

IN-CLASS WORK: LATEX & XFIG

The following steps walk you through **LaTeX**, which provides THE tool for writing scientific papers as they were just discussed. The template file which we will use has the format of title, abstract, etc. and allows us to easily include figure captions and equations in the required format. I will walk you through steps 1.-4.

1. Log Into Linux Log into Windows. Left mouse click on the Windows Symbol on the bottom left → All Apps → Xmanager Enterprise 5 → Sessions → Linuxremote1 Graphical. Log into the linux machine with the same username and password as on windows. With the cursor on the background click on the right mouse button and choose “Open Terminal”. This should open a window in which you can write commands.

2. Sample File(s)

Copy the following three files into your working directory with

```
scp phys310@linuxremote.eg.bucknell.edu:paper.dir/template_phys310.tex .
scp phys310@linuxremote.eg.bucknell.edu:paper.dir/samplefig1.pdf .
scp phys310@linuxremote.eg.bucknell.edu:paper.dir/samplefig2.pdf .
```

Note: Include the period at the end of each command. You will be asked for a password, which I will provide in class.

Look at the content of `template_phys310.tex` by using any editor, e.g. with `gedit template_phys310.tex`.

3. Compile and Look at Pdf-file

The `template_phys310.tex` contains the “commands” and they need to be converted to something you can look at. Type (on the command line):

```
pdflatex template_phys310.tex
```

Check with `ls` that the file `template_phys310.pdf` was created. You can look at the document with

```
atril template_phys310.pdf &
```

Notice that there are a few question marks. This is because you “compiled” only once. Redo the command

```
pdflatex template_phys310.tex
```

and look at the resulting `template_phys310.pdf`

4. Title and Sections

Copy `template_phys310.tex` to a tex-file (with a different name) which you will use to write your paper. In this file change the title (search for `\title`). Use `xdvi` to look at the resulting document. Next change the sections (`\section`) and make more than one section by using the command multiple times.

5. Formulae

5a. Next look at the equations Eq.(1) and Eq.(2). Add a third equation to be Eq.(1) of Paper X. Check with your `xdvi`-viewer. See below where you can get more information.

5b. Type in an equation you use in Lab 2. (This will help you for the first paper.)

6. References

Type in next at the end of the tex-file the references of your bibliography. Each reference starts with `\bibitem{}` where `{}` corresponds to the label for each reference.

Add to the references the traffic flow paper by D. Chowdhury et al.

Information: For more info please note on our Phys 310 webpage if you scroll down to the LaTeX section there are a few links for tutorials. (or just ask any one of us).

7. References (only for advanced LaTeX users):

There exists a more advanced bibliography-tool, "BibTeX", which automatically lists your references at the end of your paper in the order of occurrence in the main text of your paper. Furthermore the Bibliography is automatically in the right format (e.g. journal volume in boldface). And last but not least, WebofScience has "RefWorks" which allows you to get the bibtex-text for a specific paper. (To use this click on the box to the left of the desired reference(s) and then change on the top "Save to EndNote online" in the drop down menu to "Save to Other File Formats" then choose for the Content "Author, Title, Source" and for the File Format choose "BibTeX". When you click on "Send", the bibtex commands are most likely saved in a file in your ~/Downloads/.) In case you would like to use BibTeX, copy the necessary files into your working directory via

```
scp phys310@linuxremote.eg.bucknell.edu:paper.dir/template_bibincl.tex .
scp phys310@linuxremote.eg.bucknell.edu:paper.dir/template_bibincl.bib .
scp phys310@linuxremote.eg.bucknell.edu:paper.dir/samplefig1.eps .
scp phys310@linuxremote.eg.bucknell.edu:paper.dir/samplefig2.eps .
```

In the header of `template_bibincl.tex` you find a description for how to use BibTeX and in the header of `template_bibincl.bib` is a description for how to use WebofKnowledge to save you the typing and search for the complete information about a paper.

8. Xfig Intro

I will guide you through the following main commands of xfig, which is drawing tool:

- To get started: Type on the command line: `xfig &`
This will open a new window.
- drawing tools: background grid, circle, line, text, picture, grouping, scaling, copying, editing.
- To save an xfig session use `File → SaveAs` and give your xfig-file a name ending with `.fig`. You can get back to this session any time on the command line with `xfig filename.fig &` or within xfig with `File → Open`.
- To make an eps-file out of your figure use `File → Export`, make sure to choose “EPS (Encapsulated Postscript)” and choose the same filename but with the ending `.eps`. This eps-file can then be included in your latex file for the paper. (Later into the course I will also show you a variation of latex, latex beamer, which we will use to make talk-slides. You will be able to use the same eps-files for the paper and for the talk and therefore your work on the eps-files for your paper will be very handy for your talk preparation.)

9. (optional) Only for Advanced xfig and latex Users:

In case you would like to use latex commands within xfig use the following steps: First copy
`~kvollmay/share.dir/papers.dir/xfig2eps`
and

`~kvollmay/share.dir/papers.dir/xfig2pdf`

then make both executable (these are perl-scripts)

`chmod u+x xfig2*`. These `xfig2*` files will be needed for step (3) below.

Instead of `xfig` use instead

(1) `xfig -specialtext -latexfonts -startlatexFont default`

(2) first save then export to “Combined PS/LaTeX (both parts).”

This creates two files: `filename.pstex` and `filename.pstex.t`. To then make an eps-file (which you can include in your paper) (3a) `xfig2eps filename`

or to make a pdf-file use

(3b) `xfig2pdf filename`

10. Figure(s) for Model Section

Work on the figure(s) which you will use for your first paper on lab 2.