

The `mdframed` package ¹

auto-split frame environment

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v1.5

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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.

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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.*

¹Extending 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.

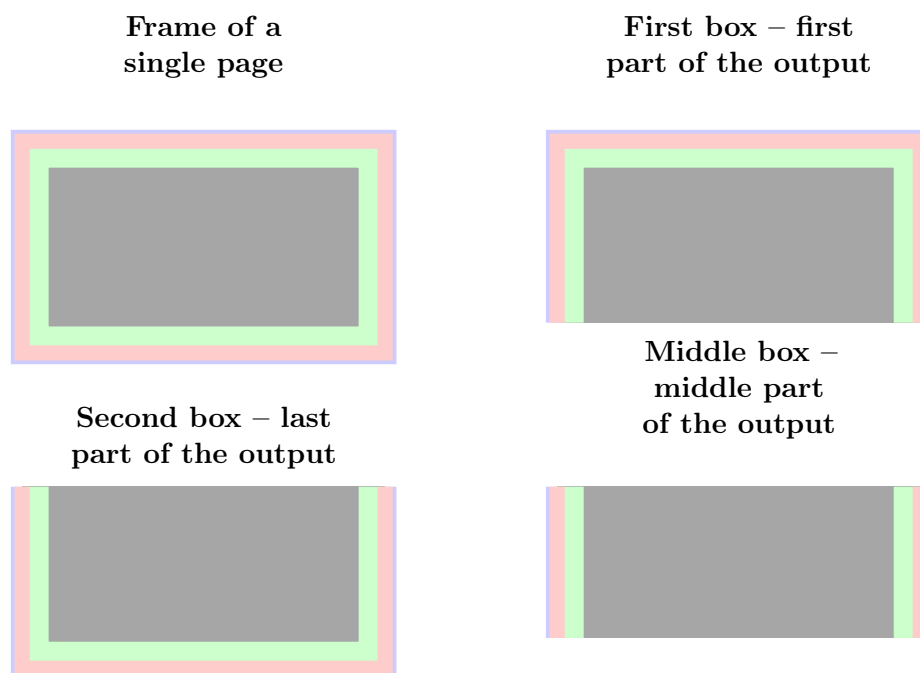


Figure 1: The basic frames

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`.

²Thanks to Heiko Oberdiek and Philipp Stephani [kvoptions-Declaration von Optionen schlägt fehl](#)

³Thanks 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	<code>default</code> , <code>tex</code> , <code>latex</code> , <code>none</code> , <code>0</code>
<code>TikZ</code>	<code>tikz</code> , <code>pgf</code> , <code>1</code>
<code>PSTricks</code>	<code>pstricks</code> , <code>ps</code> , <code>postscript</code> , <code>2</code>

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.

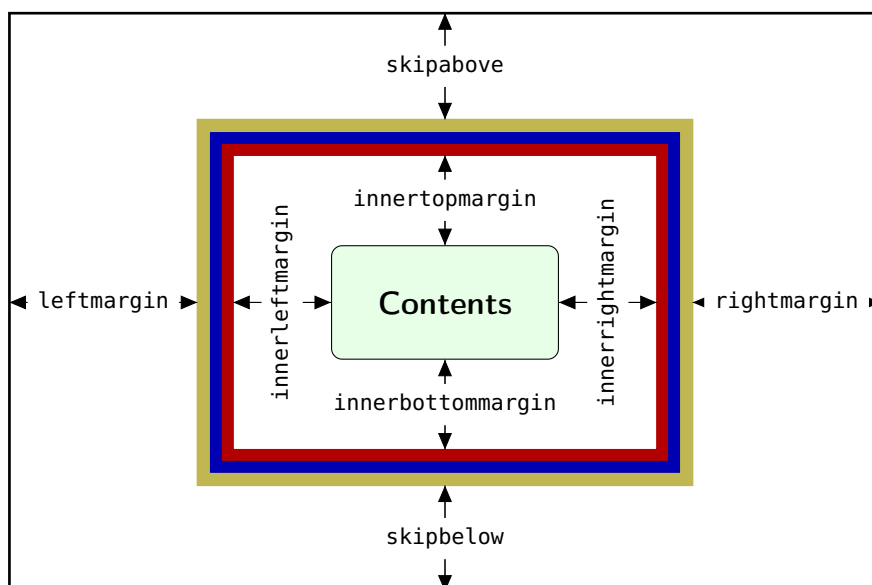


Figure 2: adjustable lengths of mdframed

`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 0pt.

`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=`8pt`

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 `\addtopstyle` 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.

`hideallllines` 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 command⁴ 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 formatting 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.

⁴Thanks 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 T_EXGroup 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 unknown. 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 3cm 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](mailto:marco.daniel@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 `\@capytype` global. To work with the package `picins` you can use the following hack.

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

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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 sequentially (done by `md-frame-X.mdf`). The following figure demonstrates this.

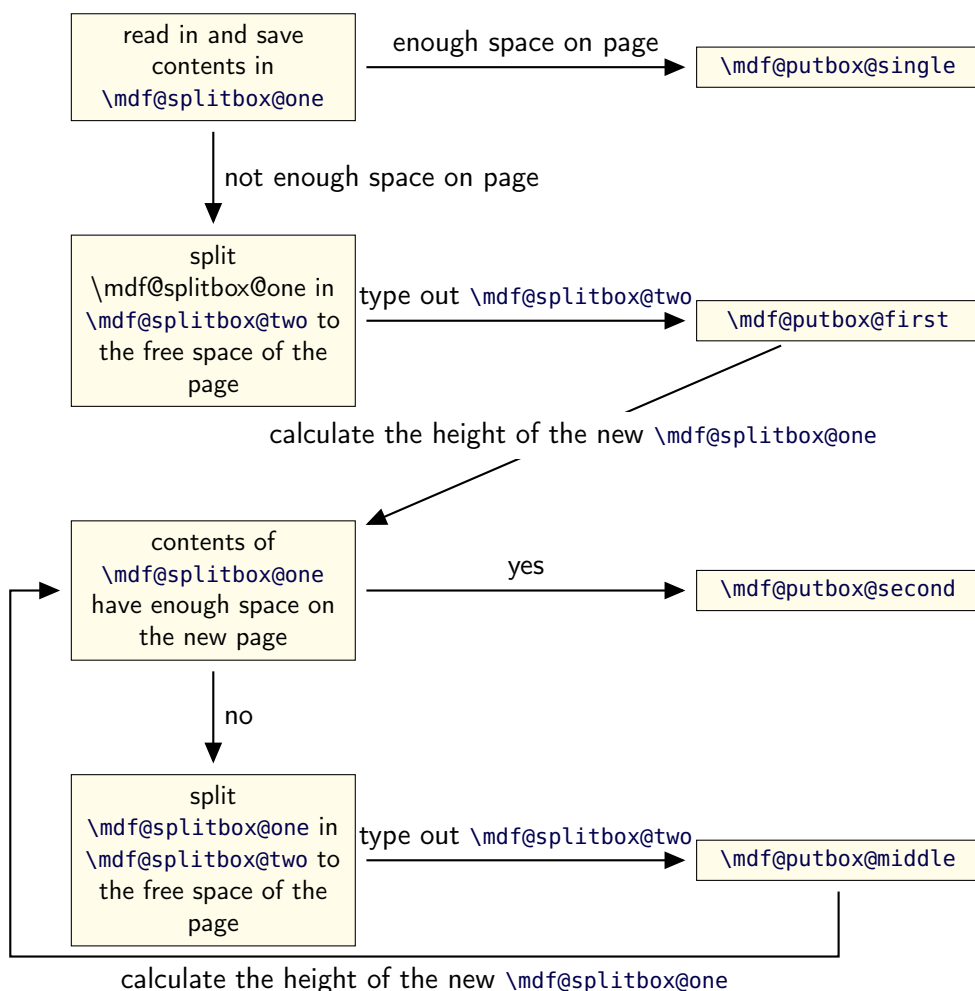


Figure 3: Setting the contents of `mdframed`

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 1.5 submitted DD MM 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 Schwan) • 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 unnecessary 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@lrbbox`

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 fix 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.dtx3732012-04-06 10:59:28Zmarco Rev : 373 Author : marco

Date : 2012-04-06 10:59:28 +0200(Fr, 06.Apr 2012)

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

Set package information

```
1 \def\mdversion{v1.5}
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 373 2012-04-06 10:59:28Z 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{xparse}
22 \RequirePackage{etoolbox}[2011/01/03]
23 \RequirePackage{zref-abspage}
24 \RequirePackage{color}
```

Set the family and the prefix of all options. (see documentation of `kvoptions`)

```
25 \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>}`

```

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

`\mdf@dolist`

Loop used by *mdframed*.

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

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

Command to define a new length with a default value.

```

\mdf@option@length{<Laengebezeichnung>}{<Defaultwert>}
43 \newrobustcmd*{\mdf@option@length}[2]{%
44   \expandafter\newlength\csname mdfl@#1@length\endcsname%
45   \expandafter\setlength\csname mdfl@#1@length\endcsname{#2}%
46 }
```

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

```

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

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

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

```

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

```

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

```

```

\mdf@do@stringoption
\mdf@stringoption@doubledo

```

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

```

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

```

```

\mdf@do@booloption
\mdf@booloption@doubledo

```

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

```

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

```

```

\mdf@do@alignoption
\mdf@alignoption@tripleo

```

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

```

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

```

Start declaration of options

```

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

```

Only provide to be backward compatible

```

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

```

```

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

```

\mdf@framemethod

```

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

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

```

\mdf@do@lengthoption

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

```

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

```

```

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

```

`\mdf@do@lengthoption`

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

```

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

```


`\mdf@do@booloption`

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

```

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

`\mdf@do@alignoption`

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

```

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

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

Set the alignment.

```

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

```

```

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

```

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

Option to pass options to tikz or pstricks

```

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

```

`\mdf@xcolor`

Problem with xcolor. This part must be reworked!

```

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

```

`\mdf@needspace`

Defining the option needspace

```

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

```

```

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

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

```

\mdfsetup

Short form of `\setkeys{mdf}`

```
279 \newrobustcmd*{\mdfsetup}{\setkeys{mdf}}
```

\mdf@style

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

```

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

```

\mdf@print@space

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

```

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

```

`\new...`

Initialize all commands and length which will we used later

```

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

```

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

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

```

346
347 \def\mdf@lrbox#1{%
348 %%patch to work with amsthm
349 \mdf@patchamsthm
350 %%end patch
351 \edef\mdf@restoreparams{%
352 \parindent=\the\parindent \parskip=\the\parskip}
353 \setbox#1\vbox\bgroup
354 \color@begingroup%
355 \mdf@horizontalmargin@equation%

```

```

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

```

```

\mdf@ignorevbadness
\mdf@restorevbadness

```

Avoiding warnings during the splitting process by `\vsplit`. see [How to avoid underfull vbox in combination with \vsplit?](#)

```

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

```

374 \ifpackageloaded{amsthm}{%
375 \newrobustcmd\mdf@patchamsth{%
376 \let\mdf@deferred@thm@head\deferred@thm@head
377 \patchcmd{\deferred@thm@head}{\indent}{\relax}{}{}
378 }%
379 }{\let\mdf@patchamsth\relax}%

```

```

\mdf@trivlist
\endmdf@trivlist

```

Modification of the default `\trivlist` and `\endtrivlist`.

```

380 \def\mdf@trivlist#1{%
381 \setlength{\topsep}{#1}%
382 \partopsep\z@%
383 \parsep\z@%
384 \@nmbrolistfalse%
385 \@trivlist%
386 \labelwidth\z@%
387 \leftmargin\z@%
388 \itemindent\z@%
389 \let\@itemlabel\@empty%
390 \def\makelabel##1{##1}%
391 %% \item\leavevmode\hrule \@height\z@ \@width\linewidth\relax%
392 %% \item\mbox{}\relax% second version

```

```

393 \item\relax% first Version
394 }
395 \let\endmdf@trivlist\endtrivlist
396 \patchcmd\endmdf@trivlist\@endparenv\mdf@endparenv{}\{\}
397 \def\mdf@endparenv{%
398 \addpenalty\@endparpenalty\addvspace\mdf@skipbelow@length\@endpetrue}
399

```

```

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

```

```

400 \newrobustcmd*\mdf@makebox@out[2][\linewidth]{%
401 \noindent\hb@xt@\z@{%
402 \noindent\makebox[\dimexpr #1\relax][l]{#2}%
403 \hss}%
404 }%
405 \newrobustcmd*\mdf@makebox@in[2][\mdf@userdefinedwidth@length]{%
406 \noindent\makebox[\dimexpr #1\relax][l]{#2}%
407 }

```

```

\mdfdefinestyle
\mdfapptodefinestyle

```

See explanation of this commands above.

```

408 \newrobustcmd*\mdfdefinestyle[2]{%
409 \csdef{mdf@definestyle@#1}{#2}%
410 }
411 \newrobustcmd*\mdfapptodefinestyle[2]{%
412 \ifcsundef{mdf@definestyle@#1}%
413 {\mdf@PackageWarning{Unknown style #1}}%
414 {\csappto{mdf@definestyle@#1}{, #2}}%
415 }

```

```

\mdflength
\surroundwithmdframed

```

Helper macros to work with *mdframed*

```

416 \newrobustcmd*\mdflength[1]{\csuse{mdf@#1@length}}
417
418 \newrobustcmd*\surroundwithmdframed[2][]{%
419 \BeforeBeginEnvironment{#2}{\begin{mdframed}[#1]}%
420 \AfterEndEnvironment{#2}{\end{mdframed}}%
421 }

```

```

\newmdenv
\renewmdenv
\newmdtheoremenv
\mdtheorem

```

Defining of the new environment definitions.

```

422 \newrobustcmd*\newmdenv[2][]{%
423 \newenvironment{#2}{%

```

```

424 \mdfsetup{#1}%
425 \begin{mdframed}%
426 }{%
427 \end{mdframed}%
428 }%
429 }
430 \newrobustcmd*\renewmdenv[2][ ]{%
431 \expandafter\let\csname #2\endcsname\relax%
432 \expandafter\let\csname end#2\endcsname\relax%
433 \newmdenv[#1]{#2}%
434 }%
435
436
437 \DeclareDocumentCommand\newmdtheoremenv{0}{ m o m o }{%
438 \ifboolexpr{ test {\IfNoValueTF {#3}} and test {\IfNoValueTF {#5}} }{%
439 {\newtheorem{#2}{#4}}{%
440 \IfValueTF{#3}{\newtheorem{#2}[#3]{#4}}{%
441 \IfValueTF{#5}{\newtheorem{#2}{#4}[#5]}{%
442 }%
443 \BeforeBeginEnvironment{#2}{%
444 \begin{mdframed}[#1]}%
445 \AfterEndEnvironment{#2}{%
446 \end{mdframed}}%
447 }
448
449 \DeclareDocumentCommand{\mdtheorem}{ 0{ } m o m o }%
450 {\ifcsdef{#2}%
451 {\mdf@PackageWarning{Environment #2 already exists\MessageBreak}}%
452 {%
453 \IfNoValueTF {#3}%
454 {%#3 not given -- number relationship
455 \IfNoValueTF {#5}
456 {%#3+#5 not given
457 \@definecounter{#2}%
458 \expandafter\xdef\csname the#2\endcsname{\@thmcounter{#2}}
459 \newenvironment{#2}[1][ ]{%
460 \refstepcounter{#2}
461 \ifstrempy{##1}%
462 {\let\@temptitle\relax}%
463 {%
464 \def\@temptitle{\mdf@theoremseparator%
465 \mdf@theoremspace%
466 \mdf@theoremtitlefont%
467 ##1}%
468 }
469 \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}}}%
470 {\end{mdframed}}}%
471 \newenvironment{#2*}[1][ ]{%
472 \ifstrempy{##1}{\let\@temptitle\relax}{\def\@temptitle{: \ ##1}}
473 \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}}}%
474 {\end{mdframed}}}%
475 }%
476 {%#5 given -- reset counter
477 \@definecounter{#2}\@newctr{#2}[#5]%
478 \expandafter\xdef\csname the#2\endcsname{\@thmcounter{#2}}
479 \expandafter\xdef\csname the#2\endcsname{%

```

```

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

```

\mdfframedtitleenv \mdf@frametitle \mdf@setopt@body \mdf@setopt@title
--

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

```

529 %TESTVERSION
530 % \newrobustcmd*\mdf@setopt@title{%
531 %   \ifbool{mdf@frametitrerule}{\booltrue{mdf@bottomline}}{\boolfalse{mdf@bottomline}}%
532 %   \let\ifmdf@leftline\ifmdf@frametitleleftline%
533 %   \let\ifmdf@topline\ifmdf@frametitletopline%
534 %   \let\ifmdf@rightline\ifmdf@frametitlerightline%
535 %   \let\ifmdf@bottomline\ifmdf@frametitlebottomline%
536 %   \mdfsetup{innerbottommargin=\mdf@titlebelowskip@length,%
537 %             innertopmargin=\mdf@titleaboveskip@length,%
538 %             middlelinecolor=\mdf@frametitrerulecolor,%
539 %             backgroundcolor=\mdf@frametitlebackgroundcolor,%
540 %             middlelinewidth=\mdf@frametitrerulewidth@length,%
541 %             innerleftmargin=\mdf@frametitleleftmargin@length,%
542 %             innerrightmargin=\mdf@frametitlerightmargin@length,%
543 %             alignment=\mdf@frametitlealignment,%
544 %             skipbelow=\z@}%
545 % \def\mdf@linecolor@bottom{\color{\mdf@frametitlebottomrulecolor}}%
546 % \mdf@frametitlesettings%
547 % }
548 %
549 % \newrobustcmd*\mdf@setopt@body{%
550 %   \mdfsetup{topline=false,skipabove=\z@}%
551 %   \unskip\nointerlineskip%
552 % }
553 %
554 % \newrobustcmd\mdfframedtitleenv[1]{%
555 %   \begingroup
556 %     \mdf@setopt@title
557 %     \color@setgroup
558 %     \mdf@frametitlefont
559 %     \mdf@lrbox{\mdf@splitbox@one}%
560 %       \mdf@frametitlealignment
561 %       #1\par\unskip
562 %     \endmdf@lrbox
563 %     \mdf@ignorevbadness
564 %     \global\setbox\mdf@frametitlebox\vbox{\unvbox\mdf@splitbox@one}%
565 %     \mdf@ignorevbadness
566 %     \global\setbox\mdf@splitbox@one\vbox{\unvcopy\mdf@frametitlebox}%
567 %     \detected@mdf@put@frame%
568 %     \color@endgroup%
569 %   \endgroup
570 % }
571 % \newrobustcmd\mdfframedtitleenv[1]{%
572 %   \color@begingroup%
573 %     \mdf@lrbox{\mdf@frametitlebox}%
574 %       \mdf@frametitlealignment%
575 %       \color{\mdf@frametitlefontcolor}%
576 %       \normalfont\mdf@frametitlefont{#1}\par\unskip
577 %     \endmdf@lrbox%
578 %     \mdf@ignorevbadness%
579 %     \global\setbox\mdf@frametitlebox\vbox{\unvbox\mdf@frametitlebox}%
580 %     \global\mdfframetitleboxwidth=\wd\mdf@frametitlebox\relax%
581 %     \global\mdfframetitleboxheight=\ht\mdf@frametitlebox\relax%
582 %     \global\mdfframetitleboxdepth=\dp\mdf@frametitlebox\relax%
583 %     \global\mdfframetitleboxtotalheight=\dimexpr\ht\mdf@frametitlebox+\dp\mdf@frametitlebox

```

```

584         +\mdf@frametitleaboveskip@length+\mdf@frametitlebelowskip@length\relax%
585     \color@endgroup%
586 }
587
588 \newrobustcmd*\mdf@@frametitle{%
589     \mdfframedtitleenv{\mdf@frametitle}%
590 }
591
592 \newrobustcmd*\mdf@@frametitle@use{%
593     \begingroup
594     \parskip\z@
595     \parindent\z@
596     \offinterlineskip
597     \mdf@ignorevbadness%
598     \global\setbox\mdf@splitbox@one\vbox{%
599         \unvcopy\mdf@frametitlebox%
600         \mdf@@frametitlerule%
601         \unvbox\mdf@splitbox@one
602     }%
603     \mdf@ignorevbadness%
604     \global\setbox\mdf@splitbox@one\vbox{%
605         \unvbox\mdf@splitbox@one}%
606     \endgroup
607     \mdfsetup{innertopmargin=\mdf@frametitleaboveskip@length}%
608 }

```

`\mdf@checkntheorem`

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

```

609
610 \newrobustcmd*\mdf@checkntheorem{%
611     \ifbool{mdf@ntheorem}%
612         {\ifundef{\theorempreskipamount}%
613             {\mdf@PackageWarning{You have not loaded ntheorem yet}}%
614             {\setlength{\theorempreskipamount}{\z@}%
615             \setlength{\theorempostskipamount}{\z@}%
616         }%
617     }{}%
618 }

```

`\mdf@footnoterule`
`\mdf@footnoteoutput`
`\mdf@footnoteinput`

Support for footnotes.

```

619 \newrobustcmd*\mdf@footnoterule{%
620     \kern0\p@%
621     \hrule \@width 1in \kern 2.6\p@}
622 \newrobustcmd*\mdf@footnoteoutput{%
623     \ifvoid\@mpfootins\else
624         \nobreak%
625         \vskip\mdf@footnotedistance@length%
626         \normalcolor%
627         \mdf@footnoterule
628         \unvbox\@mpfootins

```

```

629     \fi%
630 }
631 \newrobustcmd*\mdf@footnoteinput{%
632     \def\@mpfn{mpfootnote}%
633     \def\thempfn{\thempfootnote}%
634     \c@mpfootnote\z@%
635     \let\@footnotetext\@mpfootnotetext%
636 }

```

```

\mdf@load@style
\mdf@styledefinition

```

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

```

637 \newrobustcmd*\mdf@load@style{%
638     \ifcase\value{mdf@globalstyle@cnt}\relax%
639         \input{md-frame-0.mdf}%
640     \or\input{md-frame-1.mdf}%
641     \or\input{md-frame-2.mdf}%
642     \or\input{md-frame-3.mdf}%
643     \else%
644         \IfFileExists{md-frame-\value{mdf@globalstyle@cnt}.mdf}%
645         {\input{md-frame-\value{mdf@globalstyle@cnt}.mdf}}%
646         {%
647             \input{md-frame-0.mdf}%
648             \mdf@PackageWarning{The style number \value{mdf@globalstyle@cnt} does not exist^^J
649                                 mdframed ues instead style=0 \mdframedpackagename}%
650         }%
651     \fi%
652 }%
653 \mdf@load@style
654
655 \newrobustcmd*\mdf@styledefinition{%AVOID!!!
656     \ifnumequal{\value{mdf@globalstyle@cnt}}{0}%
657     {\deflength{\mdf@innerlinewidth@length}{\z@}%
658     \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%
659     \deflength{\mdf@outerlinewidth@length}{\z@}%
660     \let\mdf@innerlinecolor\mdf@linecolor%
661     \let\mdf@middlelinecolor\mdf@linecolor%
662     \let\mdf@outerlinecolor\mdf@linecolor%
663     }{}%
664 % \ifnumequal{\value{mdf@globalstyle@cnt}}{2}%
665 % {\deflength{\mdf@innerlinewidth@length}{\z@}%
666 % \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%
667 % \deflength{\mdf@outerlinewidth@length}{\z@}%
668 % \let\mdf@innerlinecolor\mdf@linecolor%
669 % }{}%
670 % \ifnumequal{\value{mdf@globalstyle@cnt}}{3}%
671 % {\deflength{\mdf@innerlinewidth@length}{\z@}%
672 % \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%
673 % \deflength{\mdf@outerlinewidth@length}{\z@}%
674 % \let\mdf@innerlinecolor\mdf@linecolor%
675 % }{}%
676 }

```

`\detected@mdf@put@frame`

Detect whether inside a non breakable environment.

```

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

`\mdf@hidealllines@check`

```

718 \newrobustcmd*\mdf@hidealllines@check{%
719   \ifbool{mdf@hidealllines}{%
720     \boolfalse{mdf@leftline}\boolfalse{mdf@rightline}%
721     \boolfalse{mdf@topline}\boolfalse{mdf@bottomline}%
722     \boolfalse{mdf@frametitleleftline}\boolfalse{mdf@frametitlerightline}%
723     \boolfalse{mdf@frametitletopline}\boolfalse{mdf@frametitlebottomline}%
724   }{}}%
```

725 }

```

\mdframed
\mdframed@ii
\mdframed@i

```

That the user environment.

```

726 \newenvironment{mdframed}[1][{}]{%
727 \color@begingroup%
728 \mdfsetup{userdefinedwidth=\linewidth,#1}%
729 %%% \mdf@hidealllines@check%
730 \mdf@twoside@checklength%
731 \let\width\z@%
732 \let\height\z@%
733 \mdf@checktheorem%
734 \mdf@styledefinition%
735 \mdf@footnoteinput%
736 \color{\mdf@fontcolor}%
737 \mdf@font%
738 \ifvmode\nointerlineskip\fi%
739 \mdf@trivlist{\mdf@skipabove@length}%%
740 \ifdefempty{\mdf@frametitle}{\mdf@@frametitle}%
741 \mdf@settings%
742 \mdf@lrbox{\mdf@splitbox@one}%
743 }%
744 {\par\unskip\ifvmode\nointerlineskip\hrule \@height\z@ \@width\hsize\fi%
745 \ifmdf@footnoteinside%
746 \def\mdf@reserveda{%
747 \mdf@footnoteoutput%
748 \endmdf@lrbox%
749 \ifdefempty{\mdf@frametitle}{\mdf@@frametitle@use}%
750 \detected@mdf@put@frame}%
751 \else%
752 \def\mdf@reserveda{%
753 \endmdf@lrbox%
754 \ifdefempty{\mdf@frametitle}{\mdf@@frametitle@use}%
755 \detected@mdf@put@frame%
756 \mdf@footnoteoutput%
757 }%
758 \fi%
759 \mdf@reserveda%
760 \endmdf@trivlist%
761 \color@endgroup\@doendpe%
762 }
763
764

```

```

\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.

```

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

```

\mdf@freepagevspace

```

802 \newrobustcmd*{\mdf@freepagevspace}{%
803   \penalty\@M \vskip 2\baselineskip
804   \penalty9999 \vskip -2\baselineskip
805   \penalty9999
806   \ifdimequal{\pagegoal}{\maxdimen}%
807     {\mdf@freespace@length\vsize}%
808     {\mdf@freespace@length=\pagegoal\relax%
809       \advance\mdf@freespace@length by -\pagetotal\relax%
810       \addtolength\mdf@freespace@length{\dimexpr-\parskip\relax}\relax%
811     }%
812 }

```

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

Width of the box

```
813 \newrobustcmd*\mdf@advancelength@horizontalmargin@sub[1]{%
814   \advance\mdf@horizontalsofbox by -\csname mdf@#1@length\endcsname\relax%
815 }
816 \newlength\mdf@horizontalsofbox
817 \newrobustcmd*\mdf@horizontalmargin@equation{%
818   \setlength{\mdf@horizontalsofbox}{\mdf@userdefinedwidth@length}%
819   \mdf@dolist{\mdf@advancelength@horizontalmargin@sub}{%
820     leftmargin,outerlinewidth,middlelinewidth,%
821     innerlinewidth,innerleftmargin,innerlinewidth,%
822     innerlinewidth,middlelinewidth,outerlinewidth,%
823     rightmargin}%
824   \notbool{mdf@leftline}{%
825     \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
826     \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
827     \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
828   }{}%
829   \notbool{mdf@rightline}{%
830     \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
831     \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
832     \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
833   }{}%
834   \ifdimless{\mdf@horizontalsofbox}{3cm}%
835     {\mdf@PackageWarning{You have only a width of 3cm}}{}
836   \hsize=\mdf@horizontalsofbox%
837 }
```

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

horizontal space in relation of the lines.

```
838 \newrobustcmd*\mdf@keeplines@single{%
839   \notbool{mdf@topline}{%
840     \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
841     \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
842     \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
843   }{}%
844   \notbool{mdf@bottomline}{%
845     \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
846     \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
847     \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
848   }{}%
849 }
```

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

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

```
850 \newrobustcmd*\mdf@advancelength@verticalmarginwhole[1]{%
851   \advance\mdf@verticalmarginwhole@length by \csname mdf@#1@length\endcsname\relax%
```

```

852 }
853 \newrobustcmd*\mdf@advancelength@freevspace@sub[1]{%
854   \advance\dimen@ by -\csname mdf@#1@length\endcsname\relax%
855 }
856 \newrobustcmd*\mdf@advancelength@freevspace@add[1]{%
857   \advance\dimen@ by \csname mdf@#1@length\endcsname\relax%
858 }

```

`\mdf@reset`

Reset changes

```

859 \protected@edef\mdf@reset{\boxmaxdepth\the\boxmaxdepth
860   \splittopskip\the\splittopskip}%

```

`\mdf@put@frame@standalone`

Output of `mdframed` inside a non breakable environment.

```

861 \newrobustcmd*\mdf@put@frame@standalone{\relax%
862   \ifvoid\mdf@splitbox@one\relax
863     \mdf@PackageWarning{The environment is empty\MessageBreak}%
864     \let\mdf@reserved@a\relax%
865   \else
866     %Hier berechnung Box-Inhalt+Rahmen oben und unten
867     \setlength{\mdf@verticalmarginwhole@length}{%
868       {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
869     \mdf@dolist{\mdf@advancelength@verticalmarginwhole}{%
870       outerlinewidth,middlelinewidth,innerlinewidth,innertopmargin,
871       innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth}%
872     \mdf@keep@lines@single%
873     \def\mdf@reserved@a{\mdf@putbox@single}%
874   \fi
875   \mdf@reserved@a%
876 }

```

`\mdf@put@frame`

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

```

877 \def\mdf@put@frame{\relax%
878 \ifvoid\mdf@splitbox@one\relax
879 \mdf@PackageWarning{The environment is empty\MessageBreak}%
880 \let\mdf@reserved@a\relax%
881 \else
882 \setlength\mdf@boundingboxwidth{\wd\mdf@splitbox@one}%
883 \mdf@print@space%
884 \mdf@freepagevspace@gives \mdf@freevspace@length
885 \mdf@PackageInfoSpace{\the\mdf@freevspace@length before the beginning of \MessageBreak
886   the environment ending on input line \MessageBreak}%
887 \ifdimless{\mdf@freevspace@length}{2\baselineskip}
888   {\mdf@PackageInfo{Not enough space on this page}
889     \vfill\eject%
890     \def\mdf@reserved@a{\mdf@put@frame}%
891   }{%
892     %Hier berechnung Box-Inhalt+Rahmen oben und unten

```



```

893         \setlength{\mdf@verticalmarginwhole@length}%
894             {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
895         \mdf@dolist{\mdf@advancelength@verticalmarginwhole}{%
896             outerlinewidth,middlelinewidth,innerlinewidth,innertopmargin,
897             innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth}%
898         \mdf@keeplines@single%
899         \ifdimless{\mdf@verticalmarginwhole@length}{\mdf@freevspace@length}%
900             {%passt auf Seite
901                 \begingroup
902                 \mdf@setzref
903                 \mdf@putbox@single%
904                 \endgroup
905                 \let\mdf@reserved@a\relax}%
906             {\def\mdf@reserved@a{\mdf@put@frame@i}}%passt nicht auf Seite
907         }%
908 \fi
909 \mdf@reserved@a%
910 }

```

`\mdf@put@frame@i`

Output of the first splitted box.

```

911 \def\mdf@put@frame@i{%Box muss gesplittet werden -- Ausgabe der ersten Teilbox
912 %Berechnung der Splittgroesse -- Linien und Abstand oben
913 %\vbox to 0pt{%
914 %\rlap{\smash{\the\mdf@freevspace@length}}%\hrule \@height\z@ \@width\hsize
915 \mdf@freepagevspace%gives \mdf@freevspace@length
916 %Berechnung ob nur oberen Linien nur auf die Seite passe
917 \dimen@=\the\mdf@freevspace@length%
918 \dimen@i=\mdf@innertopmargin@length%
919 \advance\dimen@i by \mdf@innerlinewidth@length%
920 \advance\dimen@i by \mdf@middlelinewidth@length%
921 \advance\dimen@i by \mdf@outerlinewidth@length%
922 \advance\dimen@i by 2\baselineskip%
923 \ifdimless{\dimen@}{\dimen@i}%
924     {\hrule \@height\z@ \@width\hsize%
925         \vfill\eject%
926         \def\mdf@reserved@a{\mdf@put@frame}%
927     }{%
928         \mdf@freepagevspace%
929         \dimen@=\the\mdf@freevspace@length%
930         \mdf@dolist{\mdf@advancelength@freevspace@sub}{%calculate with \dimen@
931             outerlinewidth,middlelinewidth,innerlinewidth,%
932             innertopmargin,splitbottomskip}%
933         \ifbool{\mdf@everyline}{%
934             \ifbool{\mdf@bottomline}{%
935                 \advance\dimen@ by -\mdf@innerlinewidth@length%
936                 \advance\dimen@ by -\mdf@middlelinewidth@length%
937                 \advance\dimen@ by -\mdf@outerlinewidth@length%
938             }{}%
939         }{}%
940         \ifbool{\mdf@topline}{%
941             \advance\dimen@ by \mdf@innerlinewidth@length%
942             \advance\dimen@ by \mdf@middlelinewidth@length%

```

```

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

```

```

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

```

`\mdf@put@frame@ii`

Output of the middle and last box.

```

1047 \def\mdf@put@frame@ii{%Ausgabe der mittleren Box(en) wenn vorhanden
1048   \setlength{\mdf@freevspace@length}{\vsize}%
1049   \setlength{\mdimen@}{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%

```

```

1050 \mdf@dolist{\mdf@advance\length@freespace@add}{%used \dimen@
1051             outerlinewidth,middlelinewidth,innerlinewidth,%
1052             innerbottommargin}%%Addition der Linien unten
1053 \ifbool{mdf@everyline}{%
1054     \ifbool{mdf@topline}{%
1055         \advance\dimen@ by \mdf@innerlinewidth@length%
1056         \advance\dimen@ by \mdf@middlelinewidth@length%
1057         \advance\dimen@ by \mdf@outerlinewidth@length%
1058     }{}%
1059 }{}%
1060 \ifbool{mdf@bottomline}{%
1061     \advance\dimen@ by -\mdf@innerlinewidth@length%
1062     \advance\dimen@ by -\mdf@middlelinewidth@length%
1063     \advance\dimen@ by -\mdf@outerlinewidth@length%
1064     \relax}%
1065 \ifdimgreater{\dimen@}{\mdf@freespace@length}%
1066 {%
1067     \advance\mdf@freespace@length by -\mdf@splitbottomskip@length\relax%
1068     \advance\mdf@freespace@length by .5\ht\strutbox\relax%
1069     \ifbool{mdf@everyline}{%
1070         \ifbool{mdf@topline}{%
1071             \advance\mdf@freespace@length by -\mdf@innerlinewidth@length%
1072             \advance\mdf@freespace@length by -\mdf@middlelinewidth@length%
1073             \advance\mdf@freespace@length by -\mdf@outerlinewidth@length%
1074         }{}%
1075         \ifbool{mdf@bottomline}{%
1076             \advance\mdf@freespace@length by -\mdf@innerlinewidth@length%
1077             \advance\mdf@freespace@length by -\mdf@middlelinewidth@length%
1078             \advance\mdf@freespace@length by -\mdf@outerlinewidth@length%
1079         }\relax{}%
1080     }{}%
1081     \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
1082     \mdf@ignorevbadness%
1083     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \mdf@freespace@length%
1084     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%PRUEFEN!!!
1085     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%PRUEFEN!!!
1086     \ifbool{mdf@repeatframetitle}{%
1087         \setbox\mdf@splitbox@one\vbox{%
1088             \vbox to \mdf@splittopskip@length{\hsize\z@}
1089             %\par\unskip\nointerlineskip
1090             \unvcopy\mdf@frametitlebox%
1091             \mdf@@frametitulerule%
1092             \vbox to\dimexpr
1093                 -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox
1094                 +\mdf@innertopmargin@length\relax{\hsize\z@}%
1095             \unvbox\mdf@splitbox@one}%
1096     }{}%
1097     \ifvoid\mdf@splitbox@one\relax%
1098         \mdf@PackageWarning{You got a bad break\MessageBreak
1099             because the split box is empty\MessageBreak
1100             You have to change the settings}%
1101         \setbox\mdf@splitbox@one{\unvbox\mdf@splitbox@two}%
1102         \def\mdf@reserved@a{\enlargethispage{\baselineskip}\mdf@put@frame@ii}%
1103     \else
1104         \begingroup
1105         \mdf@@setzref

```

```

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

```

```

\mdf@test@lrb
\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.

```

1137 %%%%      -----t-----
1138 %%%%      |                |
1139 %%%%      |                |
1140 %%%%      |                |
1141 %%%%      l|                |r
1142 %%%%      |                |

```

```

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

```

```

1199 \newrobustcmd*\mdf@test@single{%
1200     \ifboolexpr{ not (test {\mdf@test@lrb} or test {\mdf@test@ltr} or
1201         test {\mdf@test@ltb} or test {\mdf@test@trb} or
1202         test {\mdf@test@lrb} or test {\mdf@test@lb} or
1203         test {\mdf@test@rb} or test {\mdf@test@tr} or
1204         test {\mdf@test@lt} ) }}
1205 %

1206 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{framemethod}%
1207 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{xcolor}%
1208
1209 \endinput

```

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

```

1210 %% Style file for mdframed for package option 'framemethod=default'
1211 %%
1212 %% This package may be distributed under the terms of the LaTeX Project
1213 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1214 %% Either version 1.0 or, at your option, any later version.
1215 %%
1216 %%
1217 %%$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $
1218 %

```

```

\mdframed0packagename
\mdf@frame0date@svn

```

local settings

```

1219 \def\mdframed0packagename{md-frame-0}
1220 \def\mdf@frame0date@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1221 \ProvidesFile{md-frame-0.mdf}%
1222     [\mdf@frame0date@svn$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $%
1223     \mdversion: \mdframed0packagename]

```

```

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

```

short command

```

1224 \def\mdf@background@default{\color{\mdf@backgroundcolor}}
1225 \def\mdf@frametitlebackground@default{\color{\mdf@frametitlebackgroundcolor}}
1226 \def\mdf@shadow@default{\color{\mdf@shadowcolor}}
1227 \def\mdf@innerlinecolor@default{\color{\mdf@innerlinecolor}}
1228 \def\mdf@middlelinecolor@default{\color{\mdf@middlelinecolor}}
1229 \def\mdf@outerlinecolor@default{\color{\mdf@outerlinecolor}}
1230 \def\mdf@frametitlerulecolor@default{\color{\mdf@frametitlerulecolor}}
1231 \let\mdf@linecolor@default\mdf@middlelinecolor@default
1232 \def\mdf@@frametitlerule{%
1233     \ifbool{mdf@frametitlerule}{%
1234         \vbox to \mdf@frametitlerulewidth@length {\hsize\mdfframetitleboxwidth%
1235             \par\unskip\vskip\mdf@frametitlebelowskip@length%
1236             \rlap{\noindent\hspace*{-\mdf@innerleftmargin@length}%
1237                 \mdf@frametitlerulecolor@default%
1238                 \rule{\dimexpr\mdfframetitleboxwidth%

```

```

1239         +\mdf@innerleftmargin@length
1240         +\mdf@innerrightmargin@length\relax
1241         }\mdf@frametitlewidth@length}%
1242     }}%
1243 }{}
1244 \par\unskip\vskip\mdf@innertopmargin@length%
1245 }%
1246

```

```

\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 a non splitted contents of *mdframed*

```

1247 \def\mdf@frame@background@single{%
1248   \ifbool{mdf@shadow}{%
1249     \rlap{\smash{\mdf@shadow@default%
1250       \rule[\dimexpr-\mdf@boundingboxdepth
1251         -\mdf@shadowsize@length
1252         \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{\relax}%
1253       }\dimexpr\mdf@boundingboxtotalwidth
1254       +\mdf@shadowsize@length
1255       \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{\relax}%
1256     }\dimexpr\mdf@boundingboxtotalheight
1257     +\mdf@shadowsize@length
1258     \ifbool{mdf@bottomline}{+\mdf@middlelinewidth@length}{\relax}%
1259   }}%
1260 }{}%
1261 \rlap{\mdf@background@default%
1262   \rule[-\mdf@boundingboxdepth]%
1263     {\mdf@boundingboxtotalwidth}%
1264     {\mdf@boundingboxtotalheight}%
1265   }%
1266 }%
1267 \def\mdf@frame@frametitlebackground@single{%
1268   \rlap{\mdf@frametitlebackground@default%
1269     \rule[\dimexpr-\mdf@boundingboxdepth+\mdf@boundingboxtotalheight-\mdf@frametitleboxtotalheight\relax]%
1270       {\mdf@boundingboxtotalwidth}%
1271       {\mdf@frametitleboxtotalheight}%
1272     }%
1273 }%
1274
1275 \def\mdf@frame@topline@single{%
1276   \rlap{\mdf@linecolor@default%
1277     \ifbool{mdf@topline}{%
1278       \rule[\dimexpr\mdf@boundingboxheight-\mdf@boundingboxdepth%
1279         +\mdf@innerbottommargin@length+\mdf@innertopmargin@length\relax]%
1280       {\mdf@boundingboxtotalwidth}%
1281       {\mdf@middlelinewidth@length}}%
1282     }%
1283   }%
1284 }%
1285 \def\mdf@frame@bottomline@single{%

```



```

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

```

```

1342      \null%
1343      \ifbool{mdf@leftline}{%
1344        \hspace*{\mdftotalllinewidth}%
1345        \mdf@frame@leftline@single%
1346      }{}%
1347      \mdf@frame@topline@single%
1348      \mdf@frame@background@single%
1349      \mdf@frame@bottomline@single%
1350      \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@single}%
1351      \hspace*{\mdf@innerleftmargin@length}%
1352      \ifbool{mdf@rightline}{%
1353        \mdf@frame@rightline@single%
1354      }{}%
1355      {\box\mdf@splitbox@one}%
1356    }%
1357    \mdf@makeboxalign@right%
1358  }%
1359  \fi%
1360 }

```

```

\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

```

1361 \def\mdf@frame@background@first{%
1362   \ifbool{mdf@shadow}{%
1363     \rlap{\smash{\mdf@shadow@default%
1364       \rule[\dimexpr-\mdfboundingboxdepth
1365         -\mdf@shadowsize@length\relax]%
1366         {\dimexpr\mdfboundingboxtotalwidth
1367           +\mdf@shadowsize@length
1368           \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}{\relax}%
1369         {\dimexpr\mdfboundingboxtotalheight
1370           +\mdf@shadowsize@length\relax}%
1371       }%
1372     }}{}%
1373     \rlap{\mdf@background@default%
1374       \rule[-\mdfboundingboxdepth]%
1375         {\mdfboundingboxtotalwidth}%
1376         {\mdfboundingboxtotalheight}%
1377     }%
1378   }%
1379 \def\mdf@frame@frametitlebackground@first{%
1380   \ifdimless{\mdfframetitleboxtotalheight}{\mdfboundingboxtotalheight}%
1381   {%
1382     \rlap{\mdf@frametitlebackground@default%
1383       \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1384         {\mdfboundingboxtotalwidth}%
1385         {\mdfframetitleboxtotalheight}%
1386     }%
1387     \global\mdfframetitleboxtotalheight=-\p@%
1388   }{\mdf@PackageWarning{You got a page break inside the frame title}\MessageBreak

```

```

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

```

```

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

```

```

\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

```

1479 \def\mdf@frame@background@second{%
1480     \ifbool{mdf@shadow}{%
1481         \rlap{\smash{\mdf@shadow@default%
1482             \rule[\dimexpr-\mdfboundingboxdepth
1483                 -\mdf@shadowsize@length
1484                 \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{\relax}%
1485                 {\dimexpr\mdfboundingboxtotalwidth
1486                     +\mdf@shadowsize@length
1487                     \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{\relax}%
1488                 {\dimexpr\mdfboundingboxtotalheight
1489                     +\mdf@shadowsize@length\relax}%
1490             }}%
1491     }}{}%

```

```

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

```

```

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

```

```

\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

```

1584 \def\mdf@frame@leftline@middle{%
1585 \llap{\mdf@linecolor@default%
1586 \rule[-\mdfboundingboxdepth]%
1587 {\mdf@middlelinewidth@length}%
1588 {\mdfboundingboxtotalheight}%
1589 }%
1590 }%
1591 \def\mdf@frame@background@middle{%
1592 \ifbool{mdf@shadow}{%
1593 \rlap{\smash{\mdf@shadow@default%
1594 \rule[\dimexpr-\mdfboundingboxdepth
1595 -\mdf@shadowsize@length\relax]%

```

```

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

```

```

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

1689 \endinput

```

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

```

1690 %% Style file for mdframed for package option 'framemethod=default'
1691 %%
1692 %% This package may be distributed under the terms of the LaTeX Project
1693 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1694 %% Either version 1.0 or, at your option, any later version.
1695 %%
1696 %%
1697 %%$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $
1698 %

```

```

\mdframedIpackagename
\mdf@frameIdate@svn

```

local settings


```

1699 \def\mdframedIpackagename{md-frame-1}
1700 \def\mdf@frameIdate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1701 \ProvidesFile{md-frame-1.mdf}%
1702      [\mdf@frameIdate@svn$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $ %
1703      \mdversion: \mdframedIpackagename]
1704 %

```

\mdf@tikz@settings

Define settings for tikz

```

1705 %Allgemeine Einstellungen fuer tikz
1706 \def\mdf@tikz@settings{%
1707 %
1708   \tikzset{mdfbox/.style={anchor=south west,%
1709                           inner sep=0pt,%
1710                           outer sep=0pt,%
1711                           \mdf@fontcolor,}}% anchor der Ausgabebox ist unten links
1712   \tikzset{mdfcorners/.style={rounded corners=\mdf@roundcorner@length}}%
1713   \tikzset{mdfbackground/.style={fill=\mdf@backgroundcolor,%
1714                                   draw=\mdf@backgroundcolor}}%
1715   \tikzset{mdfframetitlebackground/.style={fill=\mdf@frametitlebackgroundcolor,%
1716                                               draw=none,%
1717                                               rounded corners={max(\mdf@roundcorner@length%
1718                               -\mdf@innerlinewidth@length%
1719                               -.5\mdf@middlelinewidth@length,0)}}}%
1720 %
1721   \tikzset{mdfouterline/.style={}}%
1722 % nur wenn outerlinewidth>0 wird aussere Linie gezeichnet
1723   \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
1724     {\tikzset{mdfouterline/.append style={%
1725         draw=\mdf@outerlinecolor,%
1726         line width=2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length}}}%
1727 %
1728   \tikzset{mdfinnerline/.style={}}%
1729 % nur wenn innerlinewidth>0 wird innere Linie gezeichnet
1730   \ifdimgreater{\mdf@innerlinewidth@length}{\z@}
1731     {\tikzset{mdfinnerline/.append style={%
1732         draw=\mdf@innerlinecolor,%
1733         line width=2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length}}}%
1734 %
1735   \tikzset{mdfshadow/.style={drop shadow={%
1736       shadow xshift=\mdf@shadowsize@length-2pt,
1737       shadow yshift=-\mdf@shadowsize@length+2pt,
1738       fill=\mdf@shadowcolor,
1739       every shadow }}}%
1740 %
1741   \mdf@tikzset@local
1742   \tikzset{mdfmiddleline/.style={}}%
1743 % nur wenn middlelinewidth>0 wird mittlere Linie gezeichnet
1744   \ifdimgreater{\mdf@middlelinewidth@length}{\z@}
1745     {\tikzset{mdfmiddleline/.append style={%
1746         preaction={draw=\mdf@middlelinecolor,%
1747                   line width=\mdf@middlelinewidth@length},%
1748         line width=\mdf@middlelinewidth@length,%
1749         tikzsetting}}%

```

```

1750   }{}%
1751 }%

```

```

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

```

Befehle fuer Ausgabe von Rahmen und Hintergrund

```

1752 \newrobustcmd*\mdf@tikzbox@tfl[1]{%three or four borders
1753   \clip(0,0)rectangle(\mdfboundingboxwidth,\mdfboundingboxheight);%
1754   \begin{scope}[mdfcorners]%
1755     \clip[preaction=mdfouterline]%
1756         [postaction=mdfbackground]%
1757         [postaction=mdfinnerline]#1;%
1758   \end{scope}%
1759   \path[mdfmiddleline,mdfcorners]#1;
1760 }%
1761
1762
1763
1764 \newrobustcmd*\mdf@tikzbox@otl[2]{%one or two borders
1765   \clip(0,0)rectangle(\mdfboundingboxwidth,\mdfboundingboxheight);%
1766   \begin{scope}
1767     \path[mdfouterline,mdfcorners]#1;%
1768     \clip[postaction=mdfbackground]#2;%
1769     \path[mdfinnerline,mdfcorners]#1;%
1770   \end{scope}%
1771   \path[mdfmiddleline,mdfcorners]#1;%

```

```

\mdf@put@frametitlerule

```

frametitlerule with tikz

```

1772 \tikzset{mdfframetitlerule/.style={%
1773   draw=none,
1774   fill=\mdf@frametitlerulecolor,
1775 }%
1776 }
1777 \def\mdf@@frametitlerule{%
1778   \ifbool{mdf@frametitlerule}{%
1779     \vbox{\hsize0pt
1780       \par\unskip\vskip\mdf@frametitlebelowskip@length
1781       \noindent\rlap{\hspace*{-\mdf@innerleftmargin@length}%
1782       \begingroup%
1783         \pgfmathsetlength{\dimen@}{\mdfframetitleboxwidth+\mdf@innerleftmargin@length+\mdf@innerrightmargin@length}
1784         \tikz\draw[mdfframetitlerule] (0,0)%
1785             rectangle (\dimen@,\mdf@frametitlerulewidth@length);
1786       \endgroup}
1787     }%
1788   }{}
1789   \par\unskip\vskip\mdf@innertopmargin@length%
1790 }%
1791

```

```

\mdf@putbox@single

```

Output of the non breakable contents.

```

1792 % Info zu den verwendeten Punkten:
1793 % O ist die untere linke Ecke der Mitte der middleline
1794 % P ist die obere rechte Ecke der Mitte der middleline
1795 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
1796 %
1797 \def\mdf@putbox@single{%
1798   \ifvoid\mdf@splitbox@one
1799   \else%
1800     \mdf@makebox@out{%
1801       \mdf@makeboxalign@left%
1802       \mdf@tikz@settings%
1803 %
1804       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
1805       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
1806       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
1807       \ifbool{mdf@leftline}{%
1808         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1809         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1810         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
1811       \ifbool{mdf@rightline}{%
1812         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1813         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1814         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
1815 %
1816       \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1817       \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
1818       \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
1819       \ifbool{mdf@topline}{%
1820         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1821         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1822         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
1823       \ifbool{mdf@bottomline}{%
1824         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1825         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1826         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
1827       \mdf@makebox@in[\mdfboundingboxwidth]{%
1828         \null%
1829         \begin{tikzpicture}[remember picture]%
1830           \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
1831           \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
1832           \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
1833           \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
1834           \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
1835           \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
1836           \ifbool{mdf@leftline}%
1837             {%
1838               \pgfmathsetlengthmacro\mdf@Ax%
1839                 {\mdf@Ax+\mdf@outerlinewidth@length+
1840                  \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
1841               \pgfmathsetlengthmacro\mdf@Ox%
1842                 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1843             }{}%
1844           \ifbool{mdf@rightline}%
1845             {%
1846               \pgfmathsetlengthmacro\mdf@Px%

```

```

1847         {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1848     }{}%
1849 \ifbool{mdf@bottomline}%
1850 {%
1851     \pgfmathsetlengthmacro\mdf@Ay%
1852         {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
1853         +\mdf@innerlinewidth@length}%
1854     \pgfmathsetlengthmacro\mdf@Oy%
1855         {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1856     }{}%
1857 \ifbool{mdf@topline}%
1858 {%
1859     \pgfmathsetlengthmacro\mdf@Py%
1860         {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1861     }{}%
1862 %
1863 \coordinate(0)at(\mdf@0x,\mdf@0y);%
1864 \coordinate(P)at(\mdf@Px,\mdf@Py);%
1865 %
1866 \ifbool{mdf@shadow}
1867     {\path[mdfshadow,mdfcorners](0) rectangle (P);}{}%
1868 %
1869 \begin{scope}[use as bounding box]
1870 \mdf@test@ltrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
1871 %
1872 \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
1873 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
1874 \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
1875 \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
1876 %
1877 \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
1878             {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
1879     }{}%
1880 \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
1881             {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
1882     }{}%
1883 \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
1884             {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
1885     }{}%
1886 \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
1887             {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
1888     }{}%
1889 \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
1890             {(0)rectangle(P)}%
1891     }{}%
1892 \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
1893             {(0)rectangle(P)}%
1894     }{}%
1895 %
1896 \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
1897             {(0)rectangle(P)}%
1898     }{}%
1899 \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
1900             {(0)rectangle(P)}%
1901     }{}%
1902 \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%

```

```

1903                                {(0)rectangle(P)}%
1904                                }{}%
1905                                \mdf@test@b{\mdf@tikzbox@otl{(0)--(0-|P)}%
1906                                {(0)rectangle(P)}%
1907                                }{}%
1908 %
1909                                \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}{}%
1910 %
1911                                %Frametitlebackground
1912                                \drawbrackgroundframetitle@single
1913 %
1914                                \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};% Ausgabebox einfuegen
1915                                \end{scope}
1916                                %HIER KOMMT EIN WEITERES MAKRO
1917                                \mdf@singleextra
1918                                \mdfcreateextratikz
1919                                \end{tikzpicture}%
1920                                }%
1921                                \mdf@makeboxalign@right%
1922                                }%
1923                                \fi
1924                                }%
1925                                \def\drawbrackgroundframetitle@single{%
1926                                \ifdefempty{\mdf@frametitle}{}{}%
1927                                \drawbrackgroundframetitle@@single%
1928                                }%
1929                                }%
1930                                \def\drawbrackgroundframetitle@@single{%
1931                                \begin{scope}%background frame title
1932                                \ifbool{mdf@leftline}{
1933                                \pgfmathsetlengthmacro\mdf@0x%
1934                                {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
1935                                }{}%
1936                                \ifbool{mdf@rightline}{%
1937                                \pgfmathsetlengthmacro\mdf@Px%
1938                                {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1939                                }{}%
1940                                \ifbool{mdf@topline}{%
1941                                \pgfmathsetlengthmacro\mdf@Py%
1942                                {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1943                                }{}%
1944                                \pgfmathsetlengthmacro\mdf@Fy
1945                                {\mdf@Py-\mdfframetitleboxtotalheight}
1946                                \path[mdfframetitlebackground]
1947                                (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
1948                                --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
1949                                \end{scope}
1950                                }

```

\mdf@putbox@first

Output of the first breakable contents.

```

1951 \def\drawbrackgroundframetitle@first{%
1952 \ifdefempty{\mdf@frametitle}{}{}%
1953 \ifdimgreater{\mdf@boundingboxheight}{\mdfframetitleboxtotalheight}%

```

```

1954 {%
1955   \drawbrackgroundframetitle@@first
1956   \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
1957   }\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
1958       Currently this isn't well supported}%
1959   \drawbrackgroundframetitle@@first
1960   \pgfmathsetlength{\global\mdfframetitleboxtotalheight}%
1961       {\mdfframetitleboxtotalheight-\mdfboundingboxheight-
1962       \mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
1963       +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length+\mdf@splittopskip@length%
1964       +\dp\strutbox%
1965       }%
1966   }%
1967 }%
1968 }%
1969 %
1970 \def\drawbrackgroundframetitle@@first{%
1971   \begin{scope}%background frame title
1972     \ifbool{mdf@leftline}{%
1973       \pgfmathsetlengthmacro\mdf@0x%
1974         {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
1975       }{}%
1976     \ifbool{mdf@rightline}{%
1977       \pgfmathsetlengthmacro\mdf@Px%
1978         {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1979       }{}%
1980     \ifbool{mdf@topline}{%
1981       \pgfmathsetlengthmacro\mdf@Py%
1982         {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1983       }{}%
1984     \pgfmathsetlengthmacro\mdf@Fy
1985       {max(0,\mdf@Py-\mdfframetitleboxtotalheight)}
1986     \path[mdfframetitlebackground]
1987       (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
1988       --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
1989   \end{scope}%
1990 }%
1991 %
1992 \def\mdf@putbox@first{%
1993   \ifvoid\mdf@splitbox@two
1994   \else%
1995     \mdf@makebox@out{%
1996       \mdf@makeboxalign@left%
1997       \mdf@tikz@settings%
1998       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
1999       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2000       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2001       \ifbool{mdf@leftline}{%
2002         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2003         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2004         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2005       \ifbool{mdf@rightline}{%
2006         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2007         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2008         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2009       \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%

```

```

2010 \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2011 \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2012 \ifbool{mdf@topline}{%
2013   \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2014   \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2015   \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}%
2016 %%%%%%%%%%
2017 \ifbool{mdf@everyline}{%
2018   \ifbool{mdf@bottomline}{%
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 %%%%%%%%%%
2024 %\ifdimequal{\pagegoal}{\maxdimen}{\enlargethispage{\baselineskip}}{}% ???
2025 \ifdimgreater{\pagegoal-\maxdimen}{0pt}{\enlargethispage{\baselineskip}}%
2026 \mdf@makebox@in[\mdfboundingboxwidth]{%
2027   \null%
2028   \begin{tikzpicture}[remember picture]
2029     \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2030     \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2031     \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2032     \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2033     \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2034     \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2035     \ifbool{mdf@leftline}
2036       {%
2037         \pgfmathsetlengthmacro\mdf@Ax%
2038           {\mdf@Ax+\mdf@outerlinewidth@length+
2039            \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2040         \pgfmathsetlengthmacro\mdf@Ox%
2041           {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2042       }{}%
2043     \ifbool{mdf@rightline}{%
2044       \pgfmathsetlengthmacro\mdf@Px%
2045         {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2046     }{}%
2047     \ifbool{mdf@topline}{%
2048       \pgfmathsetlengthmacro\mdf@Py%
2049         {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2050     }{}%
2051   %%
2052   \ifbool{mdf@everyline}{%
2053     \ifbool{mdf@bottomline}%
2054       {%
2055         \pgfmathsetlengthmacro\mdf@Ay%
2056           {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length
2057            +\mdf@innerlinewidth@length}%
2058         \pgfmathsetlengthmacro\mdf@Oy%
2059           {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2060       }{}%
2061     \ifbool{mdf@topline}%
2062       {%
2063         \pgfmathsetlengthmacro\mdf@Py%
2064           {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2065       }{}%

```



```

2066     }{}%
2067 %%
2068     \coordinate(0)at(\mdf@0x,\mdf@0y);%
2069     \coordinate(P)at(\mdf@Px,\mdf@Py);%
2070     \ifbool{mdf@shadow}
2071         {\path[mdfshadow] (0) -- (0|-P) to[mdfcorners] (P) -- (P|-0) -- (0);}%
2072     \begin{scope}[use as bounding box]
2073 %%%%%%%%%%
2074     \ifbool{mdf@everyline}{%
2075         \mdf@test@ltrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2076         \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2077         \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
2078         \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
2079         \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2080         \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
2081             {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2082         }{}%
2083         \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
2084             {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2085         }{}%
2086         \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
2087             {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2088         }{}%
2089         \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
2090             {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2091         }{}%
2092         \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
2093             {(0)rectangle(P)}%
2094         }{}%
2095         \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
2096             {(0)rectangle(P)}%
2097         }{}%
2098         \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2099             {(0)rectangle(P)}%
2100         }{}%
2101         \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2102             {(0)rectangle(P)}%
2103         }{}%
2104         \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2105             {(0)rectangle(P)}%
2106         }{}%
2107         \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2108             {(0)rectangle(P)}%
2109         }{}%
2110         \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
2111     }{
2112         \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@ltr}}%
2113             {\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}%
2114             {}%
2115         \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}%
2116             {\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}{(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2117             {}%
2118         \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2119             {\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}{(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2120             {}%
2121         \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%

```



```

2122      {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}}%
2123      }%
2124      \ifbool{test {\mdf@test@tb} or test {\mdf@test@t}}%
2125      {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}}%
2126      }%
2127      \ifbool{test {\mdf@test@lb} or test {\mdf@test@l}}%
2128      {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}}%
2129      }%
2130      \ifbool{test {\mdf@test@rb} or test {\mdf@test@r}}%
2131      {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}}%
2132      }%
2133      \mdf@test@b{\path[mdfbackground](0)rectangle(P);}%
2134      \mdf@test@noline{\path[mdfbackground,mdfcorners](0)--(0|-P)--(P)--(P|-0);}%
2135      }
2136      %%%%%%%%%%
2137      \drawbackgroundframetitle@first
2138      \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};% Ausgabebox einfuegen
2139      \end{scope}
2140      %HIER KOMMT EIN WEITERES MAKRO
2141      \mdf@firstextra
2142      \mdfcreateextratikz%
2143      \end{tikzpicture}%
2144      }%
2145      \mdf@makeboxalign@right%
2146      }%
2147      \fi
2148      }%

```

\mdf@putbox@middle

Output of the middle breakable contents.

```

2149 \def\drawbackgroundframetitle@middle{%
2150 \ifdefempty{\mdf@frametitle}{}%
2151 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2152 {}{%
2153 \drawbackgroundframetitle@@middle%
2154 \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
2155 }%
2156 }%
2157 }%
2158 %
2159 \def\drawbackgroundframetitle@@middle{%
2160 \begin{scope}%background frame title
2161 \ifbool{mdf@leftline}{
2162 \pgfmathsetlengthmacro\mdf@0x%
2163 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2164 }{%
2165 \ifbool{mdf@rightline}{%
2166 \pgfmathsetlengthmacro\mdf@Px%
2167 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2168 }{%
2169 \pgfmathsetlengthmacro\mdf@Fy
2170 {\mdf@Py-\mdfframetitleboxtotalheight}
2171 \path[mdfframetitlebackground,rounded corners=\z@]
2172 (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%

```

```

2173         --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2174     \end{scope}
2175 }%
2176 %
2177 \def\drawbackgroundframetitle@middle{%
2178     \begin{scope}%background frame title
2179     \ifbool{mdf@leftline}{
2180         \pgfmathsetlengthmacro\mdf@0x%
2181             {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2182     }{}%
2183     \ifbool{mdf@rightline}{%
2184         \pgfmathsetlengthmacro\mdf@Px%
2185             {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2186     }{}%
2187     \pgfmathsetlengthmacro\mdf@Fy
2188         {\mdf@Py-\mdfframetitleboxtotalheight}
2189     \path[mdfframetitlebackground,rounded corners=\z@]
2190         (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2191         --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2192     \end{scope}
2193 }%
2194 \def\mdf@putbox@middle{%
2195     \ifvoid\mdf@splitbox@two
2196     \else%
2197         \mdf@makebox@out{%
2198             \mdf@makeboxalign@left%
2199             \mdf@tikz@settings%
2200             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2201             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2202             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2203             \ifbool{mdf@leftline}{%
2204                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2205                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2206                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
2207             \ifbool{mdf@rightline}{%
2208                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2209                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2210                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
2211             \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2212             \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2213             %%%%%%%%%
2214             \ifbool{mdf@everyline}{%
2215                 \ifbool{mdf@topline}{%
2216                     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2217                     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2218                     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
2219                 \ifbool{mdf@bottomline}{%
2220                     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2221                     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2222                     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
2223                 }{}%
2224             %%%%%%%%%
2225             \mdf@makebox@in[\mdfboundingboxwidth]{%
2226                 \null%
2227                 \begin{tikzpicture}[remember picture]
2228                     \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%

```

```

2229 \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2230 \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2231 \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2232 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2233 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2234 \ifbool{mdf@leftline}%
2235 {%
2236 \pgfmathsetlengthmacro\mdf@Ax%
2237 {\mdf@Ax+\mdf@outerlinewidth@length+
2238 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2239 \pgfmathsetlengthmacro\mdf@Ox%
2240 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2241 }{}%
2242 \ifbool{mdf@rightline}%
2243 {%
2244 \pgfmathsetlengthmacro\mdf@Px%
2245 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2246 }{}%
2247 %%
2248 \ifbool{mdf@everyline}{%
2249 \ifbool{mdf@bottomline}%
2250 {%
2251 \pgfmathsetlengthmacro\mdf@Ay%
2252 {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length
2253 +\mdf@innerlinewidth@length}%
2254 \pgfmathsetlengthmacro\mdf@Oy%
2255 {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2256 }{}%
2257 \ifbool{mdf@topline}%
2258 {%
2259 \pgfmathsetlengthmacro\mdf@Py%
2260 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2261 }{}%
2262 }{}%
2263 %%
2264 \coordinate(0)at(\mdf@Ox,\mdf@Oy);%
2265 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2266 \ifbool{mdf@shadow}
2267 {\path[mdfshadow](0) rectangle (P);}%
2268 \begin{scope}[use as bounding box]
2269 %%%%%%%%%%
2270 \ifbool{mdf@everyline}{%
2271 \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2272 \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2273 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
2274 \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
2275 \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2276 \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}%
2277 {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}}{}%
2278 }{}%
2279 \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}%
2280 {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}}{}%
2281 }{}%
2282 \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}%
2283 {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}}{}%
2284 }{}%

```

```

2285 \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P))}%
2286 {(P|-0)--(0)[mdfcorners]--(0|-P)--(P))}%
2287 }{}%
2288 \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0))}%
2289 {(0)rectangle(P))}%
2290 }{}%
2291 \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P))}%
2292 {(0)rectangle(P))}%
2293 }{}%
2294 \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P))}%
2295 {(0)rectangle(P))}%
2296 }{}%
2297 \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P))}%
2298 {(0)rectangle(P))}%
2299 }{}%
2300 \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P))}%
2301 {(0)rectangle(P))}%
2302 }{}%
2303 \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P))}%
2304 {(0)rectangle(P))}%
2305 }{}%
2306 \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
2307 }{
2308 \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
2309 {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0))}{(0)rectangle(P)}}{}%
2310 \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline}}%
2311 {\mdf@tikzbox@otl{(0)--(0|-P))}{(0)rectangle(P)}}{}%
2312 \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
2313 {\mdf@tikzbox@otl{(P)--(P|-0))}{(0)rectangle(P)}}{}%
2314 \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline}}%
2315 {\path[mdfbackground](0)rectangle(P);}%
2316 }
2317 %%%%%%%%%
2318 \drawbackgroundframetitle@middle
2319 \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};% Ausgabebox einfuegen
2320 \end{scope}
2321 \mdf@middleextra
2322 %HIER KOMMT EIN WEITERES MAKRO
2323 \mdfcreateextratikz
2324 \end{tikzpicture}%
2325 }%
2326 \mdf@makeboxalign@right%
2327 }%
2328 \fi
2329 }%

```

\mdf@putbox@second

Output of the last breakable contents.

```

2330 \def\drawbackgroundframetitle@second{%
2331 \ifdefempty{\mdf@frametitle}{}{}%
2332 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2333 {}{}%
2334 \drawbackgroundframetitle@@second%
2335 }%

```

```

2336 }%
2337 }%
2338 %
2339 \def\drawbackgroundframetitle@@second{%
2340     \begin{scope}%background frame title
2341         \ifbool{mdf@leftline}{
2342             \pgfmathsetlengthmacro\mdf@0x%
2343                 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2344             }{}%
2345         \ifbool{mdf@rightline}{%
2346             \pgfmathsetlengthmacro\mdf@Px%
2347                 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2348             }{}%
2349         \pgfmathsetlengthmacro\mdf@Fy
2350             {\mdf@Py-\mdfframetitleboxtotalheight}
2351         \path[mdfframetitlebackground,rounded corners=\z@]
2352             (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2353             --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2354     \end{scope}
2355 }%
2356 \def\mdf@putbox@second{%
2357     \ifvoid\mdf@splitbox@one
2358     \else%
2359         \mdf@makebox@out{%
2360             \mdf@makeboxalign@left%
2361             \mdf@tikz@settings%
2362             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2363             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2364             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2365             \ifbool{mdf@leftline}{%
2366                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2367                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2368                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2369             \ifbool{mdf@rightline}{%
2370                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2371                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2372                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2373             \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2374             \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2375             \ifbool{mdf@bottomline}{%
2376                 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2377                 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2378                 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2379             %%%%%%%%%
2380             \ifbool{mdf@everyline}{%
2381                 \ifbool{mdf@topline}{%
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             %%%%%%%%%
2387             \mdf@makebox@in[\mdfboundingboxwidth]{%
2388                 \null%
2389                 \begin{tikzpicture}[remember picture]
2390                     \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2391                     \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%

```

```

2392 \pgfmathsetlengthmacro\mdf@0x{+0pt}%
2393 \pgfmathsetlengthmacro\mdf@0y{+0pt}%
2394 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2395 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2396 \ifbool{mdf@leftline}%
2397 {%
2398 \pgfmathsetlengthmacro\mdf@Ax%
2399 {\mdf@Ax+\mdf@outerlinewidth@length+
2400 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2401 \pgfmathsetlengthmacro\mdf@0x%
2402 {\mdf@0x+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2403 }{}%
2404 \ifbool{mdf@rightline}%
2405 {%
2406 \pgfmathsetlengthmacro\mdf@Px%
2407 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2408 }{}%
2409 \ifbool{mdf@bottomline}%
2410 {%
2411 \pgfmathsetlengthmacro\mdf@Ay%
2412 {\mdf@Ay+\mdf@outerlinewidth@length+
2413 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2414 \pgfmathsetlengthmacro\mdf@0y%
2415 {\mdf@0y+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2416 }{}%
2417 %%
2418 \ifbool{mdf@everyline}{%
2419 \ifbool{mdf@topline}%
2420 {%
2421 \pgfmathsetlengthmacro\mdf@Py%
2422 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2423 }{}%
2424 }{}%
2425 %%
2426 \coordinate(0)at(\mdf@0x,\mdf@0y);%
2427 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2428 \ifbool{mdf@shadow}
2429 {\path[mdfshadow] (0|-P) to[mdfcorners] (0) to[mdfcorners] (P|-0) -- (P) -- (0|-P);}%
2430 \begin{scope}[use as bounding box]
2431 %%%%%%%%%%
2432 \ifbool{mdf@everyline}{%
2433 \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2434 \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2435 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
2436 \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
2437 \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2438 \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
2439 {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}}{}%
2440 }{}%
2441 \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
2442 {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}}{}%
2443 }{}%
2444 \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
2445 {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}}{}%
2446 }{}%
2447 \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%

```

```

2448             {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2449         }{}%
2450     \mdf@test@lrl{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}%
2451         {(0)rectangle(P)}%
2452     }{}%
2453     \mdf@test@tl{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}%
2454         {(0)rectangle(P)}%
2455     }{}%
2456     \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}%
2457         {(0)rectangle(P)}%
2458     }{}%
2459     \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}%
2460         {(0)rectangle(P)}%
2461     }{}%
2462     \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}%
2463         {(0)rectangle(P)}%
2464     }{}%
2465     \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}%
2466         {(0)rectangle(P)}%
2467     }{}%
2468     \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
2469 }{%
2470     \ifboolexpr{test {\mdf@test@ltrl} or test {\mdf@test@lr}}{%
2471         {\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)--(P)}%
2472         }{}%
2473     \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}{%
2474         {\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}{(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2475         }{}%
2476     \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}{%
2477         {\mdf@tikzbox@otl{(P)--(P|-0)--(0)}{(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2478         }{}%
2479     \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}{%
2480         {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}%
2481         }{}%
2482     \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}{%
2483         {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}%
2484         }{}%
2485     \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}{%
2486         {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}%
2487         }{}%
2488     \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}{%
2489         {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}%
2490         }{}%
2491     \mdf@test@t{\path[mdfbackground,mdfcorners](0|-P)--(0)--(0|-P)--(P);}%
2492     \mdf@test@noline{\path[mdfbackground,mdfcorners](0|-P)--(0)--(0|-P)--(P);}%
2493 }%
2494     \drawbackgroundframetitle@second
2495     \node[mdfbox] at (\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};% Ausgabebox einfuegen
2496 \end{scope}
2497     \mdf@secondextra
2498 %HIER KOMMT EIN WEITERES MAKRO
2499     \mdfcreateextratikz
2500 \end{tikzpicture}%
2501 }%
2502 \mdf@makeboxalign@right%
2503 }%

```



```

2504 \fi
2505 }%

2506 \endinput

```

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

```

2507 %% Style file for mdframed for package option 'framemethod=default'
2508 %%
2509 %% This package may be distributed under the terms of the LaTeX Project
2510 %% Public License, as described in lppl.txt in the base LaTeX distribution.
2511 %% Either version 1.0 or, at your option, any later version.
2512 %%
2513 %%
2514 %%$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $
2515 %

```

```

\mdframedIIPackagename
\mdf@frameIIDate@svn

```

local settings

```

2516 \def\mdframedIIPackagename{md-frame-2}
2517 \def\mdf@frameIIDate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
2518 \ProvidesFile{md-frame-2.mdf}%
2519      [\mdf@frameIIDate@svn$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $ %
2520      \mdversion: \mdframedIIPackagename]

```

```

\mdf@ptlength@to@pscode
\ptTps

```

Command to calculate a latex length to postscript

```

2521 \def\mdf@ptlength@to@pscode#1{\pst@number{#1} \pst@number\psxunit div }
2522 \def\mdf@ptlength@to@pscode@length#1{\pst@number{\csname mdf@#1@length\endcsname} \pst@number\psxunit 0
2523 \let\ptTps\mdf@ptlength@to@pscode\relax
2524 \let\ptTpsL\mdf@ptlength@to@pscode@length\relax

```

```

\mdfbackgroundstyle
\mdflinestyle
\mdfframetitlerule
\mdfframetitlebackground

```

background and line settings for pstricks

```

2525 \def\mdf@pstricks@settings{%expand by \addtopsstyle
2526   \newpsstyle{mdfbackgroundstyle}%
2527   {linecolor=\mdf@backgroundcolor,fillstyle=solid,%
2528    fillcolor=\mdf@backgroundcolor,linestyle=none,%
2529    ,dimen=middle,%
2530    }%
2531 %
2532 \newpsstyle{mdfframetitlebackgroundstyle}{%
2533   linecolor=\mdf@frametitlebackgroundcolor,
2534   fillcolor=\mdf@frametitlebackgroundcolor,
2535   fillstyle=solid,linestyle=none,
2536   linearc=\ifdimgreater{\mdf@roundcorner@length%

```



```

2537             -\mdf@innerlinewidth@length%
2538             -.5\mdf@middlelinewidth@length}
2539         {\z@}{\dimexpr\mdf@roundcorner@length%
2540             -\mdf@innerlinewidth@length%
2541             -.5\mdf@middlelinewidth@length}{\z@},
2542     }
2543 %
2544 \newsstyle{mdfouterlinestyle}{linestyle=none}%
2545 \ifdimgreater{\mdf@outerlinewidth@length}{\z@}%
2546     {\newsstyle{mdfouterlinestyle}{%
2547         linecolor=\mdf@outerlinecolor,%
2548         linewidth=\dimexpr2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length\relax,
2549         dimen=middle,
2550     }}}%
2551 %
2552 \newsstyle{mdfinnerlinestyle}{linestyle=none}%
2553 \ifdimgreater{\mdf@innerlinewidth@length}{\z@}%
2554     {\newsstyle{mdfinnerlinestyle}{%
2555         linecolor=\mdf@innerlinecolor,%
2556         linewidth=\dimexpr2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length\relax,
2557         dimen=middle,
2558     }}}%
2559 %
2560 \newsstyle{mdfmiddlelinestyle}{linestyle=none}%
2561 \newsstyle{mdfshadow}{shadow=true,shadowcolor=\mdf@shadowcolor,shadowsize=\mdf@shadowsize@length}%
2562 \ifdimgreater{\mdf@middlelinewidth@length}{\z@}%
2563     {\newsstyle{mdfmiddlelinestyle}{%
2564         linewidth=\mdf@middlelinewidth@length,%
2565         linecolor=\mdf@middlelinecolor,dimen=middle
2566     }}}%
2567 \mdfpstricks@appendsettings
2568 }%
2569 %
2570 \newrobustcmd*\mdf@pstricksbox@fl[2]{%four lines
2571     \psframe[style=mdfouterlinestyle](#1)(#2)%ausen=3mm
2572     \psframe[style=mdfbackgroundstyle](#1)(#2)%Hintergrund
2573     \psclip{\psframe[style=mdfmiddlelinestyle](#1)(#2)}
2574     \psframe[style=mdfinnerlinestyle](#1)(#2)%innere=3mm
2575     \endpsclip
2576     \psframe[style=mdfmiddlelinestyle](#1)(#2)%mittlere=2mm
2577 }%
2578 \newrobustcmd*\mdf@pstricksbox@tl[1]{%three lines
2579     \psline[style=mdfouterlinestyle]#1%ausen=3mm
2580     \psline[style=mdfbackgroundstyle]#1%Hintergrund
2581     \psclip{\psline[style=mdfmiddlelinestyle]#1}
2582     \psline[style=mdfinnerlinestyle]#1%innere=3mm
2583     \endpsclip
2584     \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2585 }%
2586 \newrobustcmd*\mdf@pstricksbox@tcl[2]{%two combined lines
2587 % #1 background comple
2588 % #2 line path
2589     \psline[style=mdfouterlinestyle]#2%ausen=3mm
2590     \psline[style=mdfbackgroundstyle]#2%Hintergrund
2591     \psclip{\pscustom{linestyle=none}{
2592         \psline[style=mdfmiddlelinestyle]#2

```

```

2593         \psline[linestyle=none,lineararc=0pt]#1}
2594     }
2595     \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2596     \psline[style=mdfinnerlinestyle]#2%innere=3mm
2597 \endpsclip
2598 \psline[style=mdfmiddlelinestyle]#2%mittlere=2mm
2599 }%
2600 \newrobustcmd*\mdf@pstricksbox@tncl[2]{%two not combined lines
2601 \begingroup
2602 \psset{lineararc=0pt}
2603 \psline[style=mdfouterlinestyle](mdf@0)#1%ausсен=3mm
2604 \psline[style=mdfouterlinestyle](mdf@P)#2%ausсен=3mm
2605 \psclip{
2606 \pscustom[linestyle=none]{%
2607 \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2608 \psline[linestyle=none](mdf@0)#2
2609 \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2610 \psline[linestyle=none](mdf@P)#1
2611 }%
2612 }%
2613 \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2614 \psline[style=mdfinnerlinestyle](mdf@0)#1%innere=3mm
2615 \psline[style=mdfinnerlinestyle](mdf@P)#2%innere=3mm
2616 \endpsclip
2617 \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2618 \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2619 \endgroup
2620 }%
2621 \newrobustcmd*\mdf@pstricksbox@ol[1]{%one line
2622 \begingroup
2623 \psset{lineararc=0pt}
2624 \psline[style=mdfouterlinestyle]#1%ausсен=3mm
2625 \psline[style=mdfbackgroundstyle]#1%Hintergrund
2626 \psclip{\pscustom[linestyle=none]{
2627 \psline[style=mdfmiddlelinestyle]#1
2628 \psframe[linestyle=none,fillstyle=none,dimen=inner](mdf@0)(mdf@P)
2629 }}
2630 \psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)
2631 \psline[style=mdfinnerlinestyle]#1%innere=3mm
2632 \endpsclip
2633 \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2634 \endgroup%
2635 }%
2636
2637 %
2638 \newpsstyle{mdfframetitlerule}{%
2639 linecolor=\mdf@frametitlerulecolor,%
2640 fillcolor=\mdf@frametitlerulecolor,%
2641 fillstyle=solid,dimen=outer,%
2642 }
2643 %

```

\mdf@put@frametitlerule

frametitlerule with pstricks

```

2644 \def\mdf@frametitle{rule}%
2645 \ifbool{mdf@frametitle}{rule}%
2646 \vbox{\hsize0pt
2647   \par\unskip\vskip\mdf@frametitlebelowskip@length
2648   \noindent\rlap{%
2649     \begin{group}%
2650     \begin{pspicture}(0,0)(0,\mdf@frametitlewidth@length)
2651       \psframe[style=mdfframetitlerule](!\ptTpsL{innerleftmargin} neg 0)%
2652       (! \ptTpsL{innerrightmargin}
2653         \ptTps{\mdfframetitleboxwidth} add \ptTpsL{frametitlewidth})
2654     \end{pspicture}
2655     \end{group}
2656   }%
2657 }{}
2658 \par\unskip\vskip\mdf@innertopmargin@length%
2659 }%
2660 %
2661 % \begin{macro}{mdf@putbox@single}
2662 % Single output
2663 % \begin{macrocode}
2664 % Info zu den verwendeten Punkten:
2665 % 0 ist die untere linke Ecke der Mitte der middleline
2666 % P ist die obere rechte Ecke der Mitte der middleline
2667 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
2668 \def\mdf@putbox@single{%
2669 \ifvoid\mdf@splitbox@one
2670 \else%
2671 \mdf@makebox@out{%
2672   \mdf@makeboxalign@left%
2673   \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2674   \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2675   \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2676   \ifbool{mdf@leftline}{%
2677     \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2678     \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2679     \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
2680   \ifbool{mdf@rightline}{%
2681     \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2682     \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2683     \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2684 %
2685   \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2686   \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2687   \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2688   \ifbool{mdf@topline}{%
2689     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2690     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2691     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{%
2692   \ifbool{mdf@bottomline}{%
2693     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2694     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2695     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2696 %
2697   \setlength\mdftotalllinewidth{\dimexpr\mdf@innerlinewidth@length%
2698     +\mdf@middlelinewidth@length
2699     +\mdf@outerlinewidth@length\relax}%

```

```

2700 \psset{unit=1truecm}%
2701 \mdf@makebox@in[\mdf@boundingboxwidth]{%
2702   \null%
2703   \begin{pspicture}(0,0)(\mdf@boundingboxwidth,\mdf@boundingboxheight)
2704     \mdfpstricks@settings%
2705     \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
2706     \expandafter\psset\expandafter{\mdf@psset@local}%
2707     \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
2708     \pnode(0,0){mdf@0}
2709     \pnode(\mdf@boundingboxwidth,\mdf@boundingboxheight){mdf@P}
2710     \ifbool{mdf@leftline}%
2711       {%
2712         \nodexn{(\mdf@A)+(\mdf@outerlinewidth@length,0)
2713               +(\mdf@middlelinewidth@length,0)
2714               +(\mdf@innerlinewidth@length,0)}{mdf@A}%
2715         \nodexn{(\mdf@0)+(\mdf@outerlinewidth@length,0)
2716               +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
2717       }{}%
2718     \ifbool{mdf@rightline}%
2719       {%
2720         \nodexn{(\mdf@P)-(\mdf@outerlinewidth@length,0)
2721               -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2722       }{}%
2723     \ifbool{mdf@bottomline}%
2724       {%
2725         \nodexn{(\mdf@A)+(0,\mdf@outerlinewidth@length)
2726               +(0,\mdf@middlelinewidth@length)
2727               +(0,\mdf@innerlinewidth@length)}{mdf@A}%
2728         \nodexn{(\mdf@0)+(0,\mdf@outerlinewidth@length)
2729               +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
2730       }{}%
2731     \ifbool{mdf@topline}%
2732       {%
2733         \nodexn{(\mdf@P)-(0,\mdf@outerlinewidth@length)
2734               -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}%
2735       }{}%
2736     \ifbool{mdf@shadow}
2737       {\psframe[style=mdfshadow](mdf@0)(mdf@P)}{}
2738 %
2739 %Four lines
2740 \mdf@test@ltrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
2741 %three lines
2742 \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2743 \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
2744 \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
2745 \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
2746 %two lines combined
2747 \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
2748               {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
2749 \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
2750               {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
2751 \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2752               {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
2753 \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2754               {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2755 %two lines not combined combined

```

```

2756      \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}
2757      }{}
2758      \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}}
2759      }{}
2760      %single line
2761      \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
2762      \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
2763      \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
2764      \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
2765      %no line
2766      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}
2767 %
2768      %Frametitlebackground
2769      \drawbackgroundframetitle@single
2770      %output%
2771      \rput[bl](mdf@A){\box\mdf@splitbox@one}
2772 %
2773      \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2774 %
2775      \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2776 %
2777      \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
2778 %
2779      \endpsclip
2780      \mdf@singleextra
2781      \end{pspicture}%
2782 }%
2783 \fi
2784 \def\drawbackgroundframetitle@single{%
2785 \ifdefempty{\mdf@frametitle}}{}{}%
2786 \drawbackgroundframetitle@@single%
2787 }%
2788 }%
2789 \def\drawbackgroundframetitle@@single{%
2790 \begingroup%
2791 \ifbool{mdf@leftline}{%
2792 \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
2793 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
2794 }{}%
2795 \ifbool{mdf@rightline}{%
2796 \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
2797 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2798 }{}%
2799 \ifbool{mdf@topline}{%
2800 \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
2801 -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}%
2802 }{}%
2803 \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
2804 \psline[style=mdfframetitlebackgroundstyle](mdf@0|mdf@F)(mdf@0|mdf@P)
2805 (mdf@P)(mdf@P|mdf@F)%
2806 \endgroup
2807 }

```

\mdf@putbox@first

First output

```

2808 \def\mdf@putbox@first{%
2809   \ifvoid\mdf@splitbox@two
2810   \else%
2811     \mdf@makebox@out{%
2812       \mdf@makeboxalign@left%
2813       %\ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
2814       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2815       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2816       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2817       \ifbool{mdf@leftline}{%
2818         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2819         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2820         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
2821       \ifbool{mdf@rightline}{%
2822         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2823         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2824         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
2825       \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2826       \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2827       \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2828       \ifbool{mdf@topline}{%
2829         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2830         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2831         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
2832       %%%%%%%%%%
2833       \ifbool{mdf@everyline}{%
2834         \ifbool{mdf@bottomline}{%
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       %%%%%%%%%%
2840       \psset{linear=\mdf@roundcorner@length, cornersize=absolute}%
2841       \expandafter\psset\expandafter{\mdf@psset@local}%
2842       \mdf@makebox@in[\mdfboundingboxwidth]{%
2843         \null%
2844         \psset{unit=1truecm}%
2845         \ifdimgreater{\mdfboundingboxheight}{\vsize}
2846           {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
2847           {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
2848             \mdfpstricks@settings%
2849             \psset{linear=\mdf@roundcorner@length, cornersize=absolut,%
2850             \expandafter\psset\expandafter{\mdf@psset@local}%
2851             \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
2852             \pnode(0,0){mdf@0}
2853             \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2854             \ifbool{mdf@leftline}%
2855               {%
2856                 \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
2857                   +(\mdf@middlelinewidth@length,0)
2858                   +(\mdf@innerlinewidth@length,0)}{mdf@A}
2859                 \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
2860                   +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
2861               }{}%
2862             \ifbool{mdf@rightline}%

```

```

2863      {%
2864      \nodexn{(mdf@P) - (\mdf@outerlinewidth@length,0)
2865      -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
2866      }{}}%
2867      \ifbool{mdf@topline}%
2868      {%
2869      \nodexn{(mdf@P) - (0,\mdf@outerlinewidth@length)
2870      -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
2871      }{}}%
2872      %%%%%%%%%%
2873      \ifbool{mdf@everyline}{%
2874      \ifbool{mdf@bottomline}%
2875      {%
2876      \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
2877      +(0,\mdf@middlelinewidth@length)
2878      +(0,\mdf@innerlinewidth@length)}{mdf@A}%
2879      \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
2880      +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
2881      }{}}%
2882      }{}}%
2883      %%%%%%%%%%
2884      \ifbool{mdf@shadow}
2885      {\pscustom[style=mdfshadow,linestyle=none]{%
2886      \psline[linejoin=2,linecap=1,](mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)%
2887      \psline[linejoin=2,linecap=1,lineararc=\z@](mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)
2888      \closedshadow
2889      }
2890      }{}}
2891      % \psclip{
2892      %%%%%%%%%%
2893      \ifbool{mdf@everyline}{%
2894      %Four lines
2895      \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}}
2896      %three lines
2897      \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}}
2898      \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}}
2899      \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}}%
2900      \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}}%
2901      %two lines combined
2902      \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
2903      {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}}
2904      \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
2905      {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}}
2906      \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2907      {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}}
2908      \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2909      {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}}
2910      %two lines not combined combined
2911      \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
2912      }{}}
2913      \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
2914      }{}}
2915      %single line
2916      \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}}
2917      \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}}
2918      \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}}

```



```

2919      \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
2920      %no line
2921      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}{}%
2922  }{%
2923      %Four or Three lines
2924      \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@ltr}}%
2925      {\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}%
2926      }{%
2927      %two combined lines
2928      \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}
2929      {\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2930      {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2931      \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2932      {\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2933      {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
2934      %two not combined lines
2935      \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
2936      {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}
2937      %single line
2938      \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
2939      {\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
2940      \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%
2941      {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
2942      \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}%
2943      {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
2944      %no line
2945      \mdf@test@b{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}{}%
2946      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}{}%
2947  }%
2948 %
2949 %Frametitlebackground
2950      \drawbackgroundframetitle@first
2951      %output%
2952      \rput[bl](mdf@A){\box\mdf@splitbox@two}
2953 %      \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2954 %      \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2955 %      \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
2956 %      \endpsclip
2957      \mdf@firstextra
2958      \end{pspicture}
2959  }%
2960      \mdf@makeboxalign@right%
2961  }%
2962 \fi
2963 }%
2964 \def\drawbackgroundframetitle@first{%
2965 \ifdefempty{\mdf@frametitle}}{}%
2966 \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}%
2967 {%
2968 \drawbackgroundframetitle@first
2969 \global\mdfframetitleboxtotalheight=-\p@%
2970 }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
2971      Currently this isn't well supported}%
2972 \drawbackgroundframetitle@first
2973 \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
2974      -\mdfboundingboxheight

```



```

2975         -\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
2976         +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length
2977         +\mdf@splittopskip@length
2978         +\dp\strutbox\relax%
2979     }%
2980 }%
2981 }%
2982 \def\drawbackgroundframetitle@@first{%
2983 \begingroup%
2984 \ifbool{mdf@leftline}{%
2985     \nodexn{(\mdf@0)+(\mdf@innerlinewidth@length,0)
2986             +0.5(\mdf@middlelinewidth@length,0)}{\mdf@0}%
2987     }{}%
2988 \ifbool{mdf@rightline}{%
2989     \nodexn{(\mdf@P)-(\mdf@innerlinewidth@length,0)
2990             -0.5(\mdf@middlelinewidth@length,0)}{\mdf@P}%
2991     }{}%
2992 \ifbool{mdf@topline}{%
2993     \nodexn{(\mdf@P)-(0,\mdf@innerlinewidth@length)
2994             -0.5(0,\mdf@middlelinewidth@length)}{\mdf@P}%
2995     }{}%
2996 \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}
2997     {\nodexn{(\mdf@P)-(0,\mdfframetitleboxtotalheight)}{\mdf@F}}%
2998     {\nodexn{(\mdf@0)}{\mdf@F}}%
2999 \psline[style=mdfframetitlebackgroundstyle](\mdf@0|\mdf@F)(\mdf@0|\mdf@P)
3000                                         (\mdf@P)(\mdf@P|\mdf@F)%
3001 \endgroup
3002 }

```

\mdf@putbox@middle

Middle output

```

3003 \def\mdf@putbox@middle{%
3004 \ifvoid\mdf@splitbox@two
3005 \else%
3006 \mdf@makebox@out{%
3007 \mdf@makeboxalign@left%
3008 % \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
3009 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
3010 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3011 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3012 \ifbool{mdf@leftline}{%
3013 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3014 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3015 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
3016 \ifbool{mdf@rightline}{%
3017 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3018 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3019 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
3020 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
3021 \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
3022 %%%%%%%%%%
3023 \ifbool{mdf@everyline}{%
3024 \ifbool{mdf@topline}{%
3025 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%

```

```

3026      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3027      \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
3028      \ifbool{mdf@bottomline}{%
3029        \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3030        \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3031        \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
3032      }{}%
3033      %%%%%%%%%%
3034      \psset{unit=1truecm}%
3035      \mdf@makebox@in[\mdfboundingboxwidth]{%
3036        \null%
3037        \ifdimgreater{\mdfboundingboxheight}{\vsize}
3038          {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
3039          {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
3040            \mdfpstricks@settings%
3041            \psset{lineararc=0pt, cornersize=absolut,}%
3042            \expandafter\psset\expandafter{\mdf@psset@local}%
3043            %%%
3044            \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
3045            \pnode(0,0){mdf@0}
3046            \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3047            \ifbool{mdf@leftline}%
3048              {%
3049                \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3050                      +(\mdf@middlelinewidth@length,0)
3051                      +(\mdf@innerlinewidth@length,0)){mdf@A}
3052                \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
3053                      +0.5(\mdf@middlelinewidth@length,0)){mdf@0}
3054              }{}%
3055            \ifbool{mdf@rightline}%
3056              {%
3057                \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
3058                      -0.5(\mdf@middlelinewidth@length,0)){mdf@P}
3059              }{}%
3060            %%
3061            %%%%%%%%%%
3062            \ifbool{mdf@everyline}{%
3063              \ifbool{mdf@bottomline}%
3064                {%
3065                  \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3066                        +(0,\mdf@middlelinewidth@length)
3067                        +(0,\mdf@innerlinewidth@length)){mdf@A}%
3068                  \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
3069                        +0.5(0,\mdf@middlelinewidth@length)){mdf@0}%
3070                }{}%
3071              \ifbool{mdf@topline}%
3072                {%
3073                  \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3074                        -0.5(0,\mdf@middlelinewidth@length)){mdf@P}
3075                }{}%
3076              }{}%
3077            %%%%%%%%%%
3078            %%
3079            \ifbool{mdf@shadow}
3080              {\psframe[style=mdfshadow](mdf@0)(mdf@P)}{}
3081            %%%%%%%%%%

```

```

3082 \ifbool{mdf@everyline}{%
3083     %Four lines
3084     \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3085     %three lines
3086     \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3087     \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
3088     \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
3089     \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
3090     %two lines combined
3091     \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3092         {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3093     \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3094         {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3095     \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3096         {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3097     \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3098         {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3099     %two lines not combined
3100     \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
3101         {}}
3102     \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
3103         {}}
3104     %single line
3105     \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3106     \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3107     \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3108     \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3109     %no line
3110     \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3111 }%
3112 \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
3113     {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}%
3114 \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
3115     {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}%
3116 \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
3117     {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}%
3118 \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
3119     {\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3120 }%
3121 %Frametitlebackground
3122 \drawbackgroundframetitle@middle
3123 %output%
3124 \rput[bl](mdf@A){\box\mdf@splitbox@two}
3125 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3126 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3127 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
3128 \mdf@middleextra
3129 \end{pspicture}%
3130 }%
3131 \mdf@makeboxalign@right%
3132 }%
3133 \fi
3134 }%
3135 \def\drawbackgroundframetitle@middle{%
3136 \ifdefempty{\mdf@frametitle}}{}%
3137 \ifdimless{\mdf@frametitleboxtotalheight}{\z@}

```

```

3138  {}{%
3139    \drawbackgroundframetitle@@middle
3140    \global\mdfframetitleboxtotalheight=-\p@relax%
3141  }%
3142 }%
3143 }%
3144 \def\drawbackgroundframetitle@@middle{%
3145   \begingroup%
3146   \ifbool{mdf@leftline}{%
3147     \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
3148             +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
3149   }{%
3150   \ifbool{mdf@rightline}{%
3151     \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3152             -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3153   }{%
3154     \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3155     \psline[style=mdfframetitlebackgroundstyle,lineararc=\z@](mdf@0|mdf@F)(mdf@0|mdf@P)
3156                               (mdf@P)(mdf@P|mdf@F)%
3157   \endgroup
3158 }

```

\mdf@putbox@second

Last output

```

3159 \def\mdf@putbox@second{
3160   \ifvoid\mdf@splitbox@one
3161   \else%
3162     \mdf@makebox@out{%
3163       \mdf@makeboxalign@left%
3164     }%
3165     \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{%
3166     \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
3167     \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3168     \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3169     \ifbool{mdf@leftline}{%
3170       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3171       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3172       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%
3173     \ifbool{mdf@rightline}{%
3174       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3175       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3176       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%
3177     \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
3178     \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
3179     \ifbool{mdf@bottomline}{%
3180       \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3181       \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3182       \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%
3183     }%
3184     \ifbool{mdf@everyline}{%
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 %%%%%%%%%%
3190 \psset{unit=1truecm}%
3191 \mdf@makebox@in[\mdf@boundingboxwidth]{%
3192 \null%
3193 \begin{pspicture}(0,0)(\mdf@boundingboxwidth,\mdf@boundingboxheight)
3194 \mdfpstricks@settings%
3195 \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
3196 \expandafter\psset\expandafter{\mdf@psset@local}%
3197 \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
3198 \pnode(0,0){mdf@0}
3199 \pnode(\mdf@boundingboxwidth,\mdf@boundingboxheight){mdf@P}
3200 \ifbool{mdf@leftline}%
3201 {%
3202 \nodexn{(\mdf@A)+(\mdf@outerlinewidth@length,0)
3203 +(\mdf@middlelinewidth@length,0)
3204 +(\mdf@innerlinewidth@length,0)}{mdf@A}
3205 \nodexn{(\mdf@0)+(\mdf@outerlinewidth@length,0)
3206 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
3207 }{}%
3208 \ifbool{mdf@rightline}%
3209 {%
3210 \nodexn{(\mdf@P)-(\mdf@outerlinewidth@length,0)
3211 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
3212 }{}%
3213 \ifbool{mdf@bottomline}%
3214 {%
3215 \nodexn{(\mdf@A)+(0,\mdf@outerlinewidth@length)
3216 +(0,\mdf@middlelinewidth@length)
3217 +(0,\mdf@innerlinewidth@length)}{mdf@A}
3218 \nodexn{(\mdf@0)+(0,\mdf@outerlinewidth@length)
3219 +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}
3220 }{}%
3221 %%%%%%%%%%
3222 \ifbool{mdf@everyline}{%
3223 \ifbool{mdf@topline}%
3224 {%
3225 \nodexn{(\mdf@P)-(0,\mdf@outerlinewidth@length)
3226 -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3227 }{}%
3228 }{}%
3229 %%%%%%%%%%
3230 %%
3231 \ifbool{mdf@shadow}
3232 {\pscustom[style=mdfshadow,linestyle=none]{%
3233 \psline[linejoin=2,linecap=1,](mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)%
3234 \psline[linejoin=2,linecap=1,lineararc=\z@](mdf@0|mdf@P)(mdf@P)
3235 \closedshadow
3236 }
3237 }{}
3238 %%%%%%%%%%
3239 \ifbool{mdf@everyline}{%
3240 %Four lines
3241 \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3242 %three lines
3243 \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@P|mdf@P)(mdf@P)}}{}
3244 \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}

```

```

3245 \mdf@test@ltr{\mdf@pstricksbox@tcl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
3246 \mdf@test@lrb{\mdf@pstricksbox@tcl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
3247 %two lines combined
3248 \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3249 { (mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}%
3250 \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3251 { (mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
3252 \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3253 { (mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
3254 \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3255 { (mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}%
3256 %two lines not combined combined
3257 \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
3258 {}%
3259 \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
3260 {}%
3261 %single line
3262 \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}%
3263 \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}%
3264 \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}%
3265 \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}%
3266 %no line
3267 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3268 }{}%
3269 %Four + Three
3270 \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@lrb}}%
3271 {\mdf@pstricksbox@tcl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
3272 %Two combined
3273 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
3274 {\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3275 { (mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}%
3276 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
3277 {\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3278 { (mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
3279 %Two not combined
3280 \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
3281 {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}%
3282 %one line
3283 \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}%
3284 {\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}%
3285 \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}%
3286 {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}%
3287 \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}%
3288 {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}%
3289 %no line
3290 \mdf@test@t{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3291 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3292 }{}%
3293 %Frametitlebackground
3294 \drawbackgroundframetitle@second
3295 %output%
3296 \rput[bl](mdf@A){\box\mdf@splitbox@one}
3297 \mdf@secondextra
3298 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3299 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3300 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}

```

```

3301     \end{pspicture}%
3302   }%
3303   \mdf@makeboxalign@right%
3304 }%
3305 \fi
3306 }%
3307 \def\drawbackgroundframetitle@second{%
3308 \ifdefempty{\mdf@frametitle}{\}%
3309   \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3310   {\}%
3311   \drawbackgroundframetitle@@second
3312 }%
3313 }%
3314 }%
3315 \def\drawbackgroundframetitle@@second{%
3316 \begingroup%
3317   \ifbool{mdf@leftline}{%
3318     \nodexn{(\mdf@0)+(\mdf@innerlinewidth@length,0)
3319       +0.5(\mdf@middlelinewidth@length,0)}{\mdf@0}%
3320   }{%
3321     \ifbool{mdf@rightline}{%
3322       \nodexn{(\mdf@P)-(\mdf@innerlinewidth@length,0)
3323         -0.5(\mdf@middlelinewidth@length,0)}{\mdf@P}%
3324     }{%
3325       \nodexn{(\mdf@P)-(0,\mdfframetitleboxtotalheight)}{\mdf@F}%
3326       \psline[style=mdfframetitlebackgroundstyle,linearc=\z@](\mdf@0|\mdf@F)(\mdf@0|\mdf@P)
3327         (\mdf@P)(\mdf@P|\mdf@F)%
3328     \endgroup
3329   }

3330 \endinput
3331 %eof

```

C. The file *mdframed-example-default*

```

3332 %Documenation of the package mdframed
3333 %$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $
3334 \setcounter{errorcontextlines}{999}
3335 \documentclass[parskip=false,english,11pt]{ltxmdf}
3336 \ltxmdfsetifoot $Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $
3337
3338 \usepackage{showexpl}
3339 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3340
3341 \newcommand\Loadedframemethod{default}
3342 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3343
3344 \title{The \Pack{mdframed} package}
3345 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3346 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3347 \date{\mdfdateID$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $}
3348 \version{\mdversion}
3349 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3350 Some presented examples are more or less exorbitant.}
3351

```



```

3352 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3353 \newrobustcmd\ExampleText{%
3354     An \textit{inhomogeneous linear} differential equation has the form
3355     \begin{align}
3356         L[v] = f,
3357     \end{align}
3358     where  $L$  is a linear differential operator,  $v$  is
3359     the dependent variable, and  $f$  is a given non-zero
3360     function of the independent variables alone.
3361 }
3362
3363 \newcounter{examplecount}
3364 \setcounter{examplecount}{0}
3365 \renewcommand\thesubsection{}
3366 \newcommand\Examplesec[1]{%
3367 \stepcounter{examplecount}%
3368 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3369 }
3370
3371 \begin{document}
3372 \maketitle
3373 \section{Loading}
3374 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3375
3376 {\large\color{red!50!black}
3377 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3378
3379 \section{Examples}
3380 All examples have the following settings:
3381
3382 \begin{tltxmdfexample}
3383 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3384 \newrobustcmd\ExampleText{%
3385 An \textit{inhomogeneous linear} differential equation
3386 has the form
3387 \begin{align}
3388 L[v] = f,
3389 \end{align}
3390 where  $L$  is a linear differential operator,  $v$  is
3391 the dependent variable, and  $f$  is a given non-zero
3392 function of the independent variables alone.
3393 }
3394 \end{tltxmdfexample}
3395 \clearpage
3396 \Examplesec{very simple}
3397 \begin{LTExample}
3398 \global\mdfdefinestyle{exampledefault}{%
3399     linecolor=red,linewidth=3pt,%
3400     leftmargin=1cm,rightmargin=1cm
3401 }
3402 \begin{mdframed}[style=exampledefault]
3403 \ExampleText
3404 \end{mdframed}
3405 \end{LTExample}
3406
3407 \Examplesec{hidden line + frame title}

```



```

3408 \begin{LTXexample}
3409 \global\mdfapptodefinestyle{exampledefault}{%
3410   topline=false,rightline=true,bottomline=false}
3411 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3412 \ExampleText
3413 \end{mdframed}
3414 \end{LTXexample}
3415 \clearpage
3416
3417 \Examplesec{colored frame title}
3418 \begin{LTXexample}
3419
3420 \global\mdfapptodefinestyle{exampledefault}{%
3421   rightline=true,innerleftmargin=10,innerrightmargin=10,
3422   frametitlerule=true,frametitlerulecolor=green,
3423   frametitlebackgroundcolor=yellow,
3424   frametitlerulewidth=2pt}
3425 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3426 \ExampleText
3427 \end{mdframed}
3428 \end{LTXexample}
3429
3430 \Examplesec{framed picture which is centered}
3431 \begin{LTXexample}
3432 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3433   linecolor=blue,linewidth=4pt]
3434 \includegraphics[width=\linewidth]{donald-duck}
3435 \end{mdframed}
3436 \end{LTXexample}
3437
3438 \clearpage
3439 \Examplesec{Theorem environments}
3440 \begin{LTXexample}
3441 \mdfdefinestyle{theoremstyle}{%
3442   linecolor=red,linewidth=2pt,%
3443   frametitlerule=true,%
3444   frametitlebackgroundcolor=gray!20,
3445   innertopmargin=\topskip,
3446 }
3447 \mdtheorem[style=theoremstyle]{definition}{Definition}
3448 \begin{definition}
3449 \ExampleText
3450 \end{definition}
3451 \begin{definition}[Inhomogeneous linear]
3452 \ExampleText
3453 \end{definition}
3454 \begin{definition*}[Inhomogeneous linear]
3455 \ExampleText
3456 \end{definition*}
3457 \end{LTXexample}
3458
3459
3460 \clearpage
3461 \Examplesec{theorem with separate header and the help of TikZ (complex)}
3462 \begin{LTXexample}
3463 \newcounter{theo}[section]

```

```

3464 \newenvironment{theo}[1][]{%
3465   \stepcounter{theo}%
3466   \ifstrempy{#1}%
3467   {\mdfsetup{%
3468     frametitle={%
3469       \tikz[baseline=(current bounding box.east),outer sep=0pt]
3470       \node[anchor=east,rectangle,fill=blue!20]
3471       {\strut Theorem~\thetheo};}}
3472   }%
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:~#1};}}%
3478   }%
3479   \mdfsetup{innertopmargin=10pt,linecolor=blue!20,%
3480     linewidth=2pt,topline=true,
3481     frametitleaboveskip=\dimexpr-\ht\strutbox\relax,}
3482   \begin{mdframed}[]\relax%
3483   }\end{mdframed}}
3484 \begin{theo}[Inhomogeneous Linear]
3485 \ExampleText
3486 \end{theo}
3487
3488 \begin{theo}
3489 \ExampleText
3490 \end{theo}
3491 \end{LTXexample}
3492
3493 \clearpage
3494 \Examplesec{hide only a part of a line}
3495 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com}
3496 \begin{LTXexample}
3497 \makeatletter
3498 \newlength{\interruptlength}
3499 \setlength{\interruptlength}{2.5ex}
3500 \newrobustcmd\overlaplines{%
3501   \appto\mdf@frame@leftline@single{%
3502     \llap{\color{white}%
3503       \rule[\dimexpr-\mdfboundingboxdepth+\interruptlength\relax]{%
3504         {\mdf@middlelinewidth@length}%
3505         {\dimexpr\mdfboundingboxtotalheight%
3506           \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}}
3507         -2\interruptlength\relax}%
3508     }%
3509   }%
3510   \appto\mdf@frame@rightline@single{%
3511     \rlap{\color{white}%
3512       \hspace*{\mdfboundingboxwidth}%
3513       \hspace*{\mdf@innerrightmargin@length}%
3514       \rule[\dimexpr-\mdfboundingboxdepth%
3515         +\interruptlength\relax]{%
3516         {\mdf@middlelinewidth@length}%
3517         {\dimexpr\mdfboundingboxtotalheight%
3518           +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}}
3519         -2\interruptlength\relax}%

```

```

3520 }%
3521 }%
3522 }
3523 \makeatother
3524 \overlaplines
3525
3526 \begin{mdframed}[linecolor=blue,linewidth=8pt]
3527 \ExampleText
3528 \end{mdframed}
3529 \end{LTXexample}
3530 \end{document}
3531 \endinput

```

D. The file mdframed-example-tikz

```

3532 %Documenation of the package mdframed
3533 %$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $
3534 \setcounter{errorcontextlines}{999}
3535 \documentclass[parskip=false,english,11pt]{ltxmdf}
3536 \ltxmdfsetifoot $Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $
3537
3538
3539 \usepackage{showexpl}
3540 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3541
3542 \newcommand\Loadedframemethod{TikZ}
3543 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3544
3545 \title{The \Pack{mdframed} package}
3546 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3547 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3548 \date{\mdfdateID$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $}
3549 \version{\mdversion}
3550 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3551 Some presented examples are more or less exorbitant.}
3552
3553 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3554 \newrobustcmd\ExampleText{%
3555     An \textit{inhomogeneous linear} differential equation has the form
3556     \begin{align}
3557         L[v] &= f,
3558     \end{align}
3559     where  $L$  is a linear differential operator,  $v$  is
3560     the dependent variable, and  $f$  is a given non-zero
3561     function of the independent variables alone.
3562 }
3563
3564 \newcounter{examplecount}
3565 \setcounter{examplecount}{0}
3566 \renewcommand\thesubsection{}
3567 \newcommand\Examplesec[1]{%
3568 \stepcounter{examplecount}%
3569 \subsection{Example~\arabic{examplecount}~---~\relax}%
3570 }
3571
3572 \begin{document}

```

```

3573 \maketitle
3574 \section{Loading}
3575 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3576
3577 {\large\color{red!50!black}
3578 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3579
3580 \section{Examples}
3581 All examples have the following settings:
3582
3583 \begin{tltxmdfexample}
3584 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3585 \newrobustcmd\ExampleText{%
3586 An \textit{inhomogeneous linear} differential equation
3587 has the form
3588 \begin{align}
3589 L[v] = f,
3590 \end{align}
3591 where  $L$  is a linear differential operator,  $v$  is
3592 the dependent variable, and  $f$  is a given non-zero
3593 function of the independent variables alone.
3594 }
3595 \end{tltxmdfexample}
3596 \clearpage
3597 \ExampleText{round corner}
3598 \begin{LTXexample}
3599 \global\mdfdefinestyle{exampledefault}{%
3600     outerlinewidth=5pt,innerlinewidth=0pt,
3601     outerlinecolor=red,roundcorner=5pt
3602 }
3603 \begin{mdframed}[style=exampledefault]
3604 \ExampleText
3605 \end{mdframed}
3606 \end{LTXexample}
3607
3608 \Examplesec{hidden line + frame title}
3609 \begin{LTXexample}
3610 \global\mdfapptodefinestyle{exampledefault}{%
3611     topline=false,leftline=false,}
3612 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3613 \ExampleText
3614 \end{mdframed}
3615 \end{LTXexample}
3616 \clearpage
3617 \Examplesec{framed picture which is centered}
3618 \begin{LTXexample}
3619 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3620     linecolor=blue,middlelinewidth=4pt,roundcorner=5pt]
3621 \includegraphics[width=\linewidth]{donald-duck}
3622 \end{mdframed}
3623 \end{LTXexample}
3624
3625 \Examplesec{Gimmick}
3626 \begin{LTXexample}
3627 \mdfsetup{splitbottomskip=0.8cm,splittopskip=0cm,
3628     innerrightmargin=2cm,innertopmargin=1cm,%

```

```

3629         innerlinewidth=2pt,outerlinewidth=2pt,
3630         middlelinewidth=10pt,backgroundcolor=red,
3631         linecolor=blue,middlelinecolor=gray,
3632         tikzsetting={draw=yellow,line width=3pt,%
3633                     dashed,%
3634                     dash pattern= on 10pt off 3pt},
3635         rightline=false,bottomline=false}
3636 \begin{mdframed}
3637 \ExampleText
3638 \end{mdframed}
3639 \end{LTXexample}
3640
3641 \Examplesec{complex example with TikZ}
3642
3643 \begin{tltxmdfexample}
3644 \tikzstyle{titregris} =
3645     [draw=gray, thick, fill=white, shading = exersicetitle, %
3646     text=gray, rectangle, rounded corners, right,minimum height=.7cm]
3647
3648 \pgfdeclarehorizontalshading{exersicebackground}{100bp}
3649     {color(0bp)=(green!40); color(100bp)=(black!5)}
3650
3651 \pgfdeclarehorizontalshading{exersicetitle}{100bp}
3652     {color(0bp)=(red!40);color(100bp)=(black!5)}
3653
3654 \newcounter{exercise}
3655 \renewcommand*{\theexercise}{Exercise~n\arabic{exercise}}
3656 \makeatletter
3657 \def\mdf@@exercisepoints{}%new mdframed key:
3658 \define@key{mdf}{exercisepoints}{%
3659     \def\mdf@@exercisepoints{#1}
3660 }
3661 \makeatother
3662
3663 \mdfdefinestyle{exercisestyle}{%
3664     outerlinewidth=1pt,innerlinewidth=0pt,
3665     roundcorner=2pt,linecolor=gray,
3666     tikzsetting={shading = exersicebackground},
3667     innertopmargin=1.2\baselineskip,
3668     skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
3669     needspace=3\baselineskip,
3670     frametitlefont=\sffamily\bfseries,
3671     settings={\global\stepcounter{exercise}},
3672     singleextra={%
3673         \node[titregris,xshift=1cm] at (P-|0) %
3674             {\~\mdf@frametitlefont{\theexercise}~};
3675         \ifdefempty{\mdf@@exercisepoints}%
3676             {}%
3677         {\node[titregris,left,xshift=-1cm] at (P)%
3678             {\~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
3679     },
3680     firstextra={%
3681         \node[titregris,xshift=1cm] at (P-|0) %
3682             {\~\mdf@frametitlefont{\theexercise}~};
3683         \ifdefempty{\mdf@@exercisepoints}%
3684             {}%

```

```

3685      {\node[titregris,left,xshift=-1cm] at (P)%
3686        {\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
3687    },
3688  }
3689  \begin{mdframed}[style=exercisestyle,]
3690  \ExampleText
3691  \end{mdframed}
3692
3693  \begin{mdframed}[style=exercisestyle,exercisepoints=10]
3694  \ExampleText
3695  \end{mdframed}
3696  \end{tltxmdfexample}
3697  \clearpage
3698  \Examplesec{Theorem environments}
3699  \begin{LTXexample}
3700  \mdfdefinestyle{theoremstyle}{%
3701    linecolor=red,linewidth=2pt,%
3702    frametitlerule=true,%
3703    apptotikzsetting={\tikzset{mdfframetitlebackground/.append style={%
3704      shade,left color=white, right color=blue!20}}},
3705    frametitlerulecolor=green!60,
3706    frametitlerulewidth=1pt,
3707    innertopmargin=\topskip,
3708  }
3709  \mdtheorem[style=theoremstyle]{definition}{Definition}
3710  \begin{definition}[Inhomogeneous linear]
3711  \ExampleText
3712  \end{definition}
3713  \begin{definition*}[Inhomogeneous linear]
3714  \ExampleText
3715  \end{definition*}
3716  \end{LTXexample}
3717
3718  \end{document}
3719  \endinput

```

E. The file *mdframed-example-pstricks*

```

3720 %Documenation of the package mdframed
3721 %$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $
3722 \setcounter{errorcontextlines}{999}
3723 \documentclass[parskip=false,english,11pt]{ltxmdf}
3724 \ltxmdfsetifoot$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $
3725
3726 \lstDeleteShortInline{||}
3727 \newcommand\Loadedframemethod{PSTricks}
3728 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3729
3730 \usepackage{showexpl}
3731 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}}},}
3732
3733 \title{The \Pack{mdframed} package}
3734 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3735 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3736 \date{\mdfdateID$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $}
3737 \version{\mdversion}

```

```

3738 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3739 Some presented examples are more or less exorbitant.}
3740
3741 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3742 \newrobustcmd\ExampleText{%
3743     An \textit{inhomogeneous linear} differential equation has the form
3744     \begin{align}
3745         L[v] = f,
3746     \end{align}
3747     where  $L$  is a linear differential operator,  $v$  is
3748     the dependent variable, and  $f$  is a given non-zero
3749     function of the independent variables alone.
3750 }
3751
3752 \newcounter{examplecount}
3753 \setcounter{examplecount}{0}
3754 \renewcommand\thesubsection{}
3755 \newcommand\Examplesec[1]{%
3756 \stepcounter{examplecount}%
3757 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3758 }
3759
3760 \begin{document}
3761 \maketitle
3762 \section{Loading}
3763 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3764
3765 {\large\color{red!50!black}
3766 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3767 X
3768 \section{Examples}
3769 All examples have the following settings:
3770
3771 \begin{tltxmdfexample}
3772 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3773 \newrobustcmd\ExampleText{%
3774 An \textit{inhomogeneous linear} differential equation
3775 has the form
3776 \begin{align}
3777 L[v] = f,
3778 \end{align}
3779 where  $L$  is a linear differential operator,  $v$  is
3780 the dependent variable, and  $f$  is a given non-zero
3781 function of the independent variables alone.
3782 }
3783 \end{tltxmdfexample}
3784 \clearpage
3785
3786 \Examplesec{very simple}
3787 \begin{LTXexample}
3788 \global\mdfdefinestyle{exampledefault}{%
3789     linecolor=red,middlelinewidth=3pt,%
3790     leftmargin=1cm,rightmargin=1cm
3791 }
3792 \begin{mdframed}[style=exampledefault,roundcorner=5]
3793 \ExampleText

```

```

3794 \end{mdframed}
3795 \end{LTXexample}
3796
3797 \Examplesec{hidden line + frame title}
3798 \begin{LTXexample}
3799 \global\mdfapptodefinestyle{exampledefault}{%
3800   topline=false,rightline=false,bottomline=false,
3801   frametitlerule=true,innertopmargin=6pt,
3802   outerlinewidth=6pt,outerlinecolor=blue,
3803   pstricksappsetting={\addtopsstyle{mdfouterlinestyle}{linestyle=dashed}},
3804   innerlinecolor=yellow,innerlinewidth=5pt}%
3805 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3806 \ExampleText
3807 \end{mdframed}
3808 \end{LTXexample}
3809
3810 \clearpage
3811
3812 \Examplesec{Dash Lines}
3813 \begin{LTXexample}
3814 \global\mdfdefinestyle{exampledefault}{%
3815   pstrickssetting={linestyle=dashed,},linecolor=red,linewidth=5pt}
3816 \begin{mdframed}[style=exampledefault,]
3817 \ExampleText
3818 \end{mdframed}
3819 \end{LTXexample}
3820
3821 \Examplesec{Double Lines}
3822 \begin{LTXexample}
3823 \global\mdfdefinestyle{exampledefault}{%
3824   pstrickssetting={doubleline=true,doublesep=6pt},
3825   linecolor=red,linewidth=5pt,middlelinewidth=4pt}
3826 \begin{mdframed}[style=exampledefault,]
3827 \ExampleText
3828 \end{mdframed}
3829 \end{LTXexample}
3830
3831 \Examplesec{Shadow frame}
3832 \begin{LTXexample}
3833 \newmdenv[shadow=true,
3834           shadowsize=11pt,
3835           linewidth=8pt,
3836           frametitlerule=true,
3837           roundcorner=10pt,
3838           ]{myshadowbox}
3839 \begin{myshadowbox}[frametitle={Inhomogeneous linear}]
3840 \ExampleText
3841 \end{myshadowbox}
3842 \end{LTXexample}
3843 \end{document}
3844 \endinput

```

F. The file *mdframed-example-texsx*

```

3845 %Documentation of the package mdframed
3846 %$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $

```



```

3847 \setcounter{errorcontextlines}{999}
3848 \documentclass[parskip=false,english,11pt,ltxlipsum]{ltxmdf}
3849 \ltxmdfsetifoot $Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $
3850
3851
3852 \usepackage{showexpl}
3853 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3854 \usepackage{tikz}
3855 \usetikzlibrary{calc,arrows}
3856 \newcommand\Loadedframemethod{tikz}
3857 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3858
3859 \title{The \Pack{mdframed} package}
3860 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3861 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3862 \date{\mdfdateID$Id: mdframed.dtx 373 2012-04-06 10:59:28Z marco $}
3863 \version{\mdversion}
3864 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3865 Some presented examples are more or less exorbitant.}
3866
3867 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3868 \newrobustcmd\ExampleText{%
3869     An \textit{inhomogeneous linear} differential equation has the form
3870     \begin{align}
3871         L[v] &= f,
3872     \end{align}
3873     where  $L$  is a linear differential operator,  $v$  is
3874     the dependent variable, and  $f$  is a given non-zero
3875     function of the independent variables alone.
3876 }
3877
3878 \newcounter{examplecount}
3879 \setcounter{examplecount}{0}
3880 \renewcommand\thesubsection{}
3881 \newcommand\Examplesec[1]{%
3882 \stepcounter{examplecount}%
3883 \subsection{Example~\arabic{examplecount}~---~\relax}%
3884 }
3885
3886 \begin{document}
3887 \maketitle
3888 \section{Loading}
3889 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3890
3891 {\large\color{red!50!black}
3892 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3893
3894 \section{Examples}
3895 All examples have the following settings:
3896
3897 \begin{tltxmdfexample}
3898 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3899 \newrobustcmd\ExampleText{%
3900 An \textit{inhomogeneous linear} differential equation
3901 has the form
3902 \begin{align}

```

```

3903 L[v ] = f,
3904 \end{align}
3905 where  $L$  is a linear differential operator,  $v$  is
3906 the dependent variable, and  $f$  is a given non-zero
3907 function of the independent variables alone.
3908 }
3909 \end{tltxmdfexample}
3910 \clearpage
3911 \Examplesec{Package listings}
3912 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com}
3913
3914 Here the solution which can be decorate as usual.
3915
3916 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}]
3917 \BeforeBeginEnvironment{lstlisting}{%
3918     \begin{mdframed}[<modification>%
3919     \vspace{-0.7em}}
3920 \AfterEndEnvironment{lstlisting}{%
3921     \vspace{-0.5em}%
3922     \end{mdframed}}
3923 \end{tltxmdfexample}
3924
3925 With the new command \Cmd{surroundwithmdframed} you can use
3926 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}]
3927 \surroundwithmdframed{listings}
3928 \end{tltxmdfexample}
3929
3930 \Examplesec{Package multicols}
3931 How I wrote in \enquote{Known Problems} you can't combine \Pack{multicols} with \Pack{mdframed}. In a s
3932 \begin{LTXexample}
3933 \begin{multicols}{2}
3934 \lipsum[1]
3935 \begin{mdframed}
3936 \ExampleText
3937 \end{mdframed}
3938 \lipsum[2]
3939 \end{multicols}
3940 \end{LTXexample}
3941 \clearpage
3942 \twocolumn[\Examplesec{Working in twocolumn mode}]
3943 \begin{tltxmdfexample}
3944 \twocolumn[%
3945     \Examplesec{Working in
3946         twocolumn mode}]
3947 \lipsum[1]\lipsum[2]
3948 \begin{mdframed}[%
3949     leftmargin=10pt,%
3950     rightmargin=10pt,%
3951     linecolor=red,
3952     backgroundcolor=yellow]
3953 \ExampleText
3954 \end{mdframed}
3955 \lipsum[2]
3956 \end{tltxmdfexample}
3957 \lipsum[1]\lipsum[2]
3958 \begin{mdframed}[leftmargin=10pt,%

```

```

3959             rightmargin=10pt,%
3960             linecolor=red,
3961             backgroundcolor=yellow]
3962 \ExampleText
3963 \end{mdframed}
3964 \lipsum[2]
3965 \clearpage
3966 \onecolumn
3967 \Examplesec{Working inside enumerate}
3968 \begin{LTXexample}
3969 Text Text Text Text Text Text Text Text
3970 \begin{enumerate}
3971 \item in the following \ldots
3972     \begin{mdframed}[linecolor=blue,linewidth=2]
3973         \ExampleText
3974     \end{mdframed}
3975 \item \lipsum[2]
3976 \end{enumerate}
3977 Text Text Text Text Text Text
3978 \end{LTXexample}
3979 \clearpage
3980 \Examplesec{digression-environement inspired by Tobias Schwan}
3981 \begin{lstlisting}
3982 \usetikzlibrary{calc,arrows}
3983 \tikzset{
3984     excursus arrow/.style={%
3985         line width=2pt,
3986         draw=gray!40,
3987         rounded corners=2ex,
3988     },
3989     excursus head/.style={
3990         fill=white,
3991         font=\bfseries\sffamily,
3992         text=gray!80,
3993         anchor=base west,
3994     },
3995 }
3996 \mdfdefinestyle{digressionarrows}{%
3997     singleextra={%
3998         \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
3999         \path let \p1=(Q), \p2=(O) in (\x1,{(\y1-\y2)/2}) coordinate (M);
4000         \path [excursus arrow, round cap-to]
4001             ($ (O)+(5em,0ex)$) -| (M) |- %
4002             ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4003             ++(23em,2ex);
4004         \node [excursus head] at ($ (Q)+(2.5em,-0.75pt)$) {Digression};},
4005     firstextra={%
4006         \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4007         \path [excursus arrow,-to]
4008             (O) |- %
4009             ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4010             ++(23em,2ex);
4011         \node [excursus head] at ($ (Q)+(2.5em,-2pt)$) {Digression};},
4012     secondextra={%
4013         \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4014         \path [excursus arrow,round cap-]

```

```

4015      ($ (0)+(5em,0ex)$) -| (Q);},
4016 middleextra={%
4017   \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4018   \path [excursus arrow]
4019     (0) -- (Q);},
4020 middlelinewidth=2.5em,middlelinecolor=white,
4021 hidealllines=true,topline=true,
4022 innertopmargin=0.5ex,
4023 innerbottommargin=2.5ex,
4024 innerrightmargin=2pt,
4025 innerleftmargin=2ex,
4026 skipabove=0.87\baselineskip,
4027 skipbelow=0.62\baselineskip,
4028 }
4029
4030 \begin{mdframed}[style=digressionarrows]
4031   \ExampleText
4032 \end{mdframed}
4033 \end{lstlisting}
4034
4035 \tikzset{
4036   excursus arrow/.style={%
4037     line width=2pt,
4038     draw=gray!40,
4039     rounded corners=2ex,
4040   },
4041   excursus head/.style={
4042     fill=white,
4043     font=\bfseries\sffamily,
4044     text=gray!80,
4045     anchor=base west,
4046   },
4047 }
4048 \mdfdefinestyle{digressionarrows}{%
4049   singleextra={%
4050     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4051     \path let \p1=(Q), \p2=(0) in (\x1,{(\y1-\y2)/2}) coordinate (M);
4052     \path [excursus arrow, round cap-to]
4053       ($ (0)+(5em,0ex)$) -| (M) |- %
4054       ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4055       ++(23em,2ex);
4056     \node [excursus head] at ($ (Q)+(2.5em,-0.75pt)$) {Digression}};},
4057   firstextra={%
4058     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4059     \path [excursus arrow,-to]
4060       (0) |- %
4061       ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4062       ++(23em,2ex);
4063     \node [excursus head] at ($ (Q)+(2.5em,-2pt)$) {Digression}};},
4064   secondextra={%
4065     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4066     \path [excursus arrow,round cap-]
4067       ($ (0)+(5em,0ex)$) -| (Q);},
4068   middleextra={%
4069     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4070     \path [excursus arrow]

```

```
4071         (0) -- (Q);},
4072     middlelinewidth=2.5em,middlelinecolor=white,
4073     hidealllines=true,topline=true,
4074     innertopmargin=0.5ex,
4075     innerbottommargin=2.5ex,
4076     innerrightmargin=2pt,
4077     innerleftmargin=2ex,
4078     skipabove=0.87\baselineskip,
4079     skipbelow=0.62\baselineskip,
4080 }
4081
4082 \begin{mdframed}[style=digressionarrows]
4083     \ExampleText
4084 \end{mdframed}
4085 \end{document}
4086 \endinput
```

G. Change History

v1.0a		<code>\item\mbox\relax</code> – Need for amsthm	29
General: Created dtx and fixes bugs	1	changed definition of <code>\mdf@lrbox</code> (Thanks Lars Madsen)	28
v1.0b		Changed the enddefinition of <code>mdframed</code> . Uses now <code>\@doendpe</code> instead of <code>\endparenv</code>	37
General: added command <code>\@parboxrestore</code> to <code>\mdf@lrbox</code>	28	Edit algorithm to combine the saveboxes <code>\mdf@frametitlebox</code> and <code>\mdf@splitboxone</code> by the predefined settings: <code>\parskip\z@</code> , <code>\parindent\z@</code> and <code>\offinterlineskip</code>	32
removed <code>\setbox\mdf@splitbox@two</code> <code>\vbox\unvbox\mdf@splitbox@two</code>	41	v1.2a	
v1.1beta		General: take account of <code>\parskip</code> for the vertical calculation	38
General: added command to avoid overfull box warning by <code>vsplit</code>	29	v1.3	
Added frametitle detection to <code>\detected@mdf@put@frame</code>	35	General: Added option <code>shadow</code>	25
added lost semicolons	56	Use now <code>\item\mbox\relax</code>	29
Added method frame title via <code>\savebox</code>	32	v1.3a	
Added option <code>frametitlerulecolor</code> , <code>frametitlebackgroundcolor</code> , <code>font</code>	24	General: fixes bug with <code>\@doendpe</code> (Thanks Dietrich Grau)	28
Added option <code>titleaboveskip</code> , <code>titlebelowskip</code> , <code>frametitlerulewidth</code>	23	v1.4	
Added option <code>usetwoside</code>	25	General: Changed the detecting of float environments. Now <code>mdframed</code> uses only <code>\@capttype</code> instead of <code>\@floatpenalty</code>	35
Changed the definition of <code>\mdf@trivlist</code>	37	Changed the enddefinition of <code>mdframed</code> . Uses now a line to provide the defined width	37
Create new <code>\savebox</code> and renamed <code>\@tempboxa</code>	27	v1.4a	
Defining <code>mdframed</code> with <code>\newenvironment</code>	37	General: added extra test for a wrong splitted box	41
Joining all new definitions	27		
Redefinition of <code>\newmdtheoremenv</code> . – Now check of theorem definition.	30		
Removing <code>\@arrayparboxrestore</code>	38		
Renamed some commands so that every command have the same prefix <code>\mdf@</code>	1		
v1.1release			
General: Added <code>\mbox</code> to the definition.			

H. Index

The index only collect package relevant words.

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