

LaTeX Mark-up Language

```
1 % This is my first scientific article in LaTeX.
2 % Written by Sarah B. Spolaor
3 % It will look professional and I will get
4 % used to the syntax as I practice more.
5
6 \documentclass{article}
7 \usepackage{utf8}[inputenc]
8 \usepackage{natbib}
9 \usepackage{graphicx}
10
11 \title{demo}
12 \author{Sarah Spolaor}
13 \date{March 2019}
14
15 \begin{document}
16 \maketitle
17
18 \section{Introduction}
19 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
20 and be replaced by something even more bizarre and inexplicable. There is another theory which states that this has already happened.
21
22 \begin{figure}[h!]
23 \centering
24 \includegraphics[scale=1.7]{universe}
25 \caption{The Universe}
26 \label{fig:universe}
27 \end{figure}
28
29 \section{Conclusion}
30 ``I always thought something was fundamentally wrong with the universe'' \citep{adams1995hitchhiker}
31
32 \bibliographystyle{plain}
33 \bibliography{references}
34 \end{document}
```

Comments (optional)

Preamble (sets up formatting styles)

Document Body

But why?!?

- ♦ Professional use and appearance.
- ♦ Highly customizable.
- ♦ Easy math, labelling, citations.
- ♦ You will be using LaTeX mark-up for all projects!

General Lay-out

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Basic Syntax

- Commands `\command[options]{argument}`
 - `\includegraphics[scale=1.7]{universe}`
 - ♦ Controlling image sizes:
 - scale=1.7
 - width=0.5\textwidth
 - width=0.5\columnwidth
- “Environments” (figure, table, enumerate, itemize)
 - `\begin{environment}`
 - ...
 - `\end{environment}`
- Add Figure/Table/Equation references with `\label{}` and `\ref{}`
- Grouping and formatting text with `{}`
- Comments `%`

Equation Environment

- ◇ `\alpha` `\omega` (etc) for greek/special symbols
- ◇ `x^{2}` Superscripts
- ◇ `x_{2}` Subscripts
- ◇ `\frac{x}{y}` for nice-looking fractions
- ◇ `$. . . $` for in-line equations

Your Turn!

1. In your own “Example Project”....
2. Write a Title, Author, Date.
3. Add “Data” and “Results” sections between the intro and conclusions.
4. Populate 2-3 pages of (dummy) text in the sections.
5. Get a plot of Planck and RJ functions (download from web or generate from your Python code last lecture).
6. Upload figure to overleaf, and add it as a figure.
7. Add a brief caption and a figure label.
8. Add to main text:
 - An equation showing the RJ approximation equation.
 - A proper reference to your plot (“As seen in Figure `\ref{}`..., we show that blah blah”).
9. “Recompile”.

Careful: Special Characters

- ◇ `\` [Starts a command]
- ◇ `%` [Comment line]
- ◇ `{}` [Groups text/Arguments]
- ◇ `&` `$` `_` `^` `#` `~` | will not show up if typed directly

- ◇ ```...”` directional quotes
- ◇ Typeset `$` `&` `%` `{}` `_` `#` by adding `\` before it: `\%`
- ◇ Others require slightly different ways to make them show up in a PDF.

Additional topics

- ◇ Troubleshooting errors.

- ◇ Adding references.

- ◇ Converting document to a different format.