Package hvfloat
Rotating and scaling of objects and captions
ver 2.12a

Herbert Voß*

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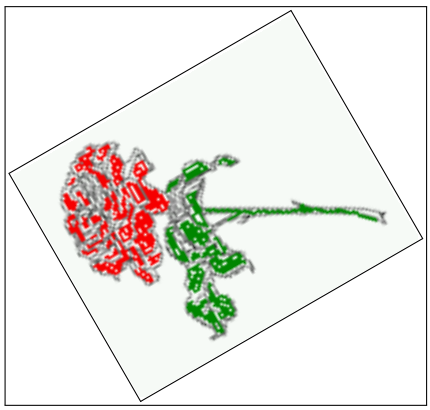
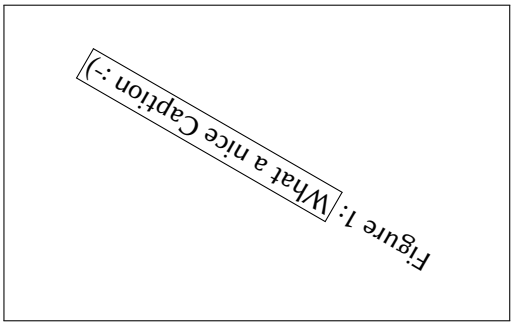
The package hvfloat defines a macro to place objects and captions of floats in different positions with different rotating angles.

All objects and captions are framed on the first pages, which is only for some demonstration here and has no additional sense!

To compare the place of the definition of the floating objects in the source and the output a marginnote float is set into the margin. This is done also only for demonstration!





*hvoss@tug.org

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1 The package options

fbox	The objects and captions are put into a \fbox command, like in this documentation. This doesn't make real sense and is only for some demonstration useful or for locating problems if images seems to have too much whitespace.
hyperref	Load package hyperref.

The length \belowcaptionskip is set by LaTeX to 0pt and changed in hvfloat to the same value than \abovecaptionskip. This length can be changed to another value in the usual way with \setlength or \addtolength.

The following packages are loaded by hvfloat and the optional argument hypcap is passed to the packages caption and subcaption:

caption, subcaption, atbegshi, expl3, multido, graphicx, xkeyval, ifoddpage, and afterpage.

2 The Macros and optional arguments

The syntax for the macros and \setDefaults, \hvSet, and \hvFloat is

\hvset{*key=value list*}
\setDefaults
\hvFloat`*` `[Options]` `+` {*float type*}{*floating object*}`[short caption]` {*long caption*}{*label*}

The star version is explained in section 10 on page 22 and 18.2 on page 50 and the optional `+` is explained in section 16.3 on page 37.

\hvSet allows the global setting of keywords and \setDefaults sets all keywords to its default value as shown in Table 2 on the next page.

If \hvFloat has an empty second parameter <float type>, then \hvFloat switches by default to a nonfloat (see table 2) object, which is not important for the user. All other parameters may also be empty and the short caption as second optional parameter missing. This one is as usual the caption for the \listoffigures.

There are some more macros defined, more or less for internally use in hvfloat, but they can be used for own purposes.

\figcaption`[short caption text]` {*caption text*}
\tabcaption`[short caption text]` {*caption text*}

They are used for the nonFloat keyword, where these macros write captions in the same way but outside of a float environment. The default caption cannot be used here. It is no problem to use the \tabcaption command to place a caption anywhere, like here in an inlined mode:

Table 1: A Caption without any sense and any object

A label can be put inside the argument or after the command in the usual way, so that a reference to the not existing table 2 is no problem.

```
[...] It is no problem to use the \verb|\tabcaption| command to place a caption anywhere,
like here in an  inlined mode: \tabcaption[The Caption without sense ...]{A Caption without any
sense and any object}\label{dummy} A label can be put inside the argument or after the command
in the usual way, so that a reference to  the not existing table~\ref{dummy} is no problem.
```

With the macro `\defhvstyle` one can define a style which can be used instead of the individual setting:

`\defhvstyle{`*name*`}{`*setting*`}`

Internally the style is saved in a macro named `\hv@<name>`.

There are the following keywords:

Table 2: The optional keywords for the macro `\hvFloat`

*K*eyword	`D`efault	*D*escription
`floatPos`	`htb`	This is *not* the same default placement setting like the one from the floats.
`rotAngle`	`0`	The value for the angle if both, the object and the caption should be rotated in the same way.
`capWidth`	`n`	The width of the caption. Can be »`n`« like a natural width, »`w`« for the width of the object, »`h`« for the height of the object, or a scale for `\columnwidth`.
`capAngle`	`0`	The value for the angle if the caption should be rotated. Counted anti clockwise.
`capPos`	`before`	The position of the caption relative to the object. Possible values are `before`: *always* before (left) from the object. `left`: *always* before (left) from the object, but on the *same page* in twocolumn mode. `after`: *always* after (right) from the object. `right`: *always* after (right) from the object, but on the *same page* in twocolumn mode. `inner`: in twoside mode always typeset at the inner margin. `outer`: in twoside mode always typeset at the outer margin. `evenPage`: in twoside mode with fullpage objects always on an even page. `oddPage`: in twoside mode with fullpage objects always on an odd page.
`capVPos`	`c`	This is only important for `capPos=left|right`. Only in this case the caption can vertically placed at the `bottom`, `center` and `top`.
`objectPos`	`center`	The horizontalplacement of the object relative to the document. Possible values are (**l**)eft|(**c**)enter|(**r**)ight.
`objectAngle`	`0`	The value for the angle if the object should be rotated. Counted anti clockwise.
`floatCapSep`	`5`	The additional width between the object and a left or right placed caption. The default unit is `pt`.

*K*eyword	`Default`	*D*escription
`useOBox`	`false`	Instead of passing the object as parameter to the `\hvFloat`, the contents maybe saved in the box `\hvOBox` With `useOBox=true` the contents of this box will be used.
`nonFloat`	`false`	The object isn't put in a floating environment. It is printed as standard text with an additional caption. The float counters are increased as usual and can be referenced.
`wide`	`false`	The float can use `\textwidth+\marginparwidth` as horizontal width.
`objectFrame`	`false`	put a frame with no separation around the float object.
`style`	–	Use a defined style

3 The default use of floating environments

In this case there is no essential difference to the well known `figure` or `table` environment, f.ex.:

```
\begin{figure}
... object ...
\caption{...}% caption below the object
\end{figure}
```

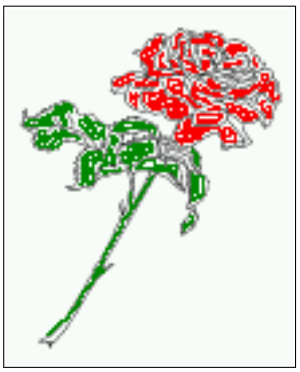


Figure 2: Without any keywords (only the `fbox` package option)

Code for figure 2:

```
\hvFloat{figure}{\includegraphics{images/rose}}{Without any keywords (only the \texttt{fbox}
    package option)}{fig:0}
```

float

Code for table 3:

```
\hvFloat[capPos=top]{table}{%
\begin{tabularx}{\textwidth}{>{\ttfamily}l|l|X}
  \rmfamily Name & Type & Description\\\hline
  \CMD{hvFloat}  & command     & places object and caption in different ways\\
```

Table 3: With the only Option `capPos=top` to place the caption on top of the table, which is often the default.

Name	Type	Description
`\hvFloat`	command	places object and caption in different ways
`hvFloatEnv`	environment	places object and caption exactly Here
`\figcaption`	command	writes a figure caption in a non floating environment
`\tabcaption`	command	writes a table caption in a non floating environment
`\setDefaults`	command	sets all options to the defaults
`\defhvstyle`	command	define a user style

```
  hvFloatEnv  & environment & places object and caption exactly Here\\
  \CMD{figcaption} & command   & writes a figure caption in a non floating environment\\
  \CMD{tabcaption} & command   & writes a table caption in a non floating environment\\
  \CMD{setDefaults} & command  & sets all options to the defaults\\
  \CMD{defhvstyle} & command & define a user style
\end{tabularx}}%
{With the only Option \texttt{capPos=top} to place the caption on top of the table, which is often
     the default.}%
{tab:0}
```

See section 13 for some more informations about tabulars as objects.

4 Caption width

4.1 Default – natural width

The default setting is the natural width of a paragraph with respect to the current linewidth or columnwidth for a caption below or above an object. It behaves in the same way as a caption set by one of the default floating environments like `figure` or `table`:

```
\hvFloat[floatPos=!htb]{figure}{\includegraphics{images/rose}}%
  {Default caption width setting, which is the natural width with respect to the current linewidth
     .}{fig:width0}
```

For the following examples the package option `fbox` is disabled. All frames are now set with the macro `\frame` or the optional keyword `objectFrame`.

For a caption beside an object, the *natural* caption width (without the optional argument `wide`) is given by the current linewidth minus the width of the object and the space between object and caption, which is set by `floatCapSep` (see Table 2 on page 7).

```
\hvFloat[floatPos=!htb,capPos=after,objectFrame]{figure}{\includegraphics[scale=1.5]{images/rose}}
    %
  {Caption right beside with a \emph{natural} width, which is given by the width of the object,
  the separation between object and caption, and the current linewidth.}{fig:width1}
```

Figure 3: Default caption width setting, which is the natural width with respect to the current linewidth.

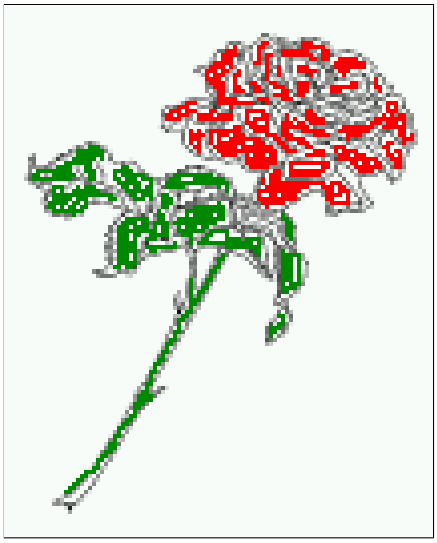


Figure 4: Caption right beside with a *natural* width, which is given by the width of the object, the separation between object and caption, and the current linewidth.

4.2 Relative linewidth

With `capWidth=<number>` the caption width is set to `<number>\columnwidth`. For captions at the bottom or on top of objects the setting is not checked if `<number>` is greater than 1.

```
\hvFloat[floatPos=!htb,capWidth=0.9]{figure}{\includegraphics{images/rose}}%
  {Caption below with a width of 0.9 of the current line width (column width), which is
   in this special case \the\linewidth. Divide it by 28.82 to get cm.}{fig:width2}
```

float

If such a value like `0.9\linewidth` is used for a caption beside an object, then the macro does a test if the space beside the object is less equal the defined caption width. If not then the width is set to the possible value between object and margin:

```
\hvFloat[floatPos=!htb,
         capPos=after,
         capWidth=0.9]{figure}{\includegraphics[scale=1.5]{images/rose}}%
```

Figure 5: Caption below with a width of 0.9 of the current line width (column width), which is in this special case 376.4258pt. Divide it by 28.82 to get cm.

```
{Caption right beside with a width setting of \texttt{0.9\textbackslash linewidth}
which is too big for this example and therefore corrected
by the macro to the maximal width.}{fig:width3}
```

float

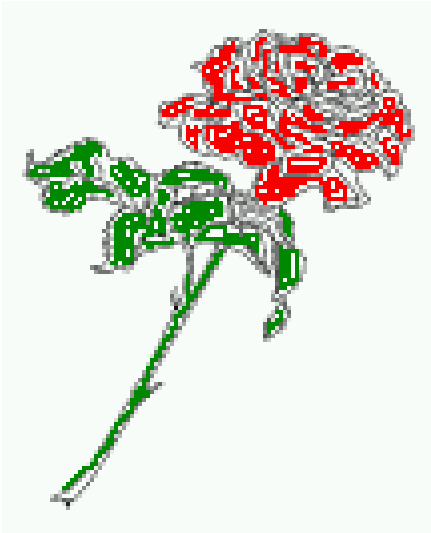


Figure 6: Caption right beside with a width setting of `0.9\linewidth` which is too big for this example and therefore corrected by the macro to the maximal width.

4.3 Identical object and caption width

With `capWidth=w` the caption width is like the object width which makes only real sense if you have a lot of identical images with respect to its widths.

```
\hvFloat[floatPos=!htb,capWidth=w]{figure}{\includegraphics[width=0.5\linewidth]{images/CTAN}}%
  {Caption below with a width of the given object which may be a problem
  if it is a very small object.}{fig:width4}
```

float

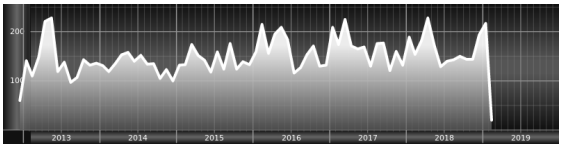


Figure 7: Caption below with a width of the given object which may be a problem if it is a very small object.

4.4 caption width to height of the object

With `capWidth=h` the caption width is like the object height which makes only real sense if you want to put a rotated caption beside the object.

```
\hvFloat[floatPos=!htb,capPos=after,capWidth=h,capAngle=90,objectFrame]{figure}{\includegraphics{
    images/rose}}%
  {Caption beside with a width of the given object height which may be a problem
  if it is a very small object.}{fig:width5}
```

Figure 8: Caption beside with a width of the given object height which may be a problem if it is a very small object.

5 Caption left or right of the object

By default the caption is set on the left side of the object. If the caption and the object are set side by side, then the keyvalue `before` is identical to the setting `left`.

5.1 Caption right with specific length

Code for figure 9:

```
\hvFloat%
  [floatPos=htb,
   capPos=right,
   objectFrame,
   objectPos=c]{figure}{\includegraphics[scale=0.9]{images/rose}}%
  [Caption beside object and vertically centered]%
```

```
{Caption vertically centered right beside the float with a natural caption width
 (the default). \blindtext}%
{fig:1}
```

float
capPos=right

Figure 9: Caption vertically centered right beside the float with a natural caption width (the default). Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

5.2 Caption left and rotated

Code for figure 10:

```
\hvFloat%
  [floatPos=htb,
   capPos=left,
   capWidth=h,% of \columnwidth
   capAngle=90,
   objectFrame
  ]{figure}{\includegraphics{images/rose}}%
  [Centered Caption beside Object]%
  {Caption vertically centered left beside the float with a caption width
   of \texttt{capWidth=h}, which is the height of the object.}{fig:2}
```

float
capAngle=90

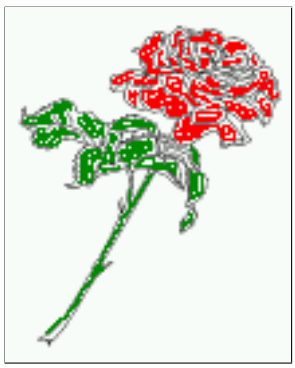


Figure 10: Caption vertically centered left beside the float with a caption width of `capWidth=h`, which is the height of the object.

It is no problem to rotate the object, too. But with a different angle value than for the caption. Do not ask for the sense, it is only a demonstration of what is possible ... The object (image) is rotated by −30 degrees with the macro `\rotatebox`. Without any definition the caption will be

placed vertically centered to the object. Important for the height of the object is the surrounding orthogonal rectangle.

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Code for figure 11:

```
\hvFloat[%
     capWidth=h,
     capPos=after,
     capAngle=180,
     objectAngle=90,
     capVPos=center,
     objectPos=center]{figure}{\frame{\includegraphics{images/rose}}}%
     [Centered Caption beside Object]{%
     {Caption vertically centered right beside the float with a caption width of the height
      of the image and a rotation of the caption and the object.}{fig:3}
```

float

Figure 11: Caption vertically centered right beside the float with a caption width of the height of the image and a rotation of the caption and the object.

6 Caption inner or outer

Setting the caption position to *inner* or *outer* makes only sense for a document in twoside mode. For a oneside document *inner* is the same as *left* and *outer* is the same as *right*. We show only the code for the first image with the setting `capPos=inner` , whereas the second one chooses only `capPos=outer` .

Code for figure 12:

```
\hvFloat[capPos=inner]{figure}{\includegraphics{images/rose}}%
     [Centered Caption on the inner side]{%
     Caption set with the parameter setting \texttt{capPos=inner}, which will be
     a caption on the right side for an even page and on the left side for
     an odd page.}{fig:20}
```

Figure 12: Caption set with the parameter setting `capPos=inner`, which will be a caption on the right side for an even page and on the left side for an odd page.

float
capPos=inner

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Now the same Image with `capPos=outer` . The current pagenumber is 15, an odd page. We now set a pagebreak at the end of the second image to see if it works with *inner*/*outer*.

```
\hvFloat[capPos=outer]{figure}{\includegraphics{images/rose}}%
     [Centered Caption on the inner side]{%
     Caption set with the parameter setting \texttt{capPos=outer}, which will be
     a caption on the right side for an even page and on the left side for
     an odd page.}{fig:20b}
```

float
capPos=outer

Figure 13: Caption set with the parameter setting `capPos=outer`, which will be a caption on the right side for an even page and on the left side for an odd page.

float

We have an odd page, the reason why figure 13 has the caption for *inner* on the left side and figure 14 for *outer* on the right side.

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how

Figure 14: Caption at the bottom right beside the float with a caption width of `0.5\columnwidth` and and `capPos=outer`.

the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Code for figure 15:

```
\hvFloat[%
    capWidth=0.5,% of \columnwidth
    capPos=inner,%  ====> INNER
    capAngle=0,
    capVPos=bottom,
    objectPos=center]{figure}{\includegraphics{images/rose}}%
    [Centered Caption beside Object]{%
    Caption vertically centered right beside the float with a caption
  width of \texttt{0.5\textbackslash columnwidth} and \texttt{capPos=outer} }{fig:22}
```

float

Figure 15: Caption vertically centered right beside the float with a caption width of `0.5\columnwidth` and `capPos=outer`

We have an even page, the reason why figure 12 has the caption for *inner* on the right side and figure 14 for *outer* on the left side.

7 Vertical Position of the Caption

The caption can be placed beside the object in the positions

```
(c)enter|(b)ottom|(t)op
```

The code for figure 16:

```
\hvFloat[%
     floatPos=htb,%
     capWidth=0.25,%
     capPos=right,%
     capVPos=bottom,%
]{figure}{\frame{\includegraphics{images/rose}}}{Caption at bottom right beside the float}{fig:4}
```

float

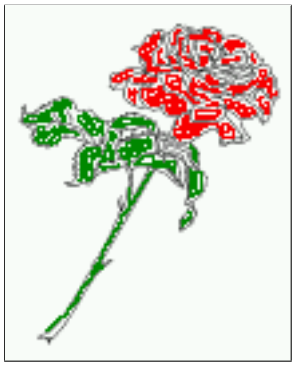
Figure 16: Caption at bottom right beside the float

The code for figure 17:

```
\hvFloat[%
     floatPos=htb,
     capWidth=0.25,
     capPos=right,
     capVPos=top,
]{figure}{\frame{\includegraphics{images/rose}}}{Caption at top left beside the float}{fig:5}
```

float

Figure 17: Caption at top left beside the float



The code for figure 18:

```
\hvFloat[%
     capWidth=0.25,
     capPos=right,
     capVPos=center,% the default
]{figure}{\frame{\includegraphics{images/rose}}}{Caption centered right beside the float}{fig:6}
```

float

Figure 18: Caption centered right beside the float

8 Horizontal Position of the Float

The caption is always near the object, only divided by the length `\floatCapSep` which can be set by the keyword of the same name `floatCapSep`. It accepts only a decimal number and is preset to 5. The default unit is `pt` and cannot be changed. The keyword `objectPos` refers always to the complete floating object: caption *and* object. The meaning of `objectPos=left` is: Put the object as far as possible to the left margin. If `capPos=left` is also used, then the caption is at the left margin followed by the object (see Figure 20 on the next page).

The code for figure 19:

```
\hvFloat[%
     capWidth=0.25,
     capPos=right,
     capVPos=top,
     objectPos=left,
     objectFrame,
]{figure}{\includegraphics{images/rose}}{%
     Caption at top right beside the float and object position left}{fig:7}
```

float

Figure 19: Caption at top right beside the float and object position left

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how

the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

The same with `capPos=left` :

Figure 20: Caption at top right beside the float and object position left

float
capPos=left

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

The code for figure 21:

```
\hvFloat[%
     capWidth=0.25,
     capPos=before,
     capVPos=top,
     objectPos=right,
     objectFrame,
]{figure}{\includegraphics{images/rose}}{%
     Caption at top leftt beside the float and object position right}{fig:8}
```

Figure 21: Caption at top left beside the float and object position right

float

Hello, here is some text without a meaning. This text should show what a printed text will

look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

9 Wide floats

With the optional argument `wide` the width of the defined `\marginparwidth` is added to the allowed horizontal width of the float.

The code for figure 22:

```
\hvFloat[wide,
    capPos=right,
    capVPos=top,
    objectPos=left,
]{figure}{\includegraphics[width=0.75\linewidth]{images/CTAN}}{%
    Caption at top right beside the float and object position left and
the option \texttt{wide}.}{fig:70}
```

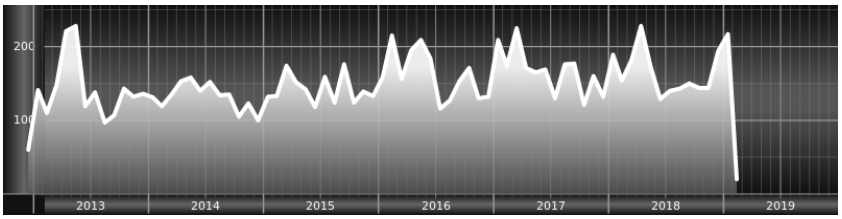
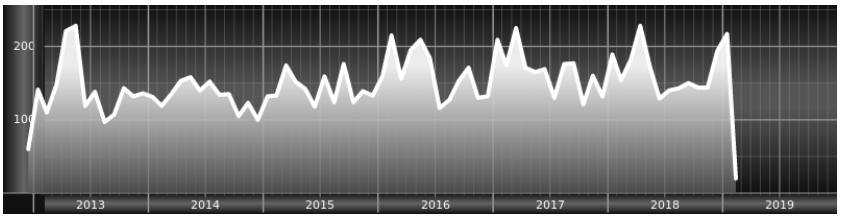


Figure 22: Caption at top right beside the float and object position left and the option `wide`.

The code for figure 23:

```
\hvFloat[wide,
    capPos=left,
    capVPos=top,
    objectPos=right,
  ]{figure}{\includegraphics[width=0.75\linewidth]{images/CTAN}}%
  {Caption at top left beside the object and object position left and
   the option \texttt{wide}.}{fig:80}
```

Figure 23: Caption at top left beside the object and object position left and the option `wide`.



For a twosided document it will place the object always in the margin.

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

```
\hvFloat[wide,
     capPos=inner,
     capVPos=top,
]{figure}{\includegraphics[width=0.75\linewidth]{images/CTAN}}{%
Caption at top and inner beside the float and object position right and
the option \texttt{wide}.}{fig:81}
```

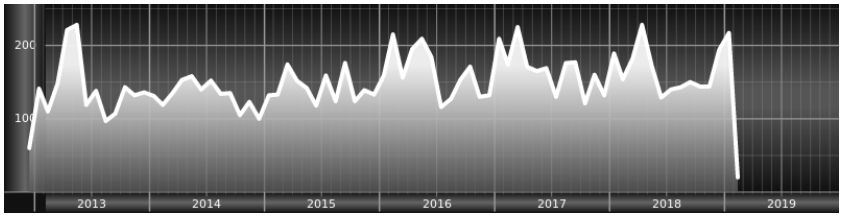


Figure 24: Caption at top and inner beside the float and object position right and the option `wide`.

Now we set the same image with the same setting on the next page. The caption will change its side due to the setting `capPos=outer` .

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

```
\hvFloat[wide,
     capPos=inner,
     capVPos=top,
]{figure}{\includegraphics[width=0.75\linewidth]{images/CTAN}}{%
Caption at top inner beside the float and object position right and
the option \texttt{wide}.}{fig:811}
```

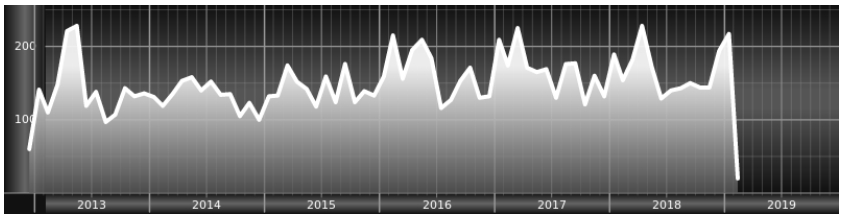


Figure 25: Caption at top inner beside the float and object position right and the option `wide`.

10 The star version \hvFloat*

In the twocolumn mode the floating environment can be set over both columns with the star version \hvFloat*. The floating environment will not be on the bottom of the page. The code for the following example (Figure 26) is:

```
\hvFloat*[capPos=right]{figure}%
  {\includegraphics{images/frose}}%
  [A  float with the default caption setting]%
  {A default caption of a ‘‘’’ object with the default setting, which
   is a ‘‘left’’  caption which means that it always appears before the object.
   This can be an even or odd page. And some more text whch has no
   real meaning because it fills only the space for a long caption.}%
  {fig:0}
```

The example shows on page 3 the star version and on page 4 the same without using the star.

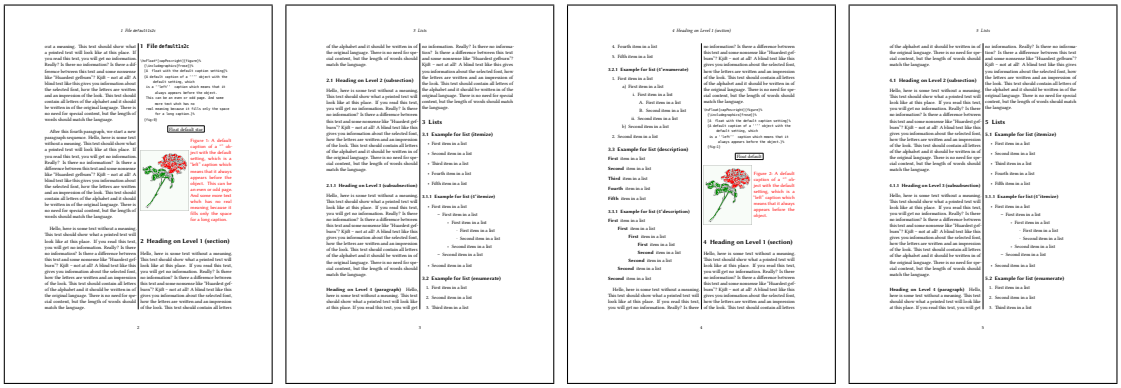


Figure 26: Output of default1s2c (pages 2 –5)

11 Full Page Width in Landscape Mode

If you do not want to load the package lscape (or pdflscape) you can use the floatPos=p option to put the image on an own page and rotated by 90 degrees (figure 27).

Code for figure 27:

```
\hvFloat[%
     floatPos=p,
     capPos=bottom,
     rotAngle=90,
     objectPos=center,
]{figure}{\includegraphics[width=0.9\textheight]{images/CTAN}}%
  [Object and Caption in landscape mode]{%
     Caption and object in landscape mode. \blindtext}{fig:9}
```

The float can also be put to the left or to the right (above/below in landscape) with the `objectPos=l` parameter

float landscape

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

The code for figure 28:

```
\hvFloat[%
     floatPos=p,
     capWidth=h,
     capPos=right,
     objectAngle=90,
     capAngle=-90,
     objectPos=left,
]{figure}{\includegraphics[width=\textheight]{images/CTAN}}%
     [Rotated Caption in Landscape]{%
     Caption right beside the float and object position left. The caption rotated by $-90$
        degrees.\blindtext}{fig:10}
```

float

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

12 The `nonFloat` Option

Sometimes it is better to put a “float” in a specific position of the page. This is possible with the `nonfloat` package and the keyword `nonFloat`.

```
Some nonsense text before the following \emph{non floating} object.

\hvFloat[%
     nonFloat,
```

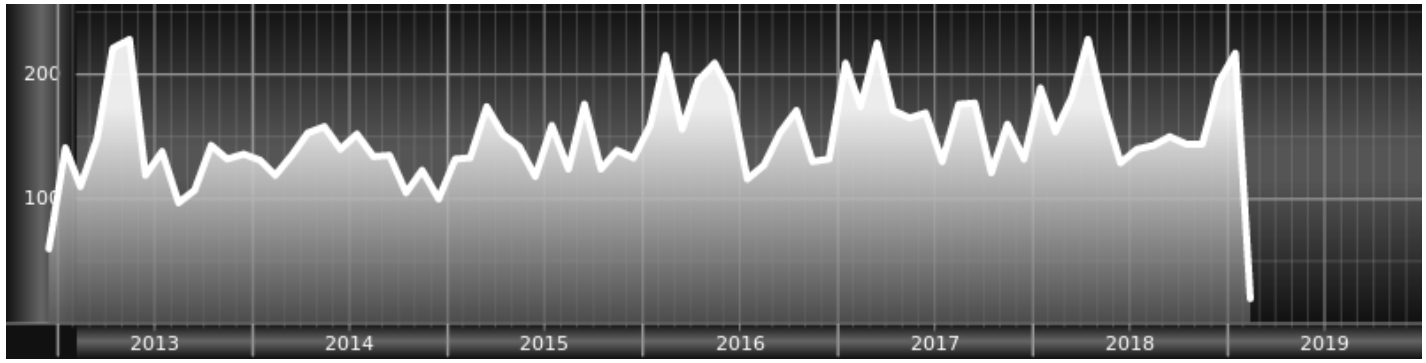
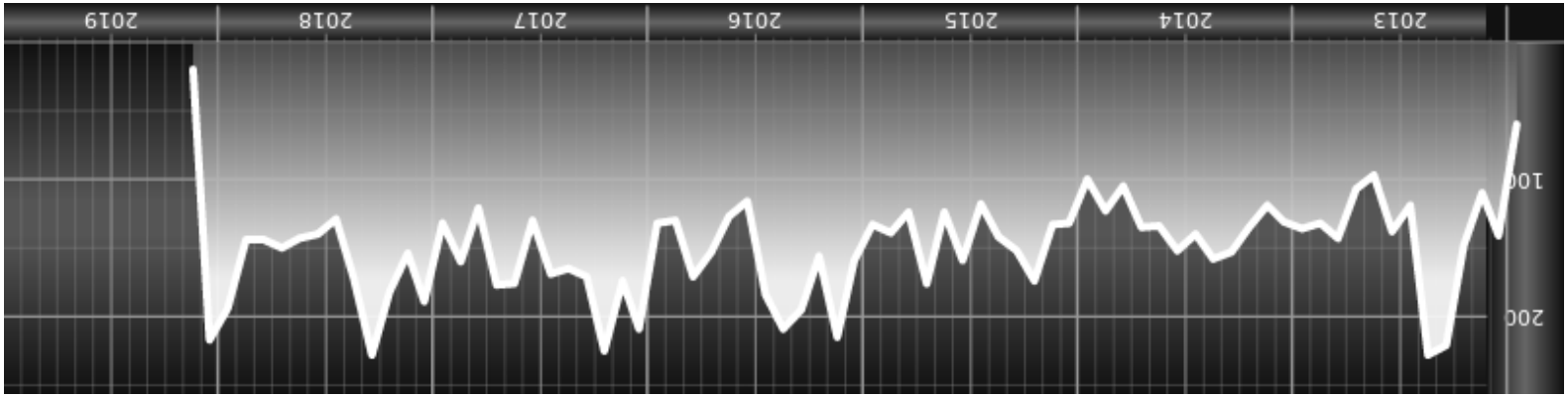


Figure 27: Caption and object in landscape mode. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Figure 28: Caption right beside the float and object position left. The caption rotated by −90 degrees. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.



```
    capWidth=0.25,
    capPos=right,
    capVPos=bottom,
    objectPos=center,
    objectFrame,
]{figure}{\includegraphics[scale=1.5]{images/rose}}%
    [Nonfloat Captions]{%
    Caption of a ‘‘nonfloat’’ Object, using the \texttt{nonfloat} Package}{fig:11}

Some nonsense text after the preceding  \emph{non floating} object.
```

float

Some nonsense text before the following *non floating* object.

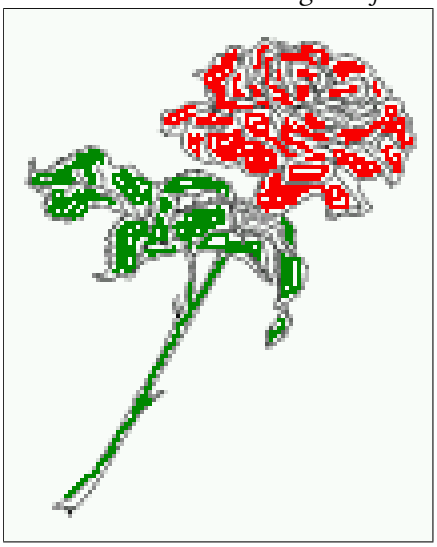


Figure 29: Caption of a “nonfloat” Object, using the `nonfloat` Package

Some nonsense text after the preceding *non floating* object.

The image 12 is exactly placed where the command `\hvFloat` appears. There are only commands for `figure` and `table` environments:

```
\newcommand{\figcaption}{\def\@captype{figure}\caption}
\newcommand{\tabcaption}{\def\@captype{table}\caption}
```

But it is no problem, to define more `xxxcaption` commands to support other with the `float` package defined new floats.

13 Tabulars as Objects

The object has to be passed as an parameter to the `\hvFloat` macro. This is no problem with images but maybe with tables, so it is easier to use the box `\hvOBox` to save the table in this box and pass it then to `\hvFloat` with the `useOBox` option. For example see table 4 and 5:

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no

information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

```
\savebox{\hvOBox}{%
 \begin{tabular}{>{\small\ttfamily}l|l|l}\hline
  \rmfamily Name    & Type        & Description\\\hline
  \CMD{hvFloat}  & command     & places object and caption in different ways\\
  hvFloatEnv  & environment & places object and caption exactly Here\\
  \CMD{figcaption} & command   & writes a figure caption in a non floating environment\\
  \CMD{tabcaption} & command   & writes a table caption in a non floating environment\\
  \CMD{setDefaults} & command  & sets all options to the defaults\\\hline
 \end{tabular}%
}
```

The code for table 4 and 5 is:

```
\hvFloat[%
  floatPos=!hb,
  capPos=top,
  useOBox=true]{table}{}{Demonstration of the \texttt{useOBox} Parameter}{table:1}

\blindtext

\hvFloat[%
  floatPos=hb,
  useOBox=true,
  objectAngle=90,
  capPos=right,
  capVPos=top,
  capWidth=0.3]{table}{}{Another demonstration of the \texttt{useOBox} Parameter}{table:2}
```

In this case leave the third parameter empty.

float

Table 4: Demonstration of the `useOBox` Parameter

Name	Type	Description
`\hvFloat`	command	places object and caption in different ways
`hvFloatEnv`	environment	places object and caption exactly Here
`\figcaption`	command	writes a figure caption in a non floating environment
`\tabcaption`	command	writes a table caption in a non floating environment
`\setDefaults`	command	sets all options to the defaults

float

Name	Type	Description
\hvFloat	command	places object and caption in different ways
hvFloatEnv	environment	places object and caption exactly Here
\figcaption	command	writes a figure caption in a non floating environment
\tabcaption	command	writes a table caption in a non floating environment
\setDefaults	command	sets all options to the defaults

Table 5: Demonstration of the useOBox Parameter

14 Text and objects

With the onlyText keyword it is no problem to put some text beside an image without getting the caption title Figure/Table. The object still can be a floating one or a nonfloating if the nonfloat keyword is used.

The code for figure 14:

```
\hvFloat[%
  onlyText=true,
  capAngle=90,
  capPos=right,
  capVPos=top,
  objectFrame,
  capWidth=h]{}{\includegraphics{images/rose}}%
  [``\texttt{onlyText}'' Caption]{%
    Demonstration of the \texttt{onlyText} Parameter, which makes it
```

```
possible to put some text beside a floating object without getting
a starting \texttt{Figure:} or \texttt{Table:}}{fig:text}
```

float

Demonstration of the onlyText Parameter, which makes it possible to put some text beside a floating object without getting a starting `Figure:` or `Table:`

15 Environment `hvFloatEnv`

With the environment `hvFloatEnv` one can place an object exactly on that position where the environment is defined. For captions the use of `\captionof` is recommended:

```
\begin{hvFloatEnv}
\captionof{table}{A caption for a nice table}
\begin{tabular}{@{} l c r @{}}\hline
left & center & right \\
L    & C      & R     \\\hline
\end{tabular}
\end{hvFloatEnv}
```

Table 6: A caption for a nice table

left	center	right
L	C	R

The environment has an optional argument for setting the line width which is preset to `\textwidth`. The object is always centered.

```
\begin{hvFloatEnv}[0.5\textwidth]
\captionof{table}{A caption for a nice table}
\begin{tabular}{@{} l c r @{}}\hline
left & center & right \\
L    & C      & R     \\\hline
\end{tabular}
\end{hvFloatEnv}
```

Table 7: A caption for a nice table

left	center	right
L	C	R

16 Full page objects in onecolumn mode

For an image or table which needs the whole space of a page the caption can be printed at the bottom of the preceeding or following page. It is possible in oneside and twoside mode, but makes only real sense in the twoside mode. `hvfloat` defines three additional optional arguments for placing images in a complete column, page or paper:

```
\define@key{Gin}{fullpage}[true]{%
  \def\Gin@ewidth{\columnwidth}%
  \def\Gin@eheight{\textheight}%
  \Gin@boolkey{false}{iso}%
}
\define@key{Gin}{FULLPAGE}[true]{%
  \def\Gin@ewidth{\paperwidth}%
  \def\Gin@eheight{\paperheight}%
  \Gin@boolkey{false}{iso}%
}
```

```
\define@key{Gin}{FullPage}[true]{%
  \def\Gin@ewidth{\textwidth}%
  \def\Gin@eheight{\textheight}%
  \Gin@boolkey{false}{iso}%
}
```

Figure 30 shows the meaning of the optional arguments `fullpage`, `FullPage`, and `FULLPAGE` for `\inclugegraphics[...]{`*tiger*`}`.

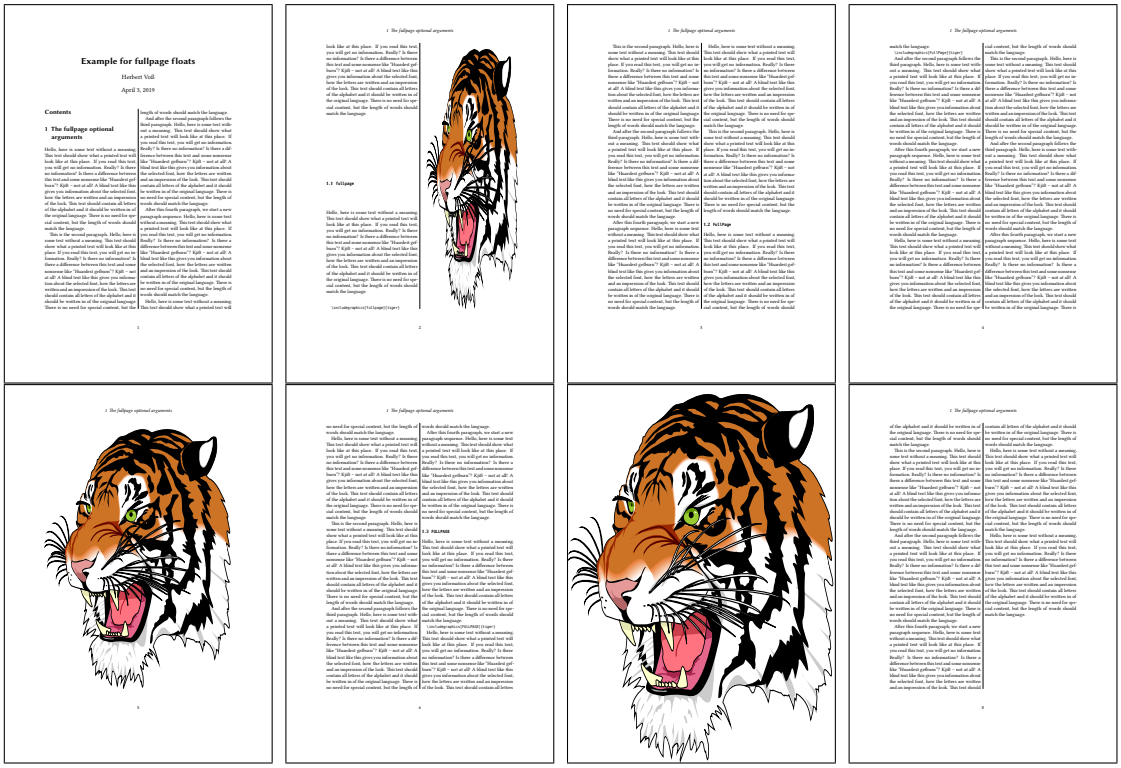


Figure 30: Output of `fullpage1s2c` (pages 1–8)

16.1 Using the textarea

The setting `capPos=evenPage` (even) or `capPos=oddPage` (odd) page for a document in twocolumn mode makes no real sense. For a twosided document a setting like `capPos=inner` for inner or `capPos=outer` for outer margin makes more sense. For an image or table which needs the whole space of a page the caption can be printed at the bottom of the preceeding or following page. It is possible in oneside and twoside mode, but makes only real sense in the twoside mode. Without any additional argument the caption is set first and the object on the follwing page:

16.1.1 Using the default or `capPos=before`

Without any additional argument the caption is set first (left) at the bottom of the current page and the object on the following page. This is the same setting like `capPos=left` for a onecolumn document. For the `twocolumn` option it makes more sense to use the setting `capPos=before` if the caption and object can appear on different pages.

```
\hvFloat[fullpage]%
  {figure}%
  {\includegraphics[fullpage]{images/frose}}%
  [A fullpage float with the default caption setting]%
  {A default caption of a ''fullpage'' object with the default setting, which
   is a ''left''  caption which means that it always appears ''before'' the object.
   This can be an even or odd page. And some more text whch has no
   real meaning because it fills only the space for a long caption.}%
  {fig:fullpage0}
```

Table 8: Valid optional arguments for a full page object.

Name	Type	Description
`fullpage`	`true|false`	Put the caption on the bottom of the preceding or following page and the object alone a page.
`FULLPAGE`	`true|false`	The same for full papersize objects over one or two columns. The pagestyle is set to `empty`
`multiFloat`	`true|false`	For multiple objects with captions for every object. See section 16.3 on page 37.
`subFloat`	`true|false`	For multiple objects with one main and more subcaptions. See section 17 on page 39.
`separatorLine`	`true`	Put a line with a predefined width of 0.4pt between the text and the caption. Only valid for the keyword `fullpage`.
`capPos`	`value`	caption `before`, `after` an object or on an `evenPage` or `oddPage`.

With this setting the caption is always placed *before* the following object. This maybe sufficient for a oneside document but not the best solution if this document is printed on a duplex machine. In such a case it may make sense to have the captions always on an even (left)

page, even though the socument is typeset in a oneside mode. Figure 31 shows the output for a oneside document with a setting `capPos=before` .

Depending to the used documentclass it can be a problem, if the caption should be placed on the first page. In such a case use one of the other setting. Table 8 on the previous page shows the valid optional arguments for a full page floating object.

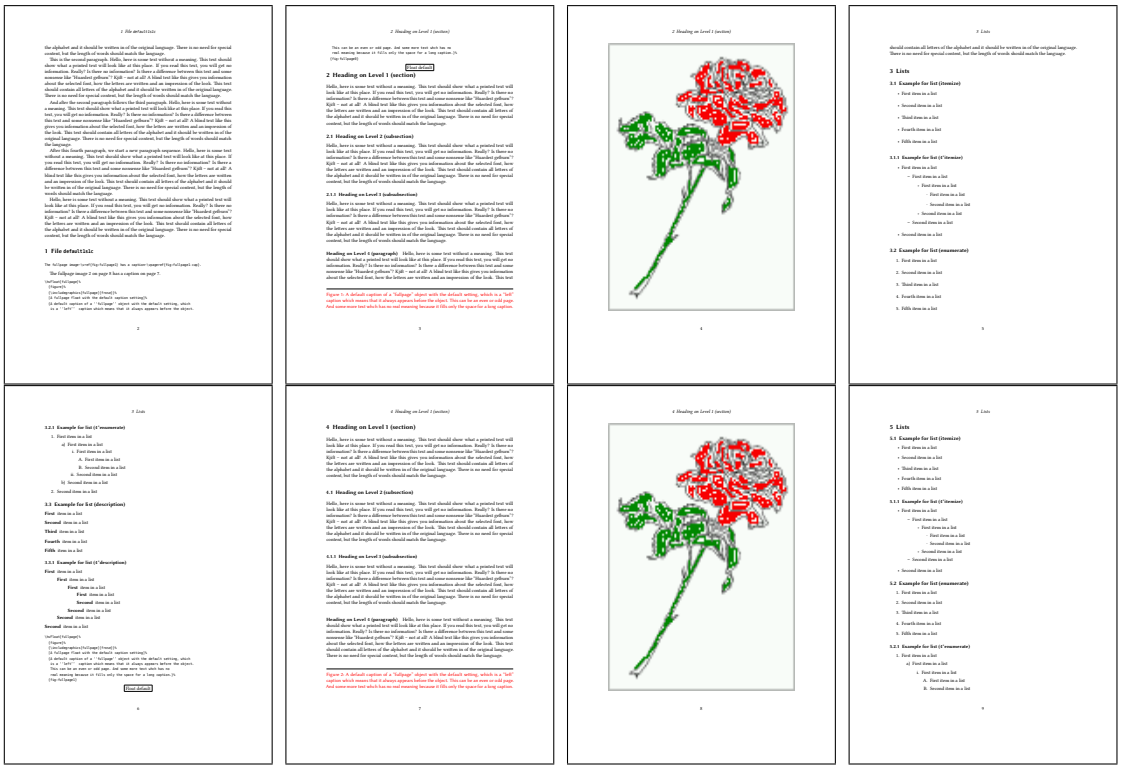


Figure 31: Output of `default1s1c` (pages 2–9)

16.1.2 Using `capPos=after`

The caption will be printed always on the right side which is the same as *after* the full page object. The object appers immediately on the next page and the caption of the next following page at the bottom. There is no check for an even or odd page. This behaviour makes only sense for a oneside document.

```
\hvFloat[fullpage, capPos=after]%
  {figure}%
  {\includegraphics[fullpage]{images/frose}}%
  [A float which needs the complete page width and height.]%
  {A Caption of a ''fullpage'' object, which follows on the next page.
   This can be an even or odd page. And some more text whch has no
   real meaning because it fills only the space for a long caption.}
  {fig:fullpage1}
```

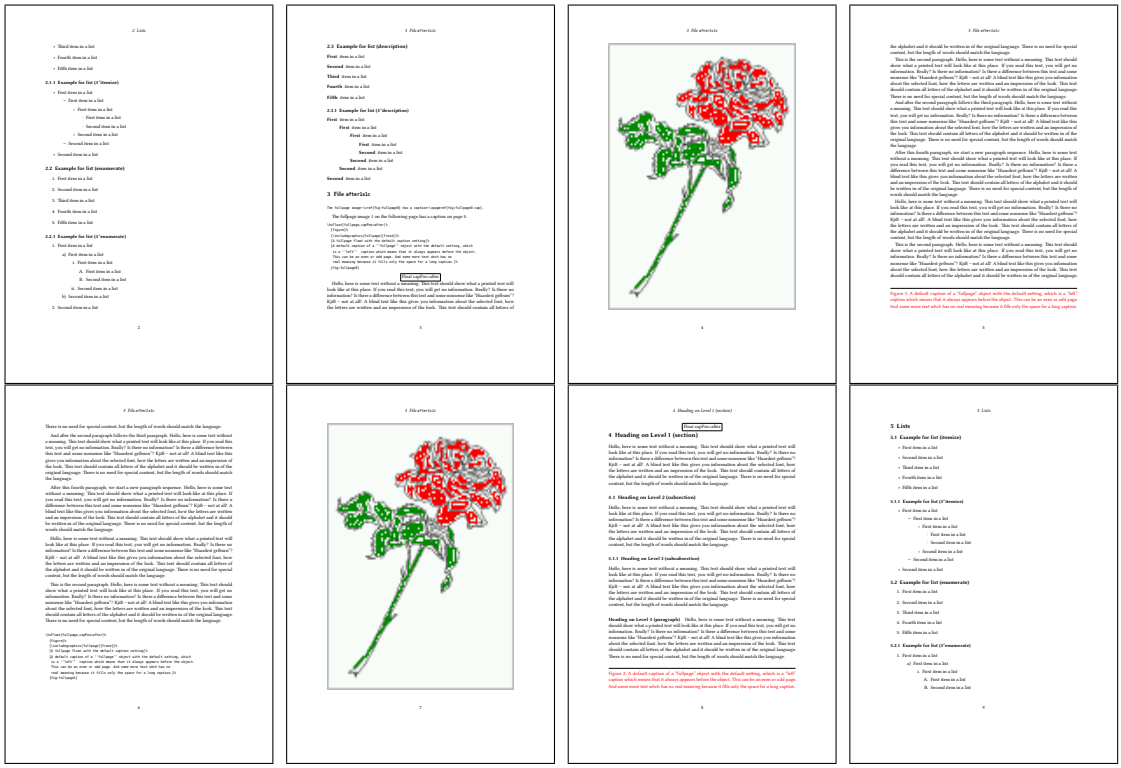


Figure 32: Output of `after1s1c` (pages 2–9)

16.1.3 Using `capPos=evenPage` — caption on an even page

With `capPos=evenPage` the caption will be printed on an even (left) page, the object will always be on an odd (right) page. This option makes only real sense for The `twoside` mode!

```
\hvFloat[fullpage, capPos=evenPage]%
  {figure}%
  {\includegraphics[fullpage]{images/frose}}%
  [A float whith a caption on an even page (left)]%
  {A caption on an even (left) page of a ‘‘fullpage’’ object.. \blindtext}
  {fig:fullpage3}
```

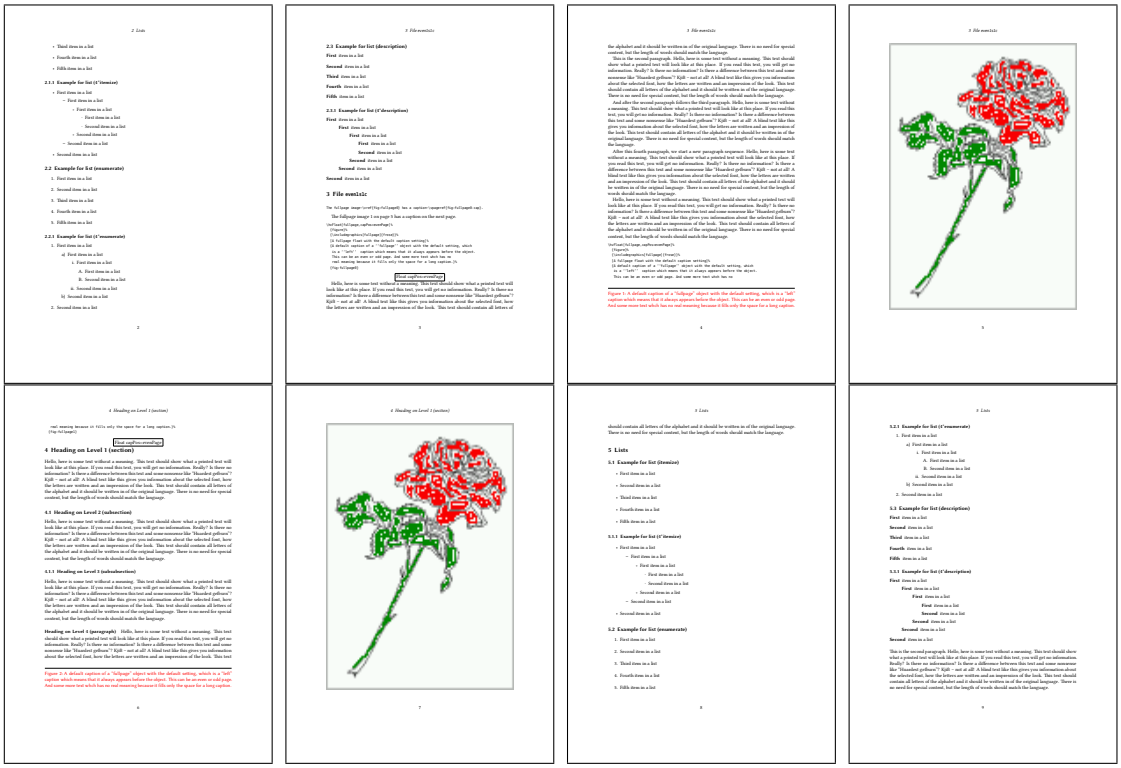


Figure 33: Output of `even1s1c` (pages 2–9)

16.1.4 Using `capPos=oddPage` — caption on an odd page

With `capPos=oddPage` the caption will be printed on an odd (right) page, the object will always be on an even (left) page, which is before the caption.

```
\hvFloat[fullpage, capPos=oddPage]%
  {figure}%
  {\includegraphics[fullpage]{images/frose}}%
  [A float which needs the complete page width and height.]%
  {A Caption on an odd page of a ‘‘fullpage’’ object, which follows on the next page.
   This can be an even or odd page. And some more text whch has no
   real meaning because it fills only the space for a long caption.}
  {fig:fullpage2}
```

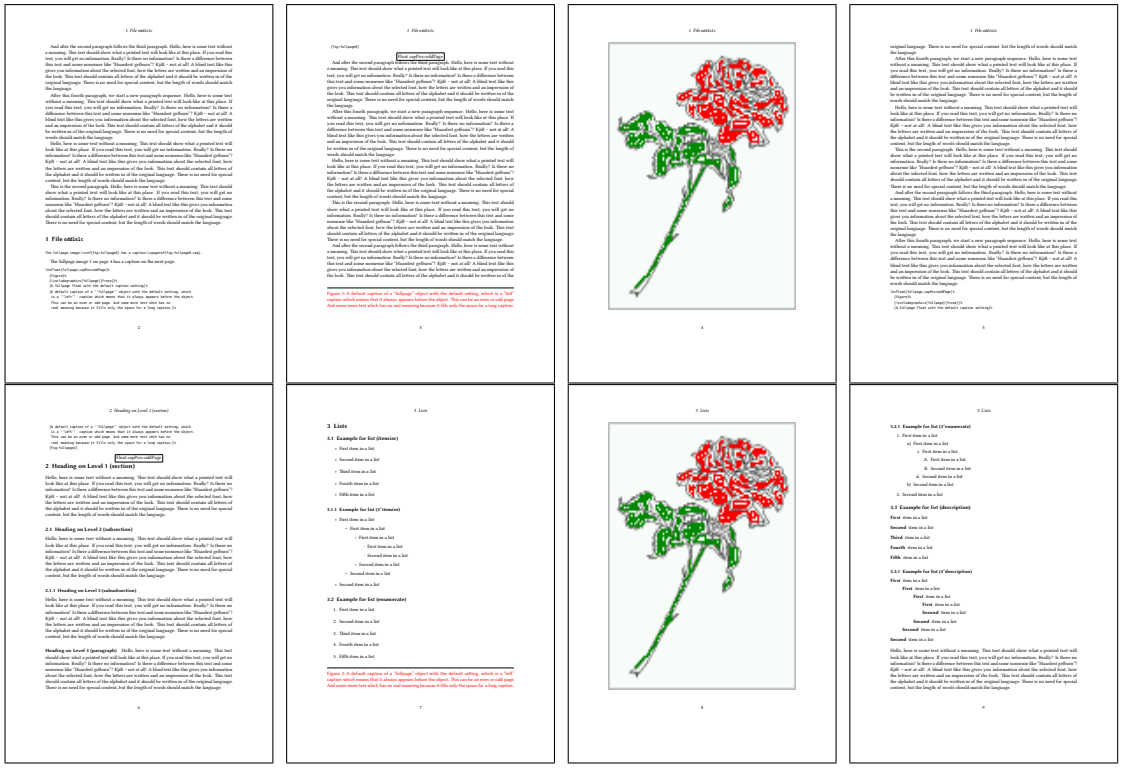


Figure 34: Output of `odd1s1c` (pages 2–9)

16.1.5 Using `capPos=inner` or `capPos=outer` — caption on the inner or outer side

These settings make no sense in onecolumn mode.

16.2 Using the paper size

It belongs to the user to create an object which fills the complete page. However, with the keyword `FULLPAGE` which is valis for `\hvfloat` *and* for the macro `\includegraphics` an image will be scaled to the paper dimensions `\paperwidth` and `\paperheight`. It can be used in one- and twocolumn mode!

```
\hvFloat[FULLPAGE]%
  {figure}%
  {\includegraphics[FULLPAGE]{frose.png}}%
  [A fullpage float with the default caption setting]%
  {A default caption of a ''fullpage'' object with the default setting, which
   is a ''left''  caption which means that it always appears before the object.
   This can be an even or odd page. And some more text whch has no
   real meaning because it fills only the space for a long caption.}%
  {fig:fullpage0}
```

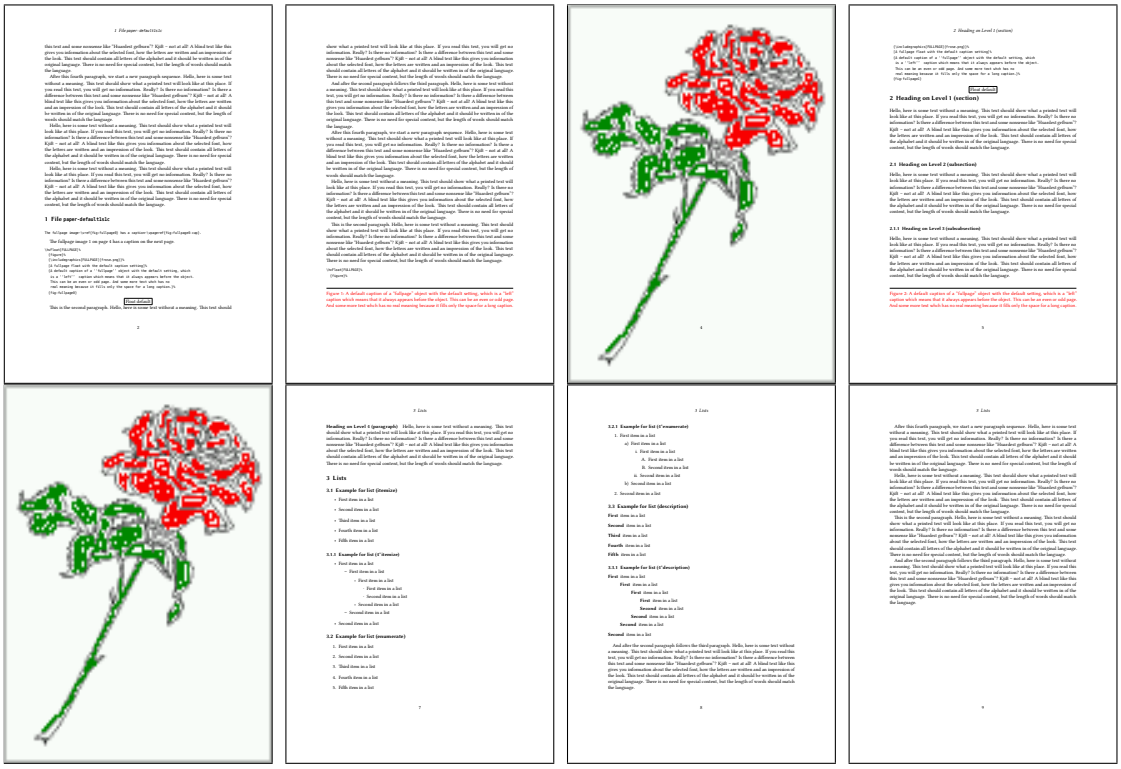


Figure 35: Output of `paper-default1s1c` (pages 2–9)

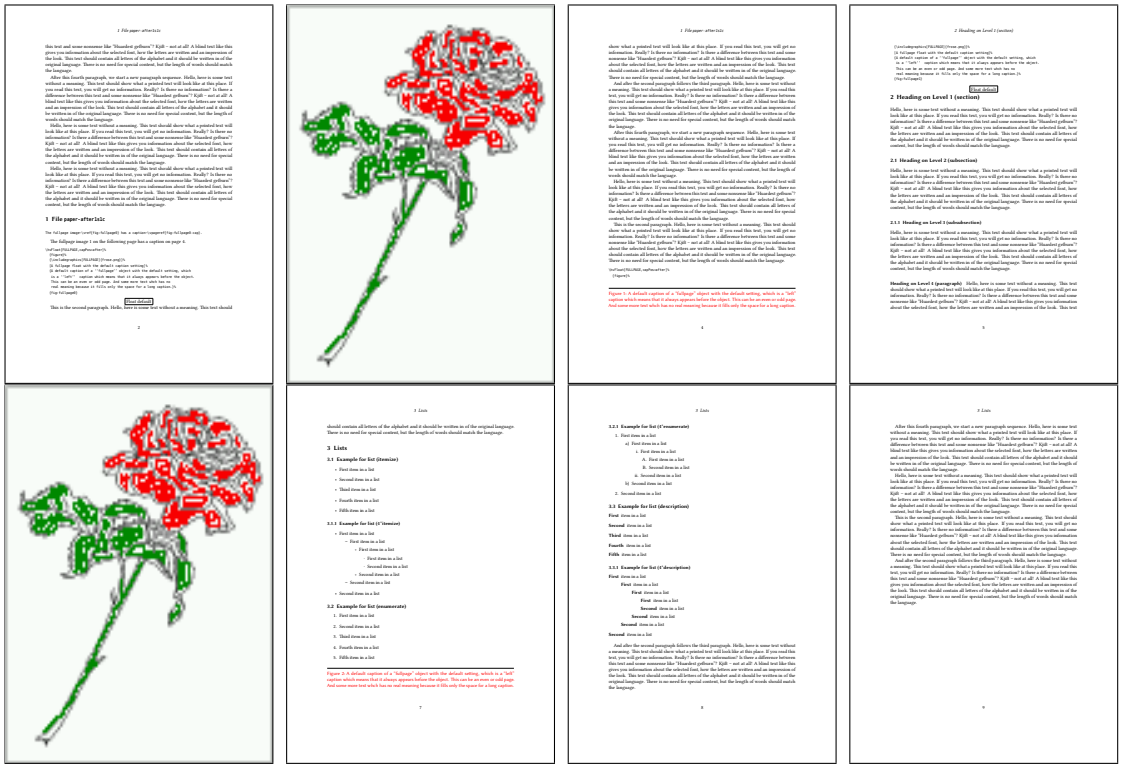


Figure 36: Output of `paper-after1s1c` (pages 2–9)

16.3 Multifloats

Multifloats is the name for more than one image and/or tabular in *one* floating environment. Every image and/or tabular has its own caption, which is different to a subcaption. The syntax for multiple floats is

```
\hvFloat[Options]+{float type}{floating object}[short caption]{long caption}{label}
                 +{float type}{floating object}[short caption]{long caption}{label}
                 +...
                 +{float type}{floating object}[short caption]{long caption}{label}
```

The + symbol defines an additional Object which will be part of the same floating environment. It's up too the user to be sure that one page or one column can hold all defined objects. Every object gets its own caption which is the reason why figures and tabulars and ... can be mixed:

```
\captionsetup{singlelinecheck=false}
\hvFloat[fullpage,capPos=before,multiFloat]%
  +{figure}{\includegraphics[width=\linewidth]{images/CTAN}}%%                    no 1
   [Short caption A]%
   {A Caption A of a ''fullpage'' object, which follows on the left or
    right column. This can be an even or odd page. And some more text whch has no
```

```
   real meaning because it fills only the space for a long caption.}%
  {img:demo0}%
 +{table}{\begin{tabular}{lrcp{3cm}}\hline                %              no 2
          Linksbündig & Rechtsbündig & Zentriert & Parbox\\\hline
          L           & R            & C         & P\\
          left        & right        & center    & Text with possible linebreaks\\
          \multicolumn{4}{c}{Multicolumn over all columns}\\\hline
         \end{tabular}}%
  [Short Caption B]%
  {A Caption B of a ''fullpage'' object, which follows on the left or
       right column. This can be an even or odd page.}{}%
 +{figure}{\includegraphics[width=\linewidth]{images/CTAN}}%%                    no 3
  {A Caption C of a ''fullpage'' object, which follows on the left or
     right column.}%
  {img:demo1}
 +{figure}{\includegraphics[width=\linewidth]{images/CTAN}}%%                    no 4
  {A Caption C of a ''fullpage'' object, which follows on the left or
     right column.}%
  {img:demo2}
```

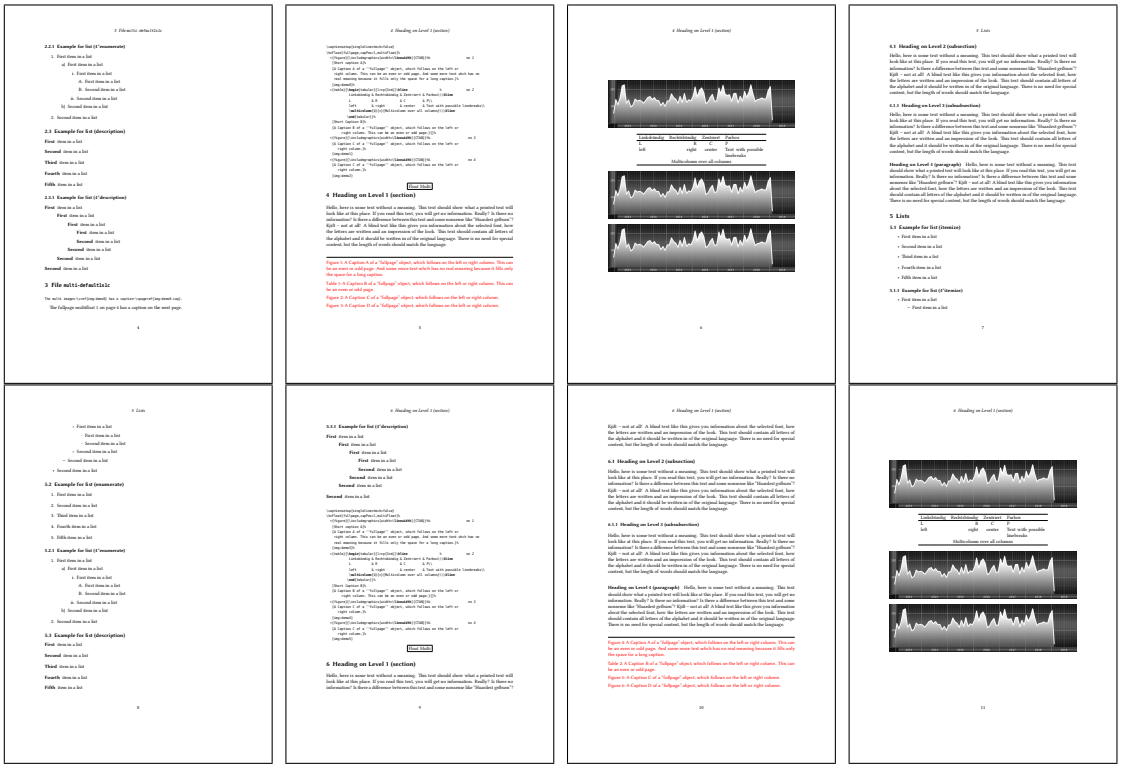


Figure 37: Output of `multi-default1s1c` (pages 4–11)

The page with the objects has no additional informations it holds only the figures and/or

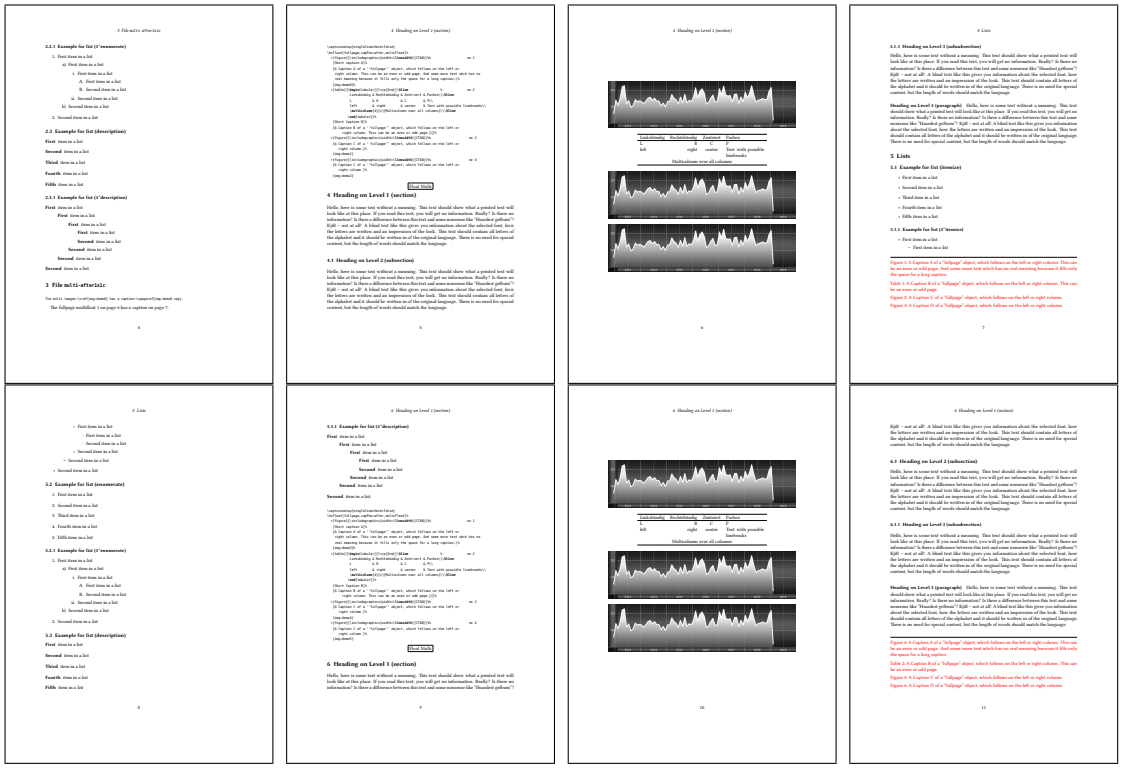


Figure 38: Output of `multi-after1s1c` (pages 4–11)

tabulars. If you want it like subfigures or subtabulars then go to section 17. The setting `\captionsetup{singlelinecheck=false }` is needed if you want the captions always left aligned.

17 Subfloat page

A subfloat page can have only one type of floats which will have one main caption and individual subcaptions. The syntax is similiar to the one for a multifloat page:

```
\hvFloat[Options] +{float type}{<empty>}[short caption]{long caption}{label}
                  +{<empty>}{floating object}[short caption]{long caption}{label}
                  +...
                  +{<empty>}{floating object}[short caption]{long caption}{label}
```

Some arguments are ignored for a subfloat, one can leave them empty. The first line defines only the type and the main caption, the object entry is ignored! All aditional lines will have the same float type, the reason why the float type entry is ignored.

```
\hvFloat[fullpage,capPos=before,objectFrame,subFloat]%
  +{figure}{}[Short main caption of the objects]%   main short lsi entry
   {The main  caption of a ‘‘fullpage’’ object, which follows on the left or
```

```
      right column. This can be an even or odd page. And some more text whch has no
      real meaning because it fills only the space for a long caption.}%  main caption
  {sub:demo0}%
 +{}{\includegraphics[width=\linewidth]{images/CTAN}}%
  [Short caption B]%
  {A Caption B of a ‘‘fullpage’’ sub object.}%  subcaption
  {}%
 +{}{\includegraphics[width=\linewidth]{images/CTAN}}%
  {A Caption C of a ‘‘fullpage’’ object, which follows on the left or right column.}%
  {sub:demo1}
 +{}{\includegraphics[width=\linewidth]{images/CTAN}}%
  {A Caption D of a ‘‘fullpage’’ object}%
  {sub:demo2}
 +{}{\includegraphics[width=\linewidth]{images/CTAN}}%
  {A Caption E of a ‘‘fullpage’’ object}%
  {sub:demo3}
```

The keyword `subFloat` defines the images or tabulars as subfloats. The package `subcaption` is loaded by default and should be activated with `\captionsetup[`*sub*`][`*singlelinecheck*`]`.

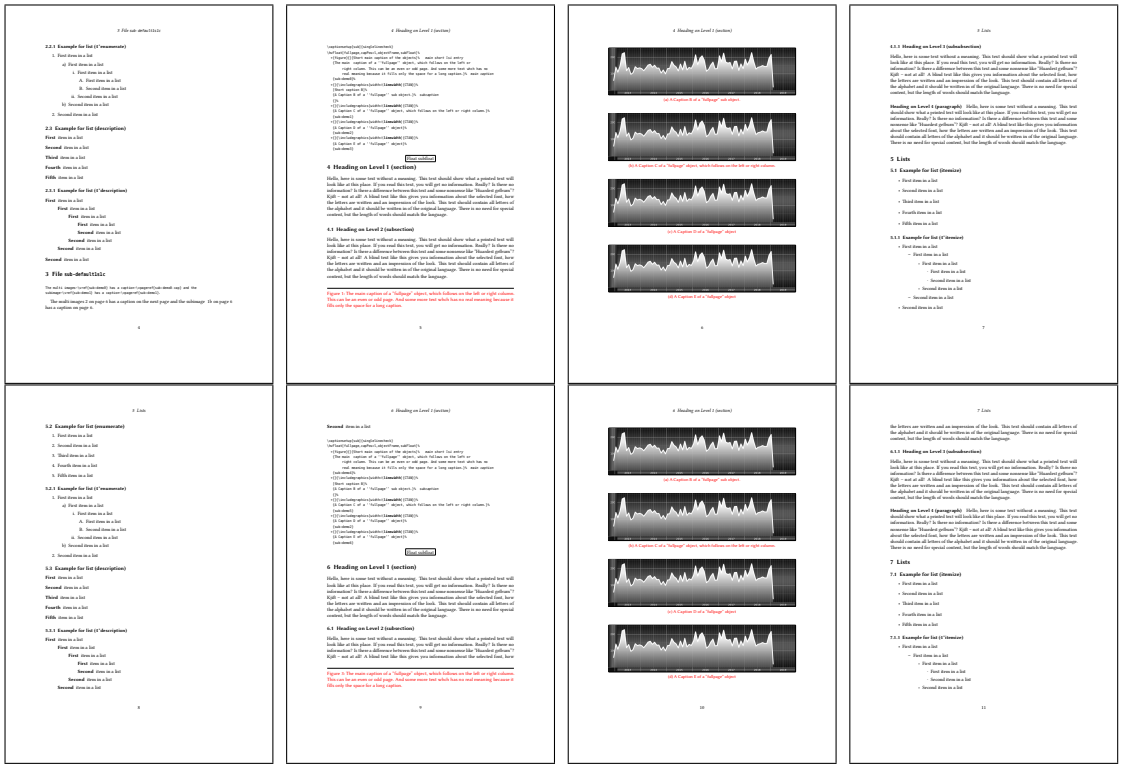


Figure 39: Output of `sub-default1s1c` (pages 4–11)

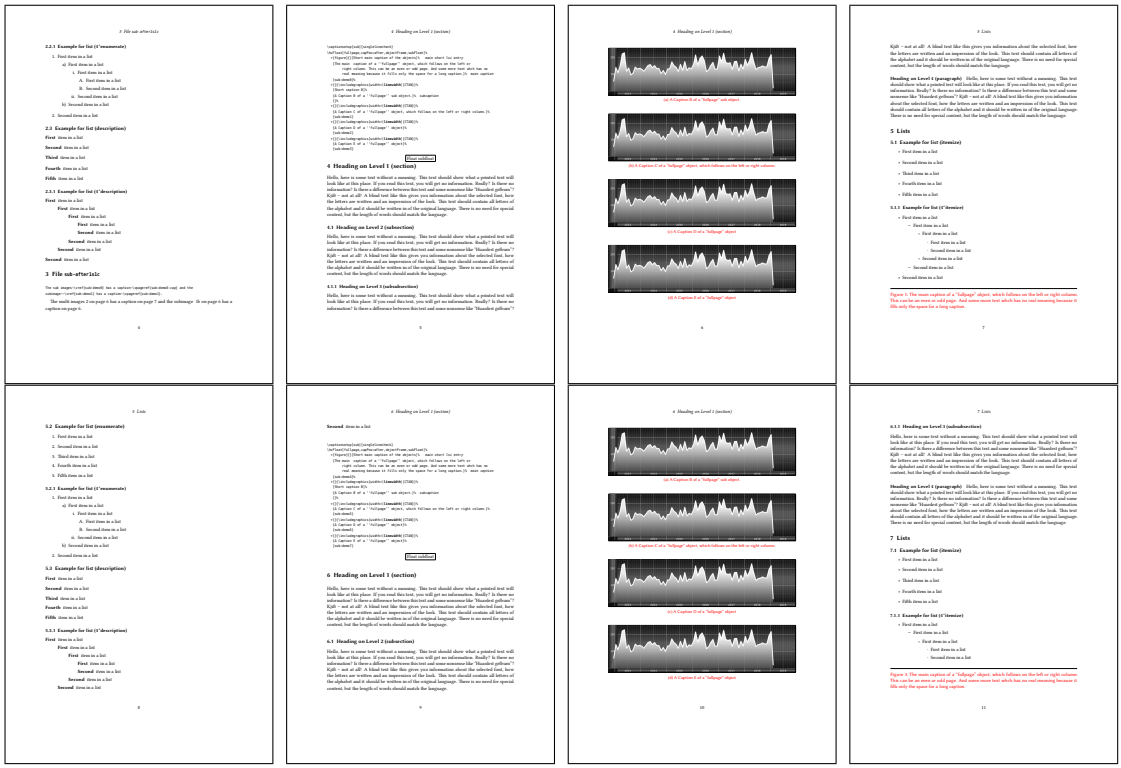


Figure 40: Output of `sub-after1s1c` (pages 4–11)

18 Full page objects in twocolumn mode

The filenames always have a “2c” for two columns in its names, e.g. `left2s2c` indicates `capPos=before` and the documentclass setting `twoside` and `twocolumn`. Depending to the used documentclass it can be a problem, if the caption should be placed on the first page of the whole document. In such a case use one of the other setting. Table 8 on page 31 shows the valid optional arguments for a full page floating object.

18.1 Default setting

For the twocolumn mode the caption can be in the left (first) or right (second) column. With the default setting (without using the keyword `capPos`) it is equivalent to the setting `capPos=before` , the caption is always placed *before* (left of) the object. This can be the first or the second column and both can be on different pages. With `capPos=before` (uppercase L) it is possible to get the caption and the object in the twocolumn mode always on one page. This is then the left (first) column for the caption (see figure 41).

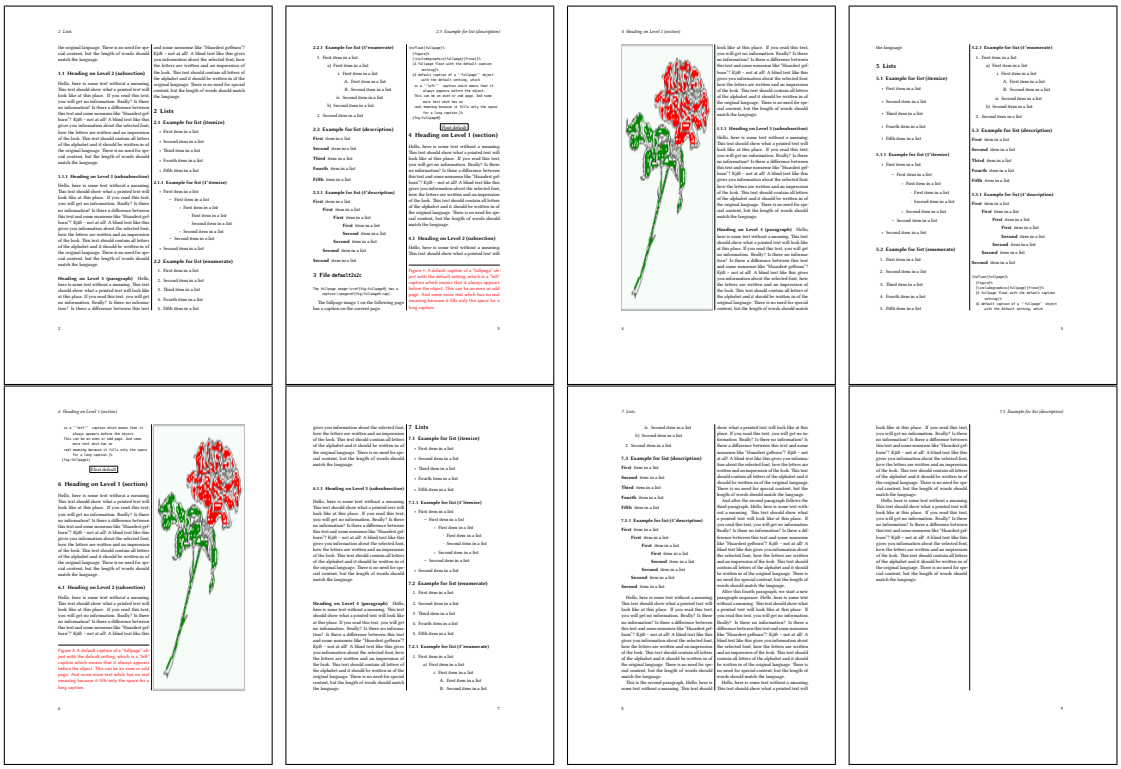


Figure 41: Output of `default2s2c` (pages 2–9)

```
\hvFloat[fullpage]{figure}%
  {\includegraphics[width=\columnwidth,height=0.9\textheight]{images/frose}}%
  [A float which needs the complete column width and height.]%
```

```
{A Caption of a ‘‘fullpage’’ object, which follows on the next column.
 This is always the right column on an even or odd page. And some more
 text whch has no real meaning because it fills only the space for a long
 caption.}%
{fig:fullpage0-2}
```

The example 41 on the preceding page shows that the caption and the object can be on different pages. If you do not like this behaviour, then use the setting `capPos=left` , which puts the caption before the object, but always on the *same page* (see Figure 42).

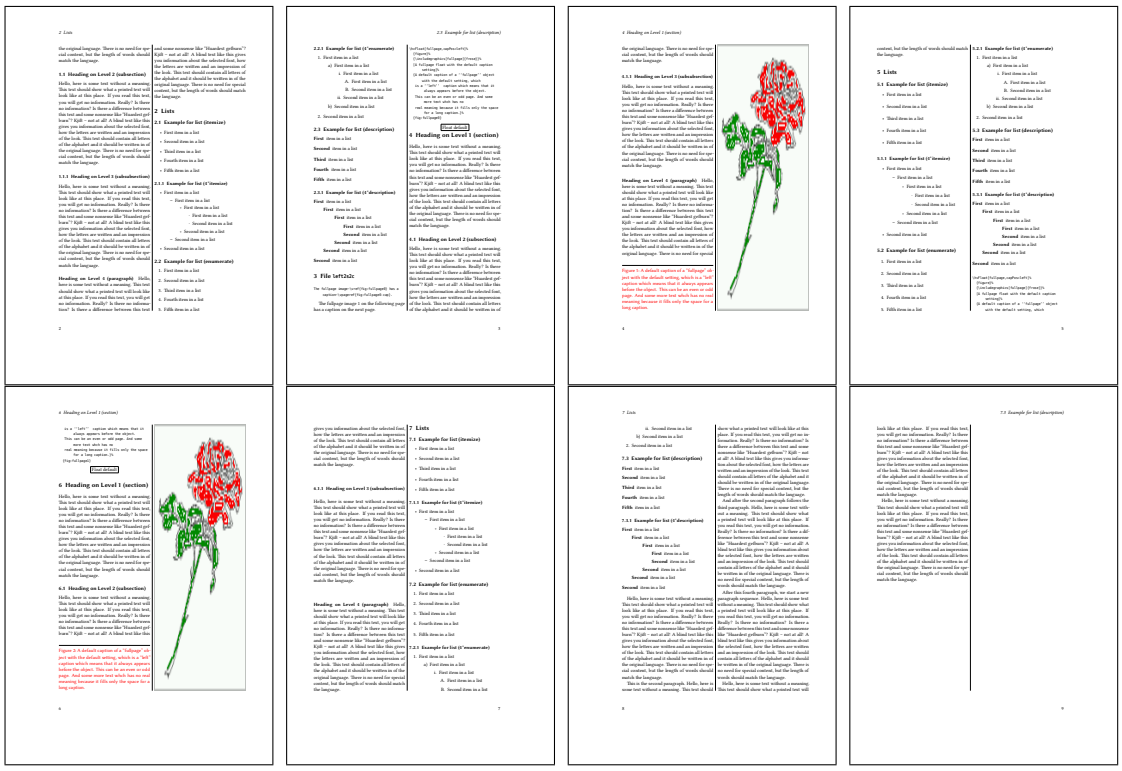


Figure 42: Output of `left2s2c` (pages 2–9)

18.1.1 Using `capPos=after`

The caption will be printed always right of the object which is the same as *after* the full page object. With `capPos=after` it is possible to get the caption in the twocolumn mode always in the right (second) column (see figure 44 on page 45)

```
\hvFloat[fullpage, capPos=after]{figure}%
  {\includegraphics[fullpage]{images/rose}}%
  [A float which needs the complete column width and height.]%
  {A Caption of a ‘‘fullpage’’ object, which is on the left column.
   This is always the right column on an even or odd page. And some more
```

```
  text whch has no real meaning because it fills only the space for a long
  caption.}%
{fig:fullpage1-2}
```

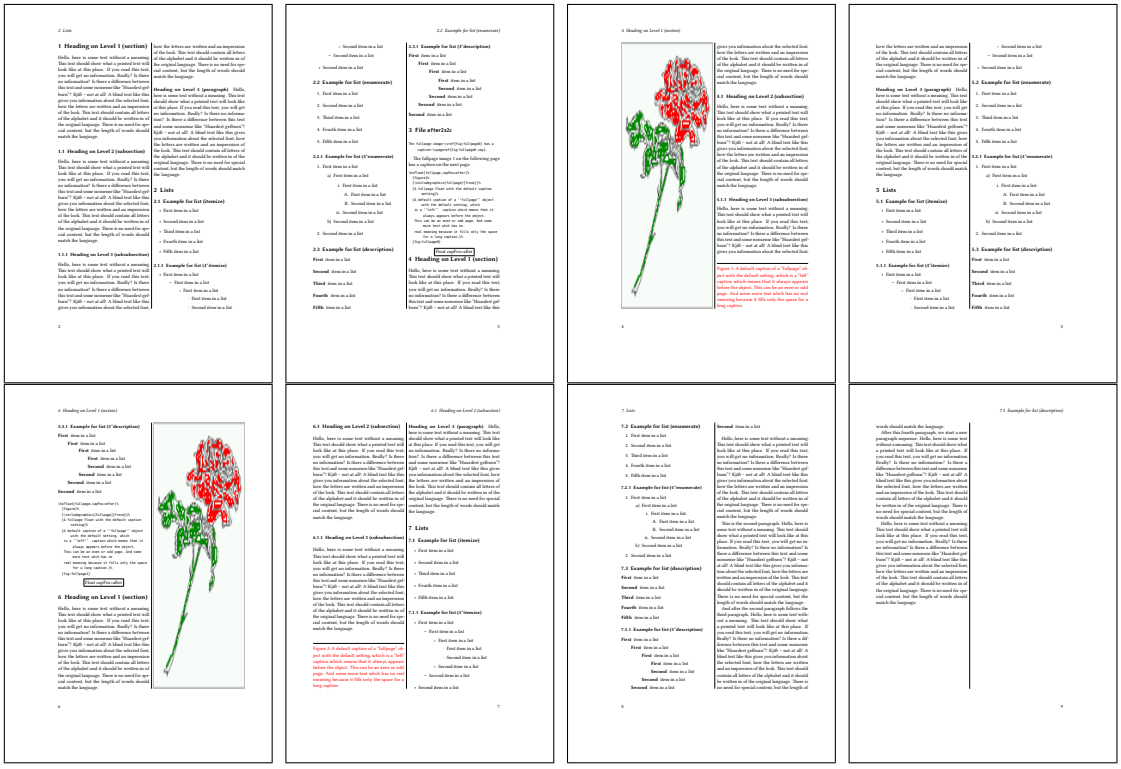


Figure 43: Output of `after2s2c` (pages 2–9)

The caption and the object can be on different pages (Figure 43). If you do not like this behaviour, then use the setting `capPos=right` instead of `capPos=after` . Figure right2s2c shows that caption and object in this case are always on the same page.

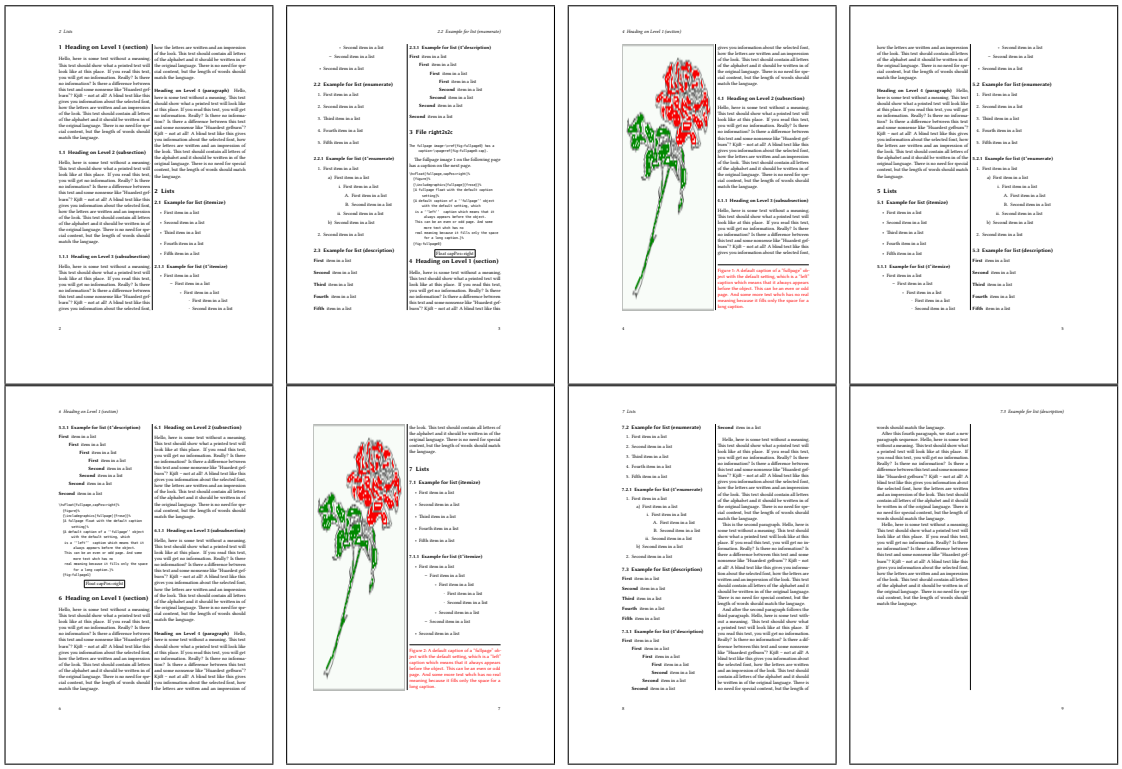


Figure 44: Output of `right2s2c` (pages 2–9)

18.1.2 Using `capPos=evenPage` — caption on an even page

There can be a problem if there is not enough space on the bottom of the even page. Then the caption will be on the next page which is an odd one. In such a case use a manually `\clearpage` or wait for an update of `hvfloat`.

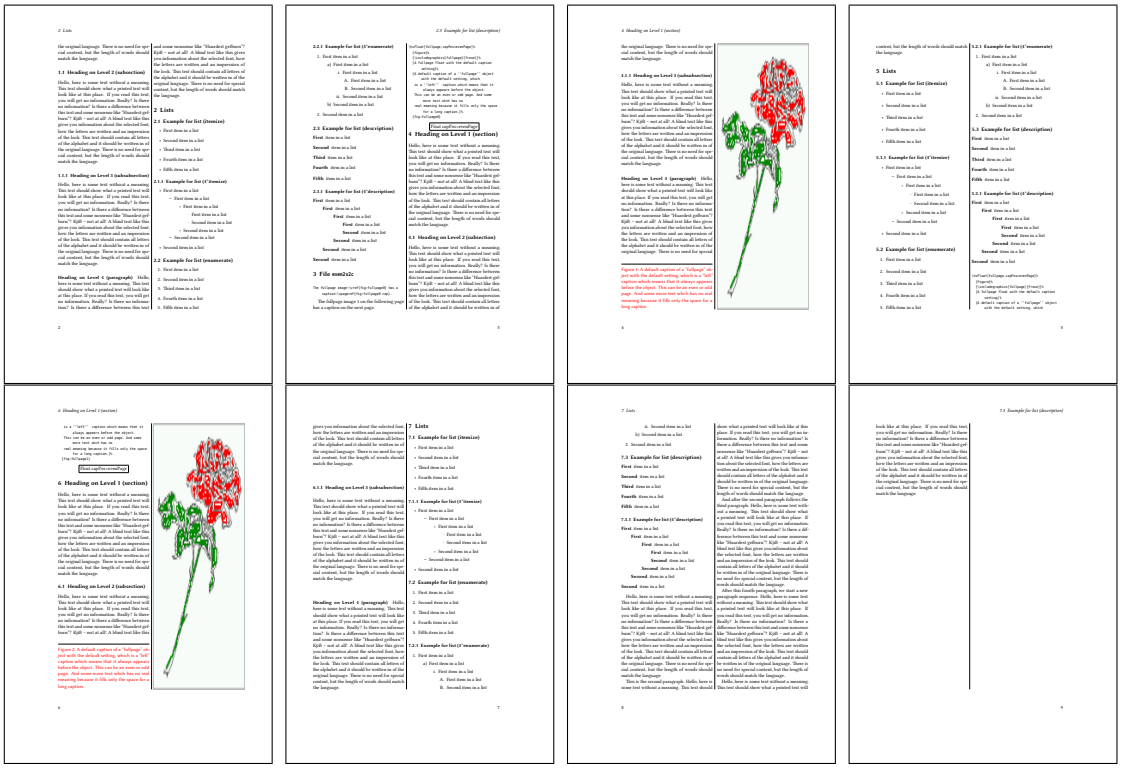


Figure 45: Output of `even2s2c` (pages 2–9)

18.1.3 Using `capPos=oddPage` — caption on an odd page

There can be a problem if there is not enough space on the bottom of the even page. Then the caption will be on the next page which is an odd one. In such a case use a manually `\clearpage` or wait for an update of `hvfloat`.

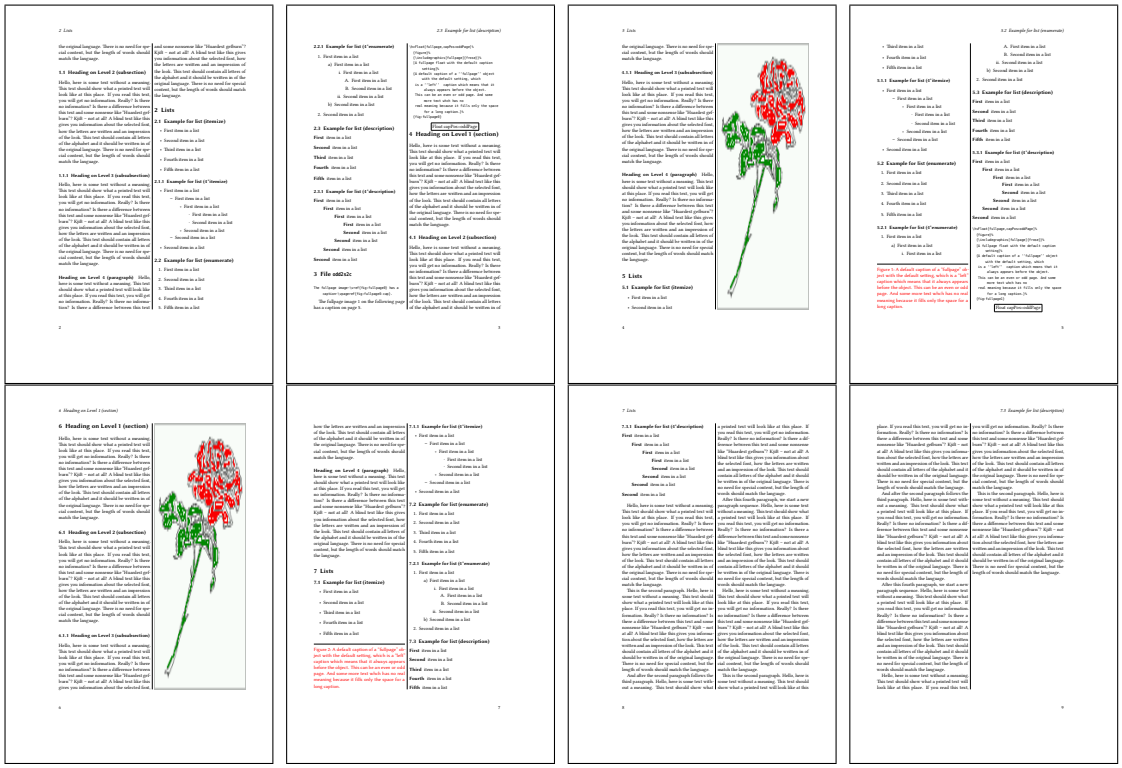


Figure 46: Output of `odd2s2c` (pages 2–9)

18.1.4 Using `capPos=inner` — caption in the inner column

The caption will be printed in the right column for an even page and in the left column for an odd page.

```
\hvFloat[fullpage,capPos=inner]{figure}{\includegraphics[fullpage]{images/rose}}%
  [A float which needs the complete column width and height.]%
  {A Caption of a ''fullpage'' object, which follows on the left or right column.
   This can be an even or odd page. And some more text whch has no
   real meaning because it fills only the space for a long caption.}{fig:fullpage3-2}
```

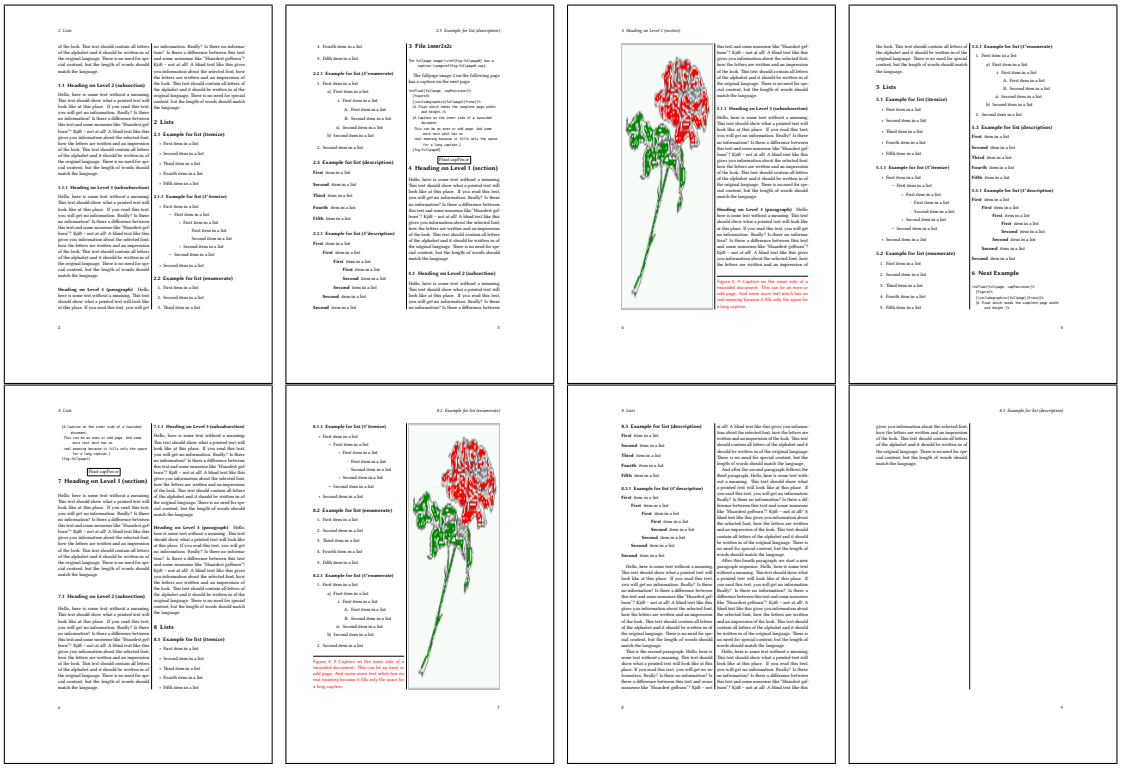


Figure 47: Output of `inner2s2c` (pages 2–9)

18.1.5 Using `capPos=outer` — caption on the outer column

The caption will be printed on the left column an odd page, the object can appear before or after this caption.

```
\hvFloat[fullpage, capPos=outer]{figure}%
  {\includegraphics[fullpage]{images/rose}}%
  [A float which needs the complete page width and height with \texttt{capPos=outer}.]%
  {A Caption of a ''fullpage'' object, which has the caption position in the
   outer page. This can be an even or odd page. And some more text whch has no
   real meaning because it fills only the space for a long caption.}{fig:fullpage2-2a}
```

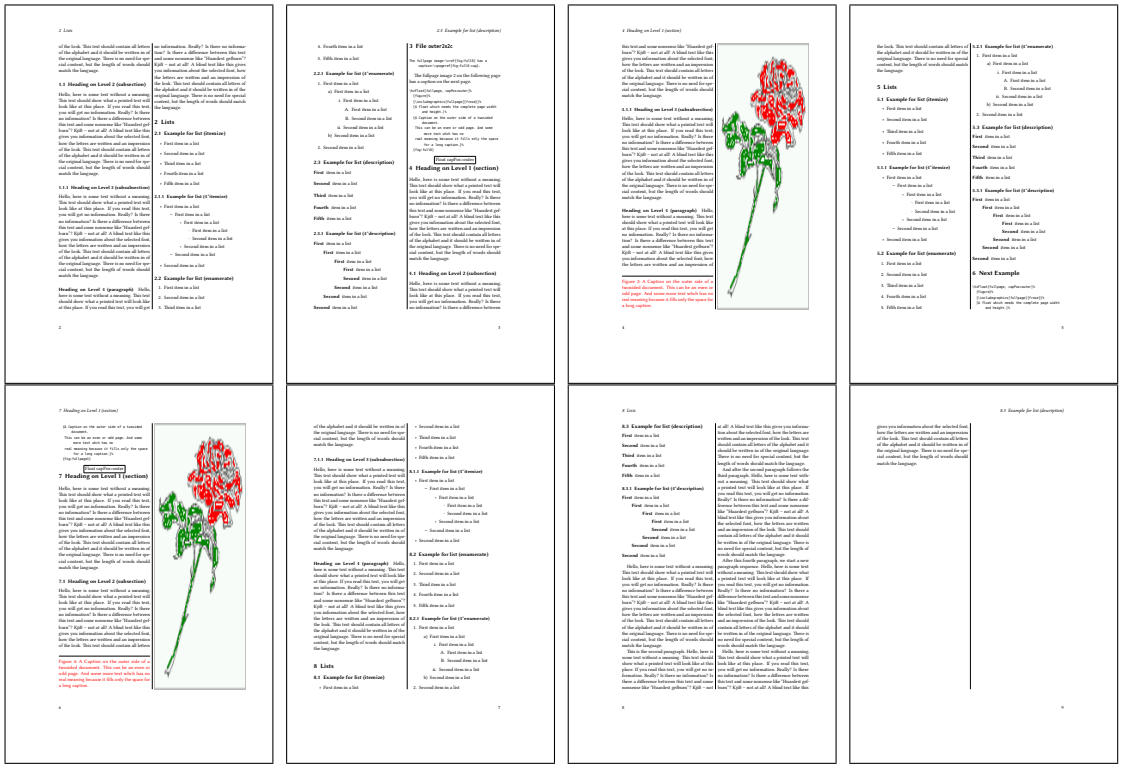


Figure 48: Output of `outer2s2c` (pages 2–9)

18.2 Using full page in twocolumn mode

With the star version of \hvfloat The object ist placed over both columns, the whole page. In such a case the only useful caption position is `capPos=inner` for *inner*.

```
\hvFloat*[fullpage, capPos=inner]{figure}%
  {\includegraphics[FullPage]{images/rose}}%
  [A float which needs the complete page width and height with \texttt{capPos=outer}.]%
  {A caption of a ''fullpage'' object in twocolumn mode: It uses the star version
  of \textbackslash hvFloat. The object goes over both columns.}{fig:two}
```

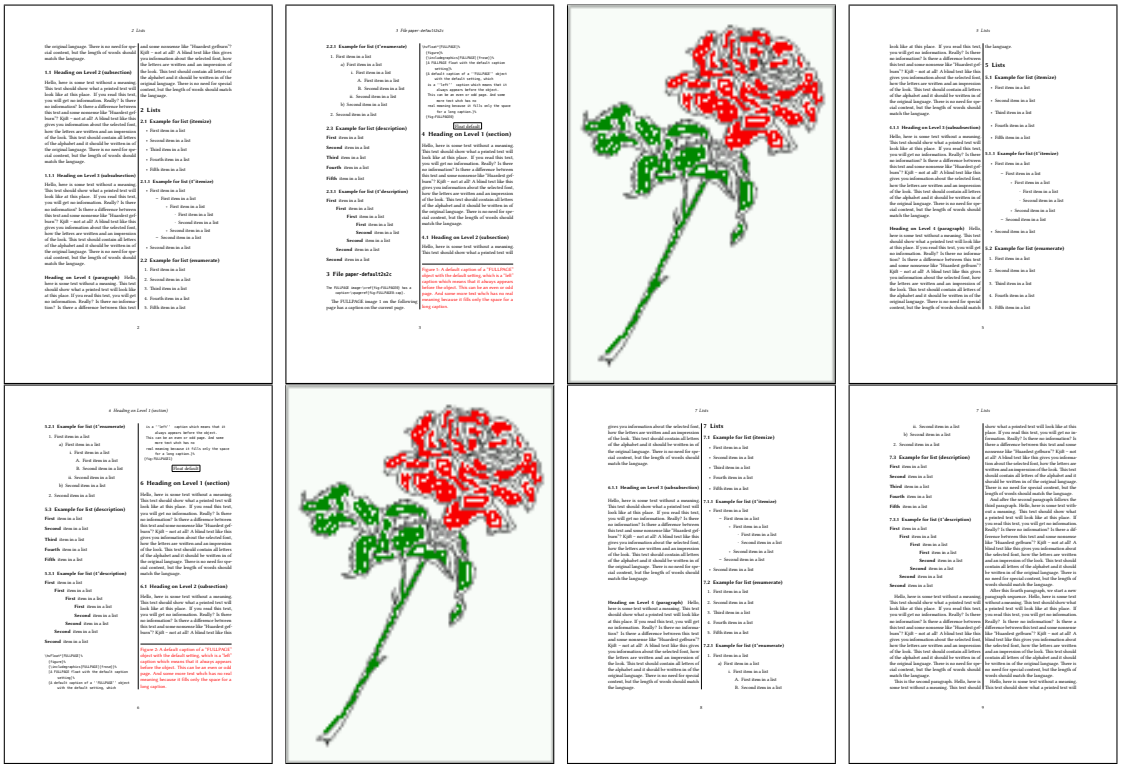


Figure 49: Output of `paper-default2s2c` (pages 2–9)

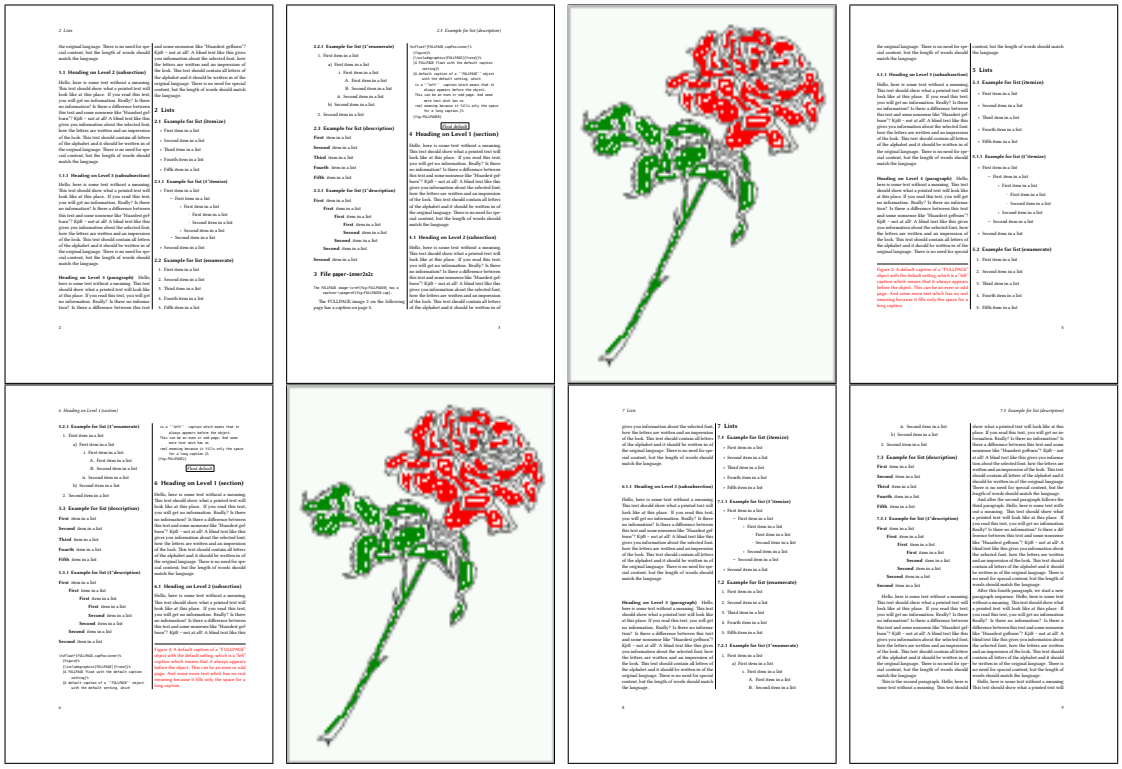


Figure 50: Output of `paper-inner2s2c` (pages 2–9)

18.3 Multifloats

Multifloats is the name for more than one image and/or tabular in *one* floating environment. Every image and/or tabular has its own caption, which is different to a subcaption. The + symbol defines an additional Object which will be part of the same floating environment. It's up too the user to be sure that one page or one column can hold all defined objects. Every object gets its own caption which is the reason why figures and tabulars and ... can be mixed:

```
\captionsetup{singlelinecheck=false}
\hvFloat[fullpage,multiFloat,capPos=inner]%
  +{figure}{\includegraphics[height=0.4\textheight]{images/rose}}%%  no 1
   [Short caption A]%
   {A Caption A of a ''fullpage'' object, which follows on the left or
    right column. This can be an even or odd page. And some more text whch has no
    real meaning because it fills only the space for a long caption.}%
   {multi:demo0}%
  +{table}{\begin{tabular}{lr}\hline                    %  no 2
           Linksbündig & Rechtsbündig\\
           L           & R           \\
           left        & right       \\
           \multicolumn{2}{c}{Multicolumn}\\\hline
```

```
        \end{tabular}}%
 [Short Caption B]%
 {A Caption B of a ''fullpage'' object, which follows on the left or
     right column. This can be an even or odd page.}%
 {}%
+{figure}{\includegraphics[height=0.4\textheight]{images/rose}}%%  no 3
 {A Caption C of a ''fullpage'' object, which follows on the left or
    right column.}%
 {multi:demo1}
```

The page with the objects has no additional informations it holds only the figures and/or tabulars. If you want it like subfigures or subtabulars then go to section 17 on page 39. The setting `\captionsetup{singlelinecheck=false }` is needed if you want the captions always left aligned.

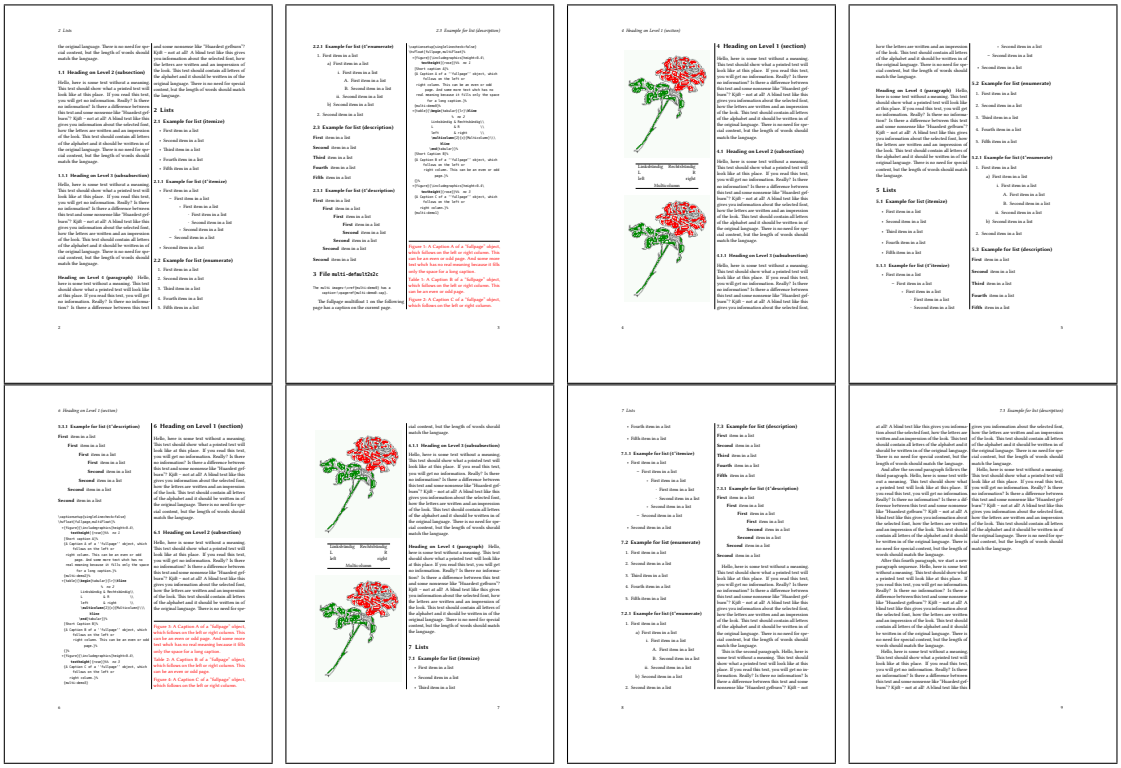


Figure 51: Output of `multi-default2s2c` (pages 2-9)

19 Subfloat page

A subfloat page can have only one type of floats which will have one main caption and individual subcaptions. Some arguments are ignored for a subfloat, one can leave them empty. The first line defines only the type and the main caption, the object entry is ignored! All aditional lines will have the same float type, the reason why the float type entry is ignored.

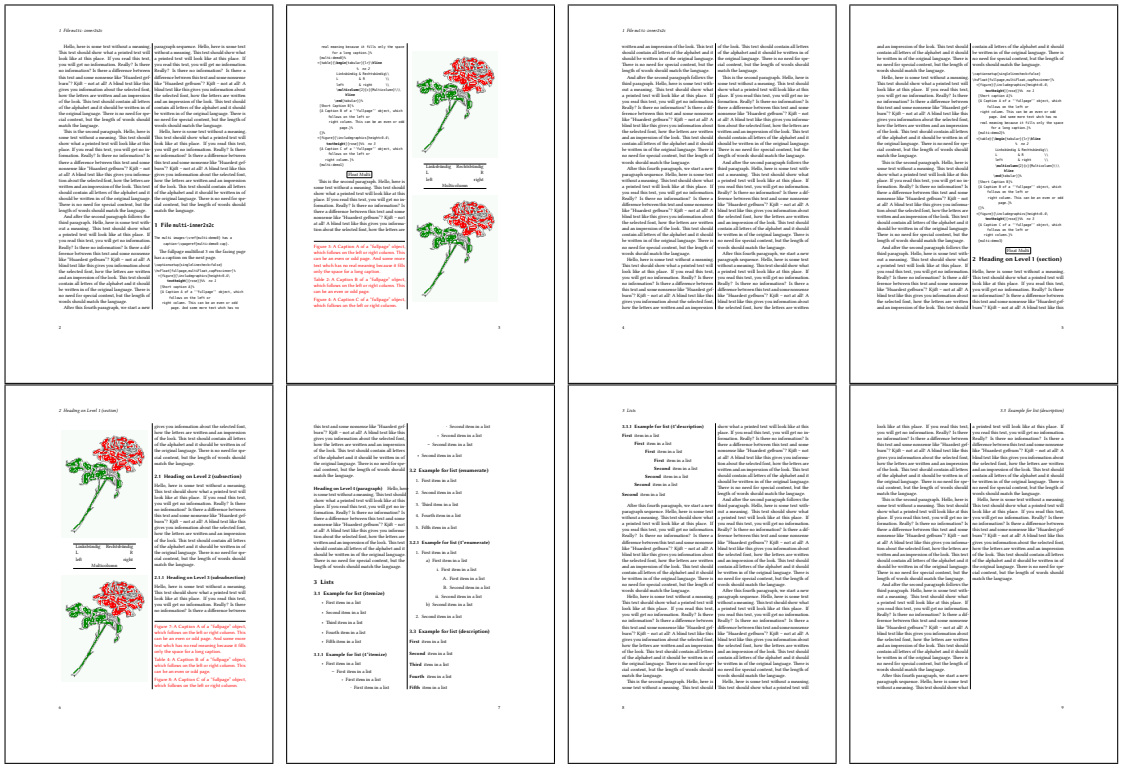


Figure 52: Output of `multi-inner2s2c` (pages 2-9)

```
\captionsetup[sub]{singlelinecheck}
\hvFloat[fullpage,capPos=before,objectFrame,subFloat]%
  +{figure}{}[Short main caption of the objects]%   main short lsi entry
   {The main  caption of a ‘‘fullpage’’ object, which follows on the left or
        right column. This can be an even or odd page. And some more text whch has no
        real meaning because it fills only the space for a long caption.}%  main caption
   {sub:demo00}%
  +{}{\includegraphics[height=0.28\textheight]{images/rose}}%
   [Short caption B]%
   {A Caption B of a ‘‘fullpage’’ sub object.}%  subcaption
   {}%
  +{}{\includegraphics[height=0.28\textheight]{images/rose}}%
   {A Caption C of a ‘‘fullpage’’ object, which follows on the left or right column.}%
   {sub:demo10}
  +{}{\includegraphics[height=0.28\textheight]{images/rose}}%
   {A Caption D of a ‘‘fullpage’’ object}%
   {sub:demo20}
```

The keyword `subFloat` defines the images or tabulars as subfloats. The package `subcaption` is loaded by default. For the subcaptions the `singlelinecheck` should be true (see listing).

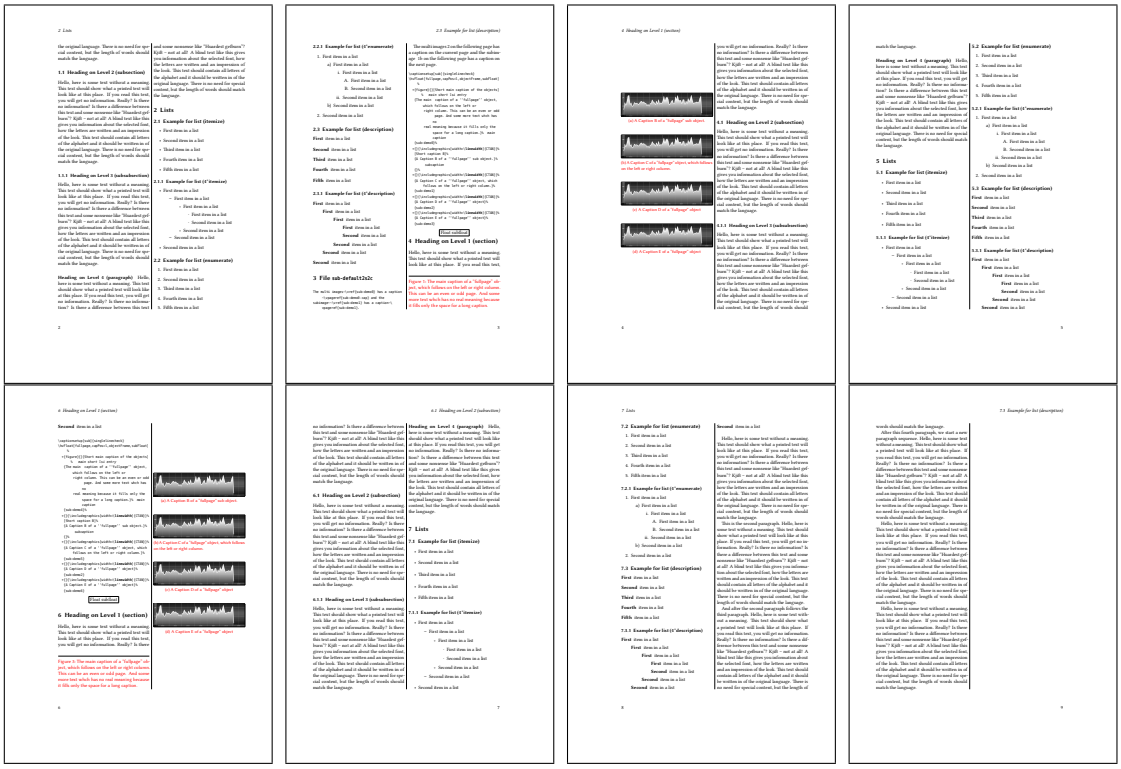


Figure 53: Output of `sub-default2s2c` (pages 2–9)

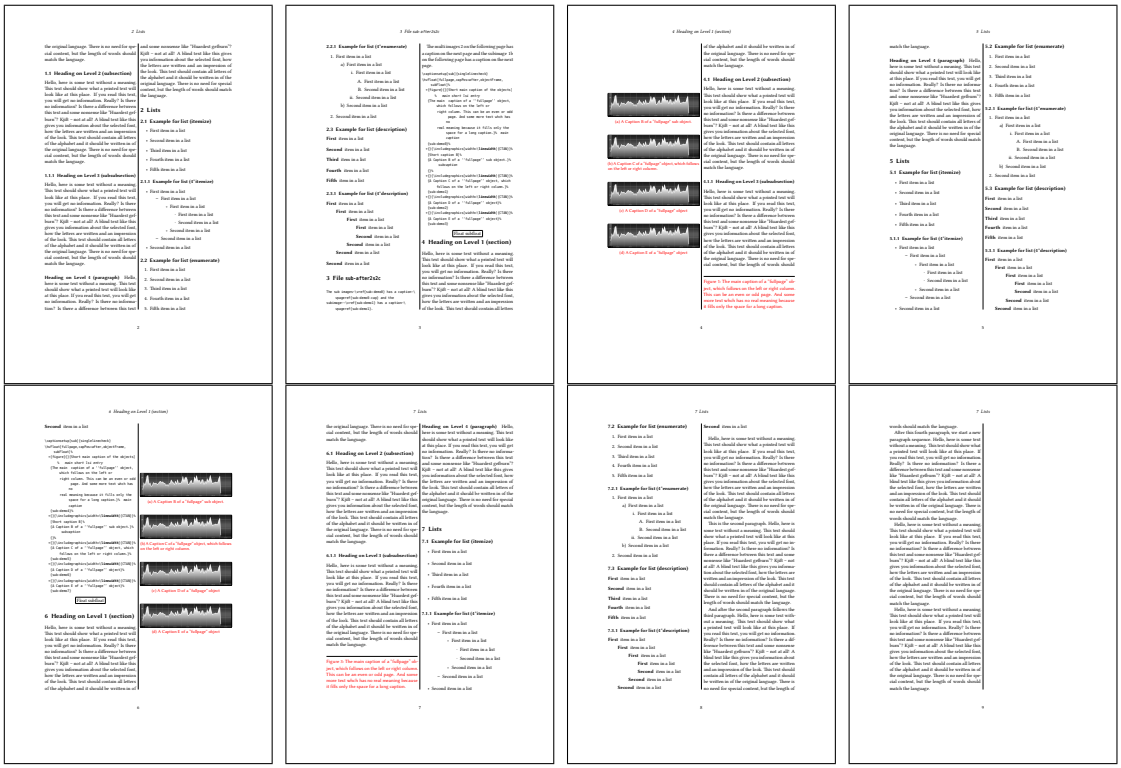


Figure 54: Output of `sub-after2s2c` (pages 2–9)

20 References to the page

With the command `\pageref` one can have a reference to the page number of a caption. For the `fullpage` option this can be the wrong page if someone wants a refence to the page where the object is set. Let's assume that we use something like

```
\setDefaults
\hvFloat[fullpage,capPos=evenPage]{figure}%
  {\IncludeGraphics{images/frose}}%
  [A float which needs the complete paper width and height.]%
  {A Caption of a ''fullpage'' object, which follows on the next page.
   This can be an even or odd page. The object uses the complete paper dimensions}%
  {demo:fullpage}
```

The label `demo:fullpage` is used for the *image* and not for the caption! Internally another label called `demo:fullpage-cap` is set on the caption page which can be before or behind the opject (depending to the optional argument of `capPos`). For example:

```
The caption of figure~\ref{demo:fullpage-cap} is on page~\pageref{demo:fullpage-cap}, but
the image itself is on page~\pageref{demo:fullpage}.
```

The caption of figure 56 is on page 56, but the image itself is on page 57. With package `varioref` it is:

```
Whith the package \Lpack{varioref} (\url{https://ctan.org/pkg/varioref})
one can get something like: see figure~\vref{demo:fullpage}, which uses a
correct page number of the floatinmg object and not the caption
page number which is~\vpageref{demo:fullpage-cap}.
The figure~\ref{demo:fullpage} is on page~\pageref{demo:fullpage}
and the caption on page~\pageref{demo:fullpage-cap}
```

Whith the package `varioref` (https://ctan.org/pkg/varioref) one can get something like: see figure 56 on page 57, which uses a correct page number of the floating object and not the caption pagenumber which is on the next page. The figure 56 is on page 57 and the caption on page 56

21 Defining a style

With `\defhvstyle` one can define a special style to get rid of the individual setting:

`\defhvstyle{`*name*`}{`*setting*`}`

For example:

```
\defhvstyle{RightCaption}{floatPos=htb, capWidth=0.5, capPos=after, capVPos=bottom, objectPos=center}

\hvFloat[style=RightCaption]{figure}{\includegraphics{images/rose}}%
  {Caption vertically centered right beside the float with a caption width of
   \texttt{0.5\textbackslash columnwidth}.}{fig:style}
```

Figure 55: Caption at bottom right beside the float with a caption width of `0.5\columnwidth`.

22 Global float setting

Instead of writing the following sequence into the preamble:

```
\makeatletter
\renewcommand\fps@figure{tb}
\renewcommand\fps@table{t}
\makeatother
```

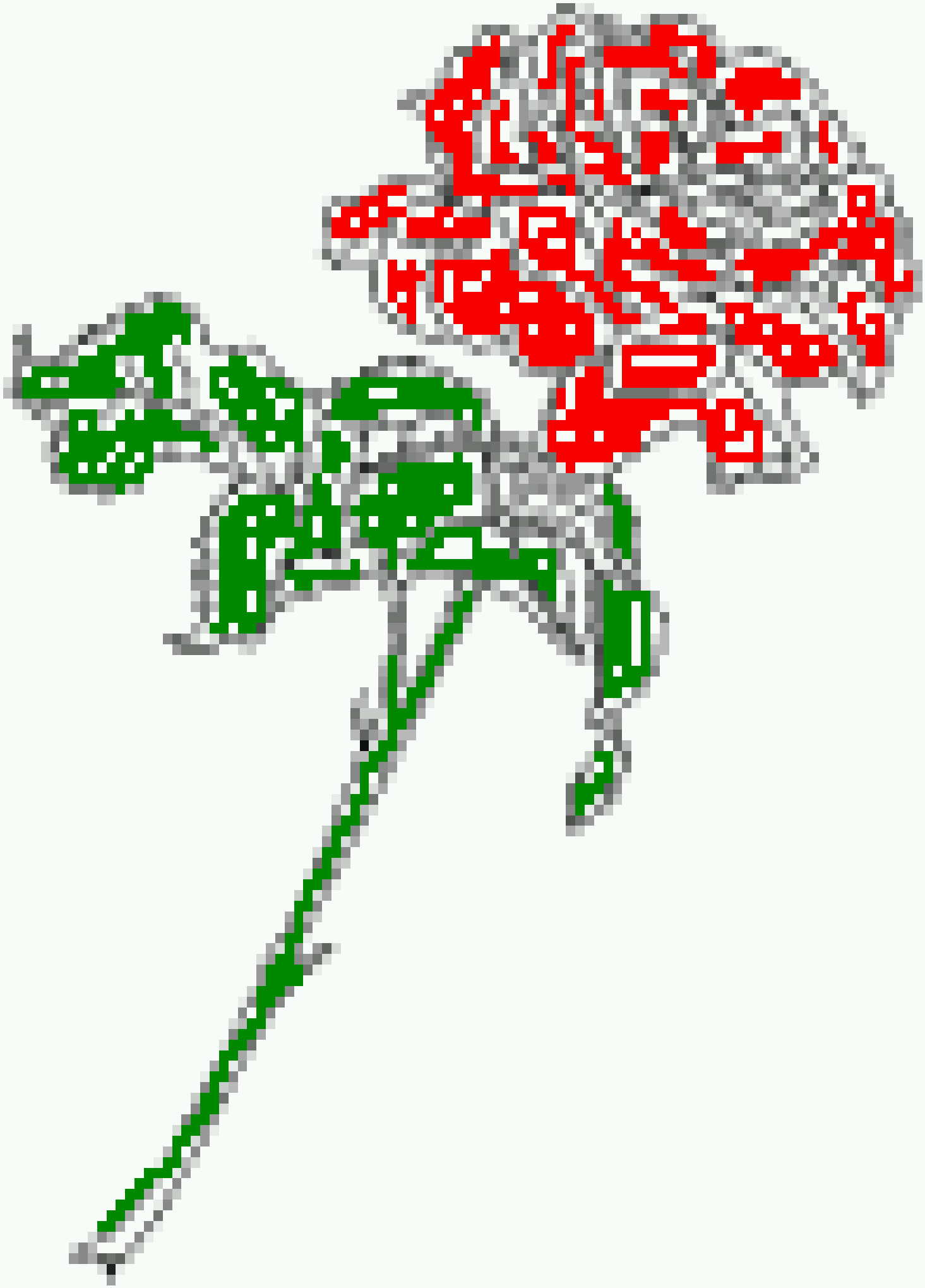
you can change the global setting of floats by loading the package `hvfloat-fps`. It allows optional package options to set the global placement:

```
\usepackage[figure=tb,table=t]{hvfloat-fps}
```

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Figure 56: A Caption of a “fullpage” object, which follows on the next page. This can be an even or odd page. The object uses the complete paper dimensions



Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

This is the second paragraph. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

And after the second paragraph follows the third paragraph. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

After this fourth paragraph, we start a new paragraph sequence. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

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23 The Package Source

```
%% $Id: hvfloat.sty 1038 2019-04-07 12:15:53Z herbert $
%%
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{hvfloat}[2019/02/03 rotating of floating objects]
%%
%% IMPORTANT NOTICE:
%%
%% This is file 'hvfloat.sty',
%%
%% Herbert Voss <hvoss@tug.org>
%%
%% This program can be redistributed and/or modified under the terms
%% of the LaTeX Project Public License Distributed from CTAN archives
%% in directory macros/latex/base/lppl.txt.
%%
%% DESCRIPTION:
%%   'hvfloat' offers rotating of captions and objects for floats
%%
\def\fileversion{2.12a}
\def\filedate{2019/04/07}
\message{'hvfloat' v\fileversion, \filedate\space (Herbert Voss)}
\let\hvFileVersion\fileversion
%
\newif\ifhv@fbox \hv@fboxfalse
\newif\ifhv@hyperref \hv@hyperreffalse
\DeclareOption{fbox}{\hv@fboxtrue\setlength{\fboxsep}{1pt}}
\DeclareOption{hyperref}{\hv@hyperreftrue}

\ProcessOptions

\PassOptionsToPackage{hypcap}{caption}
\RequirePackage{caption}
\PassOptionsToPackage{hypcap}{subcaption}
\RequirePackage{subcaption}
\RequirePackage{atbegshi}

\RequirePackage{expl3,multido}
\RequirePackage{graphicx}

\RequirePackage{xkeyval}
\RequirePackage{ifoddpage}
\RequirePackage{afterpage}
%\RequirePackage{zref-abspos}

\ifhv@hyperref
  \RequirePackage{hyperref}
%  \RequirePackage{hypcap}
\fi
%
%\unitlength=1cm
\providecommand*\LenToUnit[1]{\strip@pt\dimexpr#1*\p@/\unitlength}
```

```
52
53 \newlength\hvObjectWidth
54 \newlength\hvCapWidth
55 \newlength\hvWideWidth
56 \newlength\hvMultiFloatSkip
57 \newlength\hvMaxCapWidth
58 %\newlength\hv@BottomSpace
59 %\AtBeginDocument{%
60 %  \setlength\hv@BottomSpace{\dimexpr\paperheight-1in-\topmargin-\headheight-\headsep-\textheight}}
61
62 \newsavebox\hvObjectBox
63 \newsavebox\hvCaptionBox
64 \newsavebox\hvOBox
65 \newsavebox\@tempbox
66 \newsavebox\hv@caption@box
67
68 \newif\ifhv@capbeside \hv@capbesidefalse
69
70 \def\hv@Top{top}
71 \def\hv@Bottom{bottom}
72 \def\hv@After{after}
73 \def\hv@Before{before}
74 \def\hv@Right{right}
75 \def\hv@Left{left}
76 \def\hv@Center{center}
77 \def\hv@Outer{outer}
78 \def\hv@Inner{inner}
79 \def\hv@Even{evenPage}
80 \def\hv@Odd{oddPage}
81 \def\hv@Natural{n}
82 \def\hv@Width{w}
83 \def\hv@Height{h}
84 \def\hv@Zero{0}
85 %
86 \def\hv@figure{figure}
87 %
88 \define@key{hvSet}{floatPos}[htbp]{%      LaTeX's position parameters htbp
89    \def\hvSet@floatPos{#1}%
90 }
91 \define@key{hvSet}{rotAngle}[0]{%      rotates caption AND image together
92    \def\hvSet@rotAngle{#1}%
93 }
94 \define@key{hvSet}{capWidth}[n]{%      (n)atural width|object (w)idth)|object (h)eight|<scale of \columnwidth
       >
95    \def\hvSet@capWidth{#1}%
96 }
97 \define@key{hvSet}{capAngle}[0]{%      -360..+360
98    \def\hvSet@capAngle{#1}%
99 }
100 \define@key{hvSet}{capPos}[bottom]{%         (l)eft|(b)ottom|(t)op|(r)ight|(i)nner|(o)uter|(e)ven|o(d)d
101   \def\hvSet@capPos{#1}%         it is relativ to the object, (e),(d) only valid for fullpage float
102   \edef\@tempa{#1}%
103   \ifx\hv@Bottom\@tempa
```

```
    \hv@capbesidefalse
  \else
    \ifx\hv@Top\@tempa
      \hv@capbesidefalse
    \else
      \hv@capbesidetrue
    \fi
  \fi
}
\define@key{hvSet}{capVPos}[center]{%     bottom|center|top
   \def\hvSet@capVPos{#1}%       it is relativ to the object
}
\define@key{hvSet}{objectPos}[center]{%      (l)eft|(c)enter|(r)ight|(i)nner|(o)uter
   \def\hvSet@objectPos{#1}%     it is relativ to the document
}
\define@key{hvSet}{objectAngle}[0]{%      -360..+360
   \def\hvSet@objectAngle{#1}%
}
\define@key{hvSet}{floatCapSep}[5]{%      a width with the unit pt
   \def\hvSet@floatCapSep{#1}%
}
\define@key{hvSet}{multiFloatSkip}[\normalbaselineskip]{% a width with the unit pt
   \setlength\hvMultiFloatSkip{#1}%
}
\define@boolkey{hvSet}[hv@]{useOBox}[true]{}%      use of the hvOBox contents
\define@boolkey{hvSet}[hv@]{nonFloat}[true]{}%     Do not use float environment
\define@boolkey{hvSet}[hv@]{onlyText}[true]{}%     Write the caption only as text
\define@boolkey{hvSet}[hv@]{wide}[true]{}%      Write the caption only as text
\define@boolkey{hvSet}[hv@]{fullpage}[true]{}%     fullpage float with caption on other page
%\define@boolkey{hvSet}[hv@]{FullPage}[true]{}%    fullpage float with caption on other page
\define@boolkey{hvSet}[hv@]{FULLPAGE}[true]{}%   fullpage float with caption on other page
\define@boolkey{hvSet}[hv@]{subFloat}[true]{%      typeset values as subfloats
   \ifhv@subFloat\setkeys{hvSet}{multiFloat=false}\fi%
}%
\define@boolkey{hvSet}[hv@]{multiFloat}[true]{%    typeset values as continous floats
   \ifhv@multiFloat\setkeys{hvSet}{subFloat=false}\fi%
}%
\define@boolkey{hvSet}[hv@]{separatorLine}[true]{}%   separator line for caption of a full page float
\define@boolkey{hvSet}[hv@]{objectFrame}[true]{}%  a frame around the object with no separation
\define@key{hvSet}{style}{%
  \@ifundefined{hv@#1}%
    {\errmessage{Custom style '#1' undefined}}%
    {\begingroup
     \edef\x{\endgroup\noexpand\setkeys{hvSet}{\@nameuse{hv@#1}}\x}%   use a defined style
}
\def\hv@set#1{\begingroup\edef\x{\endgroup\noexpand\setkeys{hvSet}{#1}}\x}
\let\hvFloatSet\hv@set
%
\def\defhvstyle#1#2{\@namedef{hv@#1}{#2}}
%
\newcommand{\setDefaults}{%
  \hv@set{%
   floatPos=htbp, rotAngle=0, capWidth=n, capAngle=0,
```

```
    capPos=bottom, capVPos=center, objectPos=center, objectAngle=0,
    floatCapSep=5, useOBox=false, nonFloat=false,
    onlyText=false, wide=false, fullpage=false, FULLPAGE=false,
         multiFloat=false,subFloat=false,
    separatorLine,objectFrame=false,multiFloatSkip=\normalbaselineskip,
}%
}
\newcommand\reset@special@float{%
  \hv@set{subFloat=false,fullpage=false,multiFloat=false,FULLPAGE=false}}

\def\hv@vskip{\vspace{\hvMultiFloatSkip}}

%
\newlength\hvAboveCaptionSkip
\newlength\hvBelowCaptionSkip
\newcount\hv@@capPos

\newlength\fboxlinewidth
\AtBeginDocument{%
  \setlength\fboxlinewidth{\dimexpr\linewidth-2\fboxrule-2\fboxsep}%
}
\setlength\belowcaptionskip{\abovecaptionskip}% it is in latex.ltx = 0pt
\newcommand\saveCaptionSkip{%
   \setlength{\hvAboveCaptionSkip}{\abovecaptionskip}
   \setlength{\hvBelowCaptionSkip}{\belowcaptionskip}
   \setlength{\abovecaptionskip}{0pt}
   \setlength{\belowcaptionskip}{0pt}
}
\newcommand{\restoreCaptionSkip}{%
  \setlength\abovecaptionskip{\hvAboveCaptionSkip}%
  \setlength\belowcaptionskip{\hvBelowCaptionSkip}%
}
%
\newcommand\figcaption[2][]{\def\@captype{figure}%
  \begingroup\ifx\relax#1\relax \caption{#2}\else\caption[#1]{#2}\fi\endgroup}
\newcommand\tabcaption[2][]{\def\@captype{table}%
  \begingroup\ifx\relax#1\relax \caption{#2}\else\caption[#1]{#2}\fi\endgroup}
%
\newlength\hv@maxImageWidth
\AtBeginDocument{\hv@maxImageWidth=\columnwidth}

\define@key{Gin}{fullpage}[true]{%
  \def\Gin@ewidth{\columnwidth}%
  \def\Gin@eheight{\textheight}%
  \Gin@boolkey{false}{iso}%
}
\define@key{Gin}{FullPage}[true]{%
  \def\Gin@ewidth{\textwidth}%
  \def\Gin@eheight{\textheight}%
  \Gin@boolkey{false}{iso}%
}
\define@key{Gin}{FULLPAGE}[true]{%
  \def\Gin@ewidth{\paperwidth}%
```

```
  \def\Gin@eheight{\paperheight}%
  \Gin@boolkey{false}{iso}%
}
\newcommand\IncludeGraphics[2][]{%
%  \newpage
%\iffalse
  \vspace*{\the\dimexpr-1in-\voffset+\topskip-\headheight-0.5\baselineskip}%
  \leavevmode\checkoddpage
  \ifoddpage
    \hspace*{\dimexpr-\oddsidemargin-\parindent-1in}%
  \else
    \hspace*{\dimexpr-\evensidemargin-\parindent-1in}%
  \fi\noindent
  \includegraphics[#1,width=\paperwidth,height=\paperheight,keepaspectratio=false]{#2}%
%\fi
%  \includepdf[#1]%,width=\paperwidth,height=\paperheight,keepaspectratio=false]
%  {#2}%
}

\newcommand\put@CaptionBox[1][0]{%
  \ifcase#1
    \ifhv@fbox
      \fbox{\parbox{\wd\hvCaptionBox}{\usebox{\hvCaptionBox}}}%
    \else
      \parbox{\wd\hvCaptionBox}{\usebox{\hvCaptionBox}}%
    \fi
  \or
    \ifhv@fbox
      \fbox{\raisebox{-\height}{\usebox{\hvCaptionBox}}}%
    \else
      \raisebox{-\height}{\usebox{\hvCaptionBox}}%
    \fi
  \or
    \ifhv@fbox\fbox{\usebox{\hvCaptionBox}}\else\usebox{\hvCaptionBox}\fi
  \fi
}

\newcommand\put@ObjectBox[1][0]{%
  \ifcase#1
    \ifhv@fbox
      \fbox{\parbox{\wd\hvObjectBox}{\usebox{\hvObjectBox}}}%
    \else
      \parbox{\wd\hvObjectBox}{\ifhv@objectFrame\frame{\usebox{\hvObjectBox}}\else\usebox{\hvObjectBox}\fi}%
    \fi
  \or
    \ifhv@fbox
      \fbox{\raisebox{-\height}{\usebox{\hvObjectBox}}}%
    \else
      \raisebox{-\height}{\ifhv@objectFrame\frame{\usebox{\hvObjectBox}}\else\usebox{\hvObjectBox}\fi}%
    \fi
  \or
    \ifhv@fbox
      \fbox{\usebox{\hvObjectBox}}%
```

```
    \else
      \ifhv@objectFrame\frame{\usebox{\hvObjectBox}}\else\usebox{\hvObjectBox}\fi%
    \fi
  \fi
}

\newif\ifhv@star
\newif\if@hvsubstar
\setDefaults

\def\hvFloat{\@ifnextchar*%     Main macro
  {\hv@startrue\hv@maxImageWidth=\textwidth\hvFloat@i}%
  {\hv@starfalse\hv@maxImageWidth=\columnwidth\hvFloat@i*}%
}

%\newcommand*{\hvFloat}[5][]+{%
% [#1]: keyvalues
% #2: type  figure | table | ...
% #3: float contents
% [#4]: short caption
% #5: caption
% #6: label
%
\def\hvFloat@i*{\@ifnextchar[{\do@hvFloat}{\do@hvFloat[]}}

\def\do@hvFloat[#1]{%
  \begingroup
  \setlength\hvWideWidth{\dimexpr\linewidth+\marginparwidth}%
  \hv@maxImageWidth=\textwidth
  \hv@capbesidefalse
  \reset@special@float
  \setcounter{hv@pfigure}{\value{figure}}%
  \setcounter{hv@ptable}{\value{table}}%
  \gdef\hv@save@setting{#1}%
  \ifx\relax#1\relax\else\setkeys{hvSet}{#1}\fi
  \gdef\hv@floatType{figure}%
  \@ifnextchar+{\do@multiFloat}{\hvFloat@ii[#1]}}

\ExplSyntaxOn

\def\do@multiFloat+#1#2{%
  \clist_set:Nn\l_clist_Type{{#1}}%
  \clist_set:Nn\l_clist_Object{{#2}}%
  \@ifnextchar[\do@multiFloat@i{\do@multiFloat@i[]}%
}
\def\do@multiFloat@i[#1]#2#3{%  lof-caption, caption,label
  \ifx\relax#1\relax
    \clist_set:Nn\l_clist_LofCaption{{}}%
  \else
    \clist_set:Nn\l_clist_LofCaption{{#1}}%
  \fi
  \clist_set:Nn\l_clist_Caption{{#2}}%
  \ifx\relax#3\relax
```

```
    \clist_set:Nn\l_clist_Label{{}}%
  \else
    \clist_set:Nn\l_clist_Label{{#3}}%
  \fi
  \@ifnextchar+{\do@multiFloat@ii}{}%
}
\def\do@multiFloat@ii+#1#2{%
  \clist_put_right:Nn\l_clist_Type{{#1}}%
  \clist_put_right:Nn\l_clist_Object{{#2}}%
  \@ifnextchar[\do@multiFloat@iii{\do@multiFloat@iii[]}%
}

\def\do@multiFloat@iii[#1]#2#3{%  lof-caption, caption, label
  \ifx\relax#1\relax
    \clist_put_right:Nn\l_clist_LofCaption{{}}%
  \else
    \clist_put_right:Nn\l_clist_LofCaption{{#1}}%
  \fi
  \clist_put_right:Nn\l_clist_Caption{{#2}}%
  \ifx\relax#3\relax
    \clist_put_right:Nn\l_clist_Label{{}}%
  \else
    \clist_put_right:Nn\l_clist_Label{{#3}}%
  \fi
  \@ifnextchar+\do@multiFloat@ii%
    {\def\hvSet@CapWidth{n}%
     \do@@@@hvFloat}%
}
\ExplSyntaxOff


\newcounter{hv@pfigure}
\newcounter{hv@ptable}
\newcounter{subhv@pfigure}
\newcounter{subhv@ptable}

\def\drawSepLine{%
  \par\noindent
  \if@twocolumn\rule{\columnwidth}{0.4pt}\else\rule{\linewidth}{0.4pt}\fi
  \vspace{0pt}%
}

\newcount\hv@cnta
\newcount\hv@cntb


\def\hvFloat@ii[#1]#2#3{%
  \hv@maxImageWidth=\textwidth
  \hv@capbesidefalse
  \ifx\relax#1\relax\else\setkeys{hvSet}{#1}\fi
  \gdef\hv@floatType{#2}%
  \ifx\relax#2\relax \setkeys{hvSet}{nonFloat=true}\fi
  \gdef\hv@floatObject{#3}%
```

```
  \@ifnextchar[{\do@@hvFloat}{\do@@hvFloat[]}%
}
\def\do@@hvFloat[#1]#2#3{%
  \gdef\hv@shortCap{#1}%
  \gdef\hv@longCap{#2}%
  \gdef\hv@label{#3}%
  \ifhv@fullpage
    \def\hvSet@CapWidth{n}%  relative value
    \do@@@hvFloat%  fullpage with caption on other page
  \else
    \ifhv@FULLPAGE
      \def\hvSet@CapWidth{n}%  relative value
      \do@@@hvFloat%  fullpage with caption on other page
    \else
      \do@@@hvFloat
    \fi
  \fi
}
%
\def\do@@@hvFloat{%  no special float page
  \def\@tempa{90}%
  \ifx\hvSet@rotAngle\@tempa
    \setlength\hvMaxCapWidth{\textheight}%
  \else
    \setlength\hvMaxCapWidth{\hvWideWidth}%
  \fi
%
% First we save the object in \hvObjectBox
%
  \ifx\hvSet@objectAngle\hv@Zero % rotate the object?
    \savebox{\hvObjectBox}{\ifhv@useOBox\usebox{\hvOBox}\else\hv@floatObject\fi}%
  \else
    \savebox{\hvObjectBox}{%
      \rotatebox{\hvSet@objectAngle}{%
        \ifhv@useOBox\usebox{\hvOBox}\else\hv@floatObject\fi
      }%
    }%
  \fi
  \setlength\hvObjectWidth{\wd\hvObjectBox}%
%
% Now we save the caption with its defined \hvCapWidth
%
  \ifx\hvSet@capWidth\hv@Width%                captionwidth=objectwidth
    \setlength\hvCapWidth{\hvObjectWidth}%
  \else
    \ifx\hvSet@capWidth\hv@Height%             captionwidth=objectheight
      \setlength\hvCapWidth{\ht\hvObjectBox}%
    \else
      \ifx\hvSet@capWidth\hv@Natural%          captionwidth=\linewidth-\objectwidth-separation
        \ifhv@capbeside
          \ifhv@wide
            \setlength\hvCapWidth{\the\dimexpr\hvWideWidth-\hvObjectWidth-\hvSet@floatCapSep pt\relax}%
          \else
```

```
            \setlength\hvCapWidth{\the\dimexpr\columnwidth-\hvObjectWidth-\hvSet@floatCapSep pt\relax}%
          \fi
        \else
          \setlength\hvCapWidth{\columnwidth}%
        \fi
      \else
        \ifhv@capbeside
          \ifhv@wide
            \setlength\hvCapWidth{\hvSet@capWidth\hvWideWidth}%
            \setlength\@tempdima{\the\dimexpr\hvWideWidth-\hvObjectWidth-\hvSet@floatCapSep pt\relax}%
          \else
            \setlength\hvCapWidth{\hvSet@capWidth\columnwidth}%
            \setlength\@tempdima{\the\dimexpr\columnwidth-\hvObjectWidth-\hvSet@floatCapSep pt\relax}%
          \fi
          \ifdim\hvCapWidth>\@tempdima
            \setlength\hvCapWidth{\@tempdima}%
          \fi
        \else
          \ifhv@wide
            \setlength\hvCapWidth{\hvSet@capWidth\hvWideWidth}%
          \else
            \setlength\hvCapWidth{\hvSet@capWidth\columnwidth}%
          \fi
        \fi
      \fi
    \fi
  \fi
  \saveCaptionSkip         % we put this space ourselve
  \ifx\hvSet@capAngle\hv@Zero       % need rotation?
    \sbox\hvCaptionBox{%   NO rotation
      \begin{minipage}[b]{\hvCapWidth}% minipage, to get hyphenation
        \ifhv@nonFloat
     \ifhv@onlyText\hv@longCap
     \else
       \ifx\hv@floatType\hv@figure
         \ifx\relax\hv@shortCap\relax \figcaption{\hv@longCap}\else\figcaption[\hv@shortCap]{\hv@longCap}\fi
       \else
         \ifx\relax\hv@shortCap\relax \tabcaption{\hv@longCap}\else\tabcaption[\hv@shortCap]{\hv@longCap}\fi
       \fi
     \fi
   \else
         \let\@captype\hv@floatType
         \expandafter\ifx\expandafter\relax\hv@shortCap\relax \caption{\hv@longCap}\else\caption[\
              hv@shortCap]{\hv@longCap}\fi
   \fi
   \expandafter\label\expandafter{\hv@label}%
     \end{minipage}%
    }%
  \else
    \sbox\hvCaptionBox{%   Rotation
      \rotatebox{\hvSet@capAngle}{%
        \begin{minipage}[b]{\hvCapWidth}% minipage, to get hyphenation
     \ifhv@nonFloat
```

```
474         \ifhv@onlyText\hv@longCap
475       \else
476         \ifx\hv@floatType\hv@figure
477           \ifx\relax\hv@shortCap\relax \figcaption{\hv@longCap}\else\figcaption[\hv@shortCap]{\hv@longCap}\fi
478         \else
479           \ifx\relax\hv@shortCap\relax \tabcaption{\hv@longCap}\else\tabcaption[\hv@shortCap]{\hv@longCap}\fi
480         \fi
481       \fi
482     \else
483           \let\@captype\hv@floatType
484           \expandafter\ifx\expandafter\relax\hv@shortCap\relax \caption{\hv@longCap}\else\caption[\
                hv@shortCap]{\hv@longCap}\fi
485         \fi
486         \label{\hv@label}%
487         \end{minipage}%
488       }%  rotatebox
489     }%  \sbox
490   \fi
491 %
492 % now we have the object and the caption with the right
493 % rotated angles saved in different boxes
494 %%
495   \restoreCaptionSkip% save old values
496   \def\fps@figure{\hvSet@floatPos}%
497   \ifhv@nonFloat
498     \begingroup%        Start the nonfloat part
499     \checkoddpage
500   \else
501     \begin{\hv@floatType}%    Start the floating environment
502     \checkoddpage
503   \fi
504   \ifx\hvSet@objectPos\hv@Right\raggedleft\fi
505   \ifx\hvSet@objectPos\hv@Center
506     \ifhv@nonFloat\hspace*{\fill}\else\centering\fi
507   \fi
508   \ifx\hvSet@objectPos\hv@Outer
509     \ifoddpage\raggedleft\fi
510   \fi
511   \ifx\hvSet@objectPos\hv@Inner
512     \ifoddpage\else\raggedleft\fi
513   \fi
514 %
515 % to rotate object and caption together, we save all in another box
516 % the caption comes first, if its on the left or the top
517 %  0 caption left, inner and odd page, oneside inner
518 %  1 caption top
519 %  2 caption right, inner and even page, oneside outer
520 %  3 caption bottom
521 %
522   \ifx\hvSet@capPos\hv@Left
523     \hv@@capPos=0
524   \else
525     \ifx\hvSet@capPos\hv@Top
```

```
      \hv@@capPos=1
    \else
      \ifx\hvSet@capPos\hv@Right
        \hv@@capPos=2
      \else
        \ifx\hvSet@capPos\hv@Bottom
          \hv@@capPos=3
        \else
          \ifx\hvSet@capPos\hv@Inner
            \ifoddpageoroneside\hv@@capPos=0\else\hv@@capPos=2\fi
          \else
            \ifx\hvSet@capPos\hv@Outer
              \ifoddpageoroneside\hv@@capPos=2\else\hv@@capPos=0\fi
            \else
              \ifx\hvSet@capPos\hv@Before
                \hv@@capPos=0 % same as cappos=right
              \else
                \ifx\hvSet@capPos\hv@After
                  \hv@@capPos=2 % same as capPos=right
                \fi
              \fi
            \fi
          \fi
        \fi
      \fi
    \fi
  \fi
%%%%
  \savebox{\@tempboxa}{%
    \expandafter\ifcase\the\hv@@capPos   % 0 is LEFT     START \ifcase
      \ifx\hvSet@capVPos\hv@Center
        \put@CaptionBox
        \hspace{\hvSet@floatCapSep pt}% capfloatsep
        \put@ObjectBox
      \else
        \ifx\hvSet@capVPos\hv@Top% caption and object at top aligned
          \put@CaptionBox[1]
          \hspace{\hvSet@floatCapSep pt}% capfloatsep
          \put@ObjectBox[1]
        \else% caption on bottom
          \put@CaptionBox[2]
          \hspace{\hvSet@floatCapSep pt}% capfloatsep
          \put@ObjectBox[2]
        \fi
      \fi%  end caption left
    \or   %1 is top
      \ifdim\wd\hvCaptionBox>\wd\hvObjectBox
    \begin{minipage}{\wd\hvCaptionBox}%
      \else
    \begin{minipage}{\wd\hvObjectBox}%
      \fi
      \centering
      \ifhv@fbox
```

```
    \fbox{\usebox{\hvCaptionBox}}\\[\hvBelowCaptionSkip]%
    \fbox{\usebox{\hvObjectBox}}%
       \else
    \usebox{\hvCaptionBox}\\[\hvBelowCaptionSkip]%
    \usebox{\hvObjectBox}%
       \fi
       \end{minipage}%
     \or   %2 is right
       \ifx\hvSet@capVPos\hv@Center
         \put@ObjectBox
    \hspace{\hvSet@floatCapSep pt}%
    \put@CaptionBox
       \else
    \ifx\hvSet@capVPos\hv@Top
          \put@ObjectBox[1]
          \hspace{\hvSet@floatCapSep pt}% capfloatsep
          \put@CaptionBox[1]
    \else
          \put@ObjectBox[2]
          \hspace{\hvSet@floatCapSep pt}% capfloatsep
          \put@CaptionBox[2]
    \fi
       \fi
     \or %3 bottom
       \ifdim\wd\hvCaptionBox>\wd\hvObjectBox
         \begin{minipage}{\wd\hvCaptionBox}%
       \else
         \begin{minipage}{\wd\hvObjectBox}%
       \fi
       \centering
       \ifhv@fbox
         \fbox{\usebox{\hvObjectBox}}\\[\hvAboveCaptionSkip]%
           \fbox{\usebox{\hvCaptionBox}}%
         \else
           \ifhv@objectFrame\frame{\usebox{\hvObjectBox}}\else\usebox{\hvObjectBox}\fi\\[\hvAboveCaptionSkip]%
           \usebox{\hvCaptionBox}%
         \fi
       \end{minipage}
     \fi%   \ifcase\the\hv@@capPos
  }% End savebox Object and caption
%
% now we rotate the object and caption, if needed
%
  \ifhv@wide
    \ifoddpageoroneside\else\ifoddpage\else\hspace*{-\marginparwidth}\fi\fi%   <- for wide and left page
  \fi
  \ifx\hvSet@rotAngle\hv@Zero
    \usebox{\@tempboxa}%
  \else
    \rotatebox{\hvSet@rotAngle}{\usebox{\@tempboxa}}%
  \fi
  \ifhv@nonFloat
    \ifx\hvSet@objectPos\hv@Center
```

```
      \ifhv@nonFloat
     \hspace{\fill}%
      \fi
    \fi
    \endgroup% End the nonfloat part
  \else
    \end{\hv@floatType}%   End the floating environment
  \fi
  \endgroup% startet at main \hvFloat
}
%
\newenvironment{hvFloatEnv}[1][\textwidth]
  {\minipage{#1}\center}
  {\endcenter\endminipage}
%

\ExplSyntaxOn
\let\clist@item@Nn\clist_item:Nn
\let\l@clist@Type\l_clist_Type
\let\l@clist@LofCaption\l_clist_LofCaption
\let\l@clist@Label\l_clist_Label
\let\clist@count@N\clist_count:N
\ExplSyntaxOff

\def\do@@@@hvFloat{%  special float page: caption <-> fullpage image
  \ifx\hvSet@capPos\hv@After \hv@@capPos=1
  \else
    \ifx\hvSet@capPos\hv@Even  \hv@@capPos=2
    \else
      \ifx\hvSet@capPos\hv@Odd   \hv@@capPos=3
      \else
        \ifx\hvSet@capPos\hv@Inner   \hv@@capPos=4
        \else
          \ifx\hvSet@capPos\hv@Outer   \hv@@capPos=5
          \else
            \ifx\hvSet@capPos\hv@Right   \hv@@capPos=6 % only for twocolumn mode
            \else
              \ifx\hvSet@capPos\hv@Left   \hv@@capPos=7 % only for twocolumn mode
              \else
                \hv@@capPos=0
              \fi
            \fi
          \fi
        \fi
      \fi
    \fi
  \fi
  \checkoddpage
  \set@caption@object%  set caption and object into a box
  \ifcase\hv@@capPos%   caption before object 0-> _always_ left
    \setBottomCaption\setPageObject
  \or%                  caption after object 1-> _always_ right
    \setPageObject\setBottomCaption
```

```
  \or%                  caption on even page 2-> left page
    \ifoddpage
      \afterpage{\setBottomCaption\setPageObject}%
    \else% we are on an even page
%     \zsaveposy{hv@currentPos}%
%     \ifdim\the\dimexpr\zposy{hv@currentPos}sp-\hv@BottomSpace-1cm>\ht\TBox  % enough space*
       \setBottomCaption\setPageObject
%     \else
%       \afterpage{\afterpage{\setBottomCaption\setPageObject}}%
%     \fi
    \fi
  \or%                caption on odd page  3->right page
    \if@twoside
      \if@twocolumn
        \ifoddpage
          \if@firstcolumn%  on right side
            \setBottomCaption\setPageObject
          \else
            \afterpage{\setPageObject\setBottomCaption}% start next column
          \fi
        \else% left (even) page
          \if@firstcolumn
            \afterpage{\setPageObject\setBottomCaption}% start next column
          \else
            \setPageObject\setBottomCaption
          \fi
        \fi
      \else % onecolumn
        \ifoddpage
          \setPageObject\setBottomCaption
        \else
          \afterpage{\setPageObject\setBottomCaption}%
        \fi
      \fi
    \else % oneside
      \if@twocolumn
        \ifoddpage
          \if@firstcolumn%  on right side
            \setBottomCaption\setPageObject
          \else
          \setPageObject\setBottomCaption
          \fi
        \else
          \if@firstcolumn%  on left side
            \afterpage{\setPageObject\setBottomCaption}%
          \else
            \setPageObject\setBottomCaption
          \fi
        \fi
      \else % onecolumn
        \ifoddpage
          \setBottomCaption\setPageObject
        \else
```

```
          \afterpage{\setBottomCaption\setPageObject}%
        \fi
      \fi
    \fi
  \or%                caption on the inner column 4->inner
    \set@caption@object
    \if@twocolumn
      \ifoddpage
        \if@firstcolumn%  on right side
     \setBottomCaption\setPageObject
        \else          % right column on right side
          \setPageObject\setBottomCaption%  start next firstcolumn next page
        \fi
      \else
        \if@firstcolumn%  on left side
          \afterpage{\afterpage{\setBottomCaption\setPageObject}}% start next page/first column
        \else% left page/column
          \setBottomCaption\setPageObject% start on same page/column
        \fi
      \fi
    \else % onecolumn
      \setBottomCaption\setPageObject
    \fi
  \or%                caption on the outer column  5->outer
    \set@caption@object
    \if@twocolumn
      \ifoddpage
        \if@firstcolumn
          \afterpage{\afterpage{\setBottomCaption\setPageObject}}%
        \else
          \afterpage{\setBottomCaption\setPageObject}%
        \fi
      \else% even page (left)
        \if@firstcolumn
          \setBottomCaption\setPageObject
        \else

        \fi
      \fi
    \else% onecolumn
      \setBottomCaption\setPageObject
    \fi
  \or%                caption after object on same page 6->right for twocolumn
    \if@twocolumn
      \if@firstcolumn
        \afterpage{\setPageObject\setBottomCaption}%
      \else
        \setPageObject\setBottomCaption
      \fi
    \else%  always caption _after_ object for onecolumn
      \setPageObject\setBottomCaption
    \fi
  \or%                caption before object on same page 7->left for twocolumn
```

```
    \if@twocolumn
      \if@firstcolumn
        \setBottomCaption\setPageObject
      \else
        \afterpage{\setBottomCaption\setPageObject}
      \fi
    \else%        onecolumn -> same as before
      \setBottomCaption\setPageObject
    \fi
  \fi
  \endgroup% startet at main \hvFloat
}%
%
\def\setBottomCaption{%
  \begin{\hv@floatType}[!b]
  \ifhv@separatorLine\drawSepLine\fi
  \par
  \usebox\hvCaptionBox
  \end{\hv@floatType}%
}

\def\setPageObject{%
  \ifhv@star
    \begin{\hv@floatType*}[p]%
  \else
    \begin{\hv@floatType}[p]%
  \fi
  \ifhv@FULLPAGE
    \vspace*{\the\dimexpr-1in-\voffset-\topmargin-\headheight-\headsep}%-0.5\baselineskip}%
    \checkoddpage
    \if@twoside
      \ifoddpage
        \hspace*{\the\dimexpr-\oddsidemargin-\parindent-1in}%
      \else
        \hspace*{\the\dimexpr-\evensidemargin-\parindent-1in}%
      \fi
    \else
      \hspace*{\the\dimexpr-\oddsidemargin-\parindent-1in}%
    \fi
    %\put(0,0){
    \AtBeginShipoutNext{\thispagestyle{empty}}%
    \usebox\hvObjectBox%}%
  \else
    \usebox\hvObjectBox
  \fi
  \ifhv@star
    \end{\hv@floatType*}%
  \else
    \end{\hv@floatType}%
  \fi
}

\ExplSyntaxOn
```

```
\def\getMultiCaptionAndLabel{%
  \global\sbox\hvCaptionBox{\minipage[b]{\linewidth}%
    \setlength\belowcaptionskip{5pt}%
    \setlength\abovecaptionskip{0pt}%
    \hv@cntb=\clist_count:N\l_clist_Type
    \advance\hv@cntb by \@ne
    \hv@cnta=1
    \loop
      \edef\@captype{\clist_item:Nn\l_clist_Type{\hv@cnta}}%
      \edef\@tempa{\clist_item:Nn\l_clist_LofCaption{\hv@cnta}}%
      \ifx\@tempa\@empty
        \caption{\clist_item:Nn\l_clist_Caption{\hv@cnta}}%
      \else
        \expandafter\caption\expandafter[\@tempa]{\clist_item:Nn\l_clist_Caption{\hv@cnta}}%
      \fi
      \edef\@tempa{\clist_item:Nn\l_clist_Label{\hv@cnta}}%
      \ifx\@tempa\@empty
      \else
        \expandafter\label\expandafter{\clist_item:Nn\l_clist_Label{\hv@cnta}-cap}\fi
      \advance\hv@cnta by \@ne
    \ifnum\hv@cnta<\hv@cntb
    \repeat
  \endminipage}%
}
\def\getMultiObjectAndLabel{%
  \global\sbox\hvObjectBox{\minipage{\linewidth}%
    \ifx\hvSet@objectPos\hv@Right\raggedleft\else
      \ifx\hvSet@objectPos\hv@Left\raggedleft\else
        \ifx\hvSet@objectPos\hv@Center\centering
    \fi\fi\fi
    \hv@cntb=\clist_count:N\l_clist_Type
    \advance\hv@cntb by \@ne
    \hv@cnta=1
    \loop
      \def\@temp{\clist_item:Nn\l_clist_Object{\hv@cnta}}%
      \ifhv@objectFrame\frame{\@temp}\else\@temp\fi
      \edef\@tempa{\clist_item:Nn\l_clist_Label{\hv@cnta}}%
      \ifx\@tempa\@empty
      \else
        \refstepcounter{\@captype}%
        \expandafter\label\expandafter{\clist_item:Nn\l_clist_Label{\hv@cnta}}%
      \fi
      \ifnum\hv@cnta<\clist_count:N\l_clist_Type\par\hv@vskip\fi
      \advance\hv@cnta by \@ne
    \ifnum\hv@cnta<\hv@cntb
    \repeat
  \endminipage}%
}

\def\getMultiSubCaptionAndLabel{%
  \global\sbox\hvCaptionBox{\minipage{\linewidth}%
    \setlength\belowcaptionskip{5pt}%
```

```
    \setlength\abovecaptionskip{0pt}%
    \xdef\@captype{\clist_item:Nn\l_clist_Type{1}}%  the same for all subfloats
    \edef\@tempa{\clist_item:Nn\l_clist_LofCaption{1}}%
    \ifx\@tempa\@empty
      \caption{\clist_item:Nn\l_clist_Caption{1}}%
    \else
      \expandafter\caption\expandafter[\@tempa]{\clist_item:Nn\l_clist_Caption{1}}%
    \fi
    \edef\@tempa{\clist_item:Nn\l_clist_Label{1}}%
    \ifx\@tempa\@empty\else\expandafter\label\expandafter{\clist_item:Nn\l_clist_Label{1}-cap}\fi
  \endminipage}%
}

\def\getMultiSubObjectAndLabel{%
  \global\sbox\hvObjectBox{\minipage{\linewidth}%
    \ifx\hvSet@objectPos\hv@Right\raggedleft\else
      \ifx\hvSet@objectPos\hv@Left\raggedleft\else
        \ifx\hvSet@objectPos\hv@Center\centering
    \fi\fi\fi
    \hv@cntb=\clist_count:N\l_clist_Caption
    \advance\hv@cntb by \@ne
    \hv@cnta=2
    \xdef\@captype{\clist_item:Nn\l_clist_Type{1}}%  the same for all subfloats
    \loop
      \def\@temp{\clist_item:Nn\l_clist_Object{\hv@cnta}}%
      \ifhv@objectFrame\frame{\@temp}\else\@temp\fi
      \begingroup
      \edef\@tempa{\clist_item:Nn\l_clist_LofCaption{\hv@cnta}}%
      \ifx\@tempa\@empty
        \subcaption{\clist_item:Nn\l_clist_Caption{\hv@cnta}}%
      \else
        \expandafter\subcaption\expandafter[\@tempa]{\clist_item:Nn\l_clist_Caption{\hv@cnta}}%
      \fi
      \edef\@tempa{\clist_item:Nn\l_clist_Label{\hv@cnta}}%
      \ifx\@tempa\@empty
      \else
        \expandafter\label\expandafter{\clist_item:Nn\l_clist_Label{\hv@cnta}}%
      \fi
      \endgroup
      \ifnum\hv@cnta<\clist_count:N\l_clist_Type\par\hv@vskip\fi
      \advance\hv@cnta by \@ne
    \ifnum\hv@cnta<\hv@cntb
    \repeat
    \edef\@tempa{\clist_item:Nn\l_clist_Label{1}}%    the  main label at the end
    \ifx\@tempa\@empty
    \else
      \refstepcounter{\@captype}
      \expandafter\label\expandafter{\@tempa}%
    \fi
  \endminipage}%
}
\ExplSyntaxOff

```

```
\def\getSingleCaptionAndLabel{%
  \global\sbox\hvCaptionBox{\minipage{\linewidth}%
    \setlength\belowcaptionskip{5pt}%
    \setlength\abovecaptionskip{0pt}%
    \edef\@captype{\hv@floatType}%
    \expandafter\ifx\expandafter\relax\hv@shortCap\relax
      \caption{\hv@longCap}%
    \else
      \caption[\hv@shortCap]{\hv@longCap}%
    \fi
  \expandafter\ifx\expandafter\relax\hv@label\relax\else\label{\hv@label-cap}\fi
  \endminipage}%
}

\def\set@caption@object{%    first caption, then object
  \ifhv@multiFloat
    \getMultiCaptionAndLabel
  \else
    \ifhv@subFloat
      \getMultiSubCaptionAndLabel
    \else
      \getSingleCaptionAndLabel
    \fi
  \fi
  \edef\@captype{hv@p\hv@floatType}%
  \ifhv@multiFloat
    \getMultiObjectAndLabel
  \else
    \ifhv@subFloat
      \getMultiSubObjectAndLabel
    \else
      \global\sbox\hvObjectBox{%
        \refstepcounter{\@captype}%
        \ifhv@objectFrame\frame{\hv@floatObject}\else\hv@floatObject\fi
        \expandafter\ifx\expandafter\relax\hv@label\relax
        \else
          \expandafter\label\expandafter{\hv@label}%
        \fi
      }%
    \fi
  \fi
}
%
\endinput
```