

A Bib_TE_X Guide via Examples

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Abstract

This document describes how to (i) modify citation styles in your body text, (ii) make your own bibliography style (.bst) file, and (iii) modify the bibliography style file.

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1 Introduction

This short document describes how to change/modify *citation* and *bibliography* styles for your L^AT_EX documents. As you already know, there are basically two methods for adding bibliography at the end of your L^AT_EX documents. The first method is to use the `thebibliography` environment. Reference entries are added using `\bibitem{key}` and are called via `\cite{key}` in the body text. You can change the style of references by formatting the `bibitem` entry. This is a convenient way to handle bibliography. However, there are big problems: you have to format each reference item and have

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to reformat it when you are required to change bibliography style. Thus this method is good for small L^AT_EX documents.

The second method is to use BibT_EX. In this case you need two files: bibliography style (format) file (.bst file) and bibliography database file (.bib file). In your text, you can add the following two lines for bibliography:

```
\bibliographystyle{unsrt} % Bibliography style file, unsrt.bst
\bibliography{moea}      % Bibliography database file, moea.bib
```

The .bib file is formatted by the predefined rules in the .bst file, resulting in .bbl file which is referenced by your L^AT_EX source file.

Once you have a correct .bst file, this method is good for long L^AT_EX documents such as journal papers, reports, books, and your dissertation. You can find lots of bibliography style files in the \bibtex\bst directory in your \texmf tree. If you are lucky, book publishing companies and your universities may provide the bibliography style files. You can also see examples of many .bst files on the web (<http://www.cs.stir.ac.uk/~kjt/software/latex/showbst.html>).

Now the problem is how to create/modify a .bst file if you cannot find a right one and are strictly required to follow the citation and reference styles by the book publishing companies. For example:

- How can we change [1] in the body citation to (1), (Kim, 2000), Kim (2000), ¹, or whatever you or the journal publisher want? ⇒ *Citation style*.
- How can we change [1,2,3,4,12,14,13,7] in the body citation to [1-4,7,12-14] ? ⇒ *Citation style*.
- How can we change [1] in the bibliography list to none, 1., 1), or whatever you or the journal publisher want? ⇒ *Bibliography style*.
- How can we change “Kim, A.B., Lee, C.D., and Park, E.F.” to “AB Kim, CD Lee, EF Park”, “AB Kim, CD Lee, and EF Park” (w/ and), “KIM, A.B., LEE, C.D., and PARK, E.F.”, “Kim, Ava Bell, Lee, Cleo Dave, and Park, Elvis Frank”, or whatever you are required? ⇒ *Bibliography style*.
- How can we change journal title styles (italic or normal?), volume (bold, presence of vol., style of vol., ...), number, page, and other styles (such as location of the publisher name and its address)? ⇒ *Bibliography style*.

The main focus of this article is how to change citation and bibliography styles in BibT_EX. Section 2 shows one example of citation and bibliography styles required. Section 3 describes how to change citation styles in the body text while Section 4 and 5 present how to create and modify bibliography style files to meet the given bibliography styles. Finally Section 6 provides some useful tips about citation and bibliography styles. Enjoy !

2 Example

Suppose that you are submitting your journal paper and the company requires the following citation and reference styles:

- **Citation style:** Cite references in text by number in parentheses, in order of appearance (e.g., The algorithms in literature (1-3,5,22)).
- **Bibliography style:** Do not use boldface, italics, or underscoring. List all known coauthors. For more specific styles, see the following examples.

1. AW Warner, DL White, WA Bonner. Real-time Fourier transformation via acousto-optics. *J Appl Phys* 43:4489-4493, 1972. (*for journal papers*)
2. D Dzombak. Elements of Power Systems Analysis. 3rd ed. New York: McGraw-Hill, 1975, pp. 125-134. (*for books*)
3. KJ Kim, UM Diwekar, Solvent selection under uncertainty. In: GV Recklitis, ed. Clean Solvents Design. New York: Marcel Dekker, 2002, pp.169-174. (*for book chapters*)
4. S Sorensen, S Skogestad, Multivessel columns. Proceedings of Advances in Batch Distillation, Pittsburgh, 2002, pp. 270-282. (*for meetings*)

Some difficult parts of this style are:

- Pure first name initial (no periods) + Last name (e.g., KJ Kim),
- Periods after the author field and journal, book, book chapter, and meeting titles. Commas elsewhere,
- Year after page numbers in journals while year before page numbers in books, book chapters, and meetings (if any), and
- ‘In: ’ in book chapters but no ‘In: ’ in meetings.

In this case citation styles are quite easy and are described in the next section.

3 Citation Styles

The natbib package has been strongly recommended for reference citation. This package, developed by Patrick W. Daly¹, provides high degree of freedom for citation style change. The following examples are taken from his natbib.dvi file.

In the author-year citation mode with an author-year .bst file,

<code>\citet{jon90}</code>	\Rightarrow	Jones et al. (1990)
<code>\citet[Chap. 2]{jon90}</code>	\Rightarrow	Jones et al. (1990, Chap. 2)
<code>\citep{jon90}</code>	\Rightarrow	(Jones et al., 1990)
<code>\citep{jon90,jam91}</code>	\Rightarrow	(Jones et al., 1990; James et al., 1991)
<code>\citet*{jon90}</code>	\Rightarrow	Jones, Baker, and Williams (1990)
<code>\citep*{jon90}</code>	\Rightarrow	(Jones, Baker, and Williams, 1990)

In the number citation mode with an author-year .bst file,

<code>\citet{jon90}</code>	\Rightarrow	Jones et al. [21]
<code>\citep{jon90}</code>	\Rightarrow	[21]
<code>\citep{jon90,jam91}</code>	\Rightarrow	[21,32]

¹One of the authors of *A Guide to L^AT_EX: Document Preparation for Beginners and Advanced Users*.

In the number citation mode with a number .bst file, only `\cite{}` is valid and generates citation number in []. Thus from these three modes, it is better to make an author-year .bst file all the time!

The above styles are the default settings of the package. Now we want to use citation numbers in (), instead of []. There are many options; but here the author only shows his flavor.

```
\usepackage[sort&compress]{natbib} % Natbib citation style package
\bibpunct({}{}){,}{n}{}{} % More options for Natbib
```

The option `[sort&compress]` generates sorted and compressed number citations (e.g., [1,2,9,3,14,16,15] ⇒ [1-3,9,14-16]). The options in `\bibpunct` creates curly parentheses () (instead of []), ‘ ’ divider between citation numbers (instead of ‘;’), and number citation from the option `{n}` (the default is `{a}` for author-year citation).

For more information, please read the manual, `natbib.dvi`. One more tip from this file is *superscript* citation as seen in *Nature*. Put the following two lines in the preamble and use `\cite{key}` in the body text.

```
\usepackage[sort&compress]{natbib}
\citestyle{nature} % Superscript citation style (Nature style)
```

4 Making a .bst File

To make your own .bst file, the `custom-bib` package, also developed by Patrick W. Daly, is the best solution. Get `makebst.ins`, `makebst.dtx`, and `merlin.mbs` from CTAN (<http://www.ctan.org>) or other mirror sites. The `merlin.mbs` file is a master bibliography style file. So your .bst file is extracted from this .mbs file under given options that you will choose now.

1. Type `latex makebst.ins` in the command mode. This will generate `makebst.tex` and `makebst.drv`.
2. Type `latex makebst` to make your own .bst file. You will be asked a lot of questions regarding the bibliography style options. If you are not sure about the questions, just select the default value (*). Some important style questions (not all the questions!) are given below in order of appearance. *Remember that we want to stick on the bibliography styles described in Section 2. Also remember that there is no way to go back and correct an error during this job.*²
 - (a) The first question that you will meet is `Do you want a description of the usage?` ⇒ `yes`.
 - (b) Enter the name of the MASTER file ⇒ `default`.
 - (c) Name of the final OUTPUT .bst file? ⇒ type your .bst file name (here, `imsi`).
 - (d) Do you want verbose comments? ⇒ `yes`.
 - (e) `<<STYLE OF CITATIONS:` ⇒ (a) Author-year with some non-standard interface.
 - (f) `<<AUTHOR-YEAR SUPPORT SYSTEM` ⇒ `Natbib for use with ~`.

²Do not worry. You can correct it later.

- (g) <<ORDERING OF REFERENCES ⇒ (c) Citation order (unsorted ...).
- (h) <<AUTHOR NAMES ⇒ (x) Surname + pure initials (Smith JF). Remember that the style JF Smith is not provided. We will modify this later!
- (i) <<DATE POSITION ⇒ (*) Date at end. Remember that we need year after page numbers in journals but year before page numbers in books, book chapters, and meetings.
- (j) <<JOURNAL NAMES ⇒ (x) Dotted journal names as 'Phys Rev'. This is required by the book publisher in Section 2.
- (k) <<VOLUME PUNCTUATION ⇒ (*) Volume with colon as vol(num):ppp.
- (l) <<JOURNAL NAME PUNCTUATION ⇒ (x) Space after journal name. This is required by the book publisher in Section 2.
- (m) <<PUBLISHER POSITION ⇒ (e) Publisher after edition.
- (n) <<PUNCTUATION BETWEEN SECTIONS ⇒ (t) Period after titles of articles, books, etc else commas. We need a period after the author field (e.g., JF Smith, KJ Kim. ~).
- (o) <<PUNCTUATION AFTER 'IN' ⇒ (c) Colon after 'in' (as 'In: ..'). But we do not need In: in meetings (i.e., in collections and in proceedings).
- (p) Finished! Batch job written to file 'imsi.dbj' Shall I now run this batch job? <NO> ⇒ If you say yes, it creates your .bst file.

Now all done! If you want to change some options that you made, open the .dbj (document batch job ?) file.³ The questions are in CAPITAL LETTERS, and the options that you made are uncommented at the first column. Comment out the wrong choice by putting % in the first column, and uncomment the choice that you want to select by removing %. Then type `latex imsi.dbj`, resulting in a new `imsi.bst` file.

5 Modifying Bibliography Style Files

Of course the custom-bib package cannot produce infinite numbers of bibliography styles that we or book publishing companies want. Thus we need some modifications to the generated .bst file.

The `imsi.bst` file generated in the previous section produces the reference like this:

[12] Kim KJ, Urmila UM, Solvent selection under uncertainty. In: Proceedings of Clean Solvents Symposium, Pittsburgh, 1980, pp. 120-125.

[13] Robinson C, Elements of Fractional Distillation. New York: McGraw-Hill, forth edn., 1950.

First, we want to change the reference numbering system from [12] to 12. This can be done in the preamble by putting the following code:

```
\makeatletter                % Reference list option change
\renewcommand\@biblabel[1]{#1.} % from [1] to 1.
\makeatother                %
```

³This is also an ASCII file. This manual editing is appropriate only when you made a wrong *independent* choice. For example, you may not select author-number style options under the number citation system selected in the Step-(e) in Section 4.

The option #1. can be anything that you want to change. For example, #1). creates “1).” in bibliography. If empty in the {}, then no labels in the bibliography.

Second, we want to switch the order of surname and first name. Open the `imsi.bst` file. Go down to find the `FUNCTION {format.names}` code. You will see a line similar to `"{vv~}{ll}{ f}{j}{ jj}"`. The letter `vv` is the von part (e.g., von Neumann), `ll` is the last name part, `ff` is the first name part, and `jj` is the junior part. A double letter (e.g., `ll`) takes full name while a single letter (e.g., `f`) abbreviates full name. Thus the current option creates like “Robinson C” since there is no von and junior parts. So in order to switch, just change the order like this `"{f}{~}{vv~}{ll}{ jj}"`.

Third, we want to put ‘.’ after the author field. Go down to find the `FUNCTION {article}` code. Below the `author format.key output` line, insert a `new.sentence` line. According to the Step (n) in Section 4, <<PUNCTUATION BETWEEN SECTIONS in Section 4, this insertion will put period at the end of the author field.

Forth, we want to remove ‘In: . . .’ in proceedings and meetings. Go down to the `FUNCTION {incollection}` code. At the line `format.in.ed.booktitle "booktitle" output.check`, change to `format.booktitle "booktitle" output.check` (i.e., remove `.in.ed`). Do the same thing for `FUNCTION {inproceedings}`.

Fifth, we want to move edition after book title. Go to the `FUNCTION {book}` code. Move the `format.edition output` line to just above the `format.number.series output` line.

Sixth–Assignment? Put the year before the author names *only* in books.⁴ Hint: Go to `FUNCTION {book}` and look at `format.date "year" output.check`. Move this line to a proper place.

Due to my poor knowledge about the language (postfix stack language) used in a `.bst` file, I could only provide minimal hacking tips for the given example. For more information read `btXHak.dvi` and `btXbst.doc` in the document repository of your \TeX file system.

6 Useful Tips⁵

Question: How can I change the bibliography heading title?

Answer: Write in \LaTeX preamble or anywhere else.

```
For book-classes: \renewcommand\bibName{your bibliography title}
For article-classes: \renewcommand\refname{your bibliography title}
```

Question: I have an odd Bib \TeX problem. I am using the Bib \TeX styles provided with `amslatex`, and have two bibliography entries that Bib \TeX insists on putting in the wrong order! These entries are identical except for volume:

L. Dornhoff, Group Representation Theory, vol. B, Marcel-Dekker, NY, 1971
L. Dornhoff, Group Representation Theory, vol. A, Marcel-Dekker, NY, 1971

Surly Volume A should precede Volume B, but Bib \TeX insists on listing them backwards! Can anyone out there give me a hint as to how to override this ordering? (The ordering effects references throughout a large work, so I can’t just edit the bibliography file by hand.)

⁴This style is ridiculous. But try it for your practice.

⁵The tips in this section are collected from web sites or my personal experiences.

Answer: BibTeX sorts the items in the *.bib file based on author-year-title orders. But in some cases where the same author publishes several papers in the same year BibTeX cannot properly sort the items. I've seen a solution for this kind of problems in an old BibTeX 0.99b documentation.

Add the following @PREAMBLE command to your bibliography database file:

```
@PREAMBLE{"\newcommand{\noopsort}[1]{}"}
```

Open your .bib file and modify the year field or any other relevant field for proper sorting of the two bibliography items. For example:

```
For Vol. A entry : year = "{\noopsort{a}}1971"
```

```
For Vol. B entry : year = "{\noopsort{b}}1971"
```

If this does not work, put {\noopsort{a}} in front of the titles.

Question: How to put bibliography at each chapter in the book class?

Answer: If you use thebibliography environment, then put the following in the preamble.

```
\makeatletter
\renewenvironment{thebibliography}[1]
{\section*{\Large\bibname % \chapter* is changed to \section*
\mkboth{\MakeUppercase\bibname}{\MakeUppercase\bibname}}%
\list{\@biblabel{\@arabic\c@enumiv}}%
{\settowidth\labelwidth{\@biblabel{#1}}%
\leftmargin\labelwidth
\advance\leftmargin\labelsep
\@openbib@code
\usecounter{enumiv}%
\let\p@enumiv\@empty
\renewcommand\theenumiv{\@arabic\c@enumiv}}%
\sloppy
\clubpenalty4000
\@clubpenalty \clubpenalty
\widowpenalty4000%
\sfcode'\.\@m}
{\def\@noitemerr
{\@latex@warning{Empty 'thebibliography' environment}}%
\endlist}
\makeatother
```

If you use BibTeX, load chapterbib, bibunits, or natbib package.

Question: I want no citation in the text but list in the bibliography.

Answer: With \nocite{key} the bib entry with the key is part of the bibliography without any citation in the body text. With all entries in the specified bib-file are listed in the bibliography.

7 Closing Remark

You downloaded this document from my personal web site (<http://www.geocities.com/kijoo2000/bibtex.html>). If you find any errors or have suggestions, please contact me.