

LaTeX briefing

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TeX:

- High quality typesetting especially also for *maths*.
- Stable (last major update in 1989).
- Reliable (used to typeset books with 1000+ pages).
- Free and open source.

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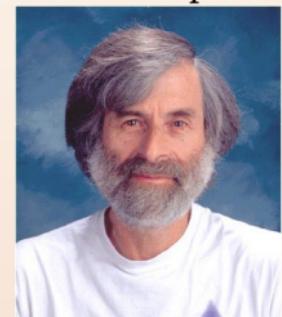
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Leslie Lamport



L^AT_EX (or L^AT_EX₂ ϵ):

- Large set of add-on packages.
- Emphasis on document structure.
- Now includes packages for many typesetting needs including AMSmath for advanced maths typesetting.

- **NOT:** “What You See Is What You Get”,
 - **BUT:** “You Asked For It, You Got It”.
-
- It takes a bit longer to get the hang of it (compared to e.g. Word).
 - But it is far more powerful and reliable once you master it.
-
- \TeX is like a “compiler” for “typesetting programs”,
transforming a text input file to a PDF output file.

- Your document is an ordinary ASCII file:

```
demo.tex
\documentclass{report}

\begin{document}
\chapter{Introduction}
The text goes here...
\chapter{Methods}
More text goes here...
\end{document}
```

- Emphasis on structure, not presentation.
- Can cut and paste bits.

- Run the pdflatex ‘compiler’ on this file:

```
pdflatex demo.tex
```

- This produces a PDF file ‘demo.pdf’.
- Graphical front-ends exist for all platforms.

Chapter 1 Introduction

The text goes here...

Chapter 2 Methods

More text goes here...

- Use a simple language for special symbols and mathematical structure.

mathdemo.tex

```
Simple formulas inline $\\int_{\\alpha}^{\\beta} \\sin^2x$  
and in  
\\begin{equation}  
\\int_{\\alpha}^{\\beta} F=\\frac{Q}{R}  
\\end{equation}  
displayed form with equation numbers.
```

mathdemo.pdf

Simple formulas inline $\int_{\alpha}^{\beta} \sin^2 x$ and in

$$\int_{\alpha}^{\beta} F = \frac{Q}{R} \tag{1}$$

displayed form with equation numbers.

- Give elements of your document a label and then refer to them by name:

refdemo.tex

```
Our main result is
\begin{equation}
\label{main_result}
A=B
\end{equation}
If we now insert \eqref{main_result} into ...
```

refdemo.pdf

Our main result is

$$A = B \tag{2}$$

If we now insert (2) into ...

- All sorts of tables and tabular data:

tabledemo.tex

```
\begin{tabular}{llc}
fruit & day & number \\
\hline
apple & monday & five \\
pear & tuesday & eight
\end{tabular}
```

tabledemo.pdf

fruit	day	number
apple	monday	five
pear	tuesday	eight

- Extra packages are included through:

packagedemo.tex

```
\usepackage{amsmath}
\begin{equation}
\begin{aligned}
\sin(x) &= a(x) + b(x) \\
\cos(x) + 3 &= a(x) - b(x)
\end{aligned}
\end{equation}
```

packagedemo.pdf

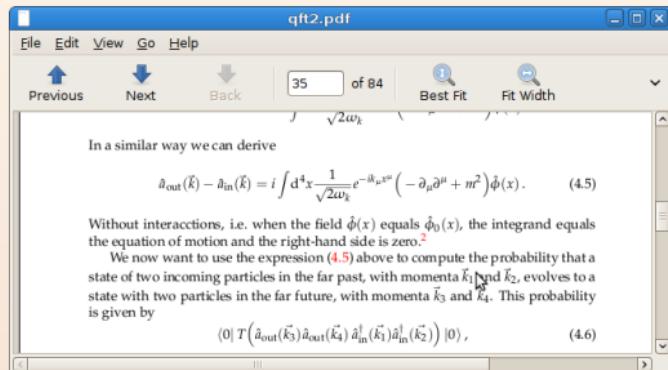
$$\begin{aligned} \sin(x) &= a(x) + b(x) \\ \cos(x) + 3 &= a(x) - b(x) \end{aligned} \tag{3}$$

Typical setup

```
emacs -l

File Edit Options Buffers Tools TeX Help

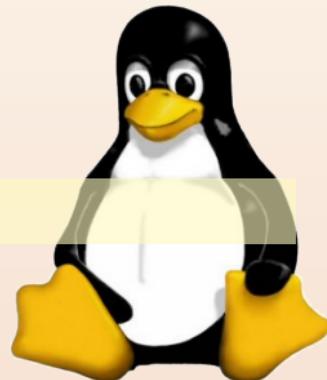
Send(aligned);
Vend{equation}
Vend{aligned}
In a similar way we can derive
\begin{equation}
\label{eqn:ainoutrelation}
\hat{v}(a)_-(\text{out}) \langle \vec{w}(k) \rangle = \hat{v}(a)_-(\text{in}) \langle \vec{w}(k) \rangle =
1/\int d^3x \frac{1}{2\pi} \sqrt{2\omega_k} e^{ik_{\mu} x^{\mu}} \Big|_0^{\infty}
-\partial_{\mu} \langle \partial^{\mu} w + m^2 w \rangle
\hat{v}(\phi)(x) ..
\end{aligned}
Without interactions, i.e. when the field  $\hat{v}(\phi)(x)$  equals  $\hat{v}(\phi)(0)$ , the integrand equals the equation of motion and the right-hand side is zero. In deriving this formula we are cheating a bit with boundary terms when doing partial integrations. As usual, these arguments can be made more precise by properly smearing operators with wave packets (see e.g. Srednicki\(2007\)q) and the result is that we can indeed just ignore the boundary terms.)
```



- BibTeX: automatically sorted and formatted bibliographies.
- mkindex: for index and glossary.
- colour package
- poster package
- beamer package (for presentations like this)
- all freely available !

already included in your installation,
or downloadable from the Comprehensive TeX Archive Network
www.ctan.org/

- All sorts of graphics effects



transparency



- All distributions (Ubuntu, Fedora, SUSE, Debian, ...) have \LaTeX ready to run, and have most add-on packages.
- Graphical front-ends:
 - Emacs with AUCTeX
 - Kile (KDE): <http://kile.sourceforge.net/>
 - TeXworks: <http://tug.org/texworks/>
 - Texmaker: <http://www.xm1math.net/texmaker/>
 - TeXmacs: <http://www.texmacs.org/>
 - Gummi: <http://dev.midnightcoding.org/projects/gummi>
 - LyX: <http://www.lyx.org/>



- Various options, a recommended one is MacTeX:
<http://www.tug.org/mactex/>
- This includes various graphical front-ends,
 - the most often used is TeXShop <http://pages.uoregon.edu/koch/texshop/>
 - TeXworks: <http://tug.org/texworks/>
- Apps for Latex for iPad start to appear. This may not be suitable for substantial writing, but might be convenient on some occasions. See e.g.
<http://www.texpadapp.com>



- Best off with MiKTeX: <http://miktex.org/>
- Graphical front-ends:
 - TeXnicCenter: <http://www.texniccenter.org/>
 - Winshell: <http://www.winshell.org/>
 - TeXworks: <http://tug.org/texworks/>
 - LyX: <http://www.lyx.org/>

- Maths project web pages

maths.dur.ac.uk/Ug/projects

- Computing and Information Services - Introduction to Latex (4 November - IT79)

www.dur.ac.uk/training.course/its/

- Search online

e.g. for 'Latex reference card'

- Email:

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