

An Introduction to L^AT_EX 2 ϵ and PDF-L^AT_EX

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Outline:

- \LaTeX resources
- $\backslash documentclass$
- Using packages: ams*, color, hyperref, foils etc.
- Custom Macros
- Including Figures and Images
- pdftex, pdflatex
- Bib \TeX

T_EX and L^AT_EX Resources

Books: There are lots, but I recommend ...

The L^AT_EXCompanion, Gossens M., Mittelbach F. and Samarin A., Addison Wesley, New York, 1994.

Electronic:

- The teT_EXdistribution has a very comprehensive help index.
A local copy is <http://math.lanl.gov/Computing/teTeX/>.
- Comprehensive T_EX Archive (CTAN) <http://www.ctan.org/>
- The T_EX Users Group (TUG) <http://www.tug.org/>

Document Classes:

LaTeX 2.09:

```
\documentstyle[options]{style}
```

LaTeX 2 ϵ :

```
\documentclass[options]{class}
```

- **options** - `twocolumn`, `a4paper`, `final`, `landscape`, etc.
- **class** - `article`, `book`, `report`, `thesis`, etc.

Document Structure:

```
\documentclass[a4,10pt]{article}
```

```
%
```

% Comments are preceeded by the percent sign.

```
%
```

```
\begin{document}
```

The stuff that really counts ...

```
\end{document}
```

Packages: Modularized Features

```
\documentclass[10pt]{article}
```

```
%
```

```
% A few packages that I use regularly:
```

```
%
```

```
\usepackage{times}
```

```
\usepackage{color}
```

```
%
```

```
\usepackage{amsmath}
```

```
\usepackage{amsfonts}
```

```
\usepackage{amssymb}
```

```
\begin{document}
```

The stuff that really counts ...

```
\end{document}
```

An AMS Equation Example:

A Large number of examples are in *The L^AT_EX Companion*, here is one.

The `align` Environment:

```
\begin{equation}
\begin{aligned}
x^2 + y^2 &= 1 \\
x &= \sqrt{1-y^2}
\end{aligned}
\end{equation}
```

Common environments include:

align, alignat, gather, split, multiline

Custom Macros:

It's a powerful feature but only when used judiciously!

The format is

```
\newcommand[# of args]{command string}
```

Look in the source to see how I simplified the previous example.
(Note: you can customize existing commands with \renewcommand)

The align Environment:

```
\begin{equation}
\begin{aligned}
x^2 + y^2 &= 1
x &= \sqrt{1-y^2}
\end{aligned} \tag{3}
```

```
\begin{aligned}
x^2 + y^2 &= 1
x &= \sqrt{1-y^2}
\end{aligned} \tag{4}
```

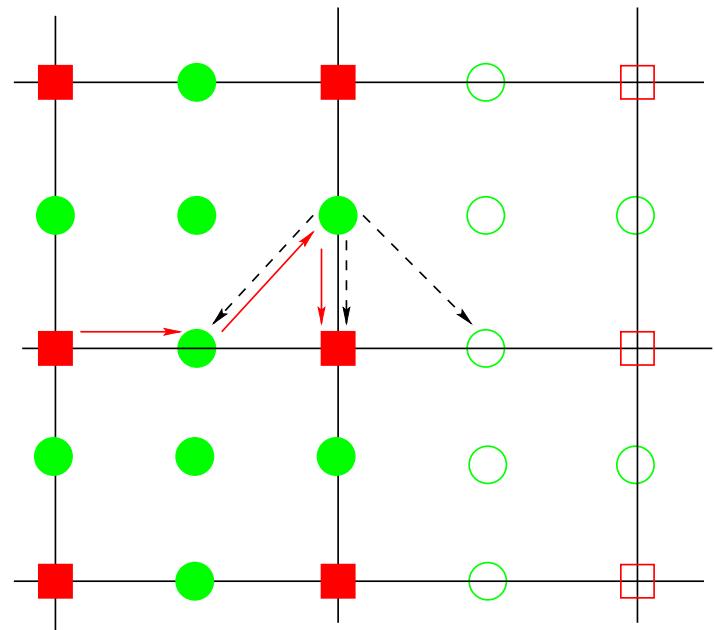
```
\end{equation}
```

Including Graphics:

To have your graphics work with both *latex* and *pdflatex*:

- use the `graphicx` package
- **do not** specify the file extension
- make sure both `file.eps` and `file.pdf` exist
(to create pdf from eps use the utility `epstopdf`)

```
\begin{figure} [h]
  \begin{center}
    \includegraphics{figs/graph_extra}
  \end{center}
\end{figure}
```



PDF-LaTeX:

*I'm assuming that you are using $\text{teT}_{\mathcal{E}}\text{X}$ 1.0 or greater!
(Or another equally capable distribution.)*

Getting Started:

- convert eps to pdf (e.g., `epstopdf file.eps`)
- add `pdflatex` to the documentclass options
- type `pdflatex file.tex`
- use a pdf viewer (e.g., `acroread`, `xpdf`) to view `file.pdf`

Features of PDF:

- hyperlinks: use the [hyperref](#) package
(see the `hyperef` package manual for a complete description)
- table of contents
- etc., see the [pdftex](#) package documentation.

BibTeX Basics:

In you document include:

```
\bibliography{bibfile1[,bibfile2,...]}  
\bibliographystyle{bibsytlefile}
```

Sequence of commands:

latex file.tex, bibtex file, latex file.tex, latex file.tex

Useful environment variables:

The directory in which BibTeX searches for my *bib* files is specified by \$BIBINPUTS, e.g.,

```
setenv BIBINPUTS $HOME/papers/refs//:
```

where the use of “//” indicates that BibTeX should search recursively.

The directory in which BibTeX searches for style files is \$BSTINPUTS.