

Regular Paper

How to Typeset Your Papers in L^AT_EX (Version 7.2)

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This pamphlet is a guide to producing a draft to be submitted to IPSJ Journal and Transactions and the final camera-ready manuscript of a paper to appear in the Journal/Transactions, using L^AT_EX and special style files. Since the pamphlet itself is produced with the style files, it will help you to refer its source file which is distributed with the style files.

1. Introduction

The Information Processing Society of Japan now employs L^AT_EX to make up the Journal/Transactions for quick and low-cost publishing. This means that your L^AT_EX source file is basically used as the source of the final printing process. Therefore, your cooperation is essential for the publishing of the Journal/Transactions inheriting its traditional and easy-to-read style.

This make-up system, on the other hand, should be also convenient for you, because it will greatly reduce troubles on proofreading by eliminating printer's errors inevitable in conventional type-printing systems. You can easily produce the final version of your paper conforming to the traditional style using special style files and standard L^AT_EX commands. A style file for submission is also available and you can easily switch the style from submission to final with relatively few changes. Moreover, the draft produced by this submission style are much more readable for both you and referees than those following conventional submission rules.

Although almost everything for final make-up can be done by using standard L^AT_EX commands, there are a few additional and essential commands. Also there

are special rules that are not checked. Please read this guide carefully and follow the rules of the publishing process.

2. Flow from Submission to Publication

The process from submission of a paper to the final publication, featuring it is as follows^{*2}.

(1) Obtaining Style Files

Access the WEB site of IPSJ <http://www.ipsj.or.jp/> to obtain the style kit including style files. The kit contains the following files:

- (a) `ipsjpapers.sty`
style for final version to make up
- (b) `ipsjpapers.cls`
L^AT_EX 2_ε style for final version
- (c) `ipsjdrafts.sty`
style for drafts to submit
- (d) `ipsjcommon.sty`
auxiliary style for final and draft
- (e) `ipsjsort-e.bst`
Bib_TE_X style (sorted)^{*3}
- (f) `ipsjunsrt-e.bst`
Bib_TE_X style (unsorted)^{*3}
- (g) `esample.tex`
source of this guide (for final)
- (h) `desample.tex`
source of this guide (for draft)
- (i) `sample.tex`
Japanese version source of this guide
- (j) `dsample.tex`
Dutch version source of this guide

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^{*1} The real author is the Editorial Board of the Trans. IPSJ.

^{*2} The following explanation is based on the current process. If you have its own process, please inquire its own process.

^{*3} The kit also contains `ipsjsort.bst` and `ipsjunsrt.bst` versions and require a Japanese L^AT_EX environment.

Japanese version source of this guide (for draft)

(k) `ebibsample.bib`

sample of bibliographic data (English)

(l) `bibsample.bib`

sample of bibliographic data (Japanese)

The kit can be unpacked and read by most of platforms, including UNIX workstations, Windows (DOS) and Macintosh machines.

(2) Submitting Draft

Prepare the $\text{\LaTeX}$ source of your draft with the `draft` option as per this guide, process it using $\text{\LaTeX}$ and produce a PDF file. Since the style for submission automatically produces an output appropriate for *blind review*, your source file may have commands to give information which shows who you are and thus cannot appear in the draft. That is, even if you specify the names and affiliations of authors, their biographies, and/or acknowledgments to the people and/or organizations related to you, these items will not appear in your draft version if you use appropriate commands for them. Then access the web site

<http://www.ipsj.or.jp/08editt/journal/submit/>

to register yourself and to obtain your own URL to submit the PDF file.

(3) Making Final Version

After you receive the notification of acceptance, revise your paper in accordance with the comments from referees, and add required omissions from the draft, such as biography, if any. The layout of figures and tables should be fixed. After that, *check your paper again and again to completely remove description errors*.

(4) Sending Final Version

Send *both $\text{\LaTeX}$ file package and the hard copy* to the IPSJ. The standard contents of the file package are `.tex` and `.bbl`. If you include PostScript files and/or special style files, add them into the package. Note that *you must not split your source into multiple .tex files*, because it is hard for printers to access multiple files when they modify your source. Also carefully make sure that the package contains all necessary files, especially special style files.

The detail of the file transfer, including its destination and packaging method, will be instructed to you by the IPSJ secretariat.

(5) Proofreading

The IPSJ may change terms in your house may modify your source to make they make no changes, the result print from what you printed because of differences. Therefore, the galley proofs of your modification and/or differences are ink. Note that *this proofreading is not* should have been corrected before sending. (6) **Typesetting and Publishing** Your paper is typeset, after the correction and is published as part of the Journal.

3. $\text{\LaTeX}$ Environment

Although a style file, `ipsjcommon.sty` set in its last part, you can use the style for English papers because the style automatically lets your $\text{\LaTeX}$ stop to read the package, however, that you have to use one of `ipsjsort-e.bst` or `ipsjunsrt-e.bst`.

The style files are confirmed to work with

$\text{\TeX}$ 3.141592 + $\text{\LaTeX}$ 2 ϵ 2003/11

You may use the styles in either native or LaTeX 2 ϵ though we expect they will work with LaTeX 2 ϵ to use the version shown above or later.

If you still love $\text{\LaTeX}$ 2.09, do not worry, it is backward compatible.

4. How to Use Style Files

4.1 General Advice

The Journal/Transactions, as opposed to the traditional and *stiff* style. This makes the style the customizability that is one of the features. You must not change *style parameters*, such as

which customizations are allowed, but the standard “Don’t tamper with it unless you are confident” should work well.

Note that if you do something you should not, *you may not have error messages but simply have ugly results.*

4.2 Configuration of Paper

The source file must have the following format. Underlined parts can be omitted from draft versions. Note that a few additional commands shown in A.1 of the Appendix are available for a paper included in the Transactions.

```
\documentclass[english]{ipsjpapers}*1 or
\documentclass[english,draft]{ipsjpapers}*1
Specify other option styles if necessary.
Specify auxiliary styles by \usepackage.
\setcounter{volume}{\langle volume \rangle}
\setcounter{number}{\langle number \rangle}
\setcounter{volpageoffset}{\langle first-page \rangle}
\received{\langle year \rangle}{\langle month \rangle}{\langle day \rangle}
\accepted{\langle year \rangle}{\langle month \rangle}{\langle day \rangle}
Define your own macros if necessary.
\begin{document}
\title{\langle title \rangle}
\affilabel{\langle affiliation-label \rangle}{\langle affiliation \rangle}
.....
Declare current affiliation by \paffilabel if necessary.
\author{\langle 1st-author \rangle \and \langle 2nd-author \rangle \and ...}
\begin{abstract}
\langle abstract \rangle
\end{abstract}
\maketitle
\section{\langle heading-of-1st-section \rangle}
.....
```

^{*1} Replace it with `\documentstyle` and, if necessary, add auxiliary style name(s) as its optional argument, when you use L^AT_EX 2_ε in 2.09-compatible mode or L^AT_EX 2.09.

\langle main text \rangle

.....

Put acknowledgments here by \acknowledgments

`\bibliographystyle{ipsjunsrt}` or

`\bibliographystyle{ipsjsort}`

`\bibliography{\langle bib-data-file \rangle}`

Put appendices here following \appendix

`\begin{biography}`

\langle biography-of-1st-author \rangle

.....

`\end{biography}`

`\end{document}`

4.3 Option Styles

The following six standard option styles are available.

of `\documentclass` or `\documentstyle`

`english` for English papers.

`landscape` for online publishing^{★2}

`portrait` for paper publishing.

`draft` for draft versions.

`technote` for technical notes.

`preface` for preface of an issue.

`sigrecommended` for a paper recommended for publication.

`invited` for invited papers.

Any (meaningful) combinations of options are allowed.

options to make a non-Journal/Transactions paper.

is for SIG reports (see A.2 of Appendix A).

private version (to link it from your own version).

additionally, you may put a copyright notice on each

page by;

`\copyrightnotice{\langle copyright-notice \rangle}`

as per the IPSJ Copyright Regulation.

^{★2} This option to typeset in landscape format is not supported in L^AT_EX 2.09.

If you specify auxiliary style files by `\usepackage`^{*1}, you must include them into the file package when you send your final version to IPSJ. However, style files included in L^AT_EX 2_ε standard distribution (e.g. `graphicx`) may be omitted. Note that style files may be incompatible to the style of the Journal/Transactions.

4.4 Volume, Number, etc.

If IPSJ notifies you of the volume and number of the issue that your paper is included in, the first page number of your paper, reception and acceptance dates, specify them with appropriate commands. If some (or all) of them are not notified, you may omit the corresponding commands. The `\year` should be a four digit number like 2007, and `\month` should be one or two digit number like 5 (not May).

4.5 Title, Author Names, etc.

Describe the title of your paper, author names and affiliations, and abstract using the commands and environment shown in 4.2. Then perform `\maketitle` that automatically puts them at the appropriate position. In the draft version, the title and abstract are automatically printed onto separate pages, while author names and affiliations are not printed to make your paper anonymous.

Title The title specified by `\title` is made centered. Even if the title is too long to be fit to one line, *automatic line break is not performed*. If your title is long, insert `\` into appropriate positions to break lines. A multiple line title is first flushed left and then is centered with respect to the widest line.

The title also appears in the header of odd pages. If your title is too long, provide a shortened title for the header to `\title` as its optional argument as follows.

```
\title[for-header]{title}
```

Author Name and Affiliation Define the affiliation of each author with a label by using `\affilabel`, in order from the first author, to have footnotes showing the affiliations with †1, †2 and so on. If two or more authors belong to the same organization, their affiliation should be declared once. If an author moved somewhere after the paper was written and he/she want to show his/her new affiliation, use `\paffilabel` to define and to put it with *1, *2, and so on. The `\author` argument is a list of author names separated by `\and`. Each author

name is followed by one or more `\affilabel` labels. `\affilabel` is used for putting to labels that have been defined before.

Abstract The abstract of your paper is written in the `abstract` environment.

4.6 Sectioning

L^AT_EX standard commands such as `\section`, `\subsection`, `\subsubsection` are for sectioning. The section heading of each section is put in one line.

For definitions, axioms, theorems, and lemmas, use `\newtheorem` for environments with `\newtheorem`. Note that the text of the theorem is not italicized. If you want have an italicized text, use `\textit`.

4.7 Main Text

Fixed Baselines Each page of the Journal/Transactions is set in the double-column style. The printing of the text is done so that a line in the left column and its margin are on the same baseline. To meet this requirement, the vertical position of baselines when a vertical space is inserted is fixed. Therefore, *you must not use \vspace*. If you want to check whether baselines are fixed, use `\checkbaselines` command in the preamble to print the position of baselines. This command, however, is not included in the source to the IPSJ.

Font Size You will see that various font sizes are used in the Journal/Transactions of your paper. Since these fonts are defined in the style files, you are free from changing them. However, it is strongly recommended not to use `\large` and `\small` in the main text. The retention of keeping fixed baselines is broken by `\small` or `\footnotesize`, in order to use the *starred* versions, `\small*` or `\footnotesize*` retaining spaces between baselines. The command `\small*` is shown in 4.2, and that of `\footnotesize*` is shown in 4.3.

Overfull and Underfull The final version of the paper is checked for overfull and underfull lines. The final

*1 Or in the optional argument of `documentstyle` if you use L^AT_EX 2.09

It is well known that almost all overfulls can be avoided by a little effort when describing sentences. For example, avoiding long in-text formulas and `\verb` is very effective. However, tricks using `flushleft` environment, `\\` or `\linebreak` are not recommended, because they cause quite ugly results.

As for underfulls, you will easily get the following warning message

```
Underfull \hbox (badness 10000) detected
```

by `\\` at the end of a paragraph. This message is also output when you use `\\` just before a list-like environment, just before an `\item`, and at the end of the environment. Such underfulls cause ugly empty lines and flood of warnings that will hide an important error message.

4.8 Formulas

- In-text Formulas

In-text formulas may be surrounded by any proper math-open/close pair, i.e. `$` and `$`, `\(` and `\)`, or `\begin` and `\end` for `math` environment. Note that tall materials in in-text formulas, such as $\frac{a}{b}$ (`\frac{a}{b}`), are ugly and will disarrange the baseline progression.

- Displayed Formulas

Displayed formulas *must not be surrounded by the pair of `$$`*. Instead, use the `\[` and `\]` pair or one of the environments `displaymath`, `equation` and `eqnarray`. These commands/environments indent formulas (not centered) and keep fixed baselines as follows.

$$\Delta_l = \sum_{i=l+1}^L \delta_{pi}. \quad (1)$$

- `eqnarray` environment

For a sequence of two or more related formulas (equations), use the `eqnarray` environment to line up them at equal (or unequal) signs, instead of `\[/\]` or `equation` environment. Note that contents of `eqnarray` will not be broken over two pages. If an `eqnarray` has many lines and you want a page break in it, add the option `[s]` as `\begin{eqnarray}[s]`.

- Special Fonts

It is strongly recommended to use only standard L^AT_EX math fonts. Otherwise, you must report that you are using some special fonts and will be deeply involved

```
\begin{figure}
\caption{...}
\label{...}
\end{figure}
```

Fig. 1 Single column figure explicitly

in the dark side of printing process.

4.9 Figures

A figure fit to one column is specified by `figure` environment. You must not specify `h` option.

The `\caption` of a figure should be followed by a `\label` command. A long caption will be broken over more lines and centered with respect to the figure. The line breaking by adding `\\` to the caption is shown in the case of two-line captions as shown in Fig. 1.

If you want to rank two or more figures in a column, use the `minipage` environment in order to save space, and put its `\caption` in a `minipage` environment as exemplified by them which are in Fig. 2.

```
\begin{minipage}[t]{%
  0.5\columnwidth}
\captiontype{table}
\caption{...}
\ecaption{...}
\label{...}
\makebox[\textwidth][c]{%
\begin{tabular}[t]{lcr}
\hline\hline
left&center&right\\
\hline
L1&C1&R1\\
L2&C2&R2\\
\hline
\end{tabular}}
\end{minipage}
```

Fig. 2 Contents of Table 1.

```

\begin{figure}*[t]
  \langle figure-body \rangle
\caption{\langle caption \rangle}
\label{...}
\end{figure*}

```

Fig. 3 Double column figure

ble 1 is correctly typeset because the `\minipage` for it has `\CaptionType{table}` command to specify the type of caption. The command of course can be used with `figure` argument to give a figure caption.

Figure 3 shows how to make a double column figure.

You may use any size of fonts as shown in Fig. 3. Also you may include an encapsulated PostScript file (so called EPS file) as the body of a figure. For the inclusion, do;

```
\usepackage{graphicx}
```

in the preamble and put `\includegraphics` command at which you wish to embed the EPS graphics with its file name (and options if necessary). If you use L^AT_EX 2.09, you have to include `epsf` in the optional argument of `\documentstyle` and use `\epsfile` for the embedment. Note that only the standard fonts shown in Appendix are usable in PostScript files.

You might have noticed that the first reference to Fig. 1 is bold-faced while the second and third are typed in roman fonts. This font switching is a rule of the Journal/Transactions, and will be automatically performed if you use `\figref{\label}` instead of `Fig.~\ref{\label}`. Another rule is that “Figure” must be used instead of “Fig.” if the reference is the first word of a sentence, as the first reference to Fig. 3. Unfortunately, this switching is too hard to do automatically, and you must use `\Figref{\label}` in such cases.

4.10 Tables

A table with many rules is not very beautiful. **Table 2** shows an example of a table with standard style rules. Note that the uppermost rule is doubled, and no rules are drawn on the left and right edges. The caption should be put above the table. The default font size in tables is `\footnotesize`. Any reference to a

table should be made using `\tabref{...}`.

4.11 Itemizing

There are four *families* of three L^AT_EX commands: `enumerate`, `itemize` and `description`, as

- `enumerate`, `itemize`, `description`

Similar to L^AT_EX-standard environment, the indentation of `enumerate` is three times, others are twice. The `enumerate` la

1. (a) i. A.

but have parentheses with small sp

- (1) (a) (i) (A)

- `enumerate*`, `itemize*`, `description*`

Similar to `enumerate` etc., but inde

- `Enumerate`, `Itemize`, `Description`

No indentation is performed.

Table 2 Sections and sub-sections in w
table)

	enumerate
type-1	2
type-2	—
type-3	2
type-4	—
type-1 :	<code>enumerate</code> , et
type-3 :	<code>Enumerate</code> , et

★1 `\Tabref` is also available but is just the

- ENUMERATE, ITEMIZE, DESCRIPTION

Indent only the first line by `\parindent`.

See Table 2 to see examples of each environment in this guide.

4.12 Keeping Fixed Baselines

As described before, every (ordinary) lines in the main text should be placed on fixed baselines. Therefore, if your text has extraordinary tall material and it shifts other lines from their fixed baselines, enclose the material in an `adjustvboxheight` environment. For example,

$$\sum_{i=0}^n i$$

is produced by the following sequence.

```
\begin{adjustvboxheight}
\begin{quote}
\fbbox{$\displaystyle\sum_{i=0}^n i$}
\end{quote}
\end{adjustvboxheight}
```

You will find the line just after the odd thing is on a fixed baseline.

4.13 Footnotes

The command `\footnote` produces footnotes with marks like ^{*1} and ^{*2}, resetting number of footnote marks to one after the page-break. This automatic adjustment of footnote marks, however, usually requires L^AT_EX to be run twice. (See p. 156 of L^AT_EXBook².)

Sometimes, it is preferable to separate a footnote and its mark into different columns. You can cope with such a special case using `\footnotemark` and `\footnotetext` commands.

4.14 Citations

There are two styles of citation. When the citation appears as a word, use the `\Cite` command to produce the citation number with normal fonts. Otherwise, use `\cite` to have subscripted citations. For example,

Goosens explained details of
`\Cite{companion}`.

will produce

Goosens explained details of L^AT_EX
as the result.

When three or more texts are cited
numbers are in series, the first and last
automatically, as 6)–8) and “literature
numerous to specify them by `\Cite` of

`\multiCite{\langle 1st-label \rangle}{\langle last-label \rangle}`

`\multicite{\langle 1st-label \rangle}{\langle last-label \rangle}`

They produce results such as 3)–11)

4.15 References

References should be arranged in
recommended to use BiB_TE_X and style
or `ipsjunsort-e.bst` (cited order) to
You will pick up hints by examining the
and the references of this guide produce
Please pay your special attention to a
doi fields for papers in electric journals

`doi = "10.2197/ipsjdc.3.14"`,
and `webpage` entries^{20)–22)} with `url` a
2007, being the date on which you re
page created or modified most recently

`url = "http://search.ieice.org"`

`refdate = "2007-02-05"`,

Also remember that you must include
.bib.

If you cannot use Bib_TE_X and have
bibliography environment, observe

*1 An example of footnote.

*2 Another footnote. This footnote appears
the source file to know how to do it.

follow its style^{*1}.

4.16 Acknowledgments and Appendices

If you want to acknowledge some people, put your acknowledgments just before the references and enclose them in the `acknowledgment` environment. Acknowledgments will not be printed in drafts.

Appendices, if any, should be just after the references and `\appendix` command. Sectioning commands produce headings like **A.1**, **A.2** and so on in appendices. If you want to make the appendix itself have a title, give a title to `\appendix` as its optional argument, like `\appendix[⟨title⟩]`.

4.17 Biography

Biographies of authors must be put just before `\end{document}` and have the following format.

```
\begin{biography}
\author{⟨1st-author's-name⟩}
    ⟨biography-of-1st-author⟩
\author{⟨2nd-author's-name⟩}
    ⟨biography-of-2nd-author⟩
    .....
\end{biography}
```

The first sentence of each biography must not have subjects and be written as if its subject is the author's name, e.g. "was born in 1956." The biographies are not printed in draft versions.

4.18 Estimation of Pages

Roughly speaking, two pages of a draft version are packed into one page of its final version. For example, the source of this guide produces a 18-page draft and 9-page final version, showing the estimation works.

Better estimation, of course, can be obtained by typesetting your draft using final version style.

*1 The references of this guide are produced by `thebilibiography` environment to make the source single file, but the contents are produced by BiB_T_EX.

5. Concluding Remarks

We don't dream that the style file will be perfect without your cooperation and hope you will give us suggestions by e-mail to

`texnicians@ipsj.or.jp`.

TeXnical questions also welcome to `texnicians@ipsj.or.jp`. Journal/Transactions should be received by

`edit@ipsj.or.jp`.

Acknowledgments We would like to thank the members of IPSJ Corp, ULS and Company, and all those who have supported the experimental L^AT_EX publishing of

References

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Appendix

A.1 Commands for the Transactions

Each Transactions has its own subtitle, abbreviation code and serial number. This information is given by the following command placed before `\begin{document}` of the final version source.

```
\transaction{<abbrev>}{<volume>}{<number>}
```

The argument `<abbrev>` must be one of the following, while the `<volume>` and `<number>` of the issue will be notified by the IPSJ or the Editorial Board of the Transactions.

- PRO (Trans. Programming)
- TOM (Trans. Mathematical Modeling and Its Applications)

- TOD (Trans. Database)
- ACS (Trans. Advanced Computing)
- CVM (Trans. Computer Vision and Machine)
- TBIO (Trans. Bioinformatics)
- SLDM (Trans. System LSI Design)
- CVA (Trans. Computer Vision and Artificial Intelligence)

Note that the `<number>` of the issue of the Transactions is the `<number>`-th month of a year. You must add the year to the following `month` counter, by IP

```
\setcounter{month}{<month>}
```

Also note that Transactions may have different styles in the following sections.

A.1.1 Functions for PRO

Issues of The Transactions on Programming and Its Applications (PRO) are papers but also abstracts of the talks given at the conference. Each abstract consists of the materials for the presentation to `\maketitle` of the format shown in the Transactions. Note that the reception of the abstract is given by the date of presentation has to be given by the following command.

```
\presented{<year>}{<month>}{<day>}
```

A.1.2 Functions for TOM

Authors of papers included in The Transactions on Mathematical Modeling and Its Applications (TOM) may be notified the revised version of the paper. In this case, the date of revision reception is given by the following command.

```
\rereceived{<year>}{<month>}{<day>}
```

If the paper has revised twice or more, the date of revision reception is given by the following command.

A.1.3 Functions for TOD

The name of the editor in charge of the Transactions on Database (TOD) is given by; the name of the editor is given by the following command.

```
\edInCharge{<name-of-editor>}
```

A.1.4 Functions for TBIO

In order to activate TBIO-specific

optional argument for `\documentclass` (or `documentstyle`). Since TBIO accepts English papers only, TBIO option implies `english` option. Therefore, you may do;

```
\documentclass[TBIO]{ipsjpaper}
```

without `english` option. Then the following commands become available.

- The *category* of the paper, `original`, `survey` or `database`, may be given by;


```
\TBIOpapercategory{category}
```

 in the preamble to put “*Original Paper*”, “*Survey Paper*” or “*Database/Software Paper*” above the paper title in the first page. If this command is not given, `original` is assumed.
- The name of the editor in charge for the paper may be given by;


```
\edInCharge{name-of-editor}
```
- The date of reception of the revised version may be specified by;

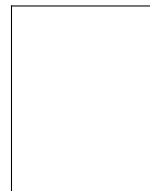

```
\rereceived{year}{month}{day}
```

Note that the last two commands are optional and thus may be omitted unless the author is given the information for them and is requested to specify them.

A.2 How to Make SIG Technical Reports

As SIG technical reports are now published only through IPSJ WEB sites, it has become the job for each author to produce the PDF manuscript for publication compliant to the IPSJ standard format. Typesetting a IPSJ compliant manuscript, however, is easily done by giving `techrep` option to `\documentclass` command. One caution for the compliance is that you have to set the counter `year` according to the date of the publication by `\setcounter` command^{*1}. Also note that biographies and reception/acceptance dates for the final version of a

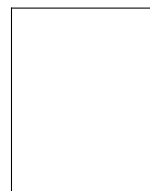
paper of Journal or Transactions are specified by the options, and they are specified.



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*1 If the counter is not set in the preamble, you will have a warning message while the counter will have the value according to the date of the L^AT_EX execution.