The active-conf class

Will Robertson

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Abstract This document describes the LaTeX class active-conf, which is intended for use initially to typeset papers that are to be published in the proceedings of the Active 2006 conference, which is to be hosted by the School of Mechanical Engineering, University of Adelaide. Its suitability for subsequent conferences is expected.

Contents

1 About this document

This document contains the usage and implementation of the active-conf class. Users will almost certainly be interested in the former. This PDF contains hyperlinks within it to aid navigation (these are typeset in red), and hyperlinks to internet sites to help find further information (these are typeset in blue).

The source of this document, `active-conf.dtx`, when run through LaTeX, will produce both the PDF documentation (the file you are currently reading) *and* the class file used to typeset your articles.

2 Description and usage

This section describes how to use the class. Please refer to the example document for context.

2.1 *Active 2006 class*

The Active 2006 class, active-conf-2006, is a variation on the active-conf class that incorporates the specific customisation for that year's conference. Future conferences may use the base class with customisation as described below; conversely, 2006 users need not take notice of the first paragraph of the following section.

On confirmation of abstract acceptance, each paper is assigned a number. Input this in the document as follows: (for, say, the 088 paper number)

```
\papernumber{088}
```

2.2 *Document preamble*

`\documentclass` Use this class with standard LaTeX parlance: `\documentclass{active-conf}`. One class option is possible: the name or year of the conference. It is the responsibility of the conference organisers to distribute a file for the conference of their year corresponding to this option. To use an example, if the class option is `[2006]` (*i.e.*, `\documentclass[2006]{active-conf}`) the contents of the file `active-header-2006.tex` will be used to construct a header on the first page of the article.[1]

The document will be set up to use A4 paper with 3 cm margins all 'round. The body text font is 12 pt/15.25 pt Times.[2] The sans serif font is Helvetica[3] and the fixed width font (or typewriter font) is Courier.

The following packages are loaded so that you don't have to: amsmath, amssymb, array, bm, graphicx.[4] Other packages are required for the class but they aren't of particular interest for the purposes of the author; refer to the Implementation (Section 3.2 on page 6) for more information. Extra packages may also be loaded if desired, provided that they do not change the layout or text fonts used in the document.

2.3 *Frontmatter metadata*

`\title` `\author` `\email` `\address` `\note` This class provides added procedures to typeset extra information in the frontmatter of the article. This information must be specified before `\maketitle`. `\title` remains the same, but `\author` is changed and `\email`, `\address`, and `\note` are all completely new.

When typeset, the information is divided into 'address blocks', each of which may contain multiple authors. True to its description, each block holds a single address that is shared by each author contained in that block.

`\maketitle` Once the metadata has been specified, the `\maketitle` command is used to create the title block containing this information. To be illustrative, an example best demonstrates the use of the new frontmatter commands. See Figure 1 on the next page for a typical input and its typeset appearance (albeit with different fonts).

To summarise:

`\title` Specified as usual.

`\author` Separates groups of authors by their respective `\address`.

`\email` Adds a footnote containing the email address of the previous author.

`\address` Creates a block containing authors previously specified.

`\note` Adds a note (used for thanks', etc.) as an unlabelled footnote.[5]

1. If `active-header-2006.tex` didn't exist, an error would occur when processing the document.
2. That is, the nominal text font size is 12 pt, and the distance between each subsequent baseline of paragraph text is 15.25 pt.
3. Scaled to match Times' x-height (*i.e.*, the lowercase letters are the same height in both alphabets)
4. Look for file `amsldoc.pdf` for amsmath & amssymb documentation; file `grfguide.pdf` for graphicx documentation.
5. As many notes as desired may be used; each is typeset on a separate line.

Input:

```
\author{A.\,B.~C------} \email{abc@university}
\author{D.\,E.~F------}
\address{University \\ City, State \\ Country}

\author{G.\,H.~I------} \email{ghi@company}
\address{Company \\ City, State \\ Country}

\note{The authors would like to thank the ABC research grant.}
\maketitle
```

Output:

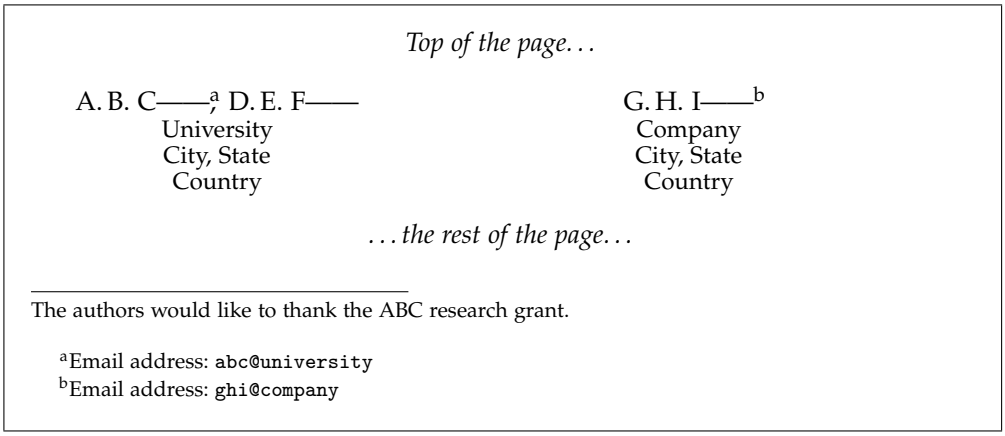

Figure 1: Example of the frontmatter in the active-conf class.

`\showaffiliations` If the command `\showaffiliations` is placed before the author declarations, each author will reference the address to which they are associated. An optional argument to `\author` can be used to customise which addresses are referenced as affiliations; for example `\author[1,3]{A.\,N.~Author}` designates an affiliation for this author with the first and third addresses.

`\pdfkeywords` Finally, optional, comma-separated keywords may be added to the paper with the command in the margin:

```
\pdfkeywords{Active noise control, Virtual microphones}
```

2.4 *Floats: figures and tables*

`figure` `table` Several enhancements have been added to make things easier when using figures and tables. Both are centred on the page, so no explicit commands for doing so are required. Secondly, the default float placement parameter is `[htbp]`,[6] so the optional argument generally won't be required for either figures or tables.

6. That is, floats will be placed at the position of their definition if possible; otherwise they will be placed at the top or bottom of a subsequent text page or on a page consisting of only floats in the last resort.

Input:

```
\begin{table}
  \caption{This is an example of how you should tabulate data.}
  \label{tab:label}
  \begin{tabular}{@{} cccc @{}}
    \hrule
    One & Two & Three & Four \\
    \hrule
    1 & 4 & 7 & 10 \\ 2 & 5 & 8 & 11 \\ 3 & 6 & 9 & 12 \\
    \hrule
  \end{tabular}
\end{table}
```

Output:

Table 1: This is an example of how you should tabulate data.

One	Two	Three	Four
1	4	7	10
2	5	8	11
3	6	9	12

Figure 2: Example of tabular data.

`\caption` The `\caption` command used to label figures and tables is now contextually sensitive to adjust its vertical spacing depending on which float it is being used within. This ensures appropriate spacing for the following rules: captions must be placed *below* figures and *above* tables.

A typical example of the figure environment follows:

```
\begin{figure}
  \includegraphics{figurename}
  \caption{Figure caption.}
  \label{fig:label}
\end{figure}
```

A typeset example of how the table environment should be used is shown in Figure 2. When displaying tabulated data, avoid vertical lines and use horizontal rules only to divide data from its label or to separate multiple sets of data. The more lines used in the table, the more distracting it is from the data being displayed. See the booktabs package documentation for more information on effective table design.

\figref
\tabref
\eqref
\secref

The class defines the following four commands for referring to document elements: `\figref`, `\tabref`, `\eqref`, and `\secref`. They are used in a similar way to the `\ref` command, but print the name of the reference type before the numbered label. For example,

```
\figref{label}   ⟶   Figure~\ref{fig:label}
```

and similarly for the others (respectively, 'Table', 'Equation', and 'Section').

Should you wish to use a more sophisticated referencing package (the author's recommendation is refstyle), these control sequences may need to be undefined before the package is loaded to prevent conflicts. This may done with, *e.g.*, `\let\figref\undefined`, and so on.

\cite

The `\cite` command is redefined to remove any preceding space and replace it with non-breaking space; in other words, its output will never follow a line break. If you desire more advanced behaviour with this command, use the following in your preamble:

```
\usepackage[sort&compress,numbers]{natbib}
\usepackage{hypernat}
```

The hypernat package is not necessarily standard, so you may need to obtain it manually.

3 Implementation

This section contains the commented source code of this package. It is not intended to be useful or interesting to the majority of users of the class.

This class has been written somewhat hastily to produce an easy-to-use LaTeX style file for authors writing articles for the conference Active 2006. As such, it is not up to the standard of a 'professional' class file although it might contain some (not particularly and not many) novel ideas; there are probably be lots of limitations/bugs since it has not been extensively tested. Use at your own risk!

3.1 Option processing

Take one option for the class: the name or year of the conference. The file `YYYY.tex` is then used to construct the titlepage header. We use `\active@option@warn` to give an error if the user tries to use more than one class option. <*!2006>

```
\let\active@option@warn\relax
\DeclareOption*{%
  \active@option@warn
  \def\active@option@warn{%
    \ClassError{active-conf}
      {The only class option possible is the name or year of the conference}
      {\MessageBreak
       This class takes one option: the name or year of the conference.\MessageBreak
       The file active-header-YYYY.tex is then used to create the titlepage header.\MessageBre
  \let\active@option\CurrentOption}
\ProcessOptions
```

</!2006> <*classfile>

3.2 Class and package loading

Base everything off the eponymous article class. Set up the fonts[7], and load a bunch of packages first to set up the document properties and second for the convenience of the user.

```
\LoadClass[12pt]{article}
\renewcommand\rmdefault{ptm}
\renewcommand\ttdefault{pcr}
\RequirePackage[scaled=0.87]{helvet}
\normalfont
\RequirePackage[T1]{fontenc}
\RequirePackage{textcomp}
\RequirePackage{calc,ifthen,url}
\RequirePackage[a4paper,margin=3cm,ignoreall]{geometry}
\RequirePackage{amsmath,amssymb,array,bm,graphicx,hyperref}
\hypersetup{
  colorlinks,
  linkcolor=black,
```

7. Note that we need to call `\normalfont` after selecting the new fonts and before selecting the new encoding in order to ensure that `T1` 'CM' fonts aren't loaded, which can cause an error in some distributions.

```
  anchorcolor=black,
  citecolor=black,
  filecolor=black,
  menucolor=black,
  pagecolor=black,
  urlcolor=black,
  bookmarks,
  pdfstartview=FitH,
  pdfpagelayout=SinglePage
  }
```

Fonts Because we need to be able to have Word users copy us, we need to use fonts that they can use too. Palatino is no good because Windows 2000 users will not have it (and I can't be bothered researching to find out if Book Antiqua or whatever will do the job sufficiently); everyone has Georgia, but that's tricky to get maths going with it and unusual to find in a LaTeX installation. So we're stuck with the age-old and none too pleasant Times. Ah well.

Note that I *have not* taken the liberty of using the Times maths fonts[8] as well, since Computer Modern maths does the job quite nicely (and moreover, contains bold Greek symbols – how can there be no bold maths in the Times maths fonts?).

Finally, get rid of extra space after punctuation (it's old-fashioned) and increase the leading between the lines; we need this due to such long lines with so many characters in each. We also want no page numbers, since numbers will be added after all the papers are collated into the proceedings.

```
\frenchspacing
\linespread{1.0517}
\pagestyle{empty}
\setlength\parindent{1.5em}
```

3.3 *Formatting specification*

\section
\subsection
\subsubsection
\paragraph
\subparagraph

Not too large a font for the titles, make it more unobstrusive. Nobody ever uses \subparagraph, so let's remove it.

```
\setcounter{secnumdepth}{3}
\renewcommand\section{\@startsection{section}{1}{\z@}%
                                    {-\baselineskip}%
                                    {1pt plus 1pt}%
                                    {\sffamily\bfseries\MakeUppercase}}
\renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
                                      {-\baselineskip}%
                                      {1pt plus 1pt}%
                                      {\sffamily\bfseries}}
\renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
                                       {-\baselineskip}%
                                       {1pt plus 1pt}%
                                       {\sffamily\bfseries}}
```

8. Either via the mathptm or mathptmx packages.

```
\renewcommand\paragraph{\@startsection{paragraph}{4}{\z@}%
                                      {\baselineskip}%
                                      {-\baselineskip}%
                                      {\sffamily\bfseries}}
\let\subparagraph\undefined
```

`itemize` `enumerate` Decrease the amount of vertical space between items in the itemize and enumerate environments. Renew the LaTeX-defined ones in order to adjust all necessary bits and pieces.

```
\def\list@spacing{%
  \parsep    4pt
  \itemsep   0pt
  \topsep    6pt
  \partopsep 0pt}
\def\enumerate{%
  \ifnum \@enumdepth > \thr@@\@toodeep\else
    \advance\@enumdepth\@ne
    \edef\@enumctr{enum\romannumeral\the\@enumdepth}%
      \expandafter
      \list
        \csname label\@enumctr\endcsname
        {\usecounter\@enumctr\def\makelabel##1{\hss\llap{##1}}%
         \list@spacing}%
  \fi}
\let\endenumerate\endlist
\def\itemize{%
  \ifnum \@itemdepth > \thr@@\@toodeep\else
    \advance\@itemdepth\@ne
    \edef\@itemitem{labelitem\romannumeral\the\@itemdepth}%
    \expandafter
    \list
      \csname\@itemitem\endcsname
      {\def\makelabel##1{\hss\llap{##1}}%
       \list@spacing}%
  \fi}
\let\enditemize\endlist
```

`itemise` Provide an environment with the correct spelling of 'itemize'.

```
\let\itemise\itemize
\let\enditemise\enditemize
```

`\descriptionlabel` Change the description label to italics instead of bold.

```
\renewcommand*\descriptionlabel[1]{\hspace\labelsep
                                  \normalfont\itshape #1}
```

`abstract` The most important part is removing the indent that exists in article!

```
\def\abstract@error{%
  \ClassError{active-conf}{Not allowed in the abstract.}
    {The abstract must not contain maths, references, or footnotes.}}
\renewenvironment{abstract}
```

```
{\vspace{\baselineskip}\fontsize{10}{11}\selectfont
 {\centering\sffamily\bfseries ABSTRACT\par}
 \setlength\leftskip{\leftskip+1.5cm}%
 \setlength\rightskip{\rightskip+1.5cm}%
 \noindent\ignorespaces}
{\par}
```

\figref
\tabref
\secref

These are hard-coded because I'm lazy and there's no good solution to this problem without telling people to use refstyle. Which is not widely distributed (as it's new) so users would have to install it themselves. Which is bad.

```
\def\eqref#1{Equation~\ref{eq:#1}}
\def\figref#1{Figure~\ref{fig:#1}}
\def\tabref#1{Table~\ref{tab:#1}}
\def\secref#1{Section~\ref{sec:#1}}
```

\fps@figure
\fps@table

Make the default float placement `[htbp]`; users will always do it themselves anyway...

```
\def\fps@figure{htbp}
\def\fps@table{htbp}
```

figure
table

Add `\centering` to the figure and table environments. This requires a trick: `\fps@...` must be expanded, so we can't just pass through `#1`. Instead, put everything, expanding all except the `\@float` command, in a temporary macro, and then use that to produce the float.

```
\renewenvironment{figure}[1][\fps@figure]
                 {\edef\@tempa{\noexpand\@float{figure}[#1]}
                  \@tempa\centering}
                 {\end@float}
\renewenvironment{table}[1][\fps@table]
                 {\edef\@tempa{\noexpand\@float{table}[#1]}
                  \@tempa\centering}
                 {\end@float}
```

With the array package, add more height to the table rows so that horizontal rules don't look ugly. But only if the booktabs package isn't loaded, since it performs similar operations itself.

```
\AtBeginDocument{%
  \@ifpackageloaded{booktabs}{}{\setlength\extrarowheight{2pt}}}
```

```
% Better float parameters: (from the TeX FAQ)
\renewcommand{\topfraction}{.85}
\renewcommand{\bottomfraction}{.7}
\renewcommand{\textfraction}{.15}
\renewcommand{\floatpagefraction}{.66}
\renewcommand{\dbltopfraction}{.66}
\renewcommand{\dblfloatpagefraction}{.66}
\setcounter{topnumber}{9}
\setcounter{bottomnumber}{9}
\setcounter{totalnumber}{20}
\setcounter{dbltopnumber}{9}
```

\@makecaption Adjust the formatting of float captions: smaller font size.

```
\long\def\@makecaption#1#2{%
  \vskip\abovecaptionskip
  \sbox\@tempboxa{\small #1:~#2}%
  \ifdim \wd\@tempboxa > \hsize
    \begingroup
      \setlength\leftskip{\leftskip+1.5cm}%
      \setlength\rightskip{\rightskip+1.5cm}%
      \small #1:~#2\par\endgroup
  \else
    \global\@minipagefalse
    \hb@xt@\hsize{\hfil\box\@tempboxa\hfil}%
  \fi
  \vskip\belowcaptionskip}
```

We wish to describe tables with captions *above* the table. This is not an uncommon style requirement.

We can't simply use LaTeX's `\caption` and put it before a `\begin{tabular}` since the spacing around the caption is defined assuming that it'll be placed below whatever it's describing. So, we use Robin Fairbairn's topcapt package (or rather, a plagiarised verbatim copy of it – v1.1a to be precise) to define a new command `\topcaption` (and an auxiliary macro `\@topcaption`) that has 'opposite' spacing to a regular `\caption` for the purposes of using it with tabular material.

\topcaption Quoth Robin: *`\topcaption` simply advances the caption count, sorts out the arguments and passes on to `\@topcaption`.*

```
\newcommand\topcaption{%
  \refstepcounter\@captype
  \@dblarg{\@topcaption\@captype}}
```

\@topcaption Robin: *`\@topcaption` swaps above and below caption skips and the relays its arguments to `\@caption`.*

```
\def\@topcaption#1[#2]#3{%
  \@tempskipa\abovecaptionskip
  \abovecaptionskip\belowcaptionskip
  \belowcaptionskip\@tempskipa
  \@caption{#1}[{#2}]{#3}%
  \@tempskipa\abovecaptionskip
  \abovecaptionskip\belowcaptionskip
  \belowcaptionskip\@tempskipa}
```

Now we want to use `\topcaption` by default when we're inside a table environment. We can do this by examining the control sequence `\@captype`, which contains the string of the floating environment in which it is called. By wrapping `\caption` in a macro that normally just calls the original `\caption` definition unless `\@captype` contains `table`, in which case `\topcaption` is used, we can make this process transparent to the user.

Of course, the author needs to know in what context to use `\caption`, but that's a problem to be tackled another day.

```
\let\caption@orig\caption
\renewcommand\caption{%
  \let\@tempa\caption@orig
  \def\@tempb{table}%
  \ifx\@captype\@tempb
    \let\@tempa\topcaption
  \fi
  \@tempa}
```

`\appendix` Use this command and all `\section` commands now print appendices.

```
\def\appendix{\par
  \c@section\z@\c@subsection\z@
  \gdef\thesection{Appendix \@Alph\c@section}}
```

3.4 *Frontmatter*

`\maketitle` This is changed somewhat from the default classes. Instead of making `\footnote` create `\thanks`'s, it is defined to gobble its argument and issue a warning. I hope nobody wants a footnote in their frontmatter. They shouldn't.

The reason for doing this is because the mechanism that `\author` and `\email` uses to create email address footnotes is rather fragile because I hacked it together rather quickly and don't take other notes into account when they're counting footnote numbers.

```
\renewcommand\maketitle{%
  \begingroup
    \def\footnote##1{\ClassWarning{active-conf}
      {Footnotes aren't allowed in address text blocks}}
    \def\thefootnote{\@alph\c@footnote}%
    \newpage
    \global\@topnum\z@   % Prevents figures from going at top of page.
    \centering
```

Put the conference details above the title. (Only if `\active@option` has been defined by the one and only class option, obviously. See Section 3.1 on page 6.)

```
⟨!2006⟩     \@ifundefined{active@option}{}
      {\vspace*{-24pt}% hard coded because I'm lazy
       \begin{minipage}{\textwidth}
         \sffamily\small
```

</classfile> <*2006>

```
\vspace*{-2cm}
\centering
\includegraphics{header-logo-2006}
```

</2006> <*!2006>

```
        \IfFileExists{active-header-\active@option.tex}
          {\input active-header-\active@option.tex}
          {\ClassError{active-conf}
             {Titlepage header file active-header-\active@option.tex not found}
```

```
179               {\MessageBreak
180                The file active-header-YYYY.tex is required to produce the titlepage header,\Me
181                where YYYY is the name or year of the conference. \MessageBreak
182                Please contact the conference organisers for further information.
183                \MessageBreak}}
```

</!2006> <*classfile>

```
184         \end{minipage}\vspace{1ex}}
185     \begin{center}
186       \sffamily\bfseries\fontsize{16}{17}\selectfont\@title
187     \end{center}
188     \vspace{-2.5ex}%
```

Notes These are input by the author with `\note`, multiple allowed, and typeset as footnotes without `\footnotemarks`. After the last, put some blank space to separate from the other footnotes and redefine `\note` to gobble its input and produce a warning. Afterwards, redefine footnote formatting to behave as normal.

```
189     \begingroup
190       \long\def\@makefntext##1{\parindent 1em\noindent##1}%
191       \@note
192       \setcounter{footnote}{0}
193       \global\def\note##1{%
194         \ClassWarning{active-conf}
195           {\protect\note\space is only allowed before \protect\maketitle}
196           {Please input all notes before the document begins.}}
197     \endgroup
```

Addresses These are author/address blocks inside the `\address@list` macro that at present exist inside boxes all of equal width.

First, it is necessary to ensure that any footnote marks for referring to the email address of an author doesn't increase the vertical height of the box for that address block, since then the baselines of adjacent blocks will no longer be aligned.

The boxes that contain the address blocks are typset with infinite stretchable space[9] on either side of each line (the `\leftskip` and the `\rightskip`). There is more infinite stretchable space in between each address block (see the end of the definition of `\address`), which serves to equispace each block horizontally.

```
198     \def\@makefnmark{\smash{\textsuperscript{\@thefnmark}}}
199     {\parindent\z@
200      \leftskip\@flushglue
201      \rightskip\@flushglue
202      \parfillskip\z@
203      \address@list\par}
204     \after@maketitle
205   \endgroup
206   \hypersetup{pdfauthor={\pdf@authors},pdftitle={\@title}}}
```

9. `\@flushglue` defined by LaTeX as `0pt plus 1fil`

```
\let\after@maketitle\@empty
```

\pdfkeywords

```
\newcommand\pdfkeywords[1]{\hypersetup{pdfkeywords={#1}}}
```

\papernumber <*2006>

```
\newcommand\papernumber[1]{%
  \hypersetup{pdfsubject={a06\_#1.pdf}}%
  \AtEndDocument{%
    \typeout{ ^^J
              ************************************************^^J
              ************************************************^^J
              **^^J
              ** Please submit your manuscript as "a06_#1.pdf"^^J
              **^^J
              ************************************************^^J
              ************************************************}}}
```

</2006>

\note This command is used to typeset notes about the article at the footer of the opening page. Intended to be used for thanks, acknowledgements, and various miscellany about the article or authors that doesn't fit anywhere else.

```
\def\note#1{\g@addto@macro\@note{\footnotetext[0]{#1}}}
\let\@note\@empty
\let\thanks\note
```

\author@init \author@list \author

\author@init is the top-level macro that creates a 'fresh' definition of \author and initialises the \author@list macro. \author simply populates \author@list with a list of authors, separated by the macro \author@sep. The definition is set up to redefine itself the first time it is called so that \author@sep is only inserted *after* this first time.

\author@list is used as the first line in every address block, so once \address is called, \author@init is called again for the next list of authors that happen to work at a different address.

```
\def\author@init{%
  \def\@@author##1{%
    \g@addto@macro\author@list{##1}%
    \def\@@author####1{\g@addto@macro\author@list{\author@sep ####1}}}%
  \let\author@list\@empty}
\author@init
\renewcommand\author[2][\c@affiliation]{%
  \ifx\pdf@authors\@empty\else
    \g@addto@macro\pdf@authors{, }%
  \fi
  \g@addto@macro\pdf@authors{#2}%
  \g@addto@macro\author@list{\mbox\bgroup}%
  \@@author{#2}%
  \if@showaff
    \@for\@@index :=#1\do{%
```

```
      \expandafter\g@addto@macro
      \expandafter\author@list
      \expandafter{%
      \expandafter\place@affiliation
      \expandafter{%
                  \@@index}}%
    }
  \fi
  \g@addto@macro\author@list{\egroup}}
\newcommand\place@affiliation[1]{\kern1pt\textsuperscript{\@fnsymbol#1}}
\let\pdf@authors\@empty
```

`\email` This macro is intended to be used immediately after an `\author` declaration, and it simply appends a footnote to the current author detailing their email address. Because we aren't evaluating these things until the end, we regrettably need to spend some effect to replicate the effect that `\footnotemark` has on `\c@footnote`. This could almost certainly be more elegant.

```
\def\email#1{%
  \g@addto@macro\author@list{\kern1pt\footnotemark}%
  \g@addto@macro\after@maketitle{%
    \stepcounter{footnote}%
    \footnotetext[\the\c@footnote]{Email address: \url{#1}}}}
\g@addto@macro\after@maketitle{\setcounter{footnote}{0}}
```

`\address@list` This is the macro used to hold all of the address blocks. Some of its contents is *unexpanded* until `\maketitle`, notably the width of the minipages used to typeset the blocks.

```
\let\address@list\@empty
```

`\@@authorhook` `\@@addresshook` And these are the macros used to format the text in the address blocks. Its default definition is to typeset everything in sans serif and the address in a small font, but you can do more complex things with it if you wish; it's enclosed in a group so don't worry about having to confine state. Unfortunately, it's *not* set up to take an argument, state-changing arguments must be used (*e.g.*, `\sffamily`, `\itshape`, `\small`).

```
\providecommand\@@authorhook{\sffamily}
\providecommand\@@addresshook{\sffamily\fontsize{10}{11}\selectfont}
```

`\address` This macro is used after any number of `\author` declarations. It takes the list of authors and typesets them in a box above the specified address. Everything is measured and later put into boxes of equal width so that spacing with several address blocks looks okay.

The trick is to use one of TEX's vertical boxes, and populate it with restricted-mode horizontal boxes—this makes the `\vbox` behave "as expected" and stretch to exactly the width it requires to typeset everything. The downside to this method is that restricted-mode `\hbox`'s are required. What does this mean? 'Normal' things like paragraph breaks and literal newlines aren't allowed, since we're typesetting in one long horizontal box.

Obviously, people will want to write multi-line addresses, so we can get around the horiz. box problem by defining \\ to end the current \hbox and start another. The following verbatim sketches the idea...

```
\address{abc \\ def \\ ghi} => \vbox{ ... \hbox{abc \\ def \\ ghi} }
                          \\ => }\hbox{
   \hbox{abc \\ def \\ ghi} => \hbox{abc }\hbox{ def }\hbox{ ghi}
```

This leaves out the details, like absorbing the leading space we don't want, and re-applying the address-block formatting hook. Finally, at the end of the address, we need to initialise the various author macros so that a fresh lot of authors can be defined for their own subsequent address block.

```
\def\address#1{%
  \begingroup
    \let\footnotemark\relax
    \def\\{\egroup\hbox\bgroup\@@addresshook\ignorespaces}
    \sbox\tempbox{%
      \vbox{%
        \hbox{\strut\@@authorhook\author@list}
        \hbox{\@@addresshook #1}}}
    \settowidth\templength{\usebox\tempbox}
    \ifthenelse{\lengthtest{\templength>0.49\linewidth}}{\global\boxwidth\linewidth}{%
      \ifthenelse{\lengthtest{\templength>\boxwidth}}{\global\boxwidth\templength}{}}%
    \expandafter\make@address@box\expandafter{\author@list}{#1}
  \endgroup
  \author@init}
\newlength\boxwidth
\newlength\templength
\newbox\tempbox
```

\make@address@box This macro is broken out for easy of supplying an expanded \author@list to the middle of a \g@addto@macro declaration. Note well that \boxwidth isn't evaluated until \address@list is expanded in \maketitle.

```
\newcommand\make@address@box[2]{%
  \g@addto@macro\address@list{%
    \begin{minipage}[t]{\boxwidth+10pt}%
      \vspace*{\medskipamount}%
      \centering
      {\@@authorhook#1\par\vspace{3pt}}
      {\linespread{0.9}%
       \@@addresshook
       \if@showaff
         \makebox[0pt][r]{\textsuperscript{\@fnsymbol\c@affiliation}}%
       \fi
       \ignorespaces#2\par}
    \end{minipage}%
    \stepcounter{affiliation}%
    \hskip\@flushglue}}

\newcounter{affiliation}
```

```
\stepcounter{affiliation}
\g@addto@macro\after@maketitle{\setcounter{affiliation}{1}}
\newif\if@showaff
\newcommand\showaffiliations{\@showafftrue}
```

Don't look at the following definition! Yuck!

```
\def\author@sep{,~\,}
```

3.5 Maths and misc.

`\unit` `\num` The `\unit` and `\num` commands are defined for typesetting units and numbers with units, respectively. In the latter case, a thin space is used between the number and its unit, which is good typographical practise.

```
\newcommand\unit[1]{\ensuremath{\mathrm{#1}}}
\newcommand\num[2]{\ensuremath{\text{#1}\,\mathrm{#2}}}
```

`\cite` Removes preceding space and replaces it with a non-breaking space.

```
\AtBeginDocument{%
  \let\cite@orig\cite
  \def\cite{\ifnum\lastskip>0\relax\unskip~\fi\cite@orig}}
```

The following is taken from my very own fontspec package, and is used to change `\mathrm` to Times Roman without destroying those aspects of default Computer Modern maths that assume that `\rmdefault` is `cmr`.

```
\DeclareSymbolFont{legacymaths}{OT1}{cmr}{m}{n}
\SetSymbolFont{legacymaths}{bold}{OT1}{cmr}{bx}{n}
\DeclareMathAccent{\acute}   {\mathalpha}{legacymaths}{19}
\DeclareMathAccent{\grave}   {\mathalpha}{legacymaths}{18}
\DeclareMathAccent{\ddot}    {\mathalpha}{legacymaths}{127}
\DeclareMathAccent{\tilde}   {\mathalpha}{legacymaths}{126}
\DeclareMathAccent{\bar}     {\mathalpha}{legacymaths}{22}
\DeclareMathAccent{\breve}   {\mathalpha}{legacymaths}{21}
\DeclareMathAccent{\check}   {\mathalpha}{legacymaths}{20}
\DeclareMathAccent{\hat}     {\mathalpha}{legacymaths}{94}
\DeclareMathAccent{\dot}     {\mathalpha}{legacymaths}{95}
\DeclareMathAccent{\mathring}{\mathalpha}{legacymaths}{23}
\DeclareMathSymbol{!}{\mathclose}{legacymaths}{33}
\DeclareMathSymbol{:}{\mathrel}  {legacymaths}{58}
\DeclareMathSymbol{;}{\mathpunct}{legacymaths}{59}
\DeclareMathSymbol{?}{\mathclose}{legacymaths}{63}
\DeclareMathSymbol{0}{\mathalpha}{legacymaths}{`0}
\DeclareMathSymbol{1}{\mathalpha}{legacymaths}{`1}
\DeclareMathSymbol{2}{\mathalpha}{legacymaths}{`2}
\DeclareMathSymbol{3}{\mathalpha}{legacymaths}{`3}
\DeclareMathSymbol{4}{\mathalpha}{legacymaths}{`4}
\DeclareMathSymbol{5}{\mathalpha}{legacymaths}{`5}
\DeclareMathSymbol{6}{\mathalpha}{legacymaths}{`6}
\DeclareMathSymbol{7}{\mathalpha}{legacymaths}{`7}
\DeclareMathSymbol{8}{\mathalpha}{legacymaths}{`8}
\DeclareMathSymbol{9}{\mathalpha}{legacymaths}{`9}
```

```
\DeclareMathSymbol{\Gamma}{\mathalpha}{legacymaths}{0}
\DeclareMathSymbol{\Delta}{\mathalpha}{legacymaths}{1}
\DeclareMathSymbol{\Theta}{\mathalpha}{legacymaths}{2}
\DeclareMathSymbol{\Lambda}{\mathalpha}{legacymaths}{3}
\DeclareMathSymbol{\Xi}{\mathalpha}{legacymaths}{4}
\DeclareMathSymbol{\Pi}{\mathalpha}{legacymaths}{5}
\DeclareMathSymbol{\Sigma}{\mathalpha}{legacymaths}{6}
\DeclareMathSymbol{\Upsilon}{\mathalpha}{legacymaths}{7}
\DeclareMathSymbol{\Phi}{\mathalpha}{legacymaths}{8}
\DeclareMathSymbol{\Psi}{\mathalpha}{legacymaths}{9}
\DeclareMathSymbol{\Omega}{\mathalpha}{legacymaths}{10}
\DeclareMathSymbol{+}{\mathbin}{legacymaths}{43}
\DeclareMathSymbol{=}{\mathrel}{legacymaths}{61}
\DeclareMathDelimiter{(}{\mathopen} {legacymaths}{40}{largesymbols}{0}
\DeclareMathDelimiter{)}{\mathclose}{legacymaths}{41}{largesymbols}{1}
\DeclareMathDelimiter{[}{\mathopen} {legacymaths}{91}{largesymbols}{2}
\DeclareMathDelimiter{]}{\mathclose}{legacymaths}{93}{largesymbols}{3}
\DeclareMathDelimiter{/}{\mathord}{legacymaths}{47}{largesymbols}{14}
\DeclareMathSymbol{\mathdollar}{\mathord}{legacymaths}{36}
\DeclareSymbolFont{operators}\encodingdefault\rmdefault\mddefault\updefault
\SetSymbolFont{operators}{normal}\encodingdefault\rmdefault\mddefault\updefault
\SetMathAlphabet\mathrm{normal}\encodingdefault\rmdefault\mddefault\updefault
\SetMathAlphabet\mathit{normal}\encodingdefault\rmdefault\mddefault\itdefault
\SetMathAlphabet\mathbf{normal}\encodingdefault\rmdefault\bfdefault\updefault
\SetMathAlphabet\mathsf{normal}\encodingdefault\sfdefault\mddefault\updefault
\SetMathAlphabet\mathtt{normal}\encodingdefault\ttdefault\mddefault\updefault
\SetSymbolFont{operators}{bold}\encodingdefault\rmdefault\bfdefault\updefault
\SetMathAlphabet\mathrm{bold}\encodingdefault\rmdefault\bfdefault\updefault
\SetMathAlphabet\mathit{bold}\encodingdefault\rmdefault\bfdefault\itdefault
\SetMathAlphabet\mathsf{bold}\encodingdefault\sfdefault\bfdefault\updefault
\SetMathAlphabet\mathtt{bold}\encodingdefault\ttdefault\bfdefault\updefault
```

The end! Thanks for coming.

⟨/classfile⟩

Change History

v0.1a

\appendix: Added 'Appendix' before the section number in an Appendix. 11
\cite: Implemented non-breaking behaviour. 16
\make@address@box: Vertical space fiddling in the frontmatter. 15

v0.2

General: Style changed to match ACTIVE 2004. Lots of little changes for this. 1

v0.3

General: Combined class implemented for 2006 alone. 1

v0.3a

General: Added PDF metadata hooks. 1

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.

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