

My revolutionary science project

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I. \LaTeX ?

\LaTeX , shortcut for 'Lamport \TeX ', is a document markup language invented by Leslie Lamport in 1983. The purpose of \LaTeX is to simplify the utilization of the word processor \TeX developed by Donald Knuth since 1977.

With typical word processors such as Microsoft Word and LibreOffice Writer, called **WYSIWYG** editors "What You See Is What You Get", one can immediately visualize the formatted text and the final shape of the document on the screen.

In \LaTeX the writer uses plain text (as opposed to formatted text), relying on markup tagging conventions to:

- define the general structure of a document (such as article, book, and letter).
- stylize text throughout a document (such as bold and italic).
- insert objects in the document (such as tables and figures).
- add citations and cross-referencing.

A \TeX distribution such as [TeX Live](#) or [MiKTeX](#) is used to produce an output file (such as PS, PDF or DVI) suitable for printing or digital distribution.

The latest version of \LaTeX is called $\text{\LaTeX} 2_{\epsilon}$.

Many ideas in this HowTo were inspired by the very good book " \LaTeX par la pratique" (in French) by Christian Rolland [1] ...

... and many others by the \LaTeX Wikibooks: <https://en.wikibooks.org/wiki/LaTeX>

II. WYSIWYG VS. \LaTeX

\LaTeX being a programming language it is required to learn it, or at least a part of it, which scares most of the potential candidates to use it.

Using a WYSIWYG editor you can visualize the result of your work immediately. With \LaTeX few steps are required to obtain the final manuscript using the source file(s) in \TeX language. The

sequence of these steps is called compilation, and the compilation process can slightly change from one case to another.

III. SOME EXAMPLES

A. Math

1. Ex. 1

$$S_T(k) - 1 \equiv \sum_{\alpha=1}^n \sum_{\beta=1}^n \frac{c_{\alpha} c_{\beta} b_{\alpha} b_{\beta}}{\langle b \rangle^2} \left[S_{\alpha\beta}^{\text{FZ}}(k) - 1 \right] \quad (1)$$

2. Ex. 2

$$E_{\text{tot}} = \underbrace{\sum_{i=1}^{occ} n_i \langle \Psi_i | -\frac{\nabla^2}{2} | \Psi_i \rangle}_{T_s[\rho]} + \underbrace{\frac{1}{2} \int_{\mathbb{R}^6} \frac{(\rho(\mathbf{r}) + \rho^Z(\mathbf{r}))(\rho(\mathbf{r}') + \rho^Z(\mathbf{r}'))}{|\mathbf{r} - \mathbf{r}'|} d\mathbf{r} d\mathbf{r}'}_{E_{\text{POT}}[\rho]} \quad (2)$$

$$+ \underbrace{\int_{\mathbb{R}^3} \rho(\mathbf{r}) \varepsilon_{\text{XC}}[\rho] d\mathbf{r}}_{E_{\text{XC}}[\rho]}$$

B. Tables

	α	β
a	2.0	1×10^{-4}
b	-3.0	$\sqrt{5}$
c	1.0	1×10^2

Table I: My interesting table

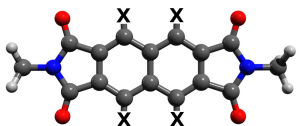

C. Image



Figure 1: My interesting figure

D. All together

Table II: Label and description of the e- acceptor diimide cores studied.

Id Label	<i>N</i>	Formula	Diimide family + 3D
1 NDI	32	$C_{16}H_{10}O_4N_2$	 <p>X= H, F</p>
2 NDI_F4	38	$C_{16}H_6O_4N_2F_4$	
5 ADI	38	$C_{20}H_{12}O_4N_2$	
6 ADI_F2	38	$C_{20}H_{10}O_4N_2F_2$	
7 ADI_CN2	40	$C_{22}H_{10}O_4N_4$	
8 ADI_Br2	38	$C_{20}H_{10}O_4N_2Br_2$	

[1] Christian Rolland. *LaTeX par la pratique*. O'Reilly, 1999. 1