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latex

The `ctable` package[1] for use with LaTeX2e

1   Purpose

The ctable package lets you easily typeset centered, captioned table and figure floats with optional footnotes. Both caption and footnotes will be forced within the width of the table.

If the width of the table is specified, then tabularx will be used to typeset it, and the X column specifier can be used. Otherwise tabular will be used.

This package defines the commands \ctable, \tnote and \tmark, as well as four \tabularnewline generating commands. The latter generate reasonable amounts of whitespace around horizontal rules and are also useful for tabulars outside this package.

Since the ctable package imports the array and booktabs packages, all commands from those packages are available as well.

Note that, in line with the comments that Simon Fear made describing his booktabs package, vertical rules for column separation can be produced with \ctable, but no provisions are made to have them make contact with horizontal rules.

2   Usage

\ctable   \ctable is called with 4 parameters, of which the first is optional:

```
\ctable[options]      % key=value,...
       {coldefs}      % for \begin{tabular}
       {foottable}    % zero or more \tnote commands (see below)
       {table lines}  % lines for the table
```

Options are given as key=value pairs, separated by comma's. Extra comma's, including one behind the last pair, don't hurt. Currently the following option keys have been defined:

---

[1] This file has version number v1.3, dated 2002/07/16.

caption	table caption
cap	for a short caption to go to the \tableofcontents
pos	float position, default: tbp
label	for \label
width	for tabularx; if absent, tabular will be used
figure	produce a figure float instead of a table float
botcap	put the caption at the bottom of the float instead of on top of it

The footnotes are placed under the table, without a rule. You therefore probably will want to use the \LL (last line) command if you use footnotes.

\tnote   \tnote[label]{footnote text} places *label* footnote text under the table. Can only be used in the foottable parameter described above. The label is optional, the default label is a single *a*. For more detailed control, you can also replace this command with something like labeltext&footnotetext\NN.

\tmark   \tmark[label] this command places the superscripted label in the table. It is equivalent with ^{label}. The label is optional, the default label is a single *a*.

The newline generating commands are a combination of \tabularnewline and zero or one of booktabs' \toprule, \midrule or \bottomrule. These combinations have been made, and short names have been defined, because source texts for complex tables often become very crowded:

\NN   Normal Newline, generates just a normal new line
\FL   First Line, generates a new line and a thick rule with some extra space under it
\ML   Middle Line: generates a new line and a thin rule with some extra space over and under it
\LL   Last Line: generates a new line and a thick rule with some extra space over it
          These macros can be used outside \ctable constructs.

Finally, for completeness, here are some of booktabs' commands that may be useful:

\toprule   \toprule[<wd>] where <wd> is the optional thinkness of the rule
\midrule   \midrule[<wd>]
\bottomrule   \bottomrule[<wd>]
\cmidrule   \cmidrule[<wd>](<trim>){a-b} where <trim> can be r, l, or rl and the rule is drawn over columns a through b
\morecmidrules   \morecmidrules must be used to separate two successive cmidrules
\addlinespace   \addlinespace[<wd>] inserts extra space between rows
\specialrule   \specialrule{<wd>}{<abovespace>}{<belowspace>}
                  See the booktabs documentation for details.

3   Examples

3.1   Tables

Table 1 is an example taken from the related package threeparttable.sty by Donald Arseneau, with an extra footnote. It was typeset with:

```
\ctable[cap     = The Skewing Angles,
        caption = The Skewing Angles ($\beta$) for
                  $\fam0 Mu(H)+X_2$ and $\fam0 Mu(H)+HX$~\tmark,
        label   = tab:nowidth,
       ]
       {rlcc}
```

Table 1: The Skewing Angles (β) for Mu(H) + X$_2$ and Mu(H) + HX ^{a}

	H(Mu) + F$_2$	H(Mu) + Cl$_2$
β(H)	80.9°^{b}	83.2°
β(Mu)	86.7°	87.7°

^{a} for the abstraction reaction,
Mu + HX → MuH + X.

^{b} 1 degree = $\pi/180$ radians.

^{c} this is a particularly long note, showing that footnotes are set in raggedright mode as we don't like hyphenation in table footnotes.

Table 2: Example with a specified width of 100mm

Example using tabularx			
	Multicolumn entry!	THREE	FOUR
one	The width of this column depends on the width of the table.^{a}	three	Column four will act in the same way as column two, with the same width.

^{a} footnotes are placed under the table

```
{\tnote{for the abstraction reaction,
        $\fam0 Mu+HX \rightarrow MuH+X$.}
 \tnote[b]{1 degree${} = \pi/180$ radians.}
 \tnote[c]{this is a particularly long note, showing that
           footnotes are set in raggedright mode as we don't like
           hyphenation in table footnotes.}
}{\FL
    &              & $\fam0 H(Mu)+F_2$    & $\fam0 H(Mu)+Cl_2$
  \ML
   &$\beta$(H)  & $80.9^\circ$\tmark[b] & $83.2^\circ$
  \NN
   &$\beta$(Mu) & $86.7^\circ$          & $87.7^\circ$
  \LL
}
```

Table 2 is an example with a width specification, taken from the tabularx documentation, with the vertical rules removed, and typeset with:

```
\ctable[caption = Example with a specified width of 100mm,
        width   = 100mm,
        pos     = t,
        label   = tab:width,
        ]
        {c>{\raggedright}Xc>{\raggedright}X}
```

```
{\tnote{footnotes are placed under the table}}
{\FL
   \multicolumn{4}{c}{Example using tabularx}
 \ML
   \multicolumn{2}{c}{Multicolumn entry!} & THREE & FOUR
 \ML
   one&
   The width of this column depends on the
   width of the table.\tmark &
   three&
   Column four will act in the same way as
   column two, with the same width.
 \LL
}
```

3.2 Figures

Figures, even single ones, are always put in tabular cells. This is not particularly handy for single pictures, but it eases the construction of arrays of pictures, including sub-captions, delineation, and spacing. Figure 1 shows a figure that has been produced with the \ctable command, in combination with \usepackage{carom}; it has been typeset with:

```
\ctable[caption=The di- and tri-bromobenzenes,
        botcap,
        figure,
        ]{ccc}{}{                    \FL
 \bzdrv{1==Br;2==Br}&
 \bzdrv{1==Br;3==Br}&
 \bzdrv{1==Br;4==Br}             \NN
 1,2 & 1,3 & 1,4                 \ML
 \bzdrv{1==Br;2==Br;3==Br}&
 \bzdrv{1==Br;2==Br;4==Br}&
 \bzdrv{1==Br;3==Br;5==Br}   \NN
 1,2,3 & 1,2,4 & 1,3,5           \LL
}
```

(The excessive whitespace at the left of the figure is caused by the bounding boxes generated by the *carom* package.)

4   Implementation

```
1 ⟨*package⟩
2 \RequirePackage{keyval,array,tabularx,booktabs}
3
4 \def\NN{\tabularnewline}
5 \def\FL{\toprule}
6 \def\ML{\NN\midrule}
7 \def\LL{\NN\bottomrule}
8
9 \newcommand{\tnote}[2][a]{%
10   \hbox{\@textsuperscript{\normalfont\textit{#1}}}&#2\NN}
```
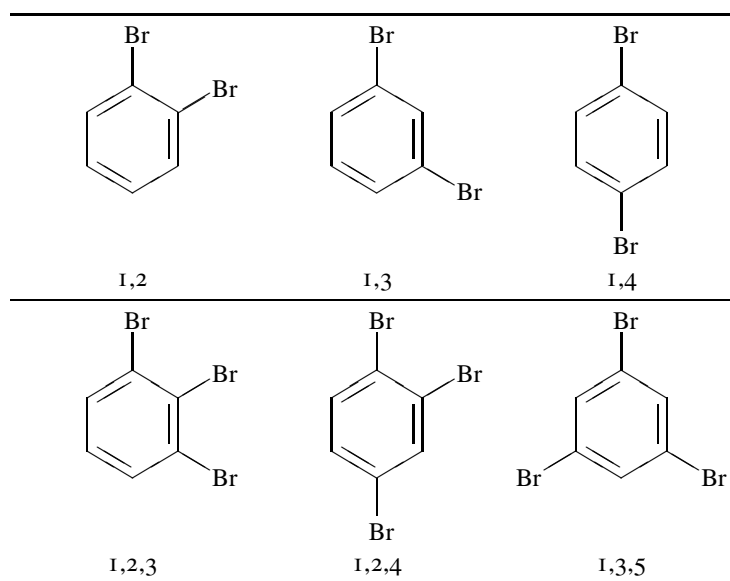
Figure 1: The di- and tri-bromobenzenes

```
11 \newcommand{\tmark}[1][a]{%
12   \hbox{\@textsuperscript{\normalfont\textit{#1}}}}}
13
```

Option setting commands from keyval. The table position (here, top, bottom, page) gets a special treatment, since LaTeX does not expand commands there. So instead of putting things like tbp in a command like \ctblbegin we put \begin{table}[tbp] in it.

```
14 \define@key{ctbl}{caption}  {\def\ctblcaption{#1}}
15 \define@key{ctbl}{cap}      {\def\ctblcap     {#1}}
16 \define@key{ctbl}{label}    {\def\ctbllabel   {#1}}
17 \define@key{ctbl}{pos}      {\def\ctblbegin  {\ctblbeg[#1]}}
18 \define@key{ctbl}{width}    {\def\ctblwidth   {#1}}
19 \define@key{ctbl}{botcap}[]{\def\ctblbotcap {1}}
20 \define@key{ctbl}{figure}[]{\def\ctblbeg{\begin{figure}}%
21                            \def\ctblend{\end{figure}}}
22
23 \def\ctblCaption{
24   \ifx\ctblcap\empty%
25     \caption{\label{\ctbllabel}\ctblcaption}%
26   \else
27     \caption[\ctblcap]{\label{\ctbllabel}\ctblcaption}
28   \fi
29 }
```

Allocate a box register for use by the \ctable command.

```
30 \newbox\ctbl@tabel
31
32 \newcommand{\ctable}[4][]{%
33   \def\ctblcaption {}%
34   \def\ctblcap     {}%
```

```
35    \def\ctbllabel    {}%
36    \def\ctblbeg       {\begin{table}}%
37    \def\ctblbegin     {\ctblbeg}%
38    \def\ctblend       {\end{table}}%
39    \def\ctblwidth     {}%
40    \def\ctblbotcap    {}%
41    \setkeys{ctbl}{#1}%
42    % save the table contents in a box, so we can determine its width:
43    \sbox\ctbl@tabel{%
44      \ifx\ctblwidth\empty
45        \begin{tabular}{#2}%
46          #4%
47        \end{tabular}%
48      \else
49        \begin{tabularx}{\ctblwidth}{#2}%
50          #4%
51        \end{tabularx}%
52      \fi
53    }%
```

\ctblbegin is now defined as something like \begin{table}[tbp].

```
54    \ctblbegin
55      \begin{center}%
56        \begin{minipage}{\wd\ctbl@tabel}%
57          \ifx\ctblbotcap\empty\ctblCaption\vspace{2ex}\fi
58          \usebox\ctbl@tabel % insert the tabular
59          \def\ctblfootnotes{#3}%
60          \ifx#3\empty\else % append footnotes, if any
61            \\%
62            \begin{tabularx}{\hsize}{r@{\,}>{\footnotesize\raggedright}X}%
63            #3%
64            \end{tabularx}%
65          \fi
66          \ifx\ctblbotcap\empty\else\ctblCaption\fi
67        \end{minipage}%
68      \end{center}%
69    \ctblend%
70 }
71 ⟨/package⟩
```