

# AIAA\* L<sup>A</sup>T<sub>E</sub>X Package Users Manual<sup>†</sup>

Bil Kleb<sup>‡</sup> and Bill Wood<sup>‡</sup>  
*NASA, Hampton, Virginia*

Erich Knausenberger<sup>§</sup>  
*AIAA, Reston, Virginia*

## Abstract

This document describes the `aiaa` L<sup>A</sup>T<sub>E</sub>X package that provides a L<sup>A</sup>T<sub>E</sub>X class (`aiaa-tc.cls`) and B<sup>I</sup>B<sup>T</sup><sub>E</sub>X bibliography style file (`aiaa.bst`). The files in this package are used to create AIAA technical conference papers. The package also contains a users manual (you are looking at it) and two templates, a bare-bones sample and an advanced sample.

## Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Requirements	1
1.2	User's Manual	2
1.3	Installation and Setup	2
<b>2</b>	<b>Usage</b>	<b>3</b>
2.1	General Commands	3
2.1.1	New Behavior from Standard Commands	3
2.1.2	New Command	3
2.2	Hand Carry Information	4
2.3	Journal Submission	5
2.4	Making Modifications	5
2.5	Getting Help	5
2.6	Known Problems	5
2.7	Sending a Bug Report	6
<b>3</b>	<b>Acknowledgments</b>	<b>6</b>
<b>4</b>	<b>Code Documentation</b>	<b>7</b>

## 1 Introduction

The AIAA class works by loading the standard L<sup>A</sup>T<sub>E</sub>X article class and several L<sup>A</sup>-T<sub>E</sub>X packages, and then making modifications and extensions to suit the AIAA layout requirements.<sup>1</sup> The AIAA B<sup>I</sup>B<sup>T</sup><sub>E</sub>X style file was created with Daly's `makebst`

---

\*American Institute of Aeronautics and Astronautics.

<sup>†</sup>This document describes `aiaa` version 3.6 that came of age on 2004/05/23.

<sup>‡</sup>Research Scientist

<sup>§</sup>Business Developer

<sup>1</sup> The older, unofficial AIAA distribution that yields two-column layout is available in the distribution's 'pre2004' subdirectory.

program and then tweaked according to AIAA conventions. In addition, abbreviations for the AIAA journals and more common aerospace journals were added.

## 1.1 Requirements

To make use of the AIAA technical conference paper class and process the AIAA bare-bones template, you will need the following files:

```
article.cls    graphicx.sty  array.sty     setspace.sty
overcite.sty  lastpage.sty  fancyhdr.sty
```

These should be included as part of your  $\text{T}_{\text{E}}\text{X}$  distribution. Note: `setspace` is only necessary if using the `submit` class option described below.

To explore some of  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ 's more advanced features such as imbedded figures, tables with footnotes, hyperlinks, subfigures, dropped capitals at the beginning of paragraphs, automatic nomenclature collection and sorting, and bibliography generation that are demonstrated in the advanced template, you will need the following  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  packages,

<code>ifthen</code>	plain text conditionals
<code>dcolumn</code>	decimal-aligned tabular math columns
<code>fancyvrb</code>	extended verbatim environments
<code>subfigure</code>	subcaptions for subfigures
<code>nomenc</code>	nomenclature generation via Makeindex
<code>hyperref</code>	hyperlinks such as email or URLs
<code>threeparttable</code>	tables with footnotes
<code>wrapfig</code>	integrate figures and tables in text (i.e., DiVinci style)
<code>lettrine</code>	dropped capital letter at beginning of paragraph
<code>subfigmat</code>	matrices of similar subfigures, aka small multiples
<code>dropping</code>	an alternative dropped capital letter package

The above packages are ordered according to the likelihood that they are included with any given  $\text{T}_{\text{E}}\text{X}$  distribution. The last three you will most likely have to download from CTAN ([www.ctan.org](http://www.ctan.org)) and add to your  $\text{T}_{\text{E}}\text{X}$  distribution according to its instructions for adding new packages, or just place them in your local working directory. Please see the Known Problems section before exploring the advanced example.

## 1.2 User's Manual

A PDF version of this Users Manual is provided as part of the distribution. It was created by processing `aiaa.dtx` with `pdflatex`. Of course a PostScript version can be made by using `latex`.

If you are new to LaTeX, you should first read *A (not so) Short Introduction to  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ , or  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  in 131 minutes*, which is available in a variety of languages from the Comprehensive  $\text{T}_{\text{E}}\text{X}$  Archive Network (CTAN) website, [www.ctan.org/tex-archive/info/lshort/](http://www.ctan.org/tex-archive/info/lshort/).

## 1.3 Installation and Setup

If you have not already run `aiaa.ins` through  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ , do so. The `docscript` utility (part of  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ ) will rip the code segments out of `aiaa.dtx` and save them in several files. If you encounter an error on installation like:

```

! Undefined control sequence
\batchLine -> generate
    {\file {aiaa-tc.cls}{\from{aiaa.dtx}{class}}}
1.728 \processbatchFile

```

it means that your `docstrip` is very old and that you will need to update your  $\TeX$  distribution to take advantage of the AIAA package.

Move `aiaa-tc.cls` to a directory searched by  $\TeX$ <sup>2</sup> and the file `aiaa.bst` to a directory searched by  $\text{\LaTeX}$ .<sup>3</sup> Once things are installed, try to  $\text{\LaTeX}$  the bare-bones template. It should produce something similar to the existing PDF copy.

## 2 Usage

The AIAA class is evoked by including

```
\documentclass[options]{aiaa-tc}
```

at the beginning of your document. The AIAA class recognizes a `handcarry` option that places paper number, conference information, and copyright information in the paper when hand carrying papers to a “loose papers” conference, and a ‘`submit`’ option that increases font size and line spacing. Other options are passed on to  $\text{\LaTeX}$ ’s `article` class that is subsequently loaded by the AIAA class.<sup>4</sup> The document is written just like one were using the standard  $\text{\LaTeX}$  `article` document class; and thus, usage is well documented by others in various  $\text{\LaTeX}$  books [1, 2, 3]. However, some of the stock commands have slightly different behaviors and there are a few new commands designed to make life a little brighter; these are discussed in the following sections.

### 2.1 General Commands

Several standard  $\text{\LaTeX}$  commands have been modified to behave slightly differently in the `aiaa-tc` class. In addition, several new commands have been introduced to ease document preparation. Both types are discussed in the following subsections.

#### 2.1.1 New Behavior from Standard Commands

`\date`     The `aiaa-tc` class does not typeset the `\date` command as part of `\maketitle`.  
`\maketitle`     Standard  $\text{\LaTeX}$  behavior of `\maketitle` is to typeset the current date as part of

<sup>2</sup> For a Unix  $\text{\TeX}$  installation, a privileged user could put these files in a directory named something like `/usr/local/share/texmf/tex/latex/aiaa` for the entire site to use, remembering to run `texhash` to reconfigure  $\text{\TeX}$  to search the new directory; or, a lowly user could make their own directory, e.g., `~/tex/inputs`, put the files in there, and set the environment variable `TEXINPUTS` via ‘`setenv TEXINPUTS ~/tex/inputs:`’. The colon represents the system search path so, in this case, the user files take precedence. On a Mac or PC installation put these files in a folder named something like `TeX-inputs`.

<sup>3</sup> Similar to preceding footnote, only on Unix, use the environment variable `BSTINPUTS` for the bibliographic style file and `BIBINPUTS` for the bibliographic database; for Mac’s, use the `BibTeX-inputs` folder, failing that try using the `TeX-inputs` folder.

<sup>4</sup> For example, the `draft` option replaces figures with a labeled box of the appropriate size and graphically depicts lines that overrun the right margin (overfull boxes).

the title section. one would have to issue a command like, `\date{\vspace{-5ex}}`, to eliminate the date and removed the space created for it.

`abstract` The `abstract` environment has been redefined within the `aiaa-tc` class to produce slightly different typesetting. It now produces an indented block of text set in a smaller, bold font. This environment should be placed after your `\maketitle`.

`\section`  
`\subsection`  
`\subsubsection` The counters, fonts, sizes, and positions normally produced by these commands have been modified to produce AIAA layout guidelines.

### 2.1.2 New Command

`\paragraph`  
`\subparagraph`  
`\thanksibid` The command `\thanksibid` is very similar to the standard `\thanks` command which is used when footnoting the author affiliations within the `\author` field. The distinction is that the `\thanksibid` command allows one to repeat a given footnote symbol without repeating the associated footnote text. For example,

```
\author{%
  Peter Gnoffo,%
  \thanks{Title, department, address, and member grade.}
  Bil Kleb,%
  \thanks{Title, department B, address, and member grade.}
  Bill Wood,%
  \thanksibid{2}% use the same footnote as the second author.
\ and
Marge Myth%
  \thanks{Title, department C, address, and member grade.}
}
```

Thus, `\thanksibid{2}` would only produce a footnote symbol at the end of Bill Wood's name and it would not generate any footnote text. Note that using the `\thanksibid` command does not increment the footnote counter, so for the case given above, an argument of 4 would not be a valid choice.

## 2.2 Hand Carry Information

`handcarry` The following commands are used to load information that is used by the `handcarry` class option. For example,

```
\documentclass[handcarry]{aiaa-tc}
```

The following commands are used produce appropriate headers and footers All of these commands are normally set in the preamble of your document (similar to `\author` and `\title`).<sup>5</sup>

`\AIAAapernumber`  
`\AIAAconference`  
`\AIAAcopyright` The commands `\AIAAapernumber`, `\AIAAconference`, and `\AIAAcopyright` are used to put appropriate items in the header and footer of each page. The contents of `\AIAAapernumber` is placed in the footer while the contents of `\AIAAconference` is placed in the header. For example,

```
\AIAAapernumber{2004-3932}
\AIAAConference{16th AIAA Fluid Dynamics Conference,
                June 6--8, Portland, Oregon}
```

A footnote describing the copyright conditions and other information about the

---

<sup>5</sup> The preamble is defined as anywhere between the `\documentclass{}` and `\begin{document}` commands.

document are incorporated via the `\AIAAcopyright`. This command should be loaded with one of the the copyright series of commands: `\CopyrightA`, `\CopyrightB`, `\CopyrightC`, or `\CopyrightD`, described below. To use, simply include something like the following in the your document’s preamble:

```

\AIAAcopyright{\CopyrightA{2004}}
\CopyrightA where the specific copyright commands will expand to one of the standard AIAA
\CopyrightB forms: A, B, C, D, or D-APL. Note: they each have different arguments, or no
\CopyrightC arguments, depending on their requirements,
\CopyrightD \CopyrightA{year}
\CopyrightDAPL \CopyrightB{year}{full name or company}
\CopyrightC
\CopyrightD{year}
\CopyrightDAPL{year}

```

See AIAA copyright instructions for which form to use.

## 2.3 Journal Submission

```

submit The submit option class option that is invoked as follows,
\documentclass[submit]{aiaa-tc}
\AIAAsubmitinfo will increase the font size and line spacing as well as place a running footer ac-
\AIAAsubmitinfo{Abbreviated Title, AuthorsLastName et al}
will place an abbreviated title and the authors last name at the bottom of each
page.

```

## 2.4 Making Modifications

If you feel the need to modify the behavior of items in `aiaa-tc.cls`, simply cut the section you want to change and save it to a file named `myaiaamods.sty`. Then modify the code in `myaiaamods.sty` to suit your needs and include it in your document via `\usepackage{myaiaamods}` in the preamble.

## 2.5 Getting Help

For general questions related to AIAA papers, procedures, and guidelines, send email to [Paper\\_Tech\\_Support@AIAA.Org](mailto:Paper_Tech_Support@AIAA.Org). For help /specific/ to this AIAA  $\LaTeX$  distribution, send email to [LaTeX\\_Support@AIAA.Org](mailto:LaTeX_Support@AIAA.Org).

For general  $\LaTeX$  help, see the *The (not so) Short Introduction to  $\LaTeX$*  mentioned above,  *$\LaTeX$ : A Document Preparation System* (2nd ed.) by Lamport, and *The  $\LaTeX$  Companion* (2nd ed.) by Mittelbach et al. [1] For more specific  $\LaTeX$  help, do a Google ‘groups’ search on the `comp.text.tex` USENET newsgroup and explore the  $\TeX$  User Group’s frequently asked questions site last seen at [www.tex.ac.uk/cgi-bin/texfaq2html](http://www.tex.ac.uk/cgi-bin/texfaq2html). If these avenues fail to answer your question, read [www.tex.ac.uk/cgi-bin/texfaq2html?label=askquestion](http://www.tex.ac.uk/cgi-bin/texfaq2html?label=askquestion) and post a question to the `comp.text.tex` USENET newsgroup. (Posting is available through [Google](https://www.google.com).)

For an extensive guide to using Encapsulated PostScript in  $\LaTeX$ , see Keith Reckdahl’s `epslatex` document available from CTAN’s `info` directory, [www.ctan.org/tex-archive/info/](http://www.ctan.org/tex-archive/info/) or various  $\LaTeX$  reference books.

Especially helpful in locating various L<sup>A</sup>T<sub>E</sub>X packages is the `Catalogue.html` web page found in the `help/Catalogue` directory of CTAN.

## 2.6 Known Problems

The bibliographic style sheet `aiaa.bst` isn't fully tested; and thus, you may need to fiddle with your `.bbl` file for your final copy, i.e., edit `file.bbl` after running a L<sup>A</sup>T<sub>E</sub>X, B<sub>I</sub>B<sub>T</sub>E<sub>X</sub>, L<sup>A</sup>T<sub>E</sub>X sequence, but before running L<sup>A</sup>T<sub>E</sub>X the final time. Note: If you run B<sub>I</sub>B<sub>T</sub>E<sub>X</sub> after modifying `file.bbl`, you will lose your modifications when L<sup>A</sup>T<sub>E</sub>X is run again.

To typeset the advanced example, you will need a fairly complete L<sup>A</sup>T<sub>E</sub>X distribution, and even then you will probably need to download packages like `dropping` or `lettine` as described in the Requirements section. Also, some packages will need to be newer than 2002 or so. For example, older versions of the `nomenclature` package will give an error like

```
! Undefined control sequence. <argument> \nomitemsep while older versions of the geometry package will give
```

```
ERROR: Package keyval Error: No value specified for paper.
```

## 2.7 Sending a Bug Report

Reports of bugs in the AIAA package are most welcome. Before filing a bug report, please take the following actions:

1. Verify your problem is not due to your own input file(s) styles sheet(s), or package(s);
2. Check to see if your problem is documented in the preceding section;
3. Try to isolate the problem by writing a *minimal* L<sup>A</sup>T<sub>E</sub>X input file which reproduces the unexpected behavior and then:
  - (a) Include the command

```
\setcounter{errorcontextlines}{50}
```

in the preamble of your document to provide extra context when things go awry;
  - (b) Run your file through L<sup>A</sup>T<sub>E</sub>X;
  - (c) Send a description of your problem, the input file and the log file via e-mail to: [LaTeX.Support@AIAA.Org](mailto:LaTeX.Support@AIAA.Org).

## 3 Acknowledgments

Foremost, the authors would like to thank all of those that took the time to ask questions, give comments, or provide suggestions: Karen Bibb, Steve Alter, Meelan Choudhari, Donald Arseneau, Ed Kerschen, Paolo Lisandrin, Mark Woodmansee, Dominique Pelletier, Manual Cruz, Martin Sanchez, Chris Rumsey, Ray Chase, and Tadashi Minowa. Without their feedback, this package would wither.<sup>6</sup>

---

<sup>6</sup> Hint: If you want to be listed in future versions of this document, send kudos, comments, and so on to [LaTeX.Support@AIAA.Org](mailto:LaTeX.Support@AIAA.Org).

Bundling and documenting this `aiaa` package in `docstrip` format was done by using other packages as a model, particularly, Mats Dahlgren's `dropping` [4] and Jeff Goldberg et al.'s `endfloat` [6].

Finally, the first author would like to thank the people of the `comp.text.tex` newsgroup, the T<sub>E</sub>X Users Group Frequently Asked Questions maintainers, and various package authors for patiently answering my inane questions, in particular, but in no particular order: Donald Arsenau, Robin Fairbairns, Piet van Oostrum, Jeroen Nijhof, Steven Douglas Cochran, Herbert Voss, Jeffrey Goldberg, Mark Wooding, Paul Foley, David Kastrup, Jerry Leichter, Patrick Daly, David Carlisle, Edward Sznyter, and Jim Hefferon.

## References

- [1] Frank Mittelbach, Michel Goossens, Johannes Bramms, David Carlisle, and Chris Rowley. *The L<sup>A</sup>T<sub>E</sub>X Companion*. 2nd ed. Addison-Wesley, Reading, Massachusetts, 2004.
- [2] Helmut Kopka and Patrick W. Daly. *A Guide to L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>: Tools and Techniques for Computer Typesetting*. 4th ed. Addison-Wesley, Reading, Massachusetts, 2003.
- [3] Leslie Lamport. *L<sup>A</sup>T<sub>E</sub>X: A Document Preparation System*. 2nd ed. Addison-Wesley, Reading, Massachusetts, 1994.
- [4] Mats Dahlgren. `dropping`—A L<sup>A</sup>T<sub>E</sub>X Macro for Dropping the First Character(s) of a Paragraph. June 1996. (version 0.1) Electronic Documentation.
- [5] David Carlisle. Packages in the ‘graphics’ bundle. December 1995. Electronic Documentation.
- [6] James Darrell McCauley and Jeff Goldberg. The `endfloat` Package. October 1995. (version 2.4i) Electronic Documentation.

## 4 Code Documentation

For the interested reader, the following sections can be made to contain a documented version of the class code and bibliographic style file. These detailed coding bits are not included in the Users Manual by default. If you want to see these in typeset form, you need to comment out the `\OnlyDescription` line in the `<driver>` section of `aiaa.dtx` and process `aiaa.dtx` with (PDF)L<sup>A</sup>T<sub>E</sub>X.

```
1 <*driver>
2 \documentclass{ltxdoc}
3 \usepackage[colorlinks]{hyperref}
4 \OnlyDescription % comment out to typeset class and bibstyle code
5 \begin{document}
6 \DocInput{aiaa.dtx}
7 \end{document}
8 </driver>
```