The HEP-FLOAT package*

Convenience package for float placement

Jan Hajer†

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Abstract

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

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

figure (*env.*)
table (*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 LaTeX macros.

`\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.*)
\panel

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}[`⟨*vertical alignment*⟩`]{`⟨*width*⟩`}` 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{`⟨*width*⟩`}` macro takes the width of the next sub-float as mandatory argument. The example code is presented in table 1a. The spacing between the panels can be adjusted by adjusting the `\panelvspace` in terms of a `\linewidth` fraction

\panelhspace
\panelvspace

*This document corresponds to HEP-FLOAT v1.1.

†jan.hajer@tecnico.ulisboa.pt

```
\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).

`\renewcommand{\panelhspace}`fraction and the `\panelvspace` in terms of a length `\renewcommand{\panelvspace}{`⟨*length*⟩`}`.

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

`\graphic` `\graphics` The GRAPHICX package [4] is loaded and the `\graphic[`⟨*width*⟩`]{`⟨*figure*⟩`}` macro is defined, which is a wrapper for the `\includegraphics{`⟨*figure*⟩`}` 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{`⟨*subfolder*⟩`}`.

A Implementation

<*package>

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

```
\RequirePackage{kvoptions}
\SetupKeyvalOptions{
  family=hepfloat,
  prefix=hepfloat@
}
```

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

```
\DeclareBoolOption[true]{manualplacement}
```

```
\ProcessKeyvalOptions*
```

Adjust the LaTeX float placement defaults

```
\setcounter{bottomnumber}{0} % 1
\setcounter{topnumber}{1} % 2
\setcounter{dbltopnumber}{1} % 2
\renewcommand{\topfraction}{.9} % .7
\renewcommand{\dbltopfraction}{.9} % .7
\renewcommand{\textfraction}{.1} % .2
\renewcommand{\floatpagefraction}{.8} % .5
```

figure (*env.*)
table (*env.*)

Center the content of figure and table environments. Ignore the manual placement if the manualplacement option is set to false.

```
\let\hep@figure\figure%
\let\end@hep@figure\endfigure%
\let\hep@table\table%
\let\end@hep@table\endtable%
\ifhepfloat@manualplacement%
  \renewenvironment{figure}[1][tbp]{%
    \hep@figure[#1]\centering%
    }{\end@hep@figure}%
  \renewenvironment{table}[1][tbp]{%
    \hep@table[#1]\centering%
  }{\end@hep@table}%
\else%
  \renewenvironment{figure}[1][]{%
    \hep@figure\centering%
  }{\end@hep@figure}%
  \renewenvironment{table}[1][]{%
    \hep@table\centering%
  }{\end@hep@table}
\fi%
```

A.1 Sub-floats

Load the SUBCAPTION package [1].

```
\PassOptionsToPackage{subrefformat=parens}{subcaption}
\RequirePackage{subcaption}
\captionsetup{font=small}
\captionsetup[sub]{font=small}
```

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

```
\RequirePackage{xparse}
\providecommand*\subcaption@minipage[2]{%
  \minipage#1{#2}\setcaptionsubtype\relax%
}
\ProvideDocumentEnvironment{subcaptionblock}{O{b}m}{%
  \caption@withoptargs\subcaption@minipage[#1]{#2}%
}{\endminipage}
```

panels (*env.*)
\panel
\panelhspace
\panelvspace

Define the panels environment and the \panel macro using the CALC [7] and ETOOLBOX [8] packages.

```
\RequirePackage{calc}
\RequirePackage{etoolbox}
\newcommand{\panelhspace}{0.0333}
\newcommand{\panelvspace}{.5\baselineskip}
\newenvironment{panels}[2][b]{%
```

```
  \addtolength{\belowcaptionskip}{\panelvspace}%
```

Define an internal macro for global behaviour.

```
  \newcommand{\begin@subcaption@minipage}[2][b]{%
%     \caption@withoptargs\subcaption@minipage[##1]{##2}%
    \subcaptionblock[##1]{##2}%
    \centering\vskip 0pt%
%     \renewcommand{\hep@panel@vspace}{\panelvspace}%
  }%
```

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

```
  \ifdim#2pt>1pt%
    \newcommand{\hep@panel@space}{\panelhspace\linewidth/#2}%
    \newcommand{\panel}[1][b]{%
      \endminipage\hfill\begin@subcaption@minipage[#1]{%
        \linewidth/#2-\hep@panel@space%
      }%
    }%
    \begin@subcaption@minipage[#1]{\linewidth/#2-\hep@panel@space}%
```

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

```
  \else%
    \newcommand{\panel}[2][b]{%
      \endminipage\hfill\begin@subcaption@minipage[#1]{%
        ##2\linewidth-##2\linewidth*\real{\panelhspace}%
      }%
    }%
    \begin@subcaption@minipage[#1]{%
      #2\linewidth-#2\linewidth*\real{\panelhspace}%
    }%
  \fi%
}{
\endsubcaptionblock
\vspace{-\panelvspace}
}
```

A.2 Tables

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

```
\RequirePackage{booktabs}
\RequirePackage{multirow}
```

A.3 Figures

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

```
\RequirePackage{graphicx}
```

```
\providecommand{\tikzsetnextfilename}[1]{}
\newcommand{\graphic}[2][1]{\tikzsetnextfilename{#2}{%
  \centering\includegraphics[width=#1\linewidth]{#2}\par%
}}
```

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

```
\newcommand{\graphics}[1]{\graphicspath{{./#1/}}}
```

</package>

B Readme

<*readme>

```
# The ‘hep-float‘ package

Convenience package for float placement

## Introduction

The ‘hep-float‘ package redefines some ‘LaTeX‘ float placement defaults and defines conv

The ‘hep-float‘ package can be loaded with ‘\usepackage{hep-float}‘.

## Author

Jan Hajer

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The latest version of this license is in ‘http://www.latex-project.org/lppl.txt‘ and ver
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</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`.