Ethan Lu

An Introduction to Complex Geometry

First Edition

logo

As my first english book, i'm happy.

—— Ethan Lu
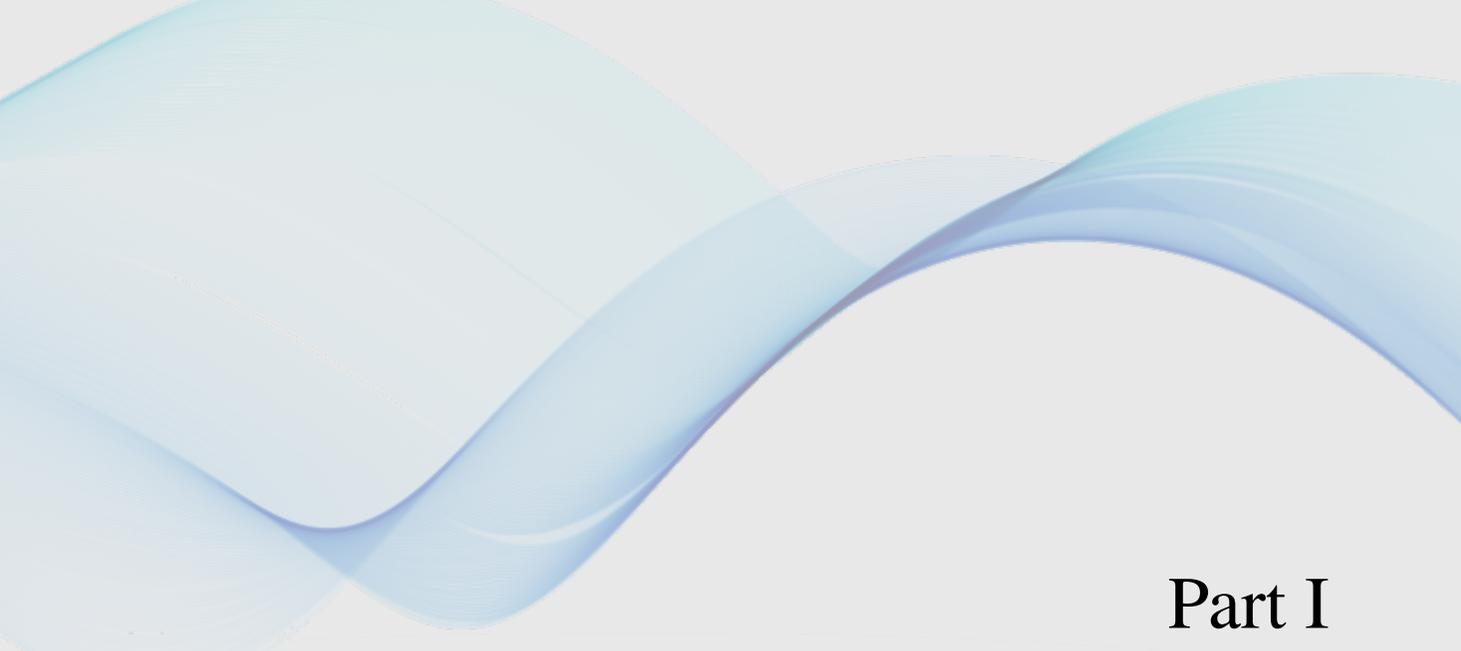2023-01-11

Contents

The template usage introduction of Beautybook

Here is the introduction area of each part, where you can write a concise overview of the part, of course, if there is nothing to say, you can leave it blank.

1 A short introduction of Beauty-book

Beauty LaTeX series of templates is a book series made by me, an unknown little person. In fact, there are only two series, one is the custom book template **fancybook**, which is dedicated to the fresh and elegant style. (this has been changed permanently, because of my aesthetic problem, I prefer "Beauty", forgive me!), the other is my flagship product- **Beautybook**! About why they have such strange names? My answer is, originally I wanted to name it elegantboook, but there is already the famous elegantbook series, so I can only settle for the next best thing and name it a combination of a noun and a book with the same meaning of beauty, the Ancients Cloud: the book has its own Yan Ruyu, this is not, the beauty with books, is not beautiful! Therefore, this is the origin of **beauty book**!

I am committed to creating a series of beautiful, elegant, simple template to facilitate the use of users and myself (mainly for their own, but can not stand the appreciation of everyone, I would like to introduce myself, please understand!). Version changes frequently, please pay attention to version information, before starting to use templates, it is recommended to choose the latest official version! The latest test version will usually be released in the QQ Group, you can take it, after taking it is to stay at will.But unfortunately, I will be on July 5 in 2023 to stop maintenance and updates, so I can no longer solve the problem for you in the Q Group, Sorry!

This article covers some of the setup and basic usage of this template. If you have any other questions, suggestions or comments, feel free to submit them to me on GitHub issues or 163 mail or QQ mail QQ mail.

The template address are

- GitHub address: https://github.com/BeautyLaTeX/latex-template,
- Download frome here: Official release,
- User QQ Group: 809237593.

This work is released under the LaTeX Project Public License, v1.3c or later.

Sec 1.1 Template Installation and Update

You will need to use this template by downloading it and compiling it. Only use it locally (within a folder).

1.1.1 Use template online

This template can be uploaded directly to overleaf for use, but note that you need to write `math-font=plain` in the premble and compile with the XeLaTeX engine!

1.1.2 Local Installation

Local Installation use the following method: download the latest version from GitHub or QQ group, strictly need only class file `.cls` and some folders. Then place the template files in your working directory and synchronously copy these folders: `fonts`, `stys`, `figures`, and `inner_pics`, `frontmatter` to use. (If you are a chinese user, you can choose to copy the chinesefonts folder.) The advantage of this is that you can install `mtpro2` font to achieve a more elegant effect than if you were using it online. Of course, the choice is left to the users, and I won't comment here.

The following are examples of minimal work:

```
1    \documentclass[zihao=-4,fontset=none]{Beautybook-V6.1-CN} %
    Instead of using a custom font, change it to fontset = Windows
    /Mac/Ubuntu and comment out stys/Settings-CN. Chinese font
    settings at the end of this sty! If you want to learn to use
    third-party fonts, you can also refer to their own
    configuration!
2    \coverstyle={ % List of covers key values
3        cover-choose=cn, % cn (A new entry is required \entitle
    {#}); en ; enfig ; birkar
4    }
5    \mathstyle={ % List of math fonts key values
6        math-font=mtpro2, %plain (Default mathematical font);
    mtpro2 % !! Do not use the key value if the mtpro2 font isn't
    installed!
7    }
8    \usepackage{stys/settings-CN}
9    \begin{document}
10   \thispagestyle{empty}
11   \entitle{entitle,only when you use cncover} % cn
12   \title{Title here}
13   \subtitle{XX}
14   \edition{First Edition}
15   \bookseries{Series}
16   \author{your name here}
17   \pressname{press name}
18   \presslogo{inner_pics/Springer-logo.png}
19   \coverimage{inner_pics/coverimage.jpg} % cn
20   %\coverimage{inner_pics/ivy-ge998908f8_1280.jpg}
21   \makecover %
22
23   % Theme color
24   \definecolor{bg}{HTML}{e0e0e0}
25   \definecolor{fg}{HTML}{203A43}
26   \colorlet{outermarginbgcolor}{bg}
27   \colorlet{outermarginfgcolor}{fg}
```

```
28    \colorlet{framegolden}{fg}
29    \colorlet{framegray}{red!15}
30    %
31    \input{frontmatter/titlepage-cn} % Titlepage
32    %
33    \frontmatter
34    \pagenumbering{Roman}
35    \input{frontmatter/preface-cn} % preface
36    \thispagestyle{empty}
37    \tableofcontents\let\cleardoublepage\clearpage
38
39    \mainmatter
40    \pagenumbering{arabic}
41    \partimage{inner_pics/part.png} % Part Pictures is needed,
   which is only need to write once.
42    \partabstract{\hspace{2em} XX} % Part introduction. If you
   don't want to write, it can be left blank.
43    \part{XX}
44    % \input{XX}
45    \backmatter
46    \appendix
47    %
48
49
50    \normalem
51    \printbibliography[
52    heading=bibintoc,
53    title={Reference}
54    ]
55    \printindex
56    \thispagestyle{empty}
57    \bottomimage{inner_pics/ivy-ge998908f8_1280.jpg}
58    \ISBNcode{\EANisbn[ISBN=ISBN Number here]} %
59    \summary{Bottom Information}
60    \makebottomcover
61    \end{document}
```

1.1.3   Release installation and updates

The test environment for this template is
   1. Win11 22H2 + TEX Live 2023;
For the installation of TEXLive/MacTEX , please refer to articles online, which is omitted here.
   After installing TEX Live, it is recommended to upgrade all macro packages after installation, upgrade method: use cmd or terminal to run `tlmgr update --all`, if tlmgr needs

to be updated, use cmd to run `tlmgr update --self`, if there is a break in the update process, please use `tlmgr update -- self --all --reinstall-forcibly-removed` update, that is

```
1  tlmgr update --self
2  tlmgr update --all
3  tlmgr update --self --all --reinstall-forcibly-removed
```

Please refer to How do I update my TeX distribution? for more information.

2 The setting of Beautybook Template

The English version of this template is based on the basic book class, and the Chinese version is based on the ctexbook class, so the option of book or ctexBook is also valid for this template. The default encoding is `UTF-8`, and it is recommended to compile with TEX Live.

Sec 2.1 Language Mode

This template contains two basic locales, `Beautybook-V6.1.cls` in Chinese and `Beautybook-V6.1-EN.cls` in English. Changing the locales will change the leading words (include figures, tables) of the chart title, the structure of the article (e.g. table of contents, references, etc.), and the leading words in the context of the theorem (e.g. Theorem, lemma, etc.). The different language modes are enabled as follows:

```
1 \documentclass{Beautybook-V6.1-CN} % chinese
2 \documentclass{Beautybook-V6.1-EN} % english
```

In addition to the two sets of language settings that come with the template, if you need to use other languages, you can solve these problems by changing the `.cls` file
1. Change the name of the part environment `Part\ \thepart` to `(translation of part in your language)\ \thepart`
2. Main file, which is the theorem guide word in the introduction area of the current file
3. Change the name of the part in the chapter environment as shown in the first article
4. Keep in mind that only Asian locales can use the ctexbook class, i.e. based on `Beautybook-V6.1-CN.cls` changes, other Spanish environments need to be changed based on `Beautybook-V6.1-EN.cls`.

Sec 2.2 Color Theme

The color of this template is freely configurable, and the color parameters that can be configured are as follows:

```
1    \definecolor{bg}{HTML}{e0e0e0} % Overall style background
  color % i.e. light color
2    \definecolor{fg}{HTML}{455a64} % Overall style foreground
  color % i.e. dark
3    %% The colors below are in the stys/bottompage.sty file
```

```
4      \definecolor{coverbgcolor}{HTML}{f9b868} % Cover and back
   cover background color
5      \definecolor{coverfgcolor}{HTML}{503D4B} % foreground color
   on the front and back covers
6      \definecolor{coverbar}{HTML}{BF8E6F} % cover bar color
7      \definecolor{bottomcolor}{HTML}{B3686A} % The back cover
   indicates the background color
8      %%%%%%%%%%%%%%%%%%%%%%%%%%
9      \colorlet{framegolden}{fg} % Antique box line color
10     \colorlet{framegray}{Dilu!5} % Antique box background color
```

There are also theorem environment colors that can be set in the introduction area of this file, which will be expanded on in the following section on the mathematical environment.

Here it is recommended to use the color configuration of the cncolours macro package developed by Lin Lianzhi, and you can select the appropriate color for comparison.

Sec 2.3   **Cover**

2.3.1   **Cover personalization**

This template has multiple sets of covers that can be used at will, and the use of them is as follows:

1. Springer classic cover –corresponding macro package `cover-choose=cn` (Chinese default),
2. Springer Classic Cover 2 - corresponding to the macro package `cover-choose=en` (English default),
3. Springer Classic Cover No. 3 - corresponding to macro package `cover-choose=enfig` (image background),
4. Chinese classic cover of the book - corresponding to the macro package `cover-choose=birkar` (triangular geometric wind).
   Note that the information corresponding to the cover is not the same, look at the above example, just follow the requirements.

Table 2.1: cover element information

Information	Commands	Information	Commands	Information	Commands
Title	\title	subtitle	\subtitle	author	\author
Publisher	\pressname	Version	\edition	cover image	\coverimage
Logo	\presslogo	English title (cn)	\entitle		

2.3.2 cover image

The cover image can be found by yourself.

2.3.3 logo

The logo used in this article is the springer classic horse logo that the wiki finds at random, you can query and download the publisher logo by yourself, in order to avoid infringement, please choose a suitable and legal picture to replace when replacing the picture.

2.3.4 custom cover

In addition, if you use a custom cover, such as an A4 PDF document made by Adobe illustror or other software, comment out `makecover`, and then insert the custom cover with the help of the `pdfpages` macro package. It is similar if you use the `titlepage` environment.

Sec 2.4 chapter title

This template customizes a set of heading styles, mainly Part, Chapter, Section three headings, see CLS for specific code. It may not suit everyone's aesthetic, and commenting it out will return to the default ctexbook heading style.

Sec 2.5 Introduction to the Mathematical Environment

In our template, we have defined four different theorem modes, including simple mode (default theorem style amsthm), a little custom thmtools, a color emphasis box, and an exclusive copyright box developed by me, of course, the ancient style box customized by Mr. Kirigetsu You can also use it as a theorem box, just add lstinlineys style to the first theorem style in the introduction area of this document.

2.5.1 Use of theorem class environment

The following is a demonstration of the use effect subsubsectionamsthm

Remark. *This is an amsthm-based annotation environment*

2.5.1.1 thmtools

Proof (description of proof). Proof environment □

Solution (test sol.). Solution environment □

2.5.1.2   color accent box

Definition 2.5.1 (name of the definition)**.** *The first defines the environment*

Theorem 2.5.1 (name of the thm)**.** *The first theorem environment*

Corollary 2.1 (name of the corollary)**.** *The first inference environment*

Proposition 2.5.1 (name of the prop)**.** *The first propositional environment*

Example 2.1 (name of the example)**.** *The first example problem environment*

Lemma 2.5.1 (name of the lem)**.** *The first lemma environment*

2.5.1.3 There are two types of boxes for personal copyright

Definition 2.5.1. (Name)

This is a custom box custom theorem environment, which is an example of where the environment is defined. Note: Use as follows

- *If you don't have a name and label, use it as*

```
1        \begin{definition}
2            Define the environment content
3        \end{definition}
4
```

- *If you don't have a label but have a name, use it as*

```
1            \begin{definition}[][Name]
2                Define the environment content
3            \end{definition}
4
```

- *If you have a tag, then whether or not it has a name, use it as*

```
1            \begin{definition}[][Yes, fill in, no blank][
     Tag]
2                Define the environment content
3            \end{definition}
4
```

- *If you want to change some setting options of the box, such as bordering, etc., use it*

```
1            \begin{definition}[tcolorbox option][write
     the name if it has, delete it with the outer
     parentheses if it does not][tag (there is a tag under
     the tag, there is no tag can delete the label with the
     outer parentheses)]
2                Define the environment content
3            \end{definition}
4
```

Theorem 2.5.1.

*The usage is the same as above, refer to the tag 2.5.1 below or you can **Definition 2.5.1**.*

Lemma 2.5.1.

The usage is the same as above, refer to the tag 2.5.1 below or you can **Definition 2.5.1**.

Corollary 2.5.1.

The usage is the same as above, refer to the tag 2.5.1 below or you can **Definition 2.5.1**.

Example 2.5.1.

The usage is the same as above, refer to the tag 2.5.1 below or you can **Definition 2.5.1**.

Antique box

Antique box test, you can nest other environments arbitrarily!

2.5.2   modify counter

If you want to modify the theorem environment to count by section, you can modify the `chapter` in the counter option `counter/.code`, the available options are `chapter` (default) and `section`, `subsection`, etc

2.5.3   custom theorem class environment

Users can define their own theorem environment in four ways, namely amsthm and thmtools, which can be seen in the macro package documentation; The latter two theorems are defined in the following way.

For example, in the introduction to this document:

```
1    % This is the first one.
2    \mynewtheorem{
3        defi={\textbf{Definition}}[section]{interior style={left
  color=ReD!8,right color=ReD!5!CyaN!50}, borderline west={1.5
  mm}{0mm}{ReD}},
4    }
5
6    % This is the second one.
7    \mynewtcbtheorem{
8    theorem={ % Christmas gift box style
9        counter=tcbthm,
10        the counter=\thesection.\arabic{tcbthm},
11        name=Theorem, % It is saved to \theorem@name.
```

```
12          thmcolor=purple5,
13          autoref name=\bfseries Theorem,
14          style={
15          arc=3pt,breakable,enhanced,interior style={top color=
    purple5!5 ,middle color=purple5!1!nuanbai, bottom color=
    nuanbai},boxrule=0pt,top=8mm,
16          fuzzy shadow={-0.6mm}{0.6mm}{0mm}{0.3mm}{white!50!gray
    },% shadow up
17          fuzzy shadow={0.6mm}{-0.6mm}{0mm}{0.3mm}{fill=white!40!
    gray},% shadow down
18          opacityframe=0, opacityback=0.98,
19          fontupper=\itshape, step={tcbthm},
20          before pre=\smallskip, after app=\smallskip,
21          overlay unbroken=\my@theorem@overlay@unbroken{\
    theorem@name\ \thetcbthm}{\theorem@thmcolor},
22          overlay first=\my@theorem@overlay@first{\theorem@name\ \
    thetcbthm}{\theorem@thmcolor},
23          overlay last=\my@theorem@overlay@last{\theorem@thmcolor
    },
24          }
25      },
26      lemma={ %  Ribbon style
27          counter=tcblem,
28          the counter=\thesection.\arabic{tcblem},
29          name=Lemma,
30          lemcolor=(color),
31          autoref name=\bfseries Lemma,
32          style={
33          arc=0mm,breakable,enhanced,interior style={top color=(
    color)!5 ,middle color=(color)!1!nuanbai, bottom color=nuanbai
    },arc=3pt,boxrule=0pt,top=7mm,bottom=5mm,
34          fuzzy shadow={-0.6mm}{0.6mm}{0mm}{0.3mm}{white!50!gray
    },% shadow up
35          fuzzy shadow={0.6mm}{-0.6mm}{0mm}{0.3mm}{fill=white!40!
    gray},%shadow down
36          opacityframe=0, opacityback=0.98,
37          fontupper=\normalsize,step={tcblem},
38          before pre=\smallskip, after app=\smallskip,
39          overlay unbroken=\my@lemma@overlay@unbroken{\lemma@name\
     \thetcblem}{\lemma@lemcolor},
40          overlay first=\my@lemma@overlay@first{\lemma@name\ \
    thetcblem}{\lemma@lemcolor},
41          overlay last=\my@lemma@overlay@last{\lemma@lemcolor},
42          }
43      },
```

```
44 }
```

Remark. *To explain, the overlay part needs to be changed Chinese seen, the theorem name is changed to what you want, and the color is also, and then don't forget to change the outermost environment name such as example to yours, such as axiom and the like, and the counter name of tcbexam should be replaced with your new definition, such as tcbaxiom and the like, and the rest does not need to be moved. As for the first theorem style, look at the above example, I believe you can learn.*

Sec 2.6 list environment

This template is customizable with the help of lstinlineenumitem, see the enumitem macro package documentation, here the example is as follows

- ⊙ first item of nesti;
- ⊙ second item of nesti;
  - – first item of nestii;
  - – second item of nestii;
    - ∗ first item of nestiii;
    - ∗ second item of nestiii.

1) first item of nesti;
2) second item of nesti;
   (a) first item of nestii;
   (b) second item of nestii;
      i. first item of nestiii;
      ii. second item of nestiii.

Sec 2.7 References

2.7.1 print document

`ref.bib` is a file stored in the reference and needs to be placed in the project folder.

2.7.2 modify document format

In addition, this template calls the Biblatex macro package and provides Biber engine compilation references, of course, you can also directly delete the Biblatex macro package in cls file (the last few lines of cls) to use Bibtex.

For bib items, you can pick them up in Google Scholar, Mendeley, Endnote and add them to lstinlineref.bib. When quoting in the text, just quote their bib key.

The document style defaults to GB GB7714-2015, reference example:[1].

If you need to set to a numeric style, you need to change the GB in the biblatex macro package option to numerical.

```
1 \usepackage[
2 backend=biber, % can be changed to bibtex (or simply delete
    bibtex)
3 style=GB7714-2015, % can be changed to numerical
```

```
4 sorting=nty
5 ]{biblatex}
6 \addbibresource{ref.bib}
```

font options

Part I

The reason why the font options are independent is that we hope that users of this template care about the fonts used by the template, know the fonts they use and encounter font-related problems more easily to find answers.

This template uses the fonts provided by Ctex's Windows options by default, if not necessary, the font should not be changed, of course, if you really need to, you can follow the following code:

```
1    \setCJKmainfont[Path=fonts/,BoldFont={XX.TTF},ItalicFont={YY.
     TTF},SlantedFont = {ZZ.TTF} , SlantedFeatures = {FakeSlant}]{
     WW.TTF}
2    \setCJKsansfont[Path=fonts/,BoldFont={XX.TTF},ItalicFont={XX.
     TTF}]{XX.TTF}
3    \setCJKmonofont[Path=fonts/,BoldFont={XX.TTF},ItalicFont={XX.
     TTF}]{XX.TTF}
4    % Setting new CJK font family
5    \newCJKfontfamily[song]\songti{XX.TTF}[Path=fonts/]
6    % Setting new font family
7    \newfontfamily\largetitlestyle[Path=fonts/]{XX.TTF}
```

Part I

Sec A.1 cover en as shown in this document

Sec A.2 See attachment in folder for other covers

References

[1]   Huybrechts, Daniel. Complex geometry:an introduction[M]. Springer, 2010.

UniversiText

This is the area of the bottom information!

logo