Usage of `pasj01.cls`

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Abstract

In this document (`pasj.tex`), we provide a brief explanation about `pasj01.cls`, the current version of PASJ's document class for authors. The class file, `pasj01.cls`, is prepared so that authors can typeset/preview articles for PASJ under the *standard* LATEX 2_ε system. Note that it is assumed that authors are used to writing documents in LATEX style; that is, this manual shows only the differences of functions provided by `pasj01.cls` and those in the *standard* LATEX 2_ε. Here, we use the phrase "standard LATEX" for "LATEX 2_ε without any optional package." The old system, LATEX2.09, is no longer supported.

Key words: key word$_1$ — key word$_2$ — . . . — key word$_n$

1 Overview

When `pasj01.cls` is applied to an article for PASJ, the article should be prepared in the standard LATEX 2_ε style with slight modifications. That is, a manuscript has the following structure:

```
\documentclass{pasj01}
\draft
\begin{document}

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

\maketitle

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

\section{First section}
%%% contents

\begin{ack}
```

```
 a brief note for an acknowledgment, if any.
\end{ack}

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

The cross-reference system of LATEX is also available without restriction. If the `graphicx` package is available, figures in eps format can be embedded via the usual figure environment (see section 6).

Important Notice: The class file `pasj01.cls` uses the Times and Helvetica families for its default typeface, which is different from the current default typeface of the journal. That is, authors cannot obtain an identical image with the published article unless the class file is not changed or replaced.

2 Class options

The class file `pasj01.cls` admits the following options:

- `draft`: produce "overfull rules" (i.e., Black boxes will appear everywhere "overfull \hbox" is occurred.)
- `final`: hide "overfull rules"
- `onecolumn`: use one-column format

- `twocolumn`: use two-column format
- `proof`: typeset in draft-style for a submission
- `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 TEX 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*}
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} }
\affil{*Affiliation*}
   \email{*Address*$_1$, *Address*$_2$}
Two or more affiliations
   \author{John \textsc{Smith}\altaffilmark{1}
      and Paul \textsc{Wood}\altaffilmark{2} }
   \altaffiltext{1}{*Affiliation*}
   \altaffiltext{2}{*Affiliation*}
   \email{*Address*$_1$, *Address*$_2$}

As shown in the above example, the description \altaffilmark{*label*} gives a label and corresponding text is given by \altaffiltext with the same label in its first argument.

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, `pasj01.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 `pasj01.cls` is as follows:

   \begin{thebibliography}{}
   \bibitem[*label*$_1$]{*key*$_1$} *entry*$_1$
   \bibitem[*label*$_2$]{*key*$_2$} *entry*$_2$
   ...
   \bibitem[*label*$_n$]{*key*$_n$} *entry*$_n$
   \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, `pasj01.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
\cite{*key*}	*author year*
\citep{*key*}	(*author year*)
\citet{*key*}	*author* (*year*)
\authorcite{*key*}	*author*
\yearcite{*key*}	*year*

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, `pasj01.cls` allows $...$ and "math" environment for in-text formulas and \[...\] and "displaymath, equation, eqnarray($*$)" environments for displayed formulas. The use of $$...$$ for a displayed formula is not recommended.

For mathematical symbols, `pasj01.cls` allows one to use symbols provided by the standard LATEX 2_ε 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.
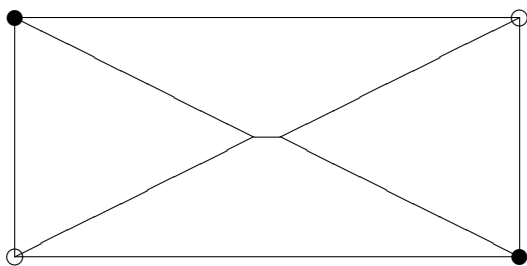
Fig. 1. Simple example of usage of the "figure" environment. This sample figure is a "picture" environment and no eps file is included. If the `graphicx` package is available and some appropriate graphic files exist, readers might observe the usage of the `\includegraphics` command.

6 Figures

The class file `pasj01.cls` supports the embeddings of graphic files in the EPS (Encapsulated PostScript) format as its default.

To place figures appropriately, the usual "figure" environment is available. As in the standard LATEX 2_ε, pasj01.cls allows the following description and figure 1 is an example of usage of the "figure" environment.

```
\begin{figure}
 \begin{center}
  \includegraphics[width=80cm]{figure1.eps}
 \end{center}
 \caption{*****}\label{.....}
\end{figure}
```

Though the "figure" environment can take one optinal 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), `pasj01.cls` assumes that figure files and the LATEX file containing those figures are placed in the same directory.

Important Notice: Note that authors *must not* use old packages for graphics, such as `epsf.sty`, `epsbox.sty`.

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.}{%
  \begin{tabular}{lll}
    ..........
  \end{tabular}}\label{...}
  \begin{tabnote}
    a brief note of table
  \end{tabnote}
```

```
\end{table}
```

To produce long tables, a simplified version of the "longtable" environment is implemeted. The usege 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
\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 2_ε.

Important Notice 1: Since PASJ's "longtable" environemnt, 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 `pasj01.cls` class file inhibits one to use 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 `pasj01.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. A manuscript of submission should be prepared in this style.

Table 1. Addtional mathematical symbols.*

Name	Symbol	Name	Symbol
\lesssim	$\lesssim$	\gtrsim	$\gtrsim$
\leqq	$\leqq$	\geqq	$\geqq$
\lessgtr	$\lessgtr$	\gtrless	$\gtrless$
\lessapprox	$\lessapprox$	\gtrapprox	$\gtrapprox$
\leftrightarrows	$\leftrightarrows$	\square	$\square$
\diameter	$\diameter$	\hateqq	$\hateqq$
\simless	$\simless$	\simgtr	$\simgtr$
\lesssimeq	$\lesssimeq$	\gtrsimeq	$\gtrsimeq$
\singlebond	—	\doublebond	=
\triplebond	$\equiv$	\onehalf	$\frac{1}{2}$
\onethird	$\frac{1}{3}$	\twothirds	$\frac{2}{3}$
\onequarter	$\frac{1}{4}$	\threequarters	$\frac{3}{4}$
\micron	μm		

* Symbols provided by the standard LaTeX system such as $\cong$, $\approx$ are
available. If the amssymb package is available, then the useamsfonts
class option enables to use the symbols defined by amssymb package.
(Also note that this document is *not* an instruction for LaTeX itself, we omit
a list for those symbols.)

Table 2. Symbols in font "astrosym."

Name	Symbol	Name	Symbol
\Mercurius	☿	\Venus	♀
\Terra	♁	\Mars	♂
\Jupiter	♃	\Saturnus	♄
\varSaturnus	♄	\Uranus	⛢
\Neptunus	♆	\varNeptunus	♆
\Pluto	♇	\varPluto	♇
\Luna	☾	\Aries	♈
\Taurus	♉	\Gemini	♊
\Cancer	♋	\Leo	♌
\Virgo	♍	\Libra	♎
\varLibra	♎	\Scorpio	♏
\Sagittarius	♐	\Capriconus	♑
\Aquarius	♒	\varAquarius	♒
\VarAquarius	♒	\Pisces	♓

8.2 Additional mathematical symbols

The symbols in table 1 are provided by pasj01.cls. Some of them are also defined in amssymb.sty, and the definitions of such commands are replaced with those in amssymb.sty if useamsfont option is specified.

8.3 Astronomical symbols

The class file `pasj01.cls` provides the commands listed in table 2 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 "$1^{\rm h}23^{\rm m}45^{\rm s}\!67$" or "$6°54'32.''1$", the class file **pasj01.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 \timeform{1.s23} give the same result "$1^{\rm s}\!23$", 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 **pasj01.cls** also provides (aastex-like) commands, such as \fh($^{\rm h}_{.}$), \fdg($^{\circ}_{.}$), the use of such commands with ambiguous names is not recommended.

Atomic symbols like "^{12}C" or "$^{14}_{7}$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 `pasj01.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 Cirulars
\jcp: J. Chem. Phys.
 Journal of Chemical Physics
\jgr: J. Geophys. Res.
 Journal of Geophysics Research
\mnras: MNRAS
 Monthly Notices of the RAS
\nat: Nature
 Nature
\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
\sovast: Soviet Ast.
 Soviet Astronomy
\ssr: Space Sci. Rev.
 Space Science Reviews

8.6 About user-defined commands

Though class file **pasj01.cls** does not inihibit the use of \def, \newcommand etc., it is *not* recommended to define a user's own command. Note that a user's own trivial abbriviations 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.