The icsv class

Will Robertson

2006/07/25 v0.2

Abstract This document describes the LaTeX class icsv, an unofficial template for typesetting papers for the International Congress on Sound and Vibration.

Contents

1 About this document

This document contains the usage and implementation of the icsv 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, `icsv.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.

There *must* be an image called `icsv-logo` in the current directory to display the logo for the conference. This graphic should be supplied by the conference organisers.

2.1 *Document preamble*

`\documentclass` Use this class with standard LaTeX parlance: `\documentclass{icsv}`.

The document will be set up to use A4 paper with 38 mm margins top and bottom, 32 mm margins left and right. The body text font is 12 pt Times.[1] The

1. That is, the nominal text font size is 12 pt, and the distance between baselines is unchanged; if space allows, better results will be achieved with `\linespread` of 1.05 or so.

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

Figure 1: Example of the frontmatter in the icsv class.

sans serif font is Helvetica[2] and the fixed width font (or typewriter font) is 'TXTT'.

The following packages are loaded either to change the formatting for this conference or for the convenience of the user: amsmath, amssymb, array, bm, caption, fancyhdr, graphicx, hyperref.[3] Of the above, a recent version of the caption package is required. 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 §3.1) 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.

2.2 *Frontmatter metadata*

`\title` `\author` `\email` `\address` `\maketitle`

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`, and `\address` are all completely new.

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 for a typical input.

`\showaffiliations`

If the command `\showaffiliations` is placed before the author declarations, each author will reference the address to which they are associated. An argument to `\author` must now be used to specify 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. An example of this form is shown in figure 2.

This functionality is slightly fragile and will hopefully receive improvement in the future. Let me know if you have troubles.

`\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. Scaled to match Times' x-height (*i.e.*, the lowercase letters are the same height in both alphabets)
3. Look for file `amsldoc.pdf` for amsmath & amssymb documentation; file `grfguide.pdf` for graphicx documentation; file `manual.pdf` in the `doc/` subdirectory for hyperref documentation.

```
\showaffiliations

\author[1]{A.\,B.~C------} \email{abc@university}
\author[1,2]{D.\,E.~F------}
\author[2]{G.\,H.~I------} \email{ghi@company}

\address{University \\ City, State \\ Country}
\address{Company \\ City, State \\ Country}
```

Figure 2: More complicated frontmatter example.

2.3 *Floats: figures and tables*

`figure` `table`

Small enhancement has been made to using figures and tables. Both are automatically centred on the page, so no explicit commands for doing so are required. Secondly, the default float placement parameter is `[htbp]`,[4] so the optional argument generally won't be required. See a LaTeX manual for more info.

4. 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.

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 was hastily converted from the pkgactive-conf class, written by the author for another conference. Don't expect brilliance within!

3.1 Class and package loading

Base everything off the eponymous article class. Set up the fonts[5], and load a bunch of packages first to set up the document properties and second for the convenience of the user.

```
\LoadClass[12pt,twoside]{article}
\RequirePackage[a4paper,vmargin=38mm,hmargin=32mm,ignoreall]{geometry}
\RequirePackage{amsmath,amssymb,array,bm,calc,fancyhdr,fixltx2e,fix-cm,graphicx,hyperref,ifthen
\RequirePackage{caption}[2006/01/12]
\hypersetup{
  colorlinks,
  linkcolor=black,
  anchorcolor=black,
  citecolor=black,
  filecolor=black,
  menucolor=black,
  pagecolor=black,
  urlcolor=black,
  pdfstartview=FitH,
  pdfpagelayout=SinglePage
  }
```

Fonts Note that I *have not* taken the liberty of using the Times maths fonts[6] 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?).

```
\renewcommand\rmdefault{ptm}
\renewcommand\ttdefault{txtt}
\RequirePackage[scaled=0.87]{helvet}
\normalfont
\RequirePackage[T1]{fontenc}
\RequirePackage{textcomp}
```

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

5. 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.
6. Either via the mathptm or mathptmx packages.

characters in each. We also want no page numbers, since numbers will be added after all the papers are collated into the proceedings.

```
\frenchspacing
\setlength\parindent{1.5em}
```

3.2 *Formatting specification*

Use the caption package to format captions, and the fancyhdr package for running headers.

```
\captionsetup{labelsep=endash,font={small,it}}
\pagestyle{fancy}
\fancyhf{}
\fancyhead[CE]{\footnotesize \pdf@authors}
\fancyhead[CO]{\footnotesize ICSV13, July 2--6, Vienna, Austria}
```

`\section` `\subsection` `\subsubsection` `\paragraph` `\subparagraph`

Nobody ever uses `\subparagraph`, so let's remove it.

```
\setcounter{secnumdepth}{0}
\renewcommand\section{\@startsection{section}{1}{\z@}%
                                     {-1.6\baselineskip}%
                                     {0.8\baselineskip}%
                                     {\centering\bfseries\MakeUppercase}}
\renewcommand\subsection{\@startsection{subsection}{2}{\z@}%
                                       {-0.8\baselineskip}%
                                       {0.8\baselineskip}%
                                       {\bfseries}}
\renewcommand\subsubsection{\@startsection{subsubsection}{3}{\z@}%
                                       {-0.8\baselineskip}%
                                       {0.8\baselineskip}%
                                       {\bfseries\itshape}}
\renewcommand\paragraph{\@startsection{paragraph}{4}{\z@}%
                                       {0.8\baselineskip}%
                                       {-0.8\baselineskip}%
                                       {\bfseries}}
\let\subparagraph\undefined
```

`abstract`

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

```
\renewenvironment{abstract}
 {\vspace{\baselineskip}\fontsize{11}{11}\selectfont
  {\fontsize{13}{13}\bfseries\noindent Abstract\par}
  \noindent\ignorespaces}
 {\par}
```

`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\bfseries #1}
```

Figures and tables

`\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}
```

3.3 Frontmatter

`\maketitle` This is changed somewhat from the default classes. No proper documentation at the moment, I'm afraid.

```
\renewcommand\maketitle{%
  \thispagestyle{empty}\noindent
  \begin{minipage}{\textwidth}
    \renewcommand\footnoterule{\vspace{-1ex}}%
    \renewcommand\thefootnote{\@fnsymbol\c@footnote}%
    \global\@topnum\z@   % Prevents figures from going at top of page.
    \begin{center}
      \vspace{-3cm}
      \includegraphics[height=4cm]{icsv-logo}%
    \end{center}
    \vspace{1sp}%
    \begin{center}
      \bfseries\fontsize{15}{17}\selectfont\MakeUppercase{\@title}%
    \end{center}
    \vspace{-2.5ex}%
    \def\@makefnmark{\smash{\textsuperscript{\@thefnmark}}}%
```

```
    {\parindent\z@
     \leftskip\@flushglue
     \rightskip\@flushglue
     \parfillskip\z@
     \address@list\par}
     \def\thempfootnote{\@fnsymbol\c@mpfootnote}
    \after@maketitle
  \end{minipage}
  \hypersetup{pdfauthor={\pdf@authors},pdftitle={\@title}}%
  \vspace{2ex}\par}
\let\after@maketitle\@empty
```

`\pdfkeywords` A hook directly into hyperref.

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

`\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{#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]{\centering\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. They're 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{}
\providecommand\@@addresshook{\vspace{1ex}\fontsize{11}{13}\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}%
      \centering
      \def\@tempa{#1}%
      \ifx\@tempa\@empty
      \else
        \vspace*{\medskipamount}%
        {\@@authorhook#1\par\vspace{3pt}}
      \fi
      {\linespread{0.9}%
       \@@addresshook
       \if@showaff
         \makebox[0pt][r]{\textsuperscript{\number\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{,~\,}
```

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`.

```
\let\zf@font@warning\@font@warning
\let\@font@warning\@font@info
\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
\let\font@warning\zf@font@warning
```

The end! Thanks for coming.