Rotating Text, Tabulars and Images

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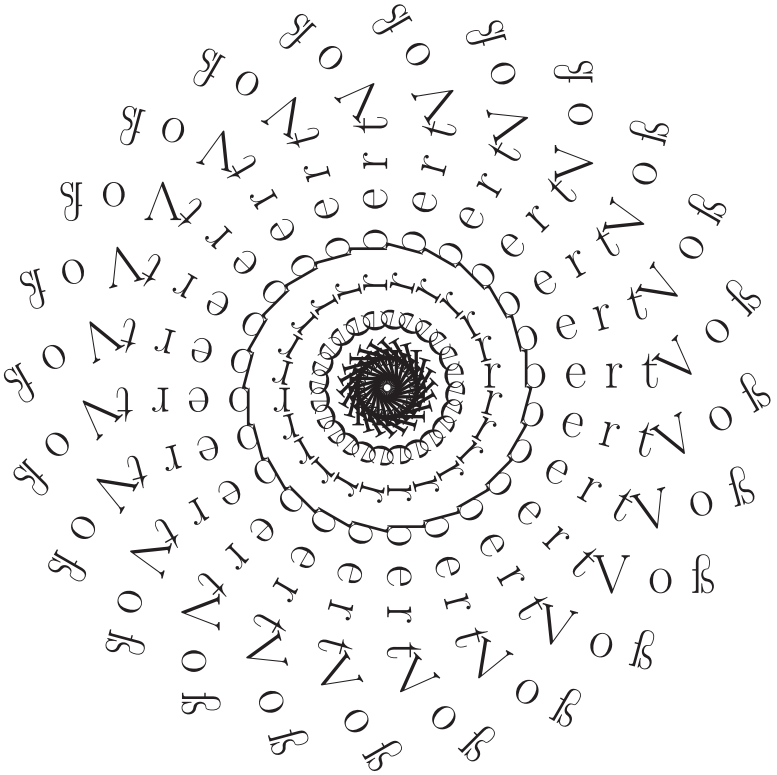
Abstract

To rotate objects like words, tables or images seems to be very easy with LaTeX but it is sometimes difficult together whith a floating environment, which should be rotated together with the caption. It maybe a good idea to read first Keith Reckdahls introduction [4] or the one from Axel Reichert[5] or the the Graphics Companion [2], before reading this article ... ;-)



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1 Introduction

There is no difference in rotating text, images, tables or any other object. This is the reason why you can use every macro (command or environment) for any object.

There are several different packages which are discussed in this paper. Some of them are similiar and some may cause problems with other packages.

The code for the image on the titlepage is:

```
\newcommand\demoText{\huge H e r b e r t \begin{rotate}{45}\huge V o ß\
    end{rotate}}
\unitlength1cm
\begin{center}
\begin{picture}(10,10)
```

```
\put(5,5){%
        \multido{\n=0+15}{24}{%
                \begin{rotate}{\n}{\demoText}\end{rotate}%
        }%
}
\end{picture}
\end{center}
```

2 Landscape Mode

There are different packages for PostScript and PDF output. The landscape mode is an environment and it starts by default a **new page**, because it changes the two lengths `paperwidth` and `paperheight`. The following subsection 2.1 is included in an environment like:

```
\begin{landscape}
\subsection{PostScript}\label{ps}
Write in the preamble \verb|\usepackage{lscape}|\index{lscape}. The
    package is available at CTAN.\footnote{\url{ftp://ftp.dante.de/tex-
    archive/macros/latex/required/graphics/lscape.dtx}}
\end{landscape}
```

The `\begin{landscape}` **immediately** starts the new page, a lot of vertical whitespace, like the one on this page, maybe possible.

Only the text part is in landscape, the header and footer are still in portrait mode. If you want the whole document to be in landscape, use the class option `landscape` and pass this to dvips with `\usepackage[dvips]{geometry}`. With the package `\ifpdf`[1] package you can load the right package:

```
\usepackage{ifpdf}
\ifpdf%
        \usepackage{pdflscape}
\else
        \usepackage{lscape}
\fi
```

2.1 PostScript

Write in the preamble `\usepackage{lscape}`. The package is available at CTAN.[2]

2.2 PDF

Write in the preamble `\usepackage{pdflscape}`. The package is available at CTAN.[3] Choose only this package, because it loads itself the `lscape` one to overwrite some code.

[1] ftp://ftp.dante.de/tex-archive/macros/latex/contrib/supported/oberdiek/ifpdf.sty
[2] ftp://ftp.dante.de/tex-archive/macros/latex/required/graphics/lscape.dtx
[3] ftp://ftp.dante.de/tex-archive/macros/latex/contrib/supported/oberdiek/pdflscape.sty

3 graphics.sty

3.1 \rotatebox command

This macro is part of the \graphicx package.[4] The syntax is:

```
\rotatebox[options]{angle}{%
[...]
}
```

This macro leaves additional space for the rotated object. This is an important fact, because we **cannot** overwrite some other stuff.

```
[...] This is an important fact,
\rotatebox{40}{%
        because we \textbf{cannot} overwrite some other stuff.%
}
```

The following options are possible and belong only to the rotation point:

origin=|lt|ct|rt|lc|c|rc|lB|cB|rB|lb|cb|rb|
x=xdim
y=ydim

The first letter l|c|r is an abbreviation for left|center|right and the second one t|c|B|b for top|center|baseline|bottom. The order is not important and c is the same than cc. Alternative the rotation point can be specified with its coordinates relative to the referenc point lB (**l**eft **B**aseline), which is the default, too.

It is not possible to rotate text which includes a verbatim Environment environment or the \verb macro. In this case choose one of the following macros from the rotating Environment package. Figure 1 shows the different rotation modes. The rotating point is marked with a red disc and all boxes are rotated anti clockwise by 30 degrees.

As an example here is the code for the option=lb mode:

```
[...]
\newcommand{\Hoehe}{\ht\FrBox\Gobble}
\newcommand{\Breite}{\wd\FrBox\Gobble}
\newcommand{\Tiefe}{\dp\FrBox\Gobble}
\newlength{\totalHeight}
\setlength{\totalHeight}{\ht\FrBox}
\addtolength{\totalHeight}{\dp\FrBox}
\newcommand{\tHoehe}{\totalHeight\Gobble}
```

[4] ftp://ftp.dante.de/tex-archive/macros/latex/required/graphics/

(a) The predefined Rotating Points

(b) option=lt (c) option=ct (d) option=rt

(e) option=lc (f) option=c (g) option=rc

(h) option=lB (i) option=cB (j) option=rB

(k) option=lb (l) option=cb (m) option=rb

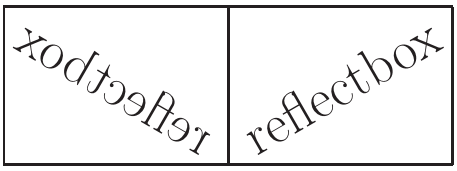
Figure 1: Demo of the Referencepoint (red disc)

```
[...]
\subfigure[option=lb]{%
\put(0,-\Tiefe){\textcolor{red}{\circle*{3}}}%
\begin{picture}(\Breite,\Hoehe)
        \put(0,-\Tiefe){\textcolor{red}{\circle*{3}}}
        \put(0,0){\usebox{\FrBox}}
        \put(-0.5\tHoehe,0){\rotatebox[origin=lb]{\rotAngle}{\usebox{\
            FrBox}}}
\end{picture}
}\hfill
[...]
```

3.2 \reflectbox command

This command is defined in `graphics.sty` and mirrors an object at the left vertical border, f.ex.:

reflectbox|reflectbox



The syntax is very easy:

```
\reflectbox{<text>}
```

`reflectbox` can beused with any kind of objects. It is only a synonym for the `\scalebox` command:

`\scalebox{-1}{1}{<object>}` ⇔ `\reflectbox`

4 Package `rotating`

The `graphicx` package has the makro `\rotatebox` which still has some problems, f.ex. with text in verbatim mode. It is better to use the `rotating` package[5]. This package has the following options:

clockwise: (the default) counts the angle anti clockwise (leftturn). This is only for compatibility to [1], where positive angles are counted clockwise.

counterclockwise: same other way round (rightturn)

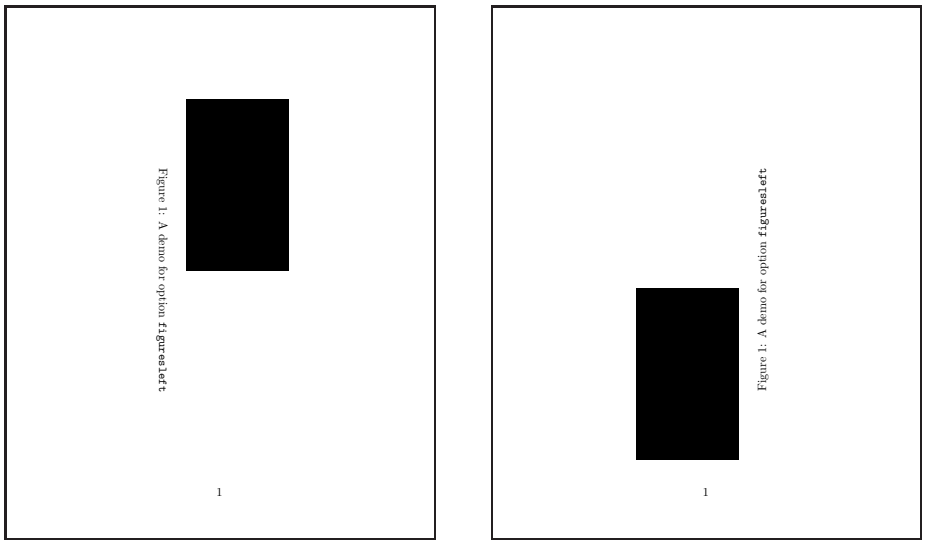
figuresleft: (the default) the figures are placed to the left, which depends to the twoside option if it appears on top or bottom of the page

figuresright: the other way round

Figure 2 shows the difference between `figuresleft` and `figuresright`. These two options only make sense with the `sidewaysfigure` floating environment and when you want them on the same side in twoside mode. The options have no effect, when center the images/tables with the `\centering` command.

The `rotating` package provides the commands or environments

[5] ftp://ftp.dante.de/tex-archive/macros/latex/contrib/supported/rotating/



(a) Option figuresleft (b) Option figuresright

Figure 2: Demo for different Options of package rotating

rotate
turn
sideways
sidewaysfigure
sidewaystable

Only the first two have an additional argument, the value of the rotating angle.

4.1 rotate Environment

The syntax is

```
\begin{rotate}{angle}
[...]
\end{rotate}
```

This environment does not leave any additional vertical space for the rotated object. This is an important fact, because we **can** overwrite some other stuff.

```
[...] This is an important fact,
\begin{rotate}{40}
because we \textbf{can} overwrite some other stuff.
\end{rotate}
```

4.2 turn Environment

The syntax is

```
\begin{turn}{<degree>}
[...]
\end{turn}
```

This environment leaves in difference to rotate additional vertical space for the rotated object. This is an important fact, because we **cannot** overwrite some other stuff. This is the same behaviour as for the \rotatebox command (see section 3.1).

```
[...] This is an important fact,
\begin{rotate}{40}
because we \textbf{cannot} overwrite some other stuff.
\end{rotate}
```

4.3 sideways Environment

This environment is a special one for turn. It always rotates with the fixed angle $\alpha = 90$ and leaves additional vertical space for the rotated object. The syntax is different to the forgoing environments, because we do not need an additional parameter:

```
\begin{sideways}
[...]
\end{sideways}
```

This environment leaves in difference to rotate additional space for the rotated object. This is an important fact, because we **cannot** overwrite some other stuff.

```
[...] This is an important fact,
\begin{sideways}
because we \textbf{cannot} overwrite some other stuff.
\end{sideways}
```

4.4 sidewaystable Environment

This environment is for a floating object. The rotation of the object is the same than for sideways. The syntax is

```
\begin{sidewaystable}
[ < a tabular > ]
\caption{< text >}
\end{sidewaystable}
```

This environment leaves in difference to rotate additional vertical space for the rotated object. This is an important fact, because it takes a **whole** page (table 1). This is the same way than using the landscape environment.

```
\begin{sidewaystable}
\centering
\begin{tabular}{cc|c}
        a & b & 1\\\hline
        c & d & 2
\end{tabular}
\caption[A \texttt{sidewaystable} environment Example]{A Demonstration
    for the \texttt{sidewaystable} environment. This float has its own
    page. The only way to get some more text is to put this into the
    float itself.}\label{tab:sideways}
\end{sidewaystable}
```

This environment is handled like a floating object, so that LaTeX fills up the page before this sideways table with text which was written after this environment, like this text. Table 1 shows that there is a bad behaviour when the caption has a lot of text. In this case it is a good idea to use a parbox inside the caption like the one from figure 3. For more information about the caption layout have a look at the different caption packages.[6]

4.5 sidewaysfigure Environment

This environment is just the same than the sidewaystable with the only difference, that it is a figure and not a table object. The syntax is

```
\begin{sidewaysfigure}
[ < any object > ]
\caption{< text >}
\end{sidewaysfigure}
```

This environment leaves in different to rotate additional vertical space for the rotated object. This is an important fact, because it takes a **whole** page (figure 3). This is the same way than using the landscape environment.

```
\begin{sidewaysfigure}
\centering
\includegraphics{rose}
\caption[A \texttt{sidewaysfigure} environment Example]{\parbox[t]{0.5\
    linewidth}{A
Demonstration for the \texttt{sidewaysfigure} environment, which has
    the same
behaviour than the \texttt{sidewaystable} environment (see \mbox{table
    \ref{tab:sideways}})}}\label{fig:sideways}
\end{sidewaysfigure}
```

[6] ftp://ftp.dante.de/tex-archive/macros/latex/contrib/supported/caption/
ftp://ftp.dante.de/tex-archive/macros/latex/contrib/supported/ccaption/

a	b	1
c	d	2

Table 1: A Demonstration for the sidewaystable environment. This float has its own page. The only way to get some more text is to put this into the float itself.

Figure 3: A Demonstration for the `sidewaysfigure` environment, which has the same behaviour than the `sidewaystable` environment (see table 1)

This environment is handled like a floating object, so that LaTeX fills the page before the sideways table with text which was written after this environment, like this text.

5 Rotating inside Floats

There is a difference in rotating an object and rotating it together with the caption. The first one is very easy, expecially together with the `\includegraphics` macro. The package `hvfloat`[7] provides a command with several options to place and rotate the object and the caption of a float in different ways. For example, it is possible to rotate the float object with another angle than for the float caption. For more information see the documentation of `hvfloat`, which is at the same address available.

Another package is `isorot`. This package[8] was designed for the ISO document class, but it can be used without any restrictions with any other standard class, like article or book. It is more or less a combination of the `lscape` package and an extension of the `rotating` package and offers nearly the same macros.

A third package is rotfloat.This package[9] requires the packages `float`[10] and `rotating` (see section 4). It works in the same way than the sideways environments.[11] `rotfloat` allows to use also new defined floats in a sideways mode. For example:

```
\floatstyle{ruled}
\floatname{source}{Sourcecode}
\newfloat{source}{tbp}{lof}[section]
```

defines the new float environment `source`, which are by default in portrait mode. Additionally the prefix `sideways` can be used to get these floats in landscape mode.

The syntax for new defined sideways floats is:

```
\begin{sidewaysXXX}
        [ ... ]
        \caption{ ... }
\end{sidewaysXXX}
```

where `XXX` is the name of the new defined float environment, f. ex.:

```
\begin{sidewayssource}
        [ ... ]
        \caption{ ... }
\end{sidewayssource}
```

The behaviour of these sideways floats is the same as usual, they are placed on an own page. For morte information have a look at the example file, which is part of the `rotfloat` package. And pay attention, because there maybe some problems when using the `rotfloat` package together with `color` and all other packages, which load `color`, like `hyperref` with an enabled `colorlinks` option.

[7] http://www.perce.de/LaTeX/hvfloat/
[8] http://www.dante.de/CTAN//macros/latex/contrib/supported/isorot/
[9] ftp://ftp.dante.de/tex-archive/macros/latex/contrib/supported/rotfloat/
[10] ftp://ftp.dante.de/tex-archive/macros/latex/contrib/supported/float/
[11] `sidewaysfigure` but `sidewaystable`(4.3)

6 Vertical Text beside a Float

It maybe useful to put some vertical text beside an image or a table. The macro `\IText` creates a parbox with the height of the image and puts the rotated text beside the figure.

```
\newcommand{\IText}[2]{% #1=Image, #2=Text
        \mbox{#1\hspace{.5\baselineskip}}%
        \begin{sideways}
                \parbox{\heightof{#1}}{%
                \raggedright#2}%
        \end{sideways}%
}
```

This macro needs the `calc` package.[12] It maybe better not to use the `\raggedright` command. As seen in figure 4 the vertical text is set a little bit too deep. This does not happen for figure 5.

Figure 4: Put some raggedright Text Beside an Image

Figure 5: Put some Text Beside an Image

```
\begin{figure}[htb]
        \centering
        \IText{\includegraphics[angle=90]{rose}}
                {Some text beside this wonderful rose, which
                is longer than the height of the image ...}
        \caption{Put some Text Beside an Image}\label{fig:textBeside}
\end{figure}
```

References

[1] Goossens, Michael ; Mittelbach, Frank ; Samarin, Alexander: *The LaTeX Companion*. Addison Wesley, 1994

[2] Goossens, Michael ; Rahtz, Sebastian ; Mittelbach, Frank: *The LaTeX Graphics Companion*. Addison Wesley, 1997

[3] Rahtz, Sebastian ; Barroca, Leonor: A style option for rotated objects in LaTeX. In: *TUGboat Journal* 13 (1992), Juli, Nr. 2, S. 156–180

[12] ftp://ftp.dante.de/tex-archive/macros/latex/required/tools/calc.dtx

[4] Reckdahl, Keith: *Using Imported Graphics in LaTeX 2ε*. ftp://ftp.dante.de/tex-archive/info/epslatex.pdf: , 1997

[5] Reichert, Axel: *Gleitobjekte – die richtige Schmierung*. ftp://ftp.dante.de/tex-archive/info/german/gleitobjekte/: MPIE (Veranst.), 1997

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