

# Usage of pasj02.cls

## PASJ Editorial Office

Astronomical Society of Japan, c/o National Astronomical Observatory of Japan, 2-21-1 Osawa, Mitaka, Tokyo 181-8588, Japan  
\*E-mail: \*\*\*@\*\*\*.\*\*\*

ORCID: 0000-0000-0000-0000

## Abstract

In this document (pasj02\_usage.tex), we provide a brief explanation about pasj02.cls, the current version of PASJ's document class for authors. The class file, pasj02.cls, is prepared so that authors can typeset/preview articles for PASJ under the *standard* L<sup>A</sup>T<sub>E</sub>X system. Note that it is assumed that authors are used to writing documents in L<sup>A</sup>T<sub>E</sub>X style; that is, this manual shows only the differences of functions provided by pasj02.cls and those in the *standard* L<sup>A</sup>T<sub>E</sub>X. Please also see “Instructions to Authors” available on <[https://academic.oup.com/pasj/pages/General\\_Instructions](https://academic.oup.com/pasj/pages/General_Instructions)>. The author's guide in Japanese can be found at <<https://www.asj.or.jp/pasj/guide/>>.

**Keywords:** key word — key word — ... — key word

## 1 Overview

When pasj02.cls is applied to an article for PASJ, the article should be prepared in the standard L<sup>A</sup>T<sub>E</sub>X style with slight modifications. That is, a manuscript has the following structure:

```
\documentclass{pasj02}
\draft
\usepackage[switch,mathlines]{lineno}

\begin{document}

\title{title of the article}
\author{list of authors}
\altaffiltext{}{the authors' affiliation}
%%% some other commands
\KeyWords{}

\maketitle
\pagewiselinenumbers

\begin{abstract}
  abstract of the article
\end{abstract}

\section{Introduction}

\subsection{}

\subsubsection{}

\begin{ack}
  A brief note for an acknowledgment, if any.
```

```
\end{ack}

\section*{Funding}
  This research was supported by ...

\section*{Data availability}
  The data underlying this article are available ...

\begin{thebibliography}{}%% references
\bibitem[label(year)]{key} reference entry
...
\end{thebibliography}
\end{document}
```

## 2 Class options

The class file pasj02.cls admits the following options:

- **draft**: produce “overfull rules” (i.e., Black boxes will appear everywhere “overfull \hbox” occurs.)
- **final**: hide “overfull rules”
- **twocolumn**: use two-column format for a submission
- **onecolumn**: use one-column format for a submission
- **proof**: typeset in draft-style
- **useamsfonts**: enable to use symbols defined in amssymb.sty
- **mfastrosym**: enable to use the font “astrosym”

Note that the mfastrosym option requires that the font “astrosym” (by Peter Schmitt) be *properly* installed in the T<sub>E</sub>X system.

### 3 Preamble commands

To produce the title page, each article should contain the following five items:

1. list of authors/their affiliation  
`\author{authors}, \affil{affiliation},`  
`\altaffilmark{n}, \altaffiltext{n}{affiliation}`  
`\altemailmark`
2. title  
`\title{title}`
3. date of reception/acception  
`\Received{reception date}, \Accepted{acception date}`
4. list of key words  
`\KeyWords{key words}`
5. e-mail address, if any  
`\email{e-mail address}`

The title of the article, author name, and affiliation should be typed at the beginning of the article. These can be produced using the following input:

#### Single affiliation

```
\author{John \textsc{Smith}
and Paul \textsc{Wood}\orcid{0000-0000-0000-0000}}
\affil{Affiliation}
\email{Address1, Address2}
```

#### Two or more affiliations

```
\author{John \textsc{Smith}\altaffilmark{1}
\altemailmark
and Paul \textsc{Wood}\altaffilmark{2} }
\altemailmark\orcid{0000-0000-0000-0000}
\altaffiltext{1}{Affiliation}
\altaffiltext{2}{Affiliation}
\email{Address1, Address2}
```

As shown in the above example, `\altaffilmark{label}` gives a label and corresponding text is given by `\altaffiltext` with the same label in its first argument and `\altemailmark` will give the label corresponding e-mail.

### 4 Cross-references

#### 4.1 `\label`, `\ref`, `\cite`, and `thebibliography` environment

For cross-references of sections, figures, equations etc., the pair of commands, `\label` and `\ref`, is available. Since the usage of these two commands is exactly the same as that in the standard  $\LaTeX$ , we leave the explanation about `\label` and `\ref` to adequate instructions of  $\LaTeX$ .

For in-text citations, `pasj02.cls` provides the system of `\cite` and a “`thebibliography`” environment, as in the case of many other class files of  $\LaTeX$ . The syntax of the “`thebibliography`” environment provided by `pasj02.cls` is as follows:

```
\begin{thebibliography}{ }
\bibitem[label1]{key1} entry1
\bibitem[label2]{key2} entry2
...
\bibitem[labeln]{keyn} entryn
```

`\end{thebibliography}`

Note that the input of `label`, in the form of “`author(year)`,” will appear in the result of typesetting. The `label` should be typed according to an expression of citation such as “Smith (2010),” “Wood et al. (2002),” “(Smith & Wood 2007),” or “Smith, Wood, and Fisher (2007).”

#### 4.2 Miscellaneous citation commands

In addition to the usual `\cite` command, `pasj02.cls` provides various citation commands. In the following list, `key` is a reference key in the “`thebibliography`” environment and `author`, `year` are the corresponding authors and publication year, respectively. That is, the term `\bibitem[author(year)]{key}...` is contained in the “`thebibliography`” environment.

Description	Result
<code>\cite{key}</code>	<i>author year</i>
<code>\citep{key}</code>	( <i>author year</i> )
<code>\citet{key}</code>	<i>author (year)</i>
<code>\authorcite{key}</code>	<i>author</i>
<code>\yearcite{key}</code>	<i>year</i>

If a comma-separated list of reference keys is given as an argument of the `\cite` command, we obtain a semicolon-separated list of reference labels. For other commands, readers can easily find the result for a list of keys by simple experiments.

### 5 Mathematical formulas

For mathematical formulas, `pasj02.cls` allows `$. . . $` and “`math`” environment for in-text formulas and “`equation`” and “`eq-narray`” environments for displayed formulas.

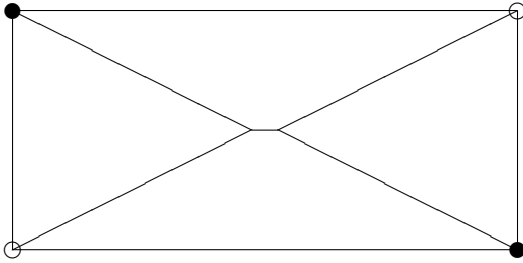
For mathematical symbols, `pasj02.cls` allows one to use symbols provided by the standard  $\LaTeX$  and some more symbols given in table 1 (see also subsection 8.2). Note that if the `amssymb` package is available, the `useamsfonts` class option enables the use of symbols defined by `amssymb.sty`.

### 6 Figures

To place figures appropriately, the usual “`figure`” environment is available. As in the standard  $\LaTeX$ , `pasj02.cls` allows the following description and figure 1 is an example of usage of the “`figure`” environment.

The class file supports the embeddings of graphic files in the EPS and PDF format as its default. Upon compilation, the class file loads the `graphicx` and `color` packages.

```
\begin{figure}
\begin{center}
\includegraphics[width=80mm]{figure1.eps}
\end{center}
\caption{ Title of figure. Provide a brief description.
{Alt text: Line graph. } }\label{....}
\end{figure}
```



**Fig. 1.** Simple example of usage of the “figure” environment. This diagram is drawn with a “picture” environment, no EPS file is included. Alt text: Rectangle drawn with lines.

Though the “figure” environment can take one optional argument showing possible positions of the figure, the use of this optional argument is not recommended.

For the location of figure files (or the directory/folder in which figure files exist), `pasj02.cls` assumes that figure files and the `LaTeX` file containing those figures are placed in the same directory.

Begin the figure caption with a descriptive title, followed by a brief explanation of the figure’s contents. For accessibility purposes, include “alternative text” at the end that describes the figure’s appearance and composition without using symbols. The publisher will not publish papers that do not include alternative text.

## 7 Tables

To include tables which are small enough to be contained in one page, the usual pair of “table” and “tabular” environments is available. That is, authors can place a small table as in the following way:

```
\begin{table}
  \tbl{Heading of this tabular.\footnotemark[$*]$ }{%
    \begin{tabular}{lll}
      .....
    \end{tabular}}\label{...}
  \begin{tabnote}
    \footnotemark[$*]$ A brief note of table.
  \end{tabnote}
\end{table}
```

To produce long tables, a simplified version of the “longtable” environment is implemented. The usage is very similar to that of the “longtable” environment provided by the `longtable` package. Thus, a long table can be described as follows:

```
\begin{longtable}{*{8}{l}}
\caption{Heading of this tabular.}
\hline
\multicolumn{8}{c}{first head} \\
A & B & C & D & E & F & G & H \\
\hline
\endfirsthead
\hline
A & B & C & D & E & F & G & H \\
\hline
```

```
\hline
\endhead
\hline
\endfoot
\hline
\multicolumn{8}{l}{some remarks...} \\
\hline
\endlastfoot
a & b & c & d & e & f & g & h \\
.....%% table data
a' & b' & c' & d' & e' & f' & g' & h' \\
\end{longtable}
```

Note that this “longtable” environment obtains the maximum size of the width of cells in each column via the aux file. Therefore, it is required to typeset at least twice to produce a correct table. For the meanings of `\endhead` etc., see “The `LaTeX` Companion” or appropriate instruction for `LaTeX`.

**Important Notice 1:** Since PASJ’s “longtable” environment, itself, is treated like table environments, there is no need to put a long table in “table” environment.

**Important Notice 2:** In the “longtable” environment, `\caption` should be placed at the first part of this environment. Though the `longtable` package provides some parameters, like `\LTleft` and `\LTpre`, the `pasj02.cls` class file inhibits users from using those parameters in order to keep the uniformity of the appearance of the tables in the journal.

## 8 Miscellaneous remarks

### 8.1 Draft mode

The class file `pasj02.cls` provides the `\draft` command to produce a one-column and double-spaced with 12pt fonts. The `\draft` command could be simply placed in the preamble of an article.

### 8.2 Additional mathematical symbols

The symbols in table 1 are provided by `pasj02.cls`. Some of them are also defined in `amssymb.sty`, and the definitions of such commands are replaced with those in `amssymb.sty` if `useamsfonts` option is specified.

### 8.3 Astronomical symbols

The class file `pasj02.cls` provides the commands for astronomical symbols: for the symbol of the sun, `\Sol` and `\solar` produce the symbol ☉.

### 8.4 Description of time/angle, atoms etc.

To produce the description of time/angle like “1<sup>h</sup>23<sup>m</sup>45<sup>s</sup>.67” or “6°54′32″.1”, the class file `pasj02.cls` provides a simple notation `\timeform{1h23m45.67s}` or `\timeform{6D54'32.1''}`. In the argument of `\timeform` command, the letter “D” corresponds to the symbol “°.” Note that all of the three expressions `\timeform{1.23s}`, `\timeform{1s.23}` and

**Table 1.** Additional mathematical symbols.\*

Name	Symbol	Name	Symbol
<code>\lessssim</code>	$\lesssssim$	<code>\gtrsim</code>	$\gtrsim$
<code>\leqq</code>	$\leqq$	<code>\geqq</code>	$\geqq$
<code>\lessgtr</code>	$\lessgtr$	<code>\gtrless</code>	$\gtrless$
<code>\lessapprox</code>	$\lessapprox$	<code>\gtrapprox</code>	$\gtrapprox$
<code>\simless</code>	$\simless$	<code>\simgtr</code>	$\simgtr$
<code>\lessimeq</code>	$\lessimeq$	<code>\gtrsim</code>	$\gtrsim$
<code>\micron</code>	$\mu\text{m}$		

\* Symbols provided by the standard L<sup>A</sup>T<sub>E</sub>X system such as  $\cong$ ,  $\approx$  are available. If the `amssymb` package is available, then the `useamsmath` class option enables to use the symbols defined by `amssymb` package. (Also note that this document is *not* an instruction for L<sup>A</sup>T<sub>E</sub>X itself, we omit a list for those symbols.)

`\timeform{1.s23}` give the same result “1.<sup>s</sup>23,” that is, there is no importance in the order of a decimal point and a unit symbol. Also, we note that the `\timeform` command assumes that there is *at most one* decimal point in its argument.

Though the file `pasj02.cls` also provides (aastex-like) commands, such as `\fh(h)`, `\fdg(c)`, the use of such commands with ambiguous names is not recommended.

Atomic symbols like “<sup>12</sup>C” or “<sup>14</sup><sub>7</sub>N” can be produced by “`\atom{C}{12}`” or “`\atom{N}{7}{14}`” respectively.

Ionization state the elements like “Fe II” can be expressed by “`Fe\emissiontype{II}`”.

## 8.5 Abbreviation of journal names

The following list shows the abbreviations of journal names already defined by `pasj02.cls`.

`\aap`: A&A  
Astronomy and Astrophysics  
`\aapr`: A&AR  
Astronomy and Astrophysics Reviews  
`\aaps`: A&AS  
Astronomy and Astrophysics, Supplement  
`\aip`: AIP Conf. Proc.  
AIP Conference Proceedings  
`\aj`: AJ  
Astronomical Journal  
`\ao`: Appl. Opt.  
Applied Optics  
`\apj`: ApJ  
Astrophysical Journal (including Letters)  
`\apjs`: ApJS  
Astrophysical Journal, Supplement  
`\aplett`: Astrophys. Lett.  
Astrophysics Letters  
`\apspr`: Astrophys. Space Phys. Res.  
Astrophysics Space Physics Research  
`\apss`: Ap&SS  
Astrophysics and Space Science  
`\araa`: ARA&A  
Annual Review of Astron and Astrophys

`\asp`: ASP Conf. Ser.  
ASP Conference Series  
`\baas`: BAAS  
Bulletin of the AAS  
`\iaucirc`: IAU Circ.  
IAU Circulars  
`\icarus`: ICARUS  
ICARUS  
`\jgr`: J. Geophys. Res.  
Journal of Geophysics Research  
`\jatis`: J. Astron. Telesc., Instrum. Syst.  
Journal of Astronomical Telescopes, Instruments, and Systems  
`\mnras`: MNRAS  
Monthly Notices of the RAS  
`\nat`: Nature  
Nature  
`\nata`: Nature Astron.  
Nature Astronomy  
`\nphysa`: Nucl. Phys. A  
Nuclear Physics A  
`\pasj`: PASJ  
Publications of the ASJ  
`\pasp`: PASP  
Publications of the ASP  
`\physrep`: Phys. Rep.  
Physics Reports  
`\planss`: Planet. Space Sci.  
Planetary Space Science  
`\pra`: Phys. Rev. A  
Physical Review A: General Physics  
`\prb`: Phys. Rev. B  
Physical Review B: Solid State  
`\prc`: Phys. Rev. C  
Physical Review C  
`\prd`: Phys. Rev. D  
Physical Review D  
`\pre`: Phys. Rev. E  
Physical Review E  
`\prl`: Phys. Rev. Lett.  
Physical Review Letters  
`\procspie`: Proc. SPIE  
Proceedings of the SPIE  
`\qjras`: QJRAS  
Quarterly Journal of the RAS  
`\skytel`: S&T  
Sky and Telescope  
`\solphys`: Sol. Phys.  
Solar Physics  
`\ssr`: Space Sci. Rev.  
Space Science Reviews

## 8.6 User-defined commands

Though class file `pasj02.cls` does not inhibit the use of `\def`, `\newcommand` etc., it is *not* recommended to define a user's own command. Note that a user's own trivial abbreviations might cause fatal errors by changing the existing commands or by interfering with macros defined in other articles (or in the class file used for publication). Every author should remember that *no* journal consists of his/hers papers only.