

My First Latex Document

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Abstract

Any good document starts with an abstract. It gives a preview of what is expected in the document. This place is reserved for abstract and must be included within the ‘abstract’ field. In this document, we will see some examples of how to start writing a latex document for engineering publications.

1 About Text

This is a separate file. In order to keep large documents organized, it is advisable to use different files to write sections (or chapters) and then include all in the main file with the ‘input’ command. Regular text can be made **bold** or *italics*, or even make it appear like **typewriter**. Also, note the difference between *italics* and *slant* text.

Now that we have some text, we should see how to use TeXniCenter to write and compile a latex document. At this point, I’m assuming that you have installed latex using the instructions illustrated on

http://debejyo.com/software_installation_guide.htm

Note that the paper setting in this example and the settings desciped on the installation page is ‘letterpaper’. If you are in India or UK, you might want to change these to make sure you compile as a4paper.

First choose ‘Project’ from the top and create a project with the main file you have (in this case its ‘paper.tex’). Make sure to check ‘Use BibTeX’ option if you are using a bibliography or reference, which can be done so by using the commance ‘cite’ and it appears like this [1]. Then, choose the ‘Latex=>PS’ or ‘Latex=>PDF’ option. Note that, if you choose to build PS, make sure all the figures are in ‘.eps’ format, and if you choose PDF, make sure all the figures are in ‘.pdf’ format. You can include jpegs, but thats tricky. Best it to convert them to pdf (print as pdf) and using Acrobat, save them as eps, if needed. After all this is done, make sure you ‘Build Output’ at least 3 times for everything to be in order. If you say ‘Build>view output’, you can see the PDF or PS file as applicable. If you had chosen the PS option, if have to open the output in the ghostview and use ‘file>conver’ to get your pdf.

Often we encounter the use of tables. Here is how we can make them: Note how various text alignment are used. The horizontal lines are optional and can be ommitted anytime. The vertical lines, once declared at the beggining of ‘tabular’, will appear throughout the table.

Its important to understand the references. You must have all the references in a bibtex format and the file should have extension ‘.bib’. See the ‘reference.bib’ file that I have

*<http://www.debejyo.com>

Left	Right	Center	fixed width of 2.5 inch
abc	180	Red	
efger	17	Green	
a	560343	Magenta	nothing

Table 1: Example table.

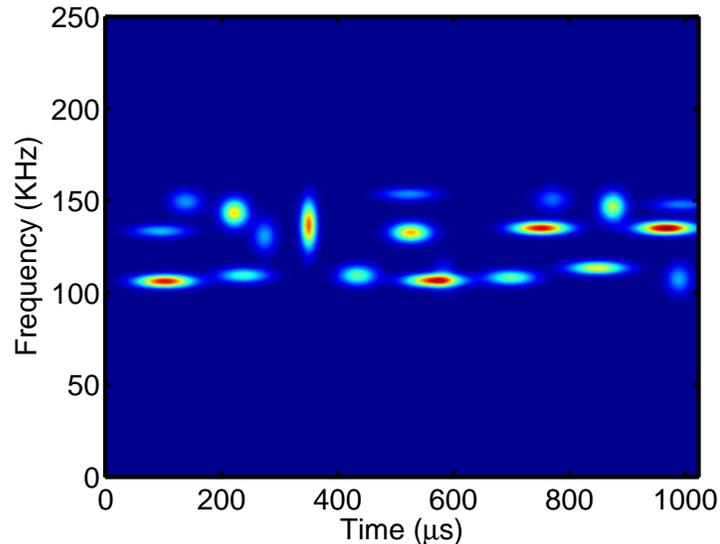


Figure 1: Single figure.

provided. You can create it in text mode or use JABREF (a free java based software) to create them.

Make sure all the files that you are using are in the same folder.

2 More Information

2.1 About Figures

More information can be put with the help of figures. A single figure is done with figure command and multiple figures are done with the subfigure command. See below for examples. Note that the figures are floating objects and they do not have to occur where you put them. The convention is to have them at the beginning of the pages. A single figure is shown in Figure 1 and multiple figures are show in Figure 2.

2.2 About equations

Equations can be typed in the equation environment or inline. Inline equations can be typed with dollar signs like this $y = mx^2 + cx + d$. Subscripts and superscripts can also be written like $a_t^{(2)}$. The following shows an equation in the ‘equation’ environment:

$$\mathcal{E} = \int_{-\infty}^{\infty} s(t)s^*(t) dt. \quad (1)$$

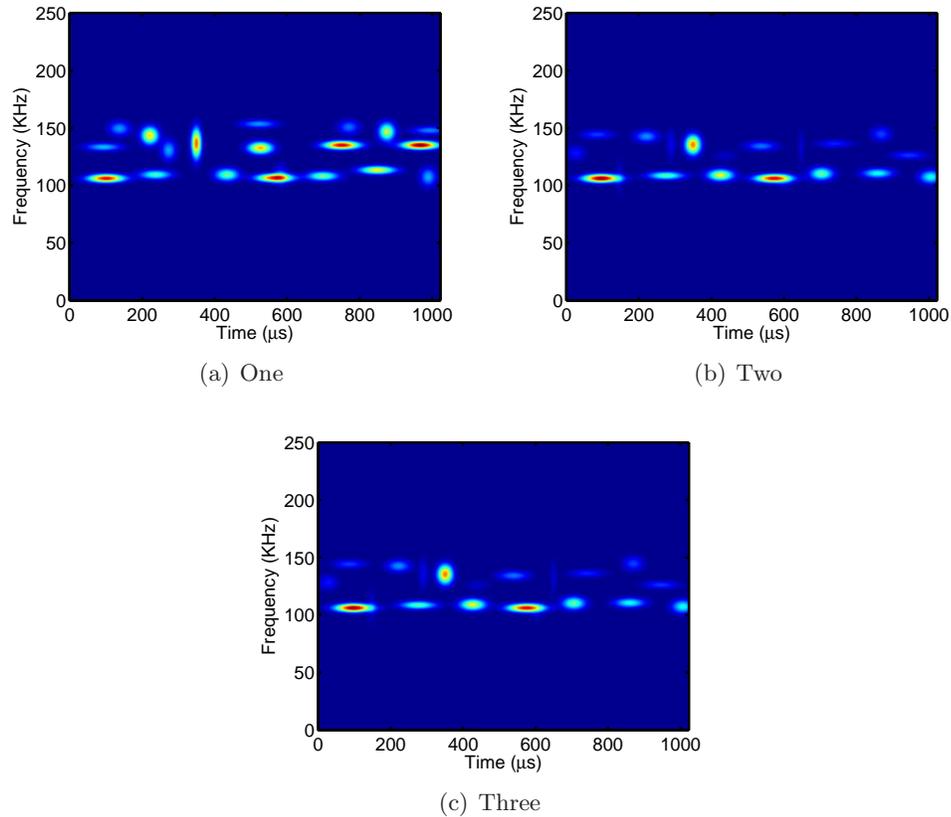


Figure 2: Showing subfigures.

Equation can also be without a numbering:

$$\mathcal{E} \approx \frac{1}{N} \sum_{n=0}^{N-1} s(n)s^*(n).$$

You can have several equation, some numbered, some unnumbered and displayed such that the equal signs are aligned:

$$\begin{aligned} \mathcal{E} &= \int_{-\infty}^{\infty} s(t)s^*(t) dt \\ &\approx \frac{1}{N} \sum_{n=0}^{N-1} s(n)s^*(n). \end{aligned} \tag{2}$$

3 Conclusion

In conclusion, latex is awesome and the best thing to use for documents with lots of equations. There is also lots of help available on google. It rocks!! Have fun.

References

- [1] C. R. Farrar and K. Worden, “An introduction to structural health monitoring,” *Phil. Trans. R. Soc. A*, vol. 365, pp. 303–315, 2007.