Implementación de una librería para la detección y el análisis de interacciones de partículas con CMOS

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We present a written summary template for use by MIT Junior Lab students, using LaTeX and the **RevTeX-4** macro package from the American Physical Society. This is the standard package used in preparing most Physical Review papers, and is used in many other journals as well. The individual summary you hand in should show evidence of your own mastery of the entire experiment, and possess a neat appearance with concise and correct English. The abstract is essential. It should briefly mention the motivation, the method and most important, the quantitative result with errors. Based on those, a conclusion may be drawn. The length of the paper should be no more than 2 double-sided pages including all figures.

1. INTRODUCCIÓN

2. CONFIGURACIÓN EXPERIMENTAL

2.1. Sensor CMOS

3. RESULTADOS

3.1. Medición de Rayos Cósmicos

3.2. Medición de los picos K_α y K_β

4. EXPERIMENT

5. CONCLUSIONES

6. REFERENCIAS

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[1] Melissinos, A.C., Experiments in Modern Physics - 1st Edition, Academic Press, [1966]
[2] Melissinos, A.C., Napolitano, J., Experiments in Modern Physics - 2nd Edition, Academic Press, [2003]
[3] Bevington and Robinson, Data Reduction and Error Analysis for the Physical Sciences - 3rd Edition, McGraw-Hill, [2003]
[4] Professor D. Pritchard, Personal Communication

Appendix A: Using LaTeX Under Windows

For those students who would like to use a Windows platform, MiKTeX (pronounced *mik-tech* is a freely available, implementation of TeX and related programs available from `www.miktex.org`. Note that MiKTeX itself runs from a command line prompt and is not terribly convenient. We strongly recommend you simultaneously purchase and install a very nice TeX editor/shell called WinEdt, available from `www.winedt.com` for only $30 for students. This interface is substantially easier than using 'emacs' on Athena for writing and typesetting scientific papers and we encourage you to check it out.

Once you've installed the above software, you will need to obtain the group of files listed in the next section and put them on your Windows machine in order to 'rebuild' this document from scratch. MIT offers free of charge to students (`http://web.mit.edu/software/win.html` a variety of useful software for communicating between your Windows machine and your Athena account. Three packages you should obtain and install are:

```
SecureFX
SecureCRT
X-Win32
```

If you wish to view postscript files under Windows, we suggest downloading and installing Ghostscript available from `www.cs.wisc.edu/~ghost`.

Appendix B: Using LaTeX Under Athena

For students wishing to utilize MIT's Athena environment, it is also a simple process to create your documents. You can use the following commands verbatim or tweak them to suit your own organizational system.

In your home directory on Athena, create a convenient directory structure for all of your Junior Lab work. Type:

```
> mkdir ~/8.13
> mkdir ~/8.13/papers
> mkdir ~/8.13/papers/template
> cd ~/8.13/papers/template
```

Once this (or similiar) directory structure has been created, copy all of the files needed to compile the template from the Junior Lab locker into your own Athena account: Type:

```
> setup 8.13
> cp /mit/8.13/www/Samplepaper/* .
```

The final period above places the copied files into the current directory so make sure you're in the correct directory! You can see where you are by typing:

```
> pwd
```

The following files should now be in your current directory:

```
sample-paper.tex
sample-paper.bib
sample-fig1.pdf
sample-fig3.pdf
typical-fit-plot.pdf
```

Additional files may also have been copied but don't worry, these get regenerated when you build your PDF document.

The 'setup' command automatically appends to your path the location of the **RevTeX-4** files.

Now let's build the file (omitting the '.tex' suffix in the following steps).

```
> pdflatex sample-paper
> bibtex sample-paper
> pdflatex sample-paper
> pdflatex sample-paper
```

The repeated calls to 'pdflatex' are necessary to resolve any nested references in the final PDf file. The 'bibtex' call reads in the bibliography file 'sample-paper.bib' allowing citation references to be resolved.

Remember to `ispell -t filename.tex` **to perform a LaTeXsafe spell check before handing in your paper!**

1. Useful Athena Utilities

Drawing Programs
Students should become proficient with a simple (vector based) computer drawing program such as **XFIG** or **TGIF** on Athena. Every written summary should include one or two simple schematics, based on their initial hand sketches from their lab notebooks.

Image Conversion
It is easy to convert images from one format to another (e.g. a scanned jpeg or bitmap image into an pdf file for inclusion into a written summary). A useful utility, available on the Sun's is "imconvert". Typing "imconvert" without any arguments will show you the accepted file types. For example, to convert a 'jpg' image to 'pdf', one types: "imconvert jpg:filename.jpg pdf:filename.pdf". Another command is 'ps2pdf'.