The `mdframed` package [1]

auto-split frame environment

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The standard methods for framing text (`\fbox` or `\fcolorbox`) require you to handle page breaks by hand, meaning that you have to split the `\fbox` into two. The present package defines the environment `mdframed` which automatically deals with pagebreaks in framed text.

By defining new environments the user may choose between several individual designs.

Linked files: mdframed-example-default.pdf   mdframed-example-tikz.pdf
mdframed-example-pstricks.pdf mdframed-example-texsx.pdf

FYI: I create a repository for `mdframed` on github where you can download the current development status.

Contents

1. Motivation

Many users wish to (further) emphasize lemmata, definitions, proofs, etc. The package `mdframed` allows you to create environments with breakable frames. I think an example is the best way to demonstrate its properties.

> **Theorem 1.1 (Pythagorean theorem)** *In any right triangle, the area of the square whose side is the hypotenuse is equal to the sum of the areas of the squares whose sides are the two legs.*

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[1] Extending the package `framed.sty`

$$a^2 + b^2 = c^2$$

The frame was defined with the following settings.

\newmdtheoremenv[outerlinewidth=2,leftmargin=40,%
    rightmargin=40,backgroundcolor=yellow,%
    outerlinecolor=blue,innertopmargin=0pt,%
    splittopskip=\topskip,skipbelow=\baselineskip,%
    skipabove=\baselineskip,ntheorem]{theorem}%
    {Theorem}[section]
\begin{theorem}[Pythagorean theorem]
...
\end{theorem}

2. Syntax

Loadings `mdframed`

The package itself loads the packages

- kvoptions,

- xparse (new),

- etoolbox and

- color.

Depending on the options mdframed will load

- xcolor,

- tikz or

- pstricks.

Load the package as usual:

\usepackage[<GLOBAL OPTIONS>]{mdframed}

Only the option `framemethod` should be loaded by the optional argument of `\usepackage`. All other options should be loaded with `\mdfsetup` or related environments. The package should be loaded after `amsthm` if you need the package.

Provided environment

The package defines only one environment with the following syntax:

\begin{mdframed}[<LOCAL OPTIONS>]
    <CONTENT>
\end{mdframed}

To create own environments with `mdframed` see section 4.

Autodetecting floats

`mdframed` detects whether the environment is used inside `float` or `minipage` environments. If you use `mdframed` in such an environment `mdframed` will use the option `nobreak` automatically.

Twoside-mode

If you are using `mdframed` inside `twoside`-mode you can set the option `innermargin` and `outermargin` (see section 5.2.1). The length will be ignored if you use the option `usetwoside`.

3. The frames

Normally you can say `mdframed` draws only some lines. To allow page breaks the following designs are supported. If you load the package with `framemethod=default` you can only draw a single line. Inside the gray box the text will be printed.

**Frame of a
single page**

**First box – first
part of the output**

**Middle box –
middle part
of the output**

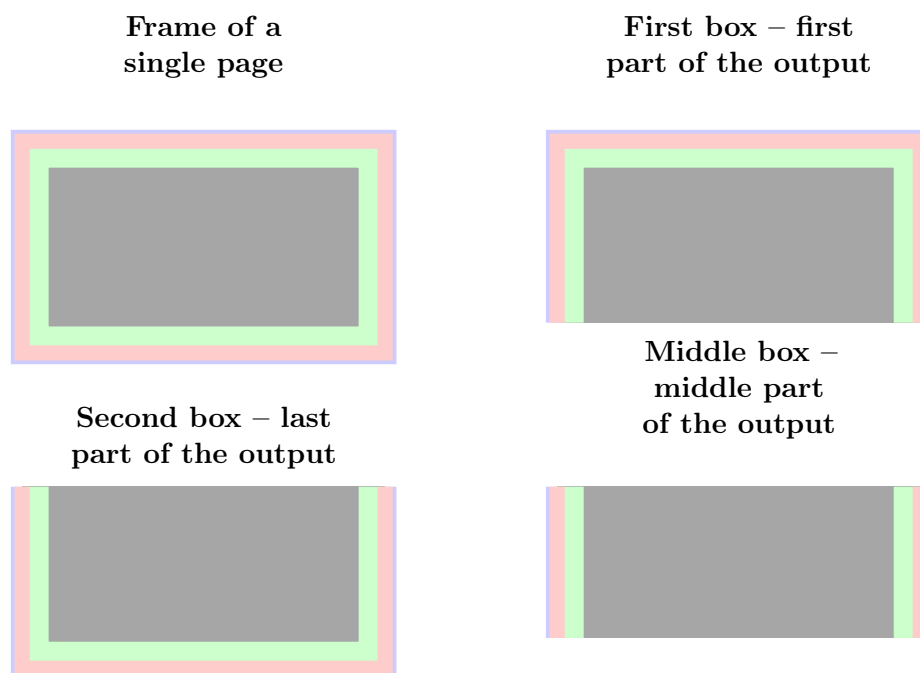**Second box – last
part of the output**

Figure 1: The basic frames

4. Commands

The following commands should countenance your by the handling with `mdframed`

`\newmdenv`

The command has the following syntax:

\newmdenv[<MDFRAMED OPTIONS>]{Name of the environment}

In this way you can simply use:

\newmdenv[**linecolor**=red,**frametitle**=Infobox]{**infobox**}
...
\begin{**infobox**}[**backgroundcolor**=yellow]
 foo foo foo foo foo foo
\end{**infobox**}

`\renewmdenv`

By using this command you can redefine environments which are created by `\newmdenv`.

`\surroundwithmdframed`

Sometimes you have predefined environments. This commands allows you to set an `environment` surround this predefined environment. To set a `mdframed` around the environment `verbatim` you can simple say without changing the original name.

> **\surroundwithmdframed**[**linewidth**=2pt]{verbatim}

`\mdflength`

If you want to work with length defined by `mdframed` (for example `innerleftmargin`) you can now simple use the command `\mdflength`.

> Some Text **\hspace**{**\mdflength**{**innerleftmargin**}} Some Text
>
> **\the\mdflength**{**innerleftmargin**}

`\mdfsetup`

To set the options you can use the optional argument of `\usepackage` or you can use the command `\mdfsetup` which is not limited to the preamble. Inside a group the settings work only local.

At this point I want to recommend the using of the command `\mdfsetup` **instead of setting package option via the optional argument of** `\usepackage`**. So you are avoiding breaking of non robust commands.**[2]

`\mdfdefinestyle`

`\mdfdefinestyle` allows the user to define different styles and use as an option of `mdframed` via `style`. The option `style` is explained in section 5.2.3.

Here a small example:

> **\mdfdefinestyle**{**mystyle**}{**leftmargin**=0pt,%
>   **linecolor**=blue}
> ....
> **\begin**{**mdframed**}[**style**=**mystyle**]
>   foo
> **\end**{**mdframed**}

`\mdfapptodefinestyle`

This commands allows to expand a defined style.[3]

5. Options

The package provides various options to manipulate frames. In the following section all options are listed. Some internal macros which can be manipulated are not shown in this documentation. The listed options are divided in global and local options. The global options can not be used inside `\mdfsetup`.

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[2]Thanks to Heiko Oberdiek and Philipp Stephani kvoptions-Declaration von Optionen schlägt fehl
[3]Thanks to Martin Scharrer and Enrico Gregorio:
    http://tex.stackexchange.com/questions/34684/argument-of-setkeys

5.1. Global Options

The following options are only global options.

`xcolor`   default=`none`

By setting this key, the package `xcolor` will be loaded with the given value(s). Without any value `mdframed` loads the package `color` without any options. If the package `xcolor` is already loaded the given option will be ignored. I recommend to load `xcolor` before `mdframed`.

`framemethod`   default=`default`

With this key you can change the way frames are drawn. You can decide whether the frame is drawn with

1. LaTeX-commands `\hrule`, `\vrule`, `\rule`,

2. TikZ (the package `TikZ` will be loaded) or

3. PSTricks (the package `pstricks` will be loaded).

The option `framemethod` requires a string. Allowed combinations are listed in the following table.

Table 1: Allowed keys for `framemethod`

Method	Allowed keys
LaTeX-commands	`default, tex, latex, none, 0`
TikZ	`tikz, pgf, 1`
PSTricks	`pstricks, ps, postscript, 2`

FYI
It is independently whether the `method` is written with no, one or more capital letter.

Note
The manipulation of the frames depends on the option `framemethod`. For further information see below.

5.2. Global and Local Options

The options listed below can be set globally or locally and they are not limited to the preamble. I tried to define self explained names.

5.2.1. Options with lengths

In figure (2) you can see the adjustable lengths (compare also figure (1)) which will be described below. All lengths accept two kinds of input. The first one is a length (e.g. 2pt) and the second one is a number (e.g. 2) which will be multiplied by `1 defaultunit`. The figure shows three different colored frames.

    I know that the predefined lengths are not well prepared. Maybe I will change it later.

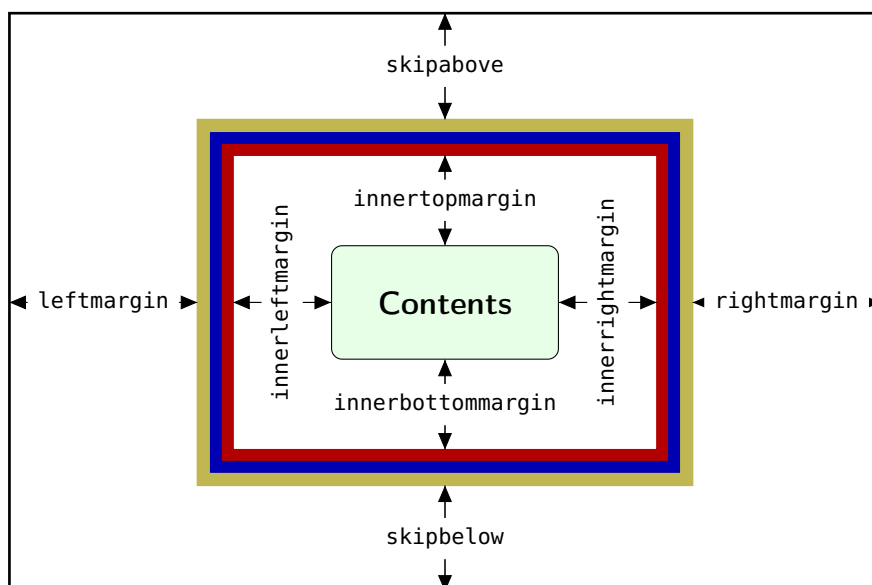`defaultunit`   default=`pt`

see the sentence above.

Figure 2: adjustable lengths of `mdframed`

skipabove   default=`0pt`

    Sets an additional skip above the frame.

skipbelow   default=`0pt`

    Sets an additional skip below the frame.

margin

    This option is not longer supported. Use `leftmargin` and `rightmargin` instead.

leftmargin   default=`0pt`

    Sets the length of the left margin of the environment. This option has an effect only in singleside-mode or, in twoside-mode, if the option `usetwoside=false` has been given. See also options `outermargin` and `innermargin`.

rightmargin   default=`0pt`

    Sets the length of the right margin of the environment. This option has an effect only in singleside-mode or, in twoside-mode, if the option `usetwoside=false` has been given. See also options `outermargin` and `innermargin`.

innerleftmargin   default=`10pt`

    Sets the length of the inner left margin of the environment.

innerrightmargin   default=`10pt`

    Sets the length of the inner right margin of the environment.

innertopmargin   default=`.4\baselineskip`

    Sets the length of the inner top margin of the environment.

`innerbottommargin`   default=.4\baselineskip

Sets the length of the inner bottom margin of the environment.

The following lengths are not shown in figure (2).

`userdefinedwidth`   default=0pt

Sets the width of the whole `mdframed` environment. The width represent the width including the line width and the inner margins. The outer margins will be ignored.

`outermargin`

Sets the length of the outer margin. This option is only available in `twoside`-mode.

`innermargin`

Sets the length of the inner margin. This option is only available in `twoside`-mode.

`splittopskip`   default=0pt

Sets the length of the skip above the split part of the environment.

`splitbottomskip`   default=0pt

Sets the length of the skip below the split part of the environment.

`linewidth`   default=0.4pt

Sets the width of the line around the environment.

`roundcorner`   default=0pt

Sets the size of the radius of the corners of the frames.
This works only with `framemethod=TikZ or PSTricks`.

`innerlinewidth`   default=0pt

Sets the width of the inner line around the environment.
This works only with `framemethod=TikZ or PSTricks`.

`outerlinewidth`   default=0pt

Sets the width of the outer line around the environment.
This works only with `framemethod=TikZ or PSTricks`.

`middlelinewidth`   default=linewidth

Sets the width of the middle line around the environment.
This works only with `framemethod=TikZ`.

5.2.2. Colored Options

`linecolor`   default=black

Sets the color of the line around the environment.

`backgroundcolor`   default=white

Sets the color of the background of the environment.

`fontcolor` default=`black`

Sets the color of the contents of the environment.

`innerlinecolor` default=`linecolor`

Sets the color of the inner line around the environment.
This works only with `framemethod=TikZ or PSTricks`.

`middlelinecolor` default=`linecolor`

Sets the color of the middle line around the environment.
This works only with `framemethod=TikZ or PSTricks`.

`outerlinecolor` default=`linecolor`

Sets the color of the outer line around the environment.
This works only with `framemethod=TikZ or PSTricks`.

5.2.3. General options

`everyline` default=`false`

Allows to draw a bottom and a top line at splitted frames.

`font` default=`{}`

Sets the font of the environment.

`ntheorem` default=`false`

Before setting this boolean key, you have to load the package `ntheorem`. With this option you set the values `\theorempreskipamount` and `\theorempostskipamount` to 0 pt.

`nobreak` default=`false`

Sometimes it is useful to prevent a frame from splitting. The `nobreak` option is used for this purpose. If you activate this option you can enable it by setting `nobreak=false`.

`usetwoside` default=`true`

If you set the twoside option you can work with `outermargin`. This option disable this and you work with `leftmargin` and `rightmargin`.

`needspace` default=`0pt`

Sometimes it is useful to set a minimum height before a frame should be splitted. For such cases you can use `needspace`. The option requires a length which sets the minimum height before a frame will be splitted.

`style`

If you define a special style with `\mdfdefinestyle` you can use the key `style` to load the style. `mdframed` has no predefined styles yet.

`settings` default=`none`

This option allows the user to commit some macros. An example is shown in the example files.

align   default=`left`

> Sometimes it is useful to align the environment itself. For this you have the option `align` which can be set to the following strings:
>
> - `left`,
>
> - `right` and
>
> - `center`.
>
> The alignments `left` or `right` depend on the given lengths `leftmargin` and `rightmargin`. Later I will present an example to demonstrate my bad English explanation.

shadow   default=`false`

> Draw a shadow. The shadow doesn't influence the bounding box so the shadow can be drawn in the margin without any overfull box. Note if you are using the TikZ you must load the library. `mdframed` doesn't do the job to avoid double loading of a library.

shadowsize   default=`8 pt`

> Specify the size of the shadow.

shadowcolor   default=`black!50`

> Specify the color of the shadow.

pstrickssetting   default=`none`

> With this key you can pass several options to `\psset`. For example if you want all lines dashed you will have to set `pstrickssetting={linestyle=dashed}`. It is very important to put the options of `pstrickssetting` in brackets.
> This works only with `framemethod=PSTricks`.

pstricksappsetting   default=`none`

> `mdframed` works with defined style for the different elements. By using `\addtopsstyle` in combination with this option you can expand the definition. The predefined styles are
>
> - `mdfbackgroundstyle`
>
> - `mdfframetitlebackgroundstyle`
>
> - `mdfouterlinestyle`
>
> - `mdfinnerlinestyle`
>
> - `mdfmiddlelinestyle`
>
> **Before you change one please have a look at the file `md-frame-2.mdf` to see the settings.**
> This works only with `framemethod=PSTricks`.

tikzsetting   default=`none`

> With this key you can pass several options to `\tikzset`. Some examples are listed in the next section. It is very important to put the options of `tikzsetting` in brackets.
> This works only with `framemethod=TikZ`.

apptotikzsetting   default=none

> With this key you can add several options to tikzsetting. This key based on the idea of manipulation of predefined keys of mdframed. The package mdframed defines via \tikzset the following keys to draw frames.
>
>   - \tikzset{mdfbox/.style}
>
>   - \tikzset{mdfcorners/.style}
>
>   - \tikzset{mdfbackground/.style}
>
>   - \tikzset{mdfinnerline/.style}
>
>   - \tikzset{mdfouterline/.style}
>
>   - \tikzset{mdfmiddleline/.style}
>
>   - \tikzset{mdfframetitlerule/.style}
>
>   - \tikzset{mdfframetitlebackground/.style}
>
>   - \tikzset{mdfshadow/.style}
>
> **Before you change one please have a look at the file md-frame-1.mdf to see the settings.**
> This works only with framemethod=TikZ.

singleextra   default={}

> With this key you can put extra material to the drawing environment of mdframed only for a non splitted frame.
> This works only with framemethod=TikZ and PSTricks.

firstextra   default={}

> With this key you can put extra material to the drawing environment of mdframed only for the first part of the splitted frame.
> This works only with framemethod=TikZ and PSTricks.

middleextra   default={}

> With this key you can put extra material to the drawing environment of mdframed only for the middle part of the splitted frame.
> This works only with framemethod=TikZ and PSTricks.

secondextra   default={}

> With this key you can put extra material to the drawing environment of mdframed only for the second part of the splitted frame.
> This works only with framemethod=TikZ and PSTricks.

5.3. Hidden Lines

topline   default=true

> Draws a line at the top.

bottomline   default=true

Draws a line at the bottom.

leftline   default=`true`

Draws a line on the left.

rightline   default=`true`

Draws a line on the right.

hidealllines   default=`false`

With this option you can decide whether all lines should be drawn or not.

5.4. Frametitle

In this section all relevant options of the frame title will be presented. They are not divided in their properties.

frametitle   default=`none`

The environment gets a title. To set a title use `frametitle={The Title of the frame}` as an option of the environment.

frametitlefont   default=`\normalfont\bfseries`

Sets the format of the `frametitle`.

frametitlealignment   default=`\raggedleft`

Align the `frametitle`. This option must be set via `\mdfsetup`.

frametitlerule   default=`false`

Set this key to `true` to get a line between the frame title and the text.

frametitlerulewidth   default=`.2pt`

Sets the width of the line between the text and the title of `mdframed`.

frametitleaboveskip   default=`5pt`

Sets the skip of the frame title to the margin above of `mdframed`.

frametitlebelowskip   default=`5pt`

Sets the skip of the frame title to the rule of the frame title.

frametitlebackgroundcolor   default=`white`

Sets the color of the background of the frametitle

FYI and Note

`mdframed` can't handle page breaks inside the frametitle well. If you get a page break please have a closer look to the output.

If a frame title is given the optional length `innertopmargin` is set between the rule under the frame title and the contents of `mdframed`.

repeatframetitle   default=`false`

Repeat the frame title on every frame. The feature is currently not well implemented!!!

5.5. Theorems

In this section is described which commands can help you to define theorem environments with `mdframed`.

\newmdtheoremenv

Since the package is often used to highlight theorem environments, I have created a command[4] to simplify this process. The command has the following syntax:

> **\newmdtheoremenv**[<mdframed−options>]{<envname>}%
>   [<numberedlike>]{<caption>}[<within>]

The last four arguments are equivalent to the command `\newtheorem`. Only the first optional argument is able to pass `mdframed`-options. A simple example is:

> **\theoremstyle**{<some **style**>}
> **\newmdtheoremenv**[**linecolor**=blue]{**lemma**}%
>   {Lemma}[**section**]
>
> ...
> **\begin**{**lemma**}[Some title]
>   foo foo foo foo foo foo
> **\end**{**lemma**}

So far there is no `\renewmdtheoremenv`!

\mdtheorem

This is a special kind of `\newtheorem`. The command has the following syntax.

> **\mdtheorem**[<mdframed−options>]{<envname>}%
>   [<numberedlike>]{<caption>}[<within>]

As you can see the arguments are equal to `\newtheorem` but the command ignores every `\theoremstyle`. This is based on the following behavior.

The command `\mdtheorem` creates two environments based on the given first mandatory argument. The first environment is named like the given argument and creates a numbered theorem. The second environment is named like the first mandatory argument with a star. This environment has the same formating but isn't numbered.

The syntax of the new defined environments is equal to the normal theorem environments.

> **\begin**{environment}[optional title]
>   ...
> **\end**{environment}

What happened? The caption of the command will be set as the frame title. In this way all options of the frame title are available. Furthermore `mdframed` provides additional options explained below.

theoremseparator   default=`{:}`

Sets the separator of the caption and the title of the theorem. The `theoremseparator` will be printed only if an theorem title is given.

---

[4]Thanks to Martin Scharrer and Enrico Gregorio:
  Own command to create new environment

theoremtitlefont   default={}

Via the option `frametitlefont` you can manipulate the font of the frame title. The option `theoremtitlefont` allows to set a different font to the title of the theorem.

theoremspace   \space

Sets the space after `theoremseparator`.
Examples can be found in the attached files.

5.6. Footnotes

Inside the environment you can use the command `\footnote` as usual. `mdframed` uses the syntax of environment `minipage` with the same counter.

Every footnote text will be collected inside a box and will be displayed at the end of the environment `mdframed`.

footnotedistance   default= \bigskipamount

The length is the distance between the end of the environment `mdframed` and the displaying of the `\footnoterule`.

footnoteinside   default=true

The position of the footnotes can be changed with the option `footnoteinside`. The footnotes will be displayed at the end of the environment but you can decide whether the output is inside `mdframed` or after.

Note
The output of the footnotes with the option `footnoteinside=false` are not in a splitted frame. I think it isn't useful because the first line of a new page shouldn't be a footnote.

6. Examples

I outsource the examples in four files to limit the documentation. The files are

mdframed-example-default
  Demonstration of examples created with `framemethod=default`.

mdframed-example-tikz
  Demonstration of examples created with `framemethod=TikZ`.

mdframed-example-pstricks
  Demonstration of examples created with `framemethod=pstricks`.

mdframed-example-texsx
  Demonstration of examples like interaction with `listings`

The examples are often not equivalent but normally they can be adapted to another method. So I really recommend to have a look to all example files.

The Korean TEXGroup created a very nice presentation. I want to show the link because it's really a great work: kts 2012 mdframed.

7. Errors, Warnings and Messages

The package `mdframed` provides different errors, warnings and messages in the `log`-file. Some LaTeX-editors like TeXMaker or TeXStudio have a special tab for errors and warnings but not for messages. So you should look in the `log-File` itself.

The following errors and warnings are generated by `mdframed`.

> The package ... does not exist but
>   needed by **mdframed**

To avoid this problem you should install the required packages which are listed in section 2.

> package option **style** is depreciated
> use **framemethod** instead **style**

With version 0.9d `mdframed` changed the meaning of the option `style`. The option is used to load a defined style by `\mdfdefinestyle`. Instead use `framemethod` (see section 5.1).

> Unknown **framemethod** .... **mdframed**

The input string for the option `framemethod` is unkown. See section 5.1.

> You have not loaded **ntheorem** yet

To use the option `ntheorem` you have to load the package `ntheorem`.

> You have only a width of 3cm

The package `mdframed` calculates the width of the contents based on the given options. If the width of the contents is smaller than 3 cm you will get this warnings. You should change the settings to get a greater width.

> You got a bad break
> you have to change it manually
> by changing the **text**, the space
> or something else

Sometimes you have enough vertical space for the rules and the space between the rules and the contents but not for the contents itself. In this situation you will get this warning because the contents of this box is empty. You have the possibility to change the settings or include a `\clearpage` in front of the environment `mdframed`. So far I have no idea how to avoid such things.

> You got a bad break
> because the split box is empty
> You have to change the page **settings**
> like enlargethispage or something else
> You got a bad break

See the explanation above.

> You got a bad break
> because the last split box is empty
> You have to change the **settings**

The same reason as above but only in the last box.

> Option ... is already consumed
> and has no effect on input line ...

If you set a global option inside the document body you will get this warning.

8. Known Problems

In this section I will collect known problems. In case you encounter any further problems, please drop me an email, marco.daniel at mada-nada.de.

Do you have any ideas / wishes on further extensions to this package? Please let me know!

1. So far the environment isn't compatible with the package `gmverb`.

2. If you load the package `picins` the frame will no be splitted. That based on a problem of the package 'picins' which defines `\@captype` global. To work with the package picins you can use the following hack.

```
\usepackage{picins}
\makeatletter
\let\@captype\@undefined
\def\newcaption{%
  \begingroup%
    \def\@captype{figure}%
    \refstepcounter\@captype\@dblarg{\@newcaption\@captype}%
  \endgroup%
}
\makeatother
```

9. ToDo

It is important to update the documentation

1. see "Known Problems".

2. So far it isn't possible to combine the environment `\begin{multicols}` of the package `multicol` with `mdframed` with the whole option list.

3. Create new styles.

4. Improve page breaks.

5. Improve footnotes.

6. Improve documentation and examples.

7. Create styles for `frametitle`.

8. Create an inline version of `mdframed` that's works like `\fbox`

9. Add `\ht\strutbox` to file `md-frame-1.mdf`

10. Acknowledgements

Dick Nickalls; Dietrich Grau; Piazza Luca; Jobst Hoffmann; Martin Scharrer; Enrico Gregorio; Heiko Oberdiek; Philipp Stephani.

Thanks for proofreading
Alan Munn and Nahid Shajari
I hope I forgot nobody.

A. More information

In the following section I want to present how to create your own frame.

A.1. How does `mdframed` work?

With the environment `\begin{mdframed}` ... `\end{mdframed}` the whole contents will be saved in a `\savebox` called `\mdf@splitbox@one`. After the calculation of the width and the height of the `\mdf@splitbox@one` (done by `mdframed.sty`) the box will be set sequently (done by `md-frame-X.mdf`). The following figure demonstrates this.
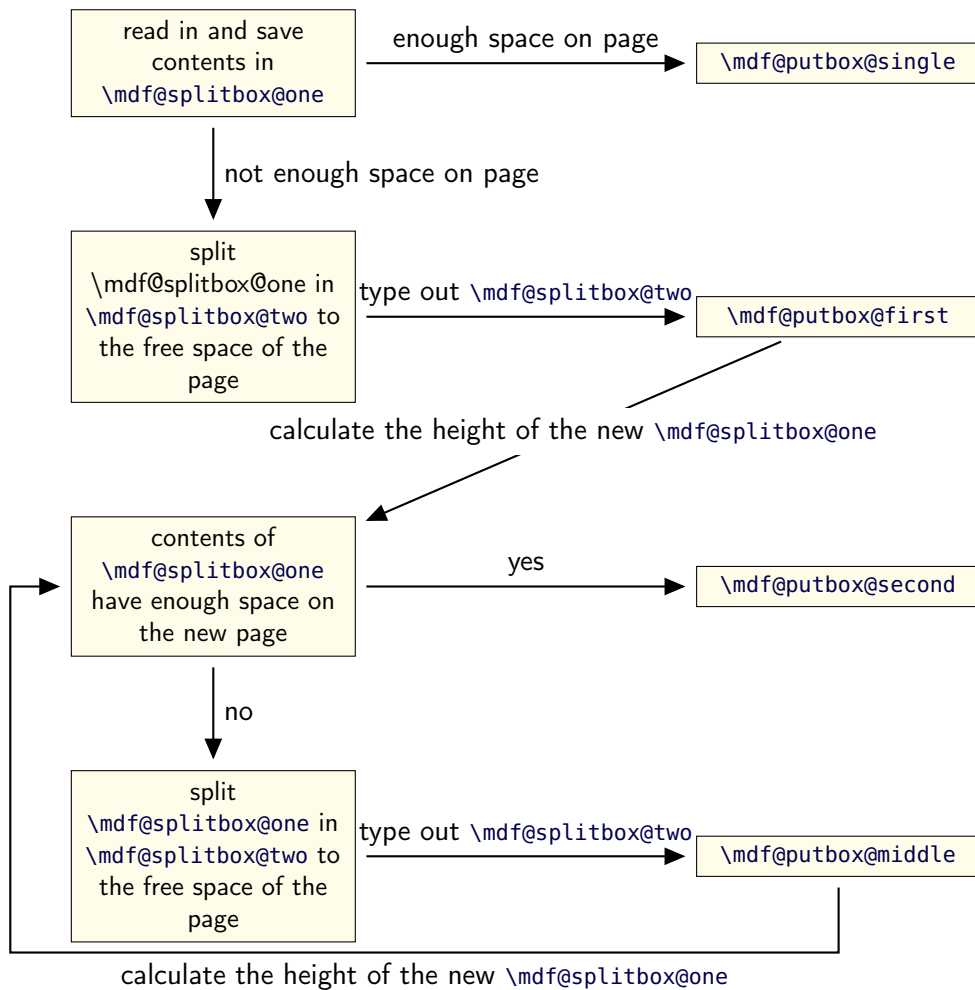
Figure 3: Setting the contents of `mdframed`

The width of the contents is the result of the settings of `leftmargin`, `rightmargin`, `linewidth`, `innerleftmargin` and `innerrightmargin` (see figure (2)).

A.2. The Framecommands

The package `mdframed` knows four kinds of "Framecommand". These commands tell LATEX how to set the contents of `mdframed`.

`\mdf@putbox@single`   This command sets the contents of a single unsplit frame.

`\mdf@putbox@first` This command sets the contents of the first frame of a split frame.

`\mdf@putbox@middle` This command sets the contents of the middle frame of a split frame.

`\mdf@putbox@second` This command sets the contents of the last frame of a split frame.

Using the explained commands we give an example. The command `\box` uses the contents of the savebox and types them out.

First we want to type out the single box without any settings (but with the calculated width).

```
\makeatletter
 \def\mdf@putbox@single{\box\mdf@splitbox@one}
\makeatother
```

I am using the command `\leftline` to start the "Framecommands" at the left.

```
\makeatletter
 \def\mdf@putbox@single{\leftline{\box\mdf@splitbox@one}}
\makeatother
```

Now you have to know how the lengths are named. Every length which can be modified by the options has the following syntax:

```
\mdf@<Name of the Length>@length
```

For example the leftmargin is:

```
\mdf@leftmargin@length
```

To create only a line at the left with the correct `leftmargin` you can set `\mdf@putboxsingle` as follows

```
\makeatletter
\def\mdf@putbox@single{%
        \leftline{%
                \hspace*{\mdf@leftmargin@length}%
                \rule[-\dp\mdf@splitbox@one]{\mdf@linewidth}%
                        {\ht\mdf@splitbox@one+\dp\mdf@splitbox@one}%
                \box\mdf@splitbox@one
        }%
}
\makeatother
```

In this way you can do what you want. If you create your own style you can save the file as `md-frame-X.mdf`. `X` must be an integer. In this way you can use the option `framemethod` to load the file by setting `framemethod=X`.

A.3. Revision history

Version 1.5a submitted DD MMM 2012

• Tobias Weh inspired the excurs-environment not Tobias Schwan. Sorry, I fixed it. • Improved `\mdtheorem` to handle `\listtheorems` provided by `ntheorem`.

Version 1.5 submitted 10 Mar 2012

• fixed bug (Thanks Nicolas Roy) • expanded documentation (Thanks Martin Wilhelm Leidig)
• added options `singleextra`, `firstextra`, `middleextra` and `secondextra` • expanded examples

Version 1.4d submitted 30 Mar 2012

• fixed bug (Thanks Nicolas Roy) • added approach to documentation to work with `picins`

• new implementation of option `hidealllines`, now you can set

`\mdfsetup{hidealllines=true,leftline=true}` printing only the left line (inspired by Tobias Weh)

• added option `everyline` to draw a top and bottom line at splitted frames

Version 1.4 submitted 4 Mar 2012

• fixed bug in combination with `\marginpar` (Thanks Juan Carlos Trujillo Ortega) • fixed bug with option `font`
• fixed bug inside `frametitle` (Thanks Yi, Hoze) • removed unnessary groups (Thanks Yi, Hoze) • changed the definition of `listings` to allow copy paste of the examples

Version 1.3a submitted 5 Feb 2012

• fixed bug (Thanks to Dietrich Grau)

Version 1.3 submitted 4 Feb 2012

• fixed documentation (Thanks to Dietrich Grau) • added option `shadow` • improved handling `\parindent` and `\parskip` (Thanks to Enrico Gregorio and Joseph Wright)

Version 1.2 submitted 8 Jan 2012

• fixed documentation (Thanks to Dietrich Grau) • fixed bug in combination with `amsthm` • fixed bug in `\newmdtheoremenv` • defined new styles via `\newpsstyle`
This works only with `framemethod=PSTricks`. • added new commands for interaction with `TikZ` and `PSTricks`
• expand frame title option by option `frametitlerule`, `frametitlerulewidth frametitlefont`, `frametitleaboveskip`, `frametitlebelowskip`, `frametitlealignment` • removed limitation of three lines for PSTricks • defined new commands `\surroundwithmdframed`, `\mdflength`, `\mdtheorem` • load `xparse` by default
• changed internal names • expanded examples

Version 1.0b submitted 9 Dec 2011

• fixes documentation (Thanks to Dietrich Grau) • fixes bug in `\newmdtheoremenv` • fixes bug with overfull boxes (Thanks to Dietrich Grau) • defined `\newpsstylemdfbackgroundstyle` and `mdflinestyle`
This works only with `framemethod=PSTricks`. • created dtx-file (Thanks to Kevin Godby) • added `\@parboxrestore` to `\mdf@lrbox`

Version 1.0 submitted 13 Nov 2011

• add option `userdefinedwidth` • add option `align` • add option `apptotikzsetting` • create new command `\mdfapptodefinestyle` • changed internal algorithm • removed calc instead using ε-TeX `\dimexpr` • expand documentation • trying to fixe problems with `xcolor` • fixed bug with `framemethod=pstricks` • create file `mdframed-example-default` • create file `mdframed-example-tikz` • create file `mdframed-example-pstricks` • create file `mdframed-example-texsx` (texsx stands for tex stackexchange)

Version 0.9g submitted 08 Oct 2011

• fixed documentation • added small footnote compatibility

Version 0.9f submitted 04 Oct 2011

• fixes bugs (thanks to Lars Madsen) • added option `hidealllines` • fixed documentation

Version 0.9e submitted 11 Sep 2011

• working with `twoside` modus

Version 0.9d submitted 10 Sep 2011

• changed the meaning of the option `style`!!! (inspired by Lars Madsen) • added option `framemethod` (inspired by Lars Madsen) • added options `needspace` (inspired by Lars Madsen) • added new command `\mdfdefinestyle` (inspired by Lars Madsen) • fixes documentation • renamed `md-frame-3.mdf` to `md-frame-2.mdf`

Version 0.9b submitted 7 Sep 2011

• fixes bugs in `\newmdtheoremenv` (Thanks to Enrico Gregorio)

Version 0.9a submitted 5 Sep 2011

• fixes bugs (Thanks to Lars Madson) • expanded documentation (added revision history)

Version 0.9 submitted 4 Sep 2011

• added option `nobreak` • detecting float environments to prevent split calculation • expand documentation (Thanks to Alan Munn)

Version 0.8a

• fixes bugs • fixes documentation

Version 0.8 submitted 22 Aug 2011

• added commands: `\newmdenv`, `\renewmdenv`, `\newmdtheoremenv` • fixes bugs • fixes documentation

Version 0.7a submitted 6 August 2011

• added option `frametitle` • added option `frametitlefont` • allow twolumn-mode • changed the calculation • added option `tikzsetting` • added options for hidden lines for all styles • fixes bugs

Version 0.6a submitted 22 Dec 2010

• fixes bugs • added `\mdfsetup` • expanded documentation

B. Implementation

And finally, here's how it all works. . .

B.1. The Explanation of mdframed.sty

Id : *mdframed.dtx*3832012 − 04 − 2013 : 38 : 38*Zmarco Rev* : 383 *Author* : *marco*
Date : 2012 − 04 − 2015 : 38 : 38 + 0200(*Fr*, 20.*Apr*2012)

```
\mdversion
\mdframedpackagename
\mdf@maindate@svn
```

Set package information

```
1 \def\mdversion{v1.5a}
2 \def\mdframedpackagename{mdframed}
3 \def\mdf@maindate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }

4 \NeedsTeXFormat{LaTeX2e}
5 \ProvidesPackage{mdframed}%
6     [\mdf@maindate@svn$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $%
7      \mdversion: \mdframedpackagename]
```

```
\mdf@PackageWarning
\mdf@PackageInfo
\mdf@LoadFile@IfExist
```

Set short form of \PackageWarning, \PackageInfo and IfFileExists in combination with \RequirePackage.

```
 8 \newcommand*\mdf@PackageWarning[1]{\PackageWarning{\mdframedpackagename}{#1}}
 9 \newcommand*\mdf@PackageInfo[1]{\PackageInfo{\mdframedpackagename}{#1}}
10 \newcommand*\mdf@LoadFile@IfExist[1]{%
11 \IfFileExists{#1.sty}{%
12         \RequirePackage{#1}%
13      }{%
14      \mdf@PackageWarning{The file #1 does not exist\MessageBreak
15                          but needed by \mdframedpackagename\MessageBreak
16                          see documentation fo further information
17                          }%
18      }
19 }
```

Loading required packages

```
20 \RequirePackage{kvoptions}
21 \RequirePackage{kvsetkeys}
22 \RequirePackage{xparse}
23 \RequirePackage{etoolbox}[2011/01/03]
24 \RequirePackage{zref-abspage}
25 \RequirePackage{color}
```
Set the family and the prefix of all options. (see documentation of kvoptions

```
26 \SetupKeyvalOptions{family=mdf,prefix=mdf@}
```

```
\mdf@iflength
\mdf@iflength@check
\mdf@iflength@check
```

Command which checks the input of length options. If the length option is only a number the `defaultunit` will be used. Syntax: `\mdf@iflength{<Input>}{<length>}{<no length>}`

```
27 \newlength{\mdf@templength}
28 \def\mdf@iflength#1{%
29   \afterassignment\mdf@iflength@check%
30   \mdf@templength=#1\mdf@defaultunit\relax\relax
31   \expandafter\endgroup\next
32 }
33 \def\mdf@iflength@check#1{%
34   \begingroup
35   \ifx\relax#1\@empty
36     \def\next{\@secondoftwo}
37   \else
38     \def\next{\@firstoftwo}
39     \expandafter\mdf@iflength@cleanup
40   \fi
41 }
42 \def\mdf@iflength@cleanup#1\relax{}
```

`\mdf@dolist`

Loop used by `mdframed`.

```
43 \DeclareListParser*{\mdf@dolist}{,}
```

`\mdf@option@length`
`\mdf@define@key@length`

Command to define a new length width a default value.
`\mdf@option@length{<Laengenbezeichnung>}{<Defaultwert>}`

```
44 \newrobustcmd*{\mdf@option@length}[2]{%
45   \expandafter\newlength\csname mdf@#1@length\endcsname%
46   \expandafter\setlength\csname mdf@#1@length\endcsname{#2}%
47 }
```

Command to create a new length option.`\mdf@define@key@length{<Bezeichnungder Option der Laenge>}`

```
48 \newrobustcmd*{\mdf@define@key@length}[1]{%
49   \define@key{mdf}{#1}{%
50     \def\@tempa{##1}
51     \mdf@iflength{\@tempa}%
52       {\csxdef{mdfl@#1}{\the\mdf@templength}}%
53       {\csxdef{mdfl@#1}{\the\mdf@templength}}%
54     \expandafter\setlength\csname mdf@#1@length\endcsname{\csname mdfl@#1\endcsname}%
55   }%
56 }
```

`\mdf@do@lengthoption`
`\mdf@lengthoption@doubledo`

The loop of `\mdf@dolist` expected one argument. So I have to define to commands to allow a loop with two arguments. The separation for the input is `==`.

```
57 \def\mdf@do@lengthoption#1{%
58   \mdf@lengthoption@doubledo#1\@nil%
59 }
60 \def\mdf@lengthoption@doubledo#1==#2\@nil{%
```

```
61      \mdf@option@length{#1}{#2}%
62      \mdf@define@key@length{#1}%
63 }
```

> `\mdf@do@stringoption`
> `\mdf@stringoption@doubledo`

Same as `\mdf@do@lengthoption` and `\mdf@lengthoption@doubledo`.

```
64 \def\mdf@do@stringoption#1{%
65      \mdf@stringoption@doubledo#1\@nil%
66 }
67 \def\mdf@stringoption@doubledo#1==#2\@nil{%
68      \expandafter\gdef\csname mdf@#1\endcsname{#2}%
69      \define@key{mdf}{#1}{%
70          \csdef{mdf@#1}{##1}%
71      }%
72 }
```

> `\mdf@do@booloption`
> `\mdf@booloption@doubledo`

Same as `\mdf@do@lengthoption` and `\mdf@lengthoption@doubledo`.

```
73 \def\mdf@do@booloption#1{%
74      \mdf@booloption@doubledo#1\@nil%
75 }
76 \def\mdf@booloption@doubledo#1==#2\@nil{%
77      \newbool{mdf@#1}\setbool{mdf@#1}{#2}%
78      \define@key{mdf}{#1}[#2]{%
79          \setbool{mdf@#1}{##1}%
80      }%
81 }
```

> `\mdf@do@alignoption`
> `\mdf@alignoption@tripledo`

Same as `\mdf@do@lengthoption` and `\mdf@lengthoption@doubledo`. Here three arguments are required.

```
82 \def\mdf@do@alignoption#1{%
83      \mdf@alignoption@tripledo#1\@nil%
84 }
85 \def\mdf@alignoption@tripledo#1==#2==#3\@nil{%
86      \csdef{mdf@align@#1@left}{\null\hspace*{#2}}%
87      \csdef{mdf@align@#1@right}{\hspace*{#3}\null}%
88 }
```

Start declaration of options

```
89 \newcounter{mdf@globalstyle@cnt}
90 \defcounter{mdf@globalstyle@cnt}{0}
91 \newcommand*\mdfglobal@style{0}
```

Only provide to be backward compatible

```
92 \define@key{mdf}{style}{%
93          \mdf@PackageWarning{package option style is depreciated^^J
94                              use framemethod instead\MessageBreak}%
95          \renewcommand*\mdfglobal@style{#1}%
```

```
 96            \defcounter{mdf@globalstyle@cnt}{#1}%
 97             \ifcase\value{mdf@globalstyle@cnt}\relax
 98                %0 <- kein Grafikpaket
 99             \or\mdf@LoadFile@IfExist{tikz}%
100             \or\mdf@LoadFile@IfExist{pstricks-add}%
101             \or\defcounter{mdf@globalstyle@cnt}{2}%
102                \mdf@LoadFile@IfExist{pst-node}%
103             \or\mdf@LoadFile@IfExist{pst-node}%
104             \else\mdf@PackageWarning{Unknown global style \value{mdf@globalstyle@cnt}}%
105           \fi%
106 }
```

`\mdf@framemethod`

```
107 \providecommand*\mdf@framemethod{}
108 \def\mdf@framemethod@i{}%
109 \def\mdf@framemethod@ii{}%
110 \def\mdf@framemethod@iii{}%
```

```
111 \define@key{mdf}{framemethod}[default]{%
112   \lowercase{\def\mdf@tempa{#1}}
113   \forcsvlist{\listadd\mdf@framemethod@i}{default,tex,latex,none,0}
114   \forcsvlist{\listadd\mdf@framemethod@ii}{pgf,tikz,1}
115   \forcsvlist{\listadd\mdf@framemethod@iii}{pstricks,ps,2,postscript}
116   \xifinlist{\mdf@tempa}{\mdf@framemethod@i}%
117      {\def\mdf@@framemethod{default}\defcounter{mdf@globalstyle@cnt}{0}}%
118      {\xifinlist{\mdf@tempa}{\mdf@framemethod@ii}%
119         {\def\mdf@@framemethod{tikz}\defcounter{mdf@globalstyle@cnt}{1}}%
120         {\xifinlist{\mdf@tempa}{\mdf@framemethod@iii}%
121            {\def\mdf@@framemethod{pstricks}\defcounter{mdf@globalstyle@cnt}{2}}%
122            {%
123             \mdf@LoadFile@IfExist{#1}%
124            }%
125         }%
126      }%
127   \ifcase\value{mdf@globalstyle@cnt}\relax%
128         %0 <- kein Grafikpaket
129      \or\mdf@LoadFile@IfExist{tikz}%
130      \or\mdf@LoadFile@IfExist{pst-node}%
131      \or\mdf@LoadFile@IfExist{pst-node}%
132   \fi%
133 }
```

`\mdf@do@lengthoption`

Here the declaration of the length option. The input method is explained above.

```
134 \mdf@dolist{\mdf@do@lengthoption}{%
135    {skipabove==\z@},%
136    {skipbelow==\z@},%
137    {leftmargin==\z@},%
138    {rightmargin==\z@},%
139    {innerleftmargin==10pt},%
140    {innerrightmargin==10pt},%
```

```
141      {innertopmargin==0.4\baselineskip},%
142      {innerbottommargin==0.4\baselineskip},%
143      {splittopskip==\z@},%
144      {splitbottomskip==\z@},%
145      {outermargin==\z@},%
146      {innermargin==\z@},%
147      {linewidth==0.4pt},%
148      {innerlinewidth==\z@},%
149      {middlelinewidth==\expandafter\mdf@linewidth@length},%
150      {outerlinewidth==\z@},%
151      {roundcorner==\z@},%
152      {footenotedistance==\medskipamount},
153      {userdefinedwidth==\linewidth},
154      {frametitleaboveskip==5pt},
155      {frametitlebelowskip==5pt},
156      {frametitlerulewidth==.2pt},
157      {frametitleleftmargin==10pt},%
158      {frametitlerightmargin==10pt},%
159      {shadowsize==8pt},%
160 }
```

\mdf@do@lengthoption

Here the declaration of the string option. The input method is explained above.

```
161 \mdf@dolist{\mdf@do@stringoption}{%
162      {frametitle=={}},%
163      {defaultunit==pt},%
164      {linecolor==black},%
165      {backgroundcolor==white},%
166      {fontcolor==black},%
167      {frametitlefontcolor==black},%
168      {innerlinecolor==\mdf@linecolor},%
169      {outerlinecolor==\mdf@linecolor},%
170      {middlelinecolor==\mdf@linecolor},%
171      {psroundlinecolor==\mdf@backgroundcolor},%
172      {frametitlerulecolor==\mdf@linecolor},
173      {frametitlebackgroundcolor==\mdf@backgroundcolor},%
174      {shadowcolor==black!50},%
175      {settings=={}},%
176      {frametitlesettings=={}},%
177      {font=={}},%
178      {frametitlefont==\normalfont\bfseries},%
179      {printheight==none},%
180      {alignment=={}},%
181      {frametitlealignment=={}},%
182      {theoremseparator=={:}},%
183      {theoremcountersep=={.}},%
184      {theoremtitlefont=={}},%
185      {theoremspace=={\space}},%
186      {singleextra=={}},
187      {firstextra=={}},
188      {middleextra=={}},
189      {secondextra=={}},
190 }
```

```
\mdf@do@booloption
```

Here the declaration of the string option. The input method is explained above.

```
191 \mdf@dolist{\mdf@do@booloption}{%
192     {ntheorem==false},%
193     {topline==true},%
194     {leftline==true},%
195     {bottomline==true},%
196     {rightline==true},%
197     {frametitletopline==true},%
198     {frametitleleftline==true},%
199     {frametitlebottomline==true},%
200     {frametitlerightline==true},%
201 %    {hidealllines==false},%
202     {frametitlerule==false},%
203     {nobreak==false},%
204     {footnoteinside==true},%
205     {usetwoside==true},%
206     {repeatframetitle==false},%Noch nicht richtig implementiert
207     {shadow==false},%
208     {everyline==false},%
209 }
210 %%special boolflag hidealllines:
211 \newbool{mdf@hidealllines}%
212 \define@key{mdf}{hidealllines}[false]{%
213 \setbool{mdf@hidealllines}{#1}%
214  \ifbool{mdf@hidealllines}{%
215    \kvsetkeys{mdf}{leftline=false,topline=false,rightline=false,bottomline=false}%
216  }{}%
217 }
```

```
\mdf@do@alignoption
```

Here the declaration of the align option. The input method is explained above.

```
218 \mdf@dolist{\mdf@do@alignoption}{%
219     {left==\mdf@leftmargin@length==\z@},%
220     {center==\fill==\fill},%
221     {right==\fill==\mdf@rightmargin@length},%
222     {outer==\fill==\mdf@rightmargin@length},%not supported yet
223     {outer==\mdf@leftmargin@length==\fill},%not supported yet
224 }
```

```
\mdf@align
\mdf@makeboxalign@left
\mdf@makeboxalign@right
\mdf@makeboxalign@right
```

Set the alignment.

```
225 \newcommand*\mdf@align{}%
226 \newcommand*\mdf@makeboxalign@left{\null\hspace*{\mdf@leftmargin@length}}%
227 \newcommand*\mdf@makeboxalign@right{}%
228 \define@key{mdf}{align}[left]{%
229     \ifcsundef{mdf@align@#1@left}{%
230         \mdf@PackageWarning{Unknown alignment #1\MessageBreak}%
```

```
231        \letcs\mdf@makeboxalign@left{mdf@align@left@left}%
232        \letcs\mdf@makeboxalign@right{mdf@align@left@right}%
233   }{%
234        \def\mdf@makeboxalign@left{\csuse{mdf@align@#1@left}}%
235        \def\mdf@makeboxalign@right{\csuse{mdf@align@#1@right}}%
236   }%
237 }
```

```
\mdf@tikzset@local
\mdf@psset@local
```

Option to pass options to tikz or pstricks

```
238 \def\mdf@tikzset@local{\tikzset{tikzsetting/.style={}}}
239 \define@key{mdf}{tikzsetting}{%
240   \def\mdf@tikzset@local{\tikzset{tikzsetting/.style={#1}}}%
241 }
242 \define@key{mdf}{apptotikzsetting}{%
243   \appto\mdf@tikzset@local{#1}%
244 }
245 \def\mdf@psset@local{}
246 \define@key{mdf}{pstrickssetting}{%
247   \def\mdf@psset@local{#1}
248 }
249 \def\mdfpstricks@appendsettings{}
250 \define@key{mdf}{pstricksappsetting}{%
251   \def\mdfpstricks@appendsettings{#1}%
252 }
253
```

```
\mdf@xcolor
```

Problem width xcolor. This part must be reworked!

```
254 \def\mdf@xcolor{}
255 \define@key{mdf}{xcolor}[none]{%
256   \def\@tempa{#1}%
257   \@ifpackageloaded{xcolor}{%
258     \let\mdf@xcolor\@empty %ignoriere die Eingabe der Optionen
259     \def\@tempa{}%
260     }{}%
261   \ifx\relax\@tempa\relax\else
262     \PassOptionsToPackage{\mdf@xcolor}{xcolor}%
263      \RequirePackage{xcolor}%
264   \fi%
265 }%
```

```
\mdf@needspace
```

Defining the option needspace

```
266 \define@key{mdf}{needspace}[\z@]{%
267      \begingroup%
268        \setlength{\dimen@}{#1}%
269        \vskip\z@\@plus\dimen@%
270        \penalty -100\vskip\z@\@plus -\dimen@%
271        \vskip\dimen@%
```

```
272        \penalty 9999%
273        \vskip -\dimen@%
274        \vskip\z@skip % hide the previous |\vskip| from |\addvspace|
275      \endgroup%
276 }
```

```
277 \DeclareDefaultOption{%
278    \mdf@PackageWarning{Unknown Option '\CurrentOption' for mdframed}}
279 \ProcessKeyvalOptions*\relax
```

`\mdfsetup`

Short form of `\setkeys{mdf}`

```
280 \newrobustcmd*{\mdfsetup}{\kvsetkeys{mdf}}
```

`\mdf@style`

Redefinition of the option `style` to use the key in combination with `mdfdefinedstyle`.

```
281 \define@key{mdf}{style}{%
282   \ifcsundef{mdf@definestyle@#1}{%
283     \mdf@PackageWarning{Unknown definedstyle #1^^J
284                 You have to define a style ^^J
285                 via \string\mdfdefinedstyle\MessageBreak
286                }%
287   }%
288   {\expandafter\expandafter\expandafter\mdfsetup%
289     \expandafter\expandafter\expandafter{\csname mdf@definestyle@#1\endcsname}}%
290 }%
```

`\mdf@print@space`

Option to type out the free vertical space of the current page.

```
291 \let\mdf@PackageNoInfo\@gobble
292 \newrobustcmd*\mdf@ifstrequal@expand{%
293 \expandafter\ifstrequal\expandafter{\mdf@printheight}%
294 }
295 \newrobustcmd*\mdf@print@space{%
296   %case "none"
297   \mdf@ifstrequal@expand{none}{\def\mdf@tempa{NoInfo}}{%
298       %case "info"
299       \mdf@ifstrequal@expand{info}{\def\mdf@tempa{Info}}{%
300         %case "warning"
301         \mdf@ifstrequal@expand{warning}{\def\mdf@tempa{Warning}}{%
302           %case "unknown"
303           \mdf@PackageWarning{Unknown key for printheight=\mdf@printheight^^J
304                       use none, info or warning}%
305           \def\mdf@tempa{none}%
306         }%
307       }%
308   }%
309 \def\mdf@PackageInfoSpace{\csname mdf@Package\mdf@tempa\endcsname}%
310 }
```

```
\new...
```

Initialize all commands and length which will we used later

```
311 \newsavebox\mdf@frametitlebox
312 \newsavebox\mdf@footnotebox
313 \newsavebox\mdf@splitbox@one
314 \newsavebox\mdf@splitbox@two
315 \newlength\mdfsplitboxwidth
316 \newlength\mdfsplitboxtotalwidth
317 \newlength\mdfsplitboxheight
318 \newlength\mdfsplitboxdepth
319 \newlength\mdfsplitboxtotalheight
320 \newlength\mdfframetitleboxwidth
321 \newlength\mdfframetitleboxtotalwidth
322 \newlength\mdfframetitleboxheight
323 \newlength\mdfframetitleboxdepth
324 \newlength\mdfframetitleboxtotalheight
325 \newlength\mdffootnoteboxwidth
326 \newlength\mdffootnoteboxtotalwidth
327 \newlength\mdffootnoteboxheight
328 \newlength\mdffootnoteboxdepth
329 \newlength\mdffootnoteboxtotalheight
330
331 \newlength\mdftotallinewidth
332
333 \newlength\mdfboundingboxwidth
334 \newlength\mdfboundingboxtotalwidth
335
336 \newlength\mdfboundingboxheight
337 \newlength\mdfboundingboxdepth
338 \newlength\mdfboundingboxtotalheight
339
340 \newlength\mdf@freevspace@length
341 \newlength\mdf@horizontalwidthofbox@length
342 \newlength\mdf@verticalmarginwhole@length
343
344 % Command to expand the tikz code. (see md-frame-1.mdf)
345 \newrobustcmd\mdfcreateextratikz{}
346
```

```
\mdf@lrbox
\endmdf@lrbox
```

Modification of the default `\lrbox` and `\endlrbox`

```
347
348 \def\mdf@lrbox#1{%
349 %%patch to work with amsthm
350   \mdf@patchamsthm
351 %%end patch
352   \edef\mdf@restoreparams{%
353    \parindent=\the\parindent \parskip=\the\parskip}
354   \setbox#1\vbox\bgroup
355    \color@begingroup%
356     \mdf@horizontalmargin@equation%
```

```
357      \columnwidth=\hsize%
358      \textwidth=\hsize%
359      \@parboxrestore%
360      \mdf@restoreparams%
361      %SETZE
362      \@afterindentfalse%
363      \@afterheading%
364      %STREICHE
365      %\@doendpe
366  }
367
368  \def\endmdf@lrbox{\color@endgroup\egroup}
369
```

\mdf@ignorevbadness
\mdf@restorevbadness

Avoiding warnings during the splitting process by \vsplit. see How to avoid underfull vbox in combination with \vsplit?

```
370  \newrobustcmd*\mdf@ignorevbadness{%
371      \edef\mdf@currentvbadness{\the\vbadness}%
372      \vbadness=\@M%
373      \afterassignment\mdf@restorevbadness}
374  \newrobustcmd*\mdf@restorevbadness{\vbadness=\mdf@currentvbadness\relax}
```

\mdf@patchamsth

The package amsthm provides a not compatible starting of theorem. So I have to change the header of amsthm.

```
375  \@ifpackageloaded{amsthm}{%
376  \newrobustcmd\mdf@patchamsthm{%
377      \let\mdf@deferred@thm@head\deferred@thm@head
378      \patchcmd{\deferred@thm@head}{\indent}{}%
379        {\mdf@PackageInfo{mdframed detected package amsthm ^^J
380                     changed the theoerem header of amsthm\MessageBreak}%
381        }{%
382         \mdf@PackageInfo{mdframed detected package amsthm ^^J
383                     changed the theoerem header of amsthm failed\MessageBreak}%
384        }%
385      }%
386  }{\let\mdf@patchamsthm\relax}%
```

\mdf@trivlist
\endmdf@trivlist

Modification of the default \trivlist and \endtrivlist.

```
387  \def\mdf@trivlist#1{%
388    \setlength{\topsep}{#1}%
389    \partopsep\z@%
390    \parsep\z@%
391    \@nmbrlistfalse%
392    \@trivlist%
393    \labelwidth\z@%
```

```
394    \leftmargin\z@%
395    \itemindent\z@%
396    \let\@itemlabel\@empty%
397    \def\makelabel##1{##1}%
398 %%  \item\leavevmode\hrule \@height\z@ \@width\linewidth\relax%
399 %%  \item\mbox{}\relax% second version
400    \item\relax% first Version
401 }
402 \let\endmdf@trivlist\endtrivlist
403 \patchcmd\endmdf@trivlist\@endparenv\mdf@endparenv{}{}
404 \def\mdf@endparenv{%
405    \addpenalty\@endparpenalty\addvspace\mdf@skipbelow@length\@endpetrue}
406
```

```
\mdf@makebox@out
\mdf@makebox@in
```

```
407 \newrobustcmd*\mdf@makebox@out[2][\linewidth]{%
408  \noindent\hb@xt@\z@{%
409     \noindent\makebox[\dimexpr #1\relax][l]{#2}%
410  \hss}%
411 }%
412 \newrobustcmd*\mdf@makebox@in[2][\mdf@userdefinedwidth@length]{%
413  \noindent\makebox[\dimexpr #1\relax][l]{#2}%
414 }
```

```
\mdfdefinestyle
\mdfapptodefinestyle
```

See explanation of this commands above.

```
415 \newrobustcmd*\mdfdefinestyle[2]{%
416   \csdef{mdf@definestyle@#1}{#2}%
417 }
418 \newrobustcmd*\mdfapptodefinestyle[2]{%
419  \ifcsundef{mdf@definestyle@#1}%
420    {\mdf@PackageWarning{Unknown style #1}}%
421    {\csappto{mdf@definestyle@#1}{,#2}}%
422 }
```

```
\mdflength
\surroundwithmdframed
```

Helper macros to work with mdframed

```
423 \newrobustcmd*{\mdflength}[1]{\csuse{mdf@#1@length}}
424
425 \newrobustcmd*{\surroundwithmdframed}[2][]{%
426   \BeforeBeginEnvironment{#2}{\begin{mdframed}[#1]}%
427   \AfterEndEnvironment{#2}{\end{mdframed}}%
428 }
```

```
\newmdenv
\renewmdenv
\newmdtheoremenv
\mdtheorem
```

Defining of the new environment defintions.

```
429 \newrobustcmd*\newmdenv[2][]{%
430   \newenvironment{#2}{%
431     \mdfsetup{#1}%
432     \begin{mdframed}%
433   }{%
434     \end{mdframed}%
435   }%
436 }
437 \newrobustcmd*\renewmdenv[2][]{%
438   \expandafter\let\csname #2\endcsname\relax%
439   \expandafter\let\csname end#2\endcsname\relax%
440   \newmdenv[#1]{#2}%
441   }%
442
443
444 \DeclareDocumentCommand\newmdtheoremenv{O{} m o m o }{%
445 \ifboolexpr{ test {\IfNoValueTF {#3}} and test {\IfNoValueTF {#5}} }%
446   {\newtheorem{#2}{#4}}{%
447     \IfValueTF{#3}{\newtheorem{#2}[#3]{#4}}{}%
448     \IfValueTF{#5}{\newtheorem{#2}{#4}[#5]}{}%
449   }%
450   \BeforeBeginEnvironment{#2}{%
451     \begin{mdframed}[#1]%
452   \AfterEndEnvironment{#2}{%
453     \end{mdframed}}%
454 }
455
456
457 \newrobustcmd*\mdf@thm@caption[2]{}
458 \AtBeginDocument{%
459 \@ifpackageloaded{ntheorem}%
460   {\renewrobustcmd*\mdf@thm@caption{\thm@thmcaption}}{}%
461 }
462
463 \DeclareDocumentCommand{\mdtheorem}{ O{} m o m o }%
464 {\ifcsdef{#2}%
465   {\mdf@PackageWarning{Environment #2 already exits\MessageBreak}}%
466   {%
467   \IfNoValueTF {#3}%
468     {%#3 not given -- number relationship
469     \IfNoValueTF {#5}
470       {%#3+#5 not given
471       \@definecounter{#2}%
472       \expandafter\xdef\csname the#2\endcsname{\@thmcounter{#2}}%
473       \newenvironment{#2}[1][]{%
474         \refstepcounter{#2}%
475         \ifstrempty{##1}%
476           {\let\@temptitle\relax}%
477           {%
478             \def\@temptitle{\mdf@theoremseparator%
```

```
479                         \mdf@theoremspace%
480                         \mdf@theoremtitlefont%
481                         ##1}%
482              \mdf@thm@caption{#2}{{#4}{\csname the#2\endcsname}{##1}}%
483              }%
484           \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}]}%
485           {\end{mdframed}}%
486        \newenvironment{#2*}[1][]{%
487           \ifstrempty{##1}{\let\@temptitle\relax}{\def\@temptitle{:\ ##1}}%
488           \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]}%
489           {\end{mdframed}}%
490        }%
491        {%#5 given -- reset counter
492        \@definecounter{#2}\@newctr{#2}[#5]%
493        \expandafter\xdef\csname the#2\endcsname{\@thmcounter{#2}}%
494        \expandafter\xdef\csname the#2\endcsname{%
495              \expandafter\noexpand\csname the#5\endcsname \@thmcountersep%
496              \@thmcounter{#2}}%
497        \newenvironment{#2}[1][]{%
498           \refstepcounter{#2}%
499           \ifstrempty{##1}%
500             {\let\@temptitle\relax}%
501             {%
502              \def\@temptitle{\mdf@theoremseparator%
503                         \mdf@theoremspace%
504                         \mdf@theoremtitlefont%
505                         ##1}%
506              \mdf@thm@caption{#2}{{#4}{\csname the#2\endcsname}{##1}}%
507              }
508           \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}]}%
509           {\end{mdframed}}%
510        \newenvironment{#2*}[1][]{%
511           \ifstrempty{##1}%
512             {\let\@temptitle\relax}%
513             {%
514              \def\@temptitle{\mdf@theoremseparator%
515                         \mdf@theoremspace%
516                         \mdf@theoremtitlefont%
517                         ##1}%
518              \mdf@thm@caption{#2}{{#4}{\csname the#2\endcsname}{##1}}%
519              }%
520           \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]}%
521           {\end{mdframed}}%
522        }%
523     }%
524     {%#3 given -- number relationship
525        \global\@namedef{the#2}{\@nameuse{the#3}}%
526        \newenvironment{#2}[1][]{%
527           \refstepcounter{#3}%
528           \ifstrempty{##1}%
529             {\let\@temptitle\relax}%
530             {%
531              \def\@temptitle{\mdf@theoremseparator%
532                         \mdf@theoremspace%
533                         \mdf@theoremtitlefont%
534                         ##1}%
```

```
535          \mdf@thm@caption{#2}{{#4}{\csname the#2\endcsname}{##1}}%
536            }
537        \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}]}%
538        {\end{mdframed}}%
539      \newenvironment{#2*}[1][]{%
540        \ifstrempty{##1}{\let\@temptitle\relax}{\def\@temptitle{:\ ##1}}%
541        \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]}%
542        {\end{mdframed}}%
543    }%
544  }%
545 }
546
```

┌─────────────────────┐
│ \mdfframedtitleenv   │
│ \mdf@@frametitle   │
│ \mdf@setopt@body   │
│ \mdf@setopt@title   │
└─────────────────────┘

Default definition of the frame tile used by `mdframed`.

```
547 %TESTVERSION
548 % \newrobustcmd*\mdf@setopt@title{%
549 %  \ifbool{mdf@frametitlerule}{\booltrue{mdf@bottomline}}{\boolfalse{mdf@bottomline}}%
550 % \let\ifmdf@leftline\ifmdf@frametitleleftline%
551 % \let\ifmdf@topline\ifmdf@frametitletopline%
552 % \let\ifmdf@rightline\ifmdf@frametitlerightline%
553 % \let\ifmdf@bottomline\ifmdf@frametitlebottomline%
554 %  \mdfsetup{innerbottommargin=\mdf@titlebelowskip@length,%
555 %            innertopmargin=\mdf@titleaboveskip@length,%
556 %            middlelinecolor=\mdf@frametitlerulecolor,%
557 %            backgroundcolor=\mdf@frametitlebackgroundcolor,%
558 %            middlelinewidth=\mdf@frametitlerulewidth@length,%
559 %            innerleftmargin=\mdf@frametitleleftmargin@length,%
560 %            innerrightmargin=\mdf@frametitlerightmargin@length,%
561 %            alignment=\mdf@frametitlealignment,%
562 %            skipbelow=\z@}%
563 % \def\mdf@linecolor@bottom{\color{\mdf@frametitlebottomrulecolor}}%
564 % \mdf@frametitlesettings%
565 % }
566 %
567 % \newrobustcmd*\mdf@setopt@body{%
568 %  \mdfsetup{topline=false,skipabove=\z@}%
569 %  \unskip\nointerlineskip%
570 % }
571 %
572 % \newrobustcmd\mdfframedtitleenv[1]{%
573 %  \begingroup
574 %    \mdf@setopt@title
575 %    \color@setgroup
576 %      \mdf@frametitlefont
577 %      \mdf@lrbox{\mdf@splitbox@one}%
578 %        \mdf@frametitlealignment
579 %         #1\par\unskip
580 %      \endmdf@lrbox
581 %    \mdf@ignorevbadness
```

```
582 %    \global\setbox\mdf@frametitlebox\vbox{\unvbox\mdf@splitbox@one}%
583 %    \mdf@ignorevbadness
584 %    \global\setbox\mdf@splitbox@one\vbox{\unvcopy\mdf@frametitlebox}%
585 %    \detected@mdf@put@frame%
586 %    \color@endgroup%
587 %  \endgroup
588 % }
589 \newrobustcmd\mdfframedtitleenv[1]{%
590   \color@begingroup%%
591     \mdf@lrbox{\mdf@frametitlebox}%
592       \mdf@frametitlealignment%
593       \color{\mdf@frametitlefontcolor}%
594         \normalfont\mdf@frametitlefont{#1}\par\unskip
595     \endmdf@lrbox%
596   \mdf@ignorevbadness%
597   \global\setbox\mdf@frametitlebox\vbox{\unvbox\mdf@frametitlebox}%
598   \global\mdfframetitleboxwidth=\wd\mdf@frametitlebox\relax%
599   \global\mdfframetitleboxheight=\ht\mdf@frametitlebox\relax%
600   \global\mdfframetitleboxdepth=\dp\mdf@frametitlebox\relax%
601   \global\mdfframetitleboxtotalheight=\dimexpr\ht\mdf@frametitlebox+\dp\mdf@frametitlebox
602         +\mdf@frametitleaboveskip@length+\mdf@frametitlebelowskip@length\relax%
603   \color@endgroup%
604 }
605
606 \newrobustcmd*\mdf@@frametitle{%
607     \mdfframedtitleenv{\mdf@frametitle}%
608 }
609
610 \newrobustcmd*\mdf@@frametitle@use{%
611   \begingroup
612   \parskip\z@
613   \parindent\z@
614   \offinterlineskip
615   \mdf@ignorevbadness%
616   \global\setbox\mdf@splitbox@one\vbox{%
617       \unvcopy\mdf@frametitlebox%
618       \mdf@@frametitlerule%
619       \unvbox\mdf@splitbox@one%
620     }%
621   \mdf@ignorevbadness%
622   \global\setbox\mdf@splitbox@one\vbox{%
623       \unvbox\mdf@splitbox@one}%
624   \endgroup
625   \mdfsetup{innertopmargin=\mdf@frametitleaboveskip@length}%
626 }
```

\mdf@checkntheorem

Command which checks only ntheorem. Later I will support also thmtools.

```
627
628 \newrobustcmd*\mdf@checkntheorem{%
629   \ifbool{mdf@ntheorem}%
630     {\ifundef{\theorempreskipamount}%
631         {\mdf@PackageWarning{You have not loaded ntheorem yet}}%
632         {\setlength{\theorempreskipamount}{\z@}%
```

```
633            \setlength{\theorempostskipamount}{\z@}%
634        }%
635    }{}%
636 }
```

> \mdf@footnoterule
> \mdf@footnoteoutput
> \mdf@footnoteinput

Support for footnotes.

```
637 \newrobustcmd*\mdf@footnoterule{%
638      \kern0\p@%
639      \hrule \@width 1in \kern 2.6\p@}
640 \newrobustcmd*\mdf@footnoteoutput{%
641      \ifvoid\@mpfootins\else
642          \nobreak%
643          \vskip\mdf@footenotedistance@length%
644          \normalcolor%
645          \mdf@footnoterule
646          \unvbox\@mpfootins
647      \fi%
648 }
649 \newrobustcmd*\mdf@footnoteinput{%
650    \def\@mpfn{mpfootnote}%
651    \def\thempfn{\thempfootnote}%
652    \c@mpfootnote\z@%
653    \let\@footnotetext\@mpfootnotetext%
654 }
```

> \mdf@load@style
> \mdf@styledefinition

Load the method to draw the frame and set style definition.

```
655 \newrobustcmd*\mdf@load@style{%
656 \ifcase\value{mdf@globalstyle@cnt}\relax%
657      \input{md-frame-0.mdf}%
658 \or\input{md-frame-1.mdf}%
659 \or\input{md-frame-2.mdf}%
660 \or\input{md-frame-3.mdf}%
661 \else%
662      \IfFileExists{md-frame-\value{mdf@globalstyle@cnt}.mdf}%
663      {\input{md-frame-\value{mdf@globalstyle@cnt}.mdf}}%
664      {%
665       \input{md-frame-0.mdf}%
666       \mdf@PackageWarning{The style number \value{mdf@globalstyle@cnt} does not exist^^J
667                          mdframed ues instead style=0 \mdframedpackagename}%
668      }%
669 \fi%
670 }%
671 \mdf@load@style
672
673 \newrobustcmd*\mdf@styledefinition{%AVOID!!!Needed for framemethod=default
674      \ifnumequal{\value{mdf@globalstyle@cnt}}{0}%
675      {\deflength{\mdf@innerlinewidth@length}{\z@}%
676       \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%
```

```
677        \deflength{\mdf@outerlinewidth@length}{\z@}%
678        \let\mdf@innerlinecolor\mdf@linecolor%
679        \let\mdf@middlelinecolor\mdf@linecolor%
680        \let\mdf@outerlinecolor\mdf@linecolor%
681     }{}%
682 }
```

the box label

`\detected@mdf@put@frame`

Detect whether inside a non breakable environment.

```
683 \let\mdf@reserved@a\@empty
684 \newrobustcmd*\detected@mdf@put@frame{%
685   \ifmdf@nobreak%Option nobreak=true?
686      \def\mdf@reserved@a{\mdf@put@frame@standalone}%
687   \else
688      \def\mdf@reserved@a{\mdf@put@frame}%
689      \ifx\@captype\@undefined
690         \def\mdf@reserved@a{\mdf@put@frame}%
691      \else
692         \mdf@PackageInfo{mdframed inside float  ^^J
693                         mdframed uses option nobreak \mdframedpackagename}%
694         \def\mdf@reserved@a{\mdf@put@frame@standalone}%
695      \fi
696 %%    \ifnum\@floatpenalty<0\relax%Detecting float
697 %%       \if@twocolumn%
698 %%          \ifx\@captype\@undefined
699 %%             \def\mdf@reserved@a{\mdf@put@frame}%
700 %%          \else
701 %%             \mdf@PackageInfo{mdframed inside float  ^^J
702 %%                             mdframed uses option nobreak \mdframedpackagename}%
703 %%             \def\mdf@reserved@a{\mdf@put@frame@standalone}%
704 %%          \fi
705 %%       \else
706 %%          \mdf@PackageInfo{mdframed inside float  ^^J
707 %%                          mdframed uses option nobreak \mdframedpackagename}%
708 %%          \def\mdf@reserved@a{\mdf@put@frame@standalone}%
709 %%       \fi%
710 %%    \fi%
711      \if@minipage%
712         \mdf@PackageInfo{mdframed inside minipage  ^^J
713                         mdframed uses option nobreak \mdframedpackagename}%
714         \def\mdf@reserved@a{\mdf@put@frame@standalone}%
715      \fi%
716      \ifinner%
717         \mdf@PackageInfo{mdframed inside a box ^^J
718                         mdframed uses option nobreak \mdframedpackagename}%
719         \def\mdf@reserved@a{\mdf@put@frame@standalone}%
720      \fi%
721   \fi%
722 \mdf@reserved@a%
723 }
```

`\mdf@hidealllines@check`

```
724 \newrobustcmd*\mdf@hidealllines@check{%
725 \ifbool{mdf@hidealllines}{%
726     \boolfalse{mdf@leftline}\boolfalse{mdf@rightline}%
727     \boolfalse{mdf@topline}\boolfalse{mdf@bottomline}%
728     \boolfalse{mdf@frametitleleftline}\boolfalse{mdf@frametitlerightline}%
729     \boolfalse{mdf@frametitletopline}\boolfalse{mdf@frametitlebottomline}%
730  }{}%
731 }
```

```
\mdframed
\mdframed@ii
\mdframed@i
```

That the user environement.

```
732 \newenvironment{mdframed}[1][]{%
733 \color@begingroup%
734     \mdfsetup{userdefinedwidth=\linewidth,#1}%
735 %%%   \mdf@hidealllines@check%
736     \mdf@twoside@checklength%
737     \let\width\z@%
738     \let\height\z@
739     \mdf@checkntheorem%
740     \mdf@styledefinition%
741     \mdf@footnoteinput%
742     \color{\mdf@fontcolor}%
743     \mdf@font%
744     \ifvmode\nointerlineskip\fi%
745     \mdf@trivlist{\mdf@skipabove@length}%%
746     \ifdefempty{\mdf@frametitle}{}{\mdf@@frametitle}%
747     \mdf@settings%
748     \mdf@lrbox{\mdf@splitbox@one}%
749  }%
750  {\par\unskip\ifvmode\nointerlineskip\hrule \@height\z@ \@width\hsize\fi%%
751    \ifmdf@footnoteinside%
752      \def\mdf@reserveda{%
753        \mdf@footnoteoutput%
754        \endmdf@lrbox%
755        \ifdefempty{\mdf@frametitle}{}{\mdf@@frametitle@use}
756        \detected@mdf@put@frame}%
757    \else%
758      \def\mdf@reserveda{%
759        \endmdf@lrbox%
760        \ifdefempty{\mdf@frametitle}{}{\mdf@@frametitle@use}
761        \detected@mdf@put@frame%
762        \mdf@footnoteoutput%
763        }%
764    \fi%
765    \mdf@reserveda%
766    \endmdf@trivlist%
767 \color@endgroup\@doendpe%
768 }
769
770
```

```
\mdf@twoside@checklength
\mdf@zref@label
\if@mdf@pageodd
\mdf@pageisodd
\mdf@pageiseven
\mdf@@setzref
```

The whole bunch is used to work width twoside mode and uses the correct margins.

```
771 \newtoggle{md:checktwoside}
772 \settoggle{md:checktwoside}{false}
773 \newrobustcmd*\mdf@twoside@checklength{%
774  \if@twoside
775    \ifbool{mdf@usetwoside}%
776       {\mdf@PackageInfo{mdframed works in twoside mode}%
777        \settoggle{md:checktwoside}{true}%
778        \setlength\mdf@rightmargin@length{\mdf@outermargin@length}%
779        \setlength\mdf@leftmargin@length{\mdf@innermargin@length}%
780       }%
781       {\mdf@PackageInfo{mdframed inside twoside mode but\MessageBreak
782                      works with oneside mode}%
783        \settoggle{md:checktwoside}{false}%
784       }%
785  \fi%
786 }
787
788 \newcounter{mdf@zref@counter}%keine doppelten laebes
789 \zref@newprop*{mdf@pagevalue}[0]{\number\value{page}}
790 \zref@addprop{\ZREF@mainlist}{mdf@pagevalue}
791 \newrobustcmd*\mdf@zref@label{%
792    \stepcounter{mdf@zref@counter}
793    \zref@label{mdf@pagelabel-\number\value{mdf@zref@counter}}%
794 }
795 \newrobustcmd*\if@mdf@pageodd{%
796     \zref@refused{mdf@pagelabel-\the\value{mdf@zref@counter}}%
797     \ifodd\zref@extract{mdf@pagelabel-\the\value{mdf@zref@counter}}{mdf@pagevalue}%
798        \setlength\mdf@rightmargin@length{\mdf@outermargin@length}%
799        \setlength\mdf@leftmargin@length{\mdf@innermargin@length}%
800     \else
801        \setlength\mdf@rightmargin@length{\mdf@innermargin@length}%
802        \setlength\mdf@leftmargin@length{\mdf@outermargin@length}%
803     \fi%
804 }
805 \newrobustcmd*\mdf@@setzref{%
806  \iftoggle{md:checktwoside}{\mdf@zref@label\if@mdf@pageodd}{}%
807 }
```

```
\mdf@freepagevspace
```

```
808 \newrobustcmd*\mdf@freepagevspace{%
809     \penalty\@M \vskip 2\baselineskip
810     \penalty9999 \vskip -2\baselineskip
811     \penalty9999
812     \ifdimequal{\pagegoal}{\maxdimen}%
```

```
813                {\mdf@freevspace@length\vsize}%
814                {\mdf@freevspace@length=\pagegoal\relax%
815                 \advance\mdf@freevspace@length by -\pagetotal\relax%
816                 \addtolength\mdf@freevspace@length{\dimexpr-\parskip\relax}\relax%
817                }%
818 }
```

```
\mdf@advancelength@horizontalmargin@add
\mdf@horizontalspaceofbox
\mdf@horizontalmargin@equation
```

Width of the box

```
819 \newrobustcmd*\mdf@advancelength@horizontalmargin@sub[1]{%
820   \advance\mdf@horizontalspaceofbox by -\csname mdf@#1@length\endcsname\relax%
821 }
822 \newlength\mdf@horizontalspaceofbox
823 \newrobustcmd*\mdf@horizontalmargin@equation{%
824     \setlength{\mdf@horizontalspaceofbox}{\mdf@userdefinedwidth@length}%
825     \mdf@dolist{\mdf@advancelength@horizontalmargin@sub}{%
826             leftmargin,outerlinewidth,middlelinewidth,%
827             innerlinewidth,innerleftmargin,innerrightmargin,%
828             innerlinewidth,middlelinewidth,outerlinewidth,%
829             rightmargin}%
830     \notbool{mdf@leftline}{%
831             \advance\mdf@horizontalspaceofbox by \mdf@innerlinewidth@length\relax%
832             \advance\mdf@horizontalspaceofbox by \mdf@middlelinewidth@length\relax%
833             \advance\mdf@horizontalspaceofbox by \mdf@outerlinewidth@length\relax%
834        }{}%
835     \notbool{mdf@rightline}{%
836             \advance\mdf@horizontalspaceofbox by \mdf@innerlinewidth@length\relax%
837             \advance\mdf@horizontalspaceofbox by \mdf@middlelinewidth@length\relax%
838             \advance\mdf@horizontalspaceofbox by \mdf@outerlinewidth@length\relax%
839        }{}%
840     \ifdimless{\mdf@horizontalspaceofbox}{3cm}%
841             {\mdf@PackageWarning{You have only a width of 3cm}}{}
842     \hsize=\mdf@horizontalspaceofbox%
843 }
```

```
\mdf@keeplines@single
```

horizontal space in relation of the lines.

```
844 \newrobustcmd*\mdf@keeplines@single{%
845   \notbool{mdf@topline}{%
846      \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
847      \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
848      \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
849     }{}%
850   \notbool{mdf@bottomline}{%
851      \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
852      \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
853      \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
854     }{}%
855 }
```

```
\mdf@advancelength@verticalmarginwhole
\mdf@advancelength@freevspace@sub
\mdf@advancelength@freevspace@add
```

Loop macros to calculate the height. Used by \mdf@dolist.

```
856 \newrobustcmd*\mdf@advancelength@verticalmarginwhole[1]{%
857   \advance\mdf@verticalmarginwhole@length by \csname mdf@#1@length\endcsname\relax%
858 }
859 \newrobustcmd*\mdf@advancelength@freevspace@sub[1]{%
860   \advance\dimen@ by -\csname mdf@#1@length\endcsname\relax%
861 }
862 \newrobustcmd*\mdf@advancelength@freevspace@add[1]{%
863   \advance\dimen@ by \csname mdf@#1@length\endcsname\relax%
864 }
```

```
\mdf@reset
```

Reset changes

```
865 \protected@edef\mdf@reset{\boxmaxdepth\the\boxmaxdepth
866                          \splittopskip\the\splittopskip}%
```

```
\mdf@put@frame@standalone
```

Output of `mdframed` inside a non breakable environement.

```
867 \newrobustcmd*\mdf@put@frame@standalone{\relax%
868     \ifvoid\mdf@splitbox@one\relax
869       \mdf@PackageWarning{The environment is empty\MessageBreak}%
870       \let\mdf@reserved@a\relax%
871     \else
872       %Hier berechnung Box-Inhalt+Rahmen oben und unten
873       \setlength{\mdf@verticalmarginwhole@length}%
874               {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
875       \mdf@dolist{\mdf@advancelength@verticalmarginwhole}{%
876               outerlinewidth,middlelinewidth,innerlinewidth,innertopmargin,
877               innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth}%
878       \mdf@keeplines@single%
879       \def\mdf@reserved@a{\mdf@putbox@single}%
880     \fi
881   \mdf@reserved@a%
882 }
```

```
\mdf@put@frame
```

Output of `mdframed` inside a breakable environement. The comparison are onyl check whether the contents must be split or not.

```
883 \def\mdf@put@frame{\relax%
884 \ifvoid\mdf@splitbox@one\relax
885 \mdf@PackageWarning{The environment is empty\MessageBreak}%
886 \let\mdf@reserved@a\relax%
887 \else
888   \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
889   \mdf@print@space%
890   \mdf@freepagevspace%gives \mdf@freevspace@length
891   \mdf@PackageInfoSpace{\the\mdf@freevspace@length before the beginning of \MessageBreak
```

```
892                    the environment ending on input line \MessageBreak}%
893   \ifdimless{\mdf@freevspace@length}{2\baselineskip}
894          {\mdf@PackageInfo{Not enough space on this page}
895           \vfill\eject%
896           \def\mdf@reserved@a{\mdf@put@frame}%
897          }{%
898           %Hier berechnung Box-Inhalt+Rahmen oben und unten
899          \setlength{\mdf@verticalmarginwhole@length}%
900                  {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
901          \mdf@dolist{\mdf@advancelength@verticalmarginwhole}{%
902                  outerlinewidth,middlelinewidth,innerlinewidth,innertopmargin,
903                  innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth}%
904          \mdf@keeplines@single%
905          \ifdimless{\mdf@verticalmarginwhole@length}{\mdf@freevspace@length}%
906            {%passt auf Seite%
907             \begingroup
908              \mdf@@setzref
909              \mdf@putbox@single%
910             \endgroup
911            \let\mdf@reserved@a\relax}%
912            {\def\mdf@reserved@a{\mdf@put@frame@i}}%passt nicht auf Seite
913          }%
914 \fi
915 \mdf@reserved@a%
916 }
```

\mdf@put@frame@i

Output of the first splitted box.

```
917 \def\mdf@put@frame@i{%Box muss gesplittet werden -- Ausgabe der ersten Teilbox
918 %Berechnung der Splittgroesse -- Linien und Abstand oben
919 %\vbox to 0pt{}%
920 %\rlap{\smash{\the\mdf@freevspace@length}}%\hrule \@height\z@ \@width\hsize
921 \mdf@freepagevspace%gives \mdf@freevspace@length
922 %Berechnung ob nur oberen Linien nur auf die Seite passe
923 \dimen@=\the\mdf@freevspace@length%
924 \dimen@i=\mdf@innertopmargin@length%
925 \advance\dimen@i by \mdf@innerlinewidth@length%
926 \advance\dimen@i by \mdf@middlelinewidth@length%
927 \advance\dimen@i by \mdf@outerlinewidth@length%
928 \advance\dimen@i by 2\baselineskip%
929 \ifdimless{\dimen@}{\dimen@i}%
930   {\hrule \@height\z@ \@width\hsize%
931    \vfill\eject%
932    \def\mdf@reserved@a{\mdf@put@frame}%
933   }{%
934    \mdf@freepagevspace%
935    \dimen@=\the\mdf@freevspace@length%
936    \mdf@dolist{\mdf@advancelength@freevspace@sub}{%calculate with \dimen@
937            outerlinewidth,middlelinewidth,innerlinewidth,%
938            innertopmargin,splitbottomskip}%
939    \ifbool{mdf@everyline}{%
940      \ifbool{mdf@bottomline}{%
941            \advance\dimen@ by -\mdf@innerlinewidth@length%
```

```
942              \advance\dimen@ by -\mdf@middlelinewidth@length%
943              \advance\dimen@ by -\mdf@outerlinewidth@length%
944          }{}%
945        }{}%
946     \ifbool{mdf@topline}{}{%
947              \advance\dimen@ by \mdf@innerlinewidth@length%
948              \advance\dimen@ by \mdf@middlelinewidth@length%
949              \advance\dimen@ by \mdf@outerlinewidth@length%
950          }%
951     \advance\dimen@.8\pageshrink
952     \ifdimless{\ht\mdf@splitbox@one+\dp\mdf@splitbox@one}{\dimen@}%
953        {\mdf@PackageWarning{You got a bad break\MessageBreak
954                         you have to change it manually\MessageBreak
955                           by changing the text, the space\MessageBreak
956                           or something else}%
957        \advance\dimen@ by -1.8\baselineskip\relax%
958        }{}%
959 %       \advance\dimen@ by -1pt\relax%Box darf nicht zu Groß werden.
960        \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
961        \mdf@ignorevbadness%
962        \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@
963        \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
964        \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
965        \ifbool{mdf@repeatframetitle}{%
966              \setbox\mdf@splitbox@one\vbox{%
967                  \vbox to \mdf@splittopskip@length{\hsize\z@}
968                  %\par\unskip\nointerlineskip
969                  \unvcopy\mdf@frametitlebox%
970                  \mdf@@frametitlerule%
971                  \vbox to\dimexpr
972                      -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox
973                      +\mdf@innertopmargin@length\relax{\hsize\z@}%
974                  \unvbox\mdf@splitbox@one}%
975          }{}%
976        \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
977         {%Falsch gesplittet
978          \mdf@PackageInfo{Box was splittet wrong\MessageBreak}%
979          \dimen@i=\dimen@
980           \advance\dimen@ by -\ht\mdf@splitbox@two
981           \advance\dimen@ by -\dp\mdf@splitbox@two
982           \advance\dimen@i by 0.5\dimen@
983          \splittopskip\z@%
984          \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two%
985                      %benoetigt um Tiefe zu haben
986                      \hrule \@height\dp\strutbox \@width\z@
987                      \unvbox\mdf@splitbox@one}
988          \splittopskip\mdf@splittopskip@length%
989          \mdf@ignorevbadness%
990          \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@i%
991          \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
992          \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
993          \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
994                  {%
995                   \splittopskip\z@\mdf@ignorevbadness%%
996                   \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two%
997                                       %benoetigt um Tiefe zu haben
```

```
998                                                  \hrule \@height\dp\strutbox \@width\z@
999                                                  \unvbox\mdf@splitbox@one}%
1000                        \mdf@ignorevbadness%
1001                        \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
1002                        }{}%
1003         \ifbool{mdf@repeatframetitle}{%
1004                 \setbox\mdf@splitbox@one\vbox{%
1005                     \vbox to \mdf@splittopskip@length{\hsize\z@}
1006                     %\par\unskip\nointerlineskip
1007                     \unvcopy\mdf@frametitlebox%
1008                     \mdf@@frametitlerule%
1009                     \vbox to\dimexpr
1010                         -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox
1011                         +\mdf@innertopmargin@length\relax{\hsize\z@}%
1012                     \unvbox\mdf@splitbox@one}%
1013             }{}%
1014         }{}%
1015         \ifvoid\mdf@splitbox@one
1016           \mdf@PackageWarning{You got a bad break\MessageBreak
1017                            because the splittet box is empty\MessageBreak
1018                            You have to change the page settings\MessageBreak
1019                            like enlargethispage or something else}%
1020         \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two}%
1021         \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
1022         \enlargethispage{\baselineskip}%
1023         \def\mdf@reserved@a{\mdf@put@frame}%
1024       \fi%
1025       \ifvoid\mdf@splitbox@two%%pruefe, ob erste Box leer ist
1026        {\hrule \@height\f@size pt \@width\z@%
1027         \hrule \@height\z@ \@width\hsize}%
1028 %       \vfill\eject%
1029 %       \vskip\baselineskip
1030 %       {\hrule \@height\z@ \@width\hsize}
1031        %
1032        \def\mdf@reserved@a{\mdf@put@frame}%
1033       \else%
1034        \ifdimequal{\ht\mdf@splitbox@two}{0pt}%
1035          {\hrule \@height\z@ \@width\hsize%
1036           \vfill\eject%
1037           \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two\unvbox\mdf@splitbox@one}%
1038           \def\mdf@reserved@a{\mdf@put@frame}%
1039          }%
1040          {%
1041          \begingroup%
1042             \mdf@@setzref%
1043             \mdf@putbox@first%%Groesse des Splittens passt
1044          \endgroup%
1045          \hrule \@height\z@ \@width\hsize%
1046          \vfill\eject%
1047          \def\mdf@reserved@a{\mdf@put@frame@ii}%
1048          }%
1049       \fi%
1050      }%
1051 \mdf@reserved@a%
1052 }
```

```
\mdf@put@frame@ii
```

Output of the middle and last box.

```
1053 \def\mdf@put@frame@ii{%Ausgabe der mittleren Box(en) wenn vorhanden
1054   \setlength{\mdf@freevspace@length}{\vsize}%
1055   \setlength{\dimen@}{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1056   \mdf@dolist{\mdf@advancelength@freevspace@add}{%used \dimen@
1057               outerlinewidth,middlelinewidth,innerlinewidth,%
1058               innerbottommargin}%%%Addition der Linien unten
1059   \ifbool{mdf@everyline}{%
1060     \ifbool{mdf@topline}{%
1061             \advance\dimen@ by \mdf@innerlinewidth@length%
1062             \advance\dimen@ by \mdf@middlelinewidth@length%
1063             \advance\dimen@ by \mdf@outerlinewidth@length%
1064         }{}%
1065       }{}%
1066   \ifbool{mdf@bottomline}{}{%
1067             \advance\dimen@ by -\mdf@innerlinewidth@length%
1068             \advance\dimen@ by -\mdf@middlelinewidth@length%
1069             \advance\dimen@ by -\mdf@outerlinewidth@length%
1070         \relax}%
1071   \ifdimgreater{\dimen@}{\mdf@freevspace@length}%
1072    {%
1073     \advance\mdf@freevspace@length by -\mdf@splitbottomskip@length\relax%
1074     \advance\mdf@freevspace@length by .5\ht\strutbox\relax%
1075     \ifbool{mdf@everyline}{%
1076       \ifbool{mdf@topline}{%
1077             \advance\mdf@freevspace@length by -\mdf@innerlinewidth@length%
1078             \advance\mdf@freevspace@length by -\mdf@middlelinewidth@length%
1079             \advance\mdf@freevspace@length by -\mdf@outerlinewidth@length%
1080         }{}%
1081       \ifbool{mdf@bottomline}{%
1082             \advance\mdf@freevspace@length by -\mdf@innerlinewidth@length%
1083             \advance\mdf@freevspace@length by -\mdf@middlelinewidth@length%
1084             \advance\mdf@freevspace@length by -\mdf@outerlinewidth@length%
1085         \relax}{}%
1086       }{}%
1087     \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
1088     \mdf@ignorevbadness%
1089     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \mdf@freevspace@length%
1090     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%PRUEFEN!!!
1091     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%PRUEFEN!!!!
1092     \ifbool{mdf@repeatframetitle}{%
1093             \setbox\mdf@splitbox@one\vbox{%
1094                 \vbox to \mdf@splittopskip@length{\hsize\z@}
1095                 %\par\unskip\nointerlineskip
1096                 \unvcopy\mdf@frametitlebox%
1097                 \mdf@@frametitlerule%
1098                 \vbox to\dimexpr%
1099                         -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox%
1100                         +\mdf@innertopmargin@length\relax{\hsize\z@}%
1101                 \unvbox\mdf@splitbox@one}%
1102         }{}%
1103       \ifvoid\mdf@splitbox@one\relax%
1104         \mdf@PackageWarning{You got a bad break\MessageBreak
1105                         because the split box is empty\MessageBreak
```

```
1106                                     You have to change the settings}%
1107              \setbox\mdf@splitbox@one{\unvbox\mdf@splitbox@two}%
1108              \def\mdf@reserved@a{\enlargethispage{\baselineskip}\mdf@put@frame@ii}%
1109            \else
1110              \begingroup%
1111               \mdf@@setzref%
1112               \mdf@putbox@middle%
1113              \endgroup%
1114              \hrule \@height\z@ \@width\hsize%
1115              \vfill\eject%
1116              \def\mdf@reserved@a{\mdf@put@frame@ii}%
1117            \fi
1118        }%Hier die Ausgabe der mittleren Box
1119        {\ifvoid\mdf@splitbox@one
1120            \mdf@PackageWarning{You got a bad break\MessageBreak
1121                                because the last split box is empty\MessageBreak
1122                                You have to change the settings}%%
1123            \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one\hrule \@height\z@ \@width\mdfbounding
1124         \fi%
1125        \ifdimless{\ht\mdf@splitbox@one}{1sp}{%
1126            \mdf@PackageWarning{You got a bad break\MessageBreak
1127                                because the last split box is empty\MessageBreak
1128                                You have to change the settings}%
1129            %\hb@xt@\z@{\box\mdf@splitbox@one}%
1130            \let\mdf@reserved@a\relax%
1131            \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one\hrule \@height\z@ \@width\mdfboundin
1132        }{}%
1133        \begingroup%
1134          \mdf@@setzref%
1135          \mdf@putbox@second%
1136          \hrule \@height\z@ \@width\hsize%
1137        \endgroup%
1138        \let\mdf@reserved@a\relax%
1139      }%Hier kommt die Ausgabe der letzten Box
1140    \mdf@reserved@a%
1141 }
1142
```

```
\mdf@test@ltrb
\mdf@test@ltr
\mdf@test@ltb
\mdf@test@trb
\mdf@test@lrb
\mdf@test@lb
\mdf@test@rb
\mdf@test@tr
\mdf@test@lt
\mdf@test@lr
\mdf@test@tb
\mdf@test@l
\mdf@test@r
\mdf@test@t
\mdf@test@b
\mdf@test@noline
```

Short forms of checking the option which lines should be drawn.

```
1143 %%%%      _____t_____
1144 %%%%    |            |
1145 %%%%    |            |
1146 %%%%    |            |
1147 %%%%  l|            |r
1148 %%%%    |            |
1149 %%%%    |            |
1150 %%%%    |_____|
1151 %%%%            b
1152 %%Zusammenhaenge abfragen:
1153 \newrobustcmd*\mdf@test@ltrb{%
1154     \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1155                 and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1156 %3-set
1157 \newrobustcmd*\mdf@test@ltr{%
1158     \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1159                 and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1160 \newrobustcmd*\mdf@test@ltb{%
1161     \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1162                 and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1163 \newrobustcmd*\mdf@test@trb{%
1164     \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1165                 and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1166 \newrobustcmd*\mdf@test@lrb{%
1167     \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1168                 and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1169 %2-set
1170 \newrobustcmd*\mdf@test@lb{%
1171     \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1172                 and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1173 \newrobustcmd*\mdf@test@rb{%
1174     \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1175                 and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1176 \newrobustcmd*\mdf@test@tr{%
1177     \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1178                 and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1179 \newrobustcmd*\mdf@test@lt{%
1180     \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1181                 and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1182 \newrobustcmd*\mdf@test@lr{%
1183     \ifboolexpr{not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1184                 and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1185 \newrobustcmd*\mdf@test@tb{%
1186     \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1187                 and not (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1188 %Einzellinien
1189 \newrobustcmd*\mdf@test@l{%
1190     \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1191                 and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1192 \newrobustcmd*\mdf@test@r{%
1193     \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1194                 and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1195 \newrobustcmd*\mdf@test@t{%
1196     \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1197                 and not (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1198 \newrobustcmd*\mdf@test@b{%
```

```
1199     \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1200                 and not (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1201 %keine Linien
1202 \newrobustcmd*\mdf@test@noline{%
1203     \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1204                 and not (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1205 \newrobustcmd*\mdf@test@single{%
1206     \ifboolexpr{ not (test {\mdf@test@ltrb} or test {\mdf@test@ltr} or
1207                 test {\mdf@test@ltb} or test {\mdf@test@trb} or
1208                 test {\mdf@test@lrb}  or test {\mdf@test@lb} or
1209                 test {\mdf@test@rb} or test {\mdf@test@tr} or
1210                 test {\mdf@test@lt} ) }}
1211 %
```

```
1212 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{framemethod}%
1213 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{xcolor}%
1214
1215  \endinput
```

B.2. The Explanation of md-frame-0.mdf

```
1216 %% Style file for mdframed for package option 'framemethod=default'
1217 %%
1218 %% This package may be distributed under the terms of the LaTeX Project
1219 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1220 %% Either version 1.0 or, at your option, any later version.
1221 %%
1222 %%
1223 %%$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $
1224 %
```

```
\mdframed0packagename
\mdf@frame0date@svn
```

local settings

```
1225 \def\mdframed0packagename{md-frame-0}
1226 \def\mdf@frame0date@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1227 \ProvidesFile{md-frame-0.mdf}%
1228     [\mdf@frame0date@svn$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $%
1229      \mdversion: \mdframed0packagename]
```

```
\mdf@background@default
\mdf@linecolor@default
\mdf@linecolor@bottom
```

short command

```
1230 \def\mdf@background@default{\color{\mdf@backgroundcolor}}
1231 \def\mdf@frametitlebackground@default{\color{\mdf@frametitlebackgroundcolor}}
1232 \def\mdf@shadow@default{\color{\mdf@shadowcolor}}
1233 \def\mdf@innerlinecolor@default{\color{\mdf@innerlinecolor}}
1234 \def\mdf@middlelinecolor@default{\color{\mdf@middlelinecolor}}
1235 \def\mdf@outerlinecolor@default{\color{\mdf@outerlinecolor}}
1236 \def\mdf@frametitlerulecolor@default{\color{\mdf@frametitlerulecolor}}
1237 \let\mdf@linecolor@default\mdf@middlelinecolor@default
1238 \def\mdf@@frametitlerule{%
```

```
1239   \ifbool{mdf@frametitlerule}{%
1240    \vbox to \mdf@frametitlerulewidth@length {\hsize\mdfframetitleboxwidth%
1241      \par\unskip\vskip\mdf@frametitlebelowskip@length%
1242      \rlap{\noindent\hspace*{-\mdf@innerleftmargin@length}%
1243      \mdf@frametitlerulecolor@default%
1244      \rule{\dimexpr\mdfframetitleboxwidth%
1245            +\mdf@innerleftmargin@length
1246            +\mdf@innerrightmargin@length\relax
1247           }{\mdf@frametitlerulewidth@length}%
1248        }}%
1249   }{}
1250   \par\unskip\vskip\mdf@innertopmargin@length%
1251 }%
1252
```

```
\mdf@putbox@single
\mdf@frame@background@single
\mdf@frame@topandbottomline@single
\mdf@frame@leftline@single
\mdf@frame@rightline@single
\mdf@frame@rightline@single
```

The frame of of a non splitted contents of mdframed

```
1253 \def\mdf@frame@background@single{%
1254   \ifbool{mdf@shadow}{%
1255    \rlap{\smash{\mdf@shadow@default%
1256      \rule[\dimexpr-\mdfboundingboxdepth
1257               -\mdf@shadowsize@length
1258               \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{}\relax]%
1259         {\dimexpr\mdfboundingboxtotalwidth
1260               +\mdf@shadowsize@length
1261               \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}\relax}%
1262         {\dimexpr\mdfboundingboxtotalheight
1263               +\mdf@shadowsize@length
1264               \ifbool{mdf@bottomline}{+\mdf@middlelinewidth@length}{}\relax}%
1265      }%
1266   }}{}%
1267   \rlap{\mdf@background@default%
1268      \rule[-\mdfboundingboxdepth]%
1269           {\mdfboundingboxtotalwidth}%
1270           {\mdfboundingboxtotalheight}%
1271      }%
1272 }%
1273 \def\mdf@frame@frametitlebackground@single{%
1274   \rlap{\mdf@frametitlebackground@default%
1275      \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1276           {\mdfboundingboxtotalwidth}%
1277           {\mdfframetitleboxtotalheight}%
1278      }%
1279 }%
1280
1281 \def\mdf@frame@topline@single{%
1282   \rlap{\mdf@linecolor@default%
1283      \ifbool{mdf@topline}{%
1284           \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth%
1285                    +\mdf@innerbottommargin@length+\mdf@innertopmargin@length\relax]%
```

```
1286                    {\mdfboundingboxtotalwidth}%
1287                    {\mdf@middlelinewidth@length}}%
1288            {}%
1289    }%
1290 }%
1291 \def\mdf@frame@bottomline@single{%
1292    \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{}\mdf@linecolor@default%
1293        \ifbool{mdf@bottomline}{%
1294            \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1295                {\dimexpr\mdfboundingboxtotalwidth
1296                        \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1297                        \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}\relax}%
1298            {\mdf@middlelinewidth@length}}%
1299        {}%
1300    }%
1301 }%
1302 \def\mdf@frame@leftline@single{%
1303    \llap{\mdf@linecolor@default%
1304        \rule[-\mdfboundingboxdepth]%
1305            {\mdf@middlelinewidth@length}%
1306            {\dimexpr\mdfboundingboxtotalheight%
1307             \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}\relax}%
1308    }%
1309 }%
1310 \def\mdf@frame@rightline@single{%
1311    \rlap{\mdf@linecolor@default%
1312        \hspace*{\mdfboundingboxwidth}%
1313        \hspace*{\mdf@innerrightmargin@length}%
1314        \rule[\dimexpr-\mdfboundingboxdepth%
1315            \relax]%
1316        {\mdf@middlelinewidth@length}%
1317        {\dimexpr\mdfboundingboxtotalheight%
1318         +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1319    }%
1320 }%
1321 \def\mdf@putbox@single{%%%% Ausgabe der ungesplitteten Gesamtbox
1322    \ifvoid\mdf@splitbox@one
1323    \else%
1324      \mdf@makebox@out{%
1325        \mdf@makeboxalign@left%
1326        \setlength{\mdfboundingboxwidth}%
1327                    {\wd\mdf@splitbox@one}%
1328        \setlength{\mdfboundingboxtotalwidth}%
1329                    {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1330                     +\mdf@innerrightmargin@length\relax}%
1331        \setlength{\mdfboundingboxheight}%
1332                    {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1333        \setlength{\mdfboundingboxdepth}%
1334                    {\dimexpr\dp\mdf@splitbox@one+\mdf@innerbottommargin@length\relax}%
1335        \setlength{\mdfboundingboxtotalheight}%
1336                    {\dimexpr\mdfboundingboxheight+\mdf@innertopmargin@length%
1337                     +\mdf@innerbottommargin@length\relax}%
1338        \setlength{\mdftotallinewidth}{%
1339                    \dimexpr\mdf@innerlinewidth@length+\mdf@middlelinewidth@length%
1340                    +\mdf@outerlinewidth@length}%
1341      \noindent%
```

```
1342        \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1343                            +\ifbool{mdf@leftline}%
1344                                    {\mdf@middlelinewidth@length}{\z@}%
1345                            +\ifbool{mdf@rightline}%
1346                                    {\mdf@middlelinewidth@length}{\z@}\relax}%
1347        \mdf@makebox@in[\@tempdima]{%
1348          \null%
1349          \ifbool{mdf@leftline}{%
1350              \hspace*{\mdftotallinewidth}%
1351              \mdf@frame@leftline@single%
1352               }{}%
1353          \mdf@frame@topline@single%
1354          \mdf@frame@background@single%
1355          \mdf@frame@bottomline@single%
1356          \ifdefempty{\mdf@frametitle}{}{\mdf@frame@frametitlebackground@single}%
1357          \hspace*{\mdf@innerleftmargin@length}%
1358          \ifbool{mdf@rightline}{%
1359              \mdf@frame@rightline@single%
1360           }{}%
1361          {\box\mdf@splitbox@one}%
1362        }%
1363      \mdf@makeboxalign@right%
1364    }%
1365    \fi%
1366 }
```

```
\mdf@putbox@first
\mdf@frame@background@first
\mdf@frame@leftline@first
\mdf@frame@topline@first
\mdf@frame@rightline@first
```

The first frame of of a splitted contents of mdframed

```
1367 \def\mdf@frame@background@first{%
1368   \ifbool{mdf@shadow}{%
1369    \rlap{\smash{\mdf@shadow@default%
1370       \rule[\dimexpr-\mdfboundingboxdepth
1371                  -\mdf@shadowsize@length\relax]%
1372         {\dimexpr\mdfboundingboxtotalwidth
1373               +\mdf@shadowsize@length
1374               \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}\relax}%
1375         {\dimexpr\mdfboundingboxtotalheight
1376               +\mdf@shadowsize@length\relax}%
1377      }%
1378 }}{}%
1379   \rlap{\mdf@background@default%
1380       \rule[-\mdfboundingboxdepth]%
1381           {\mdfboundingboxtotalwidth}%
1382           {\mdfboundingboxtotalheight}%
1383    }%
1384 }%
1385 \def\mdf@frame@frametitlebackground@first{%
1386 \ifdimless{\mdfframetitleboxtotalheight}{\mdfboundingboxtotalheight}%
1387   {%
1388    \rlap{\mdf@frametitlebackground@default%
```

```
1389        \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1390            {\mdfboundingboxtotalwidth}%
1391            {\mdfframetitleboxtotalheight}%
1392        }%
1393    \global\mdfframetitleboxtotalheight=-\p@\relax%
1394    }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
1395                        Current this isn't well supported}%
1396        \rlap{\mdf@frametitlebackground@default%
1397            \rule[-\mdfboundingboxdepth]%
1398                {\mdfboundingboxtotalwidth}%
1399                {\mdfboundingboxtotalheight}%
1400        }%
1401    \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
1402                        -\mdfboundingboxheight
1403                        +\mdf@frametitlebelowskip@length
1404                        +.5\baselineskip-1pt
1405 %                       +\dp\strutbox
1406                        \relax%
1407    }%
1408 }%
1409 \def\mdf@frame@leftline@first{%
1410    \llap{\mdf@linecolor@default%
1411        \rule[-\mdfboundingboxdepth]%
1412            {\mdf@middlelinewidth@length}%
1413            {\dimexpr\mdfboundingboxtotalheight%
1414                +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1415    }%
1416 }%
1417 \def\mdf@frame@topline@first{%
1418    \rlap{\mdf@linecolor@default%
1419        \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth+%
1420            \mdf@splitbottomskip@length+\mdf@innertopmargin@length\relax]%
1421            {\mdfboundingboxtotalwidth}%
1422            {\mdf@middlelinewidth@length}%
1423    }%
1424 }
1425 \def\mdf@frame@rightline@first{%
1426    \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1427        \hspace*{\mdf@innerrightmargin@length}%
1428        \rule[-\mdfboundingboxdepth]%
1429            {\mdf@middlelinewidth@length}%
1430            {\dimexpr\mdfboundingboxtotalheight%
1431                +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1432    }%
1433 }%
1434 \def\mdf@frame@bottomline@first{%
1435    \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{}\mdf@linecolor@default%
1436        \ifbool{mdf@bottomline}{%
1437            \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1438                {\dimexpr\mdfboundingboxtotalwidth
1439                        \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1440                        \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}\relax}%
1441                {\mdf@middlelinewidth@length}}%
1442            {}%
1443    }%
1444 }%
```

```
1445 \def\mdf@putbox@first{%%%% Ausgabe der Teilbox 1
1446  \ifvoid\mdf@splitbox@two
1447  \else%
1448    \mdf@makebox@out[\linewidth]{%
1449      \mdf@makeboxalign@left%
1450      \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@two}%
1451      \setlength{\mdfboundingboxtotalwidth}%
1452              {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1453                    +\mdf@innerrightmargin@length\relax}%
1454      \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
1455      \setlength{\mdfboundingboxdepth}%
1456              {\dimexpr\dp\mdf@splitbox@two+\mdf@splitbottomskip@length\relax}%
1457      \setlength{\mdfboundingboxtotalheight}%
1458              {\dimexpr\mdfboundingboxheight+\mdf@innertopmargin@length%
1459                    +\mdf@splitbottomskip@length\relax}%
1460      \setlength{\@tempdima}%
1461              {\dimexpr\mdfboundingboxtotalwidth%
1462                    +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1463                    +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1464                \relax}%
1465    \mdf@makebox@in[\@tempdima]{%
1466      \null%
1467      \ifbool{mdf@leftline}{%
1468        \hspace*{\mdf@middlelinewidth@length}%
1469        \mdf@frame@leftline@first}{}%
1470      \ifbool{mdf@everyline}%
1471          {\mdf@frame@bottomline@first}{}%
1472      \ifbool{mdf@topline}{%
1473        \mdf@frame@topline@first}{}%
1474      \mdf@frame@background@first%
1475      \ifdefempty{\mdf@frametitle}{}{\mdf@frame@frametitlebackground@first}%
1476      \hspace*{\mdf@innerleftmargin@length}%
1477      \ifbool{mdf@rightline}{%
1478        \mdf@frame@rightline@first}{}%
1479      {\box\mdf@splitbox@two}%
1480    }%
1481    \mdf@makeboxalign@right%
1482  }%
1483  \fi%
1484 }
```

```
\mdf@putbox@second
\mdf@frame@background@second
\mdf@frame@leftline@second
\mdf@frame@bottomline@second
\mdf@frame@rightline@second
```

The last frame of of a splitted contents of mdframed

```
1485 \def\mdf@frame@background@second{%
1486  \ifbool{mdf@shadow}{%
1487  \rlap{\smash{\mdf@shadow@default%
1488    \rule[\dimexpr-\mdfboundingboxdepth
1489              -\mdf@shadowsize@length
1490              \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{}\relax]%
1491        {\dimexpr\mdfboundingboxtotalwidth
```

```
1492                    +\mdf@shadowsize@length
1493                     \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}\relax}%
1494            {\dimexpr\mdfboundingboxtotalheight
1495                    +\mdf@shadowsize@length\relax}%
1496        }%
1497  }}{}%
1498  \rlap{\mdf@background@default%
1499      \rule[-\mdfboundingboxdepth]%
1500            {\mdfboundingboxtotalwidth}%
1501            {\mdfboundingboxtotalheight}%
1502    }%
1503 }%
1504 \def\mdf@frame@frametitlebackground@second{%
1505  \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1506    {}%
1507    {\rlap{\mdf@frametitlebackground@default%
1508      \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1509            {\mdfboundingboxtotalwidth}%
1510            {\mdfframetitleboxtotalheight}%
1511      }%
1512    }%
1513 }%
1514 \def\mdf@frame@leftline@second{%
1515  \llap{\mdf@linecolor@default%
1516      \rule[-\mdfboundingboxdepth]%
1517            {\mdf@middlelinewidth@length}%
1518            {\dimexpr\mdfboundingboxtotalheight}%
1519    }%
1520 }%
1521 \def\mdf@frame@bottomline@second{%
1522  \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{}\mdf@linecolor@default%
1523      \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1524              {\dimexpr\mdfboundingboxtotalwidth
1525                      \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}
1526                      \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}\relax}%
1527            {\mdf@middlelinewidth@length}%
1528    }%
1529 }%
1530 \def\mdf@frame@rightline@second{%
1531  \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1532      \hspace*{\mdf@innerrightmargin@length}%
1533      \rule[-\mdfboundingboxdepth]%
1534            {\mdf@middlelinewidth@length}%
1535            {\mdfboundingboxtotalheight}%
1536    }%
1537 }%
1538 \def\mdf@frame@topline@second{%
1539  \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{}\mdf@linecolor@default%
1540      \ifbool{mdf@topline}{%
1541          \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth%
1542                      +\mdf@innerbottommargin@length\relax]%
1543              {\dimexpr\mdfboundingboxtotalwidth
1544                      \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1545                      \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}\relax
1546                }%
1547              {\mdf@middlelinewidth@length}}%
```

```
1548            {}%
1549    }%
1550 }%
1551
1552 \def\mdf@putbox@second{%
1553    \ifvoid\mdf@splitbox@one%
1554    \else
1555     \mdf@makebox@out{%
1556        \mdf@makeboxalign@left%
1557        \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@one}%
1558        \setlength{\mdfboundingboxtotalwidth}%
1559                    {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1560                        +\mdf@innerrightmargin@length\relax}%
1561        \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1562        \setlength{\mdfboundingboxdepth}%
1563                    {\dimexpr\dp\mdf@splitbox@one+\mdf@innerbottommargin@length\relax}%
1564        \setlength{\mdfboundingboxtotalheight}%
1565                    {\dimexpr\mdfboundingboxheight+\mdf@innerbottommargin@length\relax}%
1566        \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1567                            +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1568                            +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1569                            \relax}%
1570        \mdf@makebox@in[\@tempdima]{%
1571        \null%
1572          \ifbool{mdf@leftline}{%
1573             \hspace*{\mdf@middlelinewidth@length}%
1574             \mdf@frame@leftline@second}{}%
1575          \ifbool{mdf@everyline}
1576                 {\mdf@frame@topline@second}{}%
1577          \mdf@frame@background@second%
1578          \ifbool{mdf@bottomline}{%
1579             \mdf@frame@bottomline@second}{}%
1580          \ifdefempty{\mdf@frametitle}{}{\mdf@frame@frametitlebackground@second}%
1581          \hspace*{\mdf@innerleftmargin@length}%
1582          \ifbool{mdf@rightline}{%
1583             \mdf@frame@rightline@second}{}%
1584          {\box\mdf@splitbox@one}%
1585        }%
1586        \mdf@makeboxalign@right%
1587     }%
1588    \fi%
1589 }%
```

```
\mdf@putbox@middle
\mdf@frame@background@middle
\mdf@frame@leftline@middle
\mdf@frame@rightline@middle
```

The last frame of of a splitted contents of mdframed

```
1590 \def\mdf@frame@leftline@middle{%
1591    \llap{\mdf@linecolor@default%
1592        \rule[-\mdfboundingboxdepth]%
1593             {\mdf@middlelinewidth@length}%
1594             {\mdfboundingboxtotalheight}%
1595    }%
```

```
1596 }%
1597 \def\mdf@frame@background@middle{%
1598   \ifbool{mdf@shadow}{%
1599    \rlap{\smash{\mdf@shadow@default%
1600      \rule[\dimexpr-\mdfboundingboxdepth
1601                  -\mdf@shadowsize@length\relax]%
1602         {\dimexpr\mdfboundingboxtotalwidth
1603                +\mdf@shadowsize@length
1604                \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}\relax}%
1605         {\dimexpr\mdfboundingboxtotalheight\relax}%
1606     }%
1607  }}{}%
1608   \rlap{\mdf@background@default%
1609      \rule[-\mdfboundingboxdepth]%
1610          {\mdfboundingboxtotalwidth}%
1611          {\mdfboundingboxtotalheight}%
1612   }%
1613 }%
1614 \def\mdf@frame@frametitlebackground@middle{%
1615  \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1616   {}%
1617   {\rlap{\mdf@frametitlebackground@default%
1618      \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1619          {\mdfboundingboxtotalwidth}%
1620          {\mdfframetitleboxtotalheight}%
1621     }%
1622   \global\mdfframetitleboxtotalheight=-\p@\relax%
1623   }%
1624 }%
1625 \def\mdf@frame@rightline@middle{%
1626   \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1627     \hspace*{\mdf@innerrightmargin@length}%
1628     \rule[-\mdfboundingboxdepth]%
1629          {\mdf@middlelinewidth@length}%
1630          {\mdfboundingboxtotalheight}%
1631   }%
1632 }%
1633 \def\mdf@frame@topline@middle{%
1634  \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{}\mdf@linecolor@default%
1635     \ifbool{mdf@topline}{%
1636         \rule[\dimexpr\mdfboundingboxtotalheight-\mdfboundingboxdepth\relax]%
1637              {\dimexpr\mdfboundingboxtotalwidth
1638                   \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1639                   \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}\relax
1640              }%
1641          {\mdf@middlelinewidth@length}}%
1642      {}%
1643   }%
1644 }%
1645 \def\mdf@frame@bottomline@middle{%
1646   \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{}\mdf@linecolor@default%
1647      \ifbool{mdf@bottomline}{%
1648          \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1649              {\dimexpr\mdfboundingboxtotalwidth
1650                   \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1651                   \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}\relax}%
```

```
1652                {\mdf@middlelinewidth@length}}%
1653          {}%
1654    }%
1655 }%
1656
1657 \def\mdf@putbox@middle{%
1658   \ifvoid\mdf@splitbox@two%
1659   \else
1660    \mdf@makebox@out{%
1661      \mdf@makeboxalign@left%
1662      \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@two}%
1663      \setlength{\mdfboundingboxtotalwidth}%
1664              {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1665                 +\mdf@innerrightmargin@length\relax}%
1666      \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
1667      \setlength{\mdfboundingboxdepth}%
1668              {\dimexpr\dp\mdf@splitbox@two+\mdf@splitbottomskip@length\relax}%
1669      \setlength{\mdfboundingboxtotalheight}%
1670              {\dimexpr\mdfboundingboxheight+\mdf@splitbottomskip@length\relax}%
1671      \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1672                  +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1673                  +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1674              \relax}%
1675      \mdf@makebox@in[\@tempdima]{%
1676        \null%
1677        \ifbool{mdf@leftline}{%
1678           \hspace*{\mdf@middlelinewidth@length}%
1679           \mdf@frame@leftline@middle}{}%
1680        \mdf@frame@background@middle%
1681        \ifbool{mdf@everyline}%
1682              {\mdf@frame@topline@middle}{}%
1683        \ifdefempty{\mdf@frametitle}{}{\mdf@frame@frametitlebackground@middle}%
1684        \ifbool{mdf@everyline}%
1685              {\mdf@frame@bottomline@middle}{}%
1686        \hspace*{\mdf@innerleftmargin@length}%
1687        \ifbool{mdf@rightline}{%
1688            \mdf@frame@rightline@middle}{}%
1689          {\box\mdf@splitbox@two}%
1690      }%
1691      \mdf@makeboxalign@right%
1692    }
1693   \fi%
1694 }
```

```
1695  \endinput
```

B.3. The Explanation of md-frame-1.mdf

```
1696 %% Style file for mdframed for package option 'framemethod=default'
1697 %%
1698 %% This package may be distributed under the terms of the LaTeX Project
1699 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1700 %% Either version 1.0 or, at your option, any later version.
1701 %%
1702 %%
1703 %%$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $
```

```
1704 %
```

```
\mdframedIpackagename
\mdf@frameIdate@svn
```

local settings

```
1705 \def\mdframedIpackagename{md-frame-1}
1706 \def\mdf@frameIdate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1707 \ProvidesFile{md-frame-1.mdf}%
1708        [\mdf@frameIdate@svn$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $ %
1709         \mdversion: \mdframedIpackagename]
1710 %
```

```
\mdf@tikz@settings
```

Define settings for tikz

```
1711 %Allgemeine Einstellungen fuer tikz
1712 \def\mdf@tikz@settings{%
1713 %
1714   \tikzset{mdfbox/.style={anchor=south west,%
1715                          inner sep=0pt,%
1716                          outer sep=0pt,%
1717                          \mdf@fontcolor,}}% anchor der Ausgabebox ist unten links
1718   \tikzset{mdfcorners/.style={rounded corners=\mdf@roundcorner@length}}%
1719   \tikzset{mdfbackground/.style={fill=\mdf@backgroundcolor,%
1720                                 draw=\mdf@backgroundcolor}}%
1721   \tikzset{mdfframetitlebackground/.style={fill=\mdf@frametitlebackgroundcolor,%
1722                                 draw=none,%
1723                                 rounded corners={max(\mdf@roundcorner@length%
1724                                               -\mdf@innerlinewidth@length%
1725                                               -.5\mdf@middlelinewidth@length,0)}}}}%
1726 %
1727   \tikzset{mdfouterline/.style={}}%
1728 % nur wenn outerlinewidth>0 wird aussere Linie gezeichnet
1729   \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
1730     {\tikzset{mdfouterline/.append style={%
1731       draw=\mdf@outerlinecolor,%
1732       line width=2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length}}}{}%
1733 %
1734   \tikzset{mdfinnerline/.style={}}%
1735 % nur wenn innerlinewidth>0 wird innere Linie gezeichnet
1736   \ifdimgreater{\mdf@innerlinewidth@length}{\z@}
1737     {\tikzset{mdfinnerline/.append style={%
1738       draw=\mdf@innerlinecolor,%
1739       line width=2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length}}}{}%
1740 %
1741   \tikzset{mdfshadow/.style={drop shadow={%
1742                             shadow xshift=\mdf@shadowsize@length-2pt,%
1743                             shadow yshift=-\mdf@shadowsize@length+2pt,%
1744                             fill=\mdf@shadowcolor,%
1745                             every shadow }}}%
1746 %
1747   \mdf@tikzset@local
1748   \tikzset{mdfmiddleline/.style={}}%
1749 % nur wenn middlelinewidth>0 wird mittlere Linie gezeichnet
1750   \ifdimgreater{\mdf@middlelinewidth@length}{\z@}
```

```
1751     {\tikzset{mdfmiddleline/.append style={%
1752       preaction={draw=\mdf@middlelinecolor,%
1753                 line width=\mdf@middlelinewidth@length},%
1754       line width=\mdf@middlelinewidth@length,%
1755       tikzsetting}}%
1756     }{}%
1757 }%
```

`\mdf@tikzbox@tfl`
`\mdf@tikzbox@otl`

Befehle fuer Ausgabe von Rahmen und Hintergrund

```
1758 \newrobustcmd*\mdf@tikzbox@tfl[1]{%three or four borders
1759     \clip(0,0)rectangle(\mdfboundingboxwidth,\mdfboundingboxheight);%
1760     \begin{scope}[mdfcorners]%
1761       \clip[preaction=mdfouterline]%
1762             [postaction=mdfbackground]%
1763             [postaction=mdfinnerline]#1;%
1764     \end{scope}%
1765     \path[mdfmiddleline,mdfcorners]#1;
1766   }%
1767
1768
1769
1770 \newrobustcmd*\mdf@tikzbox@otl[2]{%one or two borders
1771     \clip(0,0)rectangle(\mdfboundingboxwidth,\mdfboundingboxheight);%
1772     \begin{scope}
1773       \path[mdfouterline,mdfcorners]#1;%
1774       \clip[postaction=mdfbackground]#2;%
1775       \path[mdfinnerline,mdfcorners]#1;%
1776     \end{scope}%
1777     \path[mdfmiddleline,mdfcorners]#1;}%
```

`\mdf@put@frametitlerule`

---

frametitlerule with tikz

```
1778 \tikzset{mdfframetitlerule/.style={%
1779   draw=none,
1780   fill=\mdf@frametitlerulecolor,
1781   }%
1782 }
1783 \def\mdf@@frametitlerule{%
1784   \ifbool{mdf@frametitlerule}{%
1785   \vbox{\hsize0pt
1786     \par\unskip\vskip\mdf@frametitlebelowskip@length
1787     \noindent\rlap{\hspace*{-\mdf@innerleftmargin@length}%
1788     \begingroup%
1789     \pgfmathsetlength{\dimen@}{\mdfframetitleboxwidth+\mdf@innerleftmargin@length+\mdf@innerrightmargi
1790     \tikz\draw[mdfframetitlerule] (0,0)%
1791              rectangle (\dimen@,\mdf@frametitlerulewidth@length);
1792     \endgroup}
1793   }%
1794   }{}
1795   \par\unskip\vskip\mdf@innertopmargin@length%
1796 }%
```

1797

`\mdf@putbox@single`

Output of the non breakable contents.

```
1798 % Info zu den verwendeten Punkten:
1799 % O ist die untere linke Ecke der Mitte der middleline
1800 % P ist die obere rechte Ecke der Mitte der middleline
1801 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
1802 %
1803 \def\mdf@putbox@single{%
1804   \ifvoid\mdf@splitbox@one
1805   \else%
1806    \mdf@makebox@out{%
1807     \mdf@makeboxalign@left%
1808     \mdf@tikz@settings%
1809 %
1810     \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
1811     \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
1812     \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
1813     \ifbool{mdf@leftline}{%
1814       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1815       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1816       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
1817     \ifbool{mdf@rightline}{%
1818       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1819       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1820       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
1821 %
1822     \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1823     \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
1824     \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
1825     \ifbool{mdf@topline}{%
1826       \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1827       \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1828       \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
1829     \ifbool{mdf@bottomline}{%
1830       \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1831       \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1832       \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
1833     \mdf@makebox@in[\mdfboundingboxwidth]{%
1834     \null%
1835     \begin{tikzpicture}[remember picture]%
1836       \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
1837       \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
1838       \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
1839       \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
1840       \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
1841       \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
1842       \ifbool{mdf@leftline}%
1843         {%
1844         \pgfmathsetlengthmacro\mdf@Ax%
1845             {\mdf@Ax+\mdf@outerlinewidth@length+%
1846              \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
1847         \pgfmathsetlengthmacro\mdf@Ox%
```

```
1848                    {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1849          }{}%
1850        \ifbool{mdf@rightline}%
1851          {%
1852           \pgfmathsetlengthmacro\mdf@Px%
1853                    {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1854          }{}%
1855        \ifbool{mdf@bottomline}%
1856          {%
1857           \pgfmathsetlengthmacro\mdf@Ay%
1858                    {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
1859                       +\mdf@innerlinewidth@length}%
1860           \pgfmathsetlengthmacro\mdf@Oy%
1861                    {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1862          }{}%
1863        \ifbool{mdf@topline}%
1864          {%
1865           \pgfmathsetlengthmacro\mdf@Py%
1866                    {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1867          }{}%
1868 %
1869        \coordinate(O)at(\mdf@Ox,\mdf@Oy);%
1870        \coordinate(P)at(\mdf@Px,\mdf@Py);%
1871 %
1872        \ifbool{mdf@shadow}
1873          {\path[mdfshadow,mdfcorners](O) rectangle (P);}{}%
1874 %
1875      \begin{scope}[use as bounding box]
1876      \mdf@test@ltrb{\mdf@tikzbox@tfl{(O)--(O|-P)--(P)--(P|-O)--cycle}}{}%
1877 %
1878      \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-O)--(O)--(O|-P)--(P)}}{}%
1879      \mdf@test@trb{\mdf@tikzbox@tfl{(O|-P)--(P)--(P|-O)--(O)}}{}%
1880      \mdf@test@ltr{\mdf@tikzbox@tfl{(O)--(O|-P)--(P)--(P|-O)}}{}%
1881      \mdf@test@lrb{\mdf@tikzbox@tfl{(P-|O)--(O)--(O-|P)--(P)}}{}%
1882 %
1883      \mdf@test@lb{\mdf@tikzbox@otl{(P|-O)--(O)--(O|-P)}%
1884                                   {(P)--(P|-O)[mdfcorners]--(O)--(O|-P)}%
1885                }{}%
1886      \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-O)--(O)}%
1887                                   {(O|-P)--(P)[mdfcorners]--(P|-O)--(O)}%
1888                }{}%
1889      \mdf@test@tr{\mdf@tikzbox@otl{(O-|P)--(P)--(P-|O)}%
1890                                   {(O)--(O|-P)[mdfcorners]--(P)--(P|-O)}%
1891                }{}%
1892      \mdf@test@lt{\mdf@tikzbox@otl{(O)--(O|-P)--(P)}%
1893                                   {(P|-O)--(O)[mdfcorners]--(O|-P)--(P)}%
1894                }{}%
1895      \mdf@test@lr{\mdf@tikzbox@otl{(O)--(O|-P)(P)--(P|-O)}%
1896                                   {(O)rectangle(P)}%
1897                }{}%
1898      \mdf@test@tb{\mdf@tikzbox@otl{(O)--(O-|P)(O|-P)--(P)}%
1899                                   {(O)rectangle(P)}%
1900                }{}%
1901 %
1902      \mdf@test@l{\mdf@tikzbox@otl{(O)--(O|-P)}%
1903                                  {(O)rectangle(P)}%
```

```
1904                    }{}%
1905          \mdf@test@r{\mdf@tikzbox@otl{(O-|P)--(P)}%
1906                                    {(O)rectangle(P)}%
1907                    }{}%
1908          \mdf@test@t{\mdf@tikzbox@otl{(O|-P)--(P)}%
1909                                    {(O)rectangle(P)}%
1910                    }{}%
1911          \mdf@test@b{\mdf@tikzbox@otl{(O)--(O-|P)}%
1912                                    {(O)rectangle(P)}%
1913                    }{}%
1914 %
1915          \mdf@test@noline{\path[mdfbackground,mdfcorners](O)rectangle(P);}{}%
1916 %
1917            %Frametitlebackground
1918              \drawbrackgroundframetitle@single
1919 %
1920          \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};% Ausgabebox einfuegen
1921        \end{scope}
1922        %HIER KOMMT EIN WEITERES MAKRO
1923        \mdf@singleextra
1924        \mdfcreateextratikz
1925      \end{tikzpicture}%
1926      }%
1927    \mdf@makeboxalign@right%
1928   }%
1929 \fi
1930 }%
1931 \def\drawbrackgroundframetitle@single{%
1932 \ifdefempty{\mdf@frametitle}{}{%
1933    \drawbrackgroundframetitle@@single%
1934 }%
1935 }%
1936 \def\drawbrackgroundframetitle@@single{%
1937        \begin{scope}%background frame title
1938         \ifbool{mdf@leftline}{
1939          \pgfmathsetlengthmacro\mdf@Ox%
1940              {\mdf@Ox+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
1941         }{}%
1942         \ifbool{mdf@rightline}{%
1943          \pgfmathsetlengthmacro\mdf@Px%
1944              {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1945         }{}%
1946         \ifbool{mdf@topline}{%
1947          \pgfmathsetlengthmacro\mdf@Py%
1948              {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1949         }{}%
1950         \pgfmathsetlengthmacro\mdf@Fy
1951              {\mdf@Py-\mdfframetitleboxtotalheight}
1952         \path[mdfframetitlebackground]
1953              (\mdf@Ox,\mdf@Fy) -- (\mdf@Ox,\mdf@Py)%
1954              --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
1955        \end{scope}
1956 }
```

\mdf@putbox@first

Output of the first breakable contents.

```
1957 \def\drawbrackgroundframetitle@first{%
1958  \ifdefempty{\mdf@frametitle}{}{%
1959   \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}%
1960   {%
1961    \drawbrackgroundframetitle@@first
1962    \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
1963   }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
1964                    Currently this isn't well supported}%
1965     \drawbrackgroundframetitle@@first
1966     \pgfmathsetlength{\global\mdfframetitleboxtotalheight}%
1967                    {\mdfframetitleboxtotalheight-\mdfboundingboxheight-
1968                     \mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
1969                    +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length+\mdf@splittopskip@leng
1970                    +\dp\strutbox%
1971                    }%
1972   }%
1973  }%
1974 }%
1975 %
1976 \def\drawbrackgroundframetitle@@first{%
1977  \begin{scope}%background frame title
1978      \ifbool{mdf@leftline}{%
1979       \pgfmathsetlengthmacro\mdf@Ox%
1980          {\mdf@Ox+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
1981       }{}%
1982      \ifbool{mdf@rightline}{%
1983       \pgfmathsetlengthmacro\mdf@Px%
1984          {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1985       }{}%
1986      \ifbool{mdf@topline}{%
1987       \pgfmathsetlengthmacro\mdf@Py%
1988          {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1989       }{}%
1990      \pgfmathsetlengthmacro\mdf@Fy
1991          {max(0,\mdf@Py-\mdfframetitleboxtotalheight)}
1992      \path[mdfframetitlebackground]
1993          (\mdf@Ox,\mdf@Fy) -- (\mdf@Ox,\mdf@Py)%
1994          --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
1995      \end{scope}%
1996 }%
1997 %
1998 \def\mdf@putbox@first{%
1999  \ifvoid\mdf@splitbox@two
2000  \else%
2001   \mdf@makebox@out{%
2002    \mdf@makeboxalign@left%
2003    \mdf@tikz@settings%
2004    \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2005    \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2006    \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2007    \ifbool{mdf@leftline}{%
2008      \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2009      \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2010      \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2011    \ifbool{mdf@rightline}{%
```

```
2012        \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2013        \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2014        \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2015      \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2016      \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2017      \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2018      \ifbool{mdf@topline}{%
2019        \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2020        \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2021        \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2022 %%%%%%%%%
2023      \ifbool{mdf@everyline}{%
2024       \ifbool{mdf@bottomline}{%
2025        \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2026        \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2027        \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2028       }{}%
2029 %%%%%%%%%%%%%%
2030      %\ifdimequal{\pagegoal}{\maxdimen}{\enlargethispage{\baselineskip}}{}% ???
2031      \ifdimgreater{\pagegoal-\maxdimen}{0pt}{}{\enlargethispage{\baselineskip}}%
2032      \mdf@makebox@in[\mdfboundingboxwidth]{%
2033      \null%
2034      \begin{tikzpicture}[remember picture]
2035        \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2036        \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2037        \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2038        \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2039        \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2040        \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2041        \ifbool{mdf@leftline}
2042          {%
2043           \pgfmathsetlengthmacro\mdf@Ax%
2044                 {\mdf@Ax+\mdf@outerlinewidth@length+%
2045                  \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2046           \pgfmathsetlengthmacro\mdf@Ox%
2047                 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2048          }{}%
2049        \ifbool{mdf@rightline}{%
2050            \pgfmathsetlengthmacro\mdf@Px%
2051                 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2052          }{}%
2053        \ifbool{mdf@topline}{%
2054            \pgfmathsetlengthmacro\mdf@Py%
2055                 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2056          }{}%
2057 %%
2058      \ifbool{mdf@everyline}{%
2059       \ifbool{mdf@bottomline}%
2060          {%
2061           \pgfmathsetlengthmacro\mdf@Ay%
2062                 {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
2063                  +\mdf@innerlinewidth@length}%
2064           \pgfmathsetlengthmacro\mdf@Oy%
2065                 {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2066          }{}%
2067       \ifbool{mdf@topline}%
```

```
2068          {%
2069           \pgfmathsetlengthmacro\mdf@Py%
2070                {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2071          }{}%
2072       }{}%
2073 %%
2074       \coordinate(O)at(\mdf@Ox,\mdf@Oy);%
2075       \coordinate(P)at(\mdf@Px,\mdf@Py);%
2076       \ifbool{mdf@shadow}
2077          {\path[mdfshadow] (O) -- (O|-P) to[mdfcorners] (P) -- (P|-O) -- (O);}{}%
2078       \begin{scope}[use as bounding box]
2079 %%%%%%%%%%%%
2080     \ifbool{mdf@everyline}{%
2081       \mdf@test@ltrb{\mdf@tikzbox@tfl{(O)--(O|-P)--(P)--(P|-O)--cycle}}{}%
2082       \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-O)--(O)--(O|-P)--(P)}}{}%
2083       \mdf@test@trb{\mdf@tikzbox@tfl{(O|-P)--(P)--(P|-O)--(O)}}{}%
2084       \mdf@test@ltr{\mdf@tikzbox@tfl{(O)--(O|-P)--(P)--(P|-O)}}{}%
2085       \mdf@test@lrb{\mdf@tikzbox@tfl{(P-|O)--(O)--(O-|P)--(P)}}{}%
2086       \mdf@test@lb{\mdf@tikzbox@otl{(P|-O)--(O)--(O|-P)}%
2087                               {(P)--(P|-O)[mdfcorners]--(O)--(O|-P)}%
2088              }{}%
2089       \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-O)--(O)}%
2090                               {(O|-P)--(P)[mdfcorners]--(P|-O)--(O)}%
2091              }{}%
2092       \mdf@test@tr{\mdf@tikzbox@otl{(O-|P)--(P)--(P-|O)}%
2093                               {(O)--(O|-P)[mdfcorners]--(P)--(P|-O)}%
2094              }{}%
2095       \mdf@test@lt{\mdf@tikzbox@otl{(O)--(O|-P)--(P)}%
2096                               {(P|-O)--(O)[mdfcorners]--(O|-P)--(P)}%
2097              }{}%
2098       \mdf@test@lr{\mdf@tikzbox@otl{(O)--(O|-P)(P)--(P|-O)}%
2099                               {(O)rectangle(P)}%
2100              }{}%
2101       \mdf@test@tb{\mdf@tikzbox@otl{(O)--(O-|P)(O|-P)--(P)}%
2102                               {(O)rectangle(P)}%
2103              }{}%
2104       \mdf@test@l{\mdf@tikzbox@otl{(O)--(O|-P)}%
2105                               {(O)rectangle(P)}%
2106              }{}%
2107       \mdf@test@r{\mdf@tikzbox@otl{(O-|P)--(P)}%
2108                               {(O)rectangle(P)}%
2109              }{}%
2110       \mdf@test@t{\mdf@tikzbox@otl{(O|-P)--(P)}%
2111                               {(O)rectangle(P)}%
2112              }{}%
2113       \mdf@test@b{\mdf@tikzbox@otl{(O)--(O-|P)}%
2114                               {(O)rectangle(P)}%
2115              }{}%
2116       \mdf@test@noline{\path[mdfbackground,mdfcorners](O)rectangle(P);}{}%
2117     }{
2118       \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@ltr}}%
2119          {\mdf@tikzbox@tfl{(O)--(O|-P)--(P)--(P|-O)}}%
2120          {}%
2121       \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}%
2122          {\mdf@tikzbox@otl{(O)--(O|-P)--(P)}{(P|-O)--(O)[mdfcorners]--(O|-P)--(P)}}%
2123          {}%
```

```
2124        \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2125          {\mdf@tikzbox@otl{(O-|P)--(P)--(P-|O)}{(O)--(O|-P)[mdfcorners]--(P)--(P|-O)}}%
2126          {}%
2127        \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
2128          {\mdf@tikzbox@otl{(O)--(O|-P)(P)--(P|-O)}{(O)rectangle(P)}}%
2129          {}%
2130        \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
2131          {\mdf@tikzbox@otl{(O|-P)--(P)}{(O)rectangle(P)}}%
2132          {}%
2133        \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%
2134          {\mdf@tikzbox@otl{(O)--(O|-P)}{(O)rectangle(P)}}%
2135          {}%
2136        \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}%
2137          {\mdf@tikzbox@otl{(O-|P)--(P)}{(O)rectangle(P)}}%
2138          {}%
2139        \mdf@test@b{\path[mdfbackground](O)rectangle(P);}{}%
2140        \mdf@test@noline{\path[mdfbackground,mdfcorners](O)--(O|-P)--(P)--(P|-O);}{}%
2141      }
2142 %%%%%%%%%%%
2143        \drawbrackgroundframetitle@first
2144        \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};% Ausgabebox einfuegen
2145      \end{scope}
2146      %HIER KOMMT EIN WEITERES MAKRO
2147      \mdf@firstextra
2148      \mdfcreateextratikz%
2149     \end{tikzpicture}%
2150      }%
2151    \mdf@makeboxalign@right%
2152   }%
2153 \fi
2154 }%
```

\mdf@putbox@middle

Output of the middle breakable contents.

```
2155 \def\drawbrackgroundframetitle@middle{%
2156  \ifdefempty{\mdf@frametitle}{}{%
2157   \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2158   {}{%
2159    \drawbrackgroundframetitle@@middle%
2160    \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
2161   }%
2162  }%
2163 }%
2164 %
2165 \def\drawbrackgroundframetitle@@middle{%
2166        \begin{scope}%background frame title
2167         \ifbool{mdf@leftline}{
2168          \pgfmathsetlengthmacro\mdf@Ox%
2169              {\mdf@Ox+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2170         }{}%
2171         \ifbool{mdf@rightline}{%
2172          \pgfmathsetlengthmacro\mdf@Px%
2173              {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2174         }{}%
```

```
2175        \pgfmathsetlengthmacro\mdf@Fy
2176            {\mdf@Py-\mdfframetitleboxtotalheight}
2177        \path[mdfframetitlebackground,rounded corners=\z@]
2178            (\mdf@Ox,\mdf@Fy) -- (\mdf@Ox,\mdf@Py)%
2179            --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2180      \end{scope}
2181 }%
2182 %
2183 \def\drawbrackgroundframetitle@@middle{%
2184      \begin{scope}%background frame title
2185       \ifbool{mdf@leftline}{
2186         \pgfmathsetlengthmacro\mdf@Ox%
2187            {\mdf@Ox+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2188         }{}%
2189       \ifbool{mdf@rightline}{%
2190         \pgfmathsetlengthmacro\mdf@Px%
2191            {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2192         }{}%
2193       \pgfmathsetlengthmacro\mdf@Fy
2194            {\mdf@Py-\mdfframetitleboxtotalheight}
2195       \path[mdfframetitlebackground,rounded corners=\z@]
2196            (\mdf@Ox,\mdf@Fy) -- (\mdf@Ox,\mdf@Py)%
2197            --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2198      \end{scope}
2199 }%
2200 \def\mdf@putbox@middle{%
2201   \ifvoid\mdf@splitbox@two
2202   \else%
2203        \mdf@makebox@out{%
2204     \mdf@makeboxalign@left%
2205     \mdf@tikz@settings%
2206     \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2207     \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2208     \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2209     \ifbool{mdf@leftline}{%
2210       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2211       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2212       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2213     \ifbool{mdf@rightline}{%
2214       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2215       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2216       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2217     \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2218     \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2219 %%%%%%%%
2220     \ifbool{mdf@everyline}{%
2221      \ifbool{mdf@topline}{%
2222       \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2223       \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2224       \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2225      \ifbool{mdf@bottomline}{%
2226       \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2227       \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2228       \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2229       }{}%
2230 %%%%%%%%%%%%
```

```
2231     \mdf@makebox@in[\mdfboundingboxwidth]{%
2232     \null%
2233     \begin{tikzpicture}[remember picture]
2234       \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2235       \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2236       \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2237       \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2238       \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2239       \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2240       \ifbool{mdf@leftline}%
2241         {%
2242         \pgfmathsetlengthmacro\mdf@Ax%
2243               {\mdf@Ax+\mdf@outerlinewidth@length+%
2244                \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2245         \pgfmathsetlengthmacro\mdf@Ox%
2246               {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2247         }{}%
2248       \ifbool{mdf@rightline}%
2249         {%
2250          \pgfmathsetlengthmacro\mdf@Px%
2251               {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2252         }{}%
2253 %%
2254       \ifbool{mdf@everyline}{%
2255        \ifbool{mdf@bottomline}%
2256         {%
2257         \pgfmathsetlengthmacro\mdf@Ay%
2258               {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
2259                +\mdf@innerlinewidth@length}%
2260         \pgfmathsetlengthmacro\mdf@Oy%
2261               {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2262         }{}%
2263        \ifbool{mdf@topline}%
2264         {%
2265         \pgfmathsetlengthmacro\mdf@Py%
2266               {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2267         }{}%
2268       }{}%
2269 %%
2270       \coordinate(O)at(\mdf@Ox,\mdf@Oy);%
2271       \coordinate(P)at(\mdf@Px,\mdf@Py);%
2272       \ifbool{mdf@shadow}
2273         {\path[mdfshadow](O) rectangle (P);}{}%
2274       \begin{scope}[use as bounding box]
2275 %%%%%%%%%%%
2276       \ifbool{mdf@everyline}{%
2277         \mdf@test@ltrb{\mdf@tikzbox@tfl{(O)--(O|-P)--(P)--(P|-O)--cycle}}{}%
2278         \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-O)--(O)--(O|-P)--(P)}}{}%
2279         \mdf@test@trb{\mdf@tikzbox@tfl{(O|-P)--(P)--(P|-O)--(O)}}{}%
2280         \mdf@test@ltr{\mdf@tikzbox@tfl{(O)--(O|-P)--(P)--(P|-O)}}{}%
2281         \mdf@test@lrb{\mdf@tikzbox@tfl{(P-|O)--(O)--(O-|P)--(P)}}{}%
2282         \mdf@test@lb{\mdf@tikzbox@otl{(P|-O)--(O)--(O|-P)}%
2283                                     {(P)--(P|-O)[mdfcorners]--(O)--(O|-P)}%
2284                    }{}%
2285         \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-O)--(O)}%
2286                                     {(O|-P)--(P)[mdfcorners]--(P|-O)--(O)}%
```

```
2287                }{}%
2288        \mdf@test@tr{\mdf@tikzbox@otl{(O-|P)--(P)--(P-|O)}%
2289                                {(O)--(O|-P)[mdfcorners]--(P)--(P|-O)}%
2290                }{}%
2291        \mdf@test@lt{\mdf@tikzbox@otl{(O)--(O|-P)--(P)}%
2292                                {(P|-O)--(O)[mdfcorners]--(O|-P)--(P)}%
2293                }{}%
2294        \mdf@test@lr{\mdf@tikzbox@otl{(O)--(O|-P)(P)--(P|-O)}%
2295                                {(O)rectangle(P)}%
2296                }{}%
2297        \mdf@test@tb{\mdf@tikzbox@otl{(O)--(O-|P)(O|-P)--(P)}%
2298                                {(O)rectangle(P)}%
2299                }{}%
2300        \mdf@test@l{\mdf@tikzbox@otl{(O)--(O|-P)}%
2301                                {(O)rectangle(P)}%
2302                }{}%
2303        \mdf@test@r{\mdf@tikzbox@otl{(O-|P)--(P)}%
2304                                {(O)rectangle(P)}%
2305                }{}%
2306        \mdf@test@t{\mdf@tikzbox@otl{(O|-P)--(P)}%
2307                                {(O)rectangle(P)}%
2308                }{}%
2309        \mdf@test@b{\mdf@tikzbox@otl{(O)--(O-|P)}%
2310                                {(O)rectangle(P)}%
2311                }{}%
2312        \mdf@test@noline{\path[mdfbackground,mdfcorners](O)rectangle(P);}{}%
2313      }{
2314        \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
2315              {\mdf@tikzbox@otl{(O)--(O|-P)(P)--(P|-O)}{(O)rectangle(P)}}{}%
2316        \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
2317              {\mdf@tikzbox@otl{(O)--(O|-P)}{(O)rectangle(P)}}{}%
2318        \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
2319              {\mdf@tikzbox@otl{(P)--(P|-O)}{(O)rectangle(P)}}{}%
2320        \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
2321              {\path[mdfbackground](O)rectangle(P);}{}%
2322      }
2323 %%%%%%%%
2324        \drawbrackgroundframetitle@middle
2325        \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};% Ausgabebox einfuegen
2326      \end{scope}
2327      \mdf@middleextra
2328      %HIER KOMMT EIN WEITERES MAKRO
2329      \mdfcreateextratikz
2330    \end{tikzpicture}%
2331    }%
2332    \mdf@makeboxalign@right%
2333  }%
2334  \fi
2335 }%
```

`\mdf@putbox@second`

Output of the last breakable contents.

```
2336 \def\drawbrackgroundframetitle@second{%
2337  \ifdefempty{\mdf@frametitle}{}{%
```

```
2338    \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2339    {}{%
2340     \drawbrackgroundframetitle@@second%
2341    }%
2342  }%
2343 }%
2344 %
2345 \def\drawbrackgroundframetitle@@second{%
2346       \begin{scope}%background frame title
2347        \ifbool{mdf@leftline}{
2348         \pgfmathsetlengthmacro\mdf@Ox%
2349             {\mdf@Ox+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2350        }{}%
2351        \ifbool{mdf@rightline}{%
2352         \pgfmathsetlengthmacro\mdf@Px%
2353             {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2354        }{}%
2355        \pgfmathsetlengthmacro\mdf@Fy
2356             {\mdf@Py-\mdfframetitleboxtotalheight}
2357        \path[mdfframetitlebackground,rounded corners=\z@]
2358             (\mdf@Ox,\mdf@Fy) -- (\mdf@Ox,\mdf@Py)%
2359             --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2360       \end{scope}
2361 }%
2362 \def\mdf@putbox@second{%
2363   \ifvoid\mdf@splitbox@one
2364   \else%
2365        \mdf@makebox@out{%
2366     \mdf@makeboxalign@left%
2367     \mdf@tikz@settings%
2368     \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2369     \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2370     \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2371     \ifbool{mdf@leftline}{%
2372       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2373       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2374       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2375     \ifbool{mdf@rightline}{%
2376       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2377       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2378       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2379     \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2380     \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2381     \ifbool{mdf@bottomline}{%
2382       \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2383       \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2384       \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2385 %%%%%%%%%
2386     \ifbool{mdf@everyline}{%
2387       \ifbool{mdf@topline}{%
2388       \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2389       \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2390       \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2391       }{}%
2392 %%%%%%%%%%%%%
2393     \mdf@makebox@in[\mdfboundingboxwidth]{%
```

```
2394        \null%
2395        \begin{tikzpicture}[remember picture]
2396          \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2397          \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
2398          \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2399          \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2400          \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2401          \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2402          \ifbool{mdf@leftline}%
2403            {%
2404              \pgfmathsetlengthmacro\mdf@Ax%
2405                  {\mdf@Ax+\mdf@outerlinewidth@length+%
2406                   \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2407               \pgfmathsetlengthmacro\mdf@Ox%
2408                  {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2409            }{}%
2410          \ifbool{mdf@rightline}%
2411            {%
2412               \pgfmathsetlengthmacro\mdf@Px%
2413                  {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2414            }{}%
2415          \ifbool{mdf@bottomline}%
2416            {%
2417               \pgfmathsetlengthmacro\mdf@Ay%
2418                  {\mdf@Ay+\mdf@outerlinewidth@length+%
2419                   \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2420               \pgfmathsetlengthmacro\mdf@Oy%
2421                  {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2422            }{}%
2423 %%
2424        \ifbool{mdf@everyline}{%
2425         \ifbool{mdf@topline}%
2426            {%
2427             \pgfmathsetlengthmacro\mdf@Py%
2428                  {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2429            }{}%
2430        }{}%
2431 %%
2432          \coordinate(O)at(\mdf@Ox,\mdf@Oy);%
2433          \coordinate(P)at(\mdf@Px,\mdf@Py);%
2434          \ifbool{mdf@shadow}
2435            {\path[mdfshadow]  (O|-P) to[mdfcorners] (O) to[mdfcorners] (P|-O) -- (P) -- (O|-P);}{}%
2436          \begin{scope}[use as bounding box]
2437 %%%%%%%%%%%%
2438        \ifbool{mdf@everyline}{%
2439         \mdf@test@ltrb{\mdf@tikzbox@tfl{(O)--(O|-P)--(P)--(P|-O)--cycle}}{}%
2440         \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-O)--(O)--(O|-P)--(P)}}{}%
2441         \mdf@test@trb{\mdf@tikzbox@tfl{(O|-P)--(P)--(P|-O)--(O)}}{}%
2442         \mdf@test@ltr{\mdf@tikzbox@tfl{(O)--(O|-P)--(P)--(P|-O)}}{}%
2443         \mdf@test@lrb{\mdf@tikzbox@tfl{(P-|O)--(O)--(O-|P)--(P)}}{}%
2444         \mdf@test@lb{\mdf@tikzbox@otl{(P|-O)--(O)--(O|-P)}%
2445                                {(P)--(P|-O)[mdfcorners]--(O)--(O|-P)}%
2446                  }{}%
2447         \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-O)--(O)}%
2448                                {(O|-P)--(P)[mdfcorners]--(P|-O)--(O)}%
2449                  }{}%
```

```
2450        \mdf@test@tr{\mdf@tikzbox@otl{(O-|P)--(P)--(P-|O)}%
2451                             {(O)--(O|-P)[mdfcorners]--(P)--(P|-O)}%
2452               }{}%
2453        \mdf@test@lt{\mdf@tikzbox@otl{(O)--(O|-P)--(P)}%
2454                             {(P|-O)--(O)[mdfcorners]--(O|-P)--(P)}%
2455               }{}%
2456        \mdf@test@lr{\mdf@tikzbox@otl{(O)--(O|-P)(P)--(P|-O)}%
2457                             {(O)rectangle(P)}%
2458               }{}%
2459        \mdf@test@tb{\mdf@tikzbox@otl{(O)--(O-|P)(O|-P)--(P)}%
2460                             {(O)rectangle(P)}%
2461               }{}%
2462        \mdf@test@l{\mdf@tikzbox@otl{(O)--(O|-P)}%
2463                             {(O)rectangle(P)}%
2464               }{}%
2465        \mdf@test@r{\mdf@tikzbox@otl{(O-|P)--(P)}%
2466                             {(O)rectangle(P)}%
2467               }{}%
2468        \mdf@test@t{\mdf@tikzbox@otl{(O|-P)--(P)}%
2469                             {(O)rectangle(P)}%
2470               }{}%
2471        \mdf@test@b{\mdf@tikzbox@otl{(O)--(O-|P)}%
2472                             {(O)rectangle(P)}%
2473               }{}%
2474        \mdf@test@noline{\path[mdfbackground,mdfcorners](O)rectangle(P);}{}%
2475      }{%
2476        \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@lrb}}%
2477           {\mdf@tikzbox@tfl{(P-|O)--(O)--(O-|P)--(P)}}%
2478           {}%
2479        \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
2480           {\mdf@tikzbox@otl{(P-|O)--(O)--(O-|P)}{(P)--(P|-O)[mdfcorners]--(O)--(O|-P)}}%
2481           {}%
2482        \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
2483           {\mdf@tikzbox@otl{(P)--(P|-O)--(O)}{(O|-P)--(P)[mdfcorners]--(P|-O)--(O)}}%
2484           {}%
2485        \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
2486           {\mdf@tikzbox@otl{(O)--(O|-P)(P)--(P|-O)}{(O)rectangle(P)}}%
2487           {}%
2488        \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}%
2489           {\mdf@tikzbox@otl{(O)--(O-|P)}{(O)rectangle(P)}}%
2490           {}%
2491        \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}%
2492           {\mdf@tikzbox@otl{(O)--(O|-P)}{(O)rectangle(P)}}%
2493           {}%
2494        \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}%
2495           {\mdf@tikzbox@otl{(O-|P)--(P)}{(O)rectangle(P)}}%
2496           {}%
2497        \mdf@test@t{\path[mdfbackground,mdfcorners](O|-P)--(O)--(O-|P)--(P);}{}%
2498        \mdf@test@noline{\path[mdfbackground,mdfcorners](O|-P)--(O)--(O-|P)--(P);}{}%
2499      }%
2500        \drawbrackgroundframetitle@second
2501        \node[mdfbox] at (\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};% Ausgabebox einfuegen
2502      \end{scope}
2503        \mdf@secondextra
2504       %HIER KOMMT EIN WEITERES MAKRO
2505        \mdfcreateextratikz
```

```
2506      \end{tikzpicture}%
2507      }%
2508    \mdf@makeboxalign@right%
2509   }%
2510  \fi
2511 }%

2512 \endinput
```

B.4. The Explanation of md-frame-2.mdf / md-frame-3.mdf

```
2513 %% Style file for mdframed for package option 'framemethod=default'
2514 %%
2515 %% This package may be distributed under the terms of the LaTeX Project
2516 %% Public License, as described in lppl.txt in the base LaTeX distribution.
2517 %% Either version 1.0 or, at your option, any later version.
2518 %%
2519 %%
2520 %%$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $
2521 %
```

> \mdframedIIpackagename
> \mdf@frameIIdate@svn

local settings

```
2522 \def\mdframedIIpackagename{md-frame-2}
2523 \def\mdf@frameIIdate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
2524 \ProvidesFile{md-frame-2.mdf}%
2525         [\mdf@frameIIdate@svn$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $ %
2526          \mdversion: \mdframedIIpackagename]
```

> \mdf@ptlength@to@pscode
> \ptTps

Command to calculate a latex length to postscript

```
2527 \def\mdf@ptlength@to@pscode#1{\pst@number{#1} \pst@number\psxunit div }
2528 \def\mdf@ptlength@to@pscode@length#1{\pst@number{\csname mdf@#1@length\endcsname} \pst@number\psxunit d
2529 \let\ptTps\mdf@ptlength@to@pscode\relax
2530 \let\ptTpsL\mdf@ptlength@to@pscode@length\relax
```

> \mdfbackgroundstyle
> \mdflinestyle
> \mdfframetitlerule
> \mdfframetitlebackground

background and line settings for pstricks

```
2531 \def\mdfpstricks@settings{%expand by \addtopsstyle
2532   \newpsstyle{mdfbackgroundstyle}%
2533     {linecolor=\mdf@backgroundcolor,fillstyle=solid,%
2534      fillcolor=\mdf@backgroundcolor,linestyle=none,%
2535     ,dimen=middle,%
2536     }%
2537 %
2538   \newpsstyle{mdfframetitlebackgroundstyle}{%
```

```
2539        linecolor=\mdf@frametitlebackgroundcolor,
2540        fillcolor=\mdf@frametitlebackgroundcolor,
2541        fillstyle=solid,linestyle=none,
2542        linearc=\ifdimgreater{\mdf@roundcorner@length%
2543                            -\mdf@innerlinewidth@length%
2544                            -.5\mdf@middlelinewidth@length}
2545                    {\z@}{\dimexpr\mdf@roundcorner@length%
2546                            -\mdf@innerlinewidth@length%
2547                            -.5\mdf@middlelinewidth@length}{\z@},
2548    }
2549 %
2550    \newpsstyle{mdfouterlinestyle}{linestyle=none}%
2551    \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
2552      {\newpsstyle{mdfouterlinestyle}{%
2553        linecolor=\mdf@outerlinecolor,%
2554        linewidth=\dimexpr2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length\relax,
2555        dimen=middle,
2556        }}{}%
2557 %
2558    \newpsstyle{mdfinnerlinestyle}{linestyle=none}%
2559    \ifdimgreater{\mdf@innerlinewidth@length}{\z@}%
2560      {\newpsstyle{mdfinnerlinestyle}{%
2561        linecolor=\mdf@innerlinecolor,%
2562        linewidth=\dimexpr2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length\relax,
2563        dimen=middle,
2564        }}{}%
2565 %
2566    \newpsstyle{mdfmiddlelinestyle}{linestyle=none}%
2567    \newpsstyle{mdfshadow}{shadow=true,shadowcolor=\mdf@shadowcolor,shadowsize=\mdf@shadowsize@length}%
2568    \ifdimgreater{\mdf@middlelinewidth@length}{\z@}%
2569      {\newpsstyle{mdfmiddlelinestyle}{%
2570        linewidth=\mdf@middlelinewidth@length,%
2571        linecolor=\mdf@middlelinecolor,dimen=middle
2572        }}{}%
2573 \mdfpstricks@appendsettings
2574 }%
2575 %
2576 \newrobustcmd*\mdf@pstricksbox@fl[2]{%four lines
2577    \psframe[style=mdfouterlinestyle](#1)(#2)%aussen=3mm
2578    \psframe[style=mdfbackgroundstyle](#1)(#2)%Hintergrund
2579    \psclip{\psframe[style=mdfmiddlelinestyle](#1)(#2)}
2580     \psframe[style=mdfinnerlinestyle](#1)(#2)%innere=3mm
2581    \endpsclip
2582    \psframe[style=mdfmiddlelinestyle](#1)(#2)%mittlere=2mm
2583    }%
2584 \newrobustcmd*\mdf@pstricksbox@tl[1]{%three lines
2585    \psline[style=mdfouterlinestyle]#1%aussen=3mm
2586    \psline[style=mdfbackgroundstyle]#1%Hintergrund
2587    \psclip{\psline[style=mdfmiddlelinestyle]#1}
2588     \psline[style=mdfinnerlinestyle]#1%innere=3mm
2589    \endpsclip
2590    \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2591    }%
2592 \newrobustcmd*\mdf@pstricksbox@tcl[2]{%two combined lines
2593 %%#1 background comple
2594 %%#2 line path
```

```
2595   \psline[style=mdfouterlinestyle]#2%aussen=3mm
2596   \psline[style=mdfbackgroundstyle]#2%Hintergrund
2597   \psclip{\pscustom[linestyle=none]{
2598         \psline[style=mdfmiddlelinestyle]#2
2599         \psline[linestyle=none,linearc=0pt]#1}
2600         }
2601     \psframe[style=mdfbackgroundstyle,linearc=0pt](mdf@O)(mdf@P)%Hintergrund
2602     \psline[style=mdfinnerlinestyle]#2%innere=3mm
2603   \endpsclip
2604   \psline[style=mdfmiddlelinestyle]#2%mittlere=2mm
2605 }%
2606 \newrobustcmd*\mdf@pstricksbox@tncl[2]{%two not combined lines
2607  \begingroup
2608  \psset{linearc=0pt}
2609  \psline[style=mdfouterlinestyle](mdf@O)#1%aussen=3mm
2610  \psline[style=mdfouterlinestyle](mdf@P)#2%aussen=3mm
2611  \psclip{
2612    \pscustom[linestyle=none]{%
2613        \psline[style=mdfmiddlelinestyle](mdf@O)#1%mittlere=2mm
2614        \psline[linestyle=none](mdf@O)#2
2615        \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2616        \psline[linestyle=none](mdf@P)#1
2617      }%
2618    }%
2619    \psframe[style=mdfbackgroundstyle,linearc=0pt](mdf@O)(mdf@P)%Hintergrund
2620    \psline[style=mdfinnerlinestyle](mdf@O)#1%innere=3mm
2621    \psline[style=mdfinnerlinestyle](mdf@P)#2%innere=3mm
2622  \endpsclip
2623  \psline[style=mdfmiddlelinestyle](mdf@O)#1%mittlere=2mm
2624  \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2625  \endgroup
2626 }%
2627 \newrobustcmd*\mdf@pstricksbox@ol[1]{%one line
2628  \begingroup
2629  \psset{linearc=0pt}
2630  \psline[style=mdfouterlinestyle]#1%aussen=3mm
2631  \psline[style=mdfbackgroundstyle]#1%Hintergrund
2632  \psclip{\pscustom[linestyle=none]{
2633        \psline[style=mdfmiddlelinestyle]#1
2634        \psframe[linestyle=none,fillstyle=none,dimen=inner](mdf@O)(mdf@P)
2635        }}
2636    \psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)
2637    \psline[style=mdfinnerlinestyle]#1%innere=3mm
2638  \endpsclip
2639  \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2640  \endgroup%
2641 }%
2642
2643 %
2644 \newpsstyle{mdfframetitlerule}{%
2645    linecolor=\mdf@frametitlerulecolor,%
2646    fillcolor=\mdf@frametitlerulecolor,%
2647    fillstyle=solid,dimen=outer,%
2648 }
2649 %
```

`\mdf@put@frametitlerule`

---

frametitlerule with pstricks

```
2650 \def\mdf@@frametitlerule{%
2651   \ifbool{mdf@frametitlerule}{%
2652    \vbox{\hsize0pt
2653      \par\unskip\vskip\mdf@frametitlebelowskip@length
2654      \noindent\rlap{%
2655      \begingroup%
2656      \begin{pspicture}(0,0)(0,\mdf@frametitlerulewidth@length)
2657       \psframe[style=mdfframetitlerule](!\ptTpsL{innerleftmargin} neg 0)%
2658                              (! \ptTpsL{innerrightmargin}
2659                                 \ptTps{\mdfframetitleboxwidth} add \ptTpsL{frametitlerulewidth})
2660      \end{pspicture}
2661      \endgroup}
2662    }%
2663   }{}
2664   \par\unskip\vskip\mdf@innertopmargin@length%
2665 }%
2666 %
2667 % \begin{macro}{mdf@putbox@single}
2668 % Single output
2669 %    \begin{macrocode}
2670 % Info zu den verwendeten Punkten:
2671 % O ist die untere linke Ecke der Mitte der middleline
2672 % P ist die obere rechte Ecke der Mitte der middleline
2673 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
2674 \def\mdf@putbox@single{%
2675   \ifvoid\mdf@splitbox@one
2676   \else%
2677    \mdf@makebox@out{%
2678      \mdf@makeboxalign@left%
2679    \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2680    \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2681    \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2682    \ifbool{mdf@leftline}{%
2683      \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2684      \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2685      \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2686    \ifbool{mdf@rightline}{%
2687      \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2688      \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2689      \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2690 %
2691    \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2692    \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2693    \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2694    \ifbool{mdf@topline}{%
2695      \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2696      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2697      \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2698    \ifbool{mdf@bottomline}{%
2699      \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2700      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2701      \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2702 %
```

```
2703      \setlength\mdftotallinewidth{\dimexpr\mdf@innerlinewidth@length%
2704                                +\mdf@middlelinewidth@length
2705                                +\mdf@outerlinewidth@length\relax}%
2706        \psset{unit=1truecm}%
2707        \mdf@makebox@in[\mdfboundingboxwidth]{%
2708          \null%
2709          \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
2710           \mdfpstricks@settings%
2711           \psset{linearc=\mdf@roundcorner@length,cornersize=absolut,}%
2712           \expandafter\psset\expandafter{\mdf@psset@local}%
2713           \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
2714           \pnode(0,0){mdf@O}
2715           \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2716           \ifbool{mdf@leftline}%
2717             {%
2718             \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
2719                         +(\mdf@middlelinewidth@length,0)
2720                         +(\mdf@innerlinewidth@length,0)}{mdf@A}%
2721             \nodexn{(mdf@O)+(\mdf@outerlinewidth@length,0)
2722                         +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
2723             }{}%
2724           \ifbool{mdf@rightline}%
2725             {%
2726             \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
2727                         -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2728             }{}%
2729           \ifbool{mdf@bottomline}%
2730             {%
2731             \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
2732                         +(0,\mdf@middlelinewidth@length)
2733                         +(0,\mdf@innerlinewidth@length)}{mdf@A}%
2734             \nodexn{(mdf@O)+(0,\mdf@outerlinewidth@length)
2735                         +0.5(0,\mdf@middlelinewidth@length)}{mdf@O}%
2736             }{}%
2737           \ifbool{mdf@topline}%
2738             {%
2739             \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
2740                         -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
2741             }{}%
2742           \ifbool{mdf@shadow}
2743               {\psframe[style=mdfshadow](mdf@O)(mdf@P)}{}
2744 %         \psclip{%
2745           %Four lines
2746            \mdf@test@ltrb{\mdf@pstricksbox@fl{mdf@O}{mdf@P}}{}
2747           %three lines
2748            \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
2749            \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@O)(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}}{}
2750            \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@O)(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}%
2751            \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}%
2752           %two lines combinded
2753            \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}%
2754                                           {(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)}}{}
2755            \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@O|mdf@P)(mdf@O)}%
2756                                           {(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}
2757            \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)}%
2758                                           {(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}
```

```
2759            \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@O)(mdf@P|mdf@O)(mdf@P)}%
2760                                        {(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
2761         %two lines not combinded combinded
2762          \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}
2763                      }{}
2764          \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@O)}{(mdf@O|mdf@P)}
2765                      }{}
2766        %single line
2767          \mdf@test@l{\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
2768          \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
2769          \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@O|mdf@P)}}{}
2770          \mdf@test@b{\mdf@pstricksbox@ol{(mdf@O)(mdf@P|mdf@O)}}{}
2771        %no line
2772          \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}
2773 %           }
2774        %Frametitlebackground
2775          \drawbrackgroundframetitle@single
2776        %output%
2777          \rput[bl](mdf@A){\box\mdf@splitbox@one}
2778 %          \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2779 %          \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2780 %          \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
2781 %
2782 %        \endpsclip
2783          \mdf@singleextra
2784        \end{pspicture}%
2785      }%
2786    \mdf@makeboxalign@right%
2787  }%
2788 \fi
2789 }%
2790 \def\drawbrackgroundframetitle@single{%
2791  \ifdefempty{\mdf@frametitle}{}{%
2792    \drawbrackgroundframetitle@@single%
2793  }%
2794 }%
2795 \def\drawbrackgroundframetitle@@single{%
2796  \begingroup%
2797  \ifbool{mdf@leftline}{%
2798      \nodexn{(mdf@O)+(\mdf@innerlinewidth@length,0)
2799             +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
2800      }{}%
2801  \ifbool{mdf@rightline}{%
2802      \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
2803             -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2804      }{}%
2805  \ifbool{mdf@topline}{%
2806      \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
2807             -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}%
2808      }{}%
2809  \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
2810  \psline[style=mdfframetitlebackgroundstyle](mdf@O|mdf@F)(mdf@O|mdf@P)
2811                                        (mdf@P)(mdf@P|mdf@F)%
2812  \endgroup
2813 }
```

```
\mdf@putbox@first
```

First output

```
2814 \def\mdf@putbox@first{%
2815   \ifvoid\mdf@splitbox@two
2816   \else%
2817    \mdf@makebox@out{%
2818     \mdf@makeboxalign@left%
2819     %\ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
2820    \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2821    \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2822    \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2823    \ifbool{mdf@leftline}{%
2824      \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2825      \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2826      \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2827    \ifbool{mdf@rightline}{%
2828      \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2829      \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2830      \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2831    \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2832    \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2833    \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2834    \ifbool{mdf@topline}{%
2835      \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2836      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2837      \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2838 %%%%%%%%%
2839      \ifbool{mdf@everyline}{%
2840       \ifbool{mdf@bottomline}{%
2841       \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2842       \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2843       \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2844      }{}%
2845 %%%%%%%%%%%%%
2846      \psset{linearc=\mdf@roundcorner@length,cornersize=absolute}%
2847      \expandafter\psset\expandafter{\mdf@psset@local}%
2848      \mdf@makebox@in[\mdfboundingboxwidth]{%
2849       \null%
2850       \psset{unit=1truecm}%
2851       \ifdimgreater{\mdfboundingboxheight}{\vsize}
2852        {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
2853        {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
2854        \mdfpstricks@settings%
2855        \psset{linearc=\mdf@roundcorner@length,cornersize=absolut,}%
2856        \expandafter\psset\expandafter{\mdf@psset@local}%
2857        \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
2858        \pnode(0,0){mdf@O}
2859        \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2860        \ifbool{mdf@leftline}%
2861          {%
2862          \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
2863                        +(\mdf@middlelinewidth@length,0)
2864                        +(\mdf@innerlinewidth@length,0)}{mdf@A}
2865          \nodexn{(mdf@O)+(\mdf@outerlinewidth@length,0)
2866                        +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}
```

```
2867            }{}%
2868        \ifbool{mdf@rightline}%
2869          {%
2870           \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
2871                          -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
2872          }{}%
2873        \ifbool{mdf@topline}%
2874          {%
2875           \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
2876                          -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
2877          }{}%
2878 %%%%%%%%%%
2879        \ifbool{mdf@everyline}{%
2880         \ifbool{mdf@bottomline}%
2881           {%
2882            \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
2883                          +(0,\mdf@middlelinewidth@length)
2884                          +(0,\mdf@innerlinewidth@length)}{mdf@A}%
2885            \nodexn{(mdf@O)+(0,\mdf@outerlinewidth@length)
2886                          +0.5(0,\mdf@middlelinewidth@length)}{mdf@O}%
2887           }{}%
2888        }{}%
2889 %%%%%%%%%
2890        \ifbool{mdf@shadow}
2891           {\pscustom[style=mdfshadow,linestyle=none]{%
2892                \psline[linejoin=2,linecap=1,](mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)%
2893                \psline[linejoin=2,linecap=1,linearc=\z@](mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)
2894                \closedshadow
2895                }
2896           }{}
2897 %     \psclip{
2898 %%%%%%%%%%%%%
2899        \ifbool{mdf@everyline}{%
2900            %Four lines
2901            \mdf@test@ltrb{\mdf@pstricksbox@fl{mdf@O}{mdf@P}}{}
2902            %three lines
2903            \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
2904            \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@O)(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}}{}
2905            \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@O)(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}%
2906            \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}%
2907            %two lines combinded
2908            \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}%
2909                                            {(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)}}{}
2910            \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@O|mdf@P)(mdf@O)}%
2911                                            {(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}
2912            \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)}%
2913                                            {(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}
2914            \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@O)(mdf@P|mdf@O)(mdf@P)}%
2915                                            {(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
2916            %two lines not combinded combinded
2917            \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}
2918                        }{}
2919            \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@O)}{(mdf@O|mdf@P)}
2920                        }{}
2921            %single line
2922            \mdf@test@l{\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
```

```
2923        \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
2924        \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@O|mdf@P)}}{}
2925        \mdf@test@b{\mdf@pstricksbox@ol{(mdf@O)(mdf@P|mdf@O)}}{}
2926       %no line
2927        \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
2928     }{%
2929      %Four or Three lines
2930       \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@ltr}}%
2931        {\mdf@pstricksbox@tl{(mdf@O)(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}%
2932        {}%
2933      %two combinded lines
2934      \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}
2935               {\mdf@pstricksbox@tcl{(mdf@O)(mdf@P|mdf@O)(mdf@P)}%
2936                                    {(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
2937      \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2938               {\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)}%
2939                                    {(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}
2940      %two not combinded lines
2941      \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
2942               {\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}}{}
2943      %single line
2944      \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
2945               {\mdf@pstricksbox@ol{(mdf@P)(mdf@O|mdf@P)}}{}
2946      \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%
2947               {\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
2948      \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}%
2949               {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
2950      %no line
2951      \mdf@test@b{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
2952      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
2953     }%
2954 %     }
2955     %Frametitlebackground
2956       \drawbrackgroundframetitle@first
2957      %output%
2958      \rput[bl](mdf@A){\box\mdf@splitbox@two}
2959 %     \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2960 %     \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2961 %     \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
2962 %    \endpsclip
2963      \mdf@firstextra
2964     \end{pspicture}
2965    }%
2966  \mdf@makeboxalign@right%
2967  }%
2968 \fi
2969 }%
2970 \def\drawbrackgroundframetitle@first{%
2971 \ifdefempty{\mdf@frametitle}{}{%
2972   \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}%
2973   {%
2974   \drawbrackgroundframetitle@@first
2975   \global\mdfframetitleboxtotalheight=-\p@%
2976  }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
2977                    Currently this isn't well supported}%
2978    \drawbrackgroundframetitle@@first
```

```
2979      \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
2980                       -\mdfboundingboxheight
2981                       -\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
2982                       +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length
2983                       +\mdf@splittopskip@length
2984                       +\dp\strutbox\relax%
2985    }%
2986  }%
2987 }%
2988 \def\drawbrackgroundframetitle@@first{%
2989  \begingroup%
2990    \ifbool{mdf@leftline}{%
2991        \nodexn{(mdf@O)+(\mdf@innerlinewidth@length,0)
2992               +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
2993        }{}%
2994    \ifbool{mdf@rightline}{%
2995        \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
2996               -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2997        }{}%
2998    \ifbool{mdf@topline}{%
2999        \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
3000               -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}%
3001        }{}%
3002  \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}
3003    {\nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}}%
3004    {\nodexn{(mdf@O)}{mdf@F}}%
3005  \psline[style=mdfframetitlebackgroundstyle](mdf@O|mdf@F)(mdf@O|mdf@P)
3006                                             (mdf@P)(mdf@P|mdf@F)%
3007  \endgroup
3008 }
```

`\mdf@putbox@middle`

Middle output

```
3009 \def\mdf@putbox@middle{%
3010    \ifvoid\mdf@splitbox@two
3011    \else%
3012     \mdf@makebox@out{%
3013      \mdf@makeboxalign@left%
3014 %     \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
3015      \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
3016      \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3017      \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3018      \ifbool{mdf@leftline}{%
3019        \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3020        \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3021        \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
3022      \ifbool{mdf@rightline}{%
3023        \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3024        \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3025        \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
3026      \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
3027      \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
3028 %%%%%%%%
3029      \ifbool{mdf@everyline}{%
```

```
3030        \ifbool{mdf@topline}{%
3031         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3032         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3033         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
3034        \ifbool{mdf@bottomline}{%
3035         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3036         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3037         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
3038        }{}%
3039 %%%%%%%%%%%%%%
3040        \psset{unit=1truecm}%
3041        \mdf@makebox@in[\mdfboundingboxwidth]{%
3042         \null%
3043         \ifdimgreater{\mdfboundingboxheight}{\vsize}
3044          {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
3045          {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
3046          \mdfpstricks@settings%
3047          \psset{linearc=0pt,cornersize=absolut,}%
3048          \expandafter\psset\expandafter{\mdf@psset@local}%
3049          %%%%
3050          \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
3051          \pnode(0,0){mdf@O}
3052          \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3053          \ifbool{mdf@leftline}%
3054            {%
3055             \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3056                           +(\mdf@middlelinewidth@length,0)
3057                           +(\mdf@innerlinewidth@length,0)}{mdf@A}
3058             \nodexn{(mdf@O)+(\mdf@outerlinewidth@length,0)
3059                           +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}
3060            }{}%
3061          \ifbool{mdf@rightline}%
3062            {%
3063             \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
3064                            -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
3065            }{}%
3066        %%
3067 %%%%%%%%%%
3068        \ifbool{mdf@everyline}{%
3069         \ifbool{mdf@bottomline}%
3070           {%
3071            \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3072                          +(0,\mdf@middlelinewidth@length)
3073                          +(0,\mdf@innerlinewidth@length)}{mdf@A}%
3074            \nodexn{(mdf@O)+(0,\mdf@outerlinewidth@length)
3075                          +0.5(0,\mdf@middlelinewidth@length)}{mdf@O}%
3076           }{}%
3077         \ifbool{mdf@topline}%
3078           {%
3079            \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3080                           -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3081           }{}%
3082        }{}%
3083 %%%%%%%%%
3084        %%
3085        \ifbool{mdf@shadow}
```

```
3086             {\psframe[style=mdfshadow](mdf@O)(mdf@P)}{}
3087 %%%%%%%%%%%%%
3088     \ifbool{mdf@everyline}{%
3089          %Four lines
3090          \mdf@test@ltrb{\mdf@pstricksbox@fl{mdf@O}{mdf@P}}{}
3091          %three lines
3092          \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
3093          \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@O)(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}}{}
3094          \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@O)(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}%
3095          \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}%
3096          %two lines combinded
3097          \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}%
3098                                           {(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)}}{}
3099          \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@O|mdf@P)(mdf@O)}%
3100                                           {(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}
3101          \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)}%
3102                                           {(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}
3103          \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@O)(mdf@P|mdf@O)(mdf@P)}%
3104                                           {(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
3105          %two lines not combinded combinded
3106          \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}
3107                       }{}
3108          \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@O)}{(mdf@O|mdf@P)}
3109                       }{}
3110        %single line
3111          \mdf@test@l{\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
3112          \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
3113          \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@O|mdf@P)}}{}
3114          \mdf@test@b{\mdf@pstricksbox@ol{(mdf@O)(mdf@P|mdf@O)}}{}
3115        %no line
3116          \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
3117      }{%
3118       \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
3119             {\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}}{}%
3120       \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
3121             {\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}%
3122       \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
3123             {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}%
3124       \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
3125             {\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
3126      }%
3127      %Frametitlebackground
3128        \drawbrackgroundframetitle@middle
3129      %output%
3130        \rput[bl](mdf@A){\box\mdf@splitbox@two}
3131 %      \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3132 %      \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3133 %      \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
3134       \mdf@middleextra
3135      \end{pspicture}%
3136     }%
3137    \mdf@makeboxalign@right%
3138  }%
3139  \fi
3140 }%
3141 \def\drawbrackgroundframetitle@middle{%
```

```
3142 \ifdefempty{\mdf@frametitle}{}{%
3143   \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3144 {}{%
3145     \drawbrackgroundframetitle@@middle
3146     \global\mdfframetitleboxtotalheight=-\p@\relax%
3147   }%
3148 }%
3149 }%
3150 \def\drawbrackgroundframetitle@@middle{%
3151 \begingroup%
3152 \ifbool{mdf@leftline}{%
3153     \nodexn{(mdf@O)+(\mdf@innerlinewidth@length,0)
3154         +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
3155     }{}%
3156 \ifbool{mdf@rightline}{%
3157     \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3158         -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3159     }{}%
3160 \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3161 \psline[style=mdfframetitlebackgroundstyle,linearc=\z@](mdf@O|mdf@F)(mdf@O|mdf@P)
3162                                         (mdf@P)(mdf@P|mdf@F)%
3163 \endgroup
3164 }
```

\mdf@putbox@second

Last output

```
3165 \def\mdf@putbox@second{
3166   \ifvoid\mdf@splitbox@one
3167   \else%
3168    \mdf@makebox@out{%
3169     \mdf@makeboxalign@left%
3170 %    \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
3171    \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
3172    \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3173    \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3174    \ifbool{mdf@leftline}{%
3175      \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3176      \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3177      \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
3178    \ifbool{mdf@rightline}{%
3179      \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3180      \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3181      \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
3182    \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
3183    \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
3184    \ifbool{mdf@bottomline}{%
3185      \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3186      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3187      \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
3188 %%%%%%%%%
3189    \ifbool{mdf@everyline}{%
3190     \ifbool{mdf@topline}{%
3191      \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3192      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
```

```
3193          \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
3194        }{}%
3195 %%%%%%%%%%%%%%
3196        \psset{unit=1truecm}%
3197      \mdf@makebox@in[\mdfboundingboxwidth]{%
3198          \null%
3199          \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
3200           \mdfpstricks@settings%
3201           \psset{linearc=\mdf@roundcorner@length,cornersize=absolut,}%
3202           \expandafter\psset\expandafter{\mdf@psset@local}%
3203           \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
3204           \pnode(0,0){mdf@O}
3205           \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3206           \ifbool{mdf@leftline}%
3207             {%
3208              \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3209                        +(\mdf@middlelinewidth@length,0)
3210                        +(\mdf@innerlinewidth@length,0)}{mdf@A}
3211              \nodexn{(mdf@O)+(\mdf@outerlinewidth@length,0)
3212                        +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}
3213             }{}%
3214           \ifbool{mdf@rightline}%
3215             {%
3216              \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
3217                         -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
3218             }{}%
3219           \ifbool{mdf@bottomline}%
3220             {%
3221              \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3222                        +(0,\mdf@middlelinewidth@length)
3223                        +(0,\mdf@innerlinewidth@length)}{mdf@A}
3224              \nodexn{(mdf@O)+(0,\mdf@outerlinewidth@length)
3225                        +0.5(0,\mdf@middlelinewidth@length)}{mdf@O}
3226             }{}%
3227 %%%%%%%%%%
3228         \ifbool{mdf@everyline}{%
3229          \ifbool{mdf@topline}%
3230             {%
3231              \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3232                         -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3233             }{}%
3234          }{}%
3235 %%%%%%%%%%
3236           %%
3237           \ifbool{mdf@shadow}
3238              {\pscustom[style=mdfshadow,linestyle=none]{%
3239                  \psline[linejoin=2,linecap=1,](mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)(mdf@P)%
3240                  \psline[linejoin=2,linecap=1,linearc=\z@](mdf@O|mdf@P)(mdf@P)
3241                  \closedshadow
3242                  }
3243              }{}
3244 %%%%%%%%%%%%
3245       \ifbool{mdf@everyline}{%
3246          %Four lines
3247           \mdf@test@ltrb{\mdf@pstricksbox@fl{mdf@O}{mdf@P}}{}
3248          %three lines
```

```
3249        \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
3250        \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@O)(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}}{}
3251        \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@O)(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}%
3252        \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}%
3253      %two lines combinded
3254      \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}%
3255                                        {(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)}}{}
3256      \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@O|mdf@P)(mdf@O)}%
3257                                        {(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}
3258      \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)}%
3259                                        {(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}
3260      \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@O)(mdf@P|mdf@O)(mdf@P)}%
3261                                        {(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
3262      %two lines not combinded combinded
3263      \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}
3264               }{}
3265      \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@O)}{(mdf@O|mdf@P)}
3266               }{}
3267    %single line
3268      \mdf@test@l{\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
3269      \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
3270      \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@O|mdf@P)}}{}
3271      \mdf@test@b{\mdf@pstricksbox@ol{(mdf@O)(mdf@P|mdf@O)}}{}
3272    %no line
3273      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
3274  }{%
3275   %Four + Three
3276   \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@lrb}}%
3277      {\mdf@pstricksbox@tl{(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}%
3278  %Two combinded
3279   \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
3280      {\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}%
3281                                        {(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)}}{}
3282   \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
3283      {\mdf@pstricksbox@tcl{(mdf@P)(mdf@O|mdf@P)(mdf@O)}%
3284                                        {(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}
3285  %Two not combinded
3286   \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
3287      {\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}}{}%
3288  %one line
3289   \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}%
3290      {\mdf@pstricksbox@ol{(mdf@O)(mdf@P|mdf@O)}}{}
3291   \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}%
3292      {\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
3293   \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}%
3294      {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
3295  %no line
3296   \mdf@test@t{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
3297   \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
3298  }%
3299  %Frametitlebackground
3300    \drawbrackgroundframetitle@second
3301  %output%
3302   \rput[bl](mdf@A){\box\mdf@splitbox@one}
3303   \mdf@secondextra
3304 %    \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
```

```
3305 %         \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3306 %         \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
3307     \end{pspicture}%
3308    }%
3309   \mdf@makeboxalign@right%
3310  }%
3311 \fi
3312 }%
3313 \def\drawbrackgroundframetitle@second{%
3314 \ifdefempty{\mdf@frametitle}{}{%
3315   \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3316  {}{%
3317    \drawbrackgroundframetitle@@second
3318  }%
3319 }%
3320 }%
3321 \def\drawbrackgroundframetitle@@second{%
3322 \begingroup%
3323   \ifbool{mdf@leftline}{%
3324       \nodexn{(mdf@O)+(\mdf@innerlinewidth@length,0)
3325             +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
3326       }{}%
3327   \ifbool{mdf@rightline}{%
3328       \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3329             -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3330       }{}%
3331   \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3332   \psline[style=mdfframetitlebackgroundstyle,linearc=\z@](mdf@O|mdf@F)(mdf@O|mdf@P)
3333                                             (mdf@P)(mdf@P|mdf@F)%
3334 \endgroup
3335 }


3336 \endinput
3337 %eof
```

C. The file mdframed-example-default

```
3338 %Documenation of the package mdframed
3339 %%$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $
3340 \setcounter{errorcontextlines}{999}
3341 \documentclass[parskip=false,english,11pt]{ltxmdf}
3342 \ltxmdfsetifoot  $Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $
3343
3344 \usepackage{showexpl}
3345 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3346
3347 \newcommand\Loadedframemethod{default}
3348 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3349
3350 \title{The \Pack{mdframed} package}
3351 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3352 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3353 \date{\mdfdateID$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $}
3354 \version{\mdversion}
3355 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
```

```
3356 Some presented examples are more or less exorbitant.}
3357
3358 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3359 \newrobustcmd\ExampleText{%
3360       An \textit{inhomogeneous linear} differential equation has the form
3361        \begin{align}
3362           L[v ] = f,
3363        \end{align}
3364       where $L$ is a linear differential operator, $v$ is
3365       the dependent variable, and $f$ is a given non-zero
3366       function of the independent variables alone.
3367 }
3368
3369 \newcounter{examplecount}
3370 \setcounter{examplecount}{0}
3371 \renewcommand\thesubsection{}
3372 \newcommand\Examplesec[1]{%
3373 \stepcounter{examplecount}%
3374 \subsection{Example~\arabic{examplecount}~--~#1\relax}%
3375 }
3376
3377 \begin{document}
3378 \maketitle
3379 \section{Loading}
3380 In the preamble only the package \Pack{mdframed} width the option \Opt{framemethod=\Loadedframemethod}
3381
3382 {\large\color{red!50!black}
3383 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3384
3385 \section{Examples}
3386 All examples have the following settings:
3387
3388 \begin{tltxmdfexample}
3389 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3390 \newrobustcmd\ExampleText{%
3391 An \textit{inhomogeneous linear} differential equation
3392 has the form
3393 \begin{align}
3394 L[v ] = f,
3395 \end{align}
3396 where $L$ is a linear differential operator, $v$ is
3397 the dependent variable, and $f$ is a given non-zero
3398 function of the independent variables alone.
3399 }
3400 \end{tltxmdfexample}
3401 \clearpage
3402 \Examplesec{very simple}
3403 \begin{LTXexample}
3404 \global\mdfdefinestyle{exampledefault}{%
3405      linecolor=red,linewidth=3pt,%
3406      leftmargin=1cm,rightmargin=1cm
3407 }
3408 \begin{mdframed}[style=exampledefault]
3409 \ExampleText
3410 \end{mdframed}
3411 \end{LTXexample}
```

```
3412
3413 \Examplesec{hidden line + frame title}
3414 \begin{LTXexample}
3415 \global\mdfapptodefinestyle{exampledefault}{%
3416  topline=false,rightline=true,bottomline=false}
3417 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3418 \ExampleText
3419 \end{mdframed}
3420 \end{LTXexample}
3421 \clearpage
3422
3423 \Examplesec{colored frame title}
3424 \begin{LTXexample}
3425
3426 \global\mdfapptodefinestyle{exampledefault}{%
3427    rightline=true,innerleftmargin=10,innerrightmargin=10,
3428    frametitlerule=true,frametitlerulecolor=green,
3429    frametitlebackgroundcolor=yellow,
3430    frametitlerulewidth=2pt}
3431 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3432 \ExampleText
3433 \end{mdframed}
3434 \end{LTXexample}
3435
3436 \Examplesec{framed picture which is centered}
3437 \begin{LTXexample}
3438 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3439                  linecolor=blue,linewidth=4pt]
3440 \includegraphics[width=\linewidth]{donald-duck}
3441 \end{mdframed}
3442 \end{LTXexample}
3443
3444 \clearpage
3445 \Examplesec{Theorem environments}
3446 \begin{LTXexample}
3447 \mdfdefinestyle{theoremstyle}{%
3448     linecolor=red,linewidth=2pt,%
3449     frametitlerule=true,%
3450     frametitlebackgroundcolor=gray!20,
3451     innertopmargin=\topskip,
3452    }
3453 \mdtheorem[style=theoremstyle]{definition}{Definition}
3454 \begin{definition}
3455 \ExampleText
3456 \end{definition}
3457 \begin{definition}[Inhomogeneous linear]
3458 \ExampleText
3459 \end{definition}
3460 \begin{definition*}[Inhomogeneous linear]
3461 \ExampleText
3462 \end{definition*}
3463 \end{LTXexample}
3464
3465
3466 \clearpage
3467 \Examplesec{theorem with separate header and the help of TikZ (complex)}
```

```
3468 \begin{LTXexample}
3469 \newcounter{theo}[section]
3470 \newenvironment{theo}[1][]{%
3471  \stepcounter{theo}%
3472   \ifstrempty{#1}%
3473   {\mdfsetup{%
3474     frametitle={%
3475       \tikz[baseline=(current bounding box.east),outer sep=0pt]
3476        \node[anchor=east,rectangle,fill=blue!20]
3477        {\strut Theorem~\thetheo};}}
3478   }%
3479   {\mdfsetup{%
3480      frametitle={%
3481        \tikz[baseline=(current bounding box.east),outer sep=0pt]
3482        \node[anchor=east,rectangle,fill=blue!20]
3483        {\strut Theorem~\thetheo:~#1};}}%
3484   }%
3485   \mdfsetup{innertopmargin=10pt,linecolor=blue!20,%
3486            linewidth=2pt,topline=true,
3487            frametitleaboveskip=\dimexpr-\ht\strutbox\relax,}
3488   \begin{mdframed}[]\relax%
3489   }{\end{mdframed}}
3490 \begin{theo}[Inhomogeneous Linear]
3491 \ExampleText
3492 \end{theo}
3493
3494 \begin{theo}
3495 \ExampleText
3496 \end{theo}
3497 \end{LTXexample}
3498
3499 \clearpage
3500 \Examplesec{hide only a part of a line}
3501 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com
3502 \begin{LTXexample}
3503 \makeatletter
3504 \newlength{\interruptlength}
3505 \setlength{\interruptlength}{2.5ex}
3506 \newrobustcmd\overlaplines{%
3507  \appto\mdf@frame@leftline@single{%
3508    \llap{\color{white}%
3509      \rule[\dimexpr-\mdfboundingboxdepth+\interruptlength\relax]%
3510          {\mdf@middlelinewidth@length}%
3511          {\dimexpr\mdfboundingboxtotalheight%
3512           \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}
3513           -2\interruptlength\relax}%
3514   }%
3515 }%
3516 \appto\mdf@frame@rightline@single{%
3517   \rlap{\color{white}%
3518     \hspace*{\mdfboundingboxwidth}%
3519     \hspace*{\mdf@innerrightmargin@length}%
3520     \rule[\dimexpr-\mdfboundingboxdepth%
3521           +\interruptlength\relax]%
3522          {\mdf@middlelinewidth@length}%
3523          {\dimexpr\mdfboundingboxtotalheight%
```

```
3524            +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}
3525            -2\interruptlength\relax}%
3526     }%
3527  }%
3528 }
3529 \makeatother
3530 \overlaplines
3531
3532 \begin{mdframed}[linecolor=blue,linewidth=8pt]
3533 \ExampleText
3534 \end{mdframed}
3535 \end{LTXexample}
3536 \end{document}
3537  \endinput
```

D.   The file mdframed-example-tikz

```
3538 %Documenation of the package mdframed
3539 %%$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $
3540 \setcounter{errorcontextlines}{999}
3541 \documentclass[parskip=false,english,11pt]{ltxmdf}
3542 \ltxmdfsetifoot  $Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $
3543
3544
3545 \usepackage{showexpl}
3546 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3547
3548 \newcommand\Loadedframemethod{TikZ}
3549 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3550
3551 \title{The \Pack{mdframed} package}
3552 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3553 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3554 \date{\mdfdateID$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $}
3555 \version{\mdversion}
3556 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3557 Some presented examples are more or less exorbitant.}
3558
3559 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3560 \newrobustcmd\ExampleText{%
3561         An \textit{inhomogeneous linear} differential equation has the form
3562          \begin{align}
3563             L[v ] = f,
3564          \end{align}
3565         where $L$ is a linear differential operator, $v$ is
3566         the dependent variable, and $f$ is a given non-zero
3567         function of the independent variables alone.
3568 }
3569
3570 \newcounter{examplecount}
3571 \setcounter{examplecount}{0}
3572 \renewcommand\thesubsection{}
3573 \newcommand\Examplesec[1]{%
3574 \stepcounter{examplecount}%
3575 \subsection{Example~\arabic{examplecount}~--~#1\relax}%
3576 }
```

```
3577
3578 \begin{document}
3579 \maketitle
3580 \section{Loading}
3581 In the preamble only the package \Pack{mdframed} width the option \Opt{framemethod=\Loadedframemethod}
3582
3583 {\large\color{red!50!black}
3584 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3585
3586 \section{Examples}
3587 All examples have the following settings:
3588
3589 \begin{tltxmdfexample}
3590 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3591 \newrobustcmd\ExampleText{%
3592 An \textit{inhomogeneous linear} differential equation
3593 has the form
3594 \begin{align}
3595 L[v ] = f,
3596 \end{align}
3597 where $L$ is a linear differential operator, $v$ is
3598 the dependent variable, and $f$ is a given non-zero
3599 function of the independent variables alone.
3600 }
3601 \end{tltxmdfexample}
3602 \clearpage
3603 \ExampleText{round corner}
3604 \begin{LTXexample}
3605 \global\mdfdefinestyle{exampledefault}{%
3606     outerlinewidth=5pt,innerlinewidth=0pt,
3607     outerlinecolor=red,roundcorner=5pt
3608 }
3609 \begin{mdframed}[style=exampledefault]
3610 \ExampleText
3611 \end{mdframed}
3612 \end{LTXexample}
3613
3614 \Examplesec{hidden line + frame title}
3615 \begin{LTXexample}
3616 \global\mdfapptodefinestyle{exampledefault}{%
3617  topline=false,leftline=false,}
3618 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3619 \ExampleText
3620 \end{mdframed}
3621 \end{LTXexample}
3622 \clearpage
3623 \Examplesec{framed picture which is centered}
3624 \begin{LTXexample}
3625 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3626                 linecolor=blue,middlelinewidth=4pt,roundcorner=5pt]
3627 \includegraphics[width=\linewidth]{donald-duck}
3628 \end{mdframed}
3629 \end{LTXexample}
3630
3631 \Examplesec{Gimmick}
3632 \begin{LTXexample}
```

```
3633 \mdfsetup{splitbottomskip=0.8cm,splittopskip=0cm,
3634         innerrightmargin=2cm,innertopmargin=1cm,%
3635         innerlinewidth=2pt,outerlinewidth=2pt,
3636         middlelinewidth=10pt,backgroundcolor=red,
3637         linecolor=blue,middlelinecolor=gray,
3638         tikzsetting={draw=yellow,line width=3pt,%
3639                 dashed,%
3640                 dash pattern= on 10pt off 3pt},
3641         rightline=false,bottomline=false}
3642 \begin{mdframed}
3643 \ExampleText
3644 \end{mdframed}
3645 \end{LTXexample}
3646
3647 \Examplesec{complex example with TikZ}
3648
3649 \begin{tltxmdfexample}
3650 \tikzstyle{titregris} =
3651     [draw=gray, thick, fill=white, shading = exersicetitle, %
3652      text=gray, rectangle, rounded corners, right,minimum height=.7cm]
3653
3654 \pgfdeclarehorizontalshading{exersicebackground}{100bp}
3655         {color(0bp)=(green!40); color(100bp)=(black!5)}
3656
3657 \pgfdeclarehorizontalshading{exersicetitle}{100bp}
3658         {color(0bp)=(red!40);color(100bp)=(black!5)}
3659
3660 \newcounter{exercise}
3661 \renewcommand*\theexercise{Exercise~n\arabic{exercise}}
3662 \makeatletter
3663 \def\mdf@@exercisepoints{}%new mdframed key:
3664 \define@key{mdf}{exercisepoints}{%
3665     \def\mdf@@exercisepoints{#1}
3666 }
3667 \makeatother
3668
3669 \mdfdefinestyle{exercisestyle}{%
3670   outerlinewidth=1pt,innerlinewidth=0pt,
3671   roundcorner=2pt,linecolor=gray,
3672   tikzsetting={shading = exersicebackground},
3673   innertopmargin=1.2\baselineskip,
3674   skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
3675   needspace=3\baselineskip,
3676   frametitlefont=\sffamily\bfseries,
3677   settings={\global\stepcounter{exercise}},
3678   singleextra={%
3679         \node[titregris,xshift=1cm] at (P-|O) %
3680             {~\mdf@frametitlefont{\theexercise}~};
3681     \ifdefempty{\mdf@@exercisepoints}%
3682     {}%
3683     {\node[titregris,left,xshift=-1cm] at (P)%
3684       {~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
3685   },
3686   firstextra={%
3687         \node[titregris,xshift=1cm] at (P-|O) %
3688             {~\mdf@frametitlefont{\theexercise}~};
```

```
3689       \ifdefempty{\mdf@@exercisepoints}%
3690       {}%
3691       {\node[titregris,left,xshift=-1cm] at (P)%
3692          {~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
3693    },
3694 }
3695 \begin{mdframed}[style=exercisestyle,]
3696 \ExampleText
3697 \end{mdframed}
3698
3699 \begin{mdframed}[style=exercisestyle,exercisepoints=10]
3700 \ExampleText
3701 \end{mdframed}
3702 \end{tltxmdfexample}
3703 \clearpage
3704 \Examplesec{Theorem environments}
3705 \begin{LTXexample}
3706 \mdfdefinestyle{theoremstyle}{%
3707      linecolor=red,linewidth=2pt,%
3708      frametitlerule=true,%
3709      apptotikzsetting={\tikzset{mdfframetitlebackground/.append style={%
3710                          shade,left color=white, right color=blue!20}}},
3711      frametitlerulecolor=green!60,
3712      frametitlerulewidth=1pt,
3713      innertopmargin=\topskip,
3714    }
3715 \mdtheorem[style=theoremstyle]{definition}{Definition}
3716 \begin{definition}[Inhomogeneous linear]
3717 \ExampleText
3718 \end{definition}
3719 \begin{definition*}[Inhomogeneous linear]
3720 \ExampleText
3721 \end{definition*}
3722 \end{LTXexample}
3723
3724 \end{document}
3725  \endinput
```

E. The file mdframed-example-pstricks

```
3726 %Documenation of the package mdframed
3727 %%$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $
3728 \setcounter{errorcontextlines}{999}
3729 \documentclass[parskip=false,english,11pt]{ltxmdf}
3730 \ltxmdfsetifoot$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $
3731
3732 \lstDeleteShortInline{|}
3733 \newcommand\Loadedframemethod{PSTricks}
3734 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3735
3736 \usepackage{showexpl}
3737 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3738
3739 \title{The \Pack{mdframed} package}
3740 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3741 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
```

```
3742 \date{\mdfdateID$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $}
3743 \version{\mdversion}
3744 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3745 Some presented examples are more or less exorbitant.}
3746
3747 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3748 \newrobustcmd\ExampleText{%
3749       An \textit{inhomogeneous linear} differential equation has the form
3750        \begin{align}
3751          L[v ] = f,
3752        \end{align}
3753       where $L$ is a linear differential operator, $v$ is
3754       the dependent variable, and $f$ is a given non-zero
3755       function of the independent variables alone.
3756 }
3757
3758 \newcounter{examplecount}
3759 \setcounter{examplecount}{0}
3760 \renewcommand\thesubsection{}
3761 \newcommand\Examplesec[1]{%
3762 \stepcounter{examplecount}%
3763 \subsection{Example~\arabic{examplecount}~--~#1\relax}%
3764 }
3765
3766 \begin{document}
3767 \maketitle
3768 \section{Loading}
3769 In the preamble only the package \Pack{mdframed} width the option \Opt{framemethod=\Loadedframemethod}
3770
3771 {\large\color{red!50!black}
3772 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3773 X
3774 \section{Examples}
3775 All examples have the following settings:
3776
3777 \begin{tltxmdfexample}
3778 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3779 \newrobustcmd\ExampleText{%
3780 An \textit{inhomogeneous linear} differential equation
3781 has the form
3782 \begin{align}
3783 L[v ] = f,
3784 \end{align}
3785 where $L$ is a linear differential operator, $v$ is
3786 the dependent variable, and $f$ is a given non-zero
3787 function of the independent variables alone.
3788 }
3789 \end{tltxmdfexample}
3790 \clearpage
3791
3792 \Examplesec{very simple}
3793 \begin{LTXexample}
3794 \global\mdfdefinestyle{exampledefault}{%
3795      linecolor=red,middlelinewidth=3pt,%
3796      leftmargin=1cm,rightmargin=1cm
3797 }
```

```
3798 \begin{mdframed}[style=exampledefault,roundcorner=5]
3799 \ExampleText
3800 \end{mdframed}
3801 \end{LTXexample}
3802
3803 \Examplesec{hidden line + frame title}
3804 \begin{LTXexample}
3805 \global\mdfapptodefinestyle{exampledefault}{%
3806   topline=false,rightline=false,bottomline=false,
3807   frametitlerule=true,innertopmargin=6pt,
3808   outerlinewidth=6pt,outerlinecolor=blue,
3809   pstricksappsetting={\addtopsstyle{mdfouterlinestyle}{linestyle=dashed}},
3810   innerlinecolor=yellow,innerlinewidth=5pt}%
3811 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3812 \ExampleText
3813 \end{mdframed}
3814 \end{LTXexample}
3815
3816 \clearpage
3817
3818 \Examplesec{Dash Lines}
3819 \begin{LTXexample}
3820 \global\mdfdefinestyle{exampledefault}{%
3821     pstrickssetting={linestyle=dashed,},linecolor=red,linewidth=5pt}
3822 \begin{mdframed}[style=exampledefault,]
3823 \ExampleText
3824 \end{mdframed}
3825 \end{LTXexample}
3826
3827 \Examplesec{Double Lines}
3828 \begin{LTXexample}
3829 \global\mdfdefinestyle{exampledefault}{%
3830     pstrickssetting={doubleline=true,doublesep=6pt},
3831     linecolor=red,linewidth=5pt,middlelinewidth=4pt}
3832 \begin{mdframed}[style=exampledefault,]
3833 \ExampleText
3834 \end{mdframed}
3835 \end{LTXexample}
3836
3837 \Examplesec{Shadow frame}
3838 \begin{LTXexample}
3839 \newmdenv[shadow=true,
3840           shadowsize=11pt,
3841           linewidth=8pt,
3842           frametitlerule=true,
3843           roundcorner=10pt,
3844           ]{myshadowbox}
3845 \begin{myshadowbox}[frametitle={Inhomogeneous linear}]
3846 \ExampleText
3847 \end{myshadowbox}
3848 \end{LTXexample}
3849 \end{document}
3850  \endinput
```

F. The file mdframed-example-texsx

```
3851 %Documenation of the package mdframed
3852 %%$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $
3853 \setcounter{errorcontextlines}{999}
3854 \documentclass[parskip=false,english,11pt,ltxlipsum]{ltxmdf}
3855 \ltxmdfsetifoot  $Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $
3856
3857
3858 \usepackage{showexpl}
3859 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3860 \usepackage{tikz}
3861 \usetikzlibrary{calc,arrows}
3862 \newcommand\Loadedframemethod{tikz}
3863 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3864
3865 \title{The \Pack{mdframed} package}
3866 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3867 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3868 \date{\mdfdateID$Id: mdframed.dtx 383 2012-04-20 13:38:38Z marco $}
3869 \version{\mdversion}
3870 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3871 Some presented examples are more or less exorbitant.}
3872
3873 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3874 \newrobustcmd\ExampleText{%
3875       An \textit{inhomogeneous linear} differential equation has the form
3876        \begin{align}
3877           L[v ] = f,
3878        \end{align}
3879       where $L$ is a linear differential operator, $v$ is
3880       the dependent variable, and $f$ is a given non-zero
3881       function of the independent variables alone.
3882 }
3883
3884 \newcounter{examplecount}
3885 \setcounter{examplecount}{0}
3886 \renewcommand\thesubsection{}
3887 \newcommand\Examplesec[1]{%
3888 \stepcounter{examplecount}%
3889 \subsection{Example~\arabic{examplecount}~--~#1\relax}%
3890 }
3891
3892 \begin{document}
3893 \maketitle
3894 \section{Loading}
3895 In the preamble only the package \Pack{mdframed} width the option \Opt{framemethod=\Loadedframemethod}
3896
3897 {\large\color{red!50!black}
3898 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3899
3900 \section{Examples}
3901 All examples have the following settings:
3902
3903 \begin{tltxmdfexample}
3904 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3905 \newrobustcmd\ExampleText{%
3906 An \textit{inhomogeneous linear} differential equation
```

```
3907 has the form
3908 \begin{align}
3909 L[v ] = f,
3910 \end{align}
3911 where $L$ is a linear differential operator, $v$ is
3912 the dependent variable, and $f$ is a given non-zero
3913 function of the independent variables alone.
3914 }
3915 \end{tltxmdfexample}
3916 \clearpage
3917 \Examplesec{Package listings}
3918 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com
3919
3920 Here the solution which can be decorate as usual.
3921
3922 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}
3923 \BeforeBeginEnvironment{lstlisting}{%
3924     \begin{mdframed}[<modification>]%
3925     \vspace{-0.7em}}
3926 \AfterEndEnvironment{lstlisting}{%
3927     \vspace{-0.5em}%
3928     \end{mdframed}}
3929 \end{tltxmdfexample}
3930
3931 With the new command \Cmd{surroundwithmdframed} you can use
3932 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}
3933 \surroundwithmdframed{listings}
3934 \end{tltxmdfexample}
3935
3936 \Examplesec{Package multicol}
3937 How I wrote in \enquote{Known Problems} you can't combine \Pack{multicol}  with \Pack{mdframed}. In a s
3938 \begin{LTXexample}
3939 \begin{multicols}{2}
3940 \lipsum[1]
3941 \begin{mdframed}
3942 \ExampleText
3943 \end{mdframed}
3944 \lipsum[2]
3945 \end{multicols}
3946 \end{LTXexample}
3947 \clearpage
3948 \twocolumn[\Examplesec{Working in twocolumn mode}]
3949 \begin{tltxmdfexample}
3950 \twocolumn[%
3951   \Examplesec{Working in
3952         twocolumn mode}]
3953 \lipsum[1]\lipsum[2]
3954 \begin{mdframed}[%
3955     leftmargin=10pt,%
3956     rightmargin=10pt,%
3957     linecolor=red,
3958     backgroundcolor=yellow]
3959 \ExampleText
3960 \end{mdframed}
3961 \lipsum[2]
3962 \end{tltxmdfexample}
```

```
3963 \lipsum[1]\lipsum[2]
3964 \begin{mdframed}[leftmargin=10pt,%
3965                  rightmargin=10pt,%
3966                  linecolor=red,
3967                  backgroundcolor=yellow]
3968 \ExampleText
3969 \end{mdframed}
3970 \lipsum[2]
3971 \clearpage
3972 \onecolumn
3973 \Examplesec{Working inside enumerate}
3974 \begin{LTXexample}
3975 Text Text Text Text Text Text Text Text
3976 \begin{enumerate}
3977 \item in the following \ldots
3978     \begin{mdframed}[linecolor=blue,linewidth=2]
3979         \ExampleText
3980     \end{mdframed}
3981 \item \lipsum[2]
3982 \end{enumerate}
3983 Text Text Text Text Text Text
3984 \end{LTXexample}
3985 \clearpage
3986 \Examplesec{Position a specific symbol at a line}
3987 \begin{LTXexample}
3988 \tikzset{
3989   warningsymbol/.style={
3990       rectangle,draw=red,
3991       fill=white,scale=1,
3992       overlay}}
3993 \mdfdefinestyle{warning}{%
3994 hidealllines=true,leftline=true,
3995 skipabove=12,skipbelow=12pt,
3996 innertopmargin=0.4em,%
3997 innerbottommargin=0.4em,%
3998 innerrightmargin=0.7em,%
3999 rightmargin=0.7em,%
4000 innerleftmargin=1.7em,%
4001 leftmargin=0.7em,%
4002 middlelinewidth=.2em,%
4003 linecolor=red,%
4004 fontcolor=red,%
4005 firstextra={\path let \p1=(P), \p2=(O) in ($(\x2,0)+0.5*(0,\y1)$)
4006                         node[warningsymbol] {\$};},%
4007 secondextra={\path let \p1=(P), \p2=(O) in ($(\x2,0)+0.5*(0,\y1)$)
4008                         node[warningsymbol] {\$};},%
4009 middleextra={\path let \p1=(P), \p2=(O) in ($(\x2,0)+0.5*(0,\y1)$)
4010                         node[warningsymbol] {\$};},%
4011 singleextra={\path let \p1=(P), \p2=(O) in ($(\x2,0)+0.5*(0,\y1)$)
4012                         node[warningsymbol] {\$};},%
4013 }
4014 \begin{mdframed}[style=warning]
4015 \ExampleText
4016 \end{mdframed}
4017 \end{LTXexample}
4018
```

```
4019 \clearpage
4020 \Examplesec{digression-environement inspired by Tobias Weh}
4021 \begin{lstlisting}
4022 \usetikzlibrary{calc,arrows}
4023 \tikzset{
4024    excursus arrow/.style={%
4025        line width=2pt,
4026        draw=gray!40,
4027        rounded corners=2ex,
4028    },
4029    excursus head/.style={
4030        fill=white,
4031        font=\bfseries\sffamily,
4032        text=gray!80,
4033        anchor=base west,
4034    },
4035 }
4036 \mdfdefinestyle{digressionarrows}{%
4037  singleextra={%
4038        \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4039        \path let \p1=(Q), \p2=(O) in (\x1,{(\y1-\y2)/2}) coordinate (M);
4040        \path [excursus arrow, round cap-to]
4041           ($(O)+(5em,0ex)$) -| (M) |- %
4042           ($(Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4043           ++(23em,2ex);
4044        \node [excursus head] at ($(Q)+(2.5em,-0.75pt)$) {Digression};},
4045  firstextra={%
4046        \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4047        \path [excursus arrow,-to]
4048           (O) |- %
4049           ($(Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4050           ++(23em,2ex);
4051        \node [excursus head] at ($(Q)+(2.5em,-2pt)$) {Digression};},
4052  secondextra={%
4053        \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4054        \path [excursus arrow,round cap-]
4055           ($(O)+(5em,0ex)$) -| (Q);},
4056  middleextra={%
4057        \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4058        \path [excursus arrow]
4059           (O) -- (Q);},
4060    middlelinewidth=2.5em,middlelinecolor=white,
4061    hidealllines=true,topline=true,
4062    innertopmargin=0.5ex,
4063    innerbottommargin=2.5ex,
4064    innerrightmargin=2pt,
4065    innerleftmargin=2ex,
4066    skipabove=0.87\baselineskip,
4067    skipbelow=0.62\baselineskip,
4068 }
4069
4070 \begin{mdframed}[style=digressionarrows]
4071        \ExampleText
4072 \end{mdframed}
4073 \end{lstlisting}
4074
```

```
4075 \tikzset{
4076    excursus arrow/.style={%
4077       line width=2pt,
4078       draw=gray!40,
4079       rounded corners=2ex,
4080    },
4081    excursus head/.style={
4082       fill=white,
4083       font=\bfseries\sffamily,
4084       text=gray!80,
4085       anchor=base west,
4086    },
4087 }
4088 \mdfdefinestyle{digressionarrows}{%
4089  singleextra={%
4090       \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4091       \path let \p1=(Q), \p2=(O) in (\x1,{(\y1-\y2)/2}) coordinate (M);
4092       \path [excursus arrow, round cap-to]
4093          ($(O)+(5em,0ex)$) -| (M) |- %
4094          ($(Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4095          ++(23em,2ex);
4096       \node [excursus head] at ($(Q)+(2.5em,-0.75pt)$) {Digression};},
4097  firstextra={%
4098       \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4099       \path [excursus arrow,-to]
4100          (O) |- %
4101          ($(Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4102          ++(23em,2ex);
4103       \node [excursus head] at ($(Q)+(2.5em,-2pt)$) {Digression};},
4104  secondextra={%
4105       \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4106       \path [excursus arrow,round cap-]
4107          ($(O)+(5em,0ex)$) -| (Q);},
4108  middleextra={%
4109       \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4110       \path [excursus arrow]
4111          (O) -- (Q);},
4112    middlelinewidth=2.5em,middlelinecolor=white,
4113    hidealllines=true,topline=true,
4114    innertopmargin=0.5ex,
4115    innerbottommargin=2.5ex,
4116    innerrightmargin=2pt,
4117    innerleftmargin=2ex,
4118    skipabove=0.87\baselineskip,
4119    skipbelow=0.62\baselineskip,
4120 }
4121
4122 \begin{mdframed}[style=digressionarrows]
4123       \ExampleText
4124 \end{mdframed}
4125 \end{document}
4126  \endinput
```

G. Change History

H. Index

The index only collect package relevant words.