

# Developer's Guide on SJTUBeamer MIN

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June 3, 2021

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## 1 Preface

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

<span style="border: 1px solid black; padding: 0 2px;">MIN</span>	- <i>minimal</i> :	minimal work set of SJTU VI.
<span style="border: 1px solid black; padding: 0 2px;">MIN</span>	- <i>minimalism</i> :	designed in the style of minimalism.
<span style="border: 1px solid black; padding: 0 2px;">MIN</span>	- <i>minimum</i> :	minimum shapes to show your content.

## 2 Compliation

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

The detailed description is documented below.

pgfplots	tikz	xcolor
pgfplotstable	sansmath	tcolorbox
ctex	biblatex	beamer

## 2.1 MiKTeX

All required packages will be automatically installed if you are using MiKTeX[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 T<sub>E</sub>X Live

Since some packages are not default installed in the full release of T<sub>E</sub>X Live, you have to install the packages manually.

On Ubuntu, you could install `pgf` and `xcolor` and other drawing packages through the following command[6]:

```
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[5]:

```
\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 T<sub>E</sub>X 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[7]:

```
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 T<sub>E</sub>X 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<sup>A</sup>T<sub>E</sub>X to XeL<sup>A</sup>T<sub>E</sub>X 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.

In the future, the project will be implanted to Overleaf. And to make that works, the compilation on T<sub>E</sub>X Live 2021 has to be implemented. Currently, CI is only available on Github Actions by compiling on LuaL<sup>A</sup>T<sub>E</sub>X. See `.github/workflows/main.yml` for details.

At the same time, AutoBeamer[3] 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<sup>A</sup>T<sub>E</sub>X code.

Furthermore, there is a wider 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<sup>A</sup>T<sub>E</sub>X at the package `animate`. In fact, the author created some batch compiling work[4] together with the `-Parallel` parameter in PowerShell 7 to make full use of the concurrent computer architecture.

## References

- [1] “MikT<sub>E</sub>X.” [Online]. Available: <https://miktex.org/>
- [2] “Perl.” [Online]. Available: <https://www.perl.org/>
- [3] Log Creative, “Autobeamer.” [Online]. Available: <https://github.com/LogCreative/AutoBeamer>
- [4] —, “PGFPlotsEdt.” [Online]. Available: <https://github.com/LogCreative/PGFPlotsEdt/blob/master/res/logo/anim/animrender.ps1>
- [5] —, “L<sup>A</sup>T<sub>E</sub>X Sparkle Project Chapter 3.” [Online]. Available: <https://logcreative.github.io/LaTeXSparkle/src/art/chapter03.html>
- [6] T. Tantau, J. Wright, and V. Miletic, *The beamer class: User Guide for version 3.59.*, Jul. 2020. [Online]. Available: <https://github.com/josephwright/beamer>
- [7] TUG, “Upgrade from T<sub>E</sub>X Live 2020 to 2021.” [Online]. Available: <http://www.tug.org/texlive/upgrade.html>