AIP Press Toolbox for Camera-Ready Proceedings:

User Guide for Proceedings

AIP
PRESS

This toolbox is the third in a series of Publishing Toolboxes developed by the American Institute of Physics, independently or in collaboration with member societies.

AIP Publishing toolboxes:

- WordPerfect Manuscript Toolbox (M1)
  (developed in collaboration with the American Vacuum Society)
- REVTEX Manuscript Toolbox (M2)
  (developed in collaboration with the American Physical Society and the Optical Society of America)
- AIP Press Toolbox (`aipproc`)

Preface

The roles of the author, compositor, and publisher continue to evolve as technology advances. These changes are in part the result of the increasing availability of typesetting technology to the author community.

The American Institute of Physics has responded by implementing composition technology that will interface well with author tools. Where no tools are available to meet the essential needs of the author and AIP, we will respond by developing one. The toolbox supplied here is the result of one such development effort.

Author feedback plays a significant role in AIP's development efforts, and we welcome your comments. Please send your comments to hwang@aip.org

Contents

1. General Information

This toolbox is made available to authors who are preparing their books in camera-ready format. The author is expected to know LaTeX and have it running. The author is expected to conform to style requirements and to deliver high-quality pages as well as the TeX file that created them.

In order for AIP Press to provide the fastest possible publication, each author will type his/her manuscript and lay it out into pages with art and tables in place. The proceedings will be produced by a photo-offset process directly from the pages (camera-ready copy) supplied by the author. Please check over your paper carefully and thoroughly proofread it before submission. Remember, the way you submit your manuscript to the publisher is the way you will see it in print.

To ensure that your paper is reproduced clearly and in consistent size and format, please carefully follow the instructions given in this document. All the instructions are important, so please follow them.

2. Toolbox Contents

`README`	`aipproc.cls`
`aipproc.tex`	`aipproc.sty`
`samp0.tex`	`samp1.tex`
`samp2.tex`	`sampmain.tex`

It's very important that users read `README` and `aipproc.tex` carefully.

3. Guidelines

3.1 Introduction

`aipproc` runs with both LaTeX 2.09 and LaTeX 2_ε under `compatibility mode`, namely, you should use

```
\documentstyle[Options]{aipproc}
```

rather than

```
\documentclass
\usepackage{Options}
```

Support for LaTeX 2.09 is, if any, very limited.

Familiarity with LaTeX, and a copy of *LaTeX: A Document Preparation System* (second edition, by Leslie Lamport) and *The LaTeX Companion* (by Goosens, Mittelbach, and Samarin) are assumed. You must also have a complete TeX, LaTeX installation before using the `aipproc` style. For those with LaTeX 2_ε installation, you should obtain at least the `graphics` and `tools` bundles in order to have most of the supported features.

When commands are discussed they will be typeset in the form `\command` showing that no arguments are required, the form `\command{#1}` showing that one argument is required, etc. Optional arguments and "star forms" of commands may exist: reference the LaTeX documentation for complete information when in doubt.

3.2 Top matter

In general, the beginning of your paper will look like this:

```
\documentstyle{aipproc}
\begin{document}
\title{Insert title here}
\author{Insert author names here}
\address{Insert author addresses here}
\maketitle
\begin{abstract}
  . . . Insert abstract here . . .
\end{abstract}

                    ⋮
          body of the paper goes here
                    ⋮

\end{document}
```

Text font size is set to 12 pt already by the `aipproc`, therefore, no type size option is needed. You need to add all the packages to be used with `aipproc` to `\documentstyle`'s options list. See `samp2.tex` for example.

Footnotes can be added within the `\author{#1}` and `\address{#1}` commands via the `\thanks{#1}` command. The correspondence between authors and addresses should be indicated with manually inserted superscript symbols: $*$, $\dagger$, $\ddagger$, $\|$, ¶, §, $**$, $\dagger\dagger$, etc. See `samp0.tex` for examples.

3.3 Section headings

Section headings are input as in LaTeX. The output is similar.

Four levels of headings are provided in the `aipproc` style: `\section{#1}`, `\subsection{#1}`, `\subsubsection{#1}`, and `\paragraph{#1}`.

All text in the `\section{#1}` command is automatically set uppercase. If a lowercase "x" is needed, just use `\lowercase{x}`. For example, to have "Au" in a `\section` command, type `\section{A\lowercase{u}}`. On the rare occasions when you have to put commands such as `\cite, \ref` in a section title, you must use `\lowercase` to prevent the reference or citation key from being turned into uppercase. For example, `\section*{Title \lowercase{\protect\cite{baz}}}`.

All section headings are either unnumbered or automatically numbered. Numbered sections may be cross referenced easily. Following the `\section{#1}` command (*not* inside `#1`) insert a `\label{#1}` command, where `#1` is some combination of letters, numbers, and punctuation. If you later use `\ref{#1}`, where `#1` is identical to that of the `\label{#1}` command, then the correct section number will be produced by the `\ref{#1}` command.

Use `\protect\\` to force a line break in a section heading. (Fragile commands must be protected in section headings and captions, and `\\` is a fragile command. See Sec. 3.11 for a way around this.)

Important note. Authors should use the "star" form of these commands to suppress all the automatic section numbering; e.g.,

```
\section*{First-level Heading}}
\subsection*{Second-level Heading}}
\subsubsection*{Third-level Heading}}
```

as numbered sections will not normally be needed for proceedings.

3.4 Footnotes

You may set footnotes using the normal LaTeX mechanisms. Simplest is to just use the `\thanks{#1}` command when setting footnotes inside the `\author{#1}` or `\address{#1}` commands, and the `\footnote{#1}` command when setting footnotes in the text.[1]

You should use `\tablenote{#1}` command to produce table's footnote.

3.5 Displayed equations

3.5.1 Setting and numbering displayed equations

The most common type of displayed equation is a narrow, single-line equation, with or without an equation number on the same line.

To set an unnumbered, single-line equation use the `\[ \]` construct:

```
\[
  E=mc^2.
\]
```

will typeset as

$$E = mc^2.$$

[1] That is how this footnote was set!

To set an automatically numbered, single-line equation use the equation environment:

```
\begin{equation}
  E=mc^2.
\end{equation}
```

will typeset as

$$E = mc^2. \tag{1}$$

Breaking the equation into multi-line format may be necessary for very long equations or for purposes of exposition. The eqnarray environment is used for this. In this environment a `\\` signifies the start of a new line, and the lines are aligned by the material (if any) that is contained inside two `&` signs. Use `\nonumber` on any line to suppress the numbering for that line. For example:

```
\begin{eqnarray}
  x&=& 2y^2-(y+1)^2 \nonumber \\
   &=& y^2-2y-1 .
\end{eqnarray}
```

typesets as

$$\begin{aligned} x &= 2y^2 - (y+1)^2 \\ &= y^2 - 2y - 1. \qquad (2) \end{aligned}$$

Observe that the equals signs line up, the first line is unnumbered, and the final line does not require a `\\` at the end.

Using the `eqnarray*` environment allows one to set multi-line equations with no numbers on any lines:

```
\begin{eqnarray*}
  x&=& 2y^2-(y+1)^2 \\
   &=& y^2-2y-1 .
\end{eqnarray*}
```

typesets as

$$\begin{aligned} x &= 2y^2 - (y+1)^2 \\ &= y^2 - 2y - 1. \end{aligned}$$

Notice that there are no numbers on the lines of the output, even though the `\nonumber` command was not used.

To obtain numbers not normally produced by the automatic numbering, use the `\eqnum{#1}` command, where `#1` is the desired equation number. For example, to get an equation number of $(3')$,

```
\begin{equation}
E=mc^2.  \eqnum{3$'$}\label{eq:mynum}
\end{equation}
```

Note: The `\eqnum` must come before the `\label`, if any. Also, numbers assigned by `\eqnum{#1}` are completely independent of the automatic numbering; therefore, you must know the number ahead of time and *must* make sure that the number set with `\eqnum` stays in step with the automatic numbering. `\eqnum` works with both single-line and multi-line equations. If you wish a series of equations to be a lettered sequence, e.g., (4a), (4b), and (4c), just include the equation(s) or eqnarray(s) within the `mathletters` environment.

See `samp0.tex` to see examples of how all this works.

3.5.2 Cross-referencing displayed equations

Although authors will probably not need to cross reference every equation in text, when a numbered equation needs to be referred to in text by its number the `\label{#1}` and `\ref{#1}` commands can be used. The `\label{#1}` command is used within the equation or the individual eqnarray line to be referenced, and `\ref{#1}` may then be used anywhere in the file to reproduce the correct equation number:

```
\begin{equation}
  E=mc^2 \label{einstein}
\end{equation}
 It follows from Eq.\ (\ref{einstein}) ...
```

typesets as

$$E = mc^2 \tag{3}$$

It follows from Eq. (3) ...

and

```
\begin{eqnarray}
  x&=& 2y^2-(y+1)^2 \nonumber\\
   &=& y^2-2y-1 . \label{noteinstein}
\end{eqnarray}
 It follows from Eq.\ (\ref{noteinstein}) ...
```

typesets as

$$\begin{aligned} x &= 2y^2 - (y+1)^2 \\ &= y^2 - 2y - 1. \qquad (4) \end{aligned}$$

It follows from Eq. (4) ...

Note: incorrect cross referencing will result if `\label{#1}` is used in an unnumbered single line equation (i.e., within the `\[` and `\]` commands), or if `\label{#1}` is used on a line of an eqnarray that is not being numbered (i.e., a line that has a `\nonumber`).

3.6 Figures

Figures are a part of the paper and should appear as close as possible to their discussion. They should be input sequentially in the order in which they are cited in the text, closely following their first citations; `aipproc` will label and number the captions FIGURE 1, FIGURE 2, etc.

The general setup for a figure to be pasted by hand on the page will be

```
\begin{figure} % fig 1
\vspace{2.25in}
\caption{Instrument used for measurements.}
\label{instrumentfig}
\end{figure}
```

Here, the figure environment contains the following commands:

- `\vspace{#1}` leaves a vertical space equal to `#1`. The author must therefore calculate how much space will be needed for each figure *after being reduced*, and use the `\vspace{#1}` command to leave space for the insertion of the figure.
- `\caption{#1}` contains the caption for the figure. Fragile commands must be immediately preceded by `\protect`. See Sec. 3.11 for a way around this.
- `\label{#1}` works just like it does for equations. This command must be placed inside or after—but not before—the `\caption{#1}` command. Then the figure number can be reproduced by using the `\ref{#1}` command anywhere in the file.

For an Encapsulated Postscript (or EPS) figure to be included into your paper, LaTeX 2_ε users can, input something like this

```
\begin{figure} % fig 3.2
\centerline{\epsfig{file=fig3-2.ps}}
\caption{Concentration profile.}
\label{F:jfoo:2}
\end{figure}
```

3.7 Tables

Two environments are provided by `aipproc` to prepare "regular tables" and "long tables" respectively. The latter is available to LaTeX 2_ε users only.

3.7.1 Regular tables

Regular tables are handled as floating inserts and such table will not break across pages.

Each table must begin with `\begin{table}` and end with `\end{table}`. The table commands will set horizontal lines at the beginning and end of the table; a single horizontal rule should be set after the column headings by using the `\tableline` command. Extra sets of column headings within the table will require another `\tableline` to separate the headings from the column entries. Do not insert any vertical lines in the body of the table.

Table cross referencing works just like figure cross referencing: the `\label{#1}` command may be used inside of the `\caption{#1}` command or immediately following it, but not before it. Then the `\ref{#1}` command is used to cite tables in text.

For example,

```
These are shown in Table \ref{table1}.
\begin{table}
\caption{Caption for Table 1 goes here}
\label{table1}
\begin{tabular}{lddd}
\multicolumn{1}{c}{Main sample}& Secondary result&
\multicolumn{1}{c}{Previous result\tablenote{%
   This is tablenote one.}} & Change(\%)}\\
\tableline
Harkonen {\it et al.} & 34.5 & 24.5 & $-$23. \\
Deckard and Batty & 24.5 & 28.5 & $-13$. \\
Marcin & 134.5 & 224.5 & 53. \\
\end{tabular}
\end{table}
```

- *Numerical columns* will align on the decimal point (or decimal points if more than one is is present) if the column specifier, `'d'`, has been used. This should be used for simple numeric data with a *single* decimal point. Material without a decimal point is simply centered. Notes: entries that start with a decimal point (e.g., `.003`) will not be aligned by the decimal point; you should add a prezero to align the number correctly (e.g., `0.003`). Additionally, the entry is typeset in separate parts separated by any decimal point(s) present, so parts of the entry to the left and right of a decimal point must be able to be typeset separately. For example, `$-1.23$` will not work in a `d` column. You will get a "missing $" error because `$-1` is typeset separately from `23$`. Use instead `$-$1.23`. If multiple decimal points are present then the last is used for alignment. To escape from the `d` column use `\multicolumn` as usual. See sample files for examples.
- Use $ delimiters for all math in a table (no displayed equation commands).
- Use `\tablenote` command to generate a table footnote. When a table entry in a `'d'` column is `\tablenote`'ed, it is always safe to escape that entry with a `\multicolumn`.
- *Extra wide tables* that will not fit into the 5.5-in. designation can be turned broadside using the LaTeX 2_ε package `lscape`.

3.7.2 Long tables

LaTeX 2_ε users can use `longtable` package (through the `aiptable` environment) to prepare tables that span page breaks. `longtable` supports automatically continued table heads and feet. One consequence of this is that these tables will not "float". It is necessary to place the tables by hand in the position that should appear. Notes: `\tablenote` works the same way, but the `'d'` column specifier is not available with `longtable`.

Following is an example of a table prepared using the longtable package. The body of the table, which is the same as in a normal LaTeX tabular environment, has been omitted.

```
\begin{aiptable}
\begin{longtable}{rrrrrr}
\caption{Representative symbiotic stars.}
\label{T:jfoo:2}
\\\aftercapline
Name & Other Name & $\alpha_{2000}$ &
$\delta_{2000}$ & $l_{\rm II}$ & $b_{\rm II}$ \\
\afterheadline\endfirsthead
\caption[]{Continued.} \\
\aftercapline
Name & Other Name & $\alpha_{2000}$ &
$\delta_{2000}$ & $l_{\rm II}$ & $b_{\rm II}$ \\
\afterheadline\endhead
\hline\endfoot
\hline\endlastfoot
```

...

the body of the table is omitted.

...

```
\end{longtable}
\end{aiptable}
```

A complete version of this table with comments explaining its usage is in `samp2.tex`. See the longtable documentation for detailed information on the use of the longtable environment.

Please note `longtable` is not avaliable to LaTeX 2.09 users.

3.8 Special characters

The `aipproc` style will support all the "normal" TeX and LaTeX symbols, and in addition, the following symbols from REVTeX:

\succsim, \precsim, \gtrsim, \lesssim, \corresponds, \lambdabar, \tensor.

The extra symbols and fonts contained in the AMSFonts collection are available via style options `amsfonts`, or `amssymb` for those LaTeX 2_ε users who have the AMS-Fonts installed. For LaTeX 2.09 one also needs to have `amssym.def`, and `amssym.tex`.

`samp0.tex` shows what symbols these command produce.

3.9 References

The references should be input at the end of each paper using the `references` environment. `samp0.tex` shows examples of a variety of reference entries, e.g., journal, book, etc.

The reference section will be input as a normal LaTeX `references` environment. Each reference is started with the `\bibitem{#1}` command, where `#1` represents the tag name of the reference. For example, use the `\cite{#1}` command anywhere in the text, and the number that is automatically assigned to the bibitem will be inserted in the output. So,

```
We have studied the major works \cite{A,B,C}.
     .
     .
     .
\begin{references}
\bibitem{A} Foo, J. S., {\it Journal.} {\bf25},
   1456--1466 (1983).
\bibitem{B} Bar, J. S., {\it Journal.} {\bf15},
   56--66 (1953).
\bibitem{C} Baz, J. S., {\it Journal.} {\bf38},
   156--160 (1993).
\end{references}
```

produces

We have studied the major works (1–3).

.
.
.

REFERENCES

1. Foo, J. S., *Journal.* **25**, 1456–1466 (1983).
2. Bar, J. S., *Journal.* **15**, 56–66 (1953).
3. Baz, J. S., *Journal.* **38**, 156–160 (1993).

You may have noticed that a cite command that has a list of references will be output with consecutive reference numbers collapsed; for example, [1,2,7,8,9] will be output as [1,2,7–9]. No ordering is done before collapsing the list, so [1,3,2] will be output as [1,3,2]. If you use a `\cite{#1}` command with a long list of tags, your list may take up more than one input line in the file. Use a % character immediately following one of the commas in the list in order to ensure that you get the expected results:

```
 . . . is shown in \cite{refa,refb,refc,refd,%
refe,reff,refg,refh,refi,refj,refk,refl}
```

Observe the % inserted after the comma at the end of the first line. This ensures that the entire list will be processed correctly.

When using the `\label` and `\bibitem` commands, try to create unique labels so that there will be no collisions of names when all papers are run together at the end. For example, using `\label{table1}` is likely to put your label in conflict with another author's use of the same label. Here is one scheme that has been used successfully: Use `\label{X:Y:Z}`, where X is the label type (S = section, T = table, F = figure, E = equation), Y is the author's initial and lastname, and Z is the number of the thing being labeled. For example, the first table in James Foo's paper would be labeled with `\label{T:jfoo:1}`, the first figure would be `\label{F:jfoo:1}`, the second figure would be `\label{F:jfoo:2}`, and so on. Similarly, Smith's 1994 paper is better labeled with `\bibitem{jfoo:smith94}` than `\bibitem{smith94}` since `\bibitem{smith}` is likely to come up more than once.

3.10 Use other packages with aipproc style

There are many more packages available for LaTeX 2_ε than for LaTeX 2.09. One needs to have the right `.sty` files for his/her version of LaTeX.

LaTeX 2_ε users: We suggest you get the `graphics` and `tools` bundles because in most cases they should meet your variety of needs. `README` describes how one may get the files from ftp.shsu.edu and install them.

LaTeX 2.09 users: You can obtain the required `sty` files via anonymous ftp from ftp.shsu.edu in the following directories:
tex-archive/macros/latex209/contrib/epsfig
tex-archive/macros/latex209/contrib/geom
tex-archive/macros/latex209/contrib/misc
tex-archive/macros/latex209/distribs/latex/sty.

3.11 Troubleshooting

Question: How do I get lowercase letters in the `\section{#1}` command? All text in the `\section{#1}`, `\righthead{#1}`, and `\lefthead{#1}` commands is automatically set uppercase. If a lowercase letter is needed, just use `\lowercase{x}`. This also works in math mode.

Problem: I am getting error messages on the lines of my `\section{#1}`, `\subsection{#1}`, `\subsubsection{#1}`, or `\caption{#1}` commands, and I can't understand why! You may have a so-called "fragile" command in a section heading or caption. LaTeX's solution to the problem is to immediately precede the fragile command with `\protect`.

An easier solution is available: just pass empty optional arguments to the commands. For example, instead of using

```
\caption{#1}
```

just use

```
\caption[]{#1}
```

You do not need to worry about how this works unless you are interested in producing a table of contents, list of figures, or list of tables. Otherwise you may safely use this technique for all section headings and captions.

Question: TeX runs out of space while typesetting my captions. What do I do? Use the empty optional arguments outlined in the answer to the preceding question. The length of your caption is overflowing TeX's buffer. Using the empty optional argument fixes this problem.

Question: LaTeX is not putting my figure(s)/table(s) where I think they should go. How can I change this? LaTeX will normally do an acceptable job of placing floating elements on the page. If you have problems, see the discussion in Appendix C.8.1 of the LaTeX manual. Please note that tables and figures should be set at either the top or bottom of the page whenever possible, not in the middle.

3.12 Support

For technical support and information, contact:

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