PHYSOR 2014 - The Role of Reactor Physics toward a Sustainable Future
The Westin Miyako, Kyoto, Japan, September 28 - October 3, 2014, on CD-ROM (2014)

THIS IS THE TEMPLATE TO WRITE A MANUSCRIPT FOR PHYSOR 2014 WITH LaTeX, THE TITLE SHOULD NOT EXCEED THREE LINES.

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ABSTRACT

Provide an informative abstract of about 200 - 250 words. The abstract should give a short overview of all material to be discussed in the paper, including the background and / or justification of the research, the research method(s), the main result(s) and the conclusion(s). From the information in the abstract the reader should be able to determine whether or not the paper (and the presentation) will be worthwhile to study.

Key Words: **Provide at 3 keywords minimum, 6 keywords maximum**

1. INTRODUCTION

Section headers should be all capitals (upper case). The format to enter a personal name is different from country to country. We do not enforce any strict rules. Write your name(s) in a format that feels most natural. If desired, you can emphasize your family name by writing it in ALL CAPITALS. We do not specify specific rules for hyphenation and/or interpunction in names: "Jean-Marie Leblanc", "J.-M. Leblanc", or "Leblanc, JM" are all equally acceptable. If there are two authors with the same affiliation, then use "Author1 and Author2"; if there are three or more authors with the same affiliation, use "Author1, Author2, ..., AuthorN, and AuthorN+1".

Address format: we do not enforce any specific format. You *must* enter your affiliation. A mail address is *not required*, but may be entered if desired. If you enter your mail address, then give sufficient details, including ZIP code etc. Don't forget the name of the country.

*You can use foot notes if needed, for instance to include the address of your homepage: www.nce.upalookaville.edu
†www.harahira.co.jp/ned/

2. SECOND OR SUBSEQUENT MAJOR HEADING

It is up to the writer to divide the manuscript into sections and sub-sections. For a conference contribution, in general 2 levels of sectioning should be adequate (i.e. sections and sub-sections), but we allow subsub-sections. If you want to make an appendix, check Appendix A for details about the format.

2.1. Subsection Title: First Character of Each Non-trivial Word is Uppercase

LaTeX has several classes of characters. For instance, there are normal letters, mathematical symbols, and special characters. White space is one of the special characters. In LaTeX a white space does not have a constant width. Rather, the spacing between words is adjusted so that lines and paragraphs are optimally typeset[1]. A special case is the combination of a period (full stop, ".") followed by whitespace. This indicates to LaTeX a break between sentences and then it is allowed to stretch space even further. Also, whitespace is interpreted in LaTeX as a potential location for a line break. But sometimes, you want to have some white space, but no line break: for example, when you make a Reference like "Figure XYZ", you want to make sure that a line break does not happen between the "Figure" and the "XYZ". In that case, use the special "unbreakable space" (tilde-sign), i.e. use `Figure~\ref{fig::figure}`. Use this also for citations, i.e. use `See~\cite{book}`. The same applies for the construction "et al.", where the space between "et" and "al." should be non-stretchable and non-breakable, i.e. `et~al.`. If "et al." is used in a running sentence, then use `et~al.~` to make sure that the space after the period is interpreted as a non-stretchable space.

2.1.1. Sub-subsection: use italic font, only first word is capitalized

You can use a sub-subsection if you need to.

3. ANOTHER SECTION: MAKING REFERENCES

The `physor2014` style uses the natbib package to improve the typesetting of references. In general, the normal citation should be sufficient, i.e. `\cite{book}`. However, natbib has various citation commands and allows to put options into the citation command. See the natbib manual for more information. If you want to cite more than one work, simply combine them into one `\cite{}`. The natbib package will make sure that the final typesetting is reasonable, so that you get this: (see [1–4]); rather than this: (see [1], [2], [3], [4]). References should be listed in the order that they are called out in the text (note: this is automatic if you use BibTeX).

[1] In fact, the space between letters in a word is also adjusted to give an optimal paragraph filling. The process of spacing the letters is known as *kerning*.

3.1. Hyperlinks

The `physor2014` style uses the hyperref package to pretty-print URLs. URLs have no spaces, and are therefore impossible to treat with the normal line breaking algorithms in LaTeX. Besides, even if a URL is split over a line, then a hyphen-sign should not be inserted. The hyperref package has some more benefits:

- All references in your document become hyperlinks automatically. When you use a `\ref{}`, the PDF document will have a hyperlink in place which allows you to navigate through your document. This feature is very practical for instance to refer to equations.
- All bibliographic material is internally linked; one click on the link will show you the book.
- In the author entry, if used with the `mailto:`-prefix, a hyperlink will be created. If this link is clicked, the default email editor is started and an email to the author is automatically initialized.

See the hyperref documentation if you want to know more.

4. EQUATIONS

The full power of LaTeX is in typesetting mathematical material. Please use the `amsmath` package. Note the following: LaTeX provides the `equation`-environment and the `equation*`-environment. The starred version produces no equation number. According to tradition, an equation is only given a number if there is a reference to the equation. Indeed, if the equation is not refered to, there is no need for an equation number. But for the present template, strict numbering rules are not enforced. A simple equation:

$$a^2 + b^2 = c^2$$

But LaTeX also allows very long equations, such as Equation (1). Note: please use `\eqref{}` to refer to equations.

$$\hat{\Omega} \cdot \nabla \psi(\vec{r}, E, \hat{\Omega}) + \Sigma_t(\vec{r}, E)\psi(\vec{r}, E, \hat{\Omega}) = \int_0^\infty \int_{4\pi} \Sigma_s(\vec{r}, E' \to E, \hat{\Omega}' \to \hat{\Omega})\psi(\vec{r}, E', \hat{\Omega}')\, \mathrm{d}\hat{\Omega}'\, \mathrm{d}E' + \frac{\chi(\vec{r}, E)}{4\pi} \int_0^\infty \int_{4\pi} \nu\Sigma_f(\vec{r}, E')\psi(\vec{r}, E', \hat{\Omega}')\, \mathrm{d}\hat{\Omega}'\, \mathrm{d}E' + S_{\text{ext}}(\vec{r}, E, \hat{\Omega}) \quad (1)$$

Please always introduce all symbols, avoid things like "all symbols have their normal meaning".

5. FIGURES AND TABLES

LaTeX has many packages to make it easy to include figures into your manuscript. With pdfLaTeX you can include figures as PDF, JPG, or PNG. For bitmapped material, JPG is preferred, because it can be compressed very efficiently into the PDF file and very small PDF files will result. For bitmapped images, please use a resolution of at least 300x300 dpi. For graphs and schematic drawings, please use PDF. This will provide so-called vector-images, which have a very small file size, and which provide optimal resolution under all magnification. To make very nice schematics in pdfLaTeX check out PGF/TikZ. All figures and tables need to be refered to in the running text. Figures or tables without references ("dangling" figures and tables) are not allowed!

One of the issues with LaTeX is that the size of the figure in the final document is not known, and you need several iterations to find the correct size. In general, you can avoid trouble by using the `[width=]`-option of the `\includegraphics{}` command, in combination with the parameter `\textwidth`. For example, to set two figures side-by-side and remain within the text width, use:

```
\includegraphics[width=0.45\textwidth]{foo1.pdf}
\includegraphics[width=0.45\textwidth]{foo2.pdf}
```

The result would be something like Figure 1. Obviously, this only works if both figures are roughly equal in size to begin with. See the manual of the graphicx package for more info. If you need to set several figures together, consider the subfigure package which allows to set complex combinations of small figures into one larger figure.

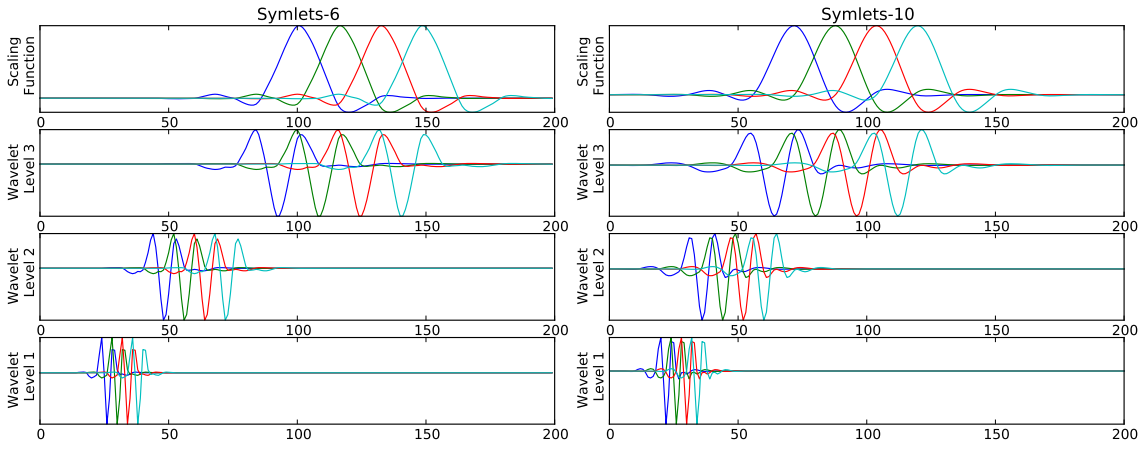

Figure 1. Figure captions go underneath the figure, over the full width of the page.

For tables, we do not enforce any special style. Writers are encouraged to take a look at the booktabs package. The manual of this package has some interesting pointers to create beautiful and informative tables. An example of a table is given, see Table I.

Table I. Table captions appear above the table, over the full width of the page. Only the "Table" label and table number are bold.

Parameter	Current uncertainty (LMFBR) [%]		Target uncertainty [%]
	Input data	Modeling	
k_{eff}	1.5	0.5	0.3
Power peak	1	3	2
Power distribution	1	6	3
Control rod worth (element)	5	6	5
Control rod worth (total)	5	4	2
Reactivity coefficients (total)	7	15	7
Reactivity coefficients (component)	20	20	10
Decay heat	10	3	5

6. CONCLUSION

Concluding: good luck with the preparation of your manuscript.

ACKNOWLEDGMENTS

If you want to thank somebody or something (maybe a funding organisation), do it here.

REFERENCES

[1] Mazda Miata, Ford Escort, and Meada Atsuko. "An important conference contribution." In: *International Meeting on Ghurkin Pickles* (Ed Kowalczek, editor). IGPA. Zandvoort, The Netherlands, February 24 - 29 (2012).

[2] "Research Institute of Nuclear Engineering, University of Fukui." Available online. URL http://www.rine.u-fukui.ac.jp/english/index.html (2013).

[3] Takayuki Kanazawa *et al.* "A breakthrough article." *Journal of Applied Technical Breakthroughs*, **45(4)**: pp. 2345 – 2354. URL http://dx.doi.org/doi_number (2012).

[4] Ian M. Babbelbox. *Zen and the Art of LWR Maintenance*. Wiley Coyote & Sons, Palookaville, USA (1998).

APPENDIX A. HOW TO MAKE APPENDICES

An appendix is a section with extra material which is relevant to the manuscript, but is too bulky, too detailed, or simply too long to include in the main text. Feel free to make one (or more) appendix (appendices), but remember: if you make an appendix, then you must include a reference from the main text to the appendix. An unreferenced ("dangling") appendix is not allowed.

APPENDIX B. ISSUES RELATED TO FISSION PRODUCT DECOUPLING IN ADJOINT TRANSMUTATION CALCULATIONS

An appendix is a section with extra material which is relevant to the manuscript, but is too bulky, too detailed, or simply too long to include in the main text. Feel free to make one (or more) appendix (appendices), but remember: if you make an appendix, then you must include a reference from the main text to the appendix. An unreferenced ("dangling") appendix is not allowed.