

An Introduction to L^AT_EX

Ravi Mukkamala
Department of Computer Science
Old Dominion University

Julie McClean
Department of Oceanography
Old Dominion University

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Abstract

An Introduction to L^AT_EX is presented. Sufficient information is provided to enable a user to prepare a scientific paper.

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1 Sections, Subsections and Paragraphs

L^AT_EX automatically generates section numbers. Blank lines before or after a sectioning command have no effect.

A paragraph is recognized by a blank line separating two pieces of text. Observe the indentation.

This paragraph has no indentation.

1.1 Subsections and Subsubsections

The section can be subdivided into subsections and subsubsections.

No Section Numbers

Hint : If you do not want section numbers place an asterisk before the braces.

2 New Environments

One way to start a new environment is to enclose it within left and right braces. i.e. {.....}.

A simpler way is to use a `\begin{ name} ... \end{ name}`

3 Type Styles and Sizes

Roman type style is the default type style

This is emphasized

This is bold type

This is slanted

This size is LARGE

This size is tiny This is huge

This is large type writer style

Hint : When specifying both a type style and a size put the size first. If you want the entire document to be in a particular style or size, put the command i.e. `\tt`, after the `\maketitle` command.

4 Lists

- This item will have the default bullet in front of it.

al The label is explicitly defined here

- Points can be numbered within an item.
 1. With the default numbers
 - bl With specified numbers or letters

5 Mathematical Formulae

L^AT_EX has a very powerful math environment. Lowercase Greek letters are obtained by adding a `\` to the name of the letter i.e. `\alpha`, `\nu`, `\lambda`, `\Pi`, `\tau`.

Other symbols such as symbols such as \pm , \div , *and* \leq are available.

Summation and integration symbols are $\sum_{i=l}^n$ and $\int_{z_{j+l}}^{z_j}$, respectively. There are assignment symbols such as the left arrow (\leftarrow) and Δx .

5.1 Arrays

Equations or text can be displayed in an array by using the "array" environment of L^AT_EX. It automatically assumes a math environment.

$$\begin{array}{cccc} a^2 + \sqrt{a+b} & \sin b * \cos \ln a & b_1 + c_1 & 1 \\ v^{n^m} & & a^2 & a+b \\ 123 & 345678 & 5678 & \end{array}$$

5.2 Superscripts and Subscripts

[^] is used for superscripts i.e. a^2 or ms^{-l} . The underscore (_{) is used for subscripts i.e. a_1, x_j .}

5.3 Numbering Equations

$$fu = -\frac{l}{\rho} \frac{\partial p}{\partial y} \tag{1}$$

$$fv = \frac{l}{\rho} \frac{\partial p}{\partial x} \tag{2}$$

$$\frac{\partial p}{\partial z} = -\rho g \tag{3}$$

Hint: The & symbol aligns the equations.

If there is only one equation to write use the "equation" environment.

$$\beta M_y = \text{curl}_z \tau_\eta \tag{4}$$

Finally, if you do not wish to number the equations

$$E = mc^2$$

Column 1	Columns 2 & 3	
12345111111	bmvnfhhgjkhg	c
l	hgfhhhghhghhgh	bbbbbbbbbbbbbbbbbb 123

Table 1: This is just an illustration of a table

5.4 Left and Right Delimiters

Many times delimiters are required around a given set of expressions. For example, a matrix is surrounded (on left and right sides) by square brackets ([]). Similarly, a set is delimited by braces ({, }). In fact, the size of the delimiters are dictated by the contents that they enclose.

For example,

$$\begin{bmatrix} x & y \\ p & q \\ a & b \end{bmatrix}$$

$$x = \begin{cases} y & \text{if } y < 0 \\ \sqrt{y} & \text{otherwise} \end{cases}$$

6 How to Create Tables

\LaTeX has a very powerful and simple mechanism to create tables.

7 Verbatim – Just Print What We Type

Confusion can arise when printing characters that are understood differently by \LaTeX . Use the "verbatim" environment to avoid this problem.

I hope this \$ is not understood as math environment by \LaTeX . If

this facility did not exist `\em` is interpreted as emphasis, and `\today` as today's date.

If you want to use it as part of a text, then use "verb". For example, *will this be understood as a `\em` symbol or as emphasis command?*

8 How to Begin a \LaTeX Document

Always begin with:

```
\documentstyle{article}
---- declarations --
\begin{document}
-- type the text -
```

There are several other options that you can specify with the `documentstyle` command. Some these are font size (12pt, 11pt), book, report, letter, two column, etc..

9 How to End a \LaTeX Document

The command `\end{document}` ends the \LaTeX document. Every \LaTeX file is to be prefixed by `.tex`. This file is called `sample.tex`.

10 How to Run a \LaTeX Document

Type the following commands:

```
latex filename.tex dvips filename  
view on the screen: xdvi filename
```

Note : NO suffix To

The first command creates a log file (file.log) and a device independent file (file.dvi).

References

- [1] Csanady, G.T. 1978: The Arrested Topographic Wave. *Journal of Physical Oceanography*, 8, 47-62.