

How to Typeset Your Papers in L^AT_EX (Version 6)

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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 by the style files. Therefore, you are requested to *read this guide carefully and to follow it rigidly* in order to make all the people involved in the publishing happy!

2. Flow from Submission to Publishing

The process from submission of a paper to publishing the Journal/Transactions featuring it is as follows^{*2}.

(1) Obtaining Style Files

Access the WEB site of IPSJ <http://www.ipsj.or.jp/> to download author's 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 versions
- (e) `ipsjsort-e.bst`
BibT_EX style (sorted)^{*3}
- (f) `ipsjunsrt-e.bst`
BibT_EX 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 (for final)
- (j) `dsample.tex`
Japanese version source of this guide (for draft)
- (k) `ebibsample.bib`
sample of bibliographic data (English)

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

*2 The following explanation is based on the process of Journal. Since each transactions may have its own process, please inquire its detail from each Editorial Board.

*3 The kit also contains `ipsjsort.bst` and `ipsjunsrt.bst` which are the counterparts of “-e” versions and require a Japanese L^AT_EX environment.

(1) **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 L^AT_EX source of your draft with the **draft** option as per this guide, process it using L^AT_EX 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/](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 L^AT_EX 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 paper as per its standard, and the printing house may modify your source to make it fit the standard printing style. Even if they make no changes, the result printed at the printing house may be different from what you printed because of differences of L^AT_EX execution environment.

Therefore, the galley proofs of your paper will be sent to you to check if those modification and/or differences are acceptable. If not, correct errors with red ink. Note that *this proof-reading is not for the correction of your errors* which should have been corrected before sending the final version.

(6) **Printing and Publishing**

Your paper is printed, after the correction of the errors you pointed out (if any), and is published as part of the Journal/Transactions.

3. L^AT_EX Environment

Although a style file, `ipsjcommon.sty`, has some symbols in Japanese character set in its last part, you can use the standard (i.e., non-Japanese) L^AT_EX for your English papers because the style automatically recognizes your environment and lets your L^AT_EX stop to read the part it cannot cope with. One exception is, however, that you have to use one of non-Japanese versions of Bib_TE_X styles `ipsjsort-e.bst` or `ipsjunsrt-e.bst`.

The style files are confirmed to work with the following L^AT_EX 2_ε versions.

T_EX 3.141592 + L^AT_EX 2_ε 2003/12/01

You may use the styles in either native-mode or L^AT_EX 2.09 compatible mode. Although we expect they will work with older versions, it is strongly recommended to use the version shown above or later one.

If you still love L^AT_EX 2.09, do not be afraid to use it because the styles are backward compatible.

4. How to Use Style Files**4.1 General Advice**

The Journal/Transactions, as opposed to conference proceedings, have a traditional and *stiff* style. This makes the style files also *stiff* and strongly restricts the customizability that is one of the useful features of L^AT_EX. For example, you must not change *style parameters*, such as `\texheight`. It is not easy to show 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 com-

mands 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}
.....
\langle main text \rangle
.....
Put acknowledgments here by acknowledgment
environment if any.
\bibliographystyle{ipsjunsrt} or
\bibliographystyle{ipsjsort}
\bibliography{\langle bib-data-file \rangle}
Put appendices here following \appendix if any.
\begin{biography}
\langle biography-of-1st-author \rangle
.....
\end{biography}
\end{document}
```

4.3 Option Styles

The following six standard option styles may be specified as optional arguments of `\documentclass` or `\documentstyle`.

`english` for English papers.

`draft` for draft versions.

`technote` for technical notes.

`preface` for preface of an issue.

`sigrecommended` for a paper recommended by a SIG.

`invited` for invited papers.

Any (meaningful) combinations of options are

^{*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.

acceptable. The style has other options to make a non-Journal/Transactions manuscript. The option `techrep` is for SIG reports, while `private` may be used for your private version (to link it from your own web page). With `private` option, additionally, you may put a copyright notice to the left top corner of the first page by;

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

as per the IPSJ Copyright Regulation.

If you specify auxiliary style files by `\usepackage`^{*2}, 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 `\langle year \rangle` should be a four digit number like 2007, and `\langle month \rangle` 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[\langle for-header \rangle]{\langle title \rangle}
```

Author Name and Affiliation Define the affiliation of each author with a label by `us-`

^{*2} Or in the optional argument of `documentstyle` if you use L^AT_EX 2.09

ing `\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 `\affiref{<label>}` to attach marks corresponding to labels that have been defined by `\affilabel` or `\paffilabel`.

Abstract The abstract of your paper should be given as the contents for the `abstract` environment.

4.6 Sectioning

L^AT_EX standard commands such as `\section` and `\subsection` are available for sectioning. The section heading of `\section` occupies two lines, while others are put in one line.

For definitions, axioms, theorems, and so on, define and use appropriate environments with `\newtheorem`. Note that the contents of such environments are not italicized. If you want have an italicized environment, use `\newtheorem*`.

4.7 Main Text

Fixed Baselines Each page of the Journal/Transactions is formatted with double-column style. The printing tradition of double-column requires that a line in the left column and its neighbor in the right column has the same baseline. To meet this requirement, the style files carefully control the progression of baselines when a vertical space is inserted for section titles and so on. Therefore, *you must not use `\vspace` nor `\vskip`*. If you want to check whether baselines progress properly, add the `\checklines` command in the preamble to print baselines on which (ordinary) lines should be located. This command, however, should be omitted when you send your source to the IPSJ.

Font Size You will see that various size fonts are used in the printed result of your paper. Since these fonts are automatically and carefully chosen by the style files, you are free from headach of selecting proper fonts. In fact, it is strongly recommended not to use font-size-changing commands such as `\large` and `\small` in the main text, because they are quite harmful to the retention of keep-

ing fixed baselines. If you really want to use smaller fonts, `\small` or `\footnotesize`, in order to pack many things in a line, use their *starred* versions, `\small*` or `\footnote*`. They will change the font size while retaining spaces between baselines the same as `\normalsize`. An example of `\small*` is shown in 4.2, and that of `\footnotesize*` is in this page.

Overfull and Underfull The final result must be free from any overfulls. 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

```
\begin{figure}[tb]
  <figure-body>
  \caption{<caption>}
  \label{...}
\end{figure}\
```

Fig. 1 Single column figure with caption explicitly broken by `\`.

[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 in the dark side of printing process.

4.9 Figures

A figure fit to one column is specified by the form shown in **Fig. 1**. Note that you must not specify `h` option.

The `\caption` of a figure should be given below of the figure body together with a `\label` command. A long caption will be automatically broken into two or more lines and centered with respect to the widest line. You can assist, however, with the line breaking by adding `\` to obtain more beautiful result especially in the case of two-line captions as shown in Fig. 1.

Figure 2 shows how to make a double column figure.

You may use any size of fonts as shown in Fig. 2. 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. 2. Unfortunately, this switch-

ing 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 1** 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{<label>}*1`.

4.11 Itemizing

There are four *families* of three L^AT_EX standard itemizing environments, `enumerate`, `itemize` and `description`, as follows.

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

Similar to L^AT_EX-standard environment except for wider indentation. The indentation of `enumerate` is three times as wide as `\parindent`, while those of others are twice. The `enumerate` labels are not L^AT_EX standard;

1. (a) i. A.

but have parentheses with small spaces as follows.

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

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

Similar to `enumerate` etc., but indentation is as wide as `\parindent`.

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

No indentation is performed.

- `ENUMERATE`, `ITEMIZE`, `DESCRIPTION`

Indent only the first line by `\parindent`.

See Table 1 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,

Table 1 Sections and sub-sections in which list-like environments are used (example of table)

	enumerate	itemize	description
type-1	2	3	4.5
type-2	—	4.11	4.7
type-3	2	—	4.5
type-4	—	4.8	4.3
type-1:	<code>enumerate</code> , etc.	type-2:	<code>enumerate*</code> , etc.
type-3:	<code>Enumerate</code> , etc.	type-4:	<code>ENUMERATE</code> , etc.

^{*1} `\Tabref` is also available but is just the same as `\tabref`.

```

\begin{figure}*[t]
  <figure-body>
\caption{<caption>}
\label{...}
\end{figure*}

```

Fig. 2 Double column figure

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

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 L^AT_EX `\cite{latex}` in `\Cite{companion}`. will produce

Goosens explained details of L^AT_EX² in 1). as the result.

When three or more texts are cited by `\Cite` or `\cite` and their reference numbers are in series, the first and last numbers are connected by ‘–’ (en-dash) automatically, as 5)–7) and “literatures^{2),8)–10)}.” If texts cited at once are too numerous to specify them by `\Cite` or `\cite`, use the following *multi* versions.

```

\multiCite{<1st-label>}{<last-label>}
\multicite{<1st-label>}{<last-label>}

```

*1 An example of footnote.

They produce results such as 3)–10) and “literatures^{11)–17)}.”

4.15 References

References should be arranged in alphabetical or cited order. It is strongly recommended to use BiB_TE_X and style files `ipsjsort-e.bst` (alphabetical order) or `ipsjunsort-e.bst` (cited order) to make references fit to the traditional style. You will pick up hints by examining the sample bibliography file `ebibsample.bib` and the references of this guide produced by BiB_TE_X with `ipsjunsort-e` style. Remember that you must include `.bbl` file in the file package, instead of `.bib`.

If you cannot use Bib_TE_X and have to make references manually using `thebibliography` environment, observe the references of this guide carefully and follow its style^{*3}.

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>

```

*2 Another footnote. This footnote appears right column while its mark is in left column. See the source file to know how to do it.

*3 The references of this guide are produced by `thebibliography` environment to make the source single file, but the contents are produced by BiB_TE_X.

```
\author{\langle 2nd-author's-name \rangle}
\langle biography-of-2nd-author \rangle
.....
\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.

5. Concluding Remarks

We don't dream that the style files are perfect, but wish to improve them with your cooperation and hope you let us know your complaint, comments, suggestions by e-mail to texnicians@ipsj.or.jp.

TeXnical questions also welcome to this address, but other questions on the Journal/Transactions should be received by

editt@ipsj.or.jp.

Acknowledgments We would like to express our thanks to Sanbi Printing Corp, ULS and Comany, and all those authors who voluntarily cooperate us in the experimental L^AT_EX publishing of the Journal/Transactions.

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{\langle abbrev \rangle}{\langle number \rangle}%
{\langle ser-num \rangle}
```

The argument `\langle abbrev \rangle` must be one of the following, while the `\langle number \rangle` of the issue and `\langle ser-num \rangle` 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 Systems)
- CVIM (Trans. Computer Vision and Image Media)
- TBIO (Trans. Bioinformatics)
- SLDM (Trans. System LSI Design Methodology)

Note that the $\langle number \rangle$ of the issue does not mean the issue is published in the $\langle number \rangle$ -th month of a year. You may be notified about the $\langle month \rangle$, to be set to the following month counter, by IPSJ or the Editorial Board.

```
\setcounter{month}{\langle month \rangle}
```

Also note that Transactions may have a few local typesetting conventions shown in the following sections.

A.1.1 Functions for PRO

Issues of The Transactions on Programming (PRO) not only have regular papers but also abstracts of the talks given in workshops of SIGPRO. The file for an abstract consists of the materials from `\documentclass` (or `\documentstyle`) to `\maketitle` of the format shown in Section 4.2. That is, the file does not have a main text. Note that the reception and acceptance dates are not necessary but the date of presentation has to be given by;

```
\presented{\langle year \rangle}{\langle month \rangle}{\langle day \rangle}
```

A.1.2 Functions for TOM

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

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

If the paper has revised twice or more, repeat the command above with each of the date of revision reception.

A.1.3 Functions for TOD

The name of the editor in charge for the paper included in The Transactions on Database (TOD) is given by;

```
\edInCharge{\langle name-of-editor \rangle}
```

A.1.4 Functions for TBIO

In order to activate TBIO-specific commands, you should specify TBIO as an 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 $\langle category \rangle$ of the paper, `original`, `survey` or `database`, may be given by;


```
\TBIOpapercategory{\langle category \rangle}
```

 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;

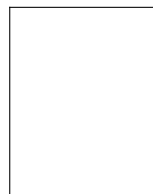

```
\edInCharge{\langle name-of-editor \rangle}
```
- The date of reception of the revised version may be specified by;


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

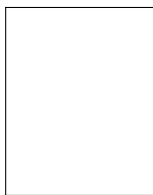
Note that the last two commands are optional and thus may be omitted unless the author is given the information for them and is requested to specify them.

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