

如何使用 \LaTeX 排版论文

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2015 年 4 月 23 日



目录

- 1 简介
 - T_EX 与 L^AT_EX
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 - L^AT_EX 常用命令
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 - THUTHESIS 清华大学学位论文模板
- 4 总结



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T_EX 与 L_AT_EX

- T_EX: $\tau\epsilon\chi$ (/ˈtɛx/, /ˈtɛk/)
 - ▶ 生成精美图书的排版系统
 - ▶ 最初由高德纳 (Donald E. Knuth) 于 1978 年开发
 - ▶ 漂亮、美观、稳定、通用
 - ▶ 尤其擅长数学公式排版
- L_AT_EX (/ˈlɑ:tɛx/, /ˈleɪtɛk/)
 - ▶ Leslie Lamport 开发 L_AT_EX 降低使用门槛
 - ▶ 极其丰富的宏包, 提供扩展功能
 - ▶ 广泛用于学术界, 期刊会议论文模板
 - ▶ 大学学位论文模板, 如 THUTHESIS



和 Word 对比

Word	L _A T _E X
字处理工具	专业排版软件
容易上手,简单直观	容易上手
所见即所得	所见即所想,所想即所得
高级功能不易掌握	进阶难,但一般用不到
处理长文档需要丰富经验	和短文档处理基本无异
花费大量时间调格式”	无需担心格式,专心作者内容
公式排版差强人意	尤其擅长公式排版
二进制格式,兼容性差	文本文件,易读、稳定
付费商业许可	自由免费使用



T_EX 排版举例:公式

无编号公式

$$\mathcal{F}(\xi) = \int_{-\infty}^{\infty} f(x)e^{-j2\pi\xi x} dx$$

多行多列公式

$$y = d \qquad z = 1 \qquad (1)$$

$$y = cx + d \qquad z = x + 1 \qquad (2)$$

$$y_{12} = bx^2 + cx + d \qquad z = x^2 + x + 1$$

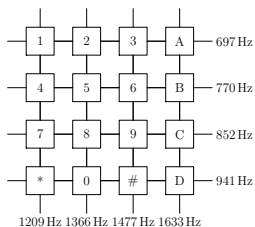
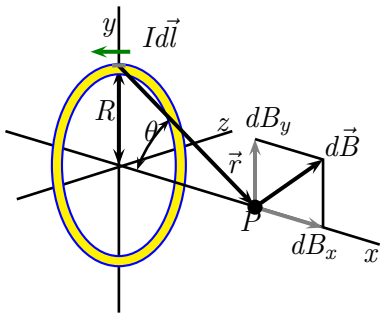
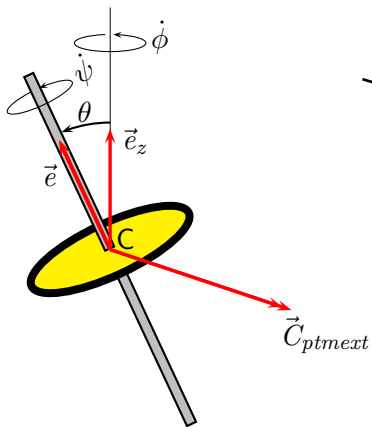
$$y(x) = ax^3 + bx^2 + cx + d \qquad z = x^3 + x^2 + x + 1 \qquad (3)$$

T_EX 排版举例:公式

编号多行公式

$$\begin{aligned} A &= \lim_{n \rightarrow \infty} \Delta x \left(a^2 + \left(a^2 + 2a\Delta x + (\Delta x)^2 \right) \right. \\ &\quad \left. + \left(a^2 + 2 \cdot 2a\Delta x + 2^2 (\Delta x)^2 \right) \right. \\ &\quad \left. + \left(a^2 + 2 \cdot 3a\Delta x + 3^2 (\Delta x)^2 \right) \right. \\ &\quad \left. + \dots \right. \\ &\quad \left. + \left(a^2 + 2 \cdot (n-1)a\Delta x + (n-1)^2 (\Delta x)^2 \right) \right) \\ &= \frac{1}{3} (b^3 - a^3) \quad (4) \end{aligned}$$



T_EX 排版举例:图形

排版范例：文档

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potential to have context sensors or sensors (and sensor networks) in the vicinity of a mobile user or send services to the mobile user, to support context-aware applications. However, challenges are present in order to “effectively” on-demand form clouds of services and resources efficiently, seamlessly and in a robust manner.

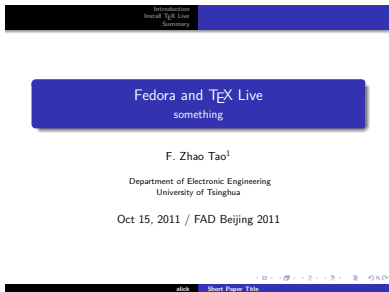
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T_EX 排版举例:幻灯片



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如何安装 \LaTeX ?

- \TeX 发行版 (Distro)
 - ▶ \TeX 实用工具大集合:引擎、宏包、文档等
 - ▶ 常见 \TeX 发行版:CTeX 套装、MiKTeX、 \TeX Live
- \TeX Live
 - ▶ 跨平台:Windows, Linux, Mac OS X (MacTeX)
 - ▶ 每年一个新版本发布,当前 \TeX Live 2014



网络安装

- 从 CTAN 镜像下载安装包 (.exe 或 .zip 或 .tar.gz 格式) (和相应的校验文件, 以 .sha256 结尾)
 - ▶ 清华镜像 <http://mirrors.tuna.tsinghua.edu.cn/CTAN/systems/texlive/tlnet/>
 - ▶ CTeX 镜像
<http://ftp.ctex.org/mirrors/CTAN/systems/texlive/tlnet/>
 - ▶ 更多可见 <http://mirror.ctan.org/README.mirrors>
- 可选步骤: 校验安装包

```
$ LANG=C sha256sum --check install-tl-unx.tar.gz.sha256  
install-tl-unx.tar.gz: OK
```



网络安装

- Windows

- ▶ 双击下载的安装程序
- ▶ 切换默认仓库为国内镜像:加速网络下载

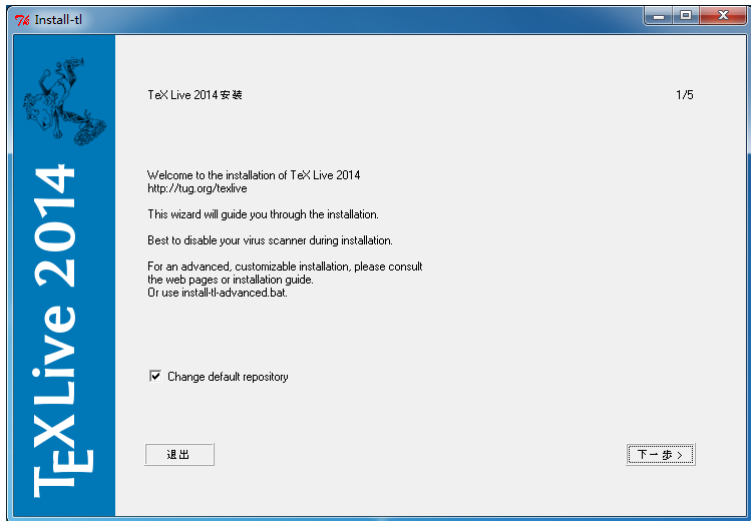
- Linux

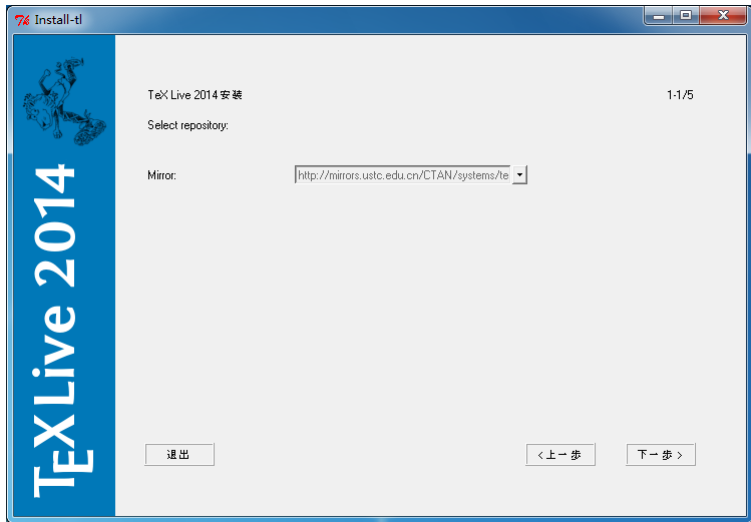
- ▶ 图形安装界面需要 Perl Tk 模块:`yum install perl-Tk`

```
sudo mkdir /usr/local/texlive
sudo chown yourname:yourname /usr/local/texlive
./install-tl -gui -repository http://mirrors.tuna.
    tsinghua.edu.cn/CTAN/systems/texlive/tlnet/
```

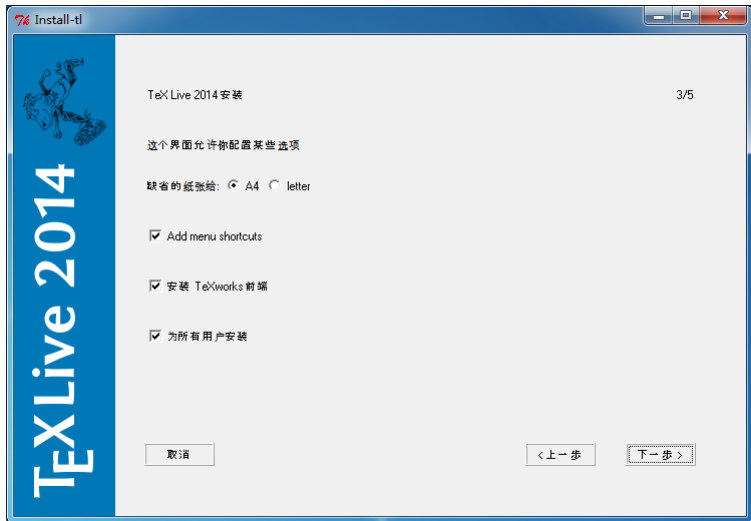
- 截图...

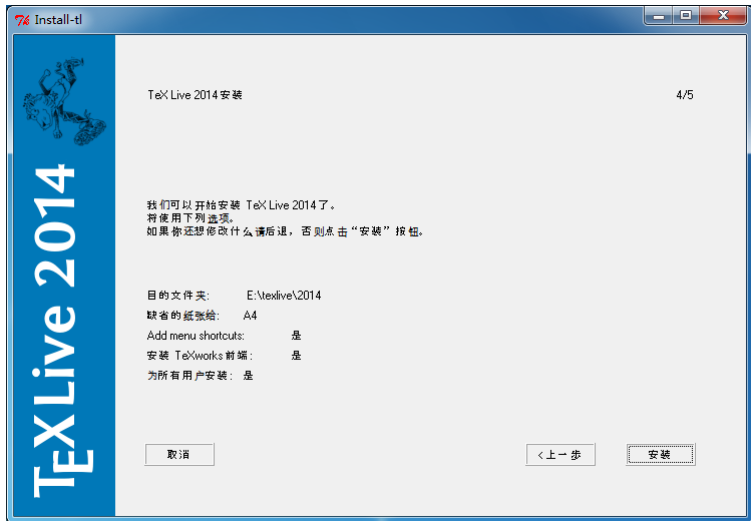


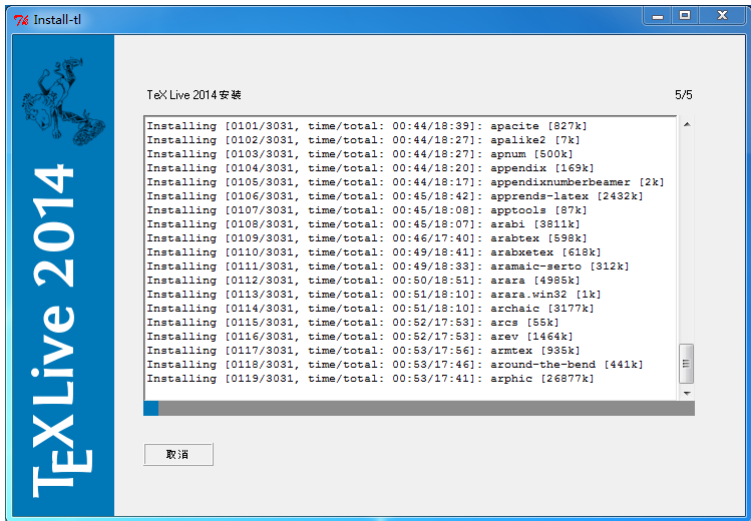


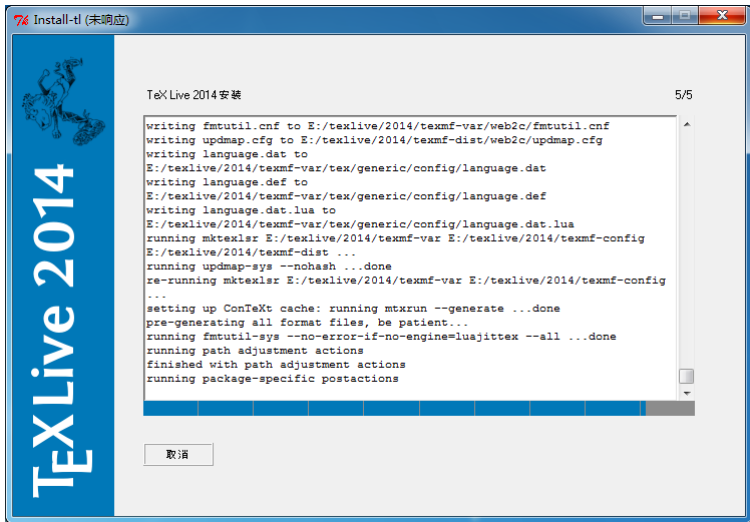


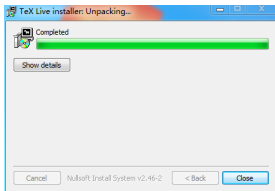
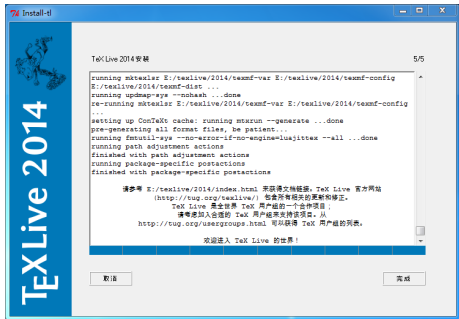












网络安装后配置 (仅 Linux)

- 添加环境变量到 `~/.bash_profile` 文件:

```
export PATH=/usr/local/texlive/2011/bin/x86_64-linux:$PATH
export MANPATH=/usr/local/texlive/2011/texmf/doc/man:
    $MANPATH
export INFOPATH=/usr/local/texlive/2011/texmf/doc/info:
    $INFOPATH
```

- 打开 T_EX Live 指南中文版 “texlive-zh-cn.pdf”, 关注第 3.4 节

```
texdoc texlive-zh
```



网络安装后配置 (仅 Linux)

- X_YT_EX 系统字体配置

```
cp /usr/local/texlive/2011/texmf-var/fonts/conf/texlive-  
fontconfig.conf /etc/fonts/conf.d/09-texlive.conf  
fc-cache -fsv
```



编辑器配置

- TeX 编辑器

- ▶ 专用编辑器: TeXworks、WinEdt 等
- ▶ 通用编辑器 (加 LaTeX 插件): Vim、Emacs 等

TeXworks 配置

- 菜单: 编辑—首选项

- ▶ 编辑器: 打开行号
- ▶ 排版: 处理工具下方默认 \Rightarrow 选择 XeLaTeX



网络安装后测试

- 编辑 `test-chinese.tex` (Windows 下不要用中文文件名; 注意 L^AT_EX 文档对大小写敏感。)

```
\documentclass{ctexart}
\begin{document}
\TeX{}你好！
\end{document}
```

- ▶ Windows 下缺省使用中易字体
- ▶ Linux、Mac OS X 下需要自定义字体 (nofonts 选项, 参见 `ctex` 文档)
- 使用 XeLaTeX 引擎编译, 得到 PDF 文档

TeX 你好!



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模板是什么？

● 模板

- ▶ 已经设计好的格式框架
- ▶ 好的模板：使用户专注于内容
- ▶ 不应将时间花费在调整框架上

● 再提 Office 和 Word

- ▶ 很少有人会有意识地在 Word 中使用模板
- ▶ 定义自己的标题？定义自己的列表？定义自己的段落样式？
- ▶ 自动化，还是手工调？
- ▶ 经常被折腾的精疲力竭
- ▶ 写论文成了学习 Word，大量不必要的精力消耗



论文排版

- 获取模板
 - ▶ 随发行版自带、手动网络下载
 - ▶ 模板文档类 `.cls` 文件
 - ▶ 示例 `.tex` 文件
- 编辑 `.tex` 文件: 添加用户内容
- 编译: 生成 PDF 文档



论文排版举例

IEEE 期刊论文

- 获取模板: 已随发行版自带
 - ▶ 在安装目录 `<prefix>\texlive\2014\` 下搜索 `bare_jrn1.tex`
- 编辑 `.tex` 文件
 - ▶ 打开 `bare_jrn1.tex`, 另存到个人论文存放的文件夹
 - ▶ 英文模板: 不支持中文
- 编译
 - ▶ 英文文献: XeLaTeX、PDFLaTeX 编译均可



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L^AT_EX 命令

宏 (Macro)、或者控制序列 (control sequence)

● 简单命令

▶ `\命令` `{\songti 中国人民解放军}` ⇒ 中国人民解放军

▶ `\命令[可选参数]{必选参数}`

`section[精简标题]{这个题目实在太长了放到目录里面不太好看}`

⇒ 1.1 这个题目实在太长了放到目录里面不太好看

● 环境

```
\begin{equation*}
  a^2 - b^2 = (a + b)(a - b)
\end{equation*}
```

$$a^2 - b^2 = (a + b)(a - b)$$



L^AT_EX 常用命令

命令

<code>\chapter</code> 章	<code>\section</code> 节	<code>\subsection</code> 小节	<code>\paragraph</code> 带题头段落
<code>\centering</code> 居中对齐	<code>\emph</code> 强调	<code>\verb</code> 原样输出	<code>\url</code> 超链接
<code>\footnote</code> 脚注	<code>\item</code> 列表条目	<code>\caption</code> 标题	<code>\includegraphics</code> 插入图片
<code>\label</code> 标号	<code>\cite</code> 引用参考文献	<code>\ref</code> 引用图表公式等	



L^AT_EX 常用命令

环境

<code>table</code>	<code>figure</code>	<code>equation</code>
表格	图片	公式
<hr/>		
<code>itemize</code>	<code>enumerate</code>	<code>description</code>
无编号列表	编号列表	描述
<hr/>		



L^AT_EX 命令举例

`\chapter{前言}`

⇒ 第 1 章 前言

`\section[精简标题]{这个题目实在太长了放到目录里面不太好看}`

⇒ 1.1 这个题目实在太长了放到目录里面不太好看

`\footnote{我是可爱的脚注}`

⇒ 前方高能¹

¹我是可爱的脚注



L^AT_EX 环境命令举例

```
\begin{itemize}
  \item 一条
  \item 次条
  \item 再条
\end{itemize}
```

- 一条
- 次条
- 再条

```
\begin{enumerate}
  \item 一条
  \item 次条
  \item 再条
\end{enumerate}
```

- ① 一条
- ② 次条
- ③ 再条



自动引用举例

- 给对象命名: 图片、表格、公式等

```
\label{name}
```

- 引用对象

```
\ref{name}
```

图书馆馆徽请参见图~\ref{fig:lib}。

```
\begin{figure}
  \centering
  \includegraphics[height=0.2\textheight]{libicon.jpg}
  \caption{图书馆馆徽。}
  \label{fig:lib}
\end{figure}
```

图书馆馆徽请参见图 1。



图 1. 图书馆馆徽。

自动引用举例

```

\begin{table}
  \centering
  \begin{tabular}{ll}\hline
    编号 & 含义 \\ \hline
    1 & 第一 \\
    2 & 第二 \\ \hline
  \end{tabular}
  \caption{编号与含义。}
  \label{tab:number}
\end{table}

```

编号与含义请参见表~\ref{tab:number}。

编号	含义
1	第一
2	第二

表 1. 编号与含义

编号与含义请参见表 1。



目录

- 1 简介
 - T_EX 与 L^AT_EX
 - 安装
- 2 学术论文排版
 - 论文模板使用
 - L^AT_EX 常用命令
- 3 学位论文排版
 - THUThesis 清华大学学位论文模板
- 4 总结



THUThESIS

清华大学学位论文 L^AT_EX 模板

- 最早：王磊 (2004.4)
- 2005 年：薛瑞尼
- 最新发布版：THUThESIS v4.8.1 (2014/12/09)
- 全面支持本科、硕士、博士、博士后论文格式

清华大学

综合论文训练

题目：清华大学学位论文 L^AT_EX 模板
使用示例文档

系 别：计算机科学与技术系
专 业：计算机科学与技术
姓 名：薛瑞尼
指导教师：郑纬民教授
辅导教师：陈文光教授
2015 年 4 月 23 日

清华大学学位论文 L^AT_EX 模板
使用示例文档

(申请清华大学工学硕士学位论文)

培养单位：计算机科学与技术系
学 科：计算机科学与技术
研 究 生：薛瑞尼
指导教师：郑纬民教授

二〇一五年四月

清华大学学位论文 L^AT_EX 模板
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指导教师：郑纬民教授
副指导教师：陈文光教授
联合导师：某某某教授

二〇一五年四月

清华大学

清 华 大 学

博 士 后 研 究 报 告

清华大学学位论文 L^AT_EX 模板
使用示例文档

薛瑞尼

清 华 大 学
2015 年 4 月

安装 THUTHESIS

以开发版本为例

● 下载最新版

- ▶ <https://github.com/xueruini/thuthesis>
- ▶ 右边栏 Download ZIP 按钮

HTTPS clone URL

<https://github.com/xueruini/thuthesis>

You can clone with [HTTPS](#), [SSH](#), or [Subversion](#). ⓘ

 Download ZIP

● 安装

- ▶ 解压缩看文档 README.md
- ▶ 模板文档类:(Xe)LaTeX 引擎处理 `thuthesis.ins` ⇒ `thuthesis.cls` 和 `thuthesis.cfg`
- ▶ 用户手册:latexmk 处理 `thuthesis.dtx` ⇒ `thuthesis.pdf`
- ▶ 论文示例:latexmk 处理 `main.tex` ⇒ `main.pdf`
(或对 `main.tex` 执行一次 XeLaTeX, 一次 BibTeX, 再两次 XeLaTeX)
- ▶ 可使用或参考附带的 Makefile



论文选项

bachelor 我要写本科论文

```
\documentclass[bachelor]{thuthesis}
```

master 我要写硕士论文

```
\documentclass[master]{thuthesis}
```

doctor 我要写博士论文

```
\documentclass[doctor]{thuthesis}
```

secret 论文有保密要求

```
\documentclass[doctor, secret]{thuthesis}  
\secretlevel{机密}  
\secretyear{2010}
```



封面

命令作用	中文命令	英文命令
论文标题	<code>\ctitle</code>	<code>\etitle</code>
作者姓名	<code>\cauthor</code>	<code>\eauthor</code>
申请学位名称	<code>\cdegree</code>	<code>\edegree</code>
院系名称	<code>\cdepartment</code>	<code>\edepartment</code>
专业名称	<code>\cmajor</code>	<code>\emajor</code>
导师	<code>\csupervisor</code>	<code>\esupervisor</code>
副导师	<code>\cassosupervisor</code>	<code>\eassosupervisor</code>
联合导师	<code>\ccosupervisor</code>	<code>\ecosupervisor</code>
日期	<code>\cdate</code>	<code>\edate</code>
摘要	<code>\cabstract</code>	<code>\eabstract</code>
关键词	<code>\ckeywords</code>	<code>\ekeywords</code>



数学

- 公式示例: `data/chap01.tex`
- THUThESIS 定义了常用的数学环境

axiom	theorem	definition	proposition	lemma
公理	定理	定义	命题	引理
proof	corollary	example	exercise	
证明	推论	例子	练习	



参考文献

- 推荐 BibTeX
 - ▶ 参考文献管理自动化
 - ▶ bib 文件
 - ▶ bst 参考文献样式文件: thubib.bst
- 学校要求两种引用方式:

- ▶ 上标模式: 如“在许多文献^[12,13]中……”

```
\cite{key12, key13}
```

- ▶ 正文模式: 如“文献 [14] 证明了……”

```
\onlinecite{key14}
```



作图

- 矢量图 eps, ps, pdf
 - ▶ METAPOST, pstricks, pgf ...
 - ▶ Xfig, Dia, Visio, Inkscape ...
- 标量图 png, jpg, tiff ...
 - ▶ 提高清晰度, 避免发虚
- 转化
 - ▶ 虚拟打印机
 - ▶ ImageMagick
 - ▶ epstopdf
 - ▶ pdfcrop

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril delenit augue dais dolore te feugait nulla facilisi. Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

HTTPS clone URL

<https://github.com/xu>

You can clone with [HTTPS](#), [SSH](#), or [Subversion](#).



Download ZIP



常见问题

- **编译不通过** 缺少必要宏包, 命令拼写错误, 括号未配对等
- **表格图片乱跑** L^AT_EX 自身的浮动定位算法
- **段落间距变大** L^AT_EX 排版算法
- **参考文献** 推荐使用 B_IB_TE_X, 也可以手写 `\bibitem`



一点建议

● 先学习

- ▶ 仔细阅读《一份不太简短的 $\text{\LaTeX} 2_{\epsilon}$ 介绍》(lshort-zh) (1-2 天)
- ▶ 粗略阅读《 $\text{\LaTeX} 2_{\epsilon}$ 插图指南》(2-3 小时)
- ▶ 仔细阅读《THUThesis 用户手册》(20 分钟)
- ▶ 从 THUThesis 示例文档入手



利用文档

● 常用文档

- ▶ symbols: 符号大全
- ▶ Mathmode: 数学参考
- ▶ ctex, xeCJK: 中文支持
- ▶ texlive-zh: T_EX Live 安装与使用
- ▶ 所用宏包文档

● 工具

- ▶ tlmgr: T_EX Live 管理器
 - ▶ texdoc: T_EX 文档查看器
- 例如: `texdoc lshort-zh`



求助

- BBS
 - ▶ 水木社区 TeX 版
 - ▶ bbs.ctex.org
- UK FAQ
- TeX StackExchange
- Google



THUThESIS 问题

- GitHub Issues 提问
- T_EX@newsimth 查找或发文
- THUThESIS Google Group 发问



你也可以帮助

- 错误反馈: GitHub Issues
- 改进建议: GitHub Issues
- 出力维护: LaTeX 宏包编写、Git
- 科普、答疑 图书馆讲座征主讲人!



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- 错误反馈: GitHub Issues
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- 出力维护: LaTeX 宏包编写、Git
- 科普、答疑 **图书馆讲座征主讲人!**



- 本幻灯片：<https://github.com/alick/thulib-latex-talk>
- 本幻灯片基于：
 - ▶ <http://github.com/alick/fad-texlive-talk>
 - ▶ THUTHESIS 使用向导 v3.0
- 许可证：CC BY-SA 4.0 Unported 



扩展阅读

- \LaTeX Tips: <https://alick.fedorapeople.org/fudcon-apac-2014/latex-tips.pdf>
(例如: \LaTeX 中引号的正确输入姿势)
- Linux 用户: <https://github.com/alick/fad-texlive-talk>
- THUTHESIS 使用向导 v3.0 (薛瑞尼)
- \LaTeX 杂谈 (刘海洋)
- 《 \LaTeX 入门》(刘海洋)



L^AT_EX 讲座预告

- T_EX 与汉字处理
 - ▶ 主讲人: 马起园、刘海洋
 - ▶ 主办: 清华 TUNA 协会
 - ▶ 时间: 暂定下月
 - ▶ 地点: 校内



Thank you!

