

Checksum3517

# The `mdframed` package <sup>1</sup>

auto-split frame environment

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v1.1beta

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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.*

---

<sup>1</sup>Extending the package `framed.sty`

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

The frame was defined with the following settings.

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

## 2. Syntax

### Loadings `mdframed`

The package itself loads the packages

- `kvoptions`,
- `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 load by the optional argument of `\usepackage`. All other options should be loaded with `\mdfsetup` or related environments.

### 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 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

When 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.

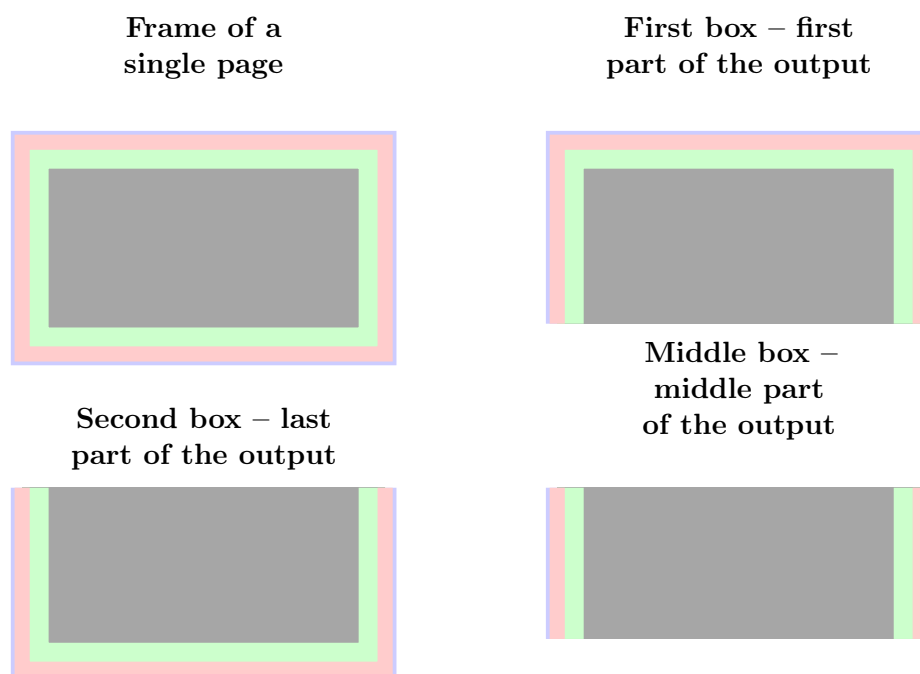


Figure 1: The basic frames

### 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`.

`\newmdtheoremenv`

Since the package is often used to highlight theorem environments, I have created a command<sup>2</sup> 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`!

### `\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 your are avoiding breaking of non robust commands.**<sup>3</sup>

### `\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.<sup>4</sup>

## 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 option are divided in global and local options. The global options can not be used inside `\mdfsetup`.

<sup>2</sup>Thanks to Martin Scharrer and Enrico Gregorio:

[Own command to create new environment](#)

<sup>3</sup>Thanks to Heiko Oberdieck and Philipp Stephani [kvoptions-Declaration von Optionen schlägt fehl](#)

<sup>4</sup>Thanks to Martin Scharrer and Enrico Gregorio:

<http://tex.stackexchange.com/questions/34684/argument-of-setkeys>

## 5.1. Global Options

The following options are only global options.

`xcolor` default=`none`

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

`framemethod` default=`default`

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

1.  $\text{\LaTeX}$ -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
$\text{\LaTeX}$ -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.

Before the explanation of every option starts here a list of all available options.

- `skipabove=0pt` • `skipbelow=0pt` • `leftmargin=0pt` • `rightmargin=0pt` • `innerleftmargin=10pt`
- `innerrightmargin=10pt` • `innertopmargin=0.4\baselineskip`
- `innerbottommargin=0.4\baselineskip` • `splittopskip=0pt` • `splitbottomskip=0pt`
- `outermargin=0pt` • `innermargin=0pt` • `linewidth=0.4pt` • `innerlinewidth=0pt`
- `middlelinewidth=linewidth` • `outerlinewidth=0pt` • `roundcorner=0pt`
- `footnotedistance=\medskipamount` • `userdefinedwidth=\linewidth` • `frametitleaboveskip=5pt`
- `frametitlebelowskip=5pt` • `frametitulerulewidth=.2pt` • `frametitle={}` • `defaultunit=pt`
- `linecolor=black` • `backgroundcolor=white` • `fontcolor=black` • `frametitlefontcolor=black`
- `innerlinecolor=linecolor` • `outerlinecolor=linecolor` • `middlelinecolor=linecolor`

- `psroundlinecolor=backgroundcolor` • `frametitlecolor=linecolor`
- `frametitlebackgroundcolor=backgroundcolor` • `frametitlebottomrulecolor=linecolor`
- `settings={}` • `frametitlesettings={}` • `font={}` • `frametitlefont=\normalfont\bfseries`
- `alignment={}` • `frametitlealignment={}` • `ntheorem=false` • `topline=true` • `leftline=true`
- `bottomline=true` • `rightline=true` • `hidealllines=false` • `frametitlerule=false` • `nobreak=false`
- `footnoteinside=true` • `usetwoside=true` • `repeatframetitle=false` (not well supported)
- `align=left/right/center` • `tikzsetting` • `pstrickssetting` • `xcolor` • `needspace` • `style`

### 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.

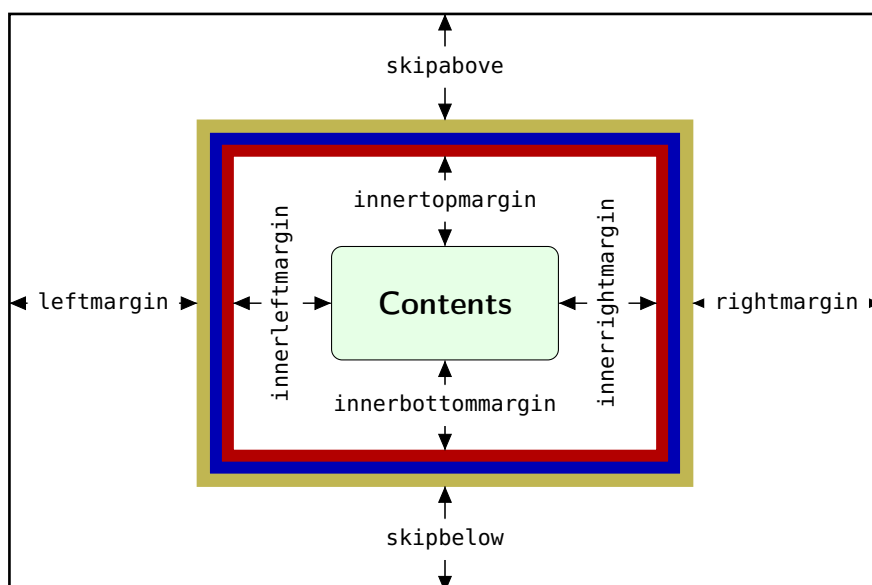


Figure 2: adjustable lengths of `mdframed`

`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.

`rightmargin` default=0pt

Sets the length of the right margin of the environment.

`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

`font` default=`{}`

Sets the font of the environment.

`ntheorem` default=`false`

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

`nobreak` default=`false`

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

`usetwoside` default=`true`

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

`needspace` default=0pt

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

`style`

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

`settings` default=none

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

`align` default=left

Sometimes it is useful to align the environment itself. For this you have the option `align` which can be set to the following strings:

- `left`,
- `right` and
- `center`.

The alignments `left` or `right` depend on the given lengths `leftmargin` and `rightmargin`. Later I will present an example to demonstrate my bad English explanation.

`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 `\apptopsstyle` in combination with this option you can expand the definition. The predefined styles are

- `mdfbackgroundstyle`
- `mdfframetitlebackgroundstyle`
- `mdfouterlinestyle`
- `mdfinnerlinestyle`
- `mdfmiddlelinestyle`
- `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}`

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`.

### 5.3. Hidden Lines

`topline`

default=`true`

Draws a line at the top.

`bottomline`

default=`true`

Draws a line at the bottom.

`leftline`

default=`true`

Draws a line on the left.

`rightline`

default=`true`

Draws a line on the right.

`hidealllines`

default=`false`

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

### 5.4. Frametitle

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

`frametitle`

default=`none`

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

`frametitleformat` default=`\bfseries\large`

Sets the format of the `frametitle`.

`frametitlealignment` default=`\raggedleft`

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

`frametitlerule` default=`true`

Set this key to `false` to get no 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. 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.

## 7. Errors, Warnings and Messages

The package `mdframed` provides different errors, warnings and messages in the `log`-file. Some  $\text{\LaTeX}$ -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 followings 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 smaller than 3 cm you will get this warnings. You should change the settings to get a greater width.

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

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

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

See the explanation above.

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

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

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

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

## 8. Known Problems

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

## 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`

## **10. Acknowledgements**

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

Thanks for proofreading

Alan Munn and Nahid Shajari

I hope I forgot nobody.

## A. More information

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

### A.1. How does `mdframed` work?

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

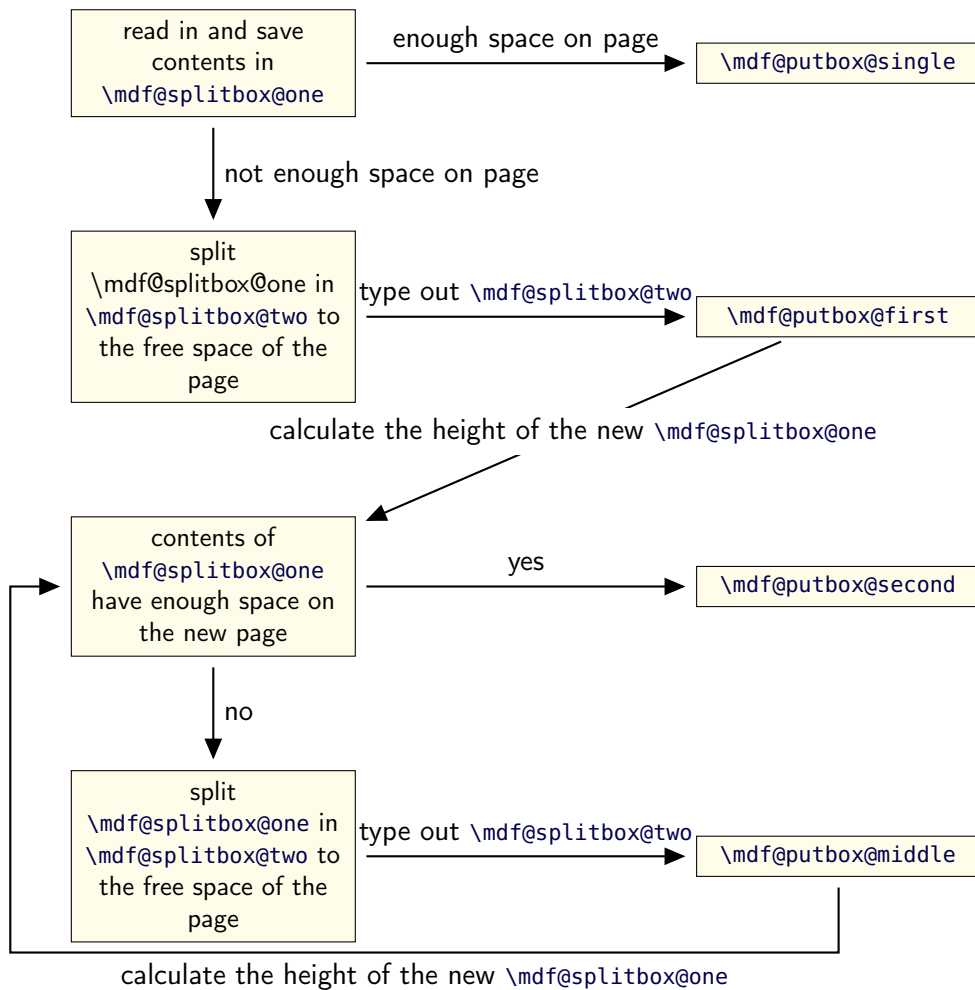


Figure 3: Setting the contents of `mdframed`

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 1.1beta submitted never

- 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=PS Tricks`. • expand frame title option by option `frametitulerule`, `frametitulerulewidth` `frametitlefont`, `frametitleaboveskip`, `frametitlebelowskip`, `frametitlealignment` • added `\@parboxrestore` to `\mdf@lrbox` • removed limitation of three lines for PS Tricks

### 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=PS Tricks`. • created dtx-file (Thanks to Kevin Godby) • added `\@parboxrestore` to `\mdf@lrbox`

### Version 1.0 submitted 13 Nov 2011

- add option `userdefinedwidth` • add option `align` • add option `apptotikzsetting` • create new command `\mdfapptodefinestyle` • changed internal algorithm • removed calc instead using  $\varepsilon$ -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 twocolumn-mode • changed the calculation
- added option `tikzsetting` • added options for hidden lines for all styles • fixes bugs

### Version 0.6a submitted 22 Dec 2010

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

## B. Implementation

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

### B.1. The Explanation of mdframed.sty

*Id : mdframed.dtx 298 2012-01-02 00:28:01Z marco Rev : 298 Author : marco*

*Date : 2012-01-02 01:28:01 +0100 (Mo, 02. Jan 2012)*

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

Set package information

```
1 \def\mdversion{v1.1beta}
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 298 2012-01-02 00:28:01Z 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{etex}
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{pstricks-add}%
102     \or\mdf@LoadFile@IfExist{pstricks-add}%
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{pstricks-add}%
130     \or\mdf@LoadFile@IfExist{pstricks-add}%
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 {footnotedistance==\medskipamount},
152 {userdefinedwidth==\linewidth},
153 {frametitleaboveskip==5pt},
154 {frametitlebelowskip==5pt},
155 {frametitlerulewidth==.2pt},
156 {frametitleleftmargin==10pt},%
157 {frametitlerightmargin==10pt},%
158 }

```

`\mdf@do@lengthoption`

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

```

159 \mdf@dolist{\mdf@do@stringoption}{%
160   {frametitle=={}},%
161   {defaultunit==pt},%
162   {linecolor==black},%
163   {backgroundcolor==white},%
164   {fontcolor==black},%
165   {frametitlefontcolor==black},%
166   {innerlinecolor==\mdf@linecolor},%
167   {outerlinecolor==\mdf@linecolor},%
168   {middlelinecolor==\mdf@linecolor},%
169   {psroundlinecolor==\mdf@backgroundcolor},%
170   {frametitlerulecolor==\mdf@linecolor},
171   {frametitlebackgroundcolor==\mdf@backgroundcolor},%
172   {frametitlebottomrulecolor==\mdf@linecolor},%
173   {settings=={}},%
174   {frametitlesettings=={}},%
175   {font=={}},%
176   {frametitlefont==\normalfont\bfseries},%
177   {printheight==none},%
178   {alignment=={}},%
179   {frametitlealignment=={}},%
180 }

```

`\mdf@do@booloption`

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

```

181 \mdf@dolist{\mdf@do@booloption}{%
182   {ntheorem==false},%
183   {topline==true},%

```

```

184 {leftline==true},%
185 {bottomline==true},%
186 {rightline==true},%
187 {frametitletopline==true},%
188 {frametitleleftline==true},%
189 {frametitlebottomline==true},%
190 {frametitlerightline==true},%
191 {hidealllines==false},%
192 {frametitlerule==false},%
193 {nobreak==false},%
194 {footnoteinside==true},%
195 {usetwoside==true},%
196 {repeatframetitle==false},%Noch nicht richtig implementiert
197 }

```

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

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

```

198 \mdf@dolist{\mdf@do@alignoption}{%
199 {left==\mdf@leftmargin@length==\z@},%
200 {center==\fill==\fill},%
201 {right==\fill==\mdf@rightmargin@length},%
202 {outer==\fill==\mdf@rightmargin@length},%not supported yet
203 {outer==\mdf@leftmargin@length==\fill},%not supported yet
204 }

```

```

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

```

Set the alignment.

```

205 \newcommand*\mdf@align{%
206 \newcommand*\mdf@makeboxalign@left{\null\hspace*\mdf@leftmargin@length}}%
207 \newcommand*\mdf@makeboxalign@right{}%
208 \define@key{mdf}{align}[left]{%
209 \ifcsundef{mdf@align@#1@left}{%
210 \mdf@PackageWarning{Unknown alignment #1\MessageBreak}%
211 \letcs\mdf@makeboxalign@left{mdf@align@left@left}%
212 \letcs\mdf@makeboxalign@right{mdf@align@left@right}%
213 }{%
214 \def\mdf@makeboxalign@left{\csuse{mdf@align@#1@left}}%
215 \def\mdf@makeboxalign@right{\csuse{mdf@align@#1@right}}%
216 }%
217 }

```

```

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

```

Option to pass options to tikz or pstricks

```

218 \def\mdf@tikzset@local{\tikzset{tikzsetting/.style={}}}
219 \define@key{mdf}{tikzsetting}{%
220 \def\mdf@tikzset@local{\tikzset{tikzsetting/.style={#1}}}%
221 }

```



```

222 \define@key{mdf}{apptotikzsetting}{%
223   \appto\mdf@tikzset@local{#1}%
224 }
225 \def\mdf@psset@local{}
226 \define@key{mdf}{pstrickssetting}{%
227   \def\mdf@psset@local{#1}
228 }
229 \def\mdfpstricks@appendsettings{}
230 \define@key{mdf}{pstricksappsetting}{%
231   \def\mdfpstricks@appendsettings{#1}%
232 }
233

```

\mdf@xcolor

**Problem with xcolor. This part must be reworked!**

```

234 \def\mdf@xcolor{}
235 \define@key{mdf}{xcolor}[none]{%
236   \def\@tempa{#1}%
237   \ifpackageloaded{xcolor}{%
238     \let\mdf@xcolor\@empty %ignoriere die Eingabe der Optionen
239     \def\@tempa{}%
240   }{}%
241   \ifx\relax\@tempa\relax\else
242     \PassOptionsToPackage{\mdf@xcolor}{xcolor}%
243     \RequirePackage{xcolor}%
244   \fi%
245 }%

```

\mdf@needspace

Defining the option needspace

```

246 \define@key{mdf}{needspace}[\z@]{%
247   \begingroup%
248     \setlength{\dimen@}{#1}%
249     \vskip\z@\@plus\dimen@%
250     \penalty -100\vskip\z@\@plus -\dimen@%
251     \vskip\dimen@%
252     \penalty 9999%
253     \vskip -\dimen@%
254     \vskip\z@skip % hide the previous |\vskip| from |\addvspace|
255   \endgroup%
256 }

257 \DeclareDefaultOption{%
258   \mdf@PackageWarning{Unknown Option '\CurrentOption' for mdframed}}
259 \ProcessKeyvalOptions*\relax

```

\mdfsetup

Short form of `\setkeys{mdf}`

```

260 \newrobustcmd*{\mdfsetup}{\setkeys{mdf}}

```

`\mdf@style`

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

```

261 \define@key{mdf}{style}{%
262   \ifcsundef{mdf@definestyle@#1}{%
263     \mdf@PackageWarning{Unknown definedstyle #1^^J
264       You have to define a style ^^J
265       via \string\mdfdefinedstyle\MessageBreak
266     }%
267   }%
268   {\expandafter\expandafter\expandafter\mdfsetup%
269     \expandafter\expandafter\expandafter{\csname mdf@definestyle@#1\endcsname}}%
270 }%
```

`\mdf@print@space`

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

```

271 \let\mdf@PackageNoInfo\@gobble
272 \newrobustcmd*\mdf@ifstrequal@expand{%
273   \expandafter\ifstrequal\expandafter{\mdf@printheight}%
274 }
275 \newrobustcmd*\mdf@print@space{%
276   %case "none"
277   \mdf@ifstrequal@expand{none}{\def\mdf@tempa{NoInfo}}{%
278     %case "info"
279     \mdf@ifstrequal@expand{info}{\def\mdf@tempa{Info}}{%
280       %case "warning"
281       \mdf@ifstrequal@expand{warning}{\def\mdf@tempa{Warning}}{%
282         %case "unknown"
283         \mdf@PackageWarning{Unknown key for printheight=\mdf@printheight^^J
284           use none, info or warning}%
285         \def\mdf@tempa{none}%
286       }%
287     }%
288   }%
289   \def\mdf@PackageInfoSpace{\csname mdf@Package\mdf@tempa\endcsname}%
290 }
```

`\new...`

Initialize all commands and length which will we used later

```

291 \newsavebox\mdf@frametitlebox
292 \newsavebox\mdf@footnotebox
293 \newsavebox\mdf@splitbox@one
294 \newsavebox\mdf@splitbox@two
295 \newlength\mdf@splitboxwidth
296 \newlength\mdf@splitboxtotalwidth
297 \newlength\mdf@splitboxheight
298 \newlength\mdf@splitboxdepth
299 \newlength\mdf@splitboxtotalheight
300 \newlength\mdf@frametitleboxwidth
301 \newlength\mdf@frametitleboxtotalwidth
302 \newlength\mdf@frametitleboxheight
```

```

303 \newlength\mdfframetitleboxdepth
304 \newlength\mdfframetitleboxtotalheight
305 \newlength\mdffootnoteboxwidth
306 \newlength\mdffootnoteboxtotalwidth
307 \newlength\mdffootnoteboxheight
308 \newlength\mdffootnoteboxdepth
309 \newlength\mdffootnoteboxtotalheight
310
311 \newlength\mdftotalllinewidth
312
313 \newlength\mdfboundingboxwidth
314 \newlength\mdfboundingboxtotalwidth
315
316 \newlength\mdfboundingboxheight
317 \newlength\mdfboundingboxdepth
318 \newlength\mdfboundingboxtotalheight
319
320 \newlength\mdf@freevspace@length
321 \newlength\mdf@horizontalwidthofbox@length
322 \newlength\mdf@verticalmarginwhole@length
323
324 % Command to expand the tikz code. (see md-frame-1.mdf)
325 \newrobustcmd\mdfcreateextratikz{}
326

```

```

\mdf@lrbox
\endmdf@lrbox

```

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

```

327 \def\mdf@lrbox#1{%
328   \setbox#1\vbox\bgroup
329   \begingroup
330   \mdf@horizontalmargin@equation%
331   \color@setgroup%
332   \hsize=\mdf@horizontalsofbox%
333   \columnwidth=\hsize%
334   \textwidth=\hsize%
335   \let\if@nobreak\iffalse
336   \let\if@noskipsec\iffalse
337   \let\par\@par
338   \let\-\@dischyp
339   \let'\@acci\let'\@accii\let\=\@acciii
340   \parindent\z@ \parskip\z@skip
341   \linewidth\hsize
342   \@totalleftmargin\z@
343   \leftskip\z@skip \rightskip\z@skip \@rightskip\z@skip
344   \parfillskip\@flushglue \lineskip\normallineskip%
345   \baselineskip\normalbaselineskip%
346   \ignorespaces%
347 }
348 \def\endmdf@lrbox{\endgroup\unskip\color@endgroup\egroup}
349

```

```
\mdf@ignorevbadness
\mdf@restorevbadness
```

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

```
350 \newrobustcmd*\mdf@ignorevbadness{%
351   \edef\mdf@currentvbadness{\the\vbadness}%
352   \vbadness=\@M%
353   \afterassignment\mdf@restorevbadness}
354 \newrobustcmd*\mdf@restorevbadness{\vbadness=\mdf@currentvbadness\relax}
```

```
\mdf@trivlist
\endmdf@trivlist
```

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

```
355 \def\mdf@trivlist#1{%
356   \setlength{\topsep}{#1}%
357   \partopsep\z@%
358   \parsep\z@%
359   \@nmblistfalse%
360   \@trivlist%
361   \labelwidth\z@%
362   \leftmargin\z@%
363   \itemindent\z@%
364   \let\@itemlabel\@empty%
365   \def\makelabel##1{##1}}
366 \let\endmdf@trivlist\endtrivlist
367 \patchcmd\endmdf@trivlist\@endparenv\mdf@endparenv{}}
368 \def\mdf@endparenv{%
369   \addpenalty\@endparpenalty\addvspace\mdf@skipbelow@length\@endpetrue}
370
```

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

```
371 \newrobustcmd*\mdf@makebox@out[2][\linewidth]{%
372   \noindent\hb@xt@\z@{%
373     \noindent\makebox[\dimexpr #1\relax][l]{#2}%
374     \hss}%
375 }%
376 \newrobustcmd*\mdf@makebox@in[2][\mdf@userdefinedwidth@length]{%
377   \noindent\makebox[\dimexpr #1\relax][l]{#2}%
378 }
```

```
\mdfdefinestyle
\mdfapptodefinestyle
```

See explanation of this commands above.

```
379 \newrobustcmd*\mdfdefinestyle[2]{%
380   \csdef{mdf@definestyle@#1}{#2}%
381 }
382 \newrobustcmd*\mdfapptodefinestyle[2]{%
383   \ifcsundef{mdf@definestyle@#1}%
```

```

384   {\mdf@PackageWarning{Unknown style #1}}%
385   {\csappto{mdf@definestyle@#1}{, #2}}%
386 }

```

```

\newmdenv
\renewmdenv
\newmdtheoremenv

```

Defining of the new environment definitions.

```

387 \newrobustcmd*\newmdenv[2][]{%
388   \newenvironment{#2}{%
389     \mdfsetup{#1}%
390     \begin{mdframed}%
391   }{%
392     \end{mdframed}%
393   }%
394 }
395 \newrobustcmd*\renewmdenv[2][]{%
396   \expandafter\let\csname #2\endcsname\relax%
397   \expandafter\let\csname end#2\endcsname\relax%
398   \newmdenv[#1]{#2}%
399 }%
400
401 \newrobustcmd*\newmdtheoremenv[2][]{%CHANGE!!!!!!!!+++EXPAND!!!!!!!!!!!!!!
402   \BeforeBeginEnvironment{#2}{\begin{mdframed}[#1]}%
403   \AfterEndEnvironment{#2}{\end{mdframed}}%
404   \newtheorem{#2}%
405 }

```

```

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

```

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

```

406 %TESTVERSION
407 % \newrobustcmd*\mdf@setopt@title{%
408 %   \ifbool{mdf@frametitulerule}{\booltrue{mdf@bottomline}}{\boolfalse{mdf@bottomline}}%
409 %   \let\ifmdf@leftline\ifmdf@frametitleleftline%
410 %   \let\ifmdf@topline\ifmdf@frametitletopline%
411 %   \let\ifmdf@rightline\ifmdf@frametitlerightline%
412 %   \let\ifmdf@bottomline\ifmdf@frametitlebottomline%
413 %   \mdfsetup{innerbottommargin=\mdf@titlebelowskip@length,%
414 %             innertopmargin=\mdf@titleaboveskip@length,%
415 %             middlelinecolor=\mdf@frametitulerulecolor,%
416 %             backgroundcolor=\mdf@frametitlebackgroundcolor,%
417 %             middlelinewidth=\mdf@frametitulerulewidth@length,%
418 %             innerleftmargin=\mdf@frametitleleftmargin@length,%
419 %             innerrightmargin=\mdf@frametitlerightmargin@length,%
420 %             alignment=\mdf@frametitlealignment,%
421 %             skipbelow=\z@}%
422 %   \def\mdf@linecolor@bottom{\color{\mdf@frametitlebottomrulecolor}}%
423 %   \mdf@frametitlesettings%

```

```

424 % }
425 %
426 % \newrobustcmd*\mdf@setopt@body{%
427 %   \mdfsetup{topline=false,skipabove=\z@}%
428 %   \unskip\nointerlineskip%
429 % }
430 %
431 % \newrobustcmd\mdfframedtitleenv[1]{%
432 %   \begingroup
433 %     \mdf@setopt@title
434 %     \color@setgroup
435 %     \mdf@frametitlefont
436 %     \mdf@lrbox{\mdf@splitbox@one}%
437 %       \mdf@frametitlealignment
438 %       #1\par\unskip
439 %     \endmdf@lrbox
440 %     \mdf@ignorevbadness
441 %     \global\setbox\mdf@frametitlebox\vbox{\unvbox\mdf@splitbox@one}%
442 %     \mdf@ignorevbadness
443 %     \global\setbox\mdf@splitbox@one\vbox{\unvcopy\mdf@frametitlebox}%
444 %     \detected@mdf@put@frame%
445 %     \color@endgroup%
446 %   \endgroup
447 % }
448 \newrobustcmd\mdfframedtitleenv[1]{%
449   \begingroup%
450     \color@setgroup%
451     \mdf@frametitlefont\color{\mdf@frametitlefontcolor}%
452     \mdf@lrbox{\mdf@frametitlebox}%
453       \mdf@frametitlealignment%
454       #1\par\unskip
455     \endmdf@lrbox%
456     \mdf@ignorevbadness%
457     \global\setbox\mdf@frametitlebox\vbox{\unvbox\mdf@frametitlebox}%
458     \global\mdfframetitleboxwidth=\wd\mdf@frametitlebox%
459     \global\mdfframetitleboxheight=\ht\mdf@frametitlebox%
460     \global\mdfframetitleboxdepth=\dp\mdf@frametitlebox%
461     \global\mdfframetitleboxtotalheight=\dimexpr\ht\mdf@frametitlebox+\dp\mdf@frametitlebox
462       +\mdf@frametitleaboveskip@length+\mdf@frametitlebelowskip@length\relax%
463     \color@endgroup%
464   \endgroup%
465 }
466
467 \newrobustcmd*\mdf@@frametitle{%
468   \mdfframedtitleenv{\mdf@frametitle}%
469 }
470
471 \newrobustcmd*\mdf@@frametitle@use{%
472   \begingroup
473     \mdf@ignorevbadness%
474     \global\setbox\mdf@splitbox@one\vbox{%
475       \unvcopy\mdf@frametitlebox%
476       \mdf@@frametitlerule%
477       \unvbox\mdf@splitbox@one
478     }%
479     \mdf@ignorevbadness%

```

```

480 \global\setbox\mdf@splitbox@one\vbox{%
481   \unvbox\mdf@splitbox@one}%
482 \endgroup
483 \mdfsetup{innertopmargin=\mdf@frametitleaboveskip@length}%
484 }

```

`\mdf@checkntheorem`

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

```

485
486 \newrobustcmd*\mdf@checkntheorem{%
487   \ifbool{mdf@ntheorem}%
488     {\ifundef{\theorempreskipamount}%
489       {\mdf@PackageWarning{You have not loaded ntheorem yet}}%
490       {\setlength{\theorempreskipamount}{\z@}%
491        \setlength{\theorempostskipamount}{\z@}%
492       }%
493     }{}%
494 }

```

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

Support for footnotes.

```

495 \newrobustcmd*\mdf@footnoterule{%
496   \kern0\p@
497   \hrule \@width 1in \kern 2.6\p@}
498 \newrobustcmd*\mdf@footnoteoutput{%
499   \ifvoid\@mpfootins\else
500     \nobreak%
501     \vskip\mdf@footnotedistance@length%
502     \normalcolor%
503     \mdf@footnoterule
504     \unvbox\@mpfootins
505   \fi%
506 }
507 \newrobustcmd*\mdf@footnoteinput{%
508   \def\@mpfn{mpfootnote}%
509   \def\thempfn{\thempfootnote}%
510   \c@mpfootnote\z@%
511   \let\@footnotetext\@mpfootnotetext%
512 }

```

`\mdf@load@style`  
`\mdf@styledefinition`

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

```

513 \newrobustcmd*\mdf@load@style{%
514   \ifcase\value{mdf@globalstyle@cnt}\relax%
515     \input{md-frame-0.mdf}%
516   \or\input{md-frame-1.mdf}%
517   \or\input{md-frame-2.mdf}%
518   \or\input{md-frame-3.mdf}%

```

```

519 \else%
520   \IfFileExists{md-frame-\value{mdf@globalstyle@cnt}.mdf}%
521   {\input{md-frame-\value{mdf@globalstyle@cnt}.mdf}}%
522   {%
523     \input{md-frame-0.mdf}%
524     \mdf@PackageWarning{The style number \value{mdf@globalstyle@cnt} does not exist^^J
525                          mdframed ues instead style=0 \mdframedpackagename}%
526   }%
527 \fi%
528 }%
529 \mdf@load@style
530
531 \newrobustcmd*{\mdf@styledefinition}{%AVOID!!!
532   \ifnumequal{\value{mdf@globalstyle@cnt}}{0}%
533   {\deflength{\mdf@innerlinewidth@length}{\z@}%
534    \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%
535    \deflength{\mdf@outerlinewidth@length}{\z@}%
536    \let\mdf@innerlinecolor\mdf@linecolor%
537    \let\mdf@middlelinecolor\mdf@linecolor%
538    \let\mdf@outerlinecolor\mdf@linecolor%
539   }{}%
540 % \ifnumequal{\value{mdf@globalstyle@cnt}}{2}%
541 % {\deflength{\mdf@innerlinewidth@length}{\z@}%
542 %  \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%
543 %  \deflength{\mdf@outerlinewidth@length}{\z@}%
544 %  \let\mdf@innerlinecolor\mdf@linecolor%
545 %  }{}%
546 % \ifnumequal{\value{mdf@globalstyle@cnt}}{3}%
547 % {\deflength{\mdf@innerlinewidth@length}{\z@}%
548 %  \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%
549 %  \deflength{\mdf@outerlinewidth@length}{\z@}%
550 %  \let\mdf@innerlinecolor\mdf@linecolor%
551 %  }{}%
552 }

```

`\detected@mdf@put@frame`

Detect whether inside a non breakable environment.

```

553 \let\mdf@reserved@a\@empty
554 \newrobustcmd*{\detected@mdf@put@frame}{%
555   \ifmdf@nobreak%0option nobreak=true?
556   \def\mdf@reserved@a{\mdf@put@frame@standalone}%
557   \else
558     \def\mdf@reserved@a{\mdf@put@frame}%
559     \ifnum\@floatpenalty<0\relax%Detecting float
560       \if@twocolumn%
561         \ifx\@capttype\@undefined
562           \def\mdf@reserved@a{\mdf@put@frame}%
563         \else
564           \mdf@PackageInfo{mdframed inside float ^^J
565                           mdframed uses option nobreak \mdframedpackagename}%
566           \def\mdf@reserved@a{\mdf@put@frame@standalone}%
567         \fi
568       \else

```



```

569      \mdf@PackageInfo{mdframed inside float ^^J
570                      mdframed uses option nobreak \mdframedpackagename}%
571      \def\mdf@reserved@a{\mdf@put@frame@standalone}%
572      \fi%
573  \fi%
574  \if@minipage%
575      \mdf@PackageInfo{mdframed inside minipage ^^J
576                      mdframed uses option nobreak \mdframedpackagename}%
577      \def\mdf@reserved@a{\mdf@put@frame@standalone}%
578      \fi%
579  \ifinner%
580      \mdf@PackageInfo{mdframed inside a box ^^J
581                      mdframed uses option nobreak \mdframedpackagename}%
582      \def\mdf@reserved@a{\mdf@put@frame@standalone}%
583      \fi%
584  \fi%
585  \mdf@reserved@a%
586 }

```

`\mdf@hidealllines@check`

```

587 \newrobustcmd*\mdf@hidealllines@check{%
588   \ifbool{mdf@hidealllines}{%
589     \boolfalse{mdf@leftline}\boolfalse{mdf@rightline}%
590     \boolfalse{mdf@topline}\boolfalse{mdf@bottomline}%
591     \boolfalse{mdf@frametitleleftline}\boolfalse{mdf@frametitlerightline}%
592     \boolfalse{mdf@frametitletopline}\boolfalse{mdf@frametitlebottomline}%
593   }{}%
594 }

```

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

That the user environment.

```

595 \newenvironment{mdframed}[1][[]]{%
596   \beginngroup%
597   \color@setgroup%
598   \mdfsetup{userdefinedwidth=\linewidth,#1}%
599   \mdf@hidealllines@check%
600   \mdf@twoside@checklength%
601   \let\width\z@%
602   \let\height\z@%
603   \mdf@checknththeorem%
604   \mdf@styledefinition%
605   \mdf@footnoteinput%
606   \color{\mdf@fontcolor}%
607   \ifvmode\nointerlineskip\fi%
608   \mdf@trivlist{\mdf@skipabove@length}\item\relax%
609   \ifdefempty{\mdf@frametitle}{\mdf@@@frametitle}%
610   \mdf@settings%
611   \mdf@lrbox{\mdf@splitbox@one}%
612 }%

```

```

613 {\par\unskip%
614   \ifmdf@footnoteinside%
615     \def\mdf@reserveda{%
616       \mdf@footnoteoutput%
617       \endmdf@lrbox%
618       \ifdefempty{\mdf@frametitle}}{\mdf@@frametitle@use}
619       \detected@mdf@put@frame}%
620   \else%
621     \def\mdf@reserveda{%
622       \endmdf@lrbox%
623       \ifdefempty{\mdf@frametitle}}{\mdf@@frametitle@use}
624       \detected@mdf@put@frame%
625       \mdf@footnoteoutput%
626     }%
627   \fi%
628   \mdf@reserveda%
629   \endmdf@trivlist%
630 \color@endgroup\endgroup\@endparenv%
631 }
632
633

```

```

\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.

```

634 \newtoggle{md:checktwoside}
635 \settoggle{md:checktwoside}{false}
636 \newrobustcmd*\mdf@twoside@checklength{%
637   \if@twoside
638     \ifbool{mdf@usetwoside}%
639       {\mdf@PackageInfo{mdframed works in twoside mode}%
640        \settoggle{md:checktwoside}{true}%
641        \setlength\mdf@rightmargin@length{\mdf@outermargin@length}%
642        \setlength\mdf@leftmargin@length{\mdf@innermargin@length}%
643        }%
644       {\mdf@PackageInfo{mdframed inside twoside mode but\MessageBreak
645                          works with oneside mode}%
646        \settoggle{md:checktwoside}{false}%
647        }%
648   \fi%
649 }
650
651 \newcounter{mdf@zref@counter}%keine doppelten laebes
652 \zref@newprop*\mdf@pagevalue}[0]{\number\value{page}}
653 \zref@addprop{\ZREF@mainlist}{mdf@pagevalue}
654 \newrobustcmd*\mdf@zref@label{%
655   \stepcounter{mdf@zref@counter}
656   \zref@label{mdf@pagelabel-\number\value{mdf@zref@counter}}%
657 }
658 \newrobustcmd*\if@mdf@pageodd{%
659   \zref@refused{mdf@pagelabel-\the\value{mdf@zref@counter}}%

```

```

660 \ifodd\zref@extract{mdf@pagelabel-\the\value{mdf@zref@counter}}{mdf@pagevalue}%
661 \setlength\mdf@rightmargin@length{\mdf@outermargin@length}%
662 \setlength\mdf@leftmargin@length{\mdf@innermargin@length}%
663 \else
664 \setlength\mdf@rightmargin@length{\mdf@innermargin@length}%
665 \setlength\mdf@leftmargin@length{\mdf@outermargin@length}%
666 \fi%
667 }
668 \newrobustcmd*{\mdf@@setzref}%
669 \iftoggle{md:checktwoside}{\mdf@zref@label\if@mdf@pageodd}{}%
670 }

```

`\mdf@freepagevspace`

```

671 \newrobustcmd*{\mdf@freepagevspace}%
672 \penalty\@M \vskip 2\baselineskip \vskip\height
673 \penalty9999 \vskip -2\baselineskip \vskip-\height
674 \penalty9999
675 \ifdimequal{\pagegoal}{\maxdimen}%
676 {\mdf@freevspace@length\vsiz}%
677 {\mdf@freevspace@length=\pagegoal\relax%
678 \advance\mdf@freevspace@length by -\pagetotal\relax%
679 }%
680 }

```

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

Width of the box

```

681 \newrobustcmd*{\mdf@advancelength@horizontalmargin@sub[1]}%
682 \advance\mdf@horizontalsofbox by -\csname mdf@#1@length\endcsname\relax%
683 }
684 \newlength\mdf@horizontalsofbox
685 \newrobustcmd*{\mdf@horizontalmargin@equation}%
686 \setlength{\mdf@horizontalsofbox}{\mdf@userdefinedwidth@length}%
687 \mdf@dolist{\mdf@advancelength@horizontalmargin@sub}{%
688 leftmargin,outerlinewidth,middlelinewidth,%
689 innerlinewidth,innerleftmargin,innerrightmargin,%
690 innerlinewidth,middlelinewidth,outerlinewidth,%
691 rightmargin}%
692 \notbool{mdf@leftline}{%
693 \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
694 \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
695 \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
696 }{}%
697 \notbool{mdf@rightline}{%
698 \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
699 \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
700 \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
701 }{}%
702 \ifdimless{\mdf@horizontalsofbox}{3cm}%
703 {\mdf@PackageWarning{You have only a width of 3cm}}{}

```

```

704 \hsize=\mdf@horizontalsofbox%
705 }

```

`\mdf@keeplines@single`

horizontal space in relation of the lines.

```

706 \newrobustcmd*\mdf@keeplines@single{%
707   \notbool{mdf@topline}{%
708     \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
709     \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
710     \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
711   }{}%
712   \notbool{mdf@bottomline}{%
713     \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
714     \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
715     \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
716   }{}%
717 }

```

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

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

```

718 \newrobustcmd*\mdf@advancelength@verticalmarginwhole[1]{%
719   \advance\mdf@verticalmarginwhole@length by \csname mdf@#1@length\endcsname\relax%
720 }
721 \newrobustcmd*\mdf@advancelength@freevspace@sub[1]{%
722   \advance\dimen@ by -\csname mdf@#1@length\endcsname\relax%
723 }
724 \newrobustcmd*\mdf@advancelength@freevspace@add[1]{%
725   \advance\dimen@ by \csname mdf@#1@length\endcsname\relax%
726 }

```

`\mdf@reset`

Reset changes

```

727 \protected@edef\mdf@reset{\boxmaxdepth\the\boxmaxdepth
728   \splittopskip\the\splittopskip}%

```

`\mdf@put@frame@standalone`

Output of `mdframed` inside a non breakable environment.

```

729 \newrobustcmd*\mdf@put@frame@standalone{\relax%
730   \ifvoid\mdf@splitbox@one\relax
731     \mdf@PackageWarning{The environment is empty\MessageBreak}%
732     \let\mdf@reserved@a\relax%
733   \else
734     %Hier berechnung Box-Inhalt+Rahmen oben und unten
735     \setlength{\mdf@verticalmarginwhole@length}{%
736       {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
737     \mdf@dolist{\mdf@advancelength@verticalmarginwhole}{%
738       outerlinewidth,middlelinewidth,innerlinewidth,innertopmargin,

```

```

739             innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth}%
740     \mdf@keeplines@single%
741     \def\mdf@reserved@a{\mdf@putbox@single}%
742     \fi
743     \mdf@reserved@a%
744 }

```

`\mdf@put@frame`

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

```

745 \def\mdf@put@frame{\relax%
746 \ifvoid\mdf@splitbox@one\relax
747 \mdf@PackageWarning{The environment is empty\MessageBreak}%
748 \let\mdf@reserved@a\relax%
749 \else
750   \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
751   \mdf@print@space%
752   \mdf@freepagevspace%gives \mdf@freevspace@length
753   \mdf@PackageInfoSpace{\the\mdf@freevspace@length before the beginning of \MessageBreak
754     the environment ending on input line \MessageBreak}%
755   \ifdimless{\mdf@freevspace@length}{2\baselineskip}
756     {\mdf@PackageInfo{Not enough space on this page}
757       \vfill\eject%
758       \def\mdf@reserved@a{\mdf@put@frame}%
759     }{%
760       %Hier berechnung Box-Inhalt+Rahmen oben und unten
761       \setlength{\mdf@verticalmarginwhole@length}%
762         {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
763       \mdf@dolist{\mdf@advance@length@verticalmarginwhole}{%
764         outerlinewidth,middlelinewidth,innerlinewidth,innertopmargin,
765         innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth}%
766       \mdf@keeplines@single%
767       \ifdimless{\mdf@verticalmarginwhole@length}{\mdf@freevspace@length}%
768         {%passt auf Seite%
769           \begingroup
770             \mdf@@setzref
771             \mdf@putbox@single%
772           \endgroup
773           \let\mdf@reserved@a\relax}%
774       {\def\mdf@reserved@a{\mdf@put@frame@i}}%passt nicht auf Seite
775     }%
776 \fi
777 \mdf@reserved@a%
778 }

```

`\mdf@put@frame@i`

Output of the first splitted box.

```

779 \def\mdf@put@frame@i{%Box muss gesplittet werden -- Ausgabe der ersten Teilbox
780 %Berechnung der Splittgroesse -- Linien und Abstand oben
781 %\vbox to 0pt{}%
782 %\rlap{\smash{\the\mdf@freevspace@length}}%\hrule \@height\z@ \@width\hsize
783 \mdf@freepagevspace%gives \mdf@freevspace@length

```

```

784 %Berechnung ob nur oberen Linien nur auf die Seite passe
785 \dimen@=\the\mdf@freevspace@length%
786 \dimen@i=\mdf@innertopmargin@length%
787 \advance\dimen@i by \mdf@innerlinewidth@length%
788 \advance\dimen@i by \mdf@middlelinewidth@length%
789 \advance\dimen@i by \mdf@outerlinewidth@length%
790 \advance\dimen@i by 2\baselineskip%
791 \ifdimless{\dimen@}{\dimen@i}%
792   {\hrule \@height\z@ \@width\hsize%
793     \vfill\ject%
794     \def\mdf@reserved@a{\mdf@put@frame}%
795   }{%
796     \mdf@freepagevspace%
797     \dimen@=\the\mdf@freevspace@length%
798     \mdf@dolist{\mdf@advance@length@freevspace@sub}{%calculate with \dimen@
799       outerlinewidth,middlelinewidth,innerlinewidth,%
800       innertopmargin,splitbottomskip}%
801     \ifbool{mdf@topline}{}%
802       \advance\dimen@ by \mdf@innerlinewidth@length%
803       \advance\dimen@ by \mdf@middlelinewidth@length%
804       \advance\dimen@ by \mdf@outerlinewidth@length%
805     }%
806     \advance\dimen@.8\pageshrink
807     \ifdimless{\ht\mdf@splitbox@one+\dp\mdf@splitbox@one}{\dimen@}%
808       {\mdf@PackageWarning{You got a bad break\MessageBreak
809         you have to change it manually\MessageBreak
810         by changing the text, the space\MessageBreak
811         or something else}%
812         \advance\dimen@ by -1.8\baselineskip\relax%
813       }{%
814 %       \advance\dimen@ by -1pt\relax%Box darf nicht zu Groß werden.
815       \splittmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
816       \mdf@ignorevbadness%
817       \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@
818       \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
819       \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
820       \ifbool{mdf@repeatframetitle}{%
821         \setbox\mdf@splitbox@one\vbox{%
822           \vbox to \mdf@splittopskip@length{\hsize\z@}
823           %\par\unskip\nointerlineskip
824           \unvcopy\mdf@frametitlebox%
825           \mdf@@@frametitlerule%
826           \vbox to\dimexpr
827             -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox
828             +\mdf@innertopmargin@length\relax{\hsize\z@}%
829           \unvbox\mdf@splitbox@one}%
830       }{%
831       \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
832         {%Falsch gesplittet
833         \mdf@PackageInfo{Box was splittet wrong\MessageBreak}%
834         \dimen@i=\dimen@
835         \advance\dimen@ by -\ht\mdf@splitbox@two
836         \advance\dimen@ by -\dp\mdf@splitbox@two
837         \advance\dimen@i by 0.5\dimen@
838         \splittopskip\z@%
839         \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two%

```

```

840             %benoetigt um Tiefe zu haben
841             \hrule \@height\dp\strutbox \@width\z@
842             \unvbox\mdf@splitbox@one}
843     \splittopskip\mdf@splittopskip@length%
844     \mdf@ignorevbadness%
845     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@i
846     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
847     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
848     \ifbool{mdf@repeatframetitle}{%
849         \setbox\mdf@splitbox@one\vbox{%
850             \vbox to \mdf@splittopskip@length{\hsize\z@}
851             %\par\unskip\nointerlineskip
852             \unvcopy\mdf@frametitlebox%
853             \mdf@@frametitlerule%
854             \vbox to\dimexpr
855                 -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox
856                 +\mdf@innertopmargin@length\relax{\hsize\z@}%
857             \unvbox\mdf@splitbox@one}%
858         }{}%
859     }{}%
860     \ifvoid\mdf@splitbox@one
861         \mdf@PackageWarning{You got a bad break\MessageBreak
862             because the splittet box is empty\MessageBreak
863             You have to change the page settings\MessageBreak
864             like enlargethispage or something else}%
865         \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two%
866             %benoetigt um Tiefe zu haben
867             \hrule \@height\dp\strutbox \@width\z@
868             \unvbox\mdf@splitbox@one}%
869         \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
870         \enlargethispage{\baselineskip}%
871         \def\mdf@reserved@a{\mdf@put@frame}%
872     \fi
873     \ifvoid\mdf@splitbox@two%pruefe, ob erste Box leer ist
874         \hrule \@height\z@ \@width\hsize
875         \vfill\eject%
876         \def\mdf@reserved@a{\mdf@put@frame}%
877     \else
878         \ifdimequal{\ht\mdf@splitbox@two}{0pt}%
879             {\hrule \@height\z@ \@width\hsize%
880             \vfill\eject%
881             \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two\unvbox\mdf@splitbox@one}
882             \def\mdf@reserved@a{\mdf@put@frame}%
883             }%
884             {%
885             \begingroup%
886                 \mdf@@setzref
887                 \mdf@putbox@first%%Groesse des Splittens passt
888             \endgroup%
889             \hrule \@height\z@ \@width\hsize%
890             \vfill\eject%
891             \def\mdf@reserved@a{\mdf@put@frame@ii}%
892             }%
893     \fi%
894 }%
895 \mdf@reserved@a%

```

896 }

`\mdf@put@frame@ii`

Output of the middle and last box.

```

897 \def\mdf@put@frame@ii{%Ausgabe der mittleren Box(en) wenn vorhanden
898   \setlength{\mdf@freevspace@length}{\vsize}%
899   \setlength{\mdf@dimen@}{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
900   \mdf@dolist{\mdf@advance@length@freevspace@add}{%used \mdf@dimen@
901               outerlinewidth,middlelinewidth,innerlinewidth,%
902               innerbottommargin}%%Addition der Linien unten
903   \ifbool{mdf@bottomline}{}%
904       \advance\mdf@dimen@i by \mdf@innerlinewidth@length%
905       \advance\mdf@dimen@i by \mdf@middlelinewidth@length%
906       \advance\mdf@dimen@i by \mdf@outerlinewidth@length%
907       \relax}%
908   \ifdimgreater{\mdf@dimen@}{\mdf@freevspace@length}%
909       {%
910       \advance\mdf@freevspace@length by -\mdf@splitbottomskip@length\relax%
911       \ifbool{mdf@bottomline}{}%
912           \advance\mdf@dimen@i by -\mdf@innerlinewidth@length%
913           \advance\mdf@dimen@i by -\mdf@middlelinewidth@length%
914           \advance\mdf@dimen@i by -\mdf@outerlinewidth@length%
915           \relax}%
916       \splittopmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
917       \mdf@ignorevbadness%
918       \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \mdf@freevspace@length%
919       \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%PRUEFEN!!!
920       \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%PRUEFEN!!!!
921       \ifbool{mdf@repeatframetitle}{%
922           \setbox\mdf@splitbox@one\vbox{%
923               \vbox to \mdf@splittopskip@length{\hsize\z@}
924               %\par\unskip\nointerlineskip
925               \unvcopy\mdf@frametitlebox%
926               \mdf@@@frametitlerule%
927               \vbox to\dimexpr
928                   -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox
929                   +\mdf@innertopmargin@length\relax{\hsize\z@}%
930               \unvbox\mdf@splitbox@one}%
931           }{}%
932       \ifvoid\mdf@splitbox@one\relax%
933           \mdf@PackageWarning{You got a bad break\MessageBreak
934                               because the split box is empty\MessageBreak
935                               You have to change the settings}%
936       \setbox\mdf@splitbox@one{\unvbox\mdf@splitbox@two}%
937       \def\mdf@reserved@a{\enlargethispage{\baselineskip}\mdf@put@frame@ii}%
938       \else
939       \begin{group}
940       \mdf@@@setzref
941       \mdf@putbox@middle%
942       \end{group}
943       \hrule \@height\z@ \@width\hsize
944       \vfill\@eject
945       \def\mdf@reserved@a{\mdf@put@frame@ii}%
946       \fi

```



```

947    }%Hier die Ausgabe der mittleren Box
948    {\ifvoid\mdf@splitbox@one
949      \mdf@PackageWarning{You got a bad break\MessageBreak
950        because the last split box is empty\MessageBreak
951        You have to change the settings}%
952      \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one\hrule \@height\z@ \@width\mdfbounding
953      \fi%
954      \ifdimless{\ht\mdf@splitbox@one}{\lsp}{%
955        \mdf@PackageWarning{You got a bad break\MessageBreak
956          because the last split box is empty\MessageBreak
957          You have to change the settings}%
958        %\hb@xt@\z@{\box\mdf@splitbox@one}%
959        \let\mdf@reserved@a\relax%
960        \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one\hrule \@height\z@ \@width\mdfboundin
961      }{}%
962      \begingroup%
963        \mdf@@setzref
964        \mdf@putbox@second%
965        \hrule \@height\z@ \@width\hsize%
966      \endgroup%
967      \let\mdf@reserved@a\relax%
968    }%Hier kommt die Ausgabe der letzten Box
969    \mdf@reserved@a%
970  }
971

```

```

\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.

```

972 %%%      -----t-----
973 %%%      |               |
974 %%%      |               |
975 %%%      |               |
976 %%%      l|             |r
977 %%%      |               |
978 %%%      |               |
979 %%%      |-----|
980 %%%      b
981 %Zusammenhaenge abfragen:
982 \newrobustcmd*\mdf@test@lrb{%
983   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})

```

```

984             and (bool {mdf@leftline}) and (bool {mdf@rightline}}})
985 %3-set
986 \newrobustcmd*{\mdf@test@ltr}%
987   \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
988             and (bool {mdf@leftline}) and (bool {mdf@rightline}}})
989 \newrobustcmd*{\mdf@test@ltb}%
990   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
991             and (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
992 \newrobustcmd*{\mdf@test@trb}%
993   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
994             and not (bool {mdf@leftline}) and (bool {mdf@rightline}}})
995 \newrobustcmd*{\mdf@test@lrb}%
996   \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
997             and (bool {mdf@leftline}) and (bool {mdf@rightline}}})
998 %2-set
999 \newrobustcmd*{\mdf@test@lb}%
1000   \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1001             and (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1002 \newrobustcmd*{\mdf@test@rb}%
1003   \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1004             and not (bool {mdf@leftline}) and (bool {mdf@rightline}}})
1005 \newrobustcmd*{\mdf@test@tr}%
1006   \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1007             and not (bool {mdf@leftline}) and (bool {mdf@rightline}}})
1008 \newrobustcmd*{\mdf@test@lt}%
1009   \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1010             and (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1011 \newrobustcmd*{\mdf@test@lr}%
1012   \ifboolexpr{not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1013             and (bool {mdf@leftline}) and (bool {mdf@rightline}}})
1014 \newrobustcmd*{\mdf@test@tb}%
1015   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1016             and not (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1017 %Einzellinien
1018 \newrobustcmd*{\mdf@test@l}%
1019   \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1020             and (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1021 \newrobustcmd*{\mdf@test@r}%
1022   \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1023             and not (bool {mdf@leftline}) and (bool {mdf@rightline}}})
1024 \newrobustcmd*{\mdf@test@t}%
1025   \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1026             and not (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1027 \newrobustcmd*{\mdf@test@b}%
1028   \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1029             and not (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1030 %keine Linien
1031 \newrobustcmd*{\mdf@test@noline}%
1032   \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1033             and not (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1034 \newrobustcmd*{\mdf@test@single}%
1035   \ifboolexpr{ not (test {\mdf@test@lrb} or test {\mdf@test@ltr} or
1036             test {\mdf@test@ltb} or test {\mdf@test@trb} or
1037             test {\mdf@test@lrb} or test {\mdf@test@lb} or
1038             test {\mdf@test@rb} or test {\mdf@test@tr} or
1039             test {\mdf@test@lt} ) }}

```

```

1040 %

1041 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{framemethod}%
1042 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{xcolor}%
1043
1044 \endinput

```

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

```

1045 %% Style file for mdframed for package option 'framemethod=default'
1046 %%
1047 %% This package may be distributed under the terms of the LaTeX Project
1048 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1049 %% Either version 1.0 or, at your option, any later version.
1050
1051 %%$Id: mdframed.dtx 298 2012-01-02 00:28:01Z marco $
1052 %

```

```

\mdframedOpackagename
\mdf@frameOdate@svn

```

local settings

```

1053 \def\mdframedOpackagename{md-frame-0}
1054 \def\mdf@frameOdate@svn$#1: #2 #3 #4-#5-#6 #7 #8$#{#4/#5/#6\space }
1055 \ProvidesFile{md-frame-0.mdf}%
1056     [\mdf@frameOdate@svn$Id: mdframed.dtx 298 2012-01-02 00:28:01Z marco $]
1057     \mdversion: \mdframedOpackagename]

```

```

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

```

short command

```

1058 \def\mdf@background@default{\color{\mdf@backgroundcolor}}
1059 \def\mdf@frametitlebackground@default{\color{\mdf@frametitlebackgroundcolor}}
1060 \def\mdf@innerlinecolor@default{\color{\mdf@innerlinecolor}}
1061 \def\mdf@middlelinecolor@default{\color{\mdf@middlelinecolor}}
1062 \def\mdf@outerlinecolor@default{\color{\mdf@outerlinecolor}}
1063 \def\mdf@frametitlerulecolor@default{\color{\mdf@frametitlerulecolor}}
1064 \let\mdf@linecolor@default\mdf@middlelinecolor@default
1065 \def\mdf@@frametitlerule{%
1066   \ifbool{mdf@frametitlerule}{%
1067     \vbox to \mdf@frametitlerulewidth@length {\hsize\mdf@frametitleboxwidth%
1068       \par\unskip\vskip\mdf@frametitlebelowskip@length%
1069       \rlap{\noindent\hspace*{-\mdf@innerleftmargin@length}%
1070         \mdf@frametitlerulecolor@default%
1071         \rule{\dimexpr\mdf@frametitleboxwidth%
1072           +\mdf@innerleftmargin@length
1073           +\mdf@innerrightmargin@length\relax
1074           }{\mdf@frametitlerulewidth@length}%
1075       }}%
1076   }{}
1077   \par\unskip\vskip\mdf@innertopmargin@length%
1078 }%
1079

```

```

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

```

The frame of of a non splitted contents of mdframed

```

1080 \def\mdf@frame@background@single{%
1081   \rlap{\mdf@background@default%
1082     \rule[-\mdf@boundingboxdepth]{%
1083       {\mdf@boundingboxtotalwidth}%
1084       {\mdf@boundingboxtotalheight}%
1085     }%
1086   }%
1087 \def\mdf@frame@frametitlebackground@single{%
1088   \rlap{\mdf@frametitlebackground@default%
1089     \rule[\dimexpr-\mdf@boundingboxdepth+\mdf@boundingboxtotalheight-\mdf@frametitleboxtotalheight\relax]{%
1090       {\mdf@boundingboxtotalwidth}%
1091       {\mdf@frametitleboxtotalheight}%
1092     }%
1093   }%
1094
1095 \def\mdf@frame@topline@single{%
1096   \rlap{\mdf@linecolor@default%
1097     \ifbool{mdf@topline}{%
1098       \rule[\dimexpr\mdf@boundingboxheight-\mdf@boundingboxdepth%
1099         +\mdf@innerbottommargin@length+\mdf@innertopmargin@length\relax]{%
1100         {\mdf@boundingboxtotalwidth}%
1101         {\mdf@middlelinewidth@length}}%
1102     }%
1103   }%
1104 }%
1105 \def\mdf@frame@bottomline@single{%
1106   \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1107     \ifbool{mdf@bottomline}{%
1108       \rule[\dimexpr-\mdf@boundingboxdepth-\mdf@middlelinewidth@length\relax]{%
1109         {\dimexpr\mdf@boundingboxtotalwidth%
1110           \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}%
1111         \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}}{\relax}%
1112         {\mdf@middlelinewidth@length}}%
1113     }%
1114   }%
1115 }%
1116 \def\mdf@frame@leftline@single{%
1117   \llap{\mdf@linecolor@default%
1118     \rule[-\mdf@boundingboxdepth]{%
1119       {\mdf@middlelinewidth@length}%
1120       {\dimexpr\mdf@boundingboxtotalheight%
1121         \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}}{\relax}%
1122     }%
1123   }%
1124 \def\mdf@frame@rightline@single{%
1125   \rlap{\mdf@linecolor@default%
1126     \hspace*{\mdf@boundingboxwidth}%
1127     \hspace*{\mdf@innerrightmargin@length}%

```

```

1128 \rule[\dimexpr-\mdfboundingboxdepth%
1129 \relax]%
1130 {\mdf@middlelinewidth@length}%
1131 {\dimexpr\mdfboundingboxtotalheight%
1132 +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1133 }%
1134 }%
1135 \def\mdf@putbox@single{%%%% Ausgabe der ungesplitteten Gesamtbox
1136 \ifvoid\mdf@splitbox@one
1137 \else%
1138 \mdf@makebox@out{%
1139 \mdf@makeboxalign@left%
1140 \setlength{\mdfboundingboxwidth}%
1141 {\wd\mdf@splitbox@one}%
1142 \setlength{\mdfboundingboxtotalwidth}%
1143 {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1144 +\mdf@innerrightmargin@length\relax}%
1145 \setlength{\mdfboundingboxheight}%
1146 {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1147 \setlength{\mdfboundingboxdepth}%
1148 {\dimexpr\dp\mdf@splitbox@one+\mdf@innerbottommargin@length\relax}%
1149 \setlength{\mdfboundingboxtotalheight}%
1150 {\dimexpr\mdfboundingboxheight+\mdf@innertopmargin@length%
1151 +\mdf@innerbottommargin@length\relax}%
1152 \setlength{\mdftotalllinewidth}{%
1153 \dimexpr\mdf@innerlinewidth@length+\mdf@middlelinewidth@length%
1154 +\mdf@outerlinewidth@length}%
1155 \noindent%
1156 \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1157 +\ifbool{mdf@leftline}%
1158 {\mdf@middlelinewidth@length}{\z@}%
1159 +\ifbool{mdf@rightline}%
1160 {\mdf@middlelinewidth@length}{\z@}\relax}%
1161 \mdf@makebox@in[\@tempdima]{%
1162 \null%
1163 \ifbool{mdf@leftline}{%
1164 \hspace*{\mdftotalllinewidth}%
1165 \mdf@frame@leftline@single%
1166 }{}%
1167 \mdf@frame@topline@single%
1168 \mdf@frame@bottomline@single%
1169 \mdf@frame@background@single%
1170 \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@single}%
1171 \hspace*{\mdf@innerleftmargin@length}%
1172 \ifbool{mdf@rightline}{%
1173 \mdf@frame@rightline@single%
1174 }{}%
1175 {\box\mdf@splitbox@one}%
1176 }%
1177 \mdf@makeboxalign@right%
1178 }%
1179 \fi%
1180 }

```

```

\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

```

1181 \def\mdf@frame@background@first{%
1182   \rlap{\mdf@background@default%
1183     \rule[-\mdfboundingboxdepth]%
1184       {\mdfboundingboxtotalwidth}%
1185       {\mdfboundingboxtotalheight}%
1186   }%
1187 }%
1188 \def\mdf@frame@frametitlebackground@first{%
1189   \ifdimless{\mdfframetitleboxtotalheight}{\mdfboundingboxtotalheight}%
1190   {%
1191     \rlap{\mdf@frametitlebackground@default%
1192       \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1193         {\mdfboundingboxtotalwidth}%
1194         {\mdfframetitleboxtotalheight}%
1195     }%
1196     \global\mdfframetitleboxtotalheight=-\p@\relax%
1197   }\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
1198     Current this isn't well supported}%
1199   \rlap{\mdf@frametitlebackground@default%
1200     \rule[-\mdfboundingboxdepth]%
1201       {\mdfboundingboxtotalwidth}%
1202       {\mdfboundingboxtotalheight}%
1203   }%
1204   \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
1205     -\mdfboundingboxheight
1206     +\mdf@frametitlebelowskip@length
1207     +.5\baselineskip-1pt
1208   %
1209     \relax%
1210 }%
1211 }%
1212 \def\mdf@frame@leftline@first{%
1213   \llap{\mdf@linecolor@default%
1214     \rule[-\mdfboundingboxdepth]%
1215       {\mdf@middlelinewidth@length}%
1216       {\dimexpr\mdfboundingboxtotalheight%
1217         +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1218   }%
1219 }%
1220 \def\mdf@frame@topline@first{%
1221   \rlap{\mdf@linecolor@default%
1222     \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth+%
1223       \mdf@splitbottomskip@length+\mdf@innertopmargin@length\relax]%
1224       {\mdfboundingboxtotalwidth}%
1225       {\mdf@middlelinewidth@length}%
1226   }%
1227 }
1228 \def\mdf@frame@rightline@first{%
1229   \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%

```

```

1230    \hspace*{\mdf@innerrightmargin@length}%
1231    \rule[-\mdfboundingboxdepth]%
1232        {\mdf@middlelinewidth@length}%
1233        {\dimexpr\mdfboundingboxtotalheight%
1234            +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1235    }%
1236 }%
1237 \def\mdf@putbox@first{%%%% Ausgabe der Teilbox 1
1238 \ifvoid\mdf@splitbox@two
1239 \else%
1240 \mdf@makebox@out[\linewidth]{%
1241 \mdf@makeboxalign@left%
1242 \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@two}%
1243 \setlength{\mdfboundingboxtotalwidth}%
1244     {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1245         +\mdf@innerrightmargin@length\relax}%
1246 \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
1247 \setlength{\mdfboundingboxdepth}%
1248     {\dimexpr\dp\mdf@splitbox@two+\mdf@splitbottomskip@length\relax}%
1249 \setlength{\mdfboundingboxtotalheight}%
1250     {\dimexpr\mdfboundingboxheight+\mdf@innertopmargin@length%
1251         +\mdf@splitbottomskip@length\relax}%
1252 \setlength{\@tempdima}%
1253     {\dimexpr\mdfboundingboxtotalwidth%
1254         +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1255         +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1256         \relax}%
1257 \mdf@makebox@in[\@tempdima]{%
1258 \null%
1259 \ifbool{mdf@leftline}{%
1260 \hspace*{\mdf@middlelinewidth@length}%
1261 \mdf@frame@leftline@first}{}%
1262 \ifbool{mdf@topline}{%
1263 \mdf@frame@topline@first}{}%
1264 \mdf@frame@background@first%
1265 \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@first}%
1266 \hspace*{\mdf@innerleftmargin@length}%
1267 \ifbool{mdf@rightline}{%
1268 \mdf@frame@rightline@first}{}%
1269 {\box\mdf@splitbox@two}%
1270 }%
1271 \mdf@makeboxalign@right%
1272 }%
1273 \fi%
1274 }

```

```

\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

```

1275 \def\mdf@frame@background@second{%
1276 \rlap{\mdf@background@default%

```

```

1277 \rule[-\mdfboundingboxdepth]%
1278 {\mdfboundingboxtotalwidth}%
1279 {\mdfboundingboxtotalheight}%
1280 }%
1281 }%
1282 \def\mdf@frame@frametitlebackground@second{%
1283 \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1284 {}%
1285 {\rlap{\mdf@frametitlebackground@default%
1286 \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1287 {\mdfboundingboxtotalwidth}%
1288 {\mdfframetitleboxtotalheight}%
1289 }%
1290 }%
1291 }%
1292 \def\mdf@frame@leftline@second{%
1293 \llap{\mdf@linecolor@default%
1294 \rule[-\mdfboundingboxdepth]%
1295 {\mdf@middlelinewidth@length}%
1296 {\dimexpr\mdfboundingboxtotalheight}%
1297 }%
1298 }%
1299 \def\mdf@frame@bottomline@second{%
1300 \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1301 \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1302 {\dimexpr\mdfboundingboxtotalwidth
1303 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{\hspace*{\mdf@middlelinewidth@length}}{\relax}%
1304 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{\relax}%
1305 {\mdf@middlelinewidth@length}%
1306 }%
1307 }%
1308 \def\mdf@frame@rightline@second{%
1309 \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1310 \hspace*{\mdf@innerrightmargin@length}%
1311 \rule[-\mdfboundingboxdepth]%
1312 {\mdf@middlelinewidth@length}%
1313 {\mdfboundingboxtotalheight}%
1314 }%
1315 }%
1316 \def\mdf@putbox@second{%
1317 \ifvoid\mdf@splitbox@one%
1318 \else
1319 \mdf@makebox@out{%
1320 \mdf@makeboxalign@left%
1321 \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@one}%
1322 \setlength{\mdfboundingboxtotalwidth}%
1323 {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1324 +\mdf@innerrightmargin@length\relax}%
1325 \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1326 \setlength{\mdfboundingboxdepth}%
1327 {\dimexpr\dp\mdf@splitbox@one+\mdf@innerbottommargin@length\relax}%
1328 \setlength{\mdfboundingboxtotalheight}%
1329 {\dimexpr\mdfboundingboxheight+\mdf@innerbottommargin@length\relax}%
1330 \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1331 +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1332 +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%

```



```

1333             \relax}%
1334 \mdf@makebox@in[\@tempdima]{%
1335 \null%
1336   \ifbool{mdf@leftline}{%
1337     \hspace*{\mdf@middlelinewidth@length}%
1338     \mdf@frame@leftline@second}{}%
1339   \ifbool{mdf@bottomline}{%
1340     \mdf@frame@bottomline@second}{}%
1341   \mdf@frame@background@second%
1342   \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@second}%
1343   \hspace*{\mdf@innerleftmargin@length}%
1344   \ifbool{mdf@rightline}{%
1345     \mdf@frame@rightline@second}{}%
1346   {\box\mdf@splitbox@one}%
1347 }%
1348 \mdf@makebox@align@right%
1349 }%
1350 \fi%
1351 }%

```

```

\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

```

1352 \def\mdf@frame@leftline@middle{%
1353   \llap{\mdf@linecolor@default%
1354     \rule[-\mdf@boundingboxdepth]{%
1355       {\mdf@middlelinewidth@length}%
1356       {\mdf@boundingboxtotalheight}}%
1357   }%
1358 }%
1359 \def\mdf@frame@background@middle{%
1360   \rlap{\mdf@background@default%
1361     \rule[-\mdf@boundingboxdepth]{%
1362       {\mdf@boundingboxtotalwidth}%
1363       {\mdf@boundingboxtotalheight}}%
1364   }%
1365 }%
1366 \def\mdf@frame@frametitlebackground@middle{%
1367   \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1368   {}%
1369   {\rlap{\mdf@frametitlebackground@default%
1370     \rule[\dimexpr-\mdf@boundingboxdepth+\mdf@boundingboxtotalheight-\mdfframetitleboxtotalheight\relax]{%
1371       {\mdf@boundingboxtotalwidth}%
1372       {\mdfframetitleboxtotalheight}}%
1373   }%
1374   \global\mdfframetitleboxtotalheight=-\p@ \relax%
1375 }%
1376 }%
1377 \def\mdf@frame@rightline@middle{%
1378   \rlap{\mdf@linecolor@default\hspace*{\mdf@boundingboxwidth}%
1379     \hspace*{\mdf@innerrightmargin@length}%
1380     \rule[-\mdf@boundingboxdepth]{%

```

```

1381      {\mdf@middlelinewidth@length}%
1382      {\mdf@boundingboxtotalheight}%
1383    }%
1384  }%
1385  \def\mdf@putbox@middle{%
1386    \ifvoid\mdf@splitbox@two%
1387    \else
1388      \mdf@makebox@out{%
1389        \mdf@makeboxalign@left%
1390        \setlength{\mdf@boundingboxwidth}{\wd\mdf@splitbox@two}%
1391        \setlength{\mdf@boundingboxtotalwidth}%
1392          {\dimexpr\mdf@boundingboxwidth+\mdf@innerleftmargin@length%
1393            +\mdf@innerrightmargin@length\relax}%
1394        \setlength{\mdf@boundingboxheight}{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
1395        \setlength{\mdf@boundingboxdepth}%
1396          {\dimexpr\dp\mdf@splitbox@two+\mdf@splitbottomskip@length\relax}%
1397        \setlength{\mdf@boundingboxtotalheight}%
1398          {\dimexpr\mdf@boundingboxheight+\mdf@splitbottomskip@length\relax}%
1399        \setlength{\@tempdima}{\dimexpr\mdf@boundingboxtotalwidth%
1400          +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1401          +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1402          \relax}%
1403        \mdf@makebox@in[\@tempdima]{%
1404          \null%
1405          \ifbool{mdf@leftline}{%
1406            \hspace*{\mdf@middlelinewidth@length}%
1407            \mdf@frame@leftline@middle}{%
1408            \mdf@frame@background@middle%
1409            \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@middle}%
1410            \hspace*{\mdf@innerleftmargin@length}%
1411            \ifbool{mdf@rightline}{%
1412              \mdf@frame@rightline@middle}{%
1413              {\box\mdf@splitbox@two}%
1414            }%
1415          \mdf@makeboxalign@right%
1416        }
1417      \fi%
1418    }
1419  \endinput

```

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

```

1420 %% Style file for mdframed for package option 'framemethod=default'
1421 %%
1422 %% This package may be distributed under the terms of the LaTeX Project
1423 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1424 %% Either version 1.0 or, at your option, any later version.
1425
1426 %%$Id: mdframed.dtx 298 2012-01-02 00:28:01Z marco $
1427 %

```

```

\mdframedIpackagename
\mdf@frameIdate@svn

```

local settings

```

1428 \def\mdframedIpackagename{md-frame-1}
1429 \def\mdf@frameIdate@svn$#1: #2 #3 #4-#5-#6 #7 #8$#{#4/#5/#6\space }
1430 \ProvidesFile{md-frame-1.mdf}%
1431      [\mdf@frameIdate@svn$Id: mdframed.dtx 298 2012-01-02 00:28:01Z marco $ %
1432      \mdversion: \mdframedIpackagename]
1433 %

```

\mdf@tikz@settings

Define settings for tikz

```

1434 %Allgemeine Einstellungen fuer tikz
1435 \def\mdf@tikz@settings{%
1436 %
1437   \tikzset{mdfbox/.style={anchor=south west,%
1438                           inner sep=0pt,%
1439                           outer sep=0pt,%
1440                           \mdf@fontcolor,}}% anchor der Ausgabebox ist unten links
1441   \tikzset{mdfcorners/.style={rounded corners=\mdf@roundcorner@length}}%
1442   \tikzset{mdfbackground/.style={fill=\mdf@backgroundcolor,%
1443                                   draw=\mdf@backgroundcolor}}%
1444   \tikzset{mdfframetitlebackground/.style={fill=\mdf@frametitlebackgroundcolor,%
1445                                               draw=none,%
1446                                               rounded corners={max(\mdf@roundcorner@length%
1447                                                                       -\mdf@innerlinewidth@length%
1448                                                                       -.5\mdf@middlelinewidth@length,0)}}}%
1449 %
1450   \tikzset{mdfouterline/.style={}}%
1451 % nur wenn outerlinewidth>0 wird aussere Linie gezeichnet
1452   \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
1453     {\tikzset{mdfouterline/.append style={%
1454         draw=\mdf@outerlinecolor,%
1455         line width=2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length}}}%
1456 %
1457   \tikzset{mdfinnerline/.style={}}%
1458 % nur wenn innerlinewidth>0 wird innere Linie gezeichnet
1459   \ifdimgreater{\mdf@innerlinewidth@length}{\z@}
1460     {\tikzset{mdfinnerline/.append style={%
1461         draw=\mdf@innerlinecolor,%
1462         line width=2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length}}}%
1463 %
1464   \mdf@tikzset@local
1465   \tikzset{mdfmiddleline/.style={}}%
1466 % nur wenn middlelinewidth>0 wird mittlere Linie gezeichnet
1467   \ifdimgreater{\mdf@middlelinewidth@length}{\z@}
1468     {\tikzset{mdfmiddleline/.append style={%
1469         preaction={draw=\mdf@middlelinecolor,%
1470                   line width=\mdf@middlelinewidth@length},%
1471         line width=\mdf@middlelinewidth@length,%
1472         tikzsetting}}}%
1473     {}%
1474 }%

```

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

Befehle fuer Ausgabe von Rahmen und Hintergrund

```

1475 \newrobustcmd*\mdf@tikzbox@tfl[1]{%three or four borders
1476   \clip(0,0)rectangle(\mdfboundingboxwidth,\mdfboundingboxheight);%
1477   \begin{scope}[mdfcorners]%
1478     \clip[preaction=mdfouterline]%
1479       [postaction=mdfbackground]%
1480       [postaction=mdfinnerline]#1;%
1481   \end{scope}%
1482   \path[mdfmiddleline,mdfcorners]#1;
1483 }%
1484
1485
1486
1487 \newrobustcmd*\mdf@tikzbox@otl[2]{%one or two borders
1488   \clip(0,0)rectangle(\mdfboundingboxwidth,\mdfboundingboxheight);%
1489   \begin{scope}
1490     \path[mdfouterline,mdfcorners]#1;%
1491     \clip[postaction=mdfbackground]#2;%
1492     \path[mdfinnerline,mdfcorners]#1;%
1493   \end{scope}%
1494   \path[mdfmiddleline,mdfcorners]#1;%

```

\mdf@put@frametitrerule

frametitrerule with tikz

```

1495 \tikzset{mdfframetitrerule/.style={%
1496   draw=none,
1497   fill=\mdf@frametitrerulecolor,
1498 }%
1499 }
1500 \def\mdf@@frametitrerule{%
1501   \ifbool{mdf@frametitrerule}{%
1502     \vbox{\hsize0pt
1503       \par\unskip\vskip\mdf@frametitlebelowskip@length
1504       \noindent\rlap{\hspace*{-\mdf@innerleftmargin@length}}%
1505       \begingroup%
1506       \pgfmathsetlength{\dimen@}{\mdfframetitleboxwidth+\mdf@innerleftmargin@length+\mdf@innerrightmargin@length}
1507       \tikz\draw[mdfframetitrerule] (0,0)%
1508         rectangle (\dimen@,\mdf@frametitrerulewidth@length);
1509       \endgroup%
1510     }%
1511   }{}
1512   \par\unskip\vskip\mdf@innertopmargin@length%
1513 }%
1514

```

\mdf@putbox@single

Output of the non breakable contents.

```

1515 % Info zu den verwendeten Punkten:
1516 % 0 ist die untere linke Ecke der Mitte der middleline
1517 % P ist die obere rechte Ecke der Mitte der middleline
1518 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
1519 %

```

```

1520 \def\mdf@putbox@single{%
1521   \ifvoid\mdf@splitbox@one
1522   \else%
1523     \mdf@makebox@out{%
1524       \mdf@makeboxalign@left%
1525       \mdf@tikz@settings%
1526 %
1527       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
1528       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
1529       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
1530       \ifbool{mdf@leftline}{%
1531         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1532         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1533         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
1534       \ifbool{mdf@rightline}{%
1535         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1536         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1537         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
1538 %
1539       \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1540       \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
1541       \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
1542       \ifbool{mdf@topline}{%
1543         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1544         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1545         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{%
1546       \ifbool{mdf@bottomline}{%
1547         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1548         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1549         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
1550       \mdf@makebox@in[\mdfboundingboxwidth]{%
1551         \null%
1552         \begin{tikzpicture}[remember picture]%
1553           \begin{scope}
1554             \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
1555             \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
1556             \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
1557             \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
1558             \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
1559             \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
1560             \ifbool{mdf@leftline}%
1561               {%
1562                 \pgfmathsetlengthmacro\mdf@Ax%
1563                   {\mdf@Ax+\mdf@outerlinewidth@length+
1564                    \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
1565                 \pgfmathsetlengthmacro\mdf@Ox%
1566                   {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1567               }{%
1568             \ifbool{mdf@rightline}%
1569               {%
1570                 \pgfmathsetlengthmacro\mdf@Px%
1571                   {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1572               }{%
1573             \ifbool{mdf@bottomline}%
1574               {%
1575                 \pgfmathsetlengthmacro\mdf@Ay%

```

```

1576      {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
1577      +\mdf@innerlinewidth@length}%
1578      \pgfmathsetlengthmacro\mdf@Oy%
1579      {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1580      }{}%
1581      \ifbool{mdf@topline}%
1582      {%
1583      \pgfmathsetlengthmacro\mdf@Py%
1584      {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1585      }{}%
1586 %
1587      \coordinate(0)at(\mdf@Ox,\mdf@Oy);%
1588      \coordinate(P)at(\mdf@Px,\mdf@Py);%
1589 %
1590      \mdf@test@ltrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
1591 %
1592      \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
1593      \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
1594      \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
1595      \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
1596 %
1597      \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
1598      {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
1599      }{}%
1600      \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
1601      {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
1602      }{}%
1603      \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
1604      {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
1605      }{}%
1606      \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
1607      {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
1608      }{}%
1609      \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
1610      {(0)rectangle(P)}%
1611      }{}%
1612      \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
1613      {(0)rectangle(P)}%
1614      }{}%
1615 %
1616      \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
1617      {(0)rectangle(P)}%
1618      }{}%
1619      \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
1620      {(0)rectangle(P)}%
1621      }{}%
1622      \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%
1623      {(0)rectangle(P)}%
1624      }{}%
1625      \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}}%
1626      {(0)rectangle(P)}%
1627      }{}%
1628 %
1629      \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
1630 %
1631      %Frametitlebackground

```

```

1632         \drawbackgroundframetitle@single
1633 %
1634         \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};% Ausgabebox einfuegen
1635         \end{scope}
1636         %HIER KOMMT EIN WEITERES MAKRO
1637         \mdfcreateextratikz
1638         \end{tikzpicture}%
1639     }%
1640     \mdf@makeboxalign@right%
1641 }%
1642 \fi
1643 }%
1644 \def\drawbackgroundframetitle@single{%
1645 \ifdefempty{\mdf@frametitle}{}%
1646     \drawbackgroundframetitle@@single%
1647 }%
1648 }%
1649 \def\drawbackgroundframetitle@@single{%
1650     \begin{scope}%background frame title
1651         \ifbool{mdf@leftline}{
1652             \pgfmathsetlengthmacro\mdf@Ox%
1653                 {\mdf@Ox+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
1654             }{}%
1655         \ifbool{mdf@rightline}{%
1656             \pgfmathsetlengthmacro\mdf@Px%
1657                 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1658             }{}%
1659         \ifbool{mdf@topline}{%
1660             \pgfmathsetlengthmacro\mdf@Py%
1661                 {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1662             }{}%
1663         \pgfmathsetlengthmacro\mdf@Fy
1664             {\mdf@Py-\mdfframetitleboxtotalheight}
1665         \path[mdfframetitlebackground]
1666             (\mdf@Ox,\mdf@Fy) -- (\mdf@Ox,\mdf@Py)%
1667             --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
1668     \end{scope}
1669 }

```

`\mdf@putbox@first`

Output of the first breakable contents.

```

1670 \def\drawbackgroundframetitle@first{%
1671 \ifdefempty{\mdf@frametitle}{}%
1672 \ifdimgreater{\mdf@boundingboxheight}{\mdfframetitleboxtotalheight}%
1673 {%
1674     \drawbackgroundframetitle@@first
1675     \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
1676 }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
1677     Currently this isn't well supported}%
1678     \drawbackgroundframetitle@@first
1679     \pgfmathsetlength{\global\mdfframetitleboxtotalheight}%
1680         {\mdfframetitleboxtotalheight-\mdf@boundingboxheight-
1681             \mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
1682             +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length+\mdf@splittopskip@length}

```

```

1683             +\dp\strutbox%
1684         }%
1685     }%
1686 }%
1687 }%
1688 %
1689 \def\drawbrackgroundframetitle@@first{%
1690 \begin{scope}%background frame title
1691     \ifbool{mdf@leftline}{%
1692         \pgfmathsetlengthmacro\mdf@0x%
1693             {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
1694         }{}%
1695     \ifbool{mdf@rightline}{%
1696         \pgfmathsetlengthmacro\mdf@Px%
1697             {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1698         }{}%
1699     \ifbool{mdf@topline}{%
1700         \pgfmathsetlengthmacro\mdf@Py%
1701             {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1702         }{}%
1703         \pgfmathsetlengthmacro\mdf@Fy
1704             {\max(0,\mdf@Py-\mdfframetitleboxtotalheight)}
1705         \path[mdfframetitlebackground]
1706             (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
1707             --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
1708     \end{scope}%
1709 }%
1710 %
1711 \def\mdf@putbox@first{%
1712     \ifvoid\mdf@splitbox@two
1713     \else%
1714         \mdf@makebox@out{%
1715             \mdf@makeboxalign@left%
1716             \mdf@tikz@settings%
1717             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
1718             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
1719             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
1720             \ifbool{mdf@leftline}{%
1721                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1722                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1723                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
1724             \ifbool{mdf@rightline}{%
1725                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1726                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1727                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
1728         }%
1729         \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
1730         \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
1731         \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
1732         \ifbool{mdf@topline}{%
1733             \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1734             \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1735             \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
1736     }%
1737     %\ifdimequal{\pagegoal}{\maxdimen}{\enlargethispage{\baselineskip}}{} ???
1738     \ifdimgreater{\pagegoal-\maxdimen}{0pt}{}{\enlargethispage{\baselineskip}}%

```



```

1739 \mdf@makebox@in[\mdfboundingboxwidth]{%
1740 \null%
1741 \begin{tikzpicture}[remember picture]
1742 \begin{scope}
1743 %
1744 \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
1745 \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
1746 \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
1747 \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
1748 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
1749 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
1750 \ifbool{mdf@leftline}
1751 {%
1752 \pgfmathsetlengthmacro\mdf@Ax%
1753 {\mdf@Ax+\mdf@outerlinewidth@length+
1754 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
1755 \pgfmathsetlengthmacro\mdf@Ox%
1756 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1757 }{}%
1758 \ifbool{mdf@rightline}{%
1759 \pgfmathsetlengthmacro\mdf@Px%
1760 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1761 }{}%
1762 \ifbool{mdf@topline}{%
1763 \pgfmathsetlengthmacro\mdf@Py%
1764 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1765 }{}%
1766 %
1767 \coordinate(0)at(\mdf@Ox,\mdf@Oy);%
1768 \coordinate(P)at(\mdf@Px,\mdf@Py);%
1769 %
1770 \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@ltr}}{%
1771 {\mdf@tikzbox@otl{(0)--(0|-P)--(P)--(P|-0)}}%
1772 }{}%
1773 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}{%
1774 {\mdf@tikzbox@otl{(0)--(0|-P)--(P)}{(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}}%
1775 }{}%
1776 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}{%
1777 {\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}{(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}}%
1778 }{}%
1779 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}{%
1780 {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}}%
1781 }{}%
1782 \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}{%
1783 {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}}%
1784 }{}%
1785 \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}{%
1786 {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}}%
1787 }{}%
1788 \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}{%
1789 {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}}%
1790 }{}%
1791 \mdf@test@b{\path[mdfbackground](0)rectangle(P);}%
1792 %
1793 \mdf@test@noline{\path[mdfbackground,mdfcorners](0)--(0|-P)--(P)--(P|-0);}%
1794 %

```

```

1795      \drawbackgroundframetitle@first
1796 %
1797      \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};% Ausgabebox einfuegen
1798      \end{scope}
1799      %HIER KOMMT EIN WEITERES MAKRO
1800      \mdfcreateextratikz%
1801      \end{tikzpicture}%
1802      }%
1803      \mdf@makeboxalign@right%
1804      }%
1805      \fi
1806      }%

```

\mdf@putbox@middle

Output of the middle breakable contents.

```

1807 \def\drawbackgroundframetitle@middle{%
1808   \ifdefempty{\mdf@frametitle}{}{%
1809     \ifdimless{\mdfframetitleboxtotalheight}{\z@}
1810     {}{%
1811       \drawbackgroundframetitle@@middle%
1812       \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
1813     }%
1814   }%
1815 }%
1816 %
1817 \def\drawbackgroundframetitle@@middle{%
1818   \begin{scope}%background frame title
1819     \ifbool{mdf@leftline}{
1820       \pgfmathsetlengthmacro\mdf@0x%
1821         {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
1822       }{}%
1823     \ifbool{mdf@rightline}{%
1824       \pgfmathsetlengthmacro\mdf@Px%
1825         {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1826       }{}%
1827     \pgfmathsetlengthmacro\mdf@Fy
1828       {\mdf@Py-\mdfframetitleboxtotalheight}
1829     \path[mdfframetitlebackground,rounded corners=\z@]
1830       (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
1831       -- (\mdf@Px,\mdf@Py) -- (\mdf@Px,\mdf@Fy);
1832     \end{scope}
1833   }%
1834 %
1835 \def\mdf@putbox@middle{%
1836   \ifvoid\mdf@splitbox@two
1837   \else%
1838     \mdf@makebox@out{%
1839       \mdf@makeboxalign@left%
1840       \mdf@tikz@settings%
1841     }%
1842     \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
1843     \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
1844     \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
1845     \ifbool{mdf@leftline}{%

```

```

1846 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1847 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1848 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
1849 \ifbool{mdf@rightline}{%
1850 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1851 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1852 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
1853 %
1854 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
1855 \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
1856 %
1857 \mdf@makebox@in[\mdfboundingboxwidth]{%
1858 \null%
1859 \begin{tikzpicture}[remember picture]
1860 \begin{scope}
1861 \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
1862 \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
1863 \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
1864 \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
1865 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
1866 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
1867 \ifbool{mdf@leftline}{%
1868 {%
1869 \pgfmathsetlengthmacro\mdf@Ax%
1870 {\mdf@Ax+\mdf@outerlinewidth@length+
1871 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
1872 \pgfmathsetlengthmacro\mdf@Ox%
1873 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1874 }}}%
1875 \ifbool{mdf@rightline}{%
1876 {%
1877 \pgfmathsetlengthmacro\mdf@Px%
1878 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1879 }}}%
1880 %
1881 \coordinate(0)at(\mdf@Ox,\mdf@Oy);%
1882 \coordinate(P)at(\mdf@Px,\mdf@Py);%
1883 %
1884 \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
1885 {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}}}%
1886 \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
1887 {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}}}%
1888 \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
1889 {\mdf@tikzbox@otl{(P)--(P|-0)}{(0)rectangle(P)}}}%
1890 \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
1891 {\path[mdfbackground](0)rectangle(P);}%
1892 %
1893 \drawbrackgroundframetitle@middle
1894 %
1895 \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};% Ausgabebox einfuegen
1896 \end{scope}
1897 %HIER KOMMT EIN WEITERES MAKRO
1898 \end{tikzpicture}%
1899 }%
1900 \mdf@makeboxalign@right%
1901 }%

```

```
1902 \fi
1903 }%
```

```
\mdf@putbox@second
```

Output of the last breakable contents.

```
1904 \def\drawbackgroundframetitle@second{%
1905   \ifdefempty{\mdf@frametitle}{\}%
1906   \ifdimless{\mdfframetitleboxtotalheight}{\z@}
1907   {\}%
1908   \drawbackgroundframetitle@@second%
1909   }%
1910 }%
1911 }%
1912 %
1913 \def\drawbackgroundframetitle@@second{%
1914   \begin{scope}%background frame title
1915     \ifbool{mdf@leftline}{
1916       \pgfmathsetlengthmacro\mdf@0x%
1917         {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
1918       }{\}%
1919     \ifbool{mdf@rightline}{%
1920       \pgfmathsetlengthmacro\mdf@Px%
1921         {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1922       }{\}%
1923     \pgfmathsetlengthmacro\mdf@Fy
1924       {\mdf@Py-\mdfframetitleboxtotalheight}
1925     \path[mdfframetitlebackground,rounded corners=\z@]
1926       (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
1927       --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
1928     \end{scope}
1929 }%
1930 \def\mdf@putbox@second{%
1931   \ifvoid\mdf@splitbox@one
1932   \else%
1933     \mdf@makebox@out{%
1934       \mdf@makeboxalign@left%
1935       \mdf@tikz@settings%
1936     }%
1937     \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
1938     \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
1939     \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
1940     \ifbool{mdf@leftline}{%
1941       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1942       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1943       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{\}%
1944     \ifbool{mdf@rightline}{%
1945       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1946       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1947       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{\}%
1948     }%
1949     \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1950     \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
1951     \ifbool{mdf@bottomline}{%
1952       \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
```

```

1953      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1954      \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
1955 %
1956      \mdf@makebox@in[\mdfboundingboxwidth]{%
1957      \null%
1958      \begin{tikzpicture}[remember picture]
1959      \begin{scope}
1960          \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
1961          \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
1962          \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
1963          \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
1964          \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
1965          \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
1966          \ifbool{mdf@leftline}%
1967              {%
1968                  \pgfmathsetlengthmacro\mdf@Ax%
1969                      {\mdf@Ax+\mdf@outerlinewidth@length+
1970                      \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
1971                  \pgfmathsetlengthmacro\mdf@Ox%
1972                      {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1973                  }{}%
1974          \ifbool{mdf@rightline}%
1975              {%
1976                  \pgfmathsetlengthmacro\mdf@Px%
1977                      {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1978                  }{}%
1979          \ifbool{mdf@bottomline}%
1980              {%
1981                  \pgfmathsetlengthmacro\mdf@Ay%
1982                      {\mdf@Ay+\mdf@outerlinewidth@length+
1983                      \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
1984                  \pgfmathsetlengthmacro\mdf@Oy%
1985                      {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1986                  }{}%
1987 %
1988      \coordinate(0)at(\mdf@Ox,\mdf@Oy);%
1989      \coordinate(P)at(\mdf@Px,\mdf@Py);%
1990 %
1991      \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@lrb}}%
1992          {\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P))}%
1993          }{}%
1994      \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
1995          {\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)){(P)--(P|-0)[mdfcorners]--(0)--(0|-P))}%
1996          }{}%
1997      \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
1998          {\mdf@tikzbox@otl{(P)--(P|-0)--(0)){(0|-P)--(P)[mdfcorners]--(P|-0)--(0))}%
1999          }{}%
2000      \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
2001          {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)){(0)rectangle(P)}}%
2002          }{}%
2003      \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}%
2004          {\mdf@tikzbox@otl{(0)--(0|-P)){(0)rectangle(P)}}%
2005          }{}%
2006      \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}%
2007          {\mdf@tikzbox@otl{(0)--(0|-P)){(0)rectangle(P)}}%
2008          }{}%

```

```

2009      \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}%
2010      {\mdf@tikzbox@otl{(0-|P)--(P)}{(0)rectangle(P)}}%
2011      {}%
2012      \mdf@test@t{\path[mdfbackground,mdfcorners](0|-P)--(0)--(0-|P)--(P);}%
2013 %
2014      \mdf@test@noline{\path[mdfbackground,mdfcorners](0|-P)--(0)--(0-|P)--(P);}%
2015 %
2016      \drawbackgroundframetitle@second
2017 %
2018      \node[mdfbox] at (\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};% Ausgabebox einfuegen
2019      \end{scope}
2020      %HIER KOMMT EIN WEITERES MAKRO
2021      \end{tikzpicture}%
2022      }%
2023      \mdf@makeboxalign@right%
2024      }%
2025      \fi
2026      }%

2027      \endinput

```

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

```

2028 %% Style file for mdframed for package option 'framemethod=default'
2029 %%
2030 %% This package may be distributed under the terms of the LaTeX Project
2031 %% Public License, as described in lppl.txt in the base LaTeX distribution.
2032 %% Either version 1.0 or, at your option, any later version.
2033
2034 %%$Id: mdframed.dtx 298 2012-01-02 00:28:01Z marco $
2035 %

```

```

\mdframedIIPackagename
\mdf@frameIIDate@svn

```

local settings

```

2036 \def\mdframedIIPackagename{md-frame-2}
2037 \def\mdf@frameIIDate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
2038 \ProvidesFile{md-frame-2.mdf}%
2039      [\mdf@frameIIDate@svn$Id: mdframed.dtx 298 2012-01-02 00:28:01Z marco $ %
2040      \mdversion: \mdframedIIPackagename]

```

```

\mdf@ptlength@to@pscode
\ptTps

```

Command to calculate a latex length to postscript

```

2041 \def\mdf@ptlength@to@pscode#1{\pst@number{#1} \pst@number\psxunit div }
2042 \def\mdf@ptlength@to@pscode@length#1{\pst@number{\csname mdf@#1@length\endcsname} \pst@number\psxunit o
2043 \let\ptTps\mdf@ptlength@to@pscode\relax
2044 \let\ptTpsL\mdf@ptlength@to@pscode@length\relax

```

```

\mdfbackgroundstyle
\mdflinestyle
\mdfframetitlerule
\mdfframetitlebackground

```

background and line settings for pstricks

```

2045 \def\mdfpstricks@settings{%expand by \addtopsstyle
2046   \newsstyle{mdfbackgroundstyle}%
2047   {linecolor=\mdf@backgroundcolor,fillstyle=solid,%
2048    fillcolor=\mdf@backgroundcolor,linestyle=none,%
2049    ,dimen=middle,%
2050   }%
2051 %
2052 \newsstyle{mdfframetitlebackgroundstyle}{%
2053   linecolor=\mdf@frametitlebackgroundcolor,
2054   fillcolor=\mdf@frametitlebackgroundcolor,
2055   fillstyle=solid,linestyle=none,
2056   linearc=\ifdimgreater{\mdf@roundcorner@length%
2057     -\mdf@innerlinewidth@length%
2058     -.5\mdf@middlelinewidth@length}
2059   {\z@}{\dimexpr\mdf@roundcorner@length%
2060     -\mdf@innerlinewidth@length%
2061     -.5\mdf@middlelinewidth@length}{\z@},
2062  }
2063 %
2064 \newsstyle{mdfouterlinestyle}{linestyle=none}%
2065 \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
2066   {\newsstyle{mdfouterlinestyle}{%
2067     linecolor=\mdf@outerlinecolor,%
2068     linewidth=\dimexpr2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length\relax,
2069     dimen=middle,
2070   }}{%
2071 %
2072 \newsstyle{mdfinnerlinestyle}{linestyle=none}%
2073 \ifdimgreater{\mdf@innerlinewidth@length}{\z@}%
2074   {\newsstyle{mdfinnerlinestyle}{%
2075     linecolor=\mdf@innerlinecolor,%
2076     linewidth=\dimexpr2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length\relax,
2077     dimen=middle,
2078   }}{%
2079 %
2080 \newsstyle{mdfmiddlelinestyle}{linestyle=none}%
2081 \ifdimgreater{\mdf@middlelinewidth@length}{\z@}%
2082   {\newsstyle{mdfmiddlelinestyle}{%
2083     linewidth=\mdf@middlelinewidth@length,%
2084     linecolor=\mdf@middlelinecolor,dimen=middle
2085   }}{%
2086 \mdfpstricks@appendsettings
2087 }%
2088 %
2089 \newrobustcmd*\mdf@pstricksbox@fl[2]{%four lines
2090   \psframe[style=mdfouterlinestyle](#1)(#2)%aussen=3mm
2091   \psframe[style=mdfbackgroundstyle](#1)(#2)%Hintergrund
2092   \psclip{\psframe[style=mdfmiddlelinestyle](#1)(#2)}
2093   \psframe[style=mdfinnerlinestyle](#1)(#2)%innere=3mm
2094   \endpsclip
2095   \psframe[style=mdfmiddlelinestyle](#1)(#2)%mittlere=2mm
2096 }%
2097 \newrobustcmd*\mdf@pstricksbox@tl[1]{%three lines
2098   \psline[style=mdfouterlinestyle]#1%aussen=3mm
2099   \psline[style=mdfbackgroundstyle]#1%Hintergrund

```



```

2100 \psclip{\psline[style=mdfmiddlelinestyle]#1}
2101   \psline[style=mdfinnerlinestyle]#1%innere=3mm
2102 \endpsclip
2103 \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2104 }%
2105 \newrobustcmd*\mdf@pstricksbox@tcl[2]{%two combined lines
2106 %%#1 background comple
2107 %%#2 line path
2108   \psline[style=mdfouterlinestyle]#2%ausen=3mm
2109   \psline[style=mdfbackgroundstyle]#2%Hintergrund
2110   \psclip{\pscustom[linestyle=none]{
2111       \psline[style=mdfmiddlelinestyle]#2
2112       \psline[linestyle=none,lineararc=0pt]#1}
2113   }
2114   \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2115   \psline[style=mdfinnerlinestyle]#2%innere=3mm
2116 \endpsclip
2117 \psline[style=mdfmiddlelinestyle]#2%mittlere=2mm
2118 }%
2119 \newrobustcmd*\mdf@pstricksbox@tncl[2]{%two not combined lines
2120 \begingroup
2121   \psset{lineararc=0pt}
2122   \psline[style=mdfouterlinestyle](mdf@0)#1%ausen=3mm
2123   \psline[style=mdfouterlinestyle](mdf@P)#2%ausen=3mm
2124   \psclip{
2125     \pscustom[linestyle=none]{%
2126       \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2127       \psline[linestyle=none](mdf@0)#2
2128       \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2129       \psline[linestyle=none](mdf@P)#1
2130     }%
2131   }%
2132   \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2133   \psline[style=mdfinnerlinestyle](mdf@0)#1%innere=3mm
2134   \psline[style=mdfinnerlinestyle](mdf@P)#2%innere=3mm
2135 \endpsclip
2136 \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2137 \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2138 \endgroup
2139 }%
2140 \newrobustcmd*\mdf@pstricksbox@ol[1]{%one line
2141 \begingroup
2142   \psset{lineararc=0pt}
2143   \psline[style=mdfouterlinestyle]#1%ausen=3mm
2144   \psline[style=mdfbackgroundstyle]#1%Hintergrund
2145   \psclip{\pscustom[linestyle=none]{
2146       \psline[style=mdfmiddlelinestyle]#1
2147       \psframe[linestyle=none,fillstyle=none,dimen=inner](mdf@0)(mdf@P)
2148   }}
2149   \psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)
2150   \psline[style=mdfinnerlinestyle]#1%innere=3mm
2151 \endpsclip
2152 \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2153 \endgroup%
2154 }%
2155

```



```

2156 %
2157 \newsstyle{mdfframetitrerule}{%
2158   linecolor=\mdf@frametitrerulecolor,%
2159   fillcolor=\mdf@frametitrerulecolor,%
2160   fillstyle=solid,%
2161 }
2162 %

```

\mdf@put@frametitrerule

frametitrerule with pstricks

```

2163 \def\mdf@@frametitrerule{%
2164   \ifbool{mdf@frametitrerule}{%
2165     \vbox{\hsize0pt
2166       \par\unskip\vskip\mdf@frametitlebelowskip@length
2167       \noindent\rlap{%
2168         \begin{group}%
2169           \begin{pspicture}(0,0)(0,\mdf@frametitrerulewidth@length)
2170             \psframe[style=mdfframetitrerule](!\ptTpsL{innerleftmargin} neg 0)%
2171                                   (! \ptTpsL{innerrightmargin}
2172                                   \ptTps{\mdfframetitleboxwidth} add \ptTpsL{frametitrerulewidth})
2173           \end{pspicture}
2174         \end{group}}
2175     }%
2176   }{}
2177   \par\unskip\vskip\mdf@innertopmargin@length%
2178 }%
2179 %
2180 % \begin{macro}{mdf@putbox@single}
2181 % Single output
2182 %   \begin{macrocode}
2183 % Info zu den verwendeten Punkten:
2184 % 0 ist die untere linke Ecke der Mitte der middleline
2185 % P ist die obere rechte Ecke der Mitte der middleline
2186 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
2187 \def\mdf@putbox@single{%
2188   \ifvoid\mdf@splitbox@one
2189   \else%
2190     \mdf@makebox@out{%
2191       \mdf@makeboxalign@left%
2192       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2193       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2194       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2195       \ifbool{mdf@leftline}{%
2196         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2197         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2198         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2199       \ifbool{mdf@rightline}{%
2200         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2201         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2202         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2203     }%
2204     \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2205     \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2206     \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%

```

```

2207 \ifbool{mdf@topline}{%
2208   \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2209   \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2210   \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2211 \ifbool{mdf@bottomline}{%
2212   \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2213   \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2214   \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2215 %
2216 \setlength\mdftotalllinewidth{\dimexpr\mdf@innerlinewidth@length%
2217                                     +\mdf@middlelinewidth@length
2218                                     +\mdf@outerlinewidth@length\relax}%
2219 \psset{unit=1truecm}%
2220 \mdf@makebox@in[\mdfboundingboxwidth]{%
2221   \null%
2222   \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
2223     \mdfpstricks@settings%
2224     \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
2225     \expandafter\psset\expandafter{\mdf@psset@local}%
2226     \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
2227     \pnode(0,0){mdf@0}
2228     \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2229     \ifbool{mdf@leftline}{%
2230       {%
2231         \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
2232                 +(\mdf@middlelinewidth@length,0)
2233                 +(\mdf@innerlinewidth@length,0)}{mdf@A}%
2234         \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
2235                 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
2236       }{}%
2237     \ifbool{mdf@rightline}{%
2238       {%
2239         \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
2240                 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2241       }{}%
2242     \ifbool{mdf@bottomline}{%
2243       {%
2244         \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
2245                 +(0,\mdf@middlelinewidth@length)
2246                 +(0,\mdf@innerlinewidth@length)}{mdf@A}%
2247         \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
2248                 +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
2249       }{}%
2250     \ifbool{mdf@topline}{%
2251       {%
2252         \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
2253                 -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
2254       }{}%
2255     %Frametitlebackground
2256     \drawbrackgroundframetitle@single
2257 %
2258 %Four lines
2259 \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
2260 %three lines
2261 \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2262 \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}

```

```

2263 \mdf@test@ltr{\mdf@pstricksbox@tcl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
2264 \mdf@test@lrb{\mdf@pstricksbox@tcl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
2265 %two lines combined
2266 \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
2267 { (mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}%
2268 \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
2269 { (mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
2270 \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2271 { (mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
2272 \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2273 { (mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}%
2274 %two lines not combined combined
2275 \mdf@test@lr{\mdf@pstricksbox@tnccl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
2276 {}%
2277 \mdf@test@tb{\mdf@pstricksbox@tnccl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
2278 {}%
2279 %single line
2280 \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}%
2281 \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}%
2282 \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}%
2283 \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}%
2284 %no line
2285 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}
2286 %
2287 %output%
2288 \rput[bl](mdf@A){\box\mdf@splitbox@one}
2289 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2290 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2291 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
2292 %
2293 % \endpsclip
2294 \end{pspicture}%
2295 }%
2296 \mdf@makeboxalign@right%
2297 }%
2298 \fi
2299 }%
2300 \def\drawbackgroundframetitle@single{%
2301 \ifdefempty{\mdf@frametitle}}{}{%
2302 \drawbackgroundframetitle@@single%
2303 }%
2304 }%
2305 \def\drawbackgroundframetitle@@single{%
2306 \begingroup%
2307 \ifbool{mdf@leftline}{%
2308 \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
2309 +0.5(\mdf@middlelinewidth@length,0)}}{mdf@0}%
2310 }{}%
2311 \ifbool{mdf@rightline}{%
2312 \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
2313 -0.5(\mdf@middlelinewidth@length,0)}}{mdf@P}%
2314 }{}%
2315 \ifbool{mdf@topline}{%
2316 \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
2317 -0.5(0,\mdf@middlelinewidth@length)}}{mdf@P}%
2318 }{}%

```

```

2319 \nodexn{(mdf@P) - (0,\mdfframetitleboxtotalheight)}{mdf@F}%
2320 \psline[style=mdfframetitlebackgroundstyle](mdf@0|mdf@F)(mdf@0|mdf@P)
2321      (mdf@P)(mdf@P|mdf@F)%
2322 \endgroup
2323 }

```

\mdf@putbox@first

First output

```

2324 \def\mdf@putbox@first{%
2325   \ifvoid\mdf@splitbox@two
2326   \else%
2327     \mdf@makebox@out{%
2328       \mdf@makeboxalign@left%
2329       %\ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
2330       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2331       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2332       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2333       \ifbool{mdf@leftline}{%
2334         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2335         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2336         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
2337       \ifbool{mdf@rightline}{%
2338         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2339         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2340         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
2341       \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2342       \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2343       \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2344       \ifbool{mdf@topline}{%
2345         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2346         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2347         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{}%
2348       \psset{lineararc=\mdf@roundcorner@length, cornersize=absolute}%
2349       \expandafter\psset\expandafter{\mdf@psset@local}%
2350       \mdf@makebox@in[\mdfboundingboxwidth]{%
2351         \null%
2352         \psset{unit=1truecm}%
2353         \ifdimgreater{\mdfboundingboxheight}{\vsize}
2354           {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
2355           {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
2356             \mdfpstricks@settings%
2357             \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
2358             \expandafter\psset\expandafter{\mdf@psset@local}%
2359             \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
2360             \pnode(0,0){mdf@0}
2361             \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2362             \ifbool{mdf@leftline}{%
2363               {%
2364                 \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
2365                   +(\mdf@middlelinewidth@length,0)
2366                   +(\mdf@innerlinewidth@length,0)}{mdf@A}
2367                 \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
2368                   +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
2369               }{}%

```

```

2370 \ifbool{mdf@rightline}%
2371 {%
2372 \nodexn{(mdf@P) - (\mdf@outerlinewidth@length,0)
2373 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
2374 }{}%
2375 \ifbool{mdf@topline}%
2376 {%
2377 \nodexn{(mdf@P) - (0,\mdf@outerlinewidth@length)
2378 -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
2379 }{}%
2380 % \psclip{
2381 %Frametitlebackground
2382 \drawbackgroundframetitle@first
2383 %Four or Three lines
2384 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@ltr}}%
2385 {\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}%
2386 }{}%
2387 %two combined lines
2388 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}%
2389 {\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2390 {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}%
2391 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2392 {\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2393 {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
2394 %two not combined lines
2395 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
2396 {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}%
2397 %single line
2398 \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
2399 {\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}%
2400 \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%
2401 {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}%
2402 \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}%
2403 {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}%
2404 %no line
2405 \mdf@test@b{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
2406 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
2407 % }
2408 %Frametitlebackground
2409 \drawbackgroundframetitle@first
2410 %output%
2411 \rput[bl](mdf@A){\box\mdf@splitbox@two}
2412 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2413 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2414 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
2415 % \endpsclip
2416 \end{pspicture}
2417 }%
2418 \mdf@makeboxalign@right%
2419 }%
2420 \fi
2421 }%
2422 \def\drawbackgroundframetitle@first{%
2423 \ifdefempty{\mdf@frametitle}}{}%
2424 \ifdimgreater{\mdf@boundingboxheight}{\mdf@frametitleboxtotalheight}%
2425 {%

```

```

2426 \drawbrackgroundframetitle@@first
2427 \global\mdfframetitleboxtotalheight=-\p@%
2428 }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
2429     Currently this isn't well supported}%
2430 \drawbrackgroundframetitle@@first
2431 \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
2432     -\mdfboundingboxheight
2433     -\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
2434     +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length
2435     +\mdf@splittopskip@length
2436     +\dp\strutbox\relax%
2437 }%
2438 }%
2439 }%
2440 \def\drawbrackgroundframetitle@@first{%
2441 \begingroup%
2442 \ifbool{mdf@leftline}{%
2443     \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
2444         +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
2445     }{}%
2446 \ifbool{mdf@rightline}{%
2447     \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
2448         -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2449     }{}%
2450 \ifbool{mdf@topline}{%
2451     \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
2452         -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}%
2453     }{}%
2454 \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}
2455     {\nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}}%
2456     {\nodexn{(mdf@0)}{mdf@F}}%
2457 \psline[style=mdfframetitlebackgroundstyle](mdf@0|mdf@F)(mdf@0|mdf@P)
2458     (mdf@P)(mdf@P|mdf@F)%
2459 \endgroup
2460 }

```

\mdf@putbox@middle

Middle output

```

2461 \def\mdf@putbox@middle{%
2462 \ifvoid\mdf@splitbox@two
2463 \else%
2464 \mdf@makebox@out{%
2465 \mdf@makeboxalign@left%
2466 % \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
2467 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2468 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2469 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2470 \ifbool{mdf@leftline}{%
2471 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2472 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2473 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
2474 \ifbool{mdf@rightline}{%
2475 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2476 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%

```

```

2477 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2478 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2479 \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2480 \psset{unit=1truecm}%
2481 \mdf@makebox@in[\mdfboundingboxwidth]{%
2482 \null%
2483 \ifdimgreater{\mdfboundingboxheight}{\vsize}
2484 {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
2485 {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
2486 \mdfpstricks@settings%
2487 \psset{lineararc=0pt, cornersize=absolut,}%
2488 \expandafter\psset\expandafter{\mdf@psset@local}%
2489 %%%
2490 \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
2491 \pnode(0,0){mdf@0}
2492 \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2493 \ifbool{mdf@leftline}%
2494 {%
2495 \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
2496 +(\mdf@middlelinewidth@length,0)
2497 +(\mdf@innerlinewidth@length,0)){mdf@A}
2498 \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
2499 +0.5(\mdf@middlelinewidth@length,0)){mdf@0}
2500 }}}%
2501 \ifbool{mdf@rightline}%
2502 {%
2503 \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
2504 -0.5(\mdf@middlelinewidth@length,0)){mdf@P}
2505 }}}%
2506 %%
2507 %Frametitlebackground
2508 \drawbackgroundframetitle@middle
2509 \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
2510 {\mdf@pstricksbox@tnc{\mdf@0|mdf@P}}{\mdf@P|mdf@0}}}%
2511 \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
2512 {\mdf@pstricksbox@ol{\mdf@0}(mdf@0|mdf@P)}}}%
2513 \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
2514 {\mdf@pstricksbox@ol{\mdf@P}(mdf@P|mdf@0)}}}%
2515 \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
2516 {\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}}%
2517 %output%
2518 \rput[bl](mdf@A){\box\mdf@splitbox@two}
2519 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2520 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2521 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
2522 \end{pspicture}%
2523 }%
2524 \mdf@makeboxalign@right%
2525 }%
2526 \fi
2527 }%
2528 \def\drawbackgroundframetitle@middle{%
2529 \ifdefempty{\mdf@frametitle}}}%
2530 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2531 {}}%
2532 \drawbackgroundframetitle@middle

```



```

2533 \global\mdfframetitleboxtotalheight=-\p@relax%
2534 }%
2535 }%
2536 }%
2537 \def\drawbackgroundframetitle@@middle{%
2538 \beginingroup%
2539 \ifbool{mdf@leftline}{%
2540 \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
2541 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
2542 }{}%
2543 \ifbool{mdf@rightline}{%
2544 \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
2545 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2546 }{}%
2547 \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
2548 \psline[style=mdfframetitlebackgroundstyle,lineararc=\z@](mdf@0|mdf@F)(mdf@0|mdf@P)
2549 (mdf@P)(mdf@P|mdf@F)%
2550 \endgroup
2551 }

```

\mdf@putbox@second

Last output

```

2552 \def\mdf@putbox@second{
2553 \ifvoid\mdf@splitbox@one
2554 \else%
2555 \mdf@makebox@out{%
2556 \mdf@makeboxalign@left%
2557 % \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
2558 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2559 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2560 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2561 \ifbool{mdf@leftline}{%
2562 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2563 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2564 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
2565 \ifbool{mdf@rightline}{%
2566 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2567 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2568 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
2569 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2570 \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2571 \ifbool{mdf@bottomline}{%
2572 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2573 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2574 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{}%
2575 \psset{unit=1truecm}%
2576 \mdf@makebox@in[\mdfboundingboxwidth]{%
2577 \null%
2578 \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
2579 \mdfpstricks@settings%
2580 \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
2581 \expandafter\psset\expandafter{\mdf@psset@local}%
2582 \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
2583 \pnode(0,0){mdf@0}

```



```

2584 \node(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2585 \ifbool{mdf@leftline}%
2586 {%
2587 \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
2588 +(\mdf@middlelinewidth@length,0)
2589 +(\mdf@innerlinewidth@length,0)){mdf@A}
2590 \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
2591 +0.5(\mdf@middlelinewidth@length,0)){mdf@0}
2592 }{}%
2593 \ifbool{mdf@rightline}%
2594 {%
2595 \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
2596 -0.5(\mdf@middlelinewidth@length,0)){mdf@P}
2597 }{}%
2598 \ifbool{mdf@bottomline}%
2599 {%
2600 \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
2601 +(0,\mdf@middlelinewidth@length)
2602 +(0,\mdf@innerlinewidth@length)){mdf@A}
2603 \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
2604 +0.5(0,\mdf@middlelinewidth@length)){mdf@0}
2605 }{}%
2606 %Four + Three
2607 \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@lrb}}%
2608 {\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
2609 %Two combined
2610 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
2611 {\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
2612 {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}%
2613 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
2614 {\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
2615 {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
2616 %Two not combined
2617 \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
2618 {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}%
2619 %one line
2620 \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}%
2621 {\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}%
2622 \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}%
2623 {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}%
2624 \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}%
2625 {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}%
2626 %no line
2627 \mdf@test@t{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
2628 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
2629 %Frametitlebackground
2630 \drawbackgroundframetitle@second
2631 %output%
2632 \rput[bl](mdf@A){\box\mdf@splitbox@one}
2633 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2634 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2635 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
2636 \end{pspicture}%
2637 }%
2638 \mdf@makeboxalign@right%
2639 }%

```

```

2640 \fi
2641 }%
2642 \def\drawbackgroundframetitle@second{%
2643 \ifdefempty{\mdf@frametitle}{}%
2644 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2645 {}{%
2646 \drawbackgroundframetitle@@second
2647 }%
2648 }%
2649 }%
2650 \def\drawbackgroundframetitle@@second{%
2651 \begingroup%
2652 \ifbool{mdf@leftline}{%
2653 \nodexn{(\mdf@0)+(\mdf@innerlinewidth@length,0)
2654 +0.5(\mdf@middlelinewidth@length,0)}{\mdf@0}%
2655 }{%
2656 \ifbool{mdf@rightline}{%
2657 \nodexn{(\mdf@P)-(\mdf@innerlinewidth@length,0)
2658 -0.5(\mdf@middlelinewidth@length,0)}{\mdf@P}%
2659 }{%
2660 \nodexn{(\mdf@P)-(0,\mdfframetitleboxtotalheight)}{\mdf@F}%
2661 \psline[style=mdfframetitlebackgroundstyle,linearcs=\z@](\mdf@0|\mdf@F)(\mdf@0|\mdf@P)
2662 (\mdf@P)(\mdf@P|\mdf@F)%
2663 \endgroup
2664 }

2665 \endinput
2666 %eof

```

## C. The file *mdframed-example-default*

```

2667 %Documentation of the package mdframed
2668 %$Id: mdframed-examples.dtx 270 2011-12-09 12:19:09Z marco $
2669 \setcounter{errorcontextlines}{999}
2670 \documentclass[parskip=false,english,11pt]{ltxmdf}
2671 \ltxmdfsetifoot $Id: mdframed-examples.dtx 270 2011-12-09 12:19:09Z marco $
2672
2673 \usepackage{showexpl}
2674 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
2675
2676 \newcommand\Loadedframemethod{default}
2677 \usepackage[framemethod=\Loadedframemethod]{mdframed}
2678
2679 \title{The \Pack{mdframed} package}
2680 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
2681 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
2682 \version{\mdversion}
2683 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
2684 Some presented examples are more or less exorbitant.}
2685
2686 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
2687 \newrobustcmd\ExampleText{%
2688 An \textit{inhomogeneous linear} differential equation has the form
2689 \begin{align}
2690 L[v] = f,

```

```

2691         \end{align}
2692     where  $L$  is a linear differential operator,  $v$  is
2693     the dependent variable, and  $f$  is a given non-zero
2694     function of the independent variables alone.
2695 }
2696
2697 \newcounter{examplecount}
2698 \setcounter{examplecount}{0}
2699 \renewcommand\thesubsection{}
2700 \newcommand\Examplesec[1]{%
2701 \stepcounter{examplecount}%
2702 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
2703 }
2704
2705 \begin{document}
2706 \maketitle
2707 \section{Loading}
2708 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
2709
2710 {\large\color{red!50!black}
2711 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
2712
2713 \section{Examples}
2714 All examples have the following settings:
2715
2716 \begin{tltxmdfexample}
2717 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
2718 \newrobustcmd\ExampleText{%
2719 An \textit{inhomogeneous linear} differential equation
2720 has the form
2721 \begin{align}
2722 L[v] = f,
2723 \end{align}
2724 where  $L$  is a linear differential operator,  $v$  is
2725 the dependent variable, and  $f$  is a given non-zero
2726 function of the independent variables alone.
2727 }
2728 \end{tltxmdfexample}
2729 \clearpage
2730 \Examplesec{very simple}
2731 \begin{LTExample}
2732 \global\mdfdefinestyle{exampledefault}{%
2733     linecolor=red,linewidth=3pt,%
2734     leftmargin=1cm,rightmargin=1cm
2735 }
2736 \begin{mdframed}[style=exampledefault]
2737 \ExampleText
2738 \end{mdframed}
2739 \end{LTExample}
2740
2741 \Examplesec{hidden line + frame title}
2742 \begin{LTExample}
2743 \global\mdfapptodefinestyle{exampledefault}{%
2744     topline=false,rightline=true,bottomline=false}
2745 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
2746 \ExampleText

```

```

2747 \end{mdframed}
2748 \end{LTXexample}
2749 \clearpage
2750
2751 \Examplesec{colored frame title}
2752 \begin{LTXexample}
2753
2754 \global\mdfapptodefestyle{exampledefault}{%
2755     rightline=true,innerleftmargin=10,innerrightmargin=10,
2756     frametitle=rule=true,frametitle=rulecolor=green,
2757     frametitlebackgroundcolor=yellow,
2758     frametitle=rulewidth=2pt}
2759 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
2760 \ExampleText
2761 \end{mdframed}
2762 \end{LTXexample}
2763
2764 \Examplesec{framed picture which is centered}
2765 \begin{LTXexample}
2766 \begin{mdframed}[userdefinedwidth=6cm,align=center,
2767     linecolor=blue,linewidth=4pt]
2768 \includegraphics[width=\linewidth]{donald-duck}
2769 \end{mdframed}
2770 \end{LTXexample}
2771 \clearpage
2772 \Examplesec{theorem with separate header and the help of TikZ (complex)}
2773 \begin{LTXexample}
2774 \newcounter{theo}[section]
2775 \newenvironment{theo}[1][1]{%
2776     \stepcounter{theo}%
2777     \ifstrempy{#1}%
2778     {\mdfsetup{%
2779         frametitle={%
2780             \tikz[baseline=(current bounding box.east),outer sep=0pt]
2781             \node[anchor=east,rectangle,fill=blue!20]
2782             {\strut Theorem~\thetheo};}}
2783     }%
2784     {\mdfsetup{%
2785         frametitle={%
2786             \tikz[baseline=(current bounding box.east),outer sep=0pt]
2787             \node[anchor=east,rectangle,fill=blue!20]
2788             {\strut Theorem~\thetheo:~#1};}}%
2789     }%
2790     \mdfsetup{innertopmargin=10pt,linecolor=blue!20,%
2791         linewidth=2pt,topline=true,
2792         frametitleaboveskip=\dimexpr-\ht\strutbox\relax,}
2793     \begin{mdframed}[]\relax%
2794     }\end{mdframed}}
2795 \begin{theo}[Inhomogeneous Linear]
2796 \ExampleText
2797 \end{theo}
2798
2799 \begin{theo}
2800 \ExampleText
2801 \end{theo}
2802 \end{LTXexample}

```

```

2803
2804 \clearpage
2805 \Examplesec{hide only a part of a line}
2806 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com}{}
2807 \begin{LTExample}
2808 \makeatletter
2809 \newlength{\interruptlength}
2810 \setlength{\interruptlength}{2.5ex}
2811 \newrobustcmd\overlaplines{%
2812   \appto\mdf@frame@leftline@single{%
2813     \llap{\color{white}%
2814       \rule[\dimexpr-\mdfboundingboxdepth+\interruptlength\relax]{%
2815         {\mdf@middlelinewidth@length}%
2816         {\dimexpr\mdfboundingboxtotalheight%
2817           \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}}
2818         -2\interruptlength\relax}%
2819     }%
2820   }%
2821   \appto\mdf@frame@rightline@single{%
2822     \rlap{\color{white}%
2823       \hspace*{\mdfboundingboxwidth}%
2824       \hspace*{\mdf@innerrightmargin@length}%
2825       \rule[\dimexpr-\mdfboundingboxdepth%
2826         +\interruptlength\relax]{%
2827         {\mdf@middlelinewidth@length}%
2828         {\dimexpr\mdfboundingboxtotalheight%
2829           +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}}
2830         -2\interruptlength\relax}%
2831     }%
2832   }%
2833 }
2834 \makeatother
2835 \overlaplines
2836
2837 \begin{mdframed}[linecolor=blue,linewidth=8pt]
2838 \ExampleText
2839 \end{mdframed}
2840 \end{LTExample}
2841 \end{document}
2842 \endinput

```

## D. The file *mdframed-example-tikz*

```

2843 %Documentation of the package mdframed
2844 %$Id: mdframed-examples.dtx 270 2011-12-09 12:19:09Z marco $
2845 \setcounter{errorcontextlines}{999}
2846 \documentclass[parskip=false,english,11pt]{ltxmdf}
2847 \ltxmdfsetifoot $Id: mdframed-examples.dtx 270 2011-12-09 12:19:09Z marco $
2848
2849 \usepackage{showexpl}
2850 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
2851
2852 \newcommand\Loadedframemethod{TikZ}
2853 \usepackage[framemethod=\Loadedframemethod]{mdframed}
2854
2855 \title{The \Pack{mdframed} package}

```

```

2856 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
2857 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
2858 \version{\mdversion}
2859 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
2860 Some presented examples are more or less exorbitant.}
2861
2862 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
2863 \newrobustcmd\ExampleText{%
2864     An \textit{inhomogeneous linear} differential equation has the form
2865     \begin{align}
2866         L[v] = f,
2867     \end{align}
2868     where  $L$  is a linear differential operator,  $v$  is
2869     the dependent variable, and  $f$  is a given non-zero
2870     function of the independent variables alone.
2871 }
2872
2873 \newcounter{examplecount}
2874 \setcounter{examplecount}{0}
2875 \renewcommand\thesubsection{}
2876 \newcommand\Examplesec[1]{%
2877 \stepcounter{examplecount}%
2878 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
2879 }
2880
2881 \begin{document}
2882 \maketitle
2883 \section{Loading}
2884 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
2885
2886 {\large\color{red!50!black}
2887 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
2888
2889 \section{Examples}
2890 All examples have the following settings:
2891
2892 \begin{tltxmdfexample}
2893 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
2894 \newrobustcmd\ExampleText{%
2895 An \textit{inhomogeneous linear} differential equation
2896 has the form
2897 \begin{align}
2898 L[v] = f,
2899 \end{align}
2900 where  $L$  is a linear differential operator,  $v$  is
2901 the dependent variable, and  $f$  is a given non-zero
2902 function of the independent variables alone.
2903 }
2904 \end{tltxmdfexample}
2905 \clearpage
2906 \ExampleText{round corner}
2907 \begin{LTExample}
2908 \global\mdfdefinestyle{exampledefault}{%
2909     outerlinewidth=5pt,innerlinewidth=0pt,
2910     outerlinecolor=red,roundcorner=5pt
2911 }

```

```

2912 \begin{mdframed}[style=exampledefault]
2913 \ExampleText
2914 \end{mdframed}
2915 \end{LTXexample}
2916
2917 \Examplesec{hidden line + frame title}
2918 \begin{LTXexample}
2919 \global\mdfapptodefinesstyle{exampledefault}{%
2920   topline=false,leftline=false,}
2921 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
2922 \ExampleText
2923 \end{mdframed}
2924 \end{LTXexample}
2925 \clearpage
2926 \Examplesec{framed picture which is centered}
2927 \begin{LTXexample}
2928 \begin{mdframed}[userdefinedwidth=6cm,align=center,
2929   linecolor=blue,middlelinewidth=4pt,roundcorner=5pt]
2930 \includegraphics[width=\linewidth]{donald-duck}
2931 \end{mdframed}
2932 \end{LTXexample}
2933
2934 \Examplesec{Gimmick}
2935 \begin{LTXexample}
2936 \mdfsetup{splitbottomskip=0.8cm,splittopskip=0cm,
2937   innerrightmargin=2cm,innertopmargin=1cm,%
2938   innerlinewidth=2pt,outerlinewidth=2pt,
2939   middlelinewidth=10pt,backgroundcolor=red,
2940   linecolor=blue,middlelinecolor=gray,
2941   tikzsetting={draw=yellow,line width=3pt,%
2942     dashed,%
2943     dash pattern= on 10pt off 3pt},
2944   rightline=false,bottomline=false}
2945 \begin{mdframed}
2946 \ExampleText
2947 \end{mdframed}
2948 \end{LTXexample}
2949
2950 \Examplesec{complex example with TikZ}
2951
2952 \begin{tltxmdfexample}
2953 \tikzstyle{titregris} =
2954   [draw=gray, thick, fill=white, shading = exersicetitle, %
2955   text=gray, rectangle, rounded corners,
2956   right,minimum height=.7cm]
2957
2958 \pgfdeclarehorizontalshading{exersicebackground}{100bp}
2959 {color(0bp)=(green!40);
2960 color(100bp)=(black!5)}
2961
2962 \pgfdeclarehorizontalshading{exersicetitle}{100bp}
2963 {color(0bp)=(red!40);
2964 color(100bp)=(black!5)}
2965
2966 \newcounter{exercise}
2967 \renewcommand\theexercise{Exercise~\arabic{exercise}}

```

```

2968 \makeatletter
2969 \def\mdf@@exercisepoints{}
2970 \define@key{mdf}{exercisepoints}{%
2971     \def\mdf@@exercisepoints{#1}
2972 }
2973 \renewrobustcmd\mdfcreateextratikz{%
2974     \node[titregris,xshift=1cm] at (P-|0) %
2975         {\~\mdf@frametitlefont{\theexercise}\~};
2976     \ifdefempty{\mdf@@exercisepoints}%
2977         {}%
2978     {\node[titregris,left,xshift=-1cm] at (P)%
2979         {\~\mdf@frametitlefont{\mdf@@exercisepoints points}\~};}%
2980 }
2981 \makeatother
2982
2983 \mdfdefinestyle{exercisestyle}{%
2984     outerlinewidth=1pt,
2985     innerlinewidth=0pt,
2986     roundcorner=2pt,
2987     linecolor=gray,
2988     tikzsetting={shading = exersicebackground},
2989     innertopmargin=1.2\baselineskip,
2990     skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
2991     needspace=3\baselineskip,
2992     frametitlefont=\sffamily\bfseries,
2993     settings={\global\stepcounter{exercise}},
2994 }
2995
2996 \begin{mdframed}[style=exercisestyle,]
2997 \ExampleText
2998 \end{mdframed}
2999
3000 \begin{mdframed}[style=exercisestyle,exercisepoints=10]
3001 \ExampleText
3002 \end{mdframed}
3003 \end{tltxmdfexample}
3004
3005 \tikzstyle{titregris} =
3006     [draw=gray, thick, fill=white, shading = exersicetitle, %
3007     text=gray, rectangle, rounded corners,
3008     right,minimum height=.7cm]
3009
3010 \pgfdeclarehorizontalshading{exersicebackground}{100bp}
3011 {color(0bp)=(green!40);
3012 color(100bp)=(black!5)}
3013
3014 \pgfdeclarehorizontalshading{exersicetitle}{100bp}
3015 {color(0bp)=(red!40);
3016 color(100bp)=(black!5)}
3017
3018 \newcounter{exercise}
3019 \renewcommand\theexercise{Exercise~\n\arabic{exercise}}
3020 \makeatletter
3021 \def\mdf@@exercisepoints{}
3022 \define@key{mdf}{exercisepoints}{%
3023     \def\mdf@@exercisepoints{#1}

```



```

3024 }
3025 \renewrobustcmd\mdfcreateextratikz{%
3026     \node[titregris,xshift=1cm] at (P-|0) {\textbf{\theexercise}~};
3027     \ifdefempty{\mdf@@exercisepoints}%
3028     {%
3029         \node[titregris,left,xshift=-1cm] at (P)%
3030         {\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
3031 }
3032 \makeatother
3033
3034 \mdfdefinestyle{exercisestyle}{%
3035     outerlinewidth=1pt,
3036     innerlinewidth=0pt,
3037     roundcorner=2pt,
3038     linecolor=gray,
3039     tikzsetting={shading = exersicebackground},
3040     innertopmargin=1.2\baselineskip,
3041     skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
3042     needspace=3\baselineskip,
3043     frametitlefont=\sffamily\bfseries,
3044     settings={\global\stepcounter{exercise}},
3045 }
3046
3047 \begin{mdframed}[style=exercisestyle,]
3048 \ExampleText
3049 \end{mdframed}
3050
3051 \begin{mdframed}[style=exercisestyle,exercisepoints=10]
3052 \ExampleText
3053 \end{mdframed}
3054
3055 \end{document}
3056 \endinput

```

## E. The file *mdframed-example-pstricks*

```

3057 %Documentation of the package mdframed
3058 %%$Id: mdframed-examples.dtx 270 2011-12-09 12:19:09Z marco $
3059 \setcounter{errorcontextlines}{999}
3060 \documentclass[parskip=false,english,11pt]{ltxmdf}
3061 \ltxmdfsetifoot$Id: mdframed-examples.dtx 270 2011-12-09 12:19:09Z marco $
3062
3063 \lstDeleteShortInline{[]}
3064 \newcommand\Loadedframemethod{PSTricks}
3065 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3066
3067 \usepackage{showexpl}
3068 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}}},}
3069
3070 \title{The \Pack{mdframed} package}
3071 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3072 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3073 \version{\mdversion}
3074 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3075 Some presented examples are more or less exorbitant.}
3076

```

```

3077 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3078 \newrobustcmd\ExampleText{%
3079     An \textit{inhomogeneous linear} differential equation has the form
3080     \begin{align}
3081         L[v] = f,
3082     \end{align}
3083     where  $L$  is a linear differential operator,  $v$  is
3084     the dependent variable, and  $f$  is a given non-zero
3085     function of the independent variables alone.
3086 }
3087
3088 \newcounter{examplecount}
3089 \setcounter{examplecount}{0}
3090 \renewcommand\thesubsection{}
3091 \newcommand\Examplesec[1]{%
3092 \stepcounter{examplecount}%
3093 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3094 }
3095
3096 \begin{document}
3097 \maketitle
3098 \section{Loading}
3099 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3100
3101 {\large\color{red!50!black}
3102 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3103 X
3104 \section{Examples}
3105 All examples have the following settings:
3106
3107 \begin{tltxmdfexample}
3108 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3109 \newrobustcmd\ExampleText{%
3110 An \textit{inhomogeneous linear} differential equation
3111 has the form
3112 \begin{align}
3113 L[v] = f,
3114 \end{align}
3115 where  $L$  is a linear differential operator,  $v$  is
3116 the dependent variable, and  $f$  is a given non-zero
3117 function of the independent variables alone.
3118 }
3119 \end{tltxmdfexample}
3120 \clearpage
3121
3122 \Examplesec{very simple}
3123 \begin{LTExample}
3124 \global\mdfdefinestyle{exampledefault}{%
3125     linecolor=red,middlelinewidth=3pt,%
3126     leftmargin=1cm,rightmargin=1cm
3127 }
3128 \begin{mdframed}[style=exampledefault,roundcorner=5]
3129 \ExampleText
3130 \end{mdframed}
3131 \end{LTExample}
3132

```

```

3133 \Examplesec{hidden line + frame title}
3134 \begin{LTExample}
3135 \global\mdfapptodefinestyle{exampledefault}{%
3136   topline=false,rightline=false,bottomline=false,
3137   frametitlerule=true,innertopmargin=6pt,
3138   outerlinewidth=6pt,outerlinecolor=blue,
3139   pstricksappsetting={\addtopsstyle{mdfouterlinestyle}{linestyle=dashed}},
3140   innerlinecolor=yellow,innerlinewidth=5pt}%
3141 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3142 \ExampleText
3143 \end{mdframed}
3144 \end{LTExample}
3145
3146 \clearpage
3147
3148 \Examplesec{Dash Lines}
3149 \begin{LTExample}
3150 \global\mdfdefinestyle{exampledefault}{%
3151   pstrickssetting={linestyle=dashed,},linecolor=red,linewidth=5pt}
3152 \begin{mdframed}[style=exampledefault,]
3153 \ExampleText
3154 \end{mdframed}
3155 \end{LTExample}
3156
3157 \Examplesec{Double Lines}
3158 \begin{LTExample}
3159 \global\mdfdefinestyle{exampledefault}{%
3160   pstrickssetting={doubleline=true,doublesep=6pt},
3161   linecolor=red,linewidth=5pt,middlelinewidth=4pt}
3162 \begin{mdframed}[style=exampledefault,]
3163 \ExampleText
3164 \end{mdframed}
3165 \end{LTExample}
3166 \end{document}
3167 \endinput

```

## F. The file *mdframed-example-texsx*

```

3168 %Documenation of the package mdframed
3169 %$Id: mdframed-examples.dtx 270 2011-12-09 12:19:09Z marco $
3170 \setcounter{errorcontextlines}{999}
3171 \documentclass[parskip=false,english,11pt,ltxlipsum]{ltxmdf}
3172 \ltxmdfsetifoot $Id: mdframed-examples.dtx 270 2011-12-09 12:19:09Z marco $
3173
3174 \usepackage{showexpl}
3175 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3176
3177 \newcommand\Loadedframemethod{default}
3178 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3179
3180 \title{The \Pack{mdframed} package}
3181 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3182 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3183 \version{\mdversion}
3184 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3185 Some presented examples are more or less exorbitant.}

```

```

3186
3187 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3188 \newrobustcmd\ExampleText{%
3189     An \textit{inhomogeneous linear} differential equation has the form
3190     \begin{align}
3191         L[v] = f,
3192     \end{align}
3193     where  $L$  is a linear differential operator,  $v$  is
3194     the dependent variable, and  $f$  is a given non-zero
3195     function of the independent variables alone.
3196 }
3197
3198 \newcounter{examplecount}
3199 \setcounter{examplecount}{0}
3200 \renewcommand\thesubsection{}
3201 \newcommand\Examplesec[1]{%
3202 \stepcounter{examplecount}%
3203 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3204 }
3205
3206 \begin{document}
3207 \maketitle
3208 \section{Loading}
3209 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3210
3211 {\large\color{red!50!black}
3212 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3213
3214 \section{Examples}
3215 All examples have the following settings:
3216
3217 \begin{tltxmdfexample}
3218 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3219 \newrobustcmd\ExampleText{%
3220 An \textit{inhomogeneous linear} differential equation
3221 has the form
3222 \begin{align}
3223 L[v] = f,
3224 \end{align}
3225 where  $L$  is a linear differential operator,  $v$  is
3226 the dependent variable, and  $f$  is a given non-zero
3227 function of the independent variables alone.
3228 }
3229 \end{tltxmdfexample}
3230 \clearpage
3231 \Examplesec{Package listings}
3232 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com}
3233
3234 Here the solution which can be decorate as usual.
3235
3236 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}]
3237 \BeforeBeginEnvironment{lstlisting}{%
3238     \begin{mdframed}[<modification>%
3239     \vspace{-0.7em}}
3240 \AfterEndEnvironment{lstlisting}{%
3241     \vspace{-0.5em}%

```

```

3242 \end{mdframed}}
3243 \end{tltxmdfexample}
3244
3245 \Examplesec{Package multicol}
3246 How I wrote in \enquote{Known Problems} you can't combine \Pack{multicol} with \Pack{mdframed}. In a s
3247 \begin{LTXexample}
3248 \begin{multicols}{2}
3249 \lipsum[1]
3250 \begin{mdframed}
3251 \ExampleText
3252 \end{mdframed}
3253 \lipsum[2]
3254 \end{multicols}
3255 \end{LTXexample}
3256 \clearpage
3257 \twocolumn[\Examplesec{Working in twocolumn mode}]
3258 \begin{tltxmdfexample}
3259 \twocolumn[%
3260 \Examplesec{Working in
3261 twocolumn mode}]
3262 \lipsum[2]
3263 \begin{mdframed}[%
3264 leftmargin=10pt,%
3265 rightmargin=10pt,%
3266 linecolor=red,
3267 backgroundcolor=yellow]
3268 \ExampleText
3269 \end{mdframed}
3270 \lipsum[2]
3271 \end{tltxmdfexample}
3272 \lipsum[2]\lipsum[2]
3273 \begin{mdframed}[leftmargin=10pt,%
3274 rightmargin=10pt,%
3275 linecolor=red,
3276 backgroundcolor=yellow]
3277 \ExampleText
3278 \end{mdframed}
3279 \lipsum[2]
3280 \onecolumn
3281 \Examplesec{Working inside enumerate}
3282 \begin{LTXexample}
3283 Text Text Text Text Text Text Text Text
3284 \begin{enumerate}
3285 \item in the following \ldots
3286 \begin{mdframed}[linecolor=blue,linewidth=2]
3287 \ExampleText
3288 \end{mdframed}
3289 \item \lipsum[2]
3290 \end{enumerate}
3291 Text Text Text Text Text Text
3292 \end{LTXexample}
3293 \end{document}
3294 \endinput

```

## G. Change History

v1.0a		Added option <code>frametitlecolor</code> ,	
General: Created dtx and fixes bugs	1	<code>frametitlebackgroundcolor</code> , font ...	22
v1.0b		Added option <code>titleaboveskip</code> ,	
General: added command <code>\@parboxrestore</code>		<code>titlebelowskip</code> , <code>frametitlewidth</code> .	21
to <code>\mdf@lrbox</code>	26	Added option <code>usetwoside</code>	22
removed <code>\setbox\mdf@splitbox@two</code>		Changed the definition of <code>\mdf@trivlist</code>	32
<code>\vbox\unvbox \mdf@splitbox@two</code>	36	Create new <code>\savebox</code> and renamed	
v1.1beta		<code>\@tempboxa</code>	25
General: added command to avoid overfull		Defining <code>mdframed</code> with <code>\newenvironment</code>	32
box warning by <code>vsplit</code>	26	Joining all new definitions	25
Added <code>frametitle</code> detection to		Redefinition of <code>\newmdtheoremenv</code> . – Now	
<code>\detected@mdf@put@frame</code>	31	check of theorem definition.	28
added lost semicolons	49	Removing <code>\arrayparboxrestore</code>	34
Added method frame title via <code>\savebox</code>	28	Renamed some commands so that every	
		command have the same prefix <code>\mdf@</code>	1

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The index only collect package relevant words.

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