

Introduction to writing with LaTeX

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Outline

- Morning lecture
 - ▶ What is \LaTeX
 - ▶ Motivating \LaTeX
 - ▶ \LaTeX software environment
 - ▶ Basics of writing \LaTeX documents
 - ▶ BibTeX reference management
 - ▶ Scientific documents with journal \LaTeX templates
 - ▶ \LaTeX for slides and posters
 - ▶ Collaborative writing and versioning of \LaTeX documents
- Afternoon hands-on
 - ▶ Develop your \LaTeX manuscript
 - ▶ Style your manuscript with journal templates
 - ▶ Revise your manuscript tracking changes
 - ▶ Create slides and a poster to present your work
 - ▶ Collaborative writing with your co-authors

Schedule

10.00 - 11.30	Lecture
11.30 - 12.30	<i>Lunch</i>
12.30 - 13.15	Hands-on I
13.15 - 13.30	<i>Break</i>
13.30 - 14.15	Hands-on II
14.15 - 14.45	<i>Coffee break</i>
14.45 - 15.30	Hands-on III
15.30 - 15.45	<i>Break</i>
15.45 - 16.30	Hands-on IV
16.30 - 17.00	Closing

About me

- Postdoc with PANGAEA at MARUM
- PhD in environmental informatics at University of Eastern Finland
- MSc in informatics at University of Zurich
- MSc in environmental science at University of Eastern Finland (*soon*)
- My history with \LaTeX goes back to 2001 when ...

What is L^AT_EX

- Document preparation system
- Authored by Leslie Lamport, first released in 1985
- Most often used for technical or scientific documents
- Separate presentation from content
- Worry less about style and more about content
- Write plain text rather than formatted text
- Leave document design to designers
- Free software
- Available for Windows, Mac OS, Linux, Online

<https://www.latex-project.org>

What is \LaTeX

- **Markup tagging** is central to writing with \LaTeX
- Label parts of the document using tags, e.g. `\textit{}`
- It is used to do things like
 - ▶ Define document structure, e.g. chapters, sections
 - ▶ Style text, e.g. italic, symbols, tables
 - ▶ Cite, footnote, cross-reference, ...
- Anyone familiar with HTML?

Markup tagging

```
\textit{Example}  
markup  
\underline{tagging}
```

Example markup tagging

Markup tagging

```
\begin{itemize}  
\item Eggs  
\item Milk  
\item Cheese  
\item Carrots  
\end{itemize}
```

- Eggs
- Milk
- Cheese
- Carrots

Markup tagging

`$ E = mc^2 $`

$$E = mc^2$$

Why L^AT_EX: Advantages

- High typographic quality
- Excels at difficult typesetting tasks, e.g. mathematical text
- Makes things easy, e.g. citation, cross-reference, table of content
- Great engineering, fast and stable
- Even with long and complex documents
- No corrupt files, content loss, etc.
- Truly portable across systems

Why *not* L^AT_EX: Disadvantages

- Learning curve, somewhat difficult to learn
- Though, basics are *really* easy
- Surely requires some time
- Not WYSIWYG
- More difficult in collaborative writing
- Less support for tracking changes

Working with L^AT_EX

- You need a distribution
 - ▶ Most likely TeX Live (<http://www.tug.org/texlive/>)
 - ▶ Or MiKTeX on Windows (<https://miktex.org/>)
 - ▶ Possibly MacTeX (<http://www.tug.org/mactex/>)
- Some kind of editor
- If you like Notepad, Vim, Emacs, ...
- Preferably,
 - ▶ TeXstudio (<http://texstudio.org/>)
 - ▶ Texmaker (<http://www.xmlmath.net/texmaker/>)
 - ▶ TeXnicCenter on Windows (<http://www.texniccenter.org/>)
 - ▶ TeXShop on Mac OS (<http://pages.uoregon.edu/koch/texshop/>)
 - ▶ Among others ...
- Make use of packages, of which there are several thousands

Working with \LaTeX

- 1 Install distribution and editor
- 2 Install required packages
- 3 Write \LaTeX document using editor
- 4 Translate \LaTeX document into PDF document
- 5 Iterate over points (2) and 3-4 until done

The screenshot shows the TeXstudio application window. The title bar indicates the file path: C:\Users\Markus\Desktop\example.tex - TeXstudio. The menu bar includes File, Edit, Idefix, Tools, LaTeX, Math, Wizards, Bibliography, Macros, View, Options, and Help. The toolbar contains icons for opening files, saving, undo, redo, and other editing functions. The main editor area displays the LaTeX source code for 'example.tex'. The code includes document class settings, package loading, and a title. It also contains a paragraph of text about LaTeX and a section of code for typesetting mathematical formulas using the align environment. The status bar at the bottom shows 'Line: 4 Column: 0 INSERT' and encoding information 'UTF-8 Ready Automatic'.

```

example.tex X
\documentclass[12pt]{article}
\usepackage{amsmath}
\title{\LaTeX}

\begin{document}
\maketitle
\LaTeX{} is a document preparation system for
the \TeX{} typesetting program. It offers
programmable desktop publishing features and
extensive facilities for automating most
aspects of typesetting and desktop publishing,
including numbering and cross-referencing,
tables and figures, page layout,
bibliographies, and much more. \LaTeX{} was
originally written in 1984 by Leslie Lamport
and has become the dominant method for using
\TeX; few people write in plain \TeX{} anymore.
The current version is \LaTeXe.

% This is a comment, not shown in final output.
% The following shows typesetting power of LaTeX:
\begin{align}
E_0 &= mc^2 \\
E &= \frac{mc^2}{\sqrt{1-\frac{v^2}{c^2}}} \\
\end{align}
\end{document}
  
```

Line: 4 Column: 0 INSERT

UTF-8 Ready Automatic

Writing L^AT_EX documents

- Start with minimal document
- Develop it gradually by introducing new elements
- Structural elements, e.g. title, sections
- Style text, e.g. font size, italic, bold
- Mathematical and chemical formulae, quantities and units
- Tables, graphics and figures
- Cross-references, footnotes, and index
- Citation and reference list
- Table of contents, list of figures and tables
- Tracking changes

Minimal document

```
\documentclass{article}
```

```
\begin{document}
```

```
    Hello World.
```

```
\end{document}
```


Hello World.

Minimal document

```
\documentclass{article}

% I am a comment
% This area is called the PREAMBLE
% Used to load packages and configure your document

\begin{document}

% This is the BODY of the document
% Document content goes here

\end{document}
```

Article title

```
\documentclass{article}

\title{Shine On You Crazy Diamond}
\author{Pink Floyd}
\date{1975}

\begin{document}
  \maketitle % Don't worry how it is displayed
             % It will look pretty good
\end{document}
```

Shine On You Crazy Diamond

Pink Floyd

1975

Article sections

```
\documentclass{article}

\title{Shine On You Crazy Diamond}
\author{Pink Floyd}
\date{1975}

\begin{document}
  \maketitle

  \section{Introduction}
  \section{History}
  \section{Lyrics}

\end{document}
```

Shine On You Crazy Diamond

Pink Floyd

1975

- 1 Introduction**
- 2 History**
- 3 Lyrics**

Sectioning

```
% For article document class
\section{...}
\subsection{...}
\subsubsection{...}
\paragraph{...}
\subparagraph{...}

% Additionally for book document class
\chapter{...}
```

Text styling

Remember `\textbf{when}` you `\textit{were}` young
`\underline{you}` shone `\texttt{like}` the
sun.

```
{\color{red}Now there's}      {\Huge{a}}  
  \textbf{\underline{look in} your}  
  eyes, like      {\tiny{'black holes  
{\Large{in the sky}}}'}}
```

Remember **when** you *were* young you shone like the sun.

Now there's a look in your eyes, like "black holes in the sky."

Mathematical formulae

```
\begin{displaymath}  
  \lim_{n \rightarrow \infty}  
  \sum_{k=1}^n  
  \frac{1}{k^2}  
\end{displaymath}
```

Math $a^2 + b^2 = c^2$ in text style.

$$\lim_{n \rightarrow \infty} \sum_{k=1}^n \frac{1}{k^2}$$

Math $a^2 + b^2 = c^2$ in text style.

Chemical formulae

`\ce{CO2}`

`\ce{CO2 + C -> 2 CO}`

This is a `\ce{H2O}` molecule.

I can do charges `\ce{CrO4^2-}` and much more.

CO_2

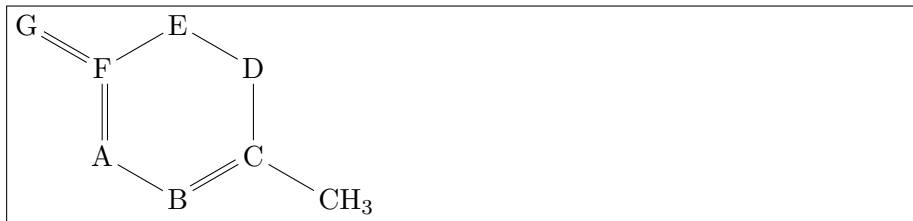
$\text{CO}_2 + \text{C} \longrightarrow 2\text{CO}$

This is a H_2O molecule.

I can do charges CrO_4^{2-} and much more.

Chemical formulae

```
\chemfig{A*6(-B=C(-CH_3)-D-E-F(=G)=)}
```



Quantities and units

`\num{.3e45}`

`\numlist{10;30;50;70}`

`\numrange{10}{30}`

`\si{\kilo\gram\metre\per\square\second}`

`\SI{1.25}{\metre\per\second}`

0.3×10^{45}

10, 30, 50 and 70

10 to 30

kg m s^{-2}

1.25 m s^{-1}

Tables

```
\begin{tabular}{|l|c|}  
  \hline  
  Year & Title \\  
  \hline  
  1973 & The Dark Side of the Moon \\  
  1975 & Wish You Were Here \\  
  1979 & The Wall \\  
  \hline  
\end{tabular}
```

Year	Title
1973	The Dark Side of the Moon
1975	Wish You Were Here
1979	The Wall

Graphics

```
\includegraphics[scale=0.6]{thewall.png}
```



Note: You can include PDFs!

Note: Graphics remain independent files

Figures and captions

```
\begin{figure}  
  \centering  
  \includegraphics[scale=0.4]{thewall.png}  
  \caption{The Wall album cover}  
\end{figure}
```



Figure: The Wall album cover

Cross-references

```
\begin{equation}\label{eq}  
E = mc^2  
\end{equation}
```

As shown in Equation `\ref{eq}`, ...

$$E = mc^2 \tag{1}$$

As shown in Equation 1, ...

Note: Same approach is used for figures, tables, sections, ...

Footnotes

Remember when you were young,
you shone like the sun.

Shine

`on\footnote{Read as if a comma is placed here}`

you crazy

`diamond\footnote{The crazy diamond is Syd Barrett}`.

Now there's a look in your eyes,
like black holes in the sky.

Footnotes

Remember when you were young, you shone like the sun.
Shine on¹ you crazy diamond².
Now there's a look in your eyes, like black holes in the sky.

¹Read as if a comma is placed here

²Syd Barrett is the crazy diamond

Index

```
\documentclass{article}
```

```
\usepackage{makeidx}
```

```
\makeindex
```

```
\begin{document}
```

```
Shine\index{Sun} on you crazy\newpage  
diamond\index{Diamond}\index{Diamond!Syd}.
```

```
\printindex
```

```
\end{document}
```

Index

Diamond, 2
Syd, 2

Sun, 1

Citation

```
\documentclass{article}
```

```
\begin{document}
```

```
Shine on you crazy diamond \cite{pf}.
```

```
\bibliographystyle{plain}
```

```
\bibliography{bibliography.bib}
```

```
\end{document}
```

Reference list

Shine on you crazy diamond [1].

References

[1] Pink Floyd. Wish you where here. LP, September 1975.

Table of contents, list of figures and tables

```
\documentclass{article}

\begin{document}

    \tableofcontents % Write out the Table of Contents
    \listoffigures % Write out the List of Figures
    \listoftables % Write out the List of Tables

\end{document}
```

Table of contents

```
\documentclass{article}

\title{Shine On You Crazy Diamond}
\author{Pink Floyd}
\date{1975}

\begin{document}
  \maketitle
  \tableofcontents
  \section{Introduction}
  Lorem ipsum dolor sit amet, consectetur adipiscing elit.
  \section{History}
  Morbi sagittis enim lorem, a pulvinar orci fringilla ac.
\end{document}
```


Table of contents

Shine On You Crazy Diamond

Pink Floyd

1975

Contents

1	Introduction	1
2	History	1

1 Introduction

Lorem ipsum dolor sit amet, consectetur adipiscing elit.

2 History

Morbi sagittis enim lorem, a pulvinar orci fringilla ac.

Tracking changes

```
\documentclass{article}
```

```
\usepackage{changes}
```

```
\definechangesauthor[name={John Doe}, color=blue]{JD}
```

```
\begin{document}
```

```
  \deleted{...}
```

```
  \replaced{...}{...}
```

```
  \added[id=JD]{...}
```

```
\end{document}
```

Tracking changes

Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. ~~Consetetur sadipscing elitr, sed diam nonumy eirmod tempor.~~^{MS} Invidunt ut labore et dolore magna aliquyam erat. ~~At vero eos et accusam et justo duo dolores et ea rebum.~~^{JD} Lorem ipsum dolor sit amet.^{MS} At vero eos et accusam et justo duo dolores et ea rebum.

Reference managers

- References should be managed, using some tool
- Many out there, Mendeley, EndNote, RefWorks, ...
- Make sure the one you choose supports BibTeX file format
- Here we will be using JabRef

JabRef - C:\Users\Markus Stocker\Desktop\bibliography.bib (BibTeX mode)

File Edit Search Groups View BibTeX Quality Tools Options Help



Search...

bibliography.bib

#	entrytype	author/editor	title	year	journal/booktitle	bibtexkey	ranking
1	Article	Parmiggiani and Monteiro	A measure of 'environmental happiness': Infrastructuring env...	2016	Science & Tech...	parmiggian...	
2	Article	Ayari et al.	A semantic approach for enhancing assistive services in ubi...	2016	Robotics and A...	ayari16sem...	
3	Misc	Wikipedia	Acoustic Doppler current profiler	2016		wikipedia1...	
4	TechRe...	Albertoni and Isaac	Data on the Web Best Practices: Data Quality Vocabulary	2016		albertoni16...	
5	TechRe...	de Mello et al.	Demonstration of Services to Integrate ORCID's into Data Re...	2016		demello16...	
6	Article	Stocker et al.	Detection and Classification of Vehicles by Measurement of ...	2016	Journal of Intell...	stocker12v...	
7	InProce...	Purohit et al.	Effective Tooling for Linked Data Publishing in Scientific Res...	2016	2016 IEEE Tent...	purohit16eff...	
8	Misc	Commission	European Cloud Initiative - Building a competitive data and k...	2016		ect16cloud...	
9	InProce...	Rybicki et al.	Graph-based Data Integration in EUDAT Data Infrastructure	2016	Proceedings of ...	rybicki16gr...	
10	Article	Stocker et al.	Implementing situation aware systems: A case study for dise...	2016	Knowledge-Ba...	stocker16kbs	
11	Article	Hidas et al.	Information infrastructure for Australia's Integrated Marine Ob...	2016	Earth Science L...	hidas16imos	
12	Misc	Elmqvist	Mistakes Reviewers Make	2016		elmqvist16...	
13	Article	Kotsev et al.	Next Generation Air Quality Platform: Openness and Interope...	2016	Sensors	kotsev16nex...	
14	Article	Sheth et al.	Semantic, Cognitive, and Perceptual Computing: Paradigms...	2016	Computer	sheth16se...	
15	Article	Sánchez-Cervantes et al.	SREQP: A Solar Radiation Extraction and Query Platform for L...	2016	Journal of Sens...	sanchez16...	
16	Article	Wilkinson et al.	The FAIR Guiding Principles for scientific data management ...	2016	Scientific Data	wilkinson1...	
17	Article	Le-Phuoc et al.	The Graph of Things: A step towards the Live Knowledge Gra...	2016	Web Semantics...	lephuoc16g...	
18	InProce...	Senderovich et al.	The ROAD from Sensor Data to Process Instances via Inter...	2016	Advanced Infor...	senderovic...	
19	TechRe...	Cox and Little	Time Ontology in OWL	2016		cox16time	
20	InCollec...	Wetz et al.	Towards an Environmental Decision-Making System: A Voca...	2016	Advances and ...	wetz16towa...	
21	InProce...	Buneman et al.	Why data citation is a computational problem	2016	CACM	buneman1...	
22	InCollec...	Stocker et al.	A Software System for the Discovery of Situations Involving Dr...	2015	Environmental ...	stocker15st...	
23	InProce...	Kinkead et al.	Automating the Collection of Semantic Sensor Network Meta...	2015	Proceedings of ...	kinkead15a...	

InProceedings (stocker15emrooz)

Stocker, M.; Shurpali, N.; Taylor, K.; Burba, G.; Rönkkö, M. & Kolehmainen, M.

Kyzirakos, K.; Henson, C.; Perry, M.; Varanka, D. & Grütter, R. (Eds.)

Emrooz: A Scalable Database for SSN Observations

Joint Proceedings of the 1st Joint International Workshop on Semantic Sensor Networks and Terra Cognita (SSN-TC 2015) and the 4th International Workshop on Ordering and Reasoning (OrdRing 2015) co-located with the 14th International Semantic Web Conference (ISWC 2015), CEUR-WS, 2015, 1488, 1-12

Status: Preview style changed to: Preview

BibTeX citation

```
@InProceedings{stocker08sparql,  
  title = {{SPARQL Basic Graph Pattern Optimization  
           Using Selectivity Estimation}},  
  author = {Stocker, M. and Seaborne, A.  
           and Bernstein, A. and Kiefer, C.  
           and Reynolds, D.},  
  booktitle = {Proceeding of the 17th international  
              conference on World Wide Web},  
  pages = {595--604},  
  year = {2008},  
  url = {http://doi.acm.org/10.1145/1367497.1367578},  
  doi = {10.1145/1367497.1367578},  
  publisher = {ACM},  
  isbn = {978-1-60558-085-2}  
}
```

Obtain citations



Staats- und Universitätsbibliothek
Bremen

[SIGN IN](#) [SIGN UP](#)

 [SEARCH](#)

Export Formats

BibTeX | [EndNote](#) | [ACM Ref](#)

```
@inproceedings{Stocker:2008:S8G:1367497.1367578,  
  author = {Stocker, Markus and Seaborne, Andy and Bernstein, Abraham and Kiefer, Christoph and Reynolds, Dave},  
  title = {SPARQL Basic Graph Pattern Optimization Using Selectivity Estimation},  
  booktitle = {Proceedings of the 17th International Conference on World Wide Web},  
  series = {WWW '08},  
  year = {2008},  
  isbn = {978-1-60558-085-2},  
  location = {Beijing, China},  
  pages = {595--604},  
  numpages = {10},  
  url = {http://doi.acm.org/10.1145/1367497.1367578},  
  doi = {10.1145/1367497.1367578},  
  acmid = {1367578},  
  publisher = {ACM},  
  address = {New York, NY, USA},  
  keywords = {SPARQL, query optimization, selectivity estimation},  
}
```

[download]

Tools and Resources

TOC Service:

[Email](#) [RSS](#)

[Save to Binder](#)

Export Formats:

[BibTeX](#) [EndNote](#) [ACM Ref](#)

Share: Tools and Resources

[Author Tags](#) ▼

Cite

```
\documentclass{article}
```

```
\begin{document}
```

In `\cite{stocker08sparql}`, the authors show that ...

```
\bibliographystyle{plain}
```

```
\bibliography{bibliography.bib}
```

```
\end{document}
```


Journal templates

- \LaTeX is pretty much the standard in publishing
- Most journal provide \LaTeX templates
- In fact, they are typically by the publisher
- Selected publishers with \LaTeX instructions
 - ▶ Elsevier, Springer, IOS Press, PLOS, Taylor & Francis, Wiley, SAGE, IEEE, MDPI, Nature Publishing Group, ...
- Simply search for "[PUBLISHER/JOURNAL] latex template"

LaTeX instructions

The guidelines on this page will help you to prepare and submit your LaTeX files. Please note that there are separate instructions available for [CRC journal articles](#) and [IFAC meeting papers](#) ↗ .

Preparing your manuscript

The Elsevier article class

The Elsevier article class helps you to format the frontmatter of your manuscript properly. It is part of the elsarticle package. This package is contained in most TeX distributions and is available on [CTAN](#) ↗ . The [elsarticle documentation](#) and some common templates and bibliographic styles are part of this package as well. You can download a set of files containing a template LaTeX manuscript, using the elsarticle class, plus associated BibTeX style files [here](#). Although elsarticle.cls supports most journal styles, it is not possible to match the journal's layout exactly.

Elsevier reference styles

Some journals require a specific reference style. The relevant bibliographic styles for LaTeX are packed with the [sample manuscript](#).

Elsarticle \LaTeX document class

CTAN
Comprehensive \TeX Archive Network

Login Join Settings Help

Cover Upload Browse Search

Location: CTAN tex-archive macros latex contrib elsarticle



Directory macros/latex/contrib/elsarticle

README

This is Elsevier's new document class for typeset journal articles, elsarticle.cls. It is now accepted for submitted articles, both in Elsevier's electronic submission system and elsewhere.

Elsevier's previous document class for typeset articles, elsart.cls, is now over 10 years old. It has been replaced with this newly written document class elsarticle.cls, which has been developed for Elsevier by the leading \TeX developer River Valley Technologies.

elsarticle.cls is based upon the standard \LaTeX document class article.cls. It uses natbib.sty for bibliographical references.

Bugs and problems with elsarticle.cls may be reported to the developers of the class via elsarticle@river-valley.com.

The file manifest.txt provides a list of the files in the elsarticle bundle. The following are the main files available:

- elsarticle.cls, the class file
- elsdoc.pdf, the user documentation

 [Download](#) the contents of this package in one zip archive (995.1k).

elsarticle – Class for articles for submission to Elsevier journals

The class is for typeset journal articles, is accepted for submitted articles, both in Elsevier's electronic submission system and elsewhere.

Package	elsarticle
Version	1.20
License	The \LaTeX Project Public License 1.2
Copyright	2007,2008,2009 Elsevier B.V., The Netherlands
Main-tainer	Martin Ruck Simon Pepping
Contained in	\TeX Live as elsarticle



L^AT_EX for slides

- L^AT_EX can be used to create slides
- In fact, these slides were done with L^AT_EX
- Obviously, for a L^AT_EX course!
- Widely used document class is called `beamer`

Slides with beamer document class

```
\documentclass{beamer}

\begin{document}

  \begin{frame}
    \frametitle{Outline}

    \begin{itemize}
      \item ...
    \end{itemize}
  \end{frame}

\end{document}
```

- There are many document classes for posters
- a0poster, baposter, sciposter, beamerposter, tikzposter, Jacobs, ...
- As for slides, whether you use L^AT_EX for posters depends
 - ▶ Is there a corresponding L^AT_EX article?
 - ▶ Are you reusing content from the article in the poster?
 - ▶ Especially formulae, references, etc.
- Slides as PDF, not as PPTX (obviously)

Unnecessarily Complicated Research Title

John Smith, James Smith and Jane Smith
Department and University Name

Objectives

Lorem ipsum dolor sit amet, consectetur, mame tellus pulvinar tortor, commodo eleifend risus arcu sed odio.

- Mollis dignissim, magna augue tincidunt dolor, interdum vestibulum urna
- Sed aliquet luctus lectus, eget aliquet leo ullamcorper consequat. Vivamus eros sem, iaculis ut enimod non, sollicitudin vel orci.
- Nascetur ridiculus mus.
- Enimod non erat. Nam ultrices pellentesque nunc, ultrices volutpat nisl ultrices a.

Introduction

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed commodo molestie porta. Sed ultrices scelerisque sapien ac commodo. Donec ut volutpat elit. Sed laoreet accumsan mattis. Integer sapien tellus, auctor ac blandit eget, sollicitudin vitae lorem. Praesent dictum tempor pulvinar. Suspendisse potenti. Sed tincidunt varius ipsum, et porta nulla suscipit et. Etiam congue bibendum fisis, ac dictum augue cursus a. Donec magna eros, iaculis sit amet placerat quis, laoreet id est. In ut orci purus, interdum ornare nibh. Pellentesque pulvinar, nibh ac malesuada accumsan, urna nunc convallis tortor, ac vehicula nulla tellus eget nulla. Nullam lectus tortor, consequat tempor hendrerit quis, vestibulum in diam. Maecenas sed diam augue. This statement requires citation [1].

Placeholder
Image

Figure 1: Figure caption

Materials

The following materials were required to complete the research:

- Curabitur pellentesque dignissim
- Ea facilis est tempus quis
- Duis porta consequat lorem
- Ea facilis est tempus quis

The materials were prepared according to the steps outlined below:

- Curabitur pellentesque dignissim
- Ea facilis est tempus quis
- Duis porta consequat lorem
- Curabitur pellentesque dignissim

Methods

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed laoreet accumsan mattis. Integer sapien tellus, auctor ac blandit eget, sollicitudin vitae lorem. Praesent dictum tempor pulvinar. Suspendisse potenti. Sed tincidunt varius ipsum, et porta nulla suscipit et. Etiam congue bibendum fisis, ac dictum augue cursus a. Donec magna eros, iaculis sit amet placerat quis, laoreet id est. In ut orci purus, interdum ornare nibh. Pellentesque pulvinar, nibh ac malesuada accumsan, urna nunc convallis tortor, ac vehicula nulla tellus eget nulla. Nullam lectus tortor, consequat tempor hendrerit quis, vestibulum in diam. Maecenas sed diam augue.

Important Result

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed commodo molestie porta. Sed ultrices scelerisque sapien ac commodo. Donec ut volutpat elit.

Mathematical Section

Nam quis odio enim, in molestie libero. Vivamus cursus mi at nulla elementum sollicitudin. Nam quis odio enim, in molestie libero. Vivamus cursus mi at nulla elementum sollicitudin.

$$E = mc^2 \tag{1}$$

Nam quis odio enim, in molestie libero. Vivamus cursus mi at nulla elementum sollicitudin. Nam quis odio enim, in molestie libero. Vivamus cursus mi at nulla elementum sollicitudin.

$$\cos^2 \theta = \frac{1}{4} \cos \theta + \frac{3}{4} \cos 3\theta \tag{2}$$

Nam quis odio enim, in molestie libero. Vivamus cursus mi at nulla elementum sollicitudin. Nam quis odio enim, in molestie libero. Vivamus cursus mi at nulla elementum sollicitudin.

$$\kappa = \frac{\xi}{E_{\text{max}}} \tag{3}$$

Conclusion

Nunc tempus venenatis facilis. Curabitur suscipit consequat eros non porttitor. Sed a massa dolor, id ornare enim. Fusce quis massa dictum tortor tincidunt mattis. Donec quam est, lobortis quis pretium at, laoreet scelerisque lacus. Nam quis odio enim, in molestie libero. Vivamus cursus mi at nulla elementum sollicitudin.

Additional Information

Maecenas ultrices fugiat velit non mattis. Fusce tempus arcu id ligula varius dictum.

- Curabitur pellentesque dignissim
- Ea facilis est tempus quis
- Duis porta consequat lorem

References

[1] J. M. Smith and A. B. Jones.
Book Title
Publisher, 7th edition, 2012.
[2] A. B. Jones and J. M. Smith.
Article Title.
Journal title, 13(32):423–436, March 2013.

Acknowledgements

Nam mollis tristique nunc eu luctus. Suspendisse retrum congue nisi sed convallis. Ametum id nunc dolor. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas.

Contact Information

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- Email: john@smithlab.com
- Phone: +1 (000) 111 1111

PLACEHOLDER PLACEHOLDER
LOGO LOGO

Placeholder
Image

Figure 2: Figure caption

Nunc tempus venenatis facilis. Curabitur suscipit consequat eros non porttitor. Sed a massa dolor, id ornare enim:

Treatments	Response 1	Response 2
Treatment 1	0.0002362	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

Table 1: Table caption

L^AT_EX for ...

- You can use L^AT_EX for a lot of things!
- Plenty of document classes and packages
- For instance, my CV is written in L^AT_EX
- L^AT_EX can create graphics, not just include them
- You can write music with L^AT_EX

Write music with L^AT_EX

```
\documentclass{article}

\begin{document}

  \begin{lilypond}
    \relative c' {
      c2 g'2 \times 2/3 { f8 e d } c'2 g4
    }
  \end{lilypond}

\end{document}
```

Write music with L^AT_EX



<https://martin-thoma.com/how-to-write-music-with-latex/>

Some thoughts on collaborative writing

- Typically, we work collaboratively on manuscripts
- Collaborative writing is not entirely trivial
- Too often we send around files by email
- Google Docs has eased this considerably
- It is super convenient, also for editing
- However, not for complex documents
- Write locally and save in Dropbox is also popular
- But Dropbox doesn't merge changes

Online L^AT_EX

- There exist a number of online platforms
- For instance Overleaf and ShareLaTeX
- Overleaf is an online L^AT_EX collaborative writing tool
- With a reasonable free plan
- How to work offline, e.g. on an airplane?

<https://www.overleaf.com/>

My Projects

Markus Stocker

Overleaf

FEATURES & BENEFITS

TEMPLATES

PRICING

COMPANY

HELP

My Projects

NEW PROJECT

Active1

★ Starred0

📁 Archived0

🗑️ Trash0

You have no tags / folders

How to add tags / folders

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SEARCH

Sort: updated | created | accessed

Projects per page: 10 | 30 | 50

Find out more about your Pro+ account...

Protected Projects

Invite collaborators by email

Full Project History

See who changed what when

Higher Limits and More

Save to Dropbox, ...

Unnecessarily Complicated Research Title

9423154...gzc

Edited 2 minutes ago by Markus Stocker

🗑️ 📁 ★ 📧

The screenshot shows the Overleaf web editor interface. The top navigation bar includes 'My Projects - Overleaf', 'Unnecessarily Complicated', and a search bar. The main toolbar contains icons for 'Source', 'Rich Text', 'Edit', 'Find', 'B', 'I', 'T', 'N', 'U', 'L', 'R', 'P', 'M', 'A', 'S', 'E', 'R', 'V', 'I', 'C', 'E', 'S'. The document is titled 'Unnecessarily Complicated Research Title' and is authored by 'John Smith' from 'California, United States'. The document content is a LaTeX source file with the following structure:

```

% \title{\textit{Unnecessarily Complicated}}
% use optional labels to link authors explicitly to addresses:
% \author[label1, label2]{<author name>}
% \address[label1]{<address>}
% \address[label2]{<address>}
\author{John Smith}
\address{California, United States}
\begin{abstract}
% Text of abstract
Suspendisse potenti. Suspendisse quis sem elit, et mattis nisl. Phasellus
consequat erat eu velit rhoncus non pharetra neque auctor. Phasellus eu lacus
quam. Ut ipsum dolor, euismod aliquam congue sed, lobortis et orci. Mauris eget
velit id arcu ultricies auctor in eget dolor. Pellentesque suscipit adipiscing
sem, imperdiet laoreet dolor elementum ut. Mauris condimentum est sed velit
lacinia placerat. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices
posuere cubilia Curae; Nullam diam metus, pharetra vitae euismod sed, placerat
ultrices eros. Aliquam tincidunt dapibus venenatis. In interdum tellus nec justo
accumsan aliquam. Nulla sit amet massa augue.
\end{abstract}
\begin{keyword}
Science \sep Publication \sep Complicated
% keywords here, in the form: keyword \sep keyword
% MSC codes here, in the form: \MSC code \sep code
% or \MSC[2008] code \sep code (2000 is the default)
\end{keyword}
\end{frontmatter}
%
% Start line numbering here if you want

```

The right pane shows the rendered PDF output. The title is 'Unnecessarily Complicated Research Title'. The author is 'John Smith' and the address is 'California, United States'. The abstract is titled 'Abstract' and contains the same text as the source code. The keywords are 'Science', 'Publication', and 'Complicated'. The first section is titled '1. The First Section' and contains the same text as the source code.

- One of many version control systems
- Supports tracking changes and coordinating work on files
- Primarily used for software development
- Great for collaborative writing with \LaTeX
- Choose an online Git repository, e.g. GitHub, Bitbucket
- Working against online repository
 - ▶ Enables collaborative writing
 - ▶ Ensures you have a backup
 - ▶ Facilitates work at the office, home, coffee shop, ...
- Very powerful approach
- As for \LaTeX , basics are relatively easy, details more intricate

The screenshot shows the GitHub interface for the repository 'markusstocker / LaTeX101'. At the top, there's a dark header with the GitHub logo, a search bar, and navigation links for 'Pull requests', 'Issues', and 'Gist'. Below this, the repository name is displayed with icons for 'Unwatch' (1), 'Star' (0), and 'Fork' (0). A secondary bar contains links for 'Code', 'Issues' (0), 'Pull requests' (0), 'Projects' (0), 'Wiki', 'Pulse', 'Graphs', and 'Settings'. The main content area starts with a message 'No description, website, or topics provided.' followed by an 'Edit' button. Below this is a summary bar showing '7 commits', '1 branch', '0 releases', and '1 contributor'. A row of buttons includes 'Branch: master', 'New pull request', 'Create new file', 'Upload files', 'Find file', and 'Clone or download'. The file list shows: 'markusstocker writing' (Latest commit 3c1ee96 a day ago), 'lectures/introduction' (writing, a day ago), '.gitignore' (writing, a day ago), 'Announcement_LaTeX_2017.docx' (added, 3 days ago), and 'README.md' (writing, 3 days ago).

`https://github.com/markusstocker/LaTeX101`

Basic Git commands

- `git clone`: Clone remote repository in local environment
- `git status`: Check what has changed
- `git add`: Add files to the local repository
- `git commit`: Record changes to local repository
- `git push`: Push changes to remote repository
- `git pull`: Fetch changes from remote repository

Take aways

- You need time to learn \LaTeX and other presented tools
- Practice, the basics are relatively straightforward
- The optimal approach ultimately depends on your needs
- Needs are typically different between projects
- For most problems there is an answer online