The abstract package

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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.

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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 \LaTeX\ docstrip utility which enables the automatic extraction of the \LaTeX\ 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 v1.2a, last revised 2009/06/08.
2 The abstract package

The typeset format of the abstract in a report or article 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.

- **style**. You specify the style for the title.\footnote{This option was suggested by Will Robertson.} The addtotoc option does not apply if you use the style option.

- **runin**. The abstract title is typeset as a run-in\footnote{This option was suggested by R. Chandrasekhar (chandra@ee.uwa.edu.au).} heading. Note that the number and style options are ignored if the runin option is used, and the number and addtotoc options are ignored if the style option is given.

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.

\footnotesize
\begin{itemize}
\item \footnotesize The abstract environment is not available for the book class.
\item \footnotesize This option was suggested by Will Robertson.
\item \footnotesize This option was suggested by R. Chandrasekhar (chandra@ee.uwa.edu.au).
\end{itemize}
2.2 Commands and environments

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

\begin{verbatim}
\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
...
\end{verbatim}

With the \texttt{abstract} package, instead you do:

\begin{verbatim}
\documentclass[twocolumn...]{...}
\usepackage{abstract}
...
\twocolumn[
  \begin{onecolabstract}
    abstract text...
  \end{onecolabstract}
]
\saythanks % typesets any \thanks commands
...
\end{verbatim}

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

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

\begin{verbatim}
\newcommand{\abstractnamefont}{\normalfont\small\bfseries}
\newcommand{\abstracttextfont}{\normalfont\small}
\end{verbatim}
When the style option is used the title is set as 
\abstitlestyle{\abstractname}\ where the default definition is simply
\newcommand{\abstitlestyle}{\text{#1}}

It is up to you to redefine \abstitlestyle to give any effects you want (e.g., if you want the title added to the ToC you have to include the necessary code as part of your redefinition).

The amended version of \abstract uses a list environment for typesetting the text. These four lengths can be changed (via \setlength) to adjust the left and right margins, the paragraph indentation, and the vertical skip between paragraphs in this environment. The default values depend on the document class options in effect.

If the runin 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 \abslabeldelim{(text)} is typeset immediately after the heading. By default it is defined to do nothing, but if you wanted, for example, the \abstractname to be followed by a colon and some extra space you could specify \abslabeldelim{:\quad}.

If the runin option is not used then the heading is typeset in its own environment. \absnamepos specifies the name of the environment in which the abstract name is typeset. It can be redefined to be one of flushleft, center, or flushright to give a left, centered or right aligned heading; or to any other appropriate environment which is supported by the document class or used packages.

With the runin option a space of length \abstitleskip is typeset before the heading. For example, if \absparindent is non-zero, then:
\setlength{\abstitleskip}{-\absparindent}
will typeset the heading flush left.

Without the runin option \abstitleskip is additional vertical space (either positive or negative) that is inserted between the abstract name and the text of the abstract.

The (internal) command \appendiargdef{\langle macro\rangle}{\langle stuff\rangle} 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 \mymacro:

\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}

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 \LaTeX\ 2e.

\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{abstract}[2009/06/08 v1.2a configurable abstracts]

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

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

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 \DeclareOption{style}{\@bsstyletrue}
19 \ProcessOptions\relax

Disable the number and addtotoc option if style is specified. Make sure that the number option is disabled if runin is used (otherwise the addtotoc option may not work as expected) and also disable the style option.
20 \if@bsstyle\number@bsfalse\add@bstotocfalse\fi
21 \if@bsrunin\number@bsfalse\@bsstylefalse\fi

3.2 Abstracts

The original definition of the abstract environment given in \textit{ltclasses.dtx} is:

\if@titlepage
\renewenvironment{abstract}{%
  \titlepage
  \null\vfil
  \@beginparpenalty@lowpenalty
  \begin{center}%
  \textbf{abstractname}
  \@endparpenalty@M
  \end{center}
}{%
  \par\vfil\null\endtitlepage}
else
\renewenvironment{abstract}{%

The next set of macros comprise the abstract package reimplementation of the abstract environment.

\abstractnamefont 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).
\abstracttextfont
22 \newcommand{\abstractnamefont}{\normalfont\small\bfseries}
23 \newcommand{\abstracttextfont}{\normalfont\small}

\absnamepos \abstitleskip specifies the environment in which the abstract’s title name will be typeset, and the length \abstitleskip is an adjustment to the vertical space between the title and the abstract’s text. These are initialised for the default case.
24 \newcommand{\absnamepos}{center}
25 \newlength{\abstitleskip} \setlength{\abstitleskip}{-0.5em}

\absleftindent \absrightindent \absparindent \absparsep The abstract’s text is typeset as a single item list, called @bstr@ctlist. 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.
26 \newlength{\absleftindent}
27 \newlength{\absrightindent}
28 \newlength{\absparindent}
29 \newlength{\absparsep}

\abslabeldelim \@bslabeldelim The contents of \abslabeldelim are typeset after a run-in heading.
30 \newcommand{\abslabeldelim}[1]{\def\@bslabeldelim{#1}}
31 \abslabeldelim{}

\@bsrunintitle This macro typeset the run-in heading.
32 \newcommand{\@bsrunintitle}{%
33 \hspace{\abstitleskip}{\abstractnamefont\abstractname\@bslabeldelim}}

Now set all the class option-dependent values.
34 \if@titlepage
Values for the titlepage class option. Note that this option takes precedence over any other option.

\setlength{\absleftindent}{\z@}
\renewcommand{\abstractnamefont}{\normalfont\bfseries}
\renewcommand{\abstracttextfont}{\normalfont}
\setlength{\abstitleskip}{0em}
\else
\if@twocolumn
Values for the twocolumn class option.
\if@bsonecol
\setlength{\absleftindent}{\leftmargin}
\else
\setlength{\absleftindent}{\z@}
\renewcommand{\abstractnamefont}{\normalfont\Large\bfseries}
\renewcommand{\abstracttextfont}{\normalfont}
\renewcommand{\absnamepos}{flushleft}
\setlength{\abstitleskip}{0em}
\fi
\else
\Values for the default, if not already initialised.
\setlength{\absleftindent}{\leftmargin}
\fi
\fi
Finally, values that apply for all cases.
\setlength{\absrightindent}{\absleftindent}
\AtBeginDocument{\setlength{\absparindent}{\parindent}
\setlength{\absparsep}{\parskip}}
\put@bsintoc
This macro adds the abstract’s title to the ToC. It does nothing if the abstract is being numbered.
\newcommand{\put@bsintoc}{%
\ifadd@bstotoc
\ifnumber@bs
\else
\@ifundefined{chapter}{\addcontentsline{toc}{section}{\abstractname}}{%
\@ifundefined{chapter}{\addcontentsline{toc}{section}{\abstractname}}{%
\endlist
\item[\relax]
\endlist

\end{document}
\addcontentsline{toc}{chapter}{\abstractname}

\fi
\fi}

\num@bs This macro generates a numbered abstract heading.
\newcommand{\num@bs}{% 
  \@ifundefined{chapter}{\section{\abstractname}}{% 
    \chapter{\abstractname}}
}}

\abstitlestyle When the \texttt{style} option is called this macro is called to typeset the abstract heading; it should be redefined by the user to suit.
\newcommand*{\abstitlestyle}{}[#1]{#1}

\abstract At last we are in position to redefine the \texttt{abstract} environment. This follows very much along the lines of the original definition, but with macros inserted at strategic points.
\if@titlepage
For the \texttt{titlepage} option.
\renewenvironment{abstract}{% 
  \titlepage
  \null\vfil
  \@beginparpenalty\@lowpenalty
  \if@bsrunin
  \else
  \begin{absnamepos}
  \abstractnamefont \abstractname
  \@endparpenalty\@M
  \end{absnamepos}\\
  \vspace{\abstitleskip}\\
  \fi
  \fi
\else
  \begin{absnamepos}
  \abstractnamefont \abstractname
  \@endparpenalty\@M
  \end{absnamepos}\\
  \vspace{\abstitleskip}\\
  \fi
\fi

Try adding the title to the ToC, then start the environment for typesetting the text. If the \texttt{runin} option is used, typeset the heading at the start of the environment.
\put@bsintoc% 
\begin{@bstr@ctlist}\if@bsrunin\@bsrunintitle\fi\abstracttextfont}\

8
Finish the abstract environment.

\begin{abstract}
\if@bsrunin
\else
\if@bsstyle
\abstitlestyle\abstractname
\else
\ifnumber@bs
\num@bs
\else
\begin{absnamepos}\abstractnamefont\abstractname\end{absnamepos}%%
\vspace{\abstitleskip}\
\fi
\fi
\vspace{\abstitleskip}\
\put@bsintoc\
\begin{@bstr@ctlist}\if@bsrunin\@bsrunintitle\fi\abstracttextfont
\fi
\end{abstract}
\fi
\else
\renewenvironment{onecolabstract}{{\par}\null}{%}
\begin{@twocolumnfalse}\begin{abstract}

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

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

\begin{onecolabstract}

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 \@os@thanks has a copy of the contents of \thanks.

\begin{onecolabstract}
\protect\def@os@thanks\os@thanks

\begin{onecolabstract}
\protect\def@os@thanks\os@thanks
\end{onecolabstract}
134 \protect\footnotetext[\the\c@footnote]{#1}}
135 \let\@bs@thanks\@empty
\saythanks This macro typesets any \thanks commands after using onecolabstract.
136 \newcommand{\saythanks}{\begingroup
138 \renewcommand{\thefootnote}{\fnsymbol{footnote}}\@bs@thanks
139 \endgroup\global\let\@bs@thanks\@empty}
140 \end{quote}

The end of this package.

References


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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.

<table>
<thead>
<tr>
<th>Symbols</th>
<th>\appendixdef</th>
<th>\addcontentsline</th>
<th>\appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td>\begin{parpenalty}</td>
<td>\absnamepos ... 4,</td>
<td>\addcontentsline</td>
<td>71, 72</td>
</tr>
<tr>
<td>@bs@thanks</td>
<td>\absparindent ...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@bslabeldelim</td>
<td>\absparindent ...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@bsevencolfalse</td>
<td>\abspan {\textit{..}}</td>
<td></td>
<td>4, 55, 61</td>
</tr>
<tr>
<td>@bsevencoltrue</td>
<td>\abstractstyle ...</td>
<td></td>
<td>\AtBeginDocument .. 55</td>
</tr>
<tr>
<td>@bsruninfalse</td>
<td>\absrightindent ...</td>
<td></td>
<td>4, 55, 61</td>
</tr>
<tr>
<td>@bsrunintitle</td>
<td>\absrightindent ...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@bsrunintitle</td>
<td>\abstitleskip ...</td>
<td></td>
<td>4, 48, 50, 61</td>
</tr>
<tr>
<td>@bsevenruntrue</td>
<td>\abstitleskip ...</td>
<td></td>
<td>4, 48, 50, 61</td>
</tr>
<tr>
<td>@bsstylefalse</td>
<td>\abstractstyle ...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@bsstyletrue</td>
<td>\abstractstyle ...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@bstr@ctlist (environment)</td>
<td>\abstractname ...</td>
<td></td>
<td>3, 79, 88, 110</td>
</tr>
<tr>
<td>@abslabeldelim</td>
<td>\abstractname ...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@abslabeldelim</td>
<td>\abstractnamefont ...</td>
<td></td>
<td>3, 22, 33, 36, 45, 94, 115</td>
</tr>
<tr>
<td>@absleftindent</td>
<td>\abstracttextfont ...</td>
<td></td>
<td>\endtitlepage \appendix</td>
</tr>
<tr>
<td>@absleftindent</td>
<td>\abstracttextfont ...</td>
<td></td>
<td>\if@bsonecol .. 4, 41</td>
</tr>
<tr>
<td>@absleftindent</td>
<td>\add@bstotocfalse .. 7, 20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@absleftindent</td>
<td>\add@bstotoctrue .. 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@bsruninfalse</td>
<td>\add@bstotocfalse .. 7, 20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@bsrunintitle</td>
<td>\add@bstotoctrue .. 15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\end{quote}