

The HEP-FLOAT package*

Convenience package for float placement

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Abstract

The HEP-FLOAT package redefines some L^AT_EX float placement defaults and defines convenience wrappers for floats.

The HEP-FLOAT package can be loaded with `\usepackage{hep-float}`.

`figure` (*env.*) Automatic float placement is adjusted to place a single float at the top of pages and to reduce the number of float pages, using the L^AT_EX macros.

`table` (*env.*)

`\setcounter{bottomnumber}{0}` no floats at the bottom of a page (default 1)
`\setcounter{topnumber}{1}` a single float at the top of a page (default 2)
`\setcounter{dbltopnumber}{1}` same for full widths floats in two-column mode
`\renewcommand{\textfraction}{.1}` large floats are allowed (default 0.2)
`\renewcommand{\topfraction}{.9}` (default 0.7)
`\renewcommand{\dbltopfraction}{.9}` (default 0.7)
`\renewcommand{\floatpagefraction}{.8}` float pages must be full (default 0.5)

`manualplacement` The most useful float placement is usually archived by placing the float *in front* of the paragraph it is referenced in first. Additionally, manual float placement can be deactivated using the `manualplacement` package option.

`\raggedright` The float environments have been adjusted to center their content. The usual behaviour can be reactivated using `\raggedright`.

`panels` (*env.*) The `panels` environment makes use of the `SUBCAPTION` package [1]. It provides sub-floats and takes as mandatory argument either the number of sub-floats (default 2) or the width of the first sub-float as fraction of the `\linewidth`. Within the `\begin{panels}[\langle vertical alignment \rangle]{\langle width \rangle}` environment the `\panel` macro initiates a new sub-float. In the case that the width of the first sub-float has been given as an optional argument to the `panels` environment the `\panel{\langle width \rangle}` macro takes the width of the next sub-float as mandatory argument. The example code is presented

`\panel`

`\panelhspace` in table 1a. The spacing between the panels can be adjusted by adjusting the `\panelvspace` in terms of a `\linewidth` fraction `\renewcommand{\panelhspace}{fraction}` and the `\panelvspace` in terms of a length `\renewcommand{\panelvspace}{\langle length \rangle}`.

`\panelvspace`

`tabular` (*env.*) The `BOOKTABS` [2] and `MULTIROW` [3] packages are loaded enabling publication quality tabulars such as in table 1b.

`\graphic` The `GRAPHICX` package [4] is loaded and the `\graphic[\langle width \rangle]{\langle figure \rangle}` macro is defined, which is a wrapper for the `\includegraphics{\langle figure \rangle}` macro and takes the figure width as fraction of the `\linewidth` as optional argument (default 1). If the graphics are located in a sub-folder its path can be indicated by `\graphics{\langle subfolder \rangle}`.

`\graphics`

*This document corresponds to HEP-FLOAT v1.3.

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```

\begin{panels}{2}
  code
\panel
  \begin{tabular}...\end{tabular}
\end{panels}

```

(a) Code for this panel environment.

	one	two		
a	b	c	d	
	b	c	d	

(b) The `booktabs` and `multirow` features.

Table 1: Example use of the `panels` environment in Panel (a) and the features from the `BOOKTABS` and `MULTIROW` packages in Panel (b).

A Implementation

<*package>

Load the `KVOPTIONS` package [5] and define a `hepfloat` namespace.

```

1 \RequirePackage{kvoptions}
2 \SetupKeyvalOptions{
3   family=hepfloat,
4   prefix=hepfloat@
5 }

```

`manualplacement` Provide the `manualplacement` option for reactivating the manual placement of floats.

```

6 \DeclareBoolOption[true]{manualplacement}
7 \ProcessKeyvalOptions*

```

Adjust the \LaTeX float placement defaults

```

8 \setcounter{bottomnumber}{0} % 1
9 \setcounter{topnumber}{1} % 2
10 \setcounter{dbltopnumber}{1} % 2
11 \renewcommand{\topfraction}{.9} % .7
12 \renewcommand{\dbltopfraction}{.9} % .7
13 \renewcommand{\textfraction}{.1} % .2
14 \renewcommand{\floatpagefraction}{.8} % .5

```

`figure` (*env.*) Center the content of `figure` and `table` environments. Ignore the manual placement if the `table` (*env.*) `manualplacement` option is set to false.

```

15 \let\hep@figure\figure%
16 \let\end@hep@figure\endfigure%
17 \let\hep@table\table%
18 \let\end@hep@table\endtable%
19 \ifhepfloat@manualplacement%
20   \renewenvironment{figure}[1][tbp]{%
21     \hep@figure[#1]\centering\small%
22   }\end@hep@figure}%
23   \renewenvironment{table}[1][tbp]{%
24     \hep@table[#1]\centering\small%
25   }\end@hep@table}%
26 \else%

```

```

27 \renewenvironment{figure}[1] [] {%
28   \hep@figure\centering\small%
29 }{\end@hep@figure}%
30 \renewenvironment{table}[1] [] {%
31   \hep@table\centering\small%
32 }{\end@hep@table}
33 \fi%

```

A.1 floats

figures (*env.*) Define the **figures** environment that places figures next to each other.

```

\figure
34 \newcommand{\figurehspace}{0.0333}
35 \newcommand{\figurevspace}{.5\baselineskip}
36 \newenvironment{figures}[2] [b] {%
37   \begin{figure}
38   \let\oldcaption\caption
39   \renewcommand{\caption}[1] {%
40     \renewcommand{\caption}{\oldcaption}%
41     \captionof{figure}{##1}\vspace{\figurevspace}%
42   }
43   \ifdim#2pt>1pt%
44     \newcommand{\hep@figure@space}{\figurehspace\linewidth/#2}%
45     \renewcommand{\figure}[1] [b] {%
46       \end{minipage}\hfill%
47       \begin{minipage}[##1]{\linewidth/#2-\hep@figure@space}%
48     }
49     \begin{minipage}[#1]{\linewidth/#2-\hep@figure@space}
50   \else%
51     \newcommand{\hep@figure@space}[1] {##1\linewidth*\real{\figurehspace}}
52     \renewcommand{\figure}[2] [b] {%
53       \end{minipage}\hfill%
54       \begin{minipage}[##1]{##2\linewidth-\hep@figure@space{##2}}%
55     }
56     \begin{minipage}[#1]{#2\linewidth-\hep@figure@space{#2}}
57   \fi%
58 }{%
59 \end{minipage}\end{figure}%
60 }

```

tables (*env.*) Define the **tables** environment that places tables next to each other.

```

\table
61 \newcommand{\tablehspace}{0.0333}
62 \newcommand{\tablevspace}{.5\baselineskip}
63 \newenvironment{tables}[2] [b] {%
64   \begin{table}
65   \let\oldcaption\caption
66   \renewcommand{\caption}[1] {%
67     \renewcommand{\caption}{\oldcaption}%
68     \captionof{table}{##1}\vspace{\tablevspace}%
69   }

```

```

70 \ifdim#2pt>1pt%
71   \newcommand{\hep@table@space}{\tablehspace\linewidth/#2}%
72   \renewcommand{\table}[1][b]{%
73     \end{minipage}\hfill%
74     \begin{minipage}[##1]{\linewidth/#2-\hep@table@space}\centering%
75   }
76   \begin{minipage}[#1]{\linewidth/#2-\hep@table@space}\centering
77 \else%
78   \newcommand{\hep@table@space}[1]{##1\linewidth*\real{\tablehspace}}
79   \renewcommand{\table}[2][b]{%
80     \end{minipage}\hfill%
81     \begin{minipage}[##1]{##2\linewidth-\hep@table@space{##2}}%
82     \centering%
83   }
84   \begin{minipage}[#1]{#2\linewidth-\hep@table@space{#2}}%
85   \centering
86   \fi%
87 }{%
88 \end{minipage}\end{table}%
89 }

```

A.2 Sub-floats

Load the SUBCAPTION package [1].

```

90 \PassOptionsToPackage{subrefformat=parens}{subcaption}
91 \RequirePackage{subcaption}
92 \captionsetup{font=small}
93 \captionsetup[sub]{font=small}

```

Provide the macros for older versions of the SUBCAPTION package using the XPARSE [6] package.

```

94 \RequirePackage{xparse}
95 \providecommand*\subcaption@minipage[2]{%
96   \minipage#1{#2}\setcaptionsubtype\relax%
97 }
98 \ProvideDocumentEnvironment{subcaptionblock}{0{b}m}{%
99   \caption@withoptargs\subcaption@minipage[#1]{#2}%
100 }{\endminipage}

```

`panels` (*env.*) Define the `panels` environment and the `\panel` macro using the `CALC` [7] and `ETOOLBOX` [8] `\panel` packages.

```

\panelhspace
\panelvspace
101 \RequirePackage{calc}
102 \RequirePackage{etoolbox}
103 \newcommand{\panelhspace}{0.0333}
104 \newcommand{\panelvspace}{.5\baselineskip}
105 \newenvironment{panels}[2][b]{%
106   \addtolength{\belowcaptionskip}{\panelvspace}%

```

Define an internal macro for global behaviour.

```

107 \newcommand{\begin@subcaption@minipage}[2][b]{%
108 %   \caption@withoptargs\subcaption@minipage[##1]{##2}%
109   \subcaptionblock[##1]{##2}%
110   \centering\vskip 0pt%
111 %   \renewcommand{\hep@panel@vspace}{\panelvspace}%
112 }%

```

Define the `\panel` macro for the case that the number of panels is given.

```

113 \ifdim#2pt>1pt%
114   \newcommand{\hep@panel@space}{\panelhspace\linewidth/#2}%
115   \newcommand{\panel}[1][b]{%
116     \endminipage\hfill\begin@subcaption@minipage[#1]{%
117       \linewidth/#2-\hep@panel@space%
118     }%
119   }%
120   \begin@subcaption@minipage[#1]{\linewidth/#2-\hep@panel@space}%

```

Define the `\panel` macro for the case that the width of the panel is given.

```

121 \else%
122   \newcommand{\hep@panel@space}[1]{##1\linewidth*\real{\panelhspace}}%
123   \newcommand{\panel}[2][b]{%
124     \endminipage\hfill\begin@subcaption@minipage[#1]{%
125       ##2\linewidth-\hep@panel@space{##2}%
126     }%
127   }%
128   \begin@subcaption@minipage[#1]{%
129     #2\linewidth-\hep@panel@space{#2}%
130   }%
131 \fi%
132 }%
133 \endsubcaptionblock%
134 \vspace{-\panelvspace}%
135 }

```

A.3 Tables

`tabular` (*env.*) Enhance tabulars with the `BOOKTABS` and `MULTIROW` packages [2, 3].

```

136 \RequirePackage{booktabs}
137 \RequirePackage{multirow}
138 \newcommand\header[1]{\multicolumn{1}{c}{#1}}

```

A.4 Figures

`\graphic` Provide the `\graphic` macro for the inclusion of figures using the `GRAPHICX` package [4].

```

139 \RequirePackage{graphicx}
140 \providecommand{\tikzsetnextfilename}[1]{}
141 \newcommand{\graphic}[2][1]{\tikzsetnextfilename{#2}{%
142   \centering\includegraphics[width=#1\linewidth]{#2}\par%
143 }}

```

`\graphics` Provide the `\graphics` macro for the inclusion of figures located in a subfolder.

```
144 \newcommand{\graphics}[1]{\graphicspath{.{/#1/}}}  
  
</package>
```

B Test

```
<*test>  
  
145 \documentclass{article}  
146  
147 \usepackage[showframe]{geometry}  
148 \usepackage{hep-float}  
149  
150 \begin{document}  
151  
152 \begin{figure}  
153 \graphic[.5]{example-image-4x3}  
154 \caption{test}  
155 \end{figure}  
156  
157 \begin{figures}{.3}  
158 \graphic{example-image-4x3}  
159 \caption{one}  
160 \figure{.4}  
161 \graphic{example-image-16x9}  
162 \caption{two}  
163 \figure{.3}  
164 \graphic{example-image-4x3}  
165 \caption{three}  
166 \figure{.3}  
167 \graphic{example-image-4x3}  
168 \caption{one}  
169 \figure{.4}  
170 \graphic{example-image-16x9}  
171 \caption{two}  
172 \figure{.3}  
173 \graphic{example-image-4x3}  
174 \caption{three}  
175 \end{figures}  
176  
177 \begin{figures}{3}  
178 \graphic{example-image-1x1}  
179 \caption{one}  
180 \figure  
181 \graphic{example-image-1x1}  
182 \caption{two}  
183 \figure  
184 \graphic{example-image-1x1}
```

```

185 \caption{three}
186 \figure
187 \graphic{example-image-1x1}
188 \caption{one}
189 \figure
190 \graphic{example-image-1x1}
191 \caption{two}
192 \figure
193 \graphic{example-image-1x1}
194 \caption{three}
195 \end{figures}
196
197
198 \begin{figure}
199 \begin{panels}{3}
200 \graphic{example-image-1x1}
201 \caption{a}
202 \panel
203 \graphic{example-image-1x1}
204 \caption{b}
205 \panel
206 \graphic{example-image-1x1}
207 \caption{c}
208 \panel
209 \graphic{example-image-1x1}
210 \caption{d}
211 \panel
212 \graphic{example-image-1x1}
213 \caption{e}
214 \panel
215 \graphic{example-image-1x1}
216 \caption{f}
217 \end{panels}
218 \caption{Panels}
219 \end{figure}
220
221 \begin{figure}
222 \begin{panels}{.3}
223 \graphic{example-image-4x3}
224 \caption{a}
225 \panel{.4}
226 \graphic{example-image-16x9}
227 \caption{b}
228 \panel{.3}
229 \graphic{example-image-4x3}
230 \caption{c}
231 \panel{.225}
232 \graphic{example-image-1x1}
233 \caption{d}
234 \panel{.4}

```

```

235 \graphic{example-image-16x9}
236 \caption{e}
237 \panel{.225}
238 \graphic[.8]{example-image-1x1}
239 \caption{f}
240 \end{panels}
241 \caption{Panels 2}
242 \end{figure}
243
244 \begin{tables}{2}
245 \begin{tabular}{cc}\toprule
246 a & b \\
247 \bottomrule\end{tabular}
248 \caption{a}
249 \table
250 \begin{tabular}{cc}\toprule
251 a & b \\
252 \bottomrule\end{tabular}
253 \caption{b}
254 \end{tables}
255
256 \end{document}

```

</test>

C Readme

<*readme>

```

257 # The 'hep-float' package
258
259 Convenience package for float placement
260
261 ## Introduction
262
263 The 'hep-float' package redefines some 'LaTeX' float placement defaults
264 and defines convenience wrappers for floats. The 'hep-float' package can
265 be loaded with '\usepackage{hep-float}'.
266
267 ## Author
268
269 Jan Hajer
270
271 ## License
272
273 This file may be distributed and/or modified under the conditions of the
274 'LaTeX' Project Public License, either version 1.3c of this license or
275 (at your option) any later version. The latest version of this license is
276 in 'http://www.latex-project.org/lppl.txt' and version 1.3c or later is
277 part of all distributions of LaTeX version 2005/12/01 or later.

```


</readme>

References

- [1] A. Sommerfeldt. ‘The `subcaption` package: Support for sub-captions’ (2007). CTAN: `subcaption`. GitLab: `axelsommerfeldt/caption`.
- [2] D. Els and S. Fear. ‘The `booktabs` package: Publication quality tables in \LaTeX ’ (1995). CTAN: `booktabs`.
- [3] P. van Oostrum and J. Leichter. ‘The `multirow`, `bigstrut` and `bigdelim` packages: Create tabular cells spanning multiple rows’ (1994). CTAN: `multirow`.
- [4] D. Carlisle and S. Rahtz. ‘Packages in the “graphics” bundle: Enhanced support for graphics’ (1994). CTAN: `graphicx`.
- [5] H. Oberdiek. ‘The `kvoptions` package: Key value format for package options’ (2004). CTAN: `kvoptions`. GitHub: `ho-tex/kvoptions`.
- [6] *LaTeX3 Project*. ‘The `xparse` package: A generic document command parser’ (1999). CTAN: `xparse`.
- [7] *LaTeX3 Project*. ‘The `calc` package: Simple arithmetic in \LaTeX commands’ (1992). CTAN: `calc`.
- [8] P. Lehman and J. Wright. ‘The `etoolbox` package: e-TeX tools for \LaTeX ’ (2007). CTAN: `etoolbox`.