

\LaTeX 入门简介

如何使用 \LaTeX 排版

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- $\text{T}_{\text{E}}\text{X}$ 与 $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$
- 和 Word 对比
- $\text{T}_{\text{E}}\text{X}$ 排版举例

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- 模板的使用
- $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$ 排版入门

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T_EX 与 L^AT_EX

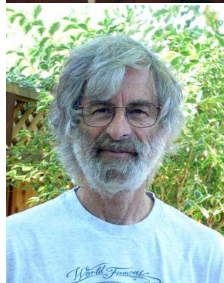
① T_EX (/ˈtɛk/, /ˈtɛx/)

- ▶ 最初由 Donald E. Knuth 于 1978 年开发
- ▶ 生成精美的图书排版系统
- ▶ 漂亮、美观、稳定、通用
- ▶ 尤其擅长数学公式的排版
- ▶ 当前的版本号为 T_EX 3.14159265



② L^AT_EX (/ˈleɪtɛk/)

- ▶ Leslie Lamport 开发 L^AT_EX 降低使用门槛
- ▶ 最流行和使用最为广泛的 T_EX 宏集
- ▶ 广泛用于学术界，期刊会议论文模板
- ▶ 大学学位论文模板
- ▶ CV、Poster



几个概念

套装发行版：是 T_EX 排版引擎、支持排版的文件（基本格式、L^AT_EX 宏包、字体等）以及一些辅助工具的集合。

► MikT_EX、T_EX Live、CT_EX

编译器：也称为排版引擎，是编译源代码并生成文档的程序。

► pdf_latex、x_elatex、l_ual_atex

编辑器：用什么东西写代码

► TeXworks、TeXstudio, WinEdt、TeXshop、Notepad++

CT_EX 套装发行版和 CT_EX 宏包/文档类是两回事



和 word 对比

Microsoft® word	L ^A T _E X
文字处理工具	专业排版软件
容易上手，简单直观	学习成本高
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
需要花费大量时间调格式	专心内容，无需关系格式
公式排版差强人意	尤其擅长公式排版
各版本兼容性差	易读，稳定
商业付费	自由免费



T_EX 排版举例: 数学公式

无编号公式

$$f(x) = f(x^{(0)}) + f'(x^{(0)})\Delta + \frac{1}{2}f''(x^{(0)})(\Delta x)^2 + \dots$$

有编号公式

$$f(x) = \begin{cases} \frac{\cos x}{x + \sin x} & x \geq 0 \\ ax^2 + bx + c & x \leq 0 \end{cases} \quad (1)$$

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1 \quad (2)$$



T_EX 排版举例: 数学公式

矩阵

$$A = \begin{bmatrix} \frac{\partial^2 f}{\partial x_1^2} & \frac{\partial^2 f}{\partial x_1 \partial x_2} & \cdots & \frac{\partial^2 f}{\partial x_1 \partial x_n} \\ \frac{\partial^2 f}{\partial x_2 \partial x_1} & \frac{\partial^2 f}{\partial x_2^2} & \cdots & \frac{\partial^2 f}{\partial x_2 \partial x_n} \\ \vdots & \vdots & \ddots & \vdots \\ \frac{\partial^2 f}{\partial x_n \partial x_1} & \frac{\partial^2 f}{\partial x_n \partial x_2} & \cdots & \frac{\partial^2 f}{\partial x_n^2} \end{bmatrix}$$

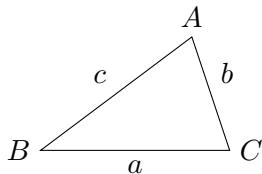
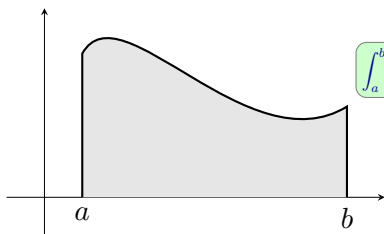
花体字

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

T_EX 排版举例: 图形排版



TeX 排版举例：文档

Publications by Björn W. Schuller

19 September 2019
 Current b-id: 73 (source: Google Scholar)
 Current citation count: 25 458 (source: Google Scholar)
 (IFT) Journal Impact Factor according to Journal Citation Reports, Thomson Reuters.
 Acceptance rates of satellite workshops may be subsumed with the main conference.

A) Books

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- 1) S. Amiripour, A. Billewicz, C. Birkholz, M. Schmitt, B. Schuller, and O. Zaïdman, *Ensemble Machine Learning: an overview of the state-of-the-art*, Springer, 2019, 70 pages.
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- 14) S. Amiripour, M. Schmitt, S. Ovi, M. Gerciz, and B. Schuller, "Deep Unsupervised Representation Learning for

Audio-based Medical Applications," in *Deep Learning and Deep Learning Descriptors for Medical Applications* (L. Nanni, S. Ballester, S. Ghahseri, R. Bressan, and L. Jain, eds.), Intelligent Systems Reference Library (ISRL), Springer, 2019, 27 pages, invited contribution, to appear.

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- 18) M. Parizki, K. Pysarko, V. Siskakis, G. Spanoudakis, I. Varlamis, S. Ioannidis, M. Maniatis, M. Louzakis, N. Cunniffe, B. Schuller, R. Loutzen, and D. Koutsouris, "Biosensors and Internet of Things to smart healthcare applications: challenges and opportunities," in *Biomedical and Implantable Medical Devices* (N. Day, A. Joubert, S. J. Ting, and C. Blank, eds.), vol. 7 of *Applications in ubiquitous sensing applications for healthcare*, ch. 2, pp. 25-53, Elsevier / Academic Press, 1 ed., 2019.
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Name of Recipient
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 Institute Name
 Address

Dear sir/madam,

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Sincerely,

John Doe, PhD

enc: Attachment info



T_EX 排版举例：文档

JOINT STRUCTURED GRAPH LEARNING AND UNSUPERVISED FEATURE SELECTION

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Abstract

The central task in graph-based unsupervised feature selection (GUPS) depends on two folds, one is to accurately characterize the geometric structure of the original feature space with a graph and the other is to make the selected features well preserve each intrinsic structure. Currently, most of the existing GUPS methods use a two-stage strategy which constructs graph first and then performs feature selection on this final graph. Since the performance of feature selection severely depends on the quality of graph, the selection results will be unsatisfactory if the given graph is of low-quality. In this end, we propose a joint graph learning and unsupervised feature selection (JGUPS) model in which the graph can be adjusted to adapt the feature selection process. The JGUPS objective function is optimized by an efficient iterative algorithm when convergence and complexity are analyzed in detail. Experimental results on representative benchmark data sets demonstrate the improved performance of JGUPS in comparison with state-of-the-art methods and therefore we conclude that it is promising of allowing the feature selection process to change the data graph.

Model Formulation

$$\min_{\mathbf{W}, \mathbf{L}} \|\mathbf{X} - \mathbf{A}\|_F^2 + \alpha \|\mathbf{L}\|_F^2 + \beta \|\mathbf{L}\|_1 + \gamma \|\mathbf{L}\|_2 + \eta \|\mathbf{L}\|_3 \quad (1)$$

$$\text{s.t. } \mathbf{L} \geq \mathbf{0}, \mathbf{L}^T \mathbf{F} = \mathbf{L}, \mathbf{F} \geq \mathbf{0}$$

where $\mathbf{X} \in \mathbb{R}^{n \times d}$ is the data matrix, $\mathbf{W} \in \mathbb{R}^{n \times k}$ is the projection matrix, β and γ are regularization parameters. Similar to [1, 2], we impose the non-negativity on \mathbf{F} here.

Conclusion

In this paper, we proposed a novel GUPS method, termed JGUPS, which simultaneously performs graph construction and feature selection. Instead of performing feature selection on a final graph, JGUPS successfully avoided the disadvantages caused by the two-stage strategy. In JGUPS, the suboptimality-responsiveness corresponding to graph construction and unsupervised feature selection could co-evolve towards the optimum. An efficient iterative optimization method with convergence guarantee was presented to optimize the JGUPS objective. Extensive experiments were conducted on representative data sets to demonstrate the excellent performance of JGUPS in comparison with state-of-the-art methods.

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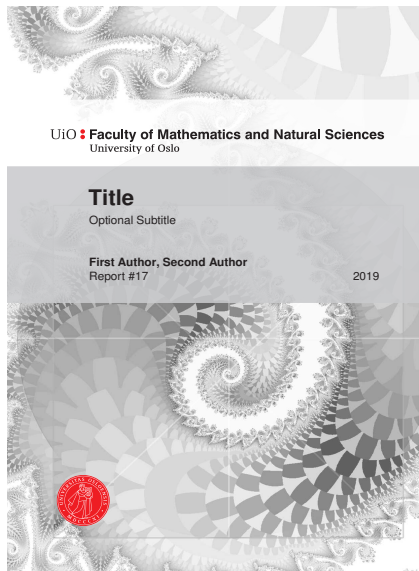
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Performance in Feature Selection

Table 1: Comparison of clustering for different feature selection methods (ACC/NMI/MI).

	ACC	JAFPE	UMIST	USPS	MNIST	COLL20	MGAGB	COLL20
MaxVa	72.1323	62.9124	67.9634	67.9634	67.9634	67.9634	67.9634	67.9634
LogSims	77.2132	65.8132	64.1132	65.9135	62.1125	64.1124	64.8124	64.8124
UMIST	78.5123	68.1131	64.1124	65.9135	62.1125	64.1124	64.8124	64.8124
USPS	83.6122	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
USPS	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
USPS	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
USPS	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
USPS	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
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UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
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UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
USPS	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
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USPS	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
USPS	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
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UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
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UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
USPS	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
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UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
USPS	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
UMIST	84.1123	68.1131	65.9124	67.1135	62.1124	62.1125	64.8124	64.8124
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USPS								

T_EX 排版举例：文档



T_EX 排版举例：幻灯片

Motivation	Main Results	Applications	Conclusion
00	00	00	00

Table Of Contents	Section I	section II
	00	00

How to Get Rid of Ghosts

Mathematics Conference for the Mysterious and Magical

Ann B. Dextrous

April 1, 2020

Tsinghua Beamer Theme

Single Fermion

Tsinghua University

January 13, 2014



Ann B. Dextrous	How to Get Rid of Ghosts
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Single Fermion	Tsinghua University
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- 和 Word 对比
- $\text{T}_{\text{E}}\text{X}$ 排版举例

2 排版

- 模板的使用
- $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$ 排版入门

3 总结

- 学习建议
- $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$ 网站
- 一点点经验分享



排版

模板的使用

► 模板

- * 已经设计好的格式框架
- * 不应将时间花费在调整框架上

► 哪里获取模板

- * 上网下载
- * .cls 文档类
- * .sty 宏包



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基本结构

%% 导言区

```
\documentclass[11pt,utf8]{article} %report,book,beamer
\usepackage{ctex} % 中文支持宏包
\title{一篇不太简短的\LaTeXe 简介}
\author{Tobias Oetiker}
\date{\doday}
```

%% 正文区

```
\begin{document}
\maketitle
这里是正文
\end{document}
```



宏包与环境

在使用 L^AT_EX 时，时常需要依赖一些扩展来增强或补充 L^AT_EX 的功能，比如排版复杂的表格、插入图片、增加颜色甚至超链接等等。这些扩展称为宏包。

```
\usepackage{package}
```

L^AT_EX 还引入了环境的用法，用以令一些效果在局部生效，或是生成特殊的文档元素。

```
\begin{<environment name>}{<arguments>}  
.  
.  
.  
\end{<environment name>}
```



L^AT_EX 命令

① 简单命令：\命令

▶ `{\songti 东北电力大学}` → 东北电力大学

▶ `\zihao{2} 电气工程学院` → 电气工程学院

▶ `\Large\textbf{我最帅}` → 我最帅

② 环境

▶ 无序列表环境 `\begin{itemize} ... \end{itemize}`

▶ 有序列表环境 `\begin{enumerate} ... \end{enumerate}`



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▶ 有序列表环境 `\begin{enumerate} ... \end{enumerate}`



L^AT_EX 环境命令举例

```
\begin{itemize}  
\item 第一  
\item 第二  
\item 第三  
\end{itemize}
```

- ▶ 第一
- ▶ 第二
- ▶ 第三

```
\begin{enumerate}  
\item 绝对不意气用事  
\item 绝对不漏判任何一件坏事  
\item 绝对裁判的公正漂亮  
\end{enumerate}
```

- ① 绝对不意气用事
- ② 绝对不漏判任何一件坏事
- ③ 绝对裁判的公正漂亮



L^AT_EX 环境命令举例

常用命令

<code>\chapter</code> 章	<code>\section</code> 节	<code>\maketitle</code> 生成标题页	<code>\tableofcontents</code> 生成目录
<code>\newpage</code> 新的一页	<code>\makebox</code> 生成盒子	<code>\vskip</code> 垂直距离	<code>\caption</code> 标题
<code>\label</code> 标号	<code>\ref</code> 引用图表公式等	<code>\includegraphics</code> 插入图片	<code>\cite</code> 引用参考文献



文章结构

```
\usepackage{ctex}  
\tableofcontents % 生成目录  
\chapter{有监督学习}  
\section{分类}  
\subsection{逻辑回归}  
\section{回归}  
\subsection{线性回归}
```

第一章 有监督学习

第一节 分类

§1.1.1 逻辑回归

第二节 回归

§1.2.1 线性回归



交叉引用和脚注

% 给对象命名：图片、表格、公式

`\label{key}`

% 引用对象

`\ref{label}`

`\pageref{label}`

`\footnote{text}`

从第 7 页的公式 1 中我们可以看出

这里有一个可爱的脚注¹



¹我在这里

交叉引用和脚注

```
东电图标请参见图~\ref{fig:logo}  
\begin{figure}[htbp]  
\centering  
\includegraphics[scale=0.08]%  
{figure/neepu_logo}  
\caption{东北电力大学图标}  
\label{fig:logo}  
\end{figure}
```

东电图标请参见图 1



东北电力大学
NORTHEAST ELECTRIC POWER UNIVERSITY

图 1: 东北电力大学图标



参考文献

LaTeX 提供了 `\cite` 命令用于引用参考文献:

`\cite{<citation>}`

- 推荐使用 BibT_EX 样式
 - 参考文献自动管理
 - bib 文件
 - bst 参考文献样式

如 “在许多文献^[1, 2] 中”

```
@article{li2018two,  
  title={A two-stage approach for combined heat  
  and power economic emission dispatch:  
  Combining multi-objective optimization with  
  integrated decision making},  
  author={Li, Yang and Wang, Jinlong and Zhao,  
  Dongbo and Li, Guoqing and Chen, Chen},  
  journal={Energy},  
  volume={162},  
  pages={237–254},  
  year={2018},  
  publisher={Elsevier} }
```



参考文献

a two-stage approach for com x +

scholar.google.com/scholar?hl=zh-CN&as_sdt=0%2C5&q=a+two-stage+approach+for+combined&btnG=#d=gs_cit&u=%2Fscholar%3Fq%3Dinfo

Google 学术搜索 a two-stage approach for combined

文章 找到约 1,330,000 条结果 (用时0.24秒)

时间不限

2019以来

2018以来

2015以来

自定义范围...

按相关性排序

按日期排序

不限语言

中文网页

简体中文网页

☒ 包括专利

☒ 包含引用

☒ 创建快讯

A two-stage approach for combined heat and power economic emission dispatch: Combining multi-objective optimization with integrated decision making

[PDF] arxiv.org

Y Li, J Wang, D Zhao, G Li, C Chen - Energy, 2018 - Elsevier

To address the problem of combined heat and power economic emission dispatch (CHPEED), a two-stage approach is proposed.

(MOO) with integrated decision making (IDM).

☆ 被引用次数: 28 相关文章

Combined approach to "dumbbell" tumors

HC Grillo, RG Ojemann, JG Scannell... - T

... published in 1978, Akwari and colleagues

complete single-stage combined removal of

D'Abreu's book, a British textbook, in a brief

☆ 被引用次数: 158 相关文章

Combined first-stage hepatectomy and bilobar hepatectomy strategy for bilobar

... L Vigano, P Goyer, A Ferrero, A Luciani

... colorectal liver metastases who are cand

of ... not suitable for curative resection2. H

33 patients (39 per cent) (study population;

☆ 被引用次数: 86 相关文章

Thermoeconomic optimization of a two stage combined refrigeration system: a finite-time approach

B Sahin, A Kodal - International Journal of Refrigeration, 2002 - Elsevier

A finite-time thermoeconomic performance analysis based on a new kind of optimization

X

引用

GB/T 7714

Li Y, Wang J, Zhao D, et al. A two-stage approach for combined heat and power economic emission dispatch: Combining multi-objective optimization with integrated decision making[J]. Energy, 2018, 162: 237-254.

MLA

Li, Yang, et al. "A two-stage approach for combined heat and power economic emission dispatch: Combining multi-objective optimization with integrated decision making." *Energy* 162 (2018): 237-254.

APA

Li, Y., Wang, J., Zhao, D., Li, G., & Chen, C. (2018). A two-stage approach for combined heat and power economic emission dispatch: Combining multi-objective optimization with integrated decision making. *Energy*, 162, 237-254.

BibTeX

EndNote

RefMan

RefWorks

数学公式

数学公式排版是 L^AT_EX 的绝对强项，在 L^AT_EX 中排版数学公式需要进入数学模式

- ▶ 用两个 \$ 美元符包围起来的是行内公式
- ▶ 用两个双美元符 \$\$ 包围起来的是行间公式
- ▶ 用 equation 环境包围的是带编号的公式
- ▶ 条件公式用 cases 环境，多行公式用 split、align、gather 环境等
- ▶ 运行 texdoc symbols 查看符号表



数学公式

在公式 $V = \frac{4}{3}\pi r^2$ 中，有：

$$\lim_{n \rightarrow \infty} (1 + \frac{1}{n})^n = e \quad \quad V = \frac{4}{3}\pi r^2$$

这是一个极限 n 趋于无穷大的极限

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- $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$ 网站
- 一点点经验分享



阅读材料

- ① 略读包太雷《 \LaTeX Notes(第二版)》
- ② 仔细阅读《一份不太简短的 \LaTeX 2 ϵ 介绍》(lshort-zh)
- ③ 仔细阅读 $\text{CT}_{\text{E}}\text{X}$ 宏集手册
- ④ \LaTeX 入门 (刘海洋)
- ⑤ 根据所需宏包查阅宏包手册
- ⑥ texdoc 例如: texdoc lshort-zh



L^AT_EX 网站

- ▶ Overleaf
- ▶ CTAN
- ▶ L^AT_EX 开源小屋
- ▶ L^AT_EX 编辑部



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↑

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Share
Submit
History
Chat

Source
Rich Text
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My latest paper

John Hammersley

Introduction

There is a theory which states that if ever anyone discovers exactly what the Universe is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and inexplicable.

There is another theory which states that this has already happened.



[universe]

The Universe

Conclusion

"I always thought something was fundamentally wrong with the universe"

Ⓜ [adams1995hutchuker]

\bibliographystyle{plain}

\bibliography{references}

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My latest paper

John Hammersley

September 2018

1 Introduction

There is a theory which states that if ever anyone discovers exactly what the Universe is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and inexplicable. There is another theory which states that this has already happened.




Figure 1: The Universe

2 Conclusion

"I always thought something was fundamentally wrong with the universe" [1]

References

[1] D. Adams. *The Hitchhiker's Guide to the Galaxy*. Pan Vol, 1995.

一点点经验分享

- ▶ \LaTeX 是排版系统，不是文字处理器
- ▶ 所有文档都是过时的
- ▶ 请不要使用 CTeX 套装发行版，使用 CTeX 宏包
- ▶ 如果要输入中文
 - * 请用 XeLaTeX，请用 XeLaTeX，请用 XeLaTeX。
 - * UTF-8 编码，UTF-8 编码，UTF-8 编码。
- ▶ 写一点编译一次，提高容错
- ▶ 用好百度，Google



参考文献

- [1] Yang Li, Jinlong Wang, Dongbo Zhao, Guoqing Li, and Chen Chen.
A two-stage approach for combined heat and power economic emission dispatch: Combining multi-objective optimization with integrated decision making.
Energy, 162:237–254, 2018.
- [2] Yang Li, Zhen Yang, Guoqing Li, Dongbo Zhao, and Wei Tian.
Optimal scheduling of an isolated microgrid with battery storage considering load and renewable generation uncertainties.
IEEE Transactions on Industrial Electronics, 66(2):1565–1575, 2018.



- ▶ 本幻灯片源码：
 - ▶ <https://github.com/Neiou8/neepu-latex-talk>
 - ▶ 模板 <https://github.com/Neiou8/neepu-slides>
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Thank you!

