
547 \def\beamer@sjtubeamermin@langcn{cn}%
548 \def\beamer@sjtubeamermin@langen{en}%

```

cjk Choose to use ‘CJK’ package. If this option is open, the document body should be covered by `\begin{CJK}{UTF8}{hei}` and `\end{CJK}`.

```

549 \DeclareOptionBeamer{cjk}{\def\beamer@sjtubeamermin@cjk{#1}}
550 \def\beamer@sjtubeamermin@cjktrue{true}%
551 \def\beamer@sjtubeamermin@cjkfalse{false}%

```

color Provided two options:

blue The default selection.

red The recommended theme for non-scientific scenario.

This option will be passed to the color theme and inner theme.

```
552 \DeclareOptionBeamer{color}{
553     \PassOptionsToPackage{color=#1}{beamercolorthemesjtubeamermin}
554     \PassOptionsToPackage{color=#1}{beamerinnerthemesjtubeamermin}
555 }
```

pattern Provided three options to affect the pattern in the slides:

none No patterns will be generated.

title A pattern array will get generated in the title page.

all Besides the title page, the frame title of section start page will get a stamp array pattern.

This option will get passed to the outer theme and inner theme.

```
556 \DeclareOptionBeamer{pattern}{
557     \PassOptionsToPackage{pattern=#1}{beamerouterthemesjtubeamermin}
558     \PassOptionsToPackage{pattern=#1}{beamerinnerthemesjtubeamermin}
559 }
```

gbt Choose the behaviour of citing.

false Use biblatex to cite.

bibtex Use bibtex to cite.

true Use biblatex-gbt7714-2015 to cite.

```
560 \DeclareOptionBeamer{gbt}{\def\beamer@sjtubeamermin@gbt{#1}}
561 \def\beamer@sjtubeamermin@gbttrue{true}%
562 \def\beamer@sjtubeamermin@gbtfalse{false}%
563 \def\beamer@sjtubeamermin@gbtbibtex{bibtex}%
```

The default default setting will get executed here before the settings defined by the user got processed.

```
564 \ExecuteOptionsBeamer{
565     navigation=tools,
566     cjk=false,
567     lang=cn,
568     color=blue,
569     pattern=title,
570     gbt=false,
571 }
572 \ProcessOptionsBeamer
```

5.5.2 Option Execution

Disable the warning from `hyperref` which conflicts the setting in C_T_EX or CJK. It has to be manually disabled.

```
573 \RequirePackage{silence}
574 \def\Hy@WarnOptionDisabled#1{
575     \def\next{#1}%
576     \ifx\next pdfauthor %
577         \ifx\next driverfallback %
578             \else
579                 \Hy@Warning{%
580                     Option ‘#1’ has already been used,\MessageBreak
581                     setting the option has no effect%
582                 }\fi%
583     \fi%
584 }
```

Process the option of `lang` and `cjk`. For Chinese typesetting, some translations are needed for CJKutf8 package.

```
585 \ifx\beamer@sjtubeamermin@lang\beamer@sjtubeamermin@langen%
586 \else
587     \ifx\beamer@sjtubeamermin@cjk\beamer@sjtubeamermin@cjktrue%
588         \RequirePackage{CJKutf8}
589         \renewcommand{\figurename}{图}
590         \renewcommand{\tablename}{表}
591         \renewcommand{\contentsname}{目录}
592     \else%
593         \RequirePackage[UTF8]{ctex}
594     \fi%
595 \fi
```

Process the option of `gbt` to handle the behaviour of citing. If `bibtex` is used, the corresponding bibliography style will get loaded according to `lang` option. Otherwise, set the style of `biblatex` and redirect `\cite` to `\footfullcite`.

```
596 \ifx\beamer@sjtubeamermin@gbt\beamer@sjtubeamermin@gbtbibtex%
597     \ifx\beamer@sjtubeamermin@lang\beamer@sjtubeamermin@langen%
598         \bibliographystyle{IEEEtran}
599     \else
600         \RequirePackage{gbt7714}
601     \fi
602 \else
603     \ifx\beamer@sjtubeamermin@gbt\beamer@sjtubeamermin@gbttrue%
604         \RequirePackage[style=gb7714-2015]{biblatex}
605     \else
606         \RequirePackage[style=authortitle-comp]{biblatex} %
607     \fi
608     \def\cite#1{
609         \footfullcite{#1}
610     }
611 \fi%
```

To avoid the messiness of Chinese bookmarks.

```
612 \hypersetup{unicode}
613 \RequirePackage{bookmark}
614 \WarningFilter{latexfont}{Font shape}
```

Specify presentation mode. Enable compress option on beamer to avoid multiline navigation dots and process the sub-styles in order.

```
615 \mode<presentation>
616 \beamer@compresstrue
617 \usecolortheme{sjtubeamermin}
618 \usefonttheme{sjtubeamermin}
619 \useoutertheme{sjtubeamermin}
620 \useinnertheme{sjtubeamermin}
```

The following code is merely an implementation of SJTU VI, which doesn't change the ownership of the design pattern. Any commercial usage should be acknowledged by the related administration of SJTU.

5.6 Color Definition

The following color is defined by SJTU VI.

cprimary The primary color, which influences the color of title and the background of title page.

csecondary The secondary color, which influences the color of subtitle.

ctertiary The tertiary color, which provides the color for the blocks.

cquanternary The quanternary color, which only influences the foreground of example blocks.

```
621 \ifx\beamer@sjtubeamermin@color\beamer@sjtubeamermin@colorblue%
622   \definecolor{cprimary}{HTML}{004098}      %problue
623   \definecolor{csecondary}{HTML}{298626}     %lightgreen
624   \definecolor{ctertiary}{HTML}{004D4B}     %lightgray
625   \definecolor{cquanternary}{HTML}{FFFFFF}   %white
626 \else%
627   \definecolor{cprimary}{HTML}{9E1F36}       %engred
628   \definecolor{csecondary}{HTML}{F28101}     %orange
629   \definecolor{ctertiary}{HTML}{FED201}     %yellow
630   \definecolor{cquanternary}{HTML}{000000}   %black
631 \fi%
```

5.7 Logo

\logo Depend on the language definition, load the required logo by default. The logo is protected by the copyright from SJTU. The logo could be customized by redefinition from **\logo** command.

```
632 \logo{
```

```

633 \ifx\beamer@sjtubeamermin@lang\beamer@sjtubeamermin@langen
634 \includegraphics{SJTUenlogo.pdf}
635 \else
636 \includegraphics{SJTUcnlogo.pdf}
637 \fi
638 }

```

5.7.1 Load TikZ

Load TikZ package and its related library: `pattern.meta` provides the interface to define a pattern; `fadings` provides the method to create a fading mask; `decoration.pathmorphing` provides the interface to user-define a decoration.

```

639 \RequirePackage{tikz}
640 \usetikzlibrary{patterns.meta}
641 \usetikzlibrary{fadings}
642 \usetikzlibrary{decorations.pathmorphing}

```

5.7.2 Shape Declarations

stamp Declare stamp pattern to make a stamp array.

The newest version of TikZ provides the interface to user-define a pattern. Obeying compatibility philosophy, use `\pgfkeyvalueof` interface to get parameters in a standard way. The unit is first tested in a standalone file and previewed by TikZEdt.

```

643 \tikzdeclarepattern{
644   name=stamp,
645   parameters={
646     \pgfkeysvalueof{/pgf/pattern keys/size},
647     \pgfkeysvalueof{/pgf/pattern keys/xshift},
648     \pgfkeysvalueof{/pgf/pattern keys/yshift},
649   },
650   defaults={
651     size/.initial = 5pt,
652     xshift/.initial = 0pt,
653     yshift/.initial = 0pt,
654   },
655   bottom left={ (
656     -0.5*\pgfkeysvalueof{/pgf/pattern keys/size}
657     +\pgfkeysvalueof{/pgf/pattern keys/xshift},
658     -0.4*\pgfkeysvalueof{/pgf/pattern keys/size}
659     +\pgfkeysvalueof{/pgf/pattern keys/yshift}
660   ) },
661   top right={ (
662     0.5*\pgfkeysvalueof{/pgf/pattern keys/size}
663     +\pgfkeysvalueof{/pgf/pattern keys/xshift},
664     0.4*\pgfkeysvalueof{/pgf/pattern keys/size}
665     +\pgfkeysvalueof{/pgf/pattern keys/yshift}
666   ) },
667   tile size={ (

```

```

668 \pgfkeysvalueof{/pgf/pattern keys/size},
669 0.8*\pgfkeysvalueof{/pgf/pattern keys/size}
670 )},
671 code={
672 \def\s{\pgfkeysvalueof{/pgf/pattern keys/size}}%
673 \tikzset{x=0.5*\s,y=0.2*\s}
674 \fill[xshift=\pgfkeysvalueof{/pgf/pattern keys/xshift},
675 yshift=\pgfkeysvalueof{/pgf/pattern keys/yshift}]
676 (-0.25*\s,0)
677 -- (-0.17*\s,0.06*\s)
678 -- (-0.17*\s,0.1*\s)
679 -- (0.17*\s,0.1*\s)
680 -- (0.17*\s,0.06*\s)
681 -- (0.25*\s,0)
682 -- (0.17*\s,-0.06*\s)
683 -- (0.17*\s,-0.1*\s)
684 -- (-0.17*\s,-0.1*\s)
685 -- (-0.17*\s,-0.06*\s) -- cycle;
686 }
687 }

```

\stamparray Create the stamp array in the TikZ environment.

Notice \TeX is not good at handling parameters. Always remember to store it into a temporary variable. Register `\pgfmathresult` will store the result of `\pgfmathparse`.

```

688 \providecommand{\stamparray}[3]{
689 %\#1: pattern size
690 %\#2: starting point
691 %\#3: ending point
692 \usebeamercolor{palette primary}
693 \fill [pattern={stamp[size=#1]},
694 pattern color=bg!50!fg] #2 rectangle #3;
695 \def\s{#1}%
696 \pgfmathparse{0.5*\s}\let\xs=\pgfmathresult%
697 \pgfmathparse{-0.4*\s}\let\ys=\pgfmathresult%
698 \fill [pattern={stamp[size=#1,xshift=\xs,yshift=\ys]},
699 pattern color=bg!50!fg] #2 rectangle #3;
700 }

```

stampline Declare a decoration to make a loop stampline.

Notice that `auto corner on length` is open to avoid spikes where the state hasn't meet final yet.

```

701 \pgfdeclaredecoration{stampline}{initial}
702 {
703 \state{initial}[
704 width=\pgfdecorationsegmentlength,
705 auto corner on length=\pgfdecorationsegmentlength]
706 {
707 \def\l{\pgfdecorationsegmentlength}%

```



```

708 \pgfpathlineto{\pgfpoint{0.25*\l}{0pt}}
709 \pgfpathlineto{\pgfpoint{0.33*\l}{0.06*\l}}
710 \pgfpathlineto{\pgfpoint{0.33*\l}{0.1*\l}}
711 \pgfpathlineto{\pgfpoint{0.67*\l}{0.1*\l}}
712 \pgfpathlineto{\pgfpoint{0.67*\l}{0.06*\l}}
713 \pgfpathlineto{\pgfpoint{0.75*\l}{0pt}}
714 \pgfpathlineto{\pgfpoint{\l}{0pt}}
715 }
716 \state{final}
717 {
718 \pgfpathlineto{\pgfpointdecoratedpathlast}
719 }
720 }

```

Good Luck with SJTUBeamer MIN !

Developer

Log Creative

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