

Introduction to mathematical typesetting and reference management

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- Life as a PhD will require preparation of several documents
- Some of the options (**MS Word**, **Scientific Word**) lack flexibility
- **L^AT_EX** is especially designed for scientific writing
- Advantages of include:
 - Size of documents
 - Quality of documents
 - Maths mode

Getting started

- First download a TeX distribution:

Mac	Ubuntu	Windows
MacTeX	TeX Live	MiKTeX

- Then get a LaTeX editor:

Mac	Ubuntu	Windows
	Texmaker	
TeXShop	Gummi	WinEdt
Scribo	Kile	TeXnicCenter

A simple file

```
1  \documentclass[12pt]{article}
2  \usepackage{...}
3  ...
4  \begin{document}
5  This is the first sentence.
6  This is the second sentence.\\
7  This is a new line
8
9  This is a new paragraph
10 % This is a comment
11 \end{document}
```

- In the preamble:

```
1 \usepackage[affil-it]{authblk}
```

and then:

```
1 \title{\textbf>Title of the document}}
2 \date{\today}
3 \author[1]{Author name}
4 \affil[1]{University of Warwick}
5 \maketitle
6 \begin{abstract}\noindent
7 Abstract goes here
8 \end{abstract}
```

Equations

- Writing equations is as simple as:

```
1 \section{Equations}
2 \begin{equation}
3 \label{eq:simple}
4 x=y
5 \end{equation}
```

- The `label` is required to refer to the equation:

```
1 \ref{eq:simple}
```

- For tables, use:

```
1 \begin{table}[h] \begin{center}
2 \begin{tabular}{ccc}
3 $n$ & median & variance \\ \hline
4 1 & 2.2 & 1.7 \\
5 2 & \multicolumn{2}{c}{NA} \\ \hline
6 \end{tabular}
7 \caption{Description}
8 \label{tab:simple}
9 \end{center} \end{table}
```

- A figure can be inserted with:

```
1 \begin{figure}[h]
2 \centering
3 \includegraphics[scale=1.0]{name.ext}
4 \caption{Description}
5 \label{fig:simple}
6 \end{figure}
```

- Most of the formats supported
- Remember package: **graphicx**

- A less simple example:

```
1  \begin{figure}[h] \centering
2
3  \begin{subfigure} \centering
4  \includegraphics{fig1}
5  \includegraphics{fig2} \\
6  \includegraphics{fig3}
7  \includegraphics{fig4}
8  \end{subfigure}
9
10
11 \begin{subfigure} \centering
12 \includegraphics{fig5}
13 \end{subfigure}
14
15 \end{figure}
```

Bibliography & referencing

- Package **natbib** is a flexible tool
- Once the **refs.bib** file is ready, add:

```
1 \bibliography{refs}
```

- Citing is easy, e.g.:

```
1 \citep{paper1}
2 \citet{book1}
```

- Several tools for managing references:
 - **Mendeley**
 - **JabRef**
 - **Zotero**
 - **Papers** (for Mac)

- The **beamer** class is designed for presentations
- The class is defined in the preamble:

```
1 \documentclass{beamer}
2 \begin{document}
3 ...
4 \end{document}
```

- General structure of a frame:

```
1 \frame{
2 \frametitle{Title}
3 ...
4 }
```

- Sections, equations, tables and figures as in *article* class

The first slide

- In the preamble:

```
1 \title{}  
2 \institute{}  
3 \author{}  
4 \date{\today}
```

and then:

```
1 \frame{  
2 \titlepage  
3 }
```

- Use:

```
1 \begin{itemize}
2 \item some text, equations, ...
3 ...
4 \end{itemize}
```

- Use:

```
1 \begin{itemize}
2 \item some text, equations,...
3 ...
4 \end{itemize}
```

- Or to appear in order:

```
1 \item First point
2 \pause
3 \item Second point
4 \pause
5 ...
```

Other features

- Blocks are for presenting theorems, algorithms, etc.:

Theorem

This is a theorem

Commands:

```
1 \begin{block}{Theorem}
2 ...
3 \end{block}
```

- Links can be accessed directly from slides with **hyperref**:

```
1 \href{Link to webpage}{Text to appear}
```

- Presentation based on notes by D. Firth and W. Kendall
- All material is available **here**
- The list of resources will be continuously updated
- Email us with questions/suggestions!!!
- Remember upcoming sessions:
 - 20/10 GPU computing
 - 24/11 Rstudio
 - 1/12 Linux tutorial
 - 1/12 Buster tutorial

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THANK YOU!!!

