

The **abstract** package*

Peter Wilson[†]

Catholic University of America

Now at `peter.r.wilson@boeing.com`

2004/04/16

Abstract

The **abstract** package provides control over the typesetting of the **abstract** environment, and especially provides for a one-column abstract in a two-column paper.

Contents

1	Introduction	1
2	The abstract package	2
2.1	Options	2
2.2	Commands and environments	3
3	The package code	4
3.1	Preliminaries	4
3.2	Abstracts	5

1 Introduction

Questions about how to have a one-column abstract in a two-column paper seem to pop up fairly regularly on the `comp.text.tex` newsgroup. While an answer based on responses on `ctt` is provided in the FAQ, the **abstract** package provides a more author-friendly means of accomplishing this. Further, additional controls are provided for the typesetting of the **abstract** environment in general.

This manual is typeset according to the conventions of the L^AT_EX DOC-STRIP utility which enables the automatic extraction of the L^AT_EX macro source files [GMS94].

Section 2 describes the usage of the **abstract** package and commented source code is in Section 3.

*This file (`abstract.dtx`) has version number v1.1a, last revised 2004/04/16.

[†]After May 2004 at: `pandgwilson at earthlink dot net`

2 The abstract package

The typeset format of the **abstract** in a **report** or **article** class¹ document depends on the class options. The formats are:

- **titlepage** class option: The abstract heading (i.e., value of `\abstractname`) is typeset centered in a bold font; the text is set in the normal font and to the normal width.
- **twocolumn** class option: The abstract heading is typeset like an unnumbered section; the text is set in the normal font and to the normal width (of a single column).
- Default (neither of the above class options): The abstract heading is typeset centered in a small bold font; the text is set in a small font and indented like the **quotation** environment.

Note that the **titlepage** option takes precedence over the **twocolumn** option.

The **abstract** package provides handles to modify the typesetting of the **abstract**.

2.1 Options

The **abstract** package takes the following options.

- **original**. In a **twocolumn** document the package default is to use the default abstract style (i.e., centered heading and small text). This option sets the typeset format of the abstract to match that of a standard two column document (i.e., section heading and normal sized text).
- **addtotoc**. The abstract title (the value of `\abstractname`) is added to the Table of Contents.
- **number**. The abstract title will be typeset as a numbered `\chapter` or as a `\section`, depending on whether the document class supports chapters or not.
- **runin**. The abstract title is typeset as a run-in² heading. Note that the **number** option is ignored if the **runin** option is used.

When the **number** option is used with a class that provides chapters, the usual `\chapter` command is used for typesetting the title. If you do not want the word ‘Chapter’ (or its equivalent) to appear, you can use the **anonchap** package to suppress this.

¹The **abstract** environment is not available for the **book** class.

²This option was suggested by R. Chandrasekhar (chandra@ee.uwa.edu.au).

2.2 Commands and environments

The usual advice about creating a one-column `abstract` in a two-column document is to write code like this:

```
\documentclass[twocolumn...]{...}
...
\twocolumn[
  \begin{@twocolumnfalse}
    \maketitle           % need full-width title
    \begin{abstract}
      abstract text...
    \end{abstract}
  \end{@twocolumnfalse}
]
... hand make footnotes for any \thanks commands
...
```

`onecolabstract` With the `abstract` package, instead you do:

```
\saythanks
\documentclass[twocolumn...]{...}
\usepackage{abstract}
...
\twocolumn[
  \maketitle           % need full-width title
  \begin{onecolabstract}
    abstract text...
  \end{onecolabstract}
]
\saythanks % typesets any \thanks commands
...
```

If you want, you can use the `onecolabstract` environment in place of the `abstract` environment — it doesn't have to be within the optional argument of the `\twocolumn` command. In fact, `onecolabstract` internally uses `abstract` for the typesetting.

`\abstractnamefont` These two commands can be redefined to change the fonts used for typesetting
`\abstracttextfont` the heading (defined via `\abstractname`) of the `abstract` environment and the
font for typesetting the text of the abstract, respectively. The default definitions
for these are designed to mimic the traditional `abstract` typesetting. Different
values are used depending on whether the document uses the `titlepage` and/or
`twocolumn` options. For example, in a non-titlepage one-column paper, their definitions are:

```
\newcommand{\abstractnamefont}{\normalfont\small\bfseries}
\newcommand{\abstracttextfont}{\normalfont\small}
```

<code>\absleftindent</code>	The amended version of <code>abstract</code> uses a list environment for typesetting the
<code>\absrightindent</code>	text. These four lengths can be changed (via <code>\setlength</code>) to adjust the left and
<code>\absparindent</code>	right margins, the paragraph indentation, and the vertical skip between para-
<code>\absparsep</code>	graphs in this environment. The default values depend on the document class
	options in effect.
<code>\abslabeldelim</code>	If the <code>runin</code> option is used, the heading is typeset as a run-in heading. That
	is, it is the first piece of text on the first line of the abstract text. The $\langle text \rangle$
	as dspecified by <code>\abslabeldelim{\langle text \rangle}</code> is typeset immediately after the head-
	ing. By default it is defined to do nothing, but if you wanted, for example, the
	<code>\abstractname</code> to be followed by a colon and some extra space you could specify
	<code>\abslabeldelim{:\quad}</code> .
<code>\absnamepos</code>	If the <code>runin</code> option is not used then the heading is typeset in its own envi-
	ronment. <code>\absnamepos</code> specifies the name of the environment in which the ab-
	stract name is typeset. It can be redefined to be one of <code>flushleft</code> , <code>center</code> , or
	<code>flushright</code> to give a left, centered or right aligned heading; or to any other ap-
	propriate environment which is supported by the document class or used packages.
<code>\abstitleskip</code>	With the <code>runin</code> option a space of length <code>\abstitleskip</code> is typeset before the
	heading. For example, if <code>\absparindent</code> is non-zero, then:
	<code>\setlength{\abstitleskip}{-\absparindent}</code>
	will typeset the heading flush left.
	Without the <code>runin</code> option <code>\abstitleskip</code> is aditional vertical space (either
	positive or negative) that is inserted between the abstract name and the text of
	the abstract.
<code>\appendiargdef</code>	The (internal) command <code>\appendiargdef{\langle macro \rangle}{\langle stuff \rangle}</code> will append
	$\langle stuff \rangle$ at the end of the current definition of $\langle macro \rangle$, where $\langle macro \rangle$ is the name
	of a macro (including the backslash) which takes a single argument. For example
	the following are two equivalent definitions of <code>\mymacro</code> :
	<pre>\newcommand{\mymacro}[1]{#1 is an artist} \appendiargdef{\mymacro}{ in spite of being colour blind} % or \newcommand{\mymacro}[1]{#1 is an artist in spite of being colour blind}</pre>

3 The package code

To try and avoid name clashes, all the internal commands include the string `@bs`.

3.1 Preliminaries

Announce the name and version of the package, which requires L^AT_EX 2_ε.

```
1 \*usc
2 \NeedsTeXFormat{LaTeX2e}
3 \ProvidesPackage{abstract}[2001/02/11 v1.1 configurable abstracts]
4
```

The following `\if...` commands are for implementing various options.

```

\if@bsonecol
\ifadd@bstotoc 5 \newif\if@bsonecol
\ifnumber@bs 6 \@bsonecoltrue
\if@bsrunin 7 \newif\ifadd@bstotoc
8 \add@bstotocfalse
9 \newif\ifnumber@bs
10 \number@bsfalse
11 \newif\if@bsrunin
12 \@bsruninfalse
13

```

Now declare and process the options.

```

14 \DeclareOption{original}{\@bsonecolfalse}
15 \DeclareOption{addtotoc}{\add@bstotoctrue}
16 \DeclareOption{number}{\number@bstrue}
17 \DeclareOption{runin}{\@bsrunintrue}
18 \ProcessOptions\relax

```

Make sure that the number option is disabled if runin is used (otherwise the addtotoc option may not work as expected).

```

19 \if@bsrunin\number@bsfalse\fi
20

```

3.2 Abstracts

The original definition of the `abstract` environment given in `ltclasses.dtx` is:

```

\if@titlepage
\renewenvironment{abstract}{%
\titlepage
\null\vfil
\@beginparpenalty\@lowpenalty
\begin{center}%
\bfseries \abstractname
\endparpenalty\@M
\end{center}}%
{\par\vfil\null\endtitlepage}
\else
\renewenvironment{abstract}{%
\if@twocolumn
\section*{\abstractname}%
\else
\small
\begin{center}%
{\bfseries \abstractname\vspace{-.5em}\vspace{\z@}}%
\end{center}%
\quotation
\fi}
{\if@twocolumn\else\endquotation\fi}
\fi

```

The next set of macros comprise the `abstract` package reimplementa-
tion of the `abstract` environment.

<code>\abstractnamefont</code> <code>\abstracttextfont</code>	<p>These two macros are for specifying the fonts for typesetting the abstract's title and text. They are initialised for the default case (i.e., no class options).</p> <pre> 21 \newcommand{\abstractnamefont}{\normalfont\small\bfseries} 22 \newcommand{\abstracttextfont}{\normalfont\small} 23 </pre>
<code>\absnamepos</code> <code>\abstitlekip</code>	<p><code>\absnamepos</code> specifies the environment in which the abstract's title name will be typeset, and the length <code>\abstitlekip</code> is an adjustment to the vertical space between the title and the abstract's text. These are initialised for the default case.</p> <pre> 24 \newcommand{\absnamepos}{center} 25 \newlength{\abstitlekip} \setlength{\abstitlekip}{-0.5em} </pre>
<code>\absleftindent</code> <code>\absrightindent</code> <code>\absparindent</code> <code>\absparsep</code>	<p>The abstract's text is typeset as a single item list, called <code>@bstr@ctlist</code>. These lengths set the left and right margin indents, the paragraph indentation, and the inter-paragraph vertical space. Their initial values are all class option-dependent.</p> <pre> 26 \newlength{\absleftindent} 27 \newlength{\absrightindent} 28 \newlength{\absparindent} 29 \newlength{\absparsep} 30 </pre>
<code>\abslabeldelim</code> <code>\@bslabeldelim</code>	<p>The contents of <code>\abslabeldelim</code> are typeset after a run-in heading.</p> <pre> 31 \newcommand{\abslabeldelim}[1]{\def\@bslabeldelim{#1}} 32 \abslabeldelim{} </pre>
<code>\@bsrunintitle</code>	<p>This macro typeset the run-in heading.</p> <pre> 33 \newcommand{\@bsrunintitle}{% 34 \hspace*{\abstitlekip}{\abstractnamefont\abstractname\@bslabeldelim}} 35 </pre>

Now set all the class option-dependent values.

```

36 \if@titlepage
Values for the titlepage class option. Note that this option takes precedence over
any other option.
37   \setlength{\absleftindent}{\z@}
38   \renewcommand{\abstractnamefont}{\normalfont\bfseries}
39   \renewcommand{\abstracttextfont}{\normalfont}
40   \setlength{\abstitlekip}{0em}
41 \else
42   \if@twocolumn

```

Values for the twocolumn class option.

```

43   \if@bsonecol
44     \setlength{\absleftindent}{\leftmargin}
45   \else
46     \setlength{\absleftindent}{\z@}
47     \renewcommand{\abstractnamefont}{\normalfont\Large\bfseries}
48     \renewcommand{\abstracttextfont}{\normalfont}
49     \renewcommand{\absnamepos}{flushleft}
50     \setlength{\abstitlekip}{0em}
51   \fi
52 \else

```

Values for the default, if not already initialised.

```

53   \setlength{\absleftindent}{\leftmargin}
54 \fi
55 \fi

```

Finally, values that apply for all cases.

```

56 \setlength{\absrightindent}{\absleftindent}
57 \AtBeginDocument{\setlength{\absparindent}{\parindent}
58                  \setlength{\absparsep}{\parskip}}
59

```

@bstr@ctlist The abstract's text is typeset within the **@bstr@ctlist** list environment.

```

60 \newenvironment{@bstr@ctlist}{%
61   \list{}{%
62     %%\topsep      \z@
63     \partopsep    \z@
64     \listparindent \absparindent
65     \itemindent   \listparindent
66     \leftmargin   \absleftindent
67     \rightmargin  \absrightindent
68     \parsep       \absparsep}%
69 \item\relax}
70 {\endlist}
71

```

\put@bsintoc This macro adds the abstract's title to the ToC. It does nothing if the abstract is being numbered.

```

72 \newcommand{\put@bsintoc}{%
73   \ifadd@bstotoc
74   \ifnumber@bs\else
75     \@ifundefined{chapter}{\addcontentsline{toc}{section}{\abstractname}}{%
76                               \addcontentsline{toc}{chapter}{\abstractname}}
77   \fi
78 \fi}
79

```

\num@bs This macro generates a numbered abstract heading.

```

80 \newcommand{\num@bs}{%

```

```

81 \ifundefined{chapter}{\section{\abstractname}}{%
82 \chapter{\abstractname}}
83 }
84

```

abstract At last we are in position to redefine the **abstract** environment. This follows very much along the lines of the original definition, but with macros inserted at strategic points.

```
85 \if@titlepage
```

For the titlepage option.

```

86 \renewenvironment{abstract}{%
87 \titlepage
88 \null\vfil
89 \@beginparpenalty\@lowpenalty
90 \if@bsrunin\else

```

If the **runin** option is not used: number the title, if called for, otherwise typeset the title in the specified (via **\absnamepos**) environment and adjust the following vertical spacing.

```

91 \ifnumber@bs \num@bs \else
92 \begin{\absnamepos}%
93 \abstractnamefont \abstractname
94 \@endparpenalty\@M
95 \end\absnamepos%
96 \vspace{\abstitlekip}%
97 \fi
98 \fi

```

Try adding the title to the ToC, then start the environment for typesetting the text. If the **runin** option is used, typeset the heading at the start of the environment.

```

99 \put@bsintoc%
100 \begin{@bstr@ctlist}\if@bsrunin\@bsrunintitle\fi\abstracttextfont}%

```

Finish the **abstract** environment.

```

101 {\par\end{@bstr@ctlist}}\vfil\null\endtitlepage}
102 \else

```

The **twocolumn** option and the default case. These use the same code as any style differences are embedded in the new macros.

```

103 \renewenvironment{abstract}{%
104 \if@bsrunin\else
105 \ifnumber@bs \num@bs \else
106 \begin{\absnamepos}\abstractnamefont\abstractname\end\absnamepos%
107 \vspace{\abstitlekip}%
108 \fi
109 \fi
110 \put@bsintoc%
111 \begin{@bstr@ctlist}\if@bsrunin\@bsrunintitle\fi\abstracttextfont}%
112 {\par\end{@bstr@ctlist}}
113 \fi
114

```


`onocolabstract` An environment for typesetting a single column abstract, particularly as the optional argument to the `\twocolumn` command.

```
115 \newenvironment{onocolabstract}{%
116   \begin{@twocolumnfalse}\begin{abstract}}{%
117   \end{abstract}\end{@twocolumnfalse}}
118
```

`\appendiargdef` `\appendiargdef{\macro}{Additional stuff}` will add `Additional stuff` at the end of the definition of `\macro`, where `\macro` is a macro that has one argument.³

```
119 \providecommand{\appendiargdef}[2]{\begingroup
120   \toks@ \expandafter{#1{##1}#2}%
121   \edef\@bsx{\endgroup \def\noexpand#1####1{\the\toks@}}%
122   \@bsx}
123
```

`\thanks` We have to keep the contents of the `\thanks` commands as normally these are emptied by the `\maketitle` command. I do this by extending the definition of the `\thanks` (from `ltsect.dtx`) command, so that `\@bs@thanks` has a copy of the contents of `\@thanks`.

```
124 \appendiargdef{\thanks}{%
125   \protected@xdef\@bs@thanks{\@bs@thanks
126     \protect\footnotetext[\the\c@footnote]{#1}}%
127 }
128 \let\@bs@thanks\@empty
129
```

`\saythanks` This macro typesets any `\thanks` commands *after* using `onocolabstract`.

```
130 \newcommand{\saythanks}{\begingroup
131   \renewcommand{\thefootnote}{\fnsymbol{footnote}}\@bs@thanks
132   \endgroup\global\let\@bs@thanks\@empty}
133
```

The end of this package.

```
134 \</usc>
```

References

[GMS94] Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The LaTeX Companion*. Addison-Wesley Publishing Company, 1994.

³Code suggestions for this were made by Michael Downes (epsmjd@ams.org) and Heiko Oberdiek (oberdiek@ruf.uni-freiburg.de) on `ctt`.

Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in *roman* refer to the code lines where the entry is used.

Symbols	<code>\abstracttextfont</code> 3, <u>21</u> , 39, 48, 100, 111	<code>\listparindent</code> .. 64, 65
<code>\@beginparpenalty</code> . 89	<code>\add@bstotocfalse</code> .. 8	N
<code>\@bs@thanks</code> <u>124</u> , 131, 132	<code>\add@bstotoctrue</code> .. 15	<code>\newif</code> 5, 7, 9, 11
<code>\@bslabeldelim</code> .. <u>31</u> , 34	<code>\addcontentsline</code> 75, 76	<code>\noexpand</code> 121
<code>\@bsonecolfalse</code> ... 14	<code>\appendiargdef</code>	<code>\normalfont</code> 21,
<code>\@bsonecoltrue</code> 6 4, <u>119</u> , 124	22, 38, 39, 47, 48
<code>\@bsrunifalse</code> 12	<code>\AtBeginDocument</code> .. 57	<code>\num@bs</code> <u>80</u> , 91, 105
<code>\@bsrunintitle</code>	C	<code>\number@bsfalse</code> . 10, 19
..... <u>33</u> , 100, 111	<code>\c@footnote</code> 126	<code>\number@bstrue</code> 16
<code>\@bsrunintrue</code> 17	<code>\chapter</code> 82	O
<code>@bstr@ctlist</code> (environ- ment) <u>60</u>	E	<code>onocolabstract</code> (envi- ronment) . 3, <u>115</u>
<code>\@bsx</code> 121, 122	<code>\edef</code> 121	P
<code>\@endparpenalty</code> ... 94	<code>\endtitlepage</code> 101	<code>\parindent</code> 57
<code>\@ifundefined</code> ... 75, 81	environments:	<code>\parsep</code> 68
<code>\@lowpenalty</code> 89	<code>@bstr@ctlist</code> ... <u>60</u>	<code>\parskip</code> 58
A	<code>abstract</code> <u>85</u>	<code>\partopsep</code> 63
<code>\abslabeldelim</code> ... 3, <u>31</u>	<code>onocolabstract</code> 3, <u>115</u>	<code>\protected@xdef</code> ... 125
<code>\absleftindent</code>	F	<code>\providecommand</code> ... 119
.... 3, <u>26</u> , 37,	<code>\fnsymbol</code> 131	<code>\ProvidesPackage</code> ... 3
44, 46, 53, 56, 66	<code>\footnotetext</code> 126	<code>\put@bsintoc</code> <u>72</u> , 99, 110
<code>\absnamepos</code> 4,	I	R
<u>24</u> , 49, 92, 95, 106	<code>\if@bsonecol</code> <u>5</u> , 43	<code>\renewenvironment</code> .
<code>\absparindent</code>	<code>\if@bsrunin</code> <u>5</u> , 86, 103
..... 3, <u>26</u> , 57, 64	19, 90, 100, 104, 111	S
<code>\absparsep</code> 3, <u>26</u> , 58, 68	<code>\if@titlepage</code> ... 36, 85	<code>\saythanks</code> 3, <u>130</u>
<code>\absrightindent</code> ...	<code>\if@twocolumn</code> 42	<code>\section</code> 81
..... 3, <u>26</u> , 56, 67	<code>\ifadd@bstotoc</code> ... <u>5</u> , 73	<code>\small</code> 21, 22
<code>\abstitlekip</code> 4, <u>24</u> ,	<code>\ifnumber@bs</code> <u>5</u> , 74, 91, 105	T
34, 40, 50, 96, 107	<code>\item</code> 69	<code>\thanks</code> <u>124</u>
<code>abstract</code> (environ- ment) <u>85</u>	<code>\itemindent</code> 65	<code>\thefootnote</code> 131
<code>\abstractname</code> 34, 75,	L	<code>\titlepage</code> 87
76, 81, 82, 93, 106	<code>\Large</code> 47	<code>\toks@</code> 120, 121
<code>\abstractnamefont</code> .	<code>\leftmargin</code> .. 44, 53, 66	<code>\topsep</code> 62
..... 3, <u>21</u> ,		
34, 38, 47, 93, 106		