zTEX User Manual

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CONTENTS NEW

1 Basic Introduction

\zLaTeX

Updated: 2024-11-05

\zTeX

\zLaTeX

Used to output the logo corresponding to this macro package. Example usage is as follows:

```
Hello \zTeX{}; Hello \zLaTeX{}.
```

Example 1

Hello zTEX; Hello zLATEX.

zTEX document class is based on the article document class by default, but you can still choose to load other document classes when loading this one by setting the option ⟨*class*⟩ to article or ctexbook. By changing the default document class, different user needs can be met. Currently, this template can be used in the following scenarios:

- Writing books or notes
- Discussion class slide creation

Original intention of zTEX: to allow users to easily write books and notes, and to seamlessly switch to daily report slides. zTEX is entirely written in LATEX3, and uses the ⟨*key-value*⟩ format for configuring options and commands. For authors: it facilitates future template extension and maintenance; for users: using key-value pairs reduces the burden of remembering command parameters, making it easier to use commands. If you are familiar with LATEX, it will take less than 10 minutes to get started with this document class to complete the tasks mentioned above, reducing unnecessary work.

2 Installation and Usage

2.1 Online Usage

To allow some users to directly experience zTEX without the `complicated` environment setup, I have deployed this template on TEXPage. The address is: TeXPgae zTEX Project. Simply open this link to try it out. The project address on Github is: https://github.com/zongpingding/zTeX_bundle, which contains the source code and documentation for both this manual and the zTikZ documentation. Due to some technical reasons, please use zTikZ locally.

2.2 Local Installation

Currently, this document class zTEX has not been submitted to CTAN, and there may be no plans to do so in the future, as the template is not yet fully developed. Since some LATEX3 commands used in this document class do not exist in older versions, compilation

may fail if your TEXLive is too outdated. The current known compatibility of zTEX document class across platforms is:

Windows : Minimum TEXLive version 2022

Linux : Minimum TEXLive version 2022

MacOS : Compatible with MacTEX2024 (should also work with older versions)

ztool

Updated: 2024-12-05

`\usepackage{ztool}`

This macro package has independently implemented a ztool package, which contains all commands from the deprecated l3sys-shell. ztool implements functions related to box and file IO operations. With the assistance of ztool, zTEX can avoid or reduce calls related to `-shell-escape`. For the ztool manual, please refer to **??**.

Since zTEX has not been submitted to CTAN (may be considered in the future), there are two ways to use this document class:

- Place all contents from the `ztex` directory into your current project folder
- Run the command in terminal: `kpsewhich -var-value=TEXMFHOME`. On Windows, this is typically: `C:/Users/`⟨*name*⟩`/texmf/`, and on Linux: `~/texmf/`. The exact path depends on your system. Create a new folder `tex/latex/ztex` under this path, denoted as ⟨*zTEX*⟩, then place all contents from the `ztex` directory into ⟨*zTEX*⟩.

In the subsequent sections of this manual, we use ⟨*zTEX*⟩ to represent the root directory of this macro collection.

2.3 Minimal Working Example

The minimal working example for zTEX is as follows[1]. First is the Chinese writing example, which loads the article document class by default. If you prefer using the book document class, you can specify `class=book` when loading the document class.

Example 2

```
% !TeX program = XeLaTeX
\documentclass[lang=cn]{ztex}

\begin{document}
% some preface
% \tableofcontents

% writing your document here ...
\end{document}
```

[1]The preamble configuration may need adjustment based on actual requirements. For detailed configuration, please refer to later sections.

Next is the English writing example. Here, the base document class is changed to book. You only need to modify two things: first, change the language option to `lang=en` (this is the default option), and second, change the compilation method to pdfLaTeX.

Example 3

```
% !TeX program = pdfLaTeX
\documentclass[class=book]{ztex}

\title{⟨title⟩}
\author{⟨author⟩}
\date{⟨date⟩}
\begin{document}
\maketitle
\frontmatter
% some preface
% \tableofcontents
% some claim etc.
\mainmatter

% writing your document here ...
\end{document}
```

When using the book document class, if you don't load the commands `\frontmatter` and `\mainmatter`, it may cause incorrect formatting of headers and footers throughout the document.

3 zTEX Configuration

3.1 Preface

Before reading this manual, we establish the following conventions:

- Options marked with ☆ can only be used as package/document class options and need to be specified when loading the package/document class;
- Options marked with ⋆ can only be set through the user interface `\ztexset` provided by the zTEX macro collection;
- Options without special marks can be used either as package/document class options or set through `\ztexset`.

Additionally, for the series of commands provided by zTEX, we establish:

- Commands marked with ⋆ can be fully expanded in `x, e, f` type parameters;
- Commands marked with ☆ can only be fully expanded in `x, e` type parameters but not in `f` type parameters;

3.2 Package Mechanism

The zTEX document class automatically processes and loads corresponding packages based on user-specified options. Therefore, the packages and commands loaded by the zTEX document class vary depending on the preamble configuration. The following sections detail the package loading under different preamble configurations and compilation engines.

zTEX always adheres to the principle of minimal dependencies, implementing functionalities independently whenever possible without introducing additional packages. For example, the `\pageref{LastPage}` provided by the lastpage package, which some users may need, has been implemented as: `\pageref{ztex:lastpage}` (hyperlink jumps may not work correctly when page numbers are correct; in such cases, you can use the anchor `ztex@lastpage`).

3.3 Basic Packages

zTEX loads a series of basic packages, meaning these packages will be loaded regardless of the user's preamble configuration. The specific package loading is as follows:

geometry	fancyhdr	graphicx	xcolor
amsmath	amsfonts	esint	framed
cleveref/zref-clever	sidenotes	titlesec	titletoc

Table 1: zTEX Document Class Basic Packages

zTEX loads only a few basic packages by default. Users who want more personalized features should load additional packages themselves. With default settings, the template already produces good results, so users unfamiliar with LATEX need not worry about overly complex configuration options. Ready to start? Please refer to the minimal writing example in "section (2.3)".

3.4 Preamble

`\ztexset` `\ztexset{⟨key-value⟩}`

Updated: 2025-04-25

zTEX accepts a series of key-value pairs for configuration. Some configurations can only be specified when loading the document class.

`\ztexoption`

Updated: 2025-04-25

`\ztexoption`

A built-in command of zTEX used to print the options received by the document class zTEX. Useful for debugging. Example usage:

Example 4

```
\ztexoption
```

Class Options: en - 10pt

The configuration options of zTEX can be specified when loading the document class or through the command `\ztexset`. The ⟨*key-value*⟩ pairs of zTEX are divided into two levels. The first-level keys ⟨*layout*⟩, ⟨*mathSpec*⟩, ⟨*toc*⟩, ⟨*packageOption*⟩, ⟨*classOption*⟩, ⟨*toc*⟩, ⟨*font*⟩ each have their own sub-keys (⟨*sub-key*⟩), while other keys can be specified directly. For the relationship between different levels of ⟨*key-value*⟩ pairs, see figure (1).

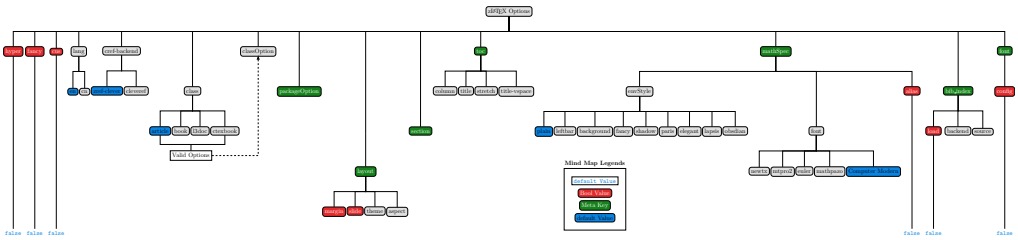

Figure 1: zTEX Document Class Options Diagram

Overall, the document class options of zTEX are relatively complex. For users new to this document class, it's not necessary to know all configuration options, as zTEX already produces good results with default settings. Below, we will detail the specification methods and meanings of each ⟨*key*⟩.

`\ztexloadmod`
`\ztexloadlib`

Updated: 2025-04-25

`\ztexloadmod{`⟨*module name*⟩`}`
`\ztexloadlib{`⟨*library name*⟩`}`

These commands can be used to load modules and libraries of zTEX. All modules are loaded by default, while libraries are not loaded by default and need to be specified by users. The current lists of modules and libraries are as follows:

Module List:

- `ztex.module.font.tex`
- `ztex.module.ref.tex`
- `ztex.module.page.tex`
- `ztex.module.color.tex`
- `ztex.module.thm.tex`
- `ztex.module.sect.tex`

Library List:

- `ztex.library.fancy.tex`
- `ztex.library.alias.tex`
- `ztex.library.slide.tex`
- `ztex.library.thm.tex`

The loading methods for each module and library are shown in the following example:

Example 5

```
% \documentclass{ztex}
\ztexloadlib{fancy}
\ztexloadlib{alias}
\ztexloadlib{slide}
\ztexloadlib{thm}
```

You can certainly write your own module, let's assume its name is ⟨*moduleA*⟩. Name this file `ztex.module.`⟨*moduleA*⟩`.tex`, place it under the path ⟨*zTEX*⟩`/module/`, and then load it with the following command:

Example 6

```
\ztexloadmod{⟨moduleA⟩}
```

`lang` ☆

`lang=`⟨*cn, en*⟩

Updated: 2024-11-05

Currently, zTEX only supports Chinese and English, with partial support for French. Depending on the document class language, zTEX loads different language-related packages. The package loading under different ⟨*lang*⟩ settings is as follows:

lang=en	inputenc(pdfTEX)	fontenc	babel	microtype
lang=cn	fontspec	ctex		

Table 2: zTEX Document Class Language Packages

`hyper` ☆

`hyper=`⟨*true, false*⟩

Updated: 2024-11-05

Whether to enable internal document hyperlinks and PDF bookmarks. Default is `false`. It is recommended to enable this option in the final draft, while setting it to `false` during the drafting stage can speed up compilation.

`fancy` ☆

`fancy=`⟨*true, false*⟩

Updated: 2024-11-05

This option controls the document's appearance, including section styles and theorem-like environment styles. Default is `false`.

`class` ☆

`class=`⟨*article, book, ctexbook*⟩

Updated: 2024-11-05

This option specifies the base document class to load. Default is article. After loading the ctexbook document class, you can use its `\ctexset` command for configuration.

classOption ☆

Updated: 2024-11-05

classOption=⟨*class options*⟩

This option accepts a comma-separated list to pass base document class options. For the default article document class, this is `oneside, 12pt`. A simple configuration example:

Example 7

```
\documentclass[
  class=article,
  classOption={10pt, leqno, a4paper},
]{ztex}
```

packageOption ☆

Updated: 2024-11-20

packageOption=⟨*key-value*⟩

This option accepts key-value pairs to pass options to different packages. Example usage:

Example 8

```
\documentclass[
  packageOption={
    fontspec=quiet,
    ctex={scheme=plain, punct=quanjiao},
  },
]{ztex}
```

toc

Updated: 2024-12-25

toc=⟨*key-value*⟩

This option sets the table of contents style. All available configurations are:

Example 9

```
\ztexset{
  toc={
    column=⟨int:1⟩,
    title=⟨tl:Contents⟩,
    title-vspace=⟨dim:-2em⟩,
    stretch=⟨float:1⟩
  }
}
```

If the above ⟨*column*⟩ ≥ 2, zTEX will automatically load the multicol package. Note: Since document class options in LATEX cannot contain control sequences, if any sub-item of ⟨*toc*⟩ contains control sequences, it must be set through the command `\ztexset`. Example:

Example 10

```
\ztexset{
  toc={
      title=\hfill\large\normalfont CONTENTS {\sffamily\small NEW}\hfill
    }
}
```

font ☆

Updated: 2024-12-06

font = ⟨key-value⟩

This option is currently experimental and mainly for font configuration. Default is `false`. When enabled, zTEX will automatically load the fontspec package, requiring the engine to be switched to XeLaTeX or LuaLaTeX. Current available options:

Example 11

```
\documentclass[
  font={config=⟨true, false⟩}
]{ztex}
```

layout ☆

Updated: 2024-11-05

layout=⟨key-value⟩

Set document layout. All available configurations:

Example 12

```
\documentclass[
  layout={
    margin=⟨bool:false⟩,
    slide=⟨bool:false⟩,
    aspect=⟨float|float:12|9⟩,
    theme=⟨str:AnnArborDefault⟩
  },
]{ztex}
```

After loading the `slide` library, if ⟨*slide*⟩=`true` is set, the document can be switched to slide mode.

bib_index

Updated: 2024-12-05

bib_index=⟨key-value⟩

This option controls whether the document generates indexes and references. All available options:

Example 13

```
\ztexset{
  bib_index={
    load=⟨bool:false⟩,
    source=⟨str:ref.bib⟩,
    backend=⟨str:biber⟩
  }
}
```

⟨*load*⟩ controls whether to load the biblatex package. Default is `false`. ⟨*source*⟩ specifies the reference source file, defaulting to `ref.bib`. ⟨*backend*⟩ specifies the reference backend, defaulting to biber.

mathSpec

Updated: 2024-11-05

mathSpec=⟨key-value⟩

This key configures math typesetting options. All available options:

Example 14

```
\ztexset{
  mathSpec={
    alias=⟨bool:false⟩,
    envStyle=⟨tl:plain⟩,
    font=⟨choice:ncmrm⟩
  }
}
```

⟨*alias*⟩ defaults to `false`. When set to `true`, zTEX loads the `alias` library, which contains shorthand declarations for a series of commands, such as `\ZZ` for `\mathbb{Z}`. ⟨*envStyle*⟩ specifies the style of math environments, defaulting to `plain`. For compilation speed considerations, although zTEX predefines a series of environment styles, it does not preload all styles, instead moving some to the `theme` library. The detailed predefined style list is:

thm module defined styles:

- plain
- background
- leftbar
- fancy

theme library defined styles:

- shadow
- paris
- elegant
- obsidian
- lapsis

⟨*font*⟩ specifies the math formula font. Predefined fonts include: `newtx, euler, mtpro2, mathpazo, ptmx`. Among these, `mtpro2` is a paid font and requires manual installation by users.