How to use the NAV LaTeX class

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This sample is a guideline for preparing technical papers using LaTeX for NAV manuscript submission. It contains the documentation for NAV LaTeX class file, which implements the layout of the manuscript for NAV journal. This sample file uses a class file named NAV.cls where the authors should use during their manuscript preparation.

KEYWORDS

keyword entry 1.   keyword entry 2.   keyword entry 3.

1. INTRODUCTION.   This latex class file is available for the authors to prepare the manuscript for NAV Journal. It is assumed that the authors are familiar with either plain TeX, LaTeX, $\mathcal{AMS}$-TeX or a standard latex set-up, hence, only the essential points are described in this document. To get more details please go through the *LaTeX User's Guide* or *The not so short introduction to LaTeX 2_ε* (which is available online). The NAV.cls is similar as the article.cls of LaTeX, with only few additional changes in the preamble portion.

2. INSTALLATION.   The NAV.cls has to be copied into a directory where tex looks for input files. The other files has to keep as a reference during the preparation of your manuscripts. Please use pre-defined commands from for title, authors, address, abstract, keywords, body etc. as shown in Box 1.

3. HOW TO START USING NAV.CLS.   Before you type anything that actually appears in the paper you need to include a \documentclass{NAV} command at the very beginning and then, the two commands that have to be part of any latex document, \begin{document} at the start and the \end{document} at the end of your paper. The main structure of your document should be as follows:

Box 1: Structure of a document.

```
\documentclass{NAV}

\begin{document}

\title[Recto running head]{How to use the
                          NAV \LaTeX\ class}

\author[Verso running head]{First author$^{1}$
                           and Second author $^{2}$}

\address{\add{1}{First author address}
\add{2}{Second author address}\email{xxxx@xxxx.xxx.xx}}

\maketitle

\section{....}
...
\subsection{....}
....
\end{document}
```

4. PREAMBLE PART.   All the options in `article.cls` are available with this class file, by default it will produce all elements single spaced throughout the document.

By default, NAV class file produce unnumbered bibliography.

4.1. *Paper Title.*   The paper title is declared like: `\title{...}` in the standard LATEX manner. Line breaks \\ may be used to equalize the length of the title lines.

4.2. *Author Names.*   The name and associated information is declared with the `\author` command. `\author` behaves slightly differently depending on the document mode. For more details about author information see Box 1.

4.3. *Running heads.*   The running heads can be given in the optional of `\title` and `\author` tag
`\title[Recto running head]{xxxx}` and
`\author[Verso running head]{xxxx}` field.

4.4. *Abstract & Keywords.*   The abstract is generally the first part of a paper. The abstract text is placed within the abstract environment.

```
\begin{abstract}
Abstract text here
\end{abstract}
```

Keywords should be inserted immediately after the abstract text with grouping as shown below.

```
\keywords{\key{Keyword entry 1} \key{Keyword entry 2}}
```

5. BODY PART.

5.1. *Sections.* The coding for section is `\section{text}`. This will generate section number automatically. Use the starred form (`\section*{text}`) of the command to suppress the automatic numbering. If you want to make cross references to the section levels use the `\label` and `\ref` command. You can have sections up to five levels.

The sectioning commands are `\section`, `\subsection`, `\subsubsection`, `\paragraph` and `\subparagraph`.

5.2. *Figures and tables.* Use the default LaTeX coding for figures and tables. Figure and table environments should be inserted after the end of the paragraph, nearest to the citation.

The coding for figure is:

```
\begin{figure}
\includegraphics{sample.eps}
\caption{Insert figure caption\label{fig1}}
\end{figure}
```

The coding for table is:

```
\begin{table}[!t]
\processtable{Insert table caption her\label{tab1}}
{\begin{tabular}{@{}lllll@{}}
\hline
Column head 1 & Column head 2 & Column head 3 &
Column head 4 & Column head 5\\
\hline
Table body & Table body & Table body  & Table body  & Table body  \\
Table body & Table body & Table body  & Table body  & Table body  \\
Table body & Table body & Table body  & Table body  & Table body  \\
Table body & Table body & Table body  & Table body  & Table body  \\
Table body & Table body & Table body  & Table body  & Table body  \\
\hline
\end{tabular}}{}
\end{table}
```

As always with LaTeX, the `\label` must be after the `\caption`, and inside the figure or table environment. The reference for figures and tables inside text can be made using the `\ref{key}` command.

5.3. *Equations.* Equations are used in the same way as described in the LaTeX manual. Equations are numbered consecutively, with equation numbers in parentheses flush right.

For example, if you type

```
\begin{equation}\label{eq1}
\int^{r_2}_0 F(r,\varphi){\rm d}r\,{\rm d}\varphi = [\sigma r_2/(2\mu_0)]
\int^{\infty}_0\exp(-\lambda|z_j-z_i|)\lambda^{-1}J_1 (\lambda r_2)J_0
(\lambda r_i\,\lambda {\rm d}\lambda)
\end{equation}
```

then you will get the following output:

$$\int_0^{r_2} F(r,\varphi)\mathrm{d}r\,\mathrm{d}\varphi = [\sigma r_2/(2\mu_0)] \int_0^\infty \exp(-\lambda|z_j - z_i|)\lambda^{-1} J_1(\lambda r_2) J_0(\lambda r_i\,\lambda\mathrm{d}\lambda) \quad (1)$$

$\mathcal{AMS}$-LaTeX has several environments that make it easier to typeset complicated multiline displayed equations. These are explained in the $\mathcal{AMS}$-LaTeX User Guide. A `subequation` environment is available to create equations with sub-numbering of the equation counter. It takes one (optional) argument to specify the way that the sub-counter should appear.

5.4. *Quotes and displayed text.* Quotes are indented from the left and right margins. There are various types of quotes, short quote, long quote and display poetry.

The coding for short quote is `\begin{quote}...\end{quote}`.

> This is a short quotation. It consists of a single paragraph of text. See how it is formatted.

The coding for long quote is `\begin{quotation}...\end{quotation}`.

> This is a longer quotation. It consists of two paragraphs of text, neither of which are particularly interesting.
> This is the second paragraph of the quotation. It is just as dull as the first paragraph.

5.5. *Listings.* Another frequently displayed structure is a list. There are various types of list numbered, itemized and bulleted list.
The coding for bulleted list are as follows:

```
\begin{itemize}
\item Bulleted list 1
\item Bulleted list 2
\item Bulleted list 3
\end{itemize}
```

The coding for numbered list are as follows:

```
\begin{enumerate}
\item Numbered list 1
\item Numbered list 2
\item Numbered list 3
\end{enumerate}
```

The coding for description list are as follows:

```
\begin{description}
\item Description list 1
\item Description list 2
\item Description list 3
\end{description}
```

5.6. *Enunciations like theorem, lemma etc..* The $\mathcal{AMS}$-LATEX package for enunciations (amsthm.sty) has been already loaded in the class file.

To get the theorem environment use the coding as:

```
\begin{theorem}
Theorem text. Theorem text. Theorem text.
Theorem text. Theorem text. Theorem text.
\end{theorem}
```

and `\newtheorem{theorem}{Theorem}` in the preamble.

Similarly, we can define for lemma, corollary, proposition, definition etc.

5.7. *Cross-referencing.* LATEX provides the following commands for cross referencing

```
\label{marker}, \ref{marker} and \pageref{marker}
```

where marker is an identifier chosen by the user. LATEX replaces `\ref` by the number of the section, subsection, figure, table, or theorem after which the corresponding `\label` command was issued. `\pageref` prints the page number of the page where the `\label` command occurred.

5.8. *Citations.* Citations are made with the `\cite`, `\citep`, `\citet` etc. In this class file we have used natbib.sty for cross references and reference style.

For bibliography the natbib package has been defined in the template as `\usepackage[authoryear]{natbib}` with
`\bibpunct[, ]{(}{)}{;}{a}{,}{;}` command

For more details about natbib.sty can be found at
http://ctan.org/tex-archive/macros/latex/contrib/natbib/

Acknowledgements Acknowledgements and other unnumbered sections are created using the `\section*` command:

```
\section*{Acknowledgment}
```

6. BACK MATTER.

6.1. *References.* The reference entries can be LATEX typed bibliographies or generated through a BIBTEX database. BIBTEX is an adjunct to LATEX that aids in the preparation of bibliographies. BIBTEX allows authors to build up a database or collection of bibliography entries that may be used for many manuscripts. They also save us the trouble of having to specify formatting. More details can be found in the *BIBTEX Guide*. For LATEX reference entries use the `\begin{thebibliography}...\end{thebibliography}` environment (see below) to make references in your paper. By default the class file will produce the unnumbered LATEX bibliography, if you want the numbered references, then please use the option "numbib" in the optional of `\documentclass` command.

For an example: `\documentclass[numbib]{NAV}`.

```
\begin{thebibliography}
\bibitem[Levine(2000)]{Chen2001}
Levine, M.: Fundamentals of Sensation and Perception, 3rd
ed., Cambridge University Press, London, 2000.
```

```
\bibitem[Zhai et~al.(2013)]{Ahn1983}
Zhai, G.;~Kaup, A.;~Wang, J.;~Yang, X.: A dual-model
approach to blind quality assessment of noisy images, in
Picture Coding Symposium (PCS), 2013, December
2013, 29--32.
\end{thebibliography}
```

6.2. *Formatting.* One should always use LaTeX macros rather than the lower-level TeX macros like `\it`, `\bf` and `\tt`. The LaTeX macros offer much improved features. The following table summarizes the font selection commands in LaTeX.

LaTeX text formatting commands

`\textit`	Italics	`\textsf`	Sans Serif
`\textbf`	Boldface	`\textsc`	Small Caps
`\texttt`	Typewriter	`\textmd`	Medium Series
`\textrm`	Roman	`\textnormal`	Normal Series
`\textsl`	Slanted	`\textup`	Upright Series

LaTeX math formatting commands

`\mathit`	Math Italics	`\mathfrak`	Fraktur
`\mathbf`	Math Boldface	`\mathbb`	Blackboard Bold
`\mathtt`	Math Typewriter	`\mathnormal`	Math Normal
`\mathsf`	Math Sans Serif	`\boldsymbol`	Bold math for Greek letters
`\mathcal`	Calligraphic		and other symbols

7. MACRO PACKAGES. The commonly used packages which can be used frequently are:

```
amsmath         graphicx        rotating
amssymb         endnotes        subfigure
amsfonts        setspace        array
xspace          latexsym        url
amscd           multicol        algorithm
```

Additionally, you can use other packages and these should be loaded using the `\usepackage` command in the preamble.

APPENDIX. A HEAD

The `\appendix` command signals that all following sections are appendices, and therefore the headings after `\appendix` will be set as appendix headings.

Note: All the figures, tables, equations, enunciations will be automatically numbered as A.1, A.2, etc. in the appendix part.