

# The mdframed package

auto-split frame environment

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

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

Linked files: [mdframed-example-default.pdf](#) [mdframed-example-tikz.pdf](#)  
[mdframed-example-pstricks.pdf](#) [mdframed-example-texsx.pdf](#)

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

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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>TikZ implementation

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

The frame was defined with the following settings.

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

## 2. Syntax

### Loadings `mdframed`

The package itself loads the packages

- `kvoptions`,
- `xparse` (new),
- `etoolbox` and
- `color`.

Depending on the options `mdframed` will load

- `xcolor`,
- `tikz` or
- `pstricks`.

Load the package as usual:

```
\usepackage[<GLOBAL OPTIONS>]{mdframed}
```

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

### Provided environment

The package defines only one environment with the following syntax:

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

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

### Autodetecting floats

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

### Twoside-mode

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

## 3. The frames

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

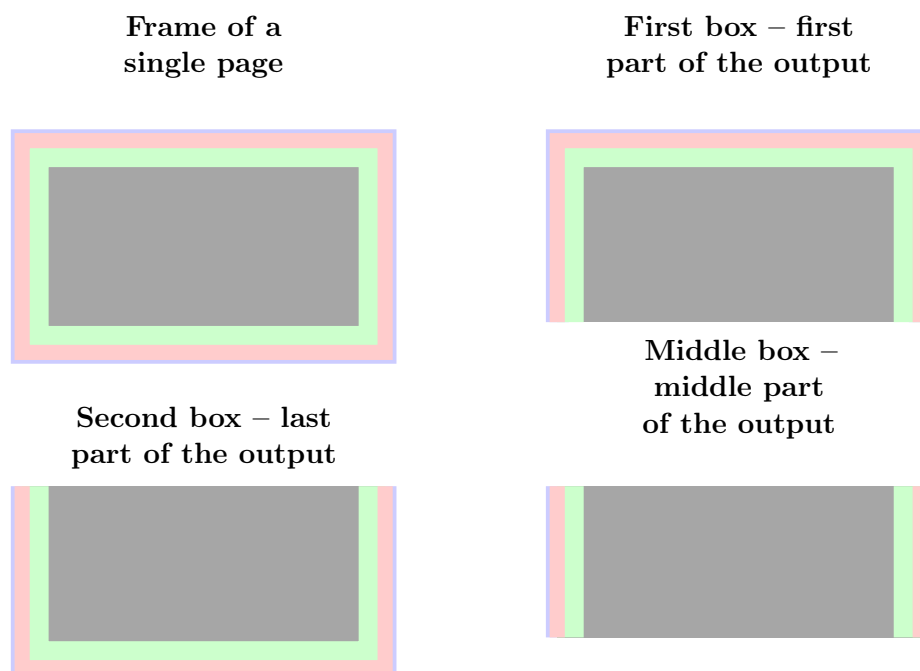


Figure 1: The basic frames

## 4. Commands

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

`\newmdenv`

The command has the following syntax:

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

In this way you can simply use:

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

```
foo foo foo foo foo foo
\end{infobox}
```

#### `\renewmdenv`

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

#### `\surroundwithmdframed`

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

```
\surroundwithmdframed[linewidth=2pt]{verbatim}
```

#### `\mdflength`

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

```
Some Text \hspace{\mdflength{innerleftmargin}} Some Text
\the\mdflength{innerleftmargin}
```

#### `\mdfsetup`

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

**At this point I want to recommend the using of the command `\mdfsetup` instead of setting package option via the optional argument of `\usepackage`. So you are avoiding breaking of non robust commands.<sup>2</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>3</sup>

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

<sup>3</sup>Thanks to Martin Scharrer and Enrico Gregorio:

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

## 5. Options

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

### 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.

## 5.2.1. Options with lengths

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

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

`defaultunit`

`default=pt`

see the sentence above.

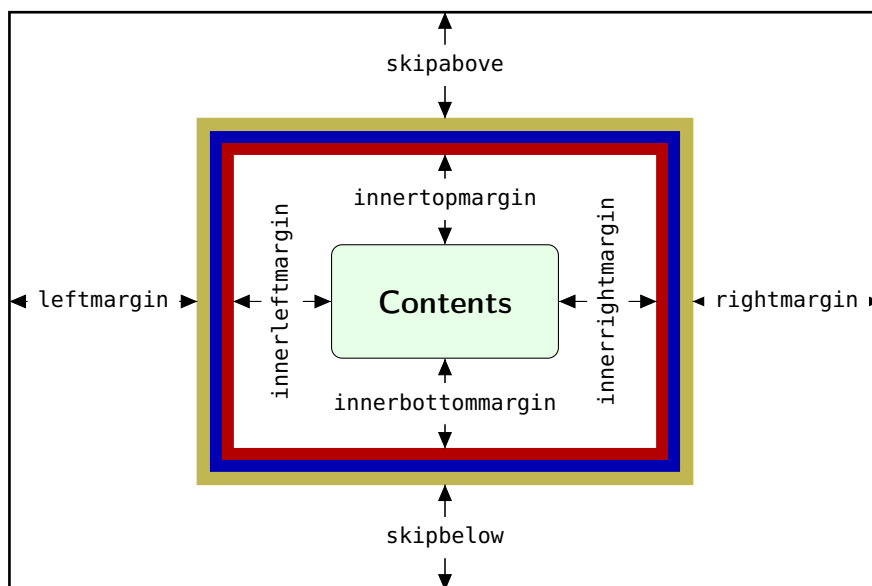


Figure 2: adjustable lengths of `mdframed`

`skipabove`

`default=0pt`

Sets an additional skip above the frame.

`skipbelow`

`default=0pt`

Sets an additional skip below the frame.

`margin`

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

`leftmargin`

`default=0pt`

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

`rightmargin`

`default=0pt`

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

`innerleftmargin` default=10pt

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

`innerrightmargin` default=10pt

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

`innertopmargin` default=.4\baselineskip

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

`innerbottommargin` default=.4\baselineskip

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

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

`userdefinedwidth` default=0pt

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

`outermargin`

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

`innermargin`

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

`splittopskip` default=0pt

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

`splitbottomskip` default=0pt

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

`linewidth` default=0.4pt

Sets the width of the line around the environment.

`roundcorner` default=0pt

Sets the size of the radius of the corners of the frames.

This works only with `framemethod=TikZ` or `PSTricks`.

`innerlinewidth` default=0pt

Sets the width of the inner line around the environment.

This works only with `framemethod=TikZ` or `PSTricks`.

`outerlinewidth` default=0pt

Sets the width of the outer line around the environment.

This works only with `framemethod=TikZ` or `PSTricks`.

`middlelinewidth` default=linewidth

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

### 5.2.2. Colored Options

`linecolor` default=black

Sets the color of the line around the environment.

`backgroundcolor` default=white

Sets the color of the background of the environment.

`fontcolor` default=black

Sets the color of the contents of the environment.

`innerlinecolor` default=linecolor

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

`middlelinecolor` default=linecolor

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

`outerlinecolor` default=linecolor

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

### 5.2.3. General options

`everyline` default=false

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

`font` default={}

Sets the font of the environment.

`ntheorem` default=false

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

`nobreak` default=false

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

`usetwoside` default=true

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



`needspace` default=0pt

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

`style`

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

`settings` default=none

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

`align` default=left

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

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

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

`shadow` default=false

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

`shadowsize` default=8pt

Specify the size of the shadow.

`shadowcolor` default=black!50

Specify the color of the shadow.

`pstrickssetting` default=none

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

This works only with `framemethod=PSTricks`.

`pstricksappsetting` default=none

`mdframed` works with defined style for the different elements. By using `\addtopstyle` in combination with this option you can expand the definition. The predefined styles are

- `mdfbackgroundstyle`
- `mdfframetitlebackgroundstyle`
- `mdfouterlinestyle`

- `mdfinnerlinestyle`
- `mdfmiddlelinestyle`

Before you change one please have a look at the file `md-frame-2.mdf` to see the settings. This works only with `framemethod=PSTricks`.

`tikzsetting` default=none

With this key you can pass several options to `\tikzset`. Some examples are listed in the next section. It is very important to put the options of `tikzsetting` in brackets.

This works only with `framemethod=TikZ`.

`apptotikzsetting` default=none

With this key you can add several options to `tikzsetting`. This key based on the idea of manipulation of predefined keys of `mdframed`. The package `mdframed` defines via `\tikzset` the following keys to draw frames.

- `\tikzset{mdfbox/.style}`
- `\tikzset{mdfcorners/.style}`
- `\tikzset{mdfbackground/.style}`
- `\tikzset{mdfinnerline/.style}`
- `\tikzset{mdfouterline/.style}`
- `\tikzset{mdfmiddleline/.style}`
- `\tikzset{mdfframetitlerule/.style}`
- `\tikzset{mdfframetitlebackground/.style}`
- `\tikzset{mdfshadow/.style}`

Before you change one please have a look at the file `md-frame-1.mdf` to see the settings. This works only with `framemethod=TikZ`.

`singleextra` default={}

With this key you can put extra material to the drawing environment of `mdframed` only for a non splitted frame.

This works only with `framemethod=TikZ` and `PSTricks`.

`firstextra` default={}

With this key you can put extra material to the drawing environment of `mdframed` only for the first part of the splitted frame.

This works only with `framemethod=TikZ` and `PSTricks`.

`middleextra` default={}

With this key you can put extra material to the drawing environment of `mdframed` only for the middle part of the splitted frame.

This works only with `framemethod=TikZ` and `PSTricks`.

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

### 5.3. Hidden Lines

`topline` default=true  
 Draws a line at the top.

`bottomline` default=true  
 Draws a line at the bottom.

`leftline` default=true  
 Draws a line on the left.

`rightline` default=true  
 Draws a line on the right.

`hidealllines` default=false  
 With this option you can decide whether all lines should be drawn or not.

### 5.4. Frametitle

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

`frametitle` default=none  
 The environment gets a title. To set a title use `frametitle={The Title of the frame}` as an option of the environment.

`frametitlefont` default=\normalfont\bfseries  
 Sets the format of the `frametitle`.

`frametitlealignment` default=\raggedleft  
 Align the `frametitle`. This option must be set via `\mdfsetup`.

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

`frametitlerulewidth` default=.2pt  
 Sets the width of the line between the text and the title of `mdframed`.

`frametitleaboveskip` default=5pt  
 Sets the skip of the frame title to the margin above of `mdframed`.

`frametitlebelowskip` default=5pt

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

`frametitlebackgroundcolor`

default=white

Sets the color of the background of the frametitle

### FYI and Note

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

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

`repeatframetitle`

default=false

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

## 5.5. Theorems

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

`\newmdtheoremenv`

Since the package is often used to highlight theorem environments, I have created a command<sup>4</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`!

`\mdtheorem`

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

```
\mdtheorem[<mdframed-options>]{<envname>}%
    [<numberedlike>]{<caption>}{<within>}
```

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

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

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

[Own command to create new environment](#)

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

```
\begin{environment}[optional title]
...
\end{environment}
```

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

`theoremseparator` default={:}

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

`theoremtitlefont` default={}

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

`theoremspace` `\space`

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

## 5.6. Footnotes

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

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

`footnotedistance` default= `\bigskipamount`

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

`footnoteinside` default=`true`

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

### Note

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

## 6. Examples

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

### `mdframed-example-default`

Demonstration of examples created with `framemethod=default`.

### `mdframed-example-tikz`

Demonstration of examples created with `framemethod=TikZ`.

**mdframed-example-pstricks**

Demonstration of examples created with `framemethod=pstricks`.

**mdframed-example-texsx**

Demonstration of examples like interaction with `listings`

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

The Korean T<sub>E</sub>XGroup created a very nice presentation. I want to show the link because it's really a great work: [kts 2012 mdframed](#).

## 7. Errors, Warnings and Messages

The package `mdframed` provides different errors, warnings and messages in the `log`-file. Some L<sup>A</sup>T<sub>E</sub>X-editors like T<sub>E</sub>XMaker or T<sub>E</sub>XStudio have a special tab for errors and warnings but not for messages. So you should look in the `log-File` itself.

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

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

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

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

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

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

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

You have not loaded **ntheorem** yet

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

You have only a width of 3cm

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

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

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

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

like enlargethispage or something else  
 You got a bad break

See the explanation above.

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

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

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

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

## 8. Known Problems

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

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

1. So far the environment isn't compatible with the package `gmverb`.
2. If you load the package `picins` the frame will no be splitted. That based on a problem of the package 'picins' which defines `\@captive` global. To work with the package `picins` you can use the following hack.

```

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

```

## 9. ToDo

### It is important to update the documentation

1. see "Known Problems".
2. So far it isn't possible to combine the environment `\begin{multicols}` of the package `multicol` with `mdframed` with the whole option list.
3. Create new styles.
4. Improve page breaks.
5. Improve footnotes.
6. Improve documentation and examples.

7. Create styles for `frametitle`.
8. Create an inline version of `mdframed` that's works like `\fbox`
9. Add `\ht\strutbox` to file `md-frame-1.mdf`

## 10. Acknowledgements

Dick Nickalls; Dietrich Grau; Piazza Luca; Jobst Hoffmann; Martin Scharrer; Enrico Gregorio; Heiko Oberdiek; Philipp Stephani; Nicolas Markey<sup>5</sup> .

Thanks for proofreading

Alan Munn and Nahid Shajari

I hope I forgot nobody.

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<sup>5</sup>Many thanks for improving the splitting algorithm



## 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.

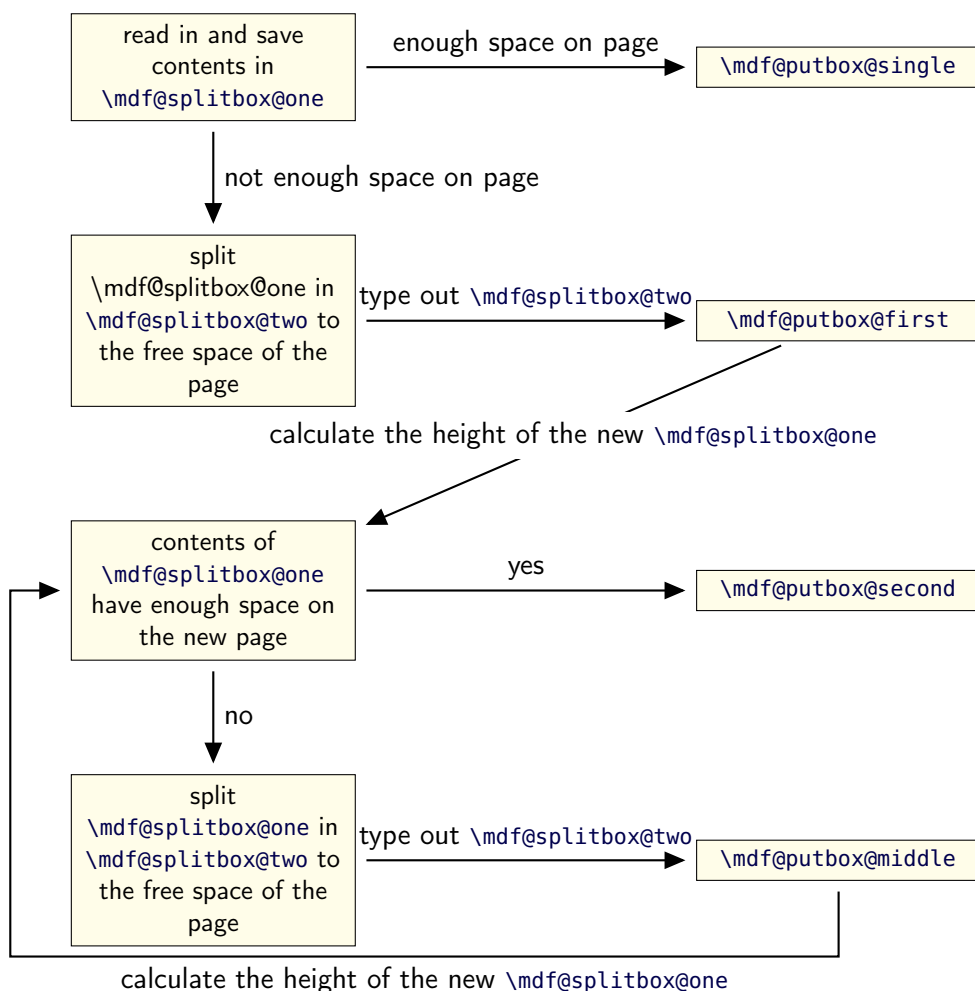


Figure 3: Setting the contents of `mdframed`

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 1.6 submitted DD MMM 2012

- Expand and improved the splitting algorithm with a great idea of Nicolas Markey • Tobias Weh inspired the excurs-environment not Tobias Schwan. Sorry, I fixed it. • Improved `\mdtheorem` to handle `\listtheorems` provided by `ntheorem`.

### Version 1.5 submitted 10 Mar 2012

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

### Version 1.4d submitted 30 Mar 2012

- fixed bug (Thanks Nicolas Roy) • added approach to documentation to work with `picins`
- new implementation of option `hidealllines`, now you can set `\mdfsetup{hidealllines=true,leftline=true}` printing only the left line (inspired by Tobias Weh)
- added option `everyline` to draw a top and bottom line at splitted frames

### Version 1.4 submitted 4 Mar 2012

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

### Version 1.3a submitted 5 Feb 2012

- fixed bug (Thanks to Dietrich Grau)

### Version 1.3 submitted 4 Feb 2012

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

### Version 1.2 submitted 8 Jan 2012

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

### Version 1.0b submitted 9 Dec 2011

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

### Version 1.0 submitted 13 Nov 2011

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

### Version 0.9g submitted 08 Oct 2011

- fixed documentation • added small footnote compatibility

### Version 0.9f submitted 04 Oct 2011

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

### Version 0.9e submitted 11 Sep 2011

- working with `twoside` modus

### Version 0.9d submitted 10 Sep 2011

- **changed the meaning of the option `style`!!!** (inspired by Lars Madsen) • added option `framemethod` (inspired by Lars Madsen) • added options `needspace` (inspired by Lars Madsen) • added new command

`\mdfdefinestyle` (inspired by Lars Madsen) • fixes documentation • renamed `md-frame-3.mdf` to `md-frame-2.mdf`

**Version 0.9b submitted 7 Sep 2011**

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

**Version 0.9a submitted 5 Sep 2011**

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

**Version 0.9 submitted 4 Sep 2011**

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

**Version 0.8a**

- fixes bugs • fixes documentation

**Version 0.8 submitted 22 Aug 2011**

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

**Version 0.7a submitted 6 August 2011**

- added option `frametitle` • added option `frametitlefont` • allow 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.dtx3892012-04-2720:46:58Zmarco Rev : 389 Author : marco*

*Date : 2012-04-2722:46:58+0200(Fr, 27 Apr 2012)*

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

Set package information

```
1 \def\mdversion{v1.6}
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 389 2012-04-27 20:46:58Z marco $%
7     \mdversion: \mdframedpackagename]
```

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

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

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

Loading required packages

```
20 \RequirePackage{kvoptions}
21 \RequirePackage{xparse}
22 \RequirePackage{etoolbox}[2011/01/03]
23 \RequirePackage{zref-abspage}
24 \RequirePackage{color}
```

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

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

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

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

```

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

`\mdf@dolist`

Loop used by *mdframed*.

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

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

Command to define a new length with a default value.

```

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

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

```

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

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

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

```

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

```

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

```

```

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

```

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

```

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

```

```

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

```

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

```

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

```

```

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

```

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

```

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

```

Start declaration of options

```

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

```

Only provide to be backward compatible

```

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

```

```

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

```

\mdf@framemethod

```

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

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

```

\mdf@do@lengthoption

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

```

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

```



```

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

```

`\mdf@do@lengthoption`

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

```

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

```

190 }

`\mdf@do@booloption`

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

```

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

`\mdf@do@alignoption`

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

```

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

```

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

Set the alignment.

```

225 \newcommand*\mdf@align{}%
226 \newcommand*\mdf@makeboxalign@left{\null\hspace*{\mdf@leftmargin@length}}%
227 \newcommand*\mdf@makeboxalign@right{}%
```

```

228 \define@key{mdf}{align}[left]{%
229   \ifcsundef{mdf@align@#1@left}{%
230     \mdf@PackageWarning{Unknown alignment #1\MessageBreak}%
231     \letcs\mdf@makeboxalign@left{mdf@align@left@left}%
232     \letcs\mdf@makeboxalign@right{mdf@align@left@right}%
233   }{%
234     \def\mdf@makeboxalign@left{\csuse{mdf@align@#1@left}}%
235     \def\mdf@makeboxalign@right{\csuse{mdf@align@#1@right}}%
236   }%
237 }

```

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

Option to pass options to tikz or pstricks

```

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

```

`\mdf@xcolor`

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

```

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

```

`\mdf@needspace`

Defining the option needspace

```

266 \define@key{mdf}{needspace}[\z@]{%
267   \begingroup%
268     \setlength{\dimen@}{#1}%

```

```

269      \vskip\z@\@plus\dimen@%
270      \penalty -100\vskip\z@\@plus -\dimen@%
271      \vskip\dimen@%
272      \penalty 9999%
273      \vskip -\dimen@%
274      \vskip\z@skip % hide the previous |\vskip| from |\addvspace|
275      \endgroup%
276 }

```

```

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

```

\mdfsetup

Short form of `\setkeys{mdf}`

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

\mdf@style

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

```

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

```

\mdf@print@space

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

```

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

```

```

309 \def\mdf@PackageInfoSpace{\csname mdf@Package\mdf@tempa\endcsname}%
310 }

```

\new...

Initialize all commands and length which will we used later

```

311 \newsavebox\mdf@frametitlebox
312 \newsavebox\mdf@footnotebox
313 \newsavebox\mdf@splitbox@one
314 \newsavebox\mdf@splitbox@two
315 \newsavebox\mdf@splitbox@save
316 \newlength\mdf@splitboxwidth
317 \newlength\mdf@splitboxtotalwidth
318 \newlength\mdf@splitboxheight
319 \newlength\mdf@splitboxdepth
320 \newlength\mdf@splitboxtotalheight
321 \newlength\mdf@frametitleboxwidth
322 \newlength\mdf@frametitleboxtotalwidth
323 \newlength\mdf@frametitleboxheight
324 \newlength\mdf@frametitleboxdepth
325 \newlength\mdf@frametitleboxtotalheight
326 \newlength\mdf@footnoteboxwidth
327 \newlength\mdf@footnoteboxtotalwidth
328 \newlength\mdf@footnoteboxheight
329 \newlength\mdf@footnoteboxdepth
330 \newlength\mdf@footnoteboxtotalheight
331
332 \newlength\mdf@totallinewidth
333
334 \newlength\mdf@boundingboxwidth
335 \newlength\mdf@boundingboxtotalwidth
336
337 \newlength\mdf@boundingboxheight
338 \newlength\mdf@boundingboxdepth
339 \newlength\mdf@boundingboxtotalheight
340
341 \newlength\mdf@freevspace@length
342 \newlength\mdf@horizontalwidthofbox@length
343 \newlength\mdf@verticalmarginwhole@length
344
345 % Command to expand the tikz code. (see md-frame-1.mdf)
346 \newrobustcmd\mdf@createextratikz{}
347

```

\mdf@loop

Creating a loop to iterate the correct splitting point

```

348 \def\mdf@loop#1\mdf@repeat{%
349   \def\mdf@iterate{#1}%
350   \mdf@iterate%
351   \let\mdf@iterate\relax
352 }
353 \let\mdf@repeat\relax

```

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

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

```
354
355 \def\mdf@lrbox#1{%
356   %%patch to work with amsthm
357   \mdf@patchamsthm
358   %%end patch
359   \edef\mdf@restoreparams{%
360     \parindent=\the\parindent \parskip=\the\parskip}
361   \setbox#1\vbox\bgroup
362   \color@begingroup%
363   \mdf@horizontalmargin@equation%
364   \columnwidth=\hsize%
365   \textwidth=\hsize%
366   \@parboxrestore%
367   \mdf@restoreparams%
368   %SETZE
369   \@afterindentfalse%
370   \@afterheading%
371   %STREICHE
372   %\doendpe
373 }
374
375 \def\endmdf@lrbox{\color@endgroup\egroup}
376
```

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

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

```
377 \newrobustcmd*\mdf@ignorevbadness{%
378   \edef\mdf@currentvbadness{\the\vbadness}%
379   \vbadness=\@M%
380   \afterassignment\mdf@restorevbadness}
381 \newrobustcmd*\mdf@restorevbadness{\vbadness=\mdf@currentvbadness\relax}
```

```
\mdf@patchamsth
```

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

```
382 \@ifpackageloaded{amsthm}{%
383   \newrobustcmd\mdf@patchamsthm{%
384     \let\mdf@deferred@thm@head\deferred@thm@head
385     \patchcmd{\deferred@thm@head}{\indent}{}%
386       {\mdf@PackageInfo{mdframed detected package amsthm ^^J
387         changed the theoerem header of amsthm\MessageBreak}%
388       }{%
389         \mdf@PackageInfo{mdframed detected package amsthm ^^J
390         changed the theoerem header of amsthm failed\MessageBreak}%
391       }%
392     }%
393   }\let\mdf@patchamsthm\relax}%

```

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

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

```
394 \def\mdf@trivlist#1{%
395   \setlength{\topsep}{#1}%
396   \partopsep\z@%
397   \parsep\z@%
398   \@nmblistfalse%
399   \@trivlist%
400   \labelwidth\z@%
401   \leftmargin\z@%
402   \itemindent\z@%
403   \let\@itemlabel\@empty%
404   \def\makelabel##1{##1}%
405   % \item\leavevmode\hrule \@height\z@ \@width\linewidth\relax%
406   % \item\mbox{}\relax% second version
407   \item\relax% first Version
408 }
409 \let\endmdf@trivlist\endtrivlist
410 \patchcmd\endmdf@trivlist\@endparenv\mdf@endparenv{}}{}
411 \def\mdf@endparenv{%
412   \addpenalty\@endparpenalty\addvspace\mdf@skipbelow@length\@endpetrue}
413
```

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

```
414 \newrobustcmd*\mdf@makebox@out[2][\linewidth]{%
415   \noindent\hb@xt@\z@{%
416     \noindent\makebox[\dimexpr #1\relax][l]{#2}%
417     \hss}%
418 }%
419 \newrobustcmd*\mdf@makebox@in[2][\mdf@userdefinedwidth@length]{%
420   \noindent\makebox[\dimexpr #1\relax][l]{#2}%
421 }
```

```
\mdfdefinestyle
\mdfapptodefinestyle
```

See explanation of this commands above.

```
422 \newrobustcmd*\mdfdefinestyle[2]{%
423   \csdef{mdf@definestyle@#1}{#2}%
424 }
425 \newrobustcmd*\mdfapptodefinestyle[2]{%
426   \ifcsundef{mdf@definestyle@#1}%
427     {\mdf@PackageWarning{Unknown style #1}}%
428     {\csappto{mdf@definestyle@#1}{, #2}}%
429 }
```

```
\mdflength
\surroundwithmdframed
```

Helper macros to work with *mdframed*

```

430 \newrobustcmd*{\mdflength}[1]{\csuse{mdf@#1@length}}
431
432 \newrobustcmd*{\surroundwithmdframed}[2][]{%
433   \BeforeBeginEnvironment{#2}{\begin{mdframed}[#1]}%
434   \AfterEndEnvironment{#2}{\end{mdframed}}}%
435 }

```

<pre> \newmdenv \renewmdenv \newmdtheoremenv \mdtheorem </pre>
--

Defining of the new environment definitions.

```

436 \newrobustcmd*{\newmdenv}[2][]{%
437   \newenvironment{#2}{%
438     \mdfsetup{#1}%
439     \begin{mdframed}%
440     }{%
441     \end{mdframed}%
442   }%
443 }
444 \newrobustcmd*{\renewmdenv}[2][]{%
445   \expandafter\let\csname #2\endcsname\relax%
446   \expandafter\let\csname end#2\endcsname\relax%
447   \newmdenv[#1]{#2}%
448 }%
449
450
451 \DeclareDocumentCommand\newmdtheoremenv{0}{m o m o }{%
452   \ifboolexpr{ test {\IfNoValueTF {#3}} and test {\IfNoValueTF {#5}} }{%
453     {\newtheorem{#2}{#4}}{%
454     \IfValueTF{#3}{\newtheorem{#2}[#3]{#4}}{%
455     \IfValueTF{#5}{\newtheorem{#2}{#4}[#5]}{%
456     }%
457     \BeforeBeginEnvironment{#2}{%
458       \begin{mdframed}[#1]}%
459     \AfterEndEnvironment{#2}{%
460       \end{mdframed}}%
461   }
462
463
464 \newrobustcmd*{\mdf@thm@caption}[2]{%
465   \AtBeginDocument{%
466     \@ifpackageloaded{ntheorem}%
467     {\renewrobustcmd*{\mdf@thm@caption}{\thm@thmcaption}}{%
468     }
469
470 \DeclareDocumentCommand{\mdtheorem}{0}{m o m o }%
471 {\ifcsdef{#2}%
472   {\mdf@PackageWarning{Environment #2 already exists\MessageBreak}}%
473   {%
474     \IfNoValueTF {#3}%
475     {%#3 not given -- number relationship
476     \IfNoValueTF {#5}

```



```

477     {%#3+#5 not given
478     \@definecounter{#2}%
479     \expandafter\xdef\csname the#2\endcsname{\@thmcounter{#2}}%
480     \newenvironment{#2}[1][{%
481         \refstepcounter{#2}%
482         \ifstrempy{##1}%
483             {\let\@temptitle\relax}%
484             {%
485                 \def\@temptitle{\mdf@theoremseparator%
486                     \mdf@theoremspace%
487                     \mdf@theoremtitlefont%
488                     ##1}%
489                 \mdf@thm@caption{#2}{\csname the#2\endcsname}{##1}}%
490             }%
491     \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}]]%
492     {\end{mdframed}}}%
493 \newenvironment{#2*}[1][{%
494     \ifstrempy{##1}{\let\@temptitle\relax}{\def\@temptitle{: \ ##1}}%
495     \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]]%
496     {\end{mdframed}}}%
497 }%
498 {%#5 given -- reset counter
499 \@definecounter{#2}\@newctr{#2}[#5]%
500 \expandafter\xdef\csname the#2\endcsname{\@thmcounter{#2}}%
501 \expandafter\xdef\csname the#2\endcsname{%
502     \expandafter\noexpand\csname the#5\endcsname \@thmcountersep%
503     \@thmcounter{#2}}%
504 \newenvironment{#2}[1][{%
505     \refstepcounter{#2}%
506     \ifstrempy{##1}%
507         {\let\@temptitle\relax}%
508         {%
509             \def\@temptitle{\mdf@theoremseparator%
510                 \mdf@theoremspace%
511                 \mdf@theoremtitlefont%
512                 ##1}%
513             \mdf@thm@caption{#2}{\csname the#2\endcsname}{##1}}%
514         }
515     \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}]]%
516     {\end{mdframed}}}%
517 \newenvironment{#2*}[1][{%
518     \ifstrempy{##1}%
519         {\let\@temptitle\relax}%
520         {%
521             \def\@temptitle{\mdf@theoremseparator%
522                 \mdf@theoremspace%
523                 \mdf@theoremtitlefont%
524                 ##1}%
525             \mdf@thm@caption{#2}{\csname the#2\endcsname}{##1}}%
526         }%
527     \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]]%
528     {\end{mdframed}}}%
529 }%
530 }%
531 {%#3 given -- number relationship
532 \global\@namedef{the#2}{\@nameuse{the#3}}%

```

```

533     \newenvironment{#2}[1][]{%
534         \refstepcounter{#3}%
535         \ifstrepty{##1}%
536             {\let\@temptitle\relax}%
537             {%
538                 \def\@temptitle{\mdf@theoremseparator%
539                     \mdf@theoremspace%
540                     \mdf@theoremtitlefont%
541                     ##1}%
542                 \mdf@thm@caption{#2}{\csname the#2\endcsname}{##1}}%
543             }
544     \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}]]%
545     {\end{mdframed}}}%
546 \newenvironment{#2*}[1][]{%
547     \ifstrepty{##1}{\let\@temptitle\relax}{\def\@temptitle{: \ ##1}}%
548     \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]]%
549     {\end{mdframed}}}%
550 }%
551 }%
552 }
553

```

```

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

```

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

```

554 %TESTVERSION
555 % \newrobustcmd*\mdf@setopt@title{%
556 %     \ifbool{mdf@frametitle rule}{\booltrue{mdf@bottomline}}{\boolfalse{mdf@bottomline}}%
557 %     \let\ifmdf@leftline\ifmdf@frametitleleftline%
558 %     \let\ifmdf@topline\ifmdf@frametitletopline%
559 %     \let\ifmdf@rightline\ifmdf@frametitlerightline%
560 %     \let\ifmdf@bottomline\ifmdf@frametitlebottomline%
561 %     \mdfsetup{innerbottommargin=\mdf@titlebelowskip@length,%
562 %         innertopmargin=\mdf@titleaboveskip@length,%
563 %         middlelinecolor=\mdf@frametitle rulecolor,%
564 %         backgroundcolor=\mdf@frametitlebackgroundcolor,%
565 %         middlelinewidth=\mdf@frametitle rulewidth@length,%
566 %         innerleftmargin=\mdf@frametitleleftmargin@length,%
567 %         innerrightmargin=\mdf@frametitle rightmargin@length,%
568 %         alignment=\mdf@frametitle alignment,%
569 %         skipbelow=\z@}%
570 %     \def\mdf@linecolor@bottom{\color{\mdf@frametitlebottomrulecolor}}%
571 %     \mdf@frametitle settings%
572 % }
573 %
574 % \newrobustcmd*\mdf@setopt@body{%
575 %     \mdfsetup{topline=false, skipabove=\z@}%
576 %     \unskip\nointerlineskip%
577 % }
578 %
579 % \newrobustcmd\mdfframedtitleenv[1]{%

```

```

580 % \beginngroup
581 % \mdf@setopt@title
582 % \color@setgroup
583 % \mdf@frametitlefont
584 % \mdf@lrbox{\mdf@splitbox@one}%
585 % \mdf@frametitlealignment
586 % #1\par\unskip
587 % \endmdf@lrbox
588 % \mdf@ignorevbadness
589 % \global\setbox\mdf@frametitlebox\vbox{\unvbox\mdf@splitbox@one}%
590 % \mdf@ignorevbadness
591 % \global\setbox\mdf@splitbox@one\vbox{\unvcopy\mdf@frametitlebox}%
592 % \detected@mdf@put@frame%
593 % \color@endgroup%
594 % \endgroup
595 % }
596 \newrobustcmd\mdfframedtitleenv[1]{%
597 \color@beginngroup%
598 \mdf@lrbox{\mdf@frametitlebox}%
599 \mdf@frametitlealignment%
600 \color{\mdf@frametitlefontcolor}%
601 \normalfont\mdf@frametitlefont{#1}\par\unskip
602 \endmdf@lrbox%
603 \mdf@ignorevbadness%
604 \global\setbox\mdf@frametitlebox\vbox{\unvbox\mdf@frametitlebox}%
605 \global\mdfframetitleboxwidth=\wd\mdf@frametitlebox\relax%
606 \global\mdfframetitleboxheight=\ht\mdf@frametitlebox\relax%
607 \global\mdfframetitleboxdepth=\dp\mdf@frametitlebox\relax%
608 \global\mdfframetitleboxtotalheight=\dimexpr\ht\mdf@frametitlebox+\dp\mdf@frametitlebox
609 +\mdf@frametitleaboveskip@length+\mdf@frametitlebelowskip@length\relax%
610 \color@endgroup%
611 }
612
613 \newrobustcmd*\mdf@@frametitle{%
614 \mdfframedtitleenv{\mdf@frametitle}%
615 }
616
617 \newrobustcmd*\mdf@@frametitle@use{%
618 \beginngroup
619 \parskip\z@
620 \parindent\z@
621 \offinterlineskip
622 \mdf@ignorevbadness%
623 \global\setbox\mdf@splitbox@one\vbox{%
624 \unvcopy\mdf@frametitlebox%
625 \mdf@@frametitlerule%
626 \unvbox\mdf@splitbox@one
627 }%
628 \mdf@ignorevbadness%
629 \global\setbox\mdf@splitbox@one\vbox{%
630 \unvbox\mdf@splitbox@one}%
631 \endgroup
632 \mdfsetup{innertopmargin=\mdf@frametitleaboveskip@length}%
633 }

```

`\mdf@checkntheorem`

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

```

634
635 \newrobustcmd*\mdf@checkntheorem{%
636   \ifbool{mdf@ntheorem}%
637     {\ifundef{\theorempreskipamount}%
638       {\mdf@PackageWarning{You have not loaded ntheorem yet}}%
639       {\setlength{\theorempreskipamount}{\z@}%
640        \setlength{\theorempostskipamount}{\z@}%
641       }}%
642   {}%
643 }
```

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

Support for footnotes.

```

644 \newrobustcmd*\mdf@footnoterule{%
645   \kern0\p@%
646   \hrule \@width 1in \kern 2.6\p@}
647 \newrobustcmd*\mdf@footnoteoutput{%
648   \ifvoid\@mpfootins\else
649     \nobreak%
650     \vskip\mdf@footnotedistance@length%
651     \normalcolor%
652     \mdf@footnoterule
653     \unvbox\@mpfootins
654   \fi%
655 }
656 \newrobustcmd*\mdf@footnoteinput{%
657   \def\@mpfn{mpfootnote}%
658   \def\thempfn{\thempfootnote}%
659   \c@mpfootnote\z@%
660   \let\@footnotetext\@mpfootnotetext%
661 }
```

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

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

```

662 \newrobustcmd*\mdf@load@style{%
663   \ifcase\value{mdf@globalstyle@cnt}\relax%
664     \input{md-frame-0.mdf}%
665     \or\input{md-frame-1.mdf}%
666     \or\input{md-frame-2.mdf}%
667     \or\input{md-frame-3.mdf}%
668   \else%
669     \IfFileExists{md-frame-\value{mdf@globalstyle@cnt}.mdf}%
670     {\input{md-frame-\value{mdf@globalstyle@cnt}.mdf}}%
671     {%
672       \input{md-frame-0.mdf}%
673       \mdf@PackageWarning{The style number \value{mdf@globalstyle@cnt} does not exist^^J

```

```

674             mdframed uses instead style=0 \mdframedpackagename}%
675     }%
676 \fi%
677 }%
678 \mdf@load@style
679
680 \newrobustcmd*{\mdf@styledefinition{%AVOID!!!Needed for framemethod=default
681     \ifnumequal{\value{mdf@globalstyle@cnt}}{0}%
682     {\deflength{\mdf@innerlinewidth@length}{\z@}%
683     \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%
684     \deflength{\mdf@outerlinewidth@length}{\z@}%
685     \let\mdf@innerlinecolor\mdf@linecolor%
686     \let\mdf@middlelinecolor\mdf@linecolor%
687     \let\mdf@outerlinecolor\mdf@linecolor%
688     }{}}%
689 }

```

`\detected@mdf@put@frame`

Detect whether inside a non breakable environment.

```

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

```

```

724      \mdf@PackageInfo{mdframed inside a box ^^J
725                      mdframed uses option nobreak \mdframedpackagename}%
726      \def\mdf@reserved@a{\mdf@put@frame@standalone}%
727      \fi%
728      \fi%
729      \mdf@reserved@a%
730  }

```

```
\mdf@hidealllines@check
```

```

731 \newrobustcmd*\mdf@hidealllines@check{%
732   \ifbool{mdf@hidealllines}{%
733     \boolfalse{mdf@leftline}\boolfalse{mdf@rightline}%
734     \boolfalse{mdf@topline}\boolfalse{mdf@bottomline}%
735     \boolfalse{mdf@frametitleleftline}\boolfalse{mdf@frametitlerightline}%
736     \boolfalse{mdf@frametitletopline}\boolfalse{mdf@frametitlebottomline}%
737   }{}%
738 }

```

```

\mdframed
\mdframed@ii
\mdframed@i

```

That the user environment.

```

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

```

```

768      \detected@mdf@put@frame%
769      \mdf@footnoteoutput%
770    }%
771    \fi%
772    \mdf@reserveda%
773    \endmdf@trivlist%
774 \color@endgroup\@doendpe%
775 }
776
777

```

```

\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.

```

778 \newtoggle{md:checktwoside}
779 \settoggle{md:checktwoside}{false}
780 \newrobustcmd*\mdf@twoside@checklength{%
781   \if@twoside
782     \ifbool{mdf@usetwoside}%
783       {\mdf@PackageInfo{mdframed works in twoside mode}%
784        \settoggle{md:checktwoside}{true}%
785        \setlength\mdf@rightmargin@length{\mdf@outermargin@length}%
786        \setlength\mdf@leftmargin@length{\mdf@innermargin@length}%
787       }%
788       {\mdf@PackageInfo{mdframed inside twoside mode but\MessageBreak
789        works with oneside mode}%
790        \settoggle{md:checktwoside}{false}%
791       }%
792   \fi%
793 }
794
795 \newcounter{mdf@zref@counter}%keine doppelten laebes
796 \zref@newprop*{mdf@pagevalue}[0]{\number\value{page}}
797 \zref@addprop{\ZREF@mainlist}{mdf@pagevalue}
798 \newrobustcmd*\mdf@zref@label{%
799   \stepcounter{mdf@zref@counter}
800   \zref@label{mdf@pagelabel-\number\value{mdf@zref@counter}}%
801 }
802 \newrobustcmd*\if@mdf@pageodd{%
803   \zref@refused{mdf@pagelabel-\the\value{mdf@zref@counter}}%
804   \ifodd\zref@extract{mdf@pagelabel-\the\value{mdf@zref@counter}}{mdf@pagevalue}%
805     \setlength\mdf@rightmargin@length{\mdf@outermargin@length}%
806     \setlength\mdf@leftmargin@length{\mdf@innermargin@length}%
807   \else
808     \setlength\mdf@rightmargin@length{\mdf@innermargin@length}%
809     \setlength\mdf@leftmargin@length{\mdf@outermargin@length}%
810   \fi%
811 }
812 \newrobustcmd*\mdf@@@setzref{%
813   \iftoggle{md:checktwoside}{\mdf@zref@label\if@mdf@pageodd}{}%
814 }

```

`\mdf@freepagevspace`

```

815 \newrobustcmd*\mdf@freepagevspace{%
816     \penalty\@M\relax \vskip 2\baselineskip\relax
817     \penalty9999\relax \vskip -2\baselineskip\relax
818     \penalty9999\relax
819     \ifdimequal{\pagegoal}{\maxdimen}%
820         {\mdf@freevspace@length\vsiz}%
821         {\mdf@freevspace@length=\pagegoal\relax%
822         \advance\mdf@freevspace@length by -\pagetotal\relax%
823         \addtolength\mdf@freevspace@length{\dimexpr-\parskip\relax}\relax%
824         }%
825 }
```

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

Width of the box

```

826 \newrobustcmd*\mdf@advancelength@horizontalmargin@sub[1]{%
827     \advance\mdf@horizontalsofbox by -\csname mdf@#1@length\endcsname\relax%
828 }
829 \newlength\mdf@horizontalsofbox
830 \newrobustcmd*\mdf@horizontalmargin@equation{%
831     \setlength{\mdf@horizontalsofbox}{\mdf@userdefinedwidth@length}%
832     \mdf@dolist{\mdf@advancelength@horizontalmargin@sub}{%
833         leftmargin,outerlinewidth,middlelinewidth,%
834         innerlinewidth,innerleftmargin,inerrightmargin,%
835         innerlinewidth,middlelinewidth,outerlinewidth,%
836         rightmargin}%
837     \notbool{mdf@leftline}{%
838         \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
839         \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
840         \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
841     }{}%
842     \notbool{mdf@rightline}{%
843         \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
844         \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
845         \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
846     }{}%
847     \ifdimless{\mdf@horizontalsofbox}{3cm}%
848         {\mdf@PackageWarning{You have only a width of 3cm}}{}
849     \hsize=\mdf@horizontalsofbox%
850 }
```

`\mdf@keeplines@single`

horizontal space in relation of the lines.

```

851 \newrobustcmd*\mdf@keeplines@single{%
852     \notbool{mdf@topline}{%
853         \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
854         \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
855         \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
```



```

856     }{}%
857     \notbool{mdf@bottomline}{%
858         \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
859         \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
860         \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
861     }{}%
862 }

```

```

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

```

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

```

863 \newrobustcmd*\mdf@advancelength@verticalmarginwhole[1]{%
864     \advance\mdf@verticalmarginwhole@length by \csname mdf@#1@length\endcsname\relax%
865 }
866 \newrobustcmd*\mdf@advancelength@freevspace@sub[1]{%
867     \advance\dimen@ by -\csname mdf@#1@length\endcsname\relax%
868 }
869 \newrobustcmd*\mdf@advancelength@freevspace@add[1]{%
870     \advance\dimen@ by \csname mdf@#1@length\endcsname\relax%
871 }

```

```
\mdf@reset
```

Reset changes

```

872 \protected@edef\mdf@reset{\boxmaxdepth\the\boxmaxdepth
873     \splittopskip\the\splittopskip}%

```

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

Output of `mdframed` inside a non breakable environment.

```

874 \newrobustcmd*\mdf@put@frame@standalone{\relax%
875     \ifvoid\mdf@splitbox@one\relax
876         \mdf@PackageWarning{The environment is empty\MessageBreak}%
877         \let\mdf@reserved@a\relax%
878     \else
879         %Hier berechnung Box-Inhalt+Rahmen oben und unten
880         \setlength{\mdf@verticalmarginwhole@length}{%
881             {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
882         \mdf@dolist{\mdf@advancelength@verticalmarginwhole}{%
883             outerlinewidth,middlelinewidth,innerlinewidth,innertopmargin,
884             innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth}%
885         \mdf@keeplines@single%
886         \def\mdf@reserved@a{\mdf@putbox@single}%
887     \fi
888     \mdf@reserved@a%
889 }

```

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

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

```

890 \def\mdf@put@frame{\relax%
891   \ifvoid\mdf@splitbox@one\relax
892     \mdf@PackageWarning{The environment is empty\MessageBreak}%
893     \let\mdf@reserved@a\relax%
894   \else
895     \setlength\mdf@boundingboxwidth{\wd\mdf@splitbox@one}%
896     \mdf@print@space%
897     \mdf@freepagevspace@gives \mdf@freevspace@length%
898     \mdf@PackageInfoSpace{\the\mdf@freevspace@length before the beginning of \MessageBreak
899       the environment ending on input line \MessageBreak}%
900     %% If not enough space when starting to split, jump to next page
901     \ifdimless{\mdf@freevspace@length}{2\baselineskip}%
902       {%
903         \mdf@PackageInfo{Not enough space on this page}%
904         \vfill\eject%
905         \def\mdf@reserved@a{\mdf@put@frame}%
906       }{%
907         %Hier berechnung Box-Inhalt+Rahmen oben und unten
908         \setlength{\mdf@verticalmarginwhole@length}%
909           {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
910         \mdf@dolist{\mdf@advance@length@verticalmarginwhole}{%
911           outerlinewidth,middlelinewidth,innerlinewidth,innertopmargin,%
912           innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth}%
913         \mdf@keeplines@single%
914         %% If box fits on current page, put box, else put@frame@i
915         \ifdimless{\mdf@verticalmarginwhole@length}{\mdf@freevspace@length}%
916           {%passt auf Seite%
917             \begin@group%
918               \mdf@@@setzref%
919               \mdf@putbox@single%
920             \end@group%
921             \let\mdf@reserved@a\relax}%
922           {%passt nicht auf Seite
923             \def\mdf@reserved@a{\mdf@put@frame@i}%
924           }%
925       }%
926   \fi
927   \mdf@reserved@a%
928 }

```

`\mdf@put@frame@i`

Output of the first splitted box.

```

929 \def\mdf@put@frame@i{%Box muss gesplittet werden -- Ausgabe der ersten Teilbox
930   %Berechnung der Splittgroesse -- Linien und Abstand oben
931   %\vbox to 0pt{}%
932   %\rlap{\smash{\the\mdf@freevspace@length}}%\hrule \@height\z@ \@width\hsize
933   \mdf@freepagevspace@gives \mdf@freevspace@length
934   %Berechnung ob nur oberen Linien nur auf die Seite passe
935   \dimen@=\the\mdf@freevspace@length%
936   \dimen@i=\mdf@innertopmargin@length%
937   \advance\dimen@i by \mdf@innerlinewidth@length%
938   \advance\dimen@i by \mdf@middlelinewidth@length%
939   \advance\dimen@i by \mdf@outerlinewidth@length%

```

```

940 \advance\dimen@i by 2\baselineskip%
941 %% \dimen@i corresponds to the size of a box with 1 line. If we don't have at least that:
942 \ifdimless{\dimen@}{\dimen@i}%
943   {% then we go to next page
944     \hrule \@height\z@ \@width\hsize%
945     \vfill\eject%
946     \def\mdf@reserved@a{\mdf@put@frame}%
947   }{% if we have some room for a non-empty box:
948     \mdf@dolist{\mdf@advancelength@freevspace@sub}{%calculate with \dimen@
949       outerlinewidth,middlelinewidth,innerlinewidth,%
950       innertopmargin,splitbottomskip}%
951     \ifbool{mdf@everyline}{%
952       \ifbool{mdf@bottomline}{%
953         \advance\dimen@ by -\mdf@innerlinewidth@length%
954         \advance\dimen@ by -\mdf@middlelinewidth@length%
955         \advance\dimen@ by -\mdf@outerlinewidth@length%
956       }{%
957       }%
958     }{\ifbool{mdf@topline}{%
959       \advance\dimen@ by -\mdf@innerlinewidth@length%
960       \advance\dimen@ by -\mdf@middlelinewidth@length%
961       \advance\dimen@ by -\mdf@outerlinewidth@length%
962     }{%
963     }%
964     \advance\dimen@.8\pageshrink
965     %% if box fits: this is a problem, because \mdf@put@frame should have seen it...
966     \ifdimless{\ht\mdf@splitbox@one+\dp\mdf@splitbox@one}{\dimen@}%
967     {%
968       \mdf@PackageWarning{You got a bad break\MessageBreak
969       you have to change it manually\MessageBreak
970       by changing the text, the space\MessageBreak
971       or something else}%
972     }{%
973     }%
974     \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
975     \setbox\mdf@splitbox@save\vbox{\unvcopy\mdf@splitbox@one}%save the original box
976     \mdf@ignorevbadness%
977     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@
978     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
979     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
980     %% Now we try to see if the recently split box fits on page.
981     %% If not, we iteratively reduce the target size, until the box fits.
982     \dimen@i=\dimen@\relax%
983     \@tempcnta=\z@\relax%
984     \mdf@loop
985     \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
986     {%Falsch gesplittet
987       %% Debugging information
988       %\immediate\message{^^Jmdframed[974]: box two too big^^J
989       %\the\ht\mdf@splitbox@two^^J
990       %\the\dp\mdf@splitbox@two^^J
991       %\the\dimen@}
992       \mdf@PackageInfo{Box was splittet wrong\MessageBreak}%
993       \global\advance\dimen@i by -1pt\relax
994       %\immediate\message{\the\dimen@i^^J}
995       \splittopskip\z@%
996       %% reuse original box for splitting

```

```

996      %% this could probably be optimized a bit... (by directly using \mdf@splitbox@save)
997      \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@save}%
998      \splittopskip\mdf@splittopskip@length%
999      \mdf@ignorevbadness%
1000     \setbox\mdf@splitbox@save\vbox{\unvcopy\mdf@splitbox@one}%
1001     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@i
1002     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
1003     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
1004     \advance\@tempcnta by \@ne
1005     \ifnum\@tempcnta>\@m
1006         \let\mdf@iterate\relax%
1007     \fi
1008     %% loop
1009     \expandafter\mdf@iterate
1010 }{}
1011 \mdf@repeat
1012 \ifvoid\mdf@splitbox@one\relax
1013     %%\immediate\message{^^Jmdframed[1013]: box one empty^^J}
1014     %% \the\ht\mdf@splitbox@two^^J
1015     %% \the\dp\mdf@splitbox@two^^J
1016     %% \the\dimen@}
1017     %% restart from beginning, with enlarged page
1018     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two}%
1019     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
1020     \enlargethispage{\baselineskip}%
1021     %\advance\vsiz by 2pt
1022     \def\mdf@reserved@a{\mdf@put@frame}%
1023 \else
1024     %% if box one non-empty but very small: same problem...
1025     \ifdimless{\ht\mdf@splitbox@one+\dp\mdf@splitbox@one}{1sp}%
1026         {% debug information
1027             %\immediate\message{^^Jmdframed[1035]: box one empty^^J}
1028             % \the\ht\mdf@splitbox@two^^J
1029             % \the\dp\mdf@splitbox@two^^J
1030             % \the\dimen@}
1031             \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two}%
1032             \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
1033             \enlargethispage{\baselineskip}%
1034             \def\mdf@reserved@a{\mdf@put@frame}%
1035         }%
1036         {% Here, remaining box is not empty. We start working with the first box
1037             \ifvoid\mdf@splitbox@two%pruefe, ob erste Box leer ist
1038                 %% first box is empty. We add a small rule and restart from beginning
1039                 %\immediate\message{^^Jmdframed[1026]: box two empty^^J}
1040                 % \the\ht\mdf@splitbox@two^^J
1041                 % \the\dp\mdf@splitbox@two^^J
1042                 % \the\dimen@}
1043                 \hrule \@height\@size pt \@width\z@%
1044                 \hrule \@height\z@ \@width\hsize%
1045                 %
1046                 \def\mdf@reserved@a{\mdf@put@frame}%
1047             \else
1048                 \ifdimequal{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{1sp}%
1049                     {% first box almost empty...
1050                         %\immediate\message{^^Jmdframed[1033]: box two zero-sized^^J}
1051                         % \the\ht\mdf@splitbox@two^^J

```

```

1052      % \the\dp\mdf@splitbox@two^^J
1053      % \the\dimen@}
1054      \hrule \@height\z@ \@width\hsize%
1055      %\vfill\@eject%
1056      %\setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two\unvbox\mdf@splitbox@one}%
1057      \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@save}%
1058      \def\mdf@reserved@a{\mdf@put@frame}%
1059      }%
1060      {% Good: both boxes are non-empty
1061      %\immediate\message{^^Jmdframed[1040]: box one and two non-empty^^J
1062      % \the\ht\mdf@splitbox@one^^J
1063      % \the\dp\mdf@splitbox@one^^J
1064      % \the\ht\mdf@splitbox@two^^J
1065      % \the\dp\mdf@splitbox@two^^J}
1066      \begingroup%
1067      %% we write box two
1068      \mdf@@setzref
1069      \mdf@putbox@first%%Groesse des Splittens passt
1070      \endgroup%
1071      \hrule \@height\z@ \@width\hsize%
1072      \vfill\@eject%
1073      \def\mdf@reserved@a{\mdf@put@frame@ii}%
1074      }%
1075      \fi
1076      }% closes "else" part of \ifdimless
1077      \fi
1078      }% closes "else" part of \ifdimless
1079      %% Now we do what we promised...
1080      \mdf@reserved@a%
1081      }

```

`\mdf@put@frame@ii`

Output of the middle and last box.

```

1082 \def\mdf@put@frame@ii{%Ausgabe der mittleren Box(en) wenn vorhanden
1083 %% Here the aim is to fill the whole page
1084 \setlength{\mdf@freevspace@length}{\vsize}%
1085 \setlength{\mdimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1086 \mdf@dolist{\mdf@advance\length@freevspace@add}{%used \mdimexpr
1087   outerlinewidth,middlelinewidth,innerlinewidth,%
1088   innerbottommargin}%%Addition der Linien unten
1089 \ifbool{mdf@everyline}{%
1090   \ifbool{mdf@topline}{%
1091     \advance\mdimexpr by \mdf@innerlinewidth@length%
1092     \advance\mdimexpr by \mdf@middlelinewidth@length%
1093     \advance\mdimexpr by \mdf@outerlinewidth@length%
1094   }{}%
1095 }{}%
1096 \ifbool{mdf@bottomline}{%
1097   \advance\mdimexpr by \mdf@innerlinewidth@length%
1098   \advance\mdimexpr by \mdf@middlelinewidth@length%
1099   \advance\mdimexpr by \mdf@outerlinewidth@length%
1100 }{}%
1101 %% if box larger than available space
1102 \ifdimgreater{\mdimexpr}{\mdf@freevspace@length}%

```

46

```

1159      % However, first box could be too large...
1160      \setlength\dimen@{\vsize
1161      \dimen@i=\dimen@
1162      \mdf@loop
1163      \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
1164      {%Falsch gesplittet
1165      %\immediate\message{^^Jmdframed[1138]: box two too big^^J
1166      % \the\ht\mdf@splitbox@two^^J
1167      % \the\dp\mdf@splitbox@two^^J
1168      % \the\dimen@}
1169      \mdf@PackageInfo{Box was splittet wrong\MessageBreak}%
1170      \global\advance\dimen@i by -1pt
1171      %\immediate\message{\the\dimen@i^^J}
1172      \splittopskip\z@%
1173      \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@save}%
1174      \splittopskip\mdf@splittopskip@length%
1175      \mdf@ignorevbadness%
1176      \setbox\mdf@splitbox@save\vbox{\unvcopy\mdf@splitbox@one}%
1177      \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@i
1178      \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
1179      \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
1180      \expandafter\mdf@iterate
1181      }{}
1182      \mdf@repeat
1183      %% Now we output the box
1184      \begingroup
1185      \mdf@@setzref
1186      \mdf@putbox@middle%
1187      \endgroup
1188      \hrule \@height\z@ \@width\hsize
1189      \vfill\@eject
1190      \def\mdf@reserved@a{\mdf@put@frame@ii}%
1191      }
1192      \fi
1193      }
1194      {%% Box not larger than available space: first test for emptiness
1195      %% (should not be, as we tried to avoid this previously)
1196      \ifvoid\mdf@splitbox@one
1197      \mdf@PackageWarning{You got a bad break\MessageBreak
1198      because the last split box is empty\MessageBreak
1199      You have to change the settings}%
1200      \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one%
1201      \hrule \@height\z@ \@width\mdf@boundingboxwidth}%
1202      \fi%
1203      \ifdimless{\ht\mdf@splitbox@one+\dp\mdf@splitbox@one}{1sp}{%
1204      \mdf@PackageWarning{You got a bad break\MessageBreak
1205      because the last split box is empty\MessageBreak
1206      You have to change the settings}%
1207      %\hb@xt@\z@{\box\mdf@splitbox@one}%
1208      \let\mdf@reserved@a\relax%
1209      \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one%
1210      \hrule \@height\z@ \@width\mdf@boundingboxwidth}%
1211      }{}%
1212      \begingroup%
1213      \mdf@@setzref
1214      \mdf@putbox@second%

```



```

1215      %\hrule \@height\z@ \@width\hsize%
1216      \endgroup%
1217      \let\mdf@reserved@a\relax%
1218      }%Hier kommt die Ausgabe der letzten Box
1219      \mdf@reserved@a%
1220 }

```

```

\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.

```

1221 %%%%      -----t-----
1222 %%%%      |               |
1223 %%%%      |               |
1224 %%%%      |               |
1225 %%%%      l|               |r
1226 %%%%      |               |
1227 %%%%      |               |
1228 %%%%      |-----|
1229 %%%%      b
1230 %%Zusammenhaenge abfragen:
1231 \newrobustcmd*\mdf@test@lrb{%
1232   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1233               and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1234 %3-set
1235 \newrobustcmd*\mdf@test@ltr{%
1236   \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1237               and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1238 \newrobustcmd*\mdf@test@ltb{%
1239   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1240               and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1241 \newrobustcmd*\mdf@test@trb{%
1242   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1243               and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1244 \newrobustcmd*\mdf@test@lrb{%
1245   \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1246               and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1247 %2-set
1248 \newrobustcmd*\mdf@test@lb{%
1249   \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1250               and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1251 \newrobustcmd*\mdf@test@rb{%

```



```

1252 \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1253           and not (bool {mdf@leftline}) and (bool {mdf@rightline}})}
1254 \newrobustcmd*{\mdf@test@tr{%
1255 \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1256           and not (bool {mdf@leftline}) and (bool {mdf@rightline}})}
1257 \newrobustcmd*{\mdf@test@lt{%
1258 \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1259           and (bool {mdf@leftline}) and not (bool {mdf@rightline}})}
1260 \newrobustcmd*{\mdf@test@lr{%
1261 \ifboolexpr{not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1262           and (bool {mdf@leftline}) and (bool {mdf@rightline}})}
1263 \newrobustcmd*{\mdf@test@tb{%
1264 \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1265           and not (bool {mdf@leftline}) and not (bool {mdf@rightline}})}
1266 %Einzellinien
1267 \newrobustcmd*{\mdf@test@l{%
1268 \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1269           and (bool {mdf@leftline}) and not (bool {mdf@rightline}})}
1270 \newrobustcmd*{\mdf@test@r{%
1271 \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1272           and not (bool {mdf@leftline}) and (bool {mdf@rightline}})}
1273 \newrobustcmd*{\mdf@test@t{%
1274 \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1275           and not (bool {mdf@leftline}) and not (bool {mdf@rightline}})}
1276 \newrobustcmd*{\mdf@test@b{%
1277 \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1278           and not (bool {mdf@leftline}) and not (bool {mdf@rightline}})}
1279 %keine Linien
1280 \newrobustcmd*{\mdf@test@noline{%
1281 \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1282           and not (bool {mdf@leftline}) and not (bool {mdf@rightline}})}
1283 \newrobustcmd*{\mdf@test@single{%
1284 \ifboolexpr{ not (test {\mdf@test@ltrb} or test {\mdf@test@ltr} or
1285 test {\mdf@test@ltb} or test {\mdf@test@trb} or
1286 test {\mdf@test@lrb} or test {\mdf@test@lb} or
1287 test {\mdf@test@rb} or test {\mdf@test@tr} or
1288 test {\mdf@test@lt} ) }}
1289 %
1290 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{framemethod}%
1291 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{xcolor}%
1292
1293 \endinput

```

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

```

1294 %% Style file for mdframed for package option 'framemethod=default'
1295 %%
1296 %% This package may be distributed under the terms of the LaTeX Project
1297 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1298 %% Either version 1.0 or, at your option, any later version.
1299 %%
1300 %%
1301 %%$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $
1302 %

```

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

local settings

```
1303 \def\mdframed0packagename{md-frame-0}
1304 \def\mdf@frame0date@svn$#1: #2 #3 #4-#5-#6 #7 #8$#4/#5/#6\space }
1305 \ProvidesFile{md-frame-0.mdf}%
1306 [\mdf@frame0date@svn$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $%
1307 \mdversion: \mdframed0packagename]
```

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

short command

```
1308 \def\mdf@background@default{\color{\mdf@backgroundcolor}}
1309 \def\mdf@frametitlebackground@default{\color{\mdf@frametitlebackgroundcolor}}
1310 \def\mdf@shadow@default{\color{\mdf@shadowcolor}}
1311 \def\mdf@innerlinecolor@default{\color{\mdf@innerlinecolor}}
1312 \def\mdf@middlelinecolor@default{\color{\mdf@middlelinecolor}}
1313 \def\mdf@outerlinecolor@default{\color{\mdf@outerlinecolor}}
1314 \def\mdf@frametitlerulecolor@default{\color{\mdf@frametitlerulecolor}}
1315 \let\mdf@linecolor@default\mdf@middlelinecolor@default
1316 \def\mdf@@frametitlerule{%
1317   \ifbool{mdf@frametitlerule}{%
1318     \vbox to \mdf@frametitlerulewidth@length {\hsize\mdfframetitleboxwidth%
1319       \par\unskip\vskip\mdf@frametitlebelowskip@length%
1320       \rlap{\noindent\hspace*{-\mdf@innerleftmargin@length}%
1321         \mdf@frametitlerulecolor@default%
1322         \rule{\dimexpr\mdfframetitleboxwidth%
1323           +\mdf@innerleftmargin@length
1324           +\mdf@innerrightmargin@length\relax
1325         }{\mdf@frametitlerulewidth@length}%
1326       }}%
1327   }{}
1328   \par\unskip\vskip\mdf@innertopmargin@length%
1329 }%
1330
```

```
\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

```
1331 \def\mdf@frame@background@single{%
1332   \ifbool{mdf@shadow}{%
1333     \rlap{\smash{\mdf@shadow@default%
1334       \rule{\dimexpr-\mdfboundingboxdepth
1335         -\mdf@shadowsize@length
1336         \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{\relax}%
1337       }\dimexpr\mdfboundingboxtotalwidth
1338       +\mdf@shadowsize@length
```

```

1339         \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{\relax}%
1340     {\dimexpr\mdfboundingboxtotalheight
1341         +\mdf@shadowsize@length
1342         \ifbool{mdf@bottomline}{+\mdf@middlelinewidth@length}{\relax}%
1343     }%
1344 }}}%
1345 \rlap{\mdf@background@default%
1346     \rule[-\mdfboundingboxdepth]%
1347         {\mdfboundingboxtotalwidth}%
1348         {\mdfboundingboxtotalheight}%
1349     }%
1350 }%
1351 \def\mdf@frame@frametitlebackground@single{%
1352     \rlap{\mdf@frametitlebackground@default%
1353         \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1354             {\mdfboundingboxtotalwidth}%
1355             {\mdfframetitleboxtotalheight}%
1356         }%
1357     }%
1358 }%
1359 \def\mdf@frame@topline@single{%
1360     \rlap{\mdf@linecolor@default%
1361         \ifbool{mdf@topline}{%
1362             \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth%
1363                 +\mdf@innerbottommargin@length+\mdf@innertopmargin@length\relax]%
1364                 {\mdfboundingboxtotalwidth}%
1365                 {\mdf@middlelinewidth@length}}%
1366         }%
1367     }%
1368 }%
1369 \def\mdf@frame@bottomline@single{%
1370     \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1371         \ifbool{mdf@bottomline}{%
1372             \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1373                 {\dimexpr\mdfboundingboxtotalwidth
1374                     \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{%
1375                         \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{\relax}%
1376                         {\mdf@middlelinewidth@length}}%
1377                 }%
1378         }%
1379     }%
1380 }%
1381 \def\mdf@frame@leftline@single{%
1382     \llap{\mdf@linecolor@default%
1383         \rule[-\mdfboundingboxdepth]%
1384             {\mdf@middlelinewidth@length}%
1385             {\dimexpr\mdfboundingboxtotalheight%
1386                 \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{\relax}%
1387         }%
1388     }%
1389 }%
1390 \def\mdf@frame@rightline@single{%
1391     \rlap{\mdf@linecolor@default%
1392         \hspace*{\mdfboundingboxwidth}%
1393         \hspace*{\mdf@innerrightmargin@length}%
1394         \rule[\dimexpr-\mdfboundingboxdepth%
1395             \relax]%
1396             {\mdf@middlelinewidth@length}%

```

```

1395         {\dimexpr\mdfboundingboxtotalheight%
1396         +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1397     }%
1398 }%
1399 \def\mdf@putbox@single{%%%% Ausgabe der ungesplitteten Gesamtbox
1400 \ifvoid\mdf@splitbox@one
1401 \else%
1402     \mdf@makebox@out{%
1403         \mdf@makeboxalign@left%
1404         \setlength{\mdfboundingboxwidth}%
1405             {\wd\mdf@splitbox@one}%
1406         \setlength{\mdfboundingboxtotalwidth}%
1407             {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1408             +\mdf@innerrightmargin@length\relax}%
1409         \setlength{\mdfboundingboxheight}%
1410             {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1411         \setlength{\mdfboundingboxdepth}%
1412             {\dimexpr\dp\mdf@splitbox@one+\mdf@innerbottommargin@length\relax}%
1413         \setlength{\mdfboundingboxtotalheight}%
1414             {\dimexpr\mdfboundingboxheight+\mdf@innertopmargin@length%
1415             +\mdf@innerbottommargin@length\relax}%
1416         \setlength{\mdftotalllinewidth}{%
1417             \dimexpr\mdf@innerlinewidth@length+\mdf@middlelinewidth@length%
1418             +\mdf@outerlinewidth@length}%
1419         \noindent%
1420         \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1421             +\ifbool{mdf@leftline}%
1422                 {\mdf@middlelinewidth@length}{\z@}%
1423             +\ifbool{mdf@rightline}%
1424                 {\mdf@middlelinewidth@length}{\z@}\relax}%
1425         \mdf@makebox@in[\@tempdima]{%
1426             \null%
1427             \ifbool{mdf@leftline}{%
1428                 \hspace*{\mdftotalllinewidth}%
1429                 \mdf@frame@leftline@single%
1430             }{}%
1431             \mdf@frame@topline@single%
1432             \mdf@frame@background@single%
1433             \mdf@frame@bottomline@single%
1434             \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@single}%
1435             \hspace*{\mdf@innerleftmargin@length}%
1436             \ifbool{mdf@rightline}{%
1437                 \mdf@frame@rightline@single%
1438             }{}%
1439             {\box\mdf@splitbox@one}%
1440         }%
1441         \mdf@makeboxalign@right%
1442     }%
1443 \fi%
1444 }

```

```

\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

```

1445 \def\mdf@frame@background@first{%
1446   \ifbool{mdf@shadow}{%
1447     \rlap{\smash{\mdf@shadow@default%
1448       \rule[\dimexpr-\mdfboundingboxdepth
1449         -\mdf@shadowsize@length\relax]%
1450         {\dimexpr\mdfboundingboxtotalwidth
1451           +\mdf@shadowsize@length
1452             \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{\relax}%
1453             {\dimexpr\mdfboundingboxtotalheight
1454               +\mdf@shadowsize@length\relax}%
1455           }%
1456         }}}%
1457   \rlap{\mdf@background@default%
1458     \rule[-\mdfboundingboxdepth]%
1459       {\mdfboundingboxtotalwidth}%
1460       {\mdfboundingboxtotalheight}%
1461   }%
1462 }%
1463 \def\mdf@frame@frametitlebackground@first{%
1464   \ifdimless{\mdfframetitleboxtotalheight}{\mdfboundingboxtotalheight}%
1465   {%
1466     \rlap{\mdf@frametitlebackground@default%
1467       \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]%
1468         {\mdfboundingboxtotalwidth}%
1469         {\mdfframetitleboxtotalheight}%
1470     }%
1471     \global\mdfframetitleboxtotalheight=-\p@\relax%
1472   }\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
1473     Current this isn't well supported}%
1474   \rlap{\mdf@frametitlebackground@default%
1475     \rule[-\mdfboundingboxdepth]%
1476       {\mdfboundingboxtotalwidth}%
1477       {\mdfboundingboxtotalheight}%
1478   }%
1479   \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
1480     -\mdfboundingboxheight
1481     +\mdf@frametitlebelowskip@length
1482     +.5\baselineskip-1pt
1483   %
1484     +\dp\strutbox
1485     \relax%
1486 }%
1487 \def\mdf@frame@leftline@first{%
1488   \llap{\mdf@linecolor@default%
1489     \rule[-\mdfboundingboxdepth]%
1490       {\mdf@middlelinewidth@length}%
1491       {\dimexpr\mdfboundingboxtotalheight%
1492         +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1493   }%

```

```

1494 }%
1495 \def\mdf@frame@topline@first{%
1496   \rlap{\mdf@linecolor@default%
1497     \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth+
1498       \mdf@splitbottomskip@length+\mdf@innertopmargin@length\relax]{%
1499     {\mdfboundingboxtotalwidth}%
1500     {\mdf@middlelinewidth@length}%
1501   }%
1502 }
1503 \def\mdf@frame@rightline@first{%
1504   \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1505     \hspace*{\mdf@innerrightmargin@length}%
1506     \rule[-\mdfboundingboxdepth]{%
1507     {\mdf@middlelinewidth@length}%
1508     {\dimexpr\mdfboundingboxtotalheight%
1509       +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1510   }%
1511 }%
1512 \def\mdf@frame@bottomline@first{%
1513   \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1514     \ifbool{mdf@bottomline}{%
1515       \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]{%
1516       {\dimexpr\mdfboundingboxtotalwidth
1517         \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1518         \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{\relax}%
1519         {\mdf@middlelinewidth@length}}%
1520     }%
1521   }%
1522 }%
1523 \def\mdf@putbox@first{%%%% Ausgabe der Teilbox 1
1524   \ifvoid\mdf@splitbox@two
1525   \else%
1526     \mdf@makebox@out[\linewidth]{%
1527       \mdf@makeboxalign@left%
1528       \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@two}%
1529       \setlength{\mdfboundingboxtotalwidth}%
1530         {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1531           +\mdf@innerrightmargin@length\relax}%
1532       \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
1533       \setlength{\mdfboundingboxdepth}%
1534         {\dimexpr\dp\mdf@splitbox@two+\mdf@splitbottomskip@length\relax}%
1535       \setlength{\mdfboundingboxtotalheight}%
1536         {\dimexpr\mdfboundingboxheight+\mdf@innertopmargin@length%
1537           +\mdf@splitbottomskip@length\relax}%
1538       \setlength{\@tempdima}%
1539         {\dimexpr\mdfboundingboxtotalwidth%
1540           +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1541           +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1542           \relax}%
1543       \mdf@makebox@in[\@tempdima]{%
1544         \null%
1545         \ifbool{mdf@leftline}{%
1546           \hspace*{\mdf@middlelinewidth@length}%
1547           \mdf@frame@leftline@first}{}%
1548         \ifbool{mdf@everyline}%
1549           {\mdf@frame@bottomline@first}{}%

```

```

1550      \ifbool{mdf@topline}{%
1551          \mdf@frame@topline@first}{}%
1552      \mdf@frame@background@first%
1553      \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@first}%
1554      \hspace*{\mdf@innerleftmargin@length}%
1555      \ifbool{mdf@rightline}{%
1556          \mdf@frame@rightline@first}{}%
1557      {\box\mdf@splitbox@two}%
1558  }%
1559  \mdf@makeboxalign@right%
1560 }%
1561 \fi%
1562 }

```

```

\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

```

1563 \def\mdf@frame@background@second{%
1564     \ifbool{mdf@shadow}{%
1565         \rlap{\smash{\mdf@shadow@default%
1566             \rule[\dimexpr-\mdfboundingboxdepth
1567                 -\mdf@shadowsize@length
1568                 \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{\relax}%
1569                 {\dimexpr\mdfboundingboxtotalwidth
1570                     +\mdf@shadowsize@length
1571                     \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{\relax}%
1572                     {\dimexpr\mdfboundingboxtotalheight
1573                         +\mdf@shadowsize@length\relax}%
1574                 }%
1575             }}}%
1576         \rlap{\mdf@background@default%
1577             \rule[-\mdfboundingboxdepth]%
1578                 {\mdfboundingboxtotalwidth}%
1579                 {\mdfboundingboxtotalheight}%
1580             }%
1581     }%
1582 \def\mdf@frame@frametitlebackground@second{%
1583     \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1584     {%
1585         {\rlap{\mdf@frametitlebackground@default%
1586             \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1587                 {\mdfboundingboxtotalwidth}%
1588                 {\mdfframetitleboxtotalheight}%
1589             }%
1590         }%
1591     }%
1592 \def\mdf@frame@leftline@second{%
1593     \llap{\mdf@linecolor@default%
1594         \rule[-\mdfboundingboxdepth]%
1595             {\mdf@middlelinewidth@length}%
1596             {\dimexpr\mdfboundingboxtotalheight}%

```

```

1597 }%
1598 }%
1599 \def\mdf@frame@bottomline@second{%
1600 \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1601 \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]{%
1602 {\dimexpr\mdfboundingboxtotalwidth
1603 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{%
1604 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{\relax}%
1605 {\mdf@middlelinewidth@length}%
1606 }%
1607 }%
1608 \def\mdf@frame@rightline@second{%
1609 \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1610 \hspace*{\mdf@innerrightmargin@length}%
1611 \rule[-\mdfboundingboxdepth]{%
1612 {\mdf@middlelinewidth@length}%
1613 {\mdfboundingboxtotalheight}%
1614 }%
1615 }%
1616 \def\mdf@frame@topline@second{%
1617 \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1618 \ifbool{mdf@topline}{%
1619 \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth%
1620 +\mdf@innerbottommargin@length\relax]{%
1621 {\dimexpr\mdfboundingboxtotalwidth
1622 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{%
1623 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{\relax
1624 }%
1625 {\mdf@middlelinewidth@length}}%
1626 {}}%
1627 }%
1628 }%
1629
1630 \def\mdf@putbox@second{%
1631 \ifvoid\mdf@splitbox@one%
1632 \else
1633 \mdf@makebox@out{%
1634 \mdf@makeboxalign@left%
1635 \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@one}%
1636 \setlength{\mdfboundingboxtotalwidth}%
1637 {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1638 +\mdf@innerrightmargin@length\relax}%
1639 \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1640 \setlength{\mdfboundingboxdepth}%
1641 {\dimexpr\dp\mdf@splitbox@one+\mdf@innerbottommargin@length\relax}%
1642 \setlength{\mdfboundingboxtotalheight}%
1643 {\dimexpr\mdfboundingboxheight+\mdf@innerbottommargin@length\relax}%
1644 \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1645 +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1646 +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1647 \relax}%
1648 \mdf@makebox@in[\@tempdima]{%
1649 \null%
1650 \ifbool{mdf@leftline}{%
1651 \hspace*{\mdf@middlelinewidth@length}%
1652 \mdf@frame@leftline@second}{%

```



```

1653     \ifbool{mdf@everyline}%
1654         {\mdf@frame@topline@second}{}%
1655     \mdf@frame@background@second%
1656     \ifbool{mdf@bottomline}{%
1657         \mdf@frame@bottomline@second}{}%
1658     \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@second}%
1659     \hspace*{\mdf@innerleftmargin@length}%
1660     \ifbool{mdf@rightline}{%
1661         \mdf@frame@rightline@second}{}%
1662     {\box\mdf@splitbox@one}%
1663 }%
1664 \mdf@makeboxalign@right%
1665 }%
1666 \fi%
1667 }%

```

```

\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

```

1668 \def\mdf@frame@leftline@middle{%
1669     \llap{\mdf@linecolor@default%
1670         \rule[-\mdfboundingboxdepth]%
1671             {\mdf@middlelinewidth@length}%
1672             {\mdfboundingboxtotalheight}%
1673     }%
1674 }%
1675 \def\mdf@frame@background@middle{%
1676     \ifbool{mdf@shadow}{%
1677         \rlap{\smash{\mdf@shadow@default%
1678             \rule[\dimexpr-\mdfboundingboxdepth
1679                 -\mdf@shadowsize@length\relax]%
1680                 {\dimexpr\mdfboundingboxtotalwidth
1681                     +\mdf@shadowsize@length
1682                     \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}}\relax}%
1683                 {\dimexpr\mdfboundingboxtotalheight\relax}%
1684             }%
1685     }}{%
1686     \rlap{\mdf@background@default%
1687         \rule[-\mdfboundingboxdepth]%
1688             {\mdfboundingboxtotalwidth}%
1689             {\mdfboundingboxtotalheight}%
1690     }%
1691 }%
1692 \def\mdf@frame@frametitlebackground@middle{%
1693     \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1694     {%
1695         {\rlap{\mdf@frametitlebackground@default%
1696             \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1697                 {\mdfboundingboxtotalwidth}%
1698                 {\mdfframetitleboxtotalheight}%
1699             }%
1700         \global\mdfframetitleboxtotalheight=-\p@ \relax%

```

```

1701 }%
1702 }%
1703 \def\mdf@frame@rightline@middle{%
1704   \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1705     \hspace*{\mdf@innerrightmargin@length}%
1706     \rule[-\mdfboundingboxdepth]{\mdf@middlelinewidth@length}%
1707       {\mdfboundingboxtotalheight}%
1708     }%
1709 }%
1710 }%
1711 \def\mdf@frame@topline@middle{%
1712   \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1713     \ifbool{mdf@topline}{%
1714       \rule[\dimexpr\mdfboundingboxtotalheight-\mdfboundingboxdepth\relax]{\dimexpr\mdfboundingboxtotalwidth
1715         {\ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}{\ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}}{\relax
1716         }%
1717         {\mdf@middlelinewidth@length}}}%
1718     }%
1719     {\mdf@middlelinewidth@length}}}%
1720   }%
1721 }%
1722 }%
1723 \def\mdf@frame@bottomline@middle{%
1724   \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1725     \ifbool{mdf@bottomline}{%
1726       \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]{\dimexpr\mdfboundingboxtotalwidth
1727         {\ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}{\ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}}{\relax}%
1728         {\mdf@middlelinewidth@length}}}%
1729     }%
1730     {\mdf@middlelinewidth@length}}}%
1731   }%
1732 }%
1733 }%
1734
1735 \def\mdf@putbox@middle{%
1736   \ifvoid\mdf@splitbox@two%
1737   \else
1738     \mdf@makebox@out{%
1739       \mdf@makeboxalign@left%
1740       \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@two}%
1741       \setlength{\mdfboundingboxtotalwidth}%
1742         {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1743           +\mdf@innerrightmargin@length\relax}%
1744       \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
1745       \setlength{\mdfboundingboxdepth}%
1746         {\dimexpr\dp\mdf@splitbox@two+\mdf@splitbottomskip@length\relax}%
1747       \setlength{\mdfboundingboxtotalheight}%
1748         {\dimexpr\mdfboundingboxheight+\mdf@splitbottomskip@length\relax}%
1749       \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1750         +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1751         +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1752       \relax}%
1753       \mdf@makebox@in[\@tempdima]{%
1754         \null%
1755         \ifbool{mdf@leftline}{%
1756           \hspace*{\mdf@middlelinewidth@length}%

```

```

1757         \mdf@frame@leftline@middle}{}%
1758         \mdf@frame@background@middle%
1759         \ifbool{mdf@everyline}%
1760             {\mdf@frame@topline@middle}{}%
1761         \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@middle}%
1762         \ifbool{mdf@everyline}%
1763             {\mdf@frame@bottomline@middle}{}%
1764         \hspace*{\mdf@innerleftmargin@length}%
1765         \ifbool{mdf@rightline}{%
1766             \mdf@frame@rightline@middle}{}%
1767         {\box\mdf@splitbox@two}%
1768     }%
1769     \mdf@makeboxalign@right%
1770 }
1771 \fi%
1772 }

1773 \endinput

```

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

```

1774 %% Style file for mdframed for package option 'framemethod=default'
1775 %%
1776 %% This package may be distributed under the terms of the LaTeX Project
1777 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1778 %% Either version 1.0 or, at your option, any later version.
1779 %%
1780 %%
1781 %%$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $
1782 %

```

```

\mdframedIpackagename
\mdf@frameIdate@svn

```

local settings

```

1783 \def\mdframedIpackagename{md-frame-1}
1784 \def\mdf@frameIdate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1785 \ProvidesFile{md-frame-1.mdf}%
1786         [\mdf@frameIdate@svn$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $ %
1787         \mdversion: \mdframedIpackagename]
1788 %

```

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

Define settings for tikz

```

1789 %Allgemeine Einstellungen fuer tikz
1790 \def\mdf@tikz@settings{%
1791 %
1792     \tikzset{mdfbox/.style={anchor=south west,%
1793                             inner sep=0pt,%
1794                             outer sep=0pt,%
1795                             \mdf@fontcolor,}}% anchor der Ausgabebox ist unten links
1796     \tikzset{mdfcorners/.style={rounded corners=\mdf@roundcorner@length}}%
1797     \tikzset{mdfbackground/.style={fill=\mdf@backgroundcolor,%
1798                                     draw=\mdf@backgroundcolor}}%

```

```

1799 \tikzset{mdfframetitlebackground/.style={fill=\mdf@frametitlebackgroundcolor,%
1800                                     draw=none,%
1801                                     rounded corners={max(\mdf@roundcorner@length%
1802                                                         -\mdf@innerlinewidth@length%
1803                                                         -.5\mdf@middlelinewidth@length,0)}}}%
1804 %
1805 \tikzset{mdfouterline/.style={}}%
1806 % nur wenn outerlinewidth>0 wird aussere Linie gezeichnet
1807 \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
1808   {\tikzset{mdfouterline/.append style={%
1809           draw=\mdf@outerlinecolor,%
1810           line width=2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length}}}%
1811 %
1812 \tikzset{mdfinnerline/.style={}}%
1813 % nur wenn innerlinewidth>0 wird innere Linie gezeichnet
1814 \ifdimgreater{\mdf@innerlinewidth@length}{\z@}
1815   {\tikzset{mdfinnerline/.append style={%
1816           draw=\mdf@innerlinecolor,%
1817           line width=2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length}}}%
1818 %
1819 \tikzset{mdfshadow/.style={drop shadow={%
1820                                     shadow xshift=\mdf@shadowsize@length-2pt,
1821                                     shadow yshift=-\mdf@shadowsize@length+2pt,
1822                                     fill=\mdf@shadowcolor,
1823                                     every shadow }}}%
1824 %
1825 \mdf@tikzset@local
1826 \tikzset{mdfmiddleline/.style={}}%
1827 % nur wenn middlelinewidth>0 wird mittlere Linie gezeichnet
1828 \ifdimgreater{\mdf@middlelinewidth@length}{\z@}
1829   {\tikzset{mdfmiddleline/.append style={%
1830           preaction={draw=\mdf@middlelinecolor,%
1831                     line width=\mdf@middlelinewidth@length},%
1832           line width=\mdf@middlelinewidth@length,%
1833           tikzsetting}}}%
1834   }{}%
1835 }%

```

```

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

```

Befehle fuer Ausgabe von Rahmen und Hintergrund

```

1836 \newrobustcmd*{\mdf@tikzbox@tfl}[1]{%three or four borders
1837   \clip(0,0)rectangle(\mdf@boundingboxwidth,\mdf@boundingboxheight);%
1838   \begin{scope}[mdfcorners]%
1839     \clip[preaction=mdfouterline]%
1840           [postaction=mdfbackground]%
1841           [postaction=mdfinnerline]#1;%
1842   \end{scope}%
1843   \path[mdfmiddleline,mdfcorners]#1;
1844 }%
1845
1846
1847
1848 \newrobustcmd*{\mdf@tikzbox@otl}[2]{%one or two borders

```

```

1849 \clip(0,0)rectangle(\mdfboundingboxwidth,\mdfboundingboxheight);%
1850 \begin{scope}
1851     \path[mdfouterline,mdfcorners]#1;%
1852     \clip[postaction=mdfbackground]#2;%
1853     \path[mdfinnerline,mdfcorners]#1;%
1854 \end{scope}%
1855 \path[mdfmiddleline,mdfcorners]#1;}%

```

\mdf@put@frametitlerule

frametitlerule with tikz

```

1856 \tikzset{mdfframetitlerule/.style={%
1857     draw=none,
1858     fill=\mdf@frametitlerulecolor,
1859 }%
1860 }
1861 \def\mdf@@@frametitlerule{%
1862     \ifbool{mdf@frametitlerule}{%
1863         \vbox{\hsize0pt
1864             \par\unskip\vskip\mdf@frametitlebelowskip@length
1865             \noindent\rlap{\hspace*{-\mdf@innerleftmargin@length}}%
1866             \begingroup%
1867             \pgfmathsetlength{\dimen@}{\mdfframetitleboxwidth+\mdf@innerleftmargin@length+\mdf@innerrightmargin@length}%
1868             \tikz\draw[mdfframetitlerule] (0,0)%
1869                 rectangle (\dimen@,\mdf@frametitlerulewidth@length);
1870             \endgroup%
1871         }%
1872     }{}
1873     \par\unskip\vskip\mdf@innertopmargin@length%
1874 }%
1875

```

\mdf@putbox@single

Output of the non breakable contents.

```

1876 % Info zu den verwendeten Punkten:
1877 % O ist die untere linke Ecke der Mitte der middleline
1878 % P ist die obere rechte Ecke der Mitte der middleline
1879 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
1880 %
1881 \def\mdf@putbox@single{%
1882     \ifvoid\mdf@splitbox@one
1883     \else%
1884         \mdf@makebox@out{%
1885             \mdf@makeboxalign@left%
1886             \mdf@tikz@settings%
1887         }%
1888         \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
1889         \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
1890         \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
1891         \ifbool{mdf@leftline}{%
1892             \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1893             \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1894             \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
1895         \ifbool{mdf@rightline}{%

```

```

1896 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1897 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1898 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
1899 %
1900 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1901 \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
1902 \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
1903 \ifbool{mdf@topline}{%
1904 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1905 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1906 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
1907 \ifbool{mdf@bottomline}{%
1908 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1909 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1910 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
1911 \mdf@makebox@in[\mdfboundingboxwidth]{%
1912 \null%
1913 \begin{tikzpicture}[remember picture]%
1914 \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
1915 \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
1916 \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
1917 \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
1918 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
1919 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
1920 \ifbool{mdf@leftline}{%
1921 {%
1922 \pgfmathsetlengthmacro\mdf@Ax%
1923 {\mdf@Ax+\mdf@outerlinewidth@length+
1924 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
1925 \pgfmathsetlengthmacro\mdf@Ox%
1926 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1927 }}}%
1928 \ifbool{mdf@rightline}{%
1929 {%
1930 \pgfmathsetlengthmacro\mdf@Px%
1931 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1932 }}}%
1933 \ifbool{mdf@bottomline}{%
1934 {%
1935 \pgfmathsetlengthmacro\mdf@Ay%
1936 {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
1937 +\mdf@innerlinewidth@length}%
1938 \pgfmathsetlengthmacro\mdf@Oy%
1939 {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1940 }}}%
1941 \ifbool{mdf@topline}{%
1942 {%
1943 \pgfmathsetlengthmacro\mdf@Py%
1944 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1945 }}}%
1946 %
1947 \coordinate(0)at(\mdf@Ox,\mdf@Oy);%
1948 \coordinate(P)at(\mdf@Px,\mdf@Py);%
1949 %
1950 \ifbool{mdf@shadow}
1951 {\path[mdfshadow,mdfcorners](0) rectangle (P);}%

```

```

1952 %
1953 \begin{scope}[use as bounding box]
1954 \mdf@test@l@trb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
1955 %
1956 \mdf@test@l@tb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
1957 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
1958 \mdf@test@l@tr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
1959 \mdf@test@l@rb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
1960 %
1961 \mdf@test@l@b{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
1962 { (P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
1963 {}{}%
1964 \mdf@test@r@b{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
1965 { (0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
1966 {}{}%
1967 \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
1968 { (0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
1969 {}{}%
1970 \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
1971 { (P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
1972 {}{}%
1973 \mdf@test@l@r{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
1974 { (0)rectangle(P)}%
1975 {}{}%
1976 \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
1977 { (0)rectangle(P)}%
1978 {}{}%
1979 %
1980 \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
1981 { (0)rectangle(P)}%
1982 {}{}%
1983 \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
1984 { (0)rectangle(P)}%
1985 {}{}%
1986 \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%
1987 { (0)rectangle(P)}%
1988 {}{}%
1989 \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}}%
1990 { (0)rectangle(P)}%
1991 {}{}%
1992 %
1993 \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}{}%
1994 %
1995 %Frametitlebackground
1996 \drawbackgroundframetitle@single
1997 %
1998 \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};% Ausgabebox einfuegen
1999 \end{scope}
2000 %HIER KOMMT EIN WEITERES MAKRO
2001 \mdf@singleextra
2002 \mdfcreateextratikz
2003 \end{tikzpicture}%
2004 }%
2005 \mdf@makeboxalign@right%
2006 }%
2007 \fi

```

```

2008 }%
2009 \def\drawbackgroundframetitle@single{%
2010 \ifdefempty{\mdf@frametitle}}{}{%
2011 \drawbackgroundframetitle@@single%
2012 }%
2013 }%
2014 \def\drawbackgroundframetitle@@single{%
2015 \begin{scope}%background frame title
2016 \ifbool{mdf@leftline}{
2017 \pgfmathsetlengthmacro\mdf@0x%
2018 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2019 }{}%
2020 \ifbool{mdf@rightline}{%
2021 \pgfmathsetlengthmacro\mdf@Px%
2022 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2023 }{}%
2024 \ifbool{mdf@topline}{%
2025 \pgfmathsetlengthmacro\mdf@Py%
2026 {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2027 }{}%
2028 \pgfmathsetlengthmacro\mdf@Fy
2029 {\mdf@Py-\mdfframetitleboxtotalheight}
2030 \path[mdfframetitlebackground]
2031 (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2032 --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2033 \end{scope}
2034 }

```

`\mdf@putbox@first`

Output of the first breakable contents.

```

2035 \def\drawbackgroundframetitle@first{%
2036 \ifdefempty{\mdf@frametitle}}{}{%
2037 \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}%
2038 {%
2039 \drawbackgroundframetitle@@first
2040 \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
2041 }\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
2042 Currently this isn't well supported}%
2043 \drawbackgroundframetitle@@first
2044 \pgfmathsetlength{\global\mdfframetitleboxtotalheight}%
2045 {\mdfframetitleboxtotalheight-\mdfboundingboxheight-
2046 \mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
2047 +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length+\mdf@splittopskip@length}
2048 +\dp\strutbox%
2049 }%
2050 }%
2051 }%
2052 }%
2053 %
2054 \def\drawbackgroundframetitle@@first{%
2055 \begin{scope}%background frame title
2056 \ifbool{mdf@leftline}{%
2057 \pgfmathsetlengthmacro\mdf@0x%
2058 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}

```



```

2059     }{}%
2060     \ifbool{mdf@rightline}{%
2061         \pgfmathsetlengthmacro\mdf@Px%
2062             {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2063     }{}%
2064     \ifbool{mdf@topline}{%
2065         \pgfmathsetlengthmacro\mdf@Py%
2066             {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2067     }{}%
2068     \pgfmathsetlengthmacro\mdf@Fy
2069         {max(0,\mdf@Py-\mdfframetitleboxtotalheight)}
2070     \path[mdfframetitlebackground]
2071         (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2072         -- (\mdf@Px,\mdf@Py) -- (\mdf@Px,\mdf@Fy);
2073     \end{scope}%
2074 }%
2075 %
2076 \def\mdf@putbox@first{%
2077     \ifvoid\mdf@splitbox@two
2078     \else%
2079         \mdf@makebox@out{%
2080             \mdf@makeboxalign@left%
2081             \mdf@tikz@settings%
2082             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2083             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2084             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2085             \ifbool{mdf@leftline}{%
2086                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2087                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2088                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
2089             \ifbool{mdf@rightline}{%
2090                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2091                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2092                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
2093             \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2094             \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2095             \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2096             \ifbool{mdf@topline}{%
2097                 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2098                 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2099                 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
2100             %%%%%%%%%
2101             \ifbool{mdf@everyline}{%
2102                 \ifbool{mdf@bottomline}{%
2103                     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2104                     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2105                     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
2106                 }{}%
2107             %%%%%%%%%
2108             %\ifdimequal{\pagegoal}{\maxdimen}{\enlargethispage{\baselineskip}}{} ???
2109             %\ifdimgreater{\pagegoal-\maxdimen}{0pt}{\enlargethispage{\baselineskip}}%
2110             \mdf@makebox@in[\mdfboundingboxwidth]{%
2111                 \null%
2112                 \begin{tikzpicture}[remember picture]
2113                     \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2114                     \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%

```

```

2115 \pgfmathsetlengthmacro\mdf@0x{+0pt}%
2116 \pgfmathsetlengthmacro\mdf@0y{+0pt}%
2117 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2118 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2119 \ifbool{mdf@leftline}
2120 {%
2121 \pgfmathsetlengthmacro\mdf@Ax%
2122 {\mdf@Ax+\mdf@outerlinewidth@length+
2123 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2124 \pgfmathsetlengthmacro\mdf@0x%
2125 {\mdf@0x+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2126 }{}%
2127 \ifbool{mdf@rightline}{%
2128 \pgfmathsetlengthmacro\mdf@Px%
2129 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2130 }{}%
2131 \ifbool{mdf@topline}{%
2132 \pgfmathsetlengthmacro\mdf@Py%
2133 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2134 }{}%
2135 %%
2136 \ifbool{mdf@everyline}{%
2137 \ifbool{mdf@bottomline}%
2138 {%
2139 \pgfmathsetlengthmacro\mdf@Ay%
2140 {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length
2141 +\mdf@innerlinewidth@length}%
2142 \pgfmathsetlengthmacro\mdf@0y%
2143 {\mdf@0y+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2144 }{}%
2145 \ifbool{mdf@topline}%
2146 {%
2147 \pgfmathsetlengthmacro\mdf@Py%
2148 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2149 }{}%
2150 }{}%
2151 %%
2152 \coordinate(0)at(\mdf@0x,\mdf@0y);%
2153 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2154 \ifbool{mdf@shadow}
2155 {\path[mdfshadow] (0) -- (0|-P) to[mdfcorners] (P) -- (P|-0) -- (0);}%
2156 \begin{scope}[use as bounding box]
2157 %%%%%%%%%%
2158 \ifbool{mdf@everyline}{%
2159 \mdf@test@lrb{\mdf@tikzbox@tfl{(0) -- (0|-P) -- (P) -- (P|-0) -- cycle}}{}%
2160 \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0) -- (0) -- (0|-P) -- (P)}}{}%
2161 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P) -- (P) -- (P|-0) -- (0)}}{}%
2162 \mdf@test@ltr{\mdf@tikzbox@tfl{(0) -- (0|-P) -- (P) -- (P|-0)}}{}%
2163 \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0) -- (0) -- (0|-P) -- (P)}}{}%
2164 \mdf@test@lb{\mdf@tikzbox@otl{(P|-0) -- (0) -- (0|-P)}}%
2165 {(P) -- (P|-0)[mdfcorners] -- (0) -- (0|-P)}%
2166 }{}%
2167 \mdf@test@rb{\mdf@tikzbox@otl{(P) -- (P|-0) -- (0)}}%
2168 {(0|-P) -- (P)[mdfcorners] -- (P|-0) -- (0)}%
2169 }{}%
2170 \mdf@test@tr{\mdf@tikzbox@otl{(0|-P) -- (P) -- (P|-0)}}%

```

```

2171                                     {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2172                                 }{}%
2173 \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}%
2174                                     {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2175                                 }{}%
2176 \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}%
2177                                     {(0)rectangle(P)}%
2178                                 }{}%
2179 \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}%
2180                                     {(0)rectangle(P)}%
2181                                 }{}%
2182 \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}%
2183                                     {(0)rectangle(P)}%
2184                                 }{}%
2185 \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}%
2186                                     {(0)rectangle(P)}%
2187                                 }{}%
2188 \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}%
2189                                     {(0)rectangle(P)}%
2190                                 }{}%
2191 \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}%
2192                                     {(0)rectangle(P)}%
2193                                 }{}%
2194 \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
2195 }{
2196 \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@ltr}}%
2197     {\mdf@tikzbox@otl{(0)--(0|-P)--(P)--(P|-0)}%
2198     }%
2199 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}%
2200     {\mdf@tikzbox@otl{(0)--(0|-P)--(P)}{(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2201     }%
2202 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2203     {\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}{(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2204     }%
2205 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
2206     {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}%
2207     }%
2208 \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
2209     {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}%
2210     }%
2211 \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%
2212     {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}%
2213     }%
2214 \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}%
2215     {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}%
2216     }%
2217 \mdf@test@b{\path[mdfbackground](0)rectangle(P);}%
2218 \mdf@test@noline{\path[mdfbackground,mdfcorners](0)--(0|-P)--(P)--(P|-0);}%
2219 }
2220 %%%%%%%%%%
2221 \drawbackgroundframetitle@first
2222 \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};% Ausgabebox einfuegen
2223 \end{scope}
2224 %HIER KOMMT EIN WEITERES MAKRO
2225 \mdf@firstextra
2226 \mdfcreateextratikz%

```

```

2227 \end{tikzpicture}%
2228 }%
2229 \mdf@makeboxalign@right%
2230 }%
2231 \fi
2232 }%

```

\mdf@putbox@middle

Output of the middle breakable contents.

```

2233 \def\drawbackgroundframetitle@middle{%
2234 \ifdefempty{\mdf@frametitle}{\z@}%
2235 \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
2236 }{%
2237 \drawbackgroundframetitle@@middle%
2238 \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
2239 }%
2240 }%
2241 }%
2242 %
2243 \def\drawbackgroundframetitle@@middle{%
2244 \begin{scope}%background frame title
2245 \ifbool{mdf@leftline}{
2246 \pgfmathsetlengthmacro\mdf@0x%
2247 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2248 }{%
2249 \ifbool{mdf@rightline}{%
2250 \pgfmathsetlengthmacro\mdf@Px%
2251 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2252 }{%
2253 \pgfmathsetlengthmacro\mdf@Fy
2254 {\mdf@Py-\mdfframetitleboxtotalheight}
2255 \path[mdfframetitlebackground,rounded corners=\z@]
2256 (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2257 -- (\mdf@Px,\mdf@Py) -- (\mdf@Px,\mdf@Fy);
2258 \end{scope}
2259 }%
2260 %
2261 \def\drawbackgroundframetitle@@middle{%
2262 \begin{scope}%background frame title
2263 \ifbool{mdf@leftline}{
2264 \pgfmathsetlengthmacro\mdf@0x%
2265 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2266 }{%
2267 \ifbool{mdf@rightline}{%
2268 \pgfmathsetlengthmacro\mdf@Px%
2269 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2270 }{%
2271 \pgfmathsetlengthmacro\mdf@Fy
2272 {\mdf@Py-\mdfframetitleboxtotalheight}
2273 \path[mdfframetitlebackground,rounded corners=\z@]
2274 (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2275 -- (\mdf@Px,\mdf@Py) -- (\mdf@Px,\mdf@Fy);
2276 \end{scope}
2277 }%

```

```

2278 \def\mdf@putbox@middle{%
2279   \ifvoid\mdf@splitbox@two
2280   \else%
2281     \mdf@makebox@out{%
2282       \mdf@makeboxalign@left%
2283       \mdf@tikz@settings%
2284       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2285       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2286       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2287       \ifbool{mdf@leftline}{%
2288         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2289         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2290         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
2291       \ifbool{mdf@rightline}{%
2292         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2293         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2294         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
2295       \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2296       \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2297       %%%%%%%%%%
2298       \ifbool{mdf@everyline}{%
2299         \ifbool{mdf@topline}{%
2300           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2301           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2302           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{%
2303         \ifbool{mdf@bottomline}{%
2304           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2305           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2306           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{%
2307         }{}%
2308       %%%%%%%%%%
2309       \mdf@makebox@in[\mdfboundingboxwidth]{%
2310       \null%
2311       \begin{tikzpicture}[remember picture]
2312         \pgfmithsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2313         \pgfmithsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2314         \pgfmithsetlengthmacro\mdf@Ox{+0pt}%
2315         \pgfmithsetlengthmacro\mdf@Oy{+0pt}%
2316         \pgfmithsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2317         \pgfmithsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2318         \ifbool{mdf@leftline}%
2319         {%
2320           \pgfmithsetlengthmacro\mdf@Ax%
2321             {\mdf@Ax+\mdf@outerlinewidth@length+
2322             \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2323           \pgfmithsetlengthmacro\mdf@Ox%
2324             {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2325           }{}%
2326         \ifbool{mdf@rightline}%
2327         {%
2328           \pgfmithsetlengthmacro\mdf@Px%
2329             {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2330           }{}%
2331       %
2332       \ifbool{mdf@everyline}{%
2333       \ifbool{mdf@bottomline}%

```

```

2334      {%
2335      \pgfmathsetlengthmacro\mdf@Ay%
2336      {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
2337      +\mdf@innerlinewidth@length}%
2338      \pgfmathsetlengthmacro\mdf@Oy%
2339      {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2340      }{}%
2341      \ifbool{mdf@topline}%
2342      {%
2343      \pgfmathsetlengthmacro\mdf@Py%
2344      {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2345      }{}%
2346      }{}%
2347      %%
2348      \coordinate(0)at(\mdf@0x,\mdf@0y);%
2349      \coordinate(P)at(\mdf@Px,\mdf@Py);%
2350      \ifbool{mdf@shadow}
2351      {\path[mdfshadow](0) rectangle (P);}{}%
2352      \begin{scope}[use as bounding box]
2353      %%%%%%%%%%
2354      \ifbool{mdf@everyline}{%
2355      \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2356      \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P))}}{}%
2357      \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0))}}{}%
2358      \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0))}}{}%
2359      \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P))}}{}%
2360      \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P))}%
2361      {(P)--(P|-0)[mdfcorners]--(0)--(0|-P))}%
2362      }{}%
2363      \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0))}%
2364      {(0|-P)--(P)[mdfcorners]--(P|-0)--(0))}%
2365      }{}%
2366      \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0))}%
2367      {(0)--(0|-P)[mdfcorners]--(P)--(P|-0))}%
2368      }{}%
2369      \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P))}%
2370      {(P|-0)--(0)[mdfcorners]--(0|-P)--(P))}%
2371      }{}%
2372      \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0))}%
2373      {(0)rectangle(P)}%
2374      }{}%
2375      \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P))}%
2376      {(0)rectangle(P)}%
2377      }{}%
2378      \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P))}%
2379      {(0)rectangle(P)}%
2380      }{}%
2381      \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P))}%
2382      {(0)rectangle(P)}%
2383      }{}%
2384      \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P))}%
2385      {(0)rectangle(P)}%
2386      }{}%
2387      \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P))}%
2388      {(0)rectangle(P)}%
2389      }{}%

```

```

2390     \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}{}%
2391   }{
2392     \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
2393       {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}}{%
2394     \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
2395       {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}}{%
2396     \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
2397       {\mdf@tikzbox@otl{(P)--(P|-0)}{(0)rectangle(P)}}{%
2398     \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
2399       {\path[mdfbackground](0)rectangle(P);}{}%
2400   }
2401   %%%%%%%%%
2402   \drawbackgroundframetitle@middle
2403   \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};% Ausgabebox einfuegen
2404   \end{scope}
2405   \mdf@middleextra
2406   %HIER KOMMT EIN WEITERES MAKRO
2407   \mdfcreateextratikz
2408   \end{tikzpicture}%
2409   }%
2410   \mdf@makeboxalign@right%
2411   }%
2412   \fi
2413   }%

```

`\mdf@putbox@second`

Output of the last breakable contents.

```

2414 \def\drawbackgroundframetitle@second{%
2415   \ifdefempty{\mdf@frametitle}{}{%
2416     \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2417     }{%
2418     \drawbackgroundframetitle@@second%
2419   }%
2420 }%
2421 }%
2422 %
2423 \def\drawbackgroundframetitle@@second{%
2424   \begin{scope}%background frame title
2425     \ifbool{mdf@leftline}{
2426       \pgfmathsetlengthmacro\mdf@0x%
2427         {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2428     }{%
2429     \ifbool{mdf@rightline}{%
2430       \pgfmathsetlengthmacro\mdf@Px%
2431         {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2432     }{%
2433       \pgfmathsetlengthmacro\mdf@Fy
2434         {\mdf@Py-\mdfframetitleboxtotalheight}
2435       \path[mdfframetitlebackground,rounded corners=\z@]
2436         (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2437         -- (\mdf@Px,\mdf@Py) -- (\mdf@Px,\mdf@Fy);
2438     }
2439   }%
2440 \def\mdf@putbox@second{%

```



```

2441 \ifvoid\mdf@splitbox@one
2442 \else%
2443     \mdf@makebox@out{%
2444     \mdf@makeboxalign@left%
2445     \mdf@tikz@settings%
2446     \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2447     \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2448     \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2449     \ifbool{mdf@leftline}{%
2450         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2451         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2452         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2453     \ifbool{mdf@rightline}{%
2454         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2455         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2456         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2457     \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2458     \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2459     \ifbool{mdf@bottomline}{%
2460         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2461         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2462         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2463     %%%%%%%%%
2464     \ifbool{mdf@everyline}{%
2465     \ifbool{mdf@topline}{%
2466         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2467         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2468         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2469     }{}%
2470     %%%%%%%%%
2471     \mdf@makebox@in[\mdfboundingboxwidth]{%
2472     \null%
2473     \begin{tikzpicture}[remember picture]
2474     \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2475     \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
2476     \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2477     \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2478     \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2479     \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2480     \ifbool{mdf@leftline}%
2481     {%
2482     \pgfmathsetlengthmacro\mdf@Ax%
2483         {\mdf@Ax+\mdf@outerlinewidth@length+
2484         \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2485     \pgfmathsetlengthmacro\mdf@Ox%
2486         {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2487     }{}%
2488     \ifbool{mdf@rightline}%
2489     {%
2490     \pgfmathsetlengthmacro\mdf@Px%
2491         {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2492     }{}%
2493     \ifbool{mdf@bottomline}%
2494     {%
2495     \pgfmathsetlengthmacro\mdf@Ay%
2496         {\mdf@Ay+\mdf@outerlinewidth@length+

```



```

2497         \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2498     \pgfmathsetlengthmacro\mdf@Oy%
2499         {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2500     }{}%
2501 %%
2502 \ifbool{mdf@everyline}{%
2503     \ifbool{mdf@topline}{%
2504         {%
2505             \pgfmathsetlengthmacro\mdf@Py%
2506                 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2507             }{}%
2508         }{}%
2509     %%
2510     \coordinate(0)at(\mdf@Ox,\mdf@Oy);%
2511     \coordinate(P)at(\mdf@Px,\mdf@Py);%
2512     \ifbool{mdf@shadow}
2513         {\path[mdfshadow] (0|-P) to[mdfcorners] (0) to[mdfcorners] (P|-0) -- (P) -- (0|-P);}%
2514     \begin{scope}[use as bounding box]
2515 %%%%%%%%%%
2516     \ifbool{mdf@everyline}{%
2517         \mdf@test@ltrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2518         \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P))}}{}%
2519         \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0))}}{}%
2520         \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0))}}{}%
2521         \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P))}}{}%
2522         \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P))}%
2523             {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}}%
2524         }{}%
2525         \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0))}%
2526             {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}}%
2527         }{}%
2528         \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0))}%
2529             {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}}%
2530         }{}%
2531         \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P))}%
2532             {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}}%
2533         }{}%
2534         \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0))}%
2535             {(0)rectangle(P)}}%
2536         }{}%
2537         \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P))}%
2538             {(0)rectangle(P)}}%
2539         }{}%
2540         \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P))}%
2541             {(0)rectangle(P)}}%
2542         }{}%
2543         \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P))}%
2544             {(0)rectangle(P)}}%
2545         }{}%
2546         \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P))}%
2547             {(0)rectangle(P)}}%
2548         }{}%
2549         \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P))}%
2550             {(0)rectangle(P)}}%
2551         }{}%
2552         \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%

```

```

2553 }{%
2554   \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@lrb}}%
2555     {\mdf@tikzbox@otfl{(P-|0)--(0)--(0-|P)--(P))}%
2556     }{%
2557   \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
2558     {\mdf@tikzbox@otl{(P-|0)--(0)--(0-|P))}{(P)--(P|-0)[mdfcorners]--(0)--(0|-P))}%
2559     }{%
2560   \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
2561     {\mdf@tikzbox@otl{(P)--(P|-0)--(0))}{(0|-P)--(P)[mdfcorners]--(P|-0)--(0))}%
2562     }{%
2563   \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
2564     {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0))}{(0)rectangle(P))}%
2565     }{%
2566   \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}%
2567     {\mdf@tikzbox@otl{(0)--(0-|P))}{(0)rectangle(P))}%
2568     }{%
2569   \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}%
2570     {\mdf@tikzbox@otl{(0)--(0|-P))}{(0)rectangle(P))}%
2571     }{%
2572   \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}%
2573     {\mdf@tikzbox@otl{(0-|P)--(P))}{(0)rectangle(P))}%
2574     }{%
2575   \mdf@test@t{\path[mdfbackground,mdfcorners](0|-P)--(0)--(0-|P)--(P);}%
2576   \mdf@test@noline{\path[mdfbackground,mdfcorners](0|-P)--(0)--(0-|P)--(P);}%
2577 }%
2578 \drawbackgroundframetitle@second
2579 \node[mdfbox] at (\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};% Ausgabebox einfügen
2580 \end{scope}
2581 \mdf@secondextra
2582 %HIER KOMMT EIN WEITERES MAKRO
2583 \mdfcreateextratikz
2584 \end{tikzpicture}%
2585 }%
2586 \mdf@makeboxalign@right%
2587 }%
2588 \fi
2589 }%

2590 \endinput

```

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

```

2591 %% Style file for mdframed for package option 'framemethod=default'
2592 %%
2593 %% This package may be distributed under the terms of the LaTeX Project
2594 %% Public License, as described in lppl.txt in the base LaTeX distribution.
2595 %% Either version 1.0 or, at your option, any later version.
2596 %%
2597 %%
2598 %%$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $
2599 %

```

```

\mdframedIIPackagename
\mdf@frameIIDate@svn

```

local settings

```

2600 \def\mdframedIIPackagename{md-frame-2}
2601 \def\mdf@frameIIDate@svn$#1: #2 #3 #4-#5-#6 #7 #8$#{#4/#5/#6\space }
2602 \ProvidesFile{md-frame-2.mdf}%
2603      [\mdf@frameIIDate@svn$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $ %
2604      \mdversion: \mdframedIIPackagename]

```

```

\mdf@ptlength@to@pscode
\ptTps

```

Command to calculate a latex length to postscript

```

2605 \def\mdf@ptlength@to@pscode#1{\pst@number{#1} \pst@number\psxunit div }
2606 \def\mdf@ptlength@to@pscode@length#1{\pst@number{\csname mdf@#1@length\endcsname} \pst@number\psxunit o
2607 \let\ptTps\mdf@ptlength@to@pscode\relax
2608 \let\ptTpsL\mdf@ptlength@to@pscode@length\relax

```

```

\mdfbackgroundstyle
\mdflinestyle
\mdfframetitlerule
\mdfframetitlebackground

```

background and line settings for pstricks

```

2609 \def\mdfpstricks@settings{%expand by \addtopsstyle
2610   \newpsstyle{mdfbackgroundstyle}%
2611     {linecolor=\mdf@backgroundcolor,fillstyle=solid,%
2612     fillcolor=\mdf@backgroundcolor,linestyle=none,%
2613     ,dimen=middle,%
2614     }%
2615 %
2616   \newpsstyle{mdfframetitlebackgroundstyle}{%
2617     linecolor=\mdf@frametitlebackgroundcolor,
2618     fillcolor=\mdf@frametitlebackgroundcolor,
2619     fillstyle=solid,linestyle=none,
2620     linearc=\ifdimgreater{\mdf@roundcorner@length%
2621       -\mdf@innerlinewidth@length%
2622       -.5\mdf@middlelinewidth@length}
2623     {\z@}{\dimexpr\mdf@roundcorner@length%
2624       -\mdf@innerlinewidth@length%
2625       -.5\mdf@middlelinewidth@length}{\z@},
2626   }
2627 %
2628   \newpsstyle{mdfouterlinestyle}{linestyle=none}%
2629   \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
2630     {\newpsstyle{mdfouterlinestyle}{%
2631       linecolor=\mdf@outerlinecolor,%
2632       linewidth=\dimexpr2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length\relax,
2633       dimen=middle,
2634       }}{%
2635 %
2636   \newpsstyle{mdfinnerlinestyle}{linestyle=none}%
2637   \ifdimgreater{\mdf@innerlinewidth@length}{\z@}%
2638     {\newpsstyle{mdfinnerlinestyle}{%
2639       linecolor=\mdf@innerlinecolor,%
2640       linewidth=\dimexpr2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length\relax,
2641       dimen=middle,
2642       }}{%

```

```

2643 %
2644 \newsstyle{mdfmiddlelinestyle}{linestyle=none}%
2645 \newsstyle{mdfshadow}{shadow=true,shadowcolor=\mdf@shadowcolor,shadowsize=\mdf@shadowsize@length}%
2646 \ifdimgreater{\mdf@middlelinewidth@length}{\z@}%
2647   {\newsstyle{mdfmiddlelinestyle}{%
2648     linewidth=\mdf@middlelinewidth@length,%
2649     linecolor=\mdf@middlelinecolor,dimen=middle
2650   }}}%
2651 \mdfpstricks@appendsettings
2652 }%
2653 %
2654 \newrobustcmd*{\mdf@pstricksbox@fl[2]}{%four lines
2655   \psframe[style=mdfouterlinestyle](#1)(#2)%ausen=3mm
2656   \psframe[style=mdfbackgroundstyle](#1)(#2)%Hintergrund
2657   \psclip{\psframe[style=mdfmiddlelinestyle](#1)(#2)}
2658   \psframe[style=mdfinnerlinestyle](#1)(#2)%innere=3mm
2659   \endpsclip
2660   \psframe[style=mdfmiddlelinestyle](#1)(#2)%mittlere=2mm
2661   }%
2662 \newrobustcmd*{\mdf@pstricksbox@tl[1]}{%three lines
2663   \psline[style=mdfouterlinestyle]#1%ausen=3mm
2664   \psline[style=mdfbackgroundstyle]#1%Hintergrund
2665   \psclip{\psline[style=mdfmiddlelinestyle]#1}
2666   \psline[style=mdfinnerlinestyle]#1%innere=3mm
2667   \endpsclip
2668   \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2669   }%
2670 \newrobustcmd*{\mdf@pstricksbox@tcl[2]}{%two combined lines
2671   %%#1 background comple
2672   %%#2 line path
2673   \psline[style=mdfouterlinestyle]#2%ausen=3mm
2674   \psline[style=mdfbackgroundstyle]#2%Hintergrund
2675   \psclip{\pscustom[linestyle=none]{
2676     \psline[style=mdfmiddlelinestyle]#2
2677     \psline[linestyle=none,lineararc=0pt]#1}
2678   }
2679   \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2680   \psline[style=mdfinnerlinestyle]#2%innere=3mm
2681   \endpsclip
2682   \psline[style=mdfmiddlelinestyle]#2%mittlere=2mm
2683   }%
2684 \newrobustcmd*{\mdf@pstricksbox@tncl[2]}{%two not combined lines
2685   \begingroup
2686   \psset{lineararc=0pt}
2687   \psline[style=mdfouterlinestyle](mdf@0)#1%ausen=3mm
2688   \psline[style=mdfouterlinestyle](mdf@P)#2%ausen=3mm
2689   \psclip{
2690     \pscustom[linestyle=none]{%
2691       \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2692       \psline[linestyle=none](mdf@0)#2
2693       \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2694       \psline[linestyle=none](mdf@P)#1
2695     }%
2696   }%
2697   \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2698   \psline[style=mdfinnerlinestyle](mdf@0)#1%innere=3mm

```

```

2699 \psline[style=mdfinnerlinestyle](mdf@P)#2%innere=3mm
2700 \endpsclip
2701 \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2702 \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2703 \endgroup
2704 }%
2705 \newrobustcmd*\mdf@pstricksbox@ol[1]{%one line
2706 \begin{group}
2707 \psset{linearc=0pt}
2708 \psline[style=mdfouterlinestyle]#1%ausen=3mm
2709 \psline[style=mdfbackgroundstyle]#1%Hintergrund
2710 \psclip{\pscustom[linestyle=none]{
2711 \psline[style=mdfmiddlelinestyle]#1
2712 \psframe[linestyle=none,fillstyle=none,dimen=inner](mdf@0)(mdf@P)
2713 }}
2714 \psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)
2715 \psline[style=mdfinnerlinestyle]#1%innere=3mm
2716 \endpsclip
2717 \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2718 \endgroup%
2719 }%
2720
2721 %
2722 \newpsstyle{mdfframetitlerule}{%
2723 linecolor=\mdf@frametitlerulecolor,%
2724 fillcolor=\mdf@frametitlerulecolor,%
2725 fillstyle=solid,dimen=outer,%
2726 }
2727 %

```

\mdf@put@frametitlerule

frametitlerule with pstricks

```

2728 \def\mdf@@frametitlerule{%
2729 \ifbool{mdf@frametitlerule}{%
2730 \vbox{\hsize0pt
2731 \par\unskip\vskip\mdf@frametitlebelowskip@length
2732 \noindent\rlap{%
2733 \begin{group}%
2734 \begin{pspicture}(0,0)(0,\mdf@frametitlerulewidth@length)
2735 \psframe[style=mdfframetitlerule](!\ptTpsL{innerleftmargin} neg 0)%
2736 (! \ptTpsL{innerrightmargin}
2737 \ptTpsL{\mdfframetitleboxwidth} add \ptTpsL{frametitlerulewidth})
2738 \end{pspicture}
2739 \end{group}}
2740 }%
2741 }{}
2742 \par\unskip\vskip\mdf@innertopmargin@length%
2743 }%
2744 %
2745 % \begin{macro}{mdf@putbox@single}
2746 % Single output
2747 % \begin{macrocode}
2748 % Info zu den verwendeten Punkten:
2749 % 0 ist die untere linke Ecke der Mitte der middleline

```

```

2750 % P ist die obere rechte Ecke der Mitte der middleline
2751 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
2752 \def\mdf@putbox@single{%
2753   \ifvoid\mdf@splitbox@one
2754   \else%
2755     \mdf@makebox@out{%
2756       \mdf@makeboxalign@left%
2757       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2758       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2759       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2760       \ifbool{mdf@leftline}{%
2761         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2762         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2763         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
2764       \ifbool{mdf@rightline}{%
2765         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2766         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2767         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2768 %
2769 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2770 \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2771 \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2772 \ifbool{mdf@topline}{%
2773   \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2774   \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2775   \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{%
2776 \ifbool{mdf@bottomline}{%
2777   \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2778   \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2779   \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2780 %
2781 \setlength\mdftotallinewidth{\dimexpr\mdf@innerlinewidth@length%
2782                               +\mdf@middlelinewidth@length
2783                               +\mdf@outerlinewidth@length\relax}%
2784 \psset{unit=1truecm}%
2785 \mdf@makebox@in[\mdfboundingboxwidth]{%
2786   \null%
2787   \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
2788     \mdfpstricks@settings%
2789     \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
2790     \expandafter\psset\expandafter{\mdf@psset@local}%
2791     \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
2792     \pnode(0,0){mdf@0}
2793     \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2794     \ifbool{mdf@leftline}%
2795     {%
2796       \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
2797               +(\mdf@middlelinewidth@length,0)
2798               +(\mdf@innerlinewidth@length,0)}{mdf@A}%
2799       \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
2800               +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
2801     }{}%
2802     \ifbool{mdf@rightline}%
2803     {%
2804       \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
2805               -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%

```

```

2806     }{}%
2807 \ifbool{mdf@bottomline}%
2808 {%
2809     \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
2810             +(0,\mdf@middlelinewidth@length)
2811             +(0,\mdf@innerlinewidth@length)}{mdf@A}%
2812     \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
2813             +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
2814     }{}%
2815 \ifbool{mdf@topline}%
2816 {%
2817     \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
2818             -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
2819     }{}%
2820 \ifbool{mdf@shadow}
2821     {\psframe[style=mdfshadow](mdf@0)(mdf@P)}{}
2822 % \psclip{%
2823 %Four lines
2824     \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
2825 %three lines
2826     \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2827     \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
2828     \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
2829     \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
2830 %two lines combined
2831     \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
2832                 {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
2833     \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
2834                 {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
2835     \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2836                 {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
2837     \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2838                 {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2839 %two lines not combined
2840     \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
2841                 {}{}
2842     \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
2843                 {}{}
2844 %single line
2845     \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
2846     \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
2847     \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
2848     \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
2849 %no line
2850     \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}
2851 %
2852 %Frametitlebackground
2853     \drawbackgroundframetitle@single
2854 %output%
2855     \rput[bl](mdf@A){\box\mdf@splitbox@one}
2856 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2857 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2858 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
2859 %
2860 % \endpsclip
2861 \mdf@singleextra

```



```

2862     \end{pspicture}%
2863   }%
2864   \mdf@makeboxalign@right%
2865 }%
2866 \fi
2867 }%
2868 \def\drawbrackgroundframetitle@single{%
2869 \ifdefempty{\mdf@frametitle}{}%{}%
2870   \drawbrackgroundframetitle@@single%
2871 }%
2872 }%
2873 \def\drawbrackgroundframetitle@@single{%
2874 \begingroup%
2875   \ifbool{mdf@leftline}{%
2876     \nodexn{(\mdf@0)+(\mdf@innerlinewidth@length,0)
2877       +0.5(\mdf@middlelinewidth@length,0)}{\mdf@0}%
2878   }{}%
2879   \ifbool{mdf@rightline}{%
2880     \nodexn{(\mdf@P)-(\mdf@innerlinewidth@length,0)
2881       -0.5(\mdf@middlelinewidth@length,0)}{\mdf@P}%
2882   }{}%
2883   \ifbool{mdf@topline}{%
2884     \nodexn{(\mdf@P)-(0,\mdf@innerlinewidth@length)
2885       -0.5(0,\mdf@middlelinewidth@length)}{\mdf@P}%
2886   }{}%
2887   \nodexn{(\mdf@P)-(0,\mdfframetitleboxtotalheight)}{\mdf@F}%
2888   \psline[style=mdfframetitlebackgroundstyle](mdf@0|mdf@F)(mdf@0|mdf@P)
2889     (mdf@P)(mdf@P|mdf@F)%
2890 \endgroup
2891 }

```

\mdf@putbox@first

First output

```

2892 \def\mdf@putbox@first{%
2893   \ifvoid\mdf@splitbox@two
2894   \else%
2895     \mdf@makebox@out{%
2896       \mdf@makeboxalign@left%
2897       %\ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
2898       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2899       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2900       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2901       \ifbool{mdf@leftline}{%
2902         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2903         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2904         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
2905       \ifbool{mdf@rightline}{%
2906         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2907         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2908         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
2909       \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2910       \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2911       \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2912       \ifbool{mdf@topline}{%

```



```

2913      \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2914      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2915      \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2916 %%%%%%%%%%
2917      \ifbool{mdf@everyline}{%
2918      \ifbool{mdf@bottomline}{%
2919      \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2920      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2921      \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2922      }{}%
2923 %%%%%%%%%%
2924      \psset{lineararc=\mdf@roundcorner@length, cornersize=absolute}%
2925      \expandafter\psset\expandafter{\mdf@psset@local}%
2926      \mdf@makebox@in[\mdfboundingboxwidth]{%
2927      \null%
2928      \psset{unit=1truecm}%
2929      \ifdimgreater{\mdfboundingboxheight}{\vsize}
2930      {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
2931      {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
2932      \mdfpstricks@settings%
2933      \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
2934      \expandafter\psset\expandafter{\mdf@psset@local}%
2935      \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
2936      \pnode(0,0){mdf@0}
2937      \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2938      \ifbool{mdf@leftline}%
2939      {%
2940      \nodexn{(\mdf@A)+(\mdf@outerlinewidth@length,0)
2941      +(\mdf@middlelinewidth@length,0)
2942      +(\mdf@innerlinewidth@length,0)}{mdf@A}
2943      \nodexn{(\mdf@0)+(\mdf@outerlinewidth@length,0)
2944      +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
2945      }{}%
2946      \ifbool{mdf@rightline}%
2947      {%
2948      \nodexn{(\mdf@P)-(\mdf@outerlinewidth@length,0)
2949      -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
2950      }{}%
2951      \ifbool{mdf@topline}%
2952      {%
2953      \nodexn{(\mdf@P)-(0,\mdf@outerlinewidth@length)
2954      -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
2955      }{}%
2956 %%%%%%%%%%
2957      \ifbool{mdf@everyline}{%
2958      \ifbool{mdf@bottomline}%
2959      {%
2960      \nodexn{(\mdf@A)+(0,\mdf@outerlinewidth@length)
2961      +(0,\mdf@middlelinewidth@length)
2962      +(0,\mdf@innerlinewidth@length)}{mdf@A}%
2963      \nodexn{(\mdf@0)+(0,\mdf@outerlinewidth@length)
2964      +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
2965      }{}%
2966      }{}%
2967 %%%%%%%%%%
2968      \ifbool{mdf@shadow}

```

```

2969         {\pscustom[style=mdfshadow,linestyle=none]{%
2970             \psline[linejoin=2,linecap=1,](mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)%
2971             \psline[linejoin=2,linecap=1,lineararc=\z@](mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)
2972             \closedshadow
2973         }
2974     }{}
2975 %     \psclip{
2976 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
2977     \ifbool{mdf@everyline}{%
2978         %Four lines
2979         \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
2980         %three lines
2981         \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2982         \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
2983         \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
2984         \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
2985         %two lines combined
2986         \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
2987             {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
2988         \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
2989             {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
2990         \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2991             {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
2992         \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2993             {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2994         %two lines not combined combined
2995         \mdf@test@lr{\mdf@pstricksbox@tnc{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}
2996         {}
2997         \mdf@test@tb{\mdf@pstricksbox@tnc{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}}
2998         {}
2999         %single line
3000         \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3001         \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3002         \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3003         \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3004         %no line
3005         \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3006     }{}
3007     %Four or Three lines
3008     \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@ltr}}%
3009     {\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
3010     {}%
3011     %two combined lines
3012     \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}
3013     {\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3014         {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3015     \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
3016     {\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3017         {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3018     %two not combined lines
3019     \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
3020     {\mdf@pstricksbox@tnc{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}
3021     %single line
3022     \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
3023     {\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3024     \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%

```

```

3025         {\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
3026     \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}%
3027         {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
3028     %no line
3029     \mdf@test@b{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}}{}%
3030     \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}}{}%
3031 }%
3032 %
3033 %Frametitlebackground
3034     \drawbackgroundframetitle@first
3035     %output%
3036     \rput[bl](mdf@A){\box\mdf@splitbox@two}
3037 %     \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3038 %     \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3039 %     \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
3040 %     \endpsclip
3041     \mdf@firstextra
3042     \end{pspicture}
3043 }%
3044     \mdf@makeboxalign@right%
3045 }%
3046 \fi
3047 }%
3048 \def\drawbackgroundframetitle@first{%
3049     \ifdefempty{\mdf@frametitle}}{}%
3050     \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}%
3051     {%
3052         \drawbackgroundframetitle@@first
3053         \global\mdfframetitleboxtotalheight=-\p@%
3054     }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
3055         Currently this isn't well supported}%
3056         \drawbackgroundframetitle@@first
3057         \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
3058             -\mdfboundingboxheight
3059             -\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
3060             +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length
3061             +\mdf@splittopskip@length
3062             +\dp\strutbox\relax%
3063     }%
3064 }%
3065 }%
3066 \def\drawbackgroundframetitle@@first{%
3067     \begingroup%
3068     \ifbool{mdf@leftline}{%
3069         \nodexn{(mdf@O)+(\mdf@innerlinewidth@length,0)
3070             +0.5(\mdf@middlelinewidth@length,0)}}{mdf@O}%
3071     }{}%
3072     \ifbool{mdf@rightline}{%
3073         \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3074             -0.5(\mdf@middlelinewidth@length,0)}}{mdf@P}%
3075     }{}%
3076     \ifbool{mdf@topline}{%
3077         \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
3078             -0.5(0,\mdf@middlelinewidth@length)}}{mdf@P}%
3079     }{}%
3080     \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}

```

```

3081    {\nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}}%
3082    {\nodexn{(mdf@0)}{mdf@F}}%
3083    \psline[style=mdfframetitlebackgroundstyle](mdf@0|mdf@F)(mdf@0|mdf@P)
3084                                     (mdf@P)(mdf@P|mdf@F)%
3085  \endgroup
3086 }

```

\mdf@putbox@middle

Middle output

```

3087 \def\mdf@putbox@middle{%
3088   \ifvoid\mdf@splitbox@two
3089   \else%
3090     \mdf@makebox@out{%
3091       \mdf@makeboxalign@left%
3092       % \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
3093       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
3094       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3095       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3096       \ifbool{mdf@leftline}{%
3097         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3098         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3099         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
3100       \ifbool{mdf@rightline}{%
3101         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3102         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3103         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
3104       \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
3105       \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
3106       %%%%%%%%%%
3107       \ifbool{mdf@everyline}{%
3108         \ifbool{mdf@topline}{%
3109           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3110           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3111           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{}%
3112         \ifbool{mdf@bottomline}{%
3113           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3114           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3115           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{}%
3116       }{}%
3117       %%%%%%%%%%
3118       \psset{unit=1truecm}%
3119       \mdf@makebox@in[\mdfboundingboxwidth]{%
3120         \null%
3121         \ifdimgreater{\mdfboundingboxheight}{\vsize}
3122           {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
3123           {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
3124             \mdfpstricks@settings%
3125             \psset{lineararc=0pt, cornersize=absolut,}%
3126             \expandafter\psset\expandafter{\mdf@psset@local}%
3127             %%%%
3128             \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
3129             \pnode(0,0){mdf@0}
3130             \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3131             \ifbool{mdf@leftline}{%

```

```

3132      {%
3133      \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3134              +(\mdf@middlelinewidth@length,0)
3135              +(\mdf@innerlinewidth@length,0)}{mdf@A}
3136      \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
3137              +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
3138      }{}%
3139      \ifbool{mdf@rightline}%
3140      {%
3141      \nodexn{(mdf@P) - (\mdf@outerlinewidth@length,0)
3142              -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
3143      }{}%
3144      %%
3145      %%%%%%%%%%
3146      \ifbool{mdf@everyline}{%
3147      \ifbool{mdf@bottomline}%
3148      {%
3149      \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3150              +(0,\mdf@middlelinewidth@length)
3151              +(0,\mdf@innerlinewidth@length)}{mdf@A}%
3152      \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
3153              +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
3154      }{}%
3155      \ifbool{mdf@topline}%
3156      {%
3157      \nodexn{(mdf@P) - (0,\mdf@outerlinewidth@length)
3158              -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3159      }{}%
3160      }{}%
3161      %%%%%%%%%%
3162      %%
3163      \ifbool{mdf@shadow}
3164      {\psframe[style=mdfshadow](mdf@0)(mdf@P)}{}
3165      %%%%%%%%%%
3166      \ifbool{mdf@everyline}{%
3167      %Four lines
3168      \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3169      %three lines
3170      \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3171      \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
3172      \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
3173      \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
3174      %two lines combined
3175      \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3176              {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3177      \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3178              {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3179      \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3180              {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3181      \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3182              {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3183      %two lines not combined
3184      \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
3185              {}}
3186      \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
3187              {}}

```

```

3188      %single line
3189      \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3190      \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3191      \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3192      \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3193      %no line
3194      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}{}%
3195  }{%
3196      \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
3197          {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}%
3198      \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
3199          {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}%
3200      \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
3201          {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}%
3202      \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
3203          {\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}{}%
3204  }%
3205      %Frametitlebackground
3206      \drawbackgroundframetitle@middle
3207      %output%
3208      \rput[bl](mdf@A){\box\mdf@splitbox@two}
3209 %      \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3210 %      \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3211 %      \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
3212      \mdf@middleextra
3213      \end{pspicture}%
3214  }%
3215      \mdf@makeboxalign@right%
3216  }%
3217  \fi
3218 }%
3219 \def\drawbackgroundframetitle@middle{%
3220 \ifdefempty{\mdf@frametitle}}{}%
3221 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3222 {}{}%
3223 \drawbackgroundframetitle@@middle
3224 \global\mdfframetitleboxtotalheight=-\p@{\relax%
3225 }%
3226 }%
3227 }%
3228 \def\drawbackgroundframetitle@@middle{%
3229 \begingroup%
3230 \ifbool{mdf@leftline}{%
3231     \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
3232         +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
3233     }{}%
3234 \ifbool{mdf@rightline}{%
3235     \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3236         -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3237     }{}%
3238 \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3239 \psline[style=mdfframetitlebackgroundstyle,linear=\z@](mdf@0|mdf@F)(mdf@0|mdf@P)
3240     (mdf@P)(mdf@P|mdf@F)%
3241 \endgroup
3242 }

```

\mdf@putbox@second

Last output

```

3243 \def\mdf@putbox@second{
3244   \ifvoid\mdf@splitbox@one
3245   \else%
3246     \mdf@makebox@out{%
3247       \mdf@makeboxalign@left%
3248       % \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
3249       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
3250       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3251       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3252       \ifbool{mdf@leftline}{%
3253         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3254         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3255         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
3256       \ifbool{mdf@rightline}{%
3257         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3258         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3259         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
3260       \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
3261       \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
3262       \ifbool{mdf@bottomline}{%
3263         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3264         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3265         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
3266       %%%%%%%%%%
3267       \ifbool{mdf@everyline}{%
3268         \ifbool{mdf@topline}{%
3269           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3270           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3271           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
3272         }{}%
3273       %%%%%%%%%%
3274       \psset{unit=1truecm}%
3275       \mdf@makebox@in[\mdfboundingboxwidth]{%
3276         \null%
3277         \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
3278           \mdfpstricks@settings%
3279           \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
3280           \expandafter\psset\expandafter{\mdf@psset@local}%
3281           \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
3282           \pnode(0,0){mdf@0}
3283           \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3284           \ifbool{mdf@leftline}%
3285             {%
3286               \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3287                 +(\mdf@middlelinewidth@length,0)
3288                 +(\mdf@innerlinewidth@length,0)}{mdf@A}
3289               \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
3290                 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
3291             }{}%
3292           \ifbool{mdf@rightline}%
3293             {%
3294               \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
3295                 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}

```



```

3296     }{}%
3297 \ifbool{mdf@bottomline}%
3298 {%
3299     \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3300             +(0,\mdf@middlelinewidth@length)
3301             +(0,\mdf@innerlinewidth@length)}}{mdf@A}
3302     \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
3303             +0.5(0,\mdf@middlelinewidth@length)}}{mdf@0}
3304 }{}%
3305 %%%%%%%%%%
3306 \ifbool{mdf@everyline}%
3307 \ifbool{mdf@topline}%
3308 {%
3309     \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3310             -0.5(0,\mdf@middlelinewidth@length)}}{mdf@P}
3311 }{}%
3312 }{}%
3313 %%%%%%%%%%
3314 %%
3315 \ifbool{mdf@shadow}
3316 {\pscustom[style=mdfshadow,linestyle=none]{%
3317     \psline[linejoin=2,linecap=1,](mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)%
3318     \psline[linejoin=2,linecap=1,lineararc=\z@](mdf@0|mdf@P)(mdf@P)
3319     \closedshadow
3320 }
3321 }{}
3322 %%%%%%%%%%
3323 \ifbool{mdf@everyline}%
3324 %Four lines
3325 \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3326 %three lines
3327 \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3328 \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
3329 \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3330 \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3331 %two lines combined
3332 \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3333             {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3334 \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3335             {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3336 \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3337             {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3338 \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3339             {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3340 %two lines not combined
3341 \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}
3342 }{}
3343 \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}}
3344 }{}
3345 %single line
3346 \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3347 \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3348 \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3349 \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3350 %no line
3351 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}{}%

```



```

3352 }{%
3353   %Four + Three
3354   \ifbool{test {\mdf@test@ltrb} or test {\mdf@test@lrb}}{%
3355     {\mdf@pstricksbox@tl{(\mdf@0|\mdf@P)(\mdf@0)(\mdf@P|\mdf@0)(\mdf@P)}}{%}
3356   %Two combined
3357   \ifbool{test {\mdf@test@ltb} or test {\mdf@test@lb}}{%
3358     {\mdf@pstricksbox@tcl{(\mdf@P|\mdf@0)(\mdf@P)(\mdf@0|\mdf@P)}}%
3359     {(\mdf@0|\mdf@P)(\mdf@0)(\mdf@P|\mdf@0)}}{%}
3360   \ifbool{test {\mdf@test@trb} or test {\mdf@test@rb}}{%
3361     {\mdf@pstricksbox@tcl{(\mdf@P)(\mdf@0|\mdf@P)(\mdf@0)}}%
3362     {(\mdf@0)(\mdf@P|\mdf@0)(\mdf@P)}}{%}
3363   %Two not combined
3364   \ifbool{test {\mdf@test@ltr} or test {\mdf@test@lr}}{%
3365     {\mdf@pstricksbox@tncl{(\mdf@0|\mdf@P)}}{(\mdf@P|\mdf@0)}}{%}
3366   %one line
3367   \ifbool{test {\mdf@test@tb} or test {\mdf@test@b}}{%
3368     {\mdf@pstricksbox@ol{(\mdf@0)(\mdf@P|\mdf@0)}}{%}
3369   \ifbool{test {\mdf@test@lt} or test {\mdf@test@l}}{%
3370     {\mdf@pstricksbox@ol{(\mdf@0)(\mdf@0|\mdf@P)}}{%}
3371   \ifbool{test {\mdf@test@tr} or test {\mdf@test@r}}{%
3372     {\mdf@pstricksbox@ol{(\mdf@P)(\mdf@P|\mdf@0)}}{%}
3373   %no line
3374   \mdf@test@t{\psframe[style=mdfbackgroundstyle](\mdf@0)(\mdf@P)}}{%}
3375   \mdf@test@noline{\psframe[style=mdfbackgroundstyle](\mdf@0)(\mdf@P)}}{%}
3376 }%
3377 %Frametitlebackground
3378 \drawbackgroundframetitle@second
3379 %output%
3380 \rput[bl](\mdf@A){\box\mdf@splitbox@one}
3381 \mdf@secondextra
3382 % \psdot(\mdf@A)\uput[90](\mdf@A){mdf at A}
3383 % \psdot(\mdf@P)\uput[90](\mdf@P){mdf at P}
3384 % \psdot(\mdf@0)\uput[90](\mdf@0){mdf at 0}
3385 \end{pspicture}%
3386 }%
3387 \mdf@makeboxalign@right%
3388 }%
3389 \fi
3390 }%
3391 \def\drawbackgroundframetitle@second{%
3392 \ifdefempty{\mdf@frametitle}}{%
3393 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3394 }{%
3395 \drawbackgroundframetitle@@second
3396 }%
3397 }%
3398 }%
3399 \def\drawbackgroundframetitle@@second{%
3400 \begingroup%
3401 \ifbool{\mdf@leftline}{%
3402 \nodexn{(\mdf@0)+(\mdf@innerlinewidth@length,0)
3403 +0.5(\mdf@middlelinewidth@length,0)}{\mdf@0}%
3404 }{%
3405 \ifbool{\mdf@rightline}{%
3406 \nodexn{(\mdf@P)-(\mdf@innerlinewidth@length,0)
3407 -0.5(\mdf@middlelinewidth@length,0)}{\mdf@P}%

```

```

3408         }{}%
3409     \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3410     \psline[style=mdfframetitlebackgroundstyle,linearcl=\z@](mdf@0|mdf@F)(mdf@0|mdf@P)
3411         (mdf@P)(mdf@P|mdf@F)%
3412 \endgroup
3413 }

3414 \endinput
3415 %eof

```

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

```

3416 %Documentation of the package mdframed
3417 %$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $
3418 \setcounter{errorcontextlines}{999}
3419 \documentclass[parskip=false,english,11pt]{ltxmdf}
3420 \ltxmdfsetifoot $Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $
3421
3422 \usepackage{showexpl}
3423 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3424
3425 \newcommand\Loadedframemethod{default}
3426 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3427
3428 \title{The \Pack{mdframed} package}
3429 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3430 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3431 \date{\mdfdateID$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $}
3432 \version{\mdversion}
3433 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3434 Some presented examples are more or less exorbitant.}
3435
3436 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3437 \newrobustcmd\ExampleText{%
3438     An \textit{inhomogeneous linear} differential equation has the form
3439     \begin{align}
3440         L[v] &= f,
3441     \end{align}
3442     where  $L$  is a linear differential operator,  $v$  is
3443     the dependent variable, and  $f$  is a given non-zero
3444     function of the independent variables alone.
3445 }
3446
3447 \newcounter{examplecount}
3448 \setcounter{examplecount}{0}
3449 \renewcommand\thesubsection{}
3450 \newcommand\Examplesec[1]{%
3451 \stepcounter{examplecount}%
3452 \subsection{Example~\arabic{examplecount}~---~\#1\relax}%
3453 }
3454
3455 \begin{document}
3456 \maketitle
3457 \section{Loading}
3458 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}

```

```

3459
3460 {\large\color{red!50!black}
3461 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3462
3463 \section{Examples}
3464 All examples have the following settings:
3465
3466 \begin{tltxmdfexample}
3467 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3468 \newrobustcmd\ExampleText{%
3469 An \textit{inhomogeneous linear} differential equation
3470 has the form
3471 \begin{align}
3472 L[v] = f,
3473 \end{align}
3474 where  $L$  is a linear differential operator,  $v$  is
3475 the dependent variable, and  $f$  is a given non-zero
3476 function of the independent variables alone.
3477 }
3478 \end{tltxmdfexample}
3479 \clearpage
3480 \Examplesec{very simple}
3481 \begin{LTXexample}
3482 \global\mdfdefinestyle{exampledefault}{%
3483     linecolor=red,linewidth=3pt,%
3484     leftmargin=1cm,rightmargin=1cm
3485 }
3486 \begin{mdframed}[style=exampledefault]
3487 \ExampleText
3488 \end{mdframed}
3489 \end{LTXexample}
3490
3491 \Examplesec{hidden line + frame title}
3492 \begin{LTXexample}
3493 \global\mdfapptodefinestyle{exampledefault}{%
3494     topline=false,rightline=true,bottomline=false}
3495 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3496 \ExampleText
3497 \end{mdframed}
3498 \end{LTXexample}
3499 \clearpage
3500
3501 \Examplesec{colored frame title}
3502 \begin{LTXexample}
3503
3504 \global\mdfapptodefinestyle{exampledefault}{%
3505     rightline=true,innerleftmargin=10,innerrightmargin=10,
3506     frametitlerule=true,frametitlerulecolor=green,
3507     frametitlebackgroundcolor=yellow,
3508     frametitlerulewidth=2pt}
3509 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3510 \ExampleText
3511 \end{mdframed}
3512 \end{LTXexample}
3513
3514 \Examplesec{framed picture which is centered}

```

```

3515 \begin{LTXexample}
3516 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3517             linecolor=blue,linewidth=4pt]
3518 \includegraphics[width=\linewidth]{donald-duck}
3519 \end{mdframed}
3520 \end{LTXexample}
3521
3522 \clearpage
3523 \Examplesec{Theorem environments}
3524 \begin{LTXexample}
3525 \mdfdefinestyle{theoremstyle}{%
3526     linecolor=red,linewidth=2pt,%
3527     frametitlerule=true,%
3528     frametitlebackgroundcolor=gray!20,
3529     innertopmargin=\topskip,
3530 }
3531 \mdtheorem[style=theoremstyle]{definition}{Definition}
3532 \begin{definition}
3533 \ExampleText
3534 \end{definition}
3535 \begin{definition}[Inhomogeneous linear]
3536 \ExampleText
3537 \end{definition}
3538 \begin{definition*}[Inhomogeneous linear]
3539 \ExampleText
3540 \end{definition*}
3541 \end{LTXexample}
3542
3543
3544 \clearpage
3545 \Examplesec{theorem with separate header and the help of TikZ (complex)}
3546 \begin{LTXexample}
3547 \newcounter{theo}[section]
3548 \newenvironment{theo}[1][]{%
3549     \stepcounter{theo}%
3550     \ifstrempy{#1}%
3551     {\mdfsetup{%
3552         frametitle={%
3553             \tikz[baseline=(current bounding box.east),outer sep=0pt]
3554             \node[anchor=east,rectangle,fill=blue!20]
3555             {\strut Theorem~\thetheo};}}
3556     }%
3557     {\mdfsetup{%
3558         frametitle={%
3559             \tikz[baseline=(current bounding box.east),outer sep=0pt]
3560             \node[anchor=east,rectangle,fill=blue!20]
3561             {\strut Theorem~\thetheo:~#1};}}%
3562     }%
3563     \mdfsetup{innertopmargin=10pt,linecolor=blue!20,%
3564         linewidth=2pt,topline=true,
3565         frametitleaboveskip=\dimexpr-\ht\strutbox\relax,}
3566     \begin{mdframed}[]\relax%
3567     }\end{mdframed}}
3568 \begin{theo}[Inhomogeneous Linear]
3569 \ExampleText
3570 \end{theo}

```

```

3571
3572 \begin{theo}
3573 \ExampleText
3574 \end{theo}
3575 \end{LTXexample}
3576
3577 \clearpage
3578 \Examplesec{hide only a part of a line}
3579 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com}
3580 \begin{LTXexample}
3581 \makeatletter
3582 \newlength{\interruptlength}
3583 \setlength{\interruptlength}{2.5ex}
3584 \newrobustcmd\overlaplines{%
3585   \appto\mdf@frame@leftline@single{%
3586     \llap{\color{white}%
3587       \rule[\dimexpr-\mdfboundingboxdepth+\interruptlength\relax]{%
3588         {\mdf@middlelinewidth@length}%
3589         {\dimexpr\mdfboundingboxtotalheight%
3590           \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}}
3591         -2\interruptlength\relax}%
3592     }%
3593   }%
3594   \appto\mdf@frame@rightline@single{%
3595     \rlap{\color{white}%
3596       \hspace*{\mdfboundingboxwidth}%
3597       \hspace*{\mdf@innerrightmargin@length}%
3598       \rule[\dimexpr-\mdfboundingboxdepth%
3599         +\interruptlength\relax]{%
3600         {\mdf@middlelinewidth@length}%
3601         {\dimexpr\mdfboundingboxtotalheight%
3602           +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}}
3603         -2\interruptlength\relax}%
3604     }%
3605   }%
3606 }
3607 \makeatother
3608 \overlaplines
3609
3610 \begin{mdframed}[linecolor=blue,linewidth=8pt]
3611 \ExampleText
3612 \end{mdframed}
3613 \end{LTXexample}
3614 \end{document}
3615 \endinput

```

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

```

3616 %Documenation of the package mdframed
3617 %$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $
3618 \setcounter{errorcontextlines}{999}
3619 \documentclass[parskip=false,english,11pt]{ltxmdf}
3620 \ltxmdfsetifoot $Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $
3621
3622
3623 \usepackage{showexpl}

```

```

3624 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3625
3626 \newcommand\Loadedframemethod{TikZ}
3627 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3628
3629 \title{The \Pack{mdframed} package}
3630 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3631 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3632 \date{\mdfdateID$Id: mdfamed.dtx 389 2012-04-27 20:46:58Z marco $}
3633 \version{\mdversion}
3634 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3635 Some presented examples are more or less exorbitant.}
3636
3637 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3638 \newrobustcmd\ExampleText{%
3639     An \textit{inhomogeneous linear} differential equation has the form
3640     \begin{align}
3641         L[v] = f,
3642     \end{align}
3643     where  $L$  is a linear differential operator,  $v$  is
3644     the dependent variable, and  $f$  is a given non-zero
3645     function of the independent variables alone.
3646 }
3647
3648 \newcounter{examplecount}
3649 \setcounter{examplecount}{0}
3650 \renewcommand\thesubsection{}
3651 \newcommand\Examplesec[1]{%
3652 \stepcounter{examplecount}%
3653 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3654 }
3655
3656 \begin{document}
3657 \maketitle
3658 \section{Loading}
3659 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3660
3661 {\large\color{red!50!black}
3662 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3663
3664 \section{Examples}
3665 All examples have the following settings:
3666
3667 \begin{tltxmdfexample}
3668 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3669 \newrobustcmd\ExampleText{%
3670 An \textit{inhomogeneous linear} differential equation
3671 has the form
3672 \begin{align}
3673 L[v] = f,
3674 \end{align}
3675 where  $L$  is a linear differential operator,  $v$  is
3676 the dependent variable, and  $f$  is a given non-zero
3677 function of the independent variables alone.
3678 }
3679 \end{tltxmdfexample}

```

```

3680 \clearpage
3681 \ExampleText{round corner}
3682 \begin{LTXexample}
3683 \global\mdfdefinestyle{exampledefault}{%
3684     outerlinewidth=5pt,innerlinewidth=0pt,
3685     outerlinecolor=red,roundcorner=5pt
3686 }
3687 \begin{mdframed}[style=exampledefault]
3688 \ExampleText
3689 \end{mdframed}
3690 \end{LTXexample}
3691
3692 \Examplesec{hidden line + frame title}
3693 \begin{LTXexample}
3694 \global\mdfapptodefinestyle{exampledefault}{%
3695     topline=false,leftline=false,}
3696 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3697 \ExampleText
3698 \end{mdframed}
3699 \end{LTXexample}
3700 \clearpage
3701 \Examplesec{framed picture which is centered}
3702 \begin{LTXexample}
3703 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3704     linecolor=blue,middlelinewidth=4pt,roundcorner=5pt]
3705 \includegraphics[width=\linewidth]{donald-duck}
3706 \end{mdframed}
3707 \end{LTXexample}
3708
3709 \Examplesec{Gimmick}
3710 \begin{LTXexample}
3711 \mdfsetup{splitbottomskip=0.8cm,splittopskip=0cm,
3712     innerrightmargin=2cm,innertopmargin=1cm,%
3713     innerlinewidth=2pt,outerlinewidth=2pt,
3714     middlelinewidth=10pt,backgroundcolor=red,
3715     linecolor=blue,middlelinecolor=gray,
3716     tikzsetting={draw=yellow,line width=3pt,%
3717         dashed,%
3718         dash pattern= on 10pt off 3pt},
3719     rightline=false,bottomline=false}
3720 \begin{mdframed}
3721 \ExampleText
3722 \end{mdframed}
3723 \end{LTXexample}
3724
3725 \Examplesec{complex example with TikZ}
3726
3727 \begin{tltxmdfexample}
3728 \tikzstyle{titregris} =
3729     [draw=gray, thick, fill=white, shading = exersicetitle, %
3730     text=gray, rectangle, rounded corners, right,minimum height=.7cm]
3731
3732 \pgfdeclarehorizontalshading{exersicebackground}{100bp}
3733     {color(0bp)=(green!40); color(100bp)=(black!5)}
3734
3735 \pgfdeclarehorizontalshading{exersicetitle}{100bp}

```

```

3736         {color(0bp)=(red!40);color(100bp)=(black!5)}
3737
3738 \newcounter{exercise}
3739 \renewcommand*{\theexercise}{Exercise~\arabic{exercise}}
3740 \makeatletter
3741 \def\mdf@@exercisepoints{}%new mdframed key:
3742 \define@key{mdf}{exercisepoints}{%
3743     \def\mdf@@exercisepoints{#1}
3744 }
3745 \makeatother
3746
3747 \mdfdefinestyle{exercisestyle}{%
3748     outerlinewidth=1pt,innerlinewidth=0pt,
3749     roundcorner=2pt,linecolor=gray,
3750     tikzsetting={shading = exersicebackground},
3751     innertopmargin=1.2\baselineskip,
3752     skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
3753     needspace=3\baselineskip,
3754     frametitlefont=\sffamily\bfseries,
3755     settings={\global\stepcounter{exercise}},
3756     singleextra={%
3757         \node[titregris,xshift=1cm] at (P-|0) %
3758             {\~\mdf@frametitlefont{\theexercise}\~};
3759         \ifdefempty{\mdf@@exercisepoints}%
3760             {}%
3761             {\node[titregris,left,xshift=-1cm] at (P)%
3762                 {\~\mdf@frametitlefont{\mdf@@exercisepoints points}\~};}%
3763     },
3764     firstextra={%
3765         \node[titregris,xshift=1cm] at (P-|0) %
3766             {\~\mdf@frametitlefont{\theexercise}\~};
3767         \ifdefempty{\mdf@@exercisepoints}%
3768             {}%
3769             {\node[titregris,left,xshift=-1cm] at (P)%
3770                 {\~\mdf@frametitlefont{\mdf@@exercisepoints points}\~};}%
3771     },
3772 }
3773 \begin{mdframed}[style=exercisestyle,]
3774 \ExampleText
3775 \end{mdframed}
3776
3777 \begin{mdframed}[style=exercisestyle,exercisepoints=10]
3778 \ExampleText
3779 \end{mdframed}
3780 \end{tltxmdfexample}
3781 \clearpage
3782 \Examplesec{Theorem environments}
3783 \begin{LTXexample}
3784 \mdfdefinestyle{theoremstyle}{%
3785     linecolor=red,linewidth=2pt,%
3786     frametitlerule=true,%
3787     apptotikzsetting={\tikzset{mdfframetitlebackground/.append style={%
3788         shade,left color=white, right color=blue!20}}},
3789     frametitlerulecolor=green!60,
3790     frametitlerulewidth=1pt,
3791     innertopmargin=\topskip,

```



```

3792   }
3793 \mdtheorem[style=theoremstyle]{definition}{Definition}
3794 \begin{definition}[Inhomogeneous linear]
3795 \ExampleText
3796 \end{definition}
3797 \begin{definition*}[Inhomogeneous linear]
3798 \ExampleText
3799 \end{definition*}
3800 \end{LTXexample}
3801
3802 \end{document}
3803 \endinput

```

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

```

3804 %Documenation of the package mdframed
3805 %$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $
3806 \setcounter{errorcontextlines}{999}
3807 \documentclass[parskip=false,english,11pt]{ltxmdf}
3808 \ltxmdfsetifoot$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $
3809
3810 \lstDeleteShortInline{||}
3811 \newcommand\Loadedframemethod{PSTricks}
3812 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3813
3814 \usepackage{showexpl}
3815 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3816
3817 \title{The \Pack{mdframed} package}
3818 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3819 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3820 \date{\mdfdateID$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $}
3821 \version{\mdversion}
3822 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3823 Some presented examples are more or less exorbitant.}
3824
3825 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3826 \newrobustcmd\ExampleText{%
3827     An \textit{inhomogeneous linear} differential equation has the form
3828     \begin{align}
3829         L[v] &= f,
3830     \end{align}
3831     where  $L$  is a linear differential operator,  $v$  is
3832     the dependent variable, and  $f$  is a given non-zero
3833     function of the independent variables alone.
3834 }
3835
3836 \newcounter{examplecount}
3837 \setcounter{examplecount}{0}
3838 \renewcommand\thesubsection{}
3839 \newcommand\Examplesec[1]{%
3840 \stepcounter{examplecount}%
3841 \subsection{Example~\arabic{examplecount}~---~\relax}%
3842 }
3843
3844 \begin{document}

```

```

3845 \maketitle
3846 \section{Loading}
3847 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3848
3849 {\large\color{red!50!black}
3850 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3851 X
3852 \section{Examples}
3853 All examples have the following settings:
3854
3855 \begin{tltxmdfexample}
3856 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3857 \newrobustcmd\ExampleText{%
3858 An \textit{inhomogeneous linear} differential equation
3859 has the form
3860 \begin{align}
3861 L[v] = f,
3862 \end{align}
3863 where  $L$  is a linear differential operator,  $v$  is
3864 the dependent variable, and  $f$  is a given non-zero
3865 function of the independent variables alone.
3866 }
3867 \end{tltxmdfexample}
3868 \clearpage
3869
3870 \Examplesec{very simple}
3871 \begin{LTExample}
3872 \global\mdfdefinestyle{exampledefault}{%
3873     linecolor=red,middlelinewidth=3pt,%
3874     leftmargin=1cm,rightmargin=1cm
3875 }
3876 \begin{mdframed}[style=exampledefault,roundcorner=5]
3877 \ExampleText
3878 \end{mdframed}
3879 \end{LTExample}
3880
3881 \Examplesec{hidden line + frame title}
3882 \begin{LTExample}
3883 \global\mdfapptodefinestyle{exampledefault}{%
3884     topline=false,rightline=false,bottomline=false,
3885     frametitlerule=true,innertopmargin=6pt,
3886     outerlinewidth=6pt,outerlinecolor=blue,
3887     pstricksappsetting={\addtopstyle{mdfouterlinestyle}{linestyle=dashed}},
3888     innerlinecolor=yellow,innerlinewidth=5pt}%
3889 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3890 \ExampleText
3891 \end{mdframed}
3892 \end{LTExample}
3893
3894 \clearpage
3895
3896 \Examplesec{Dash Lines}
3897 \begin{LTExample}
3898 \global\mdfdefinestyle{exampledefault}{%
3899     pstrickssetting={linestyle=dashed,},linecolor=red,linewidth=5pt}
3900 \begin{mdframed}[style=exampledefault,]

```

```

3901 \ExampleText
3902 \end{mdframed}
3903 \end{LTXexample}
3904
3905 \Examplesec{Double Lines}
3906 \begin{LTXexample}
3907 \global\mdfdefinestyle{exampledefault}{%
3908     pstrickssetting={doubleline=true,doublesep=6pt},
3909     linecolor=red,linewidth=5pt,middlelinewidth=4pt}
3910 \begin{mdframed}[style=exampledefault,]
3911 \ExampleText
3912 \end{mdframed}
3913 \end{LTXexample}
3914
3915 \Examplesec{Shadow frame}
3916 \begin{LTXexample}
3917 \newmdenv[shadow=true,
3918     shadowsize=11pt,
3919     linewidth=8pt,
3920     frametitlerule=true,
3921     roundcorner=10pt,
3922     ]{myshadowbox}
3923 \begin{myshadowbox}[frametitle={Inhomogeneous linear}]
3924 \ExampleText
3925 \end{myshadowbox}
3926 \end{LTXexample}
3927 \end{document}
3928 \endinput

```

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

```

3929 %Documenation of the package mdframed
3930 %$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $
3931 \setcounter{errorcontextlines}{999}
3932 \documentclass[parskip=false,english,11pt,ltxlipsum]{ltxmdf}
3933 \ltxmdfsetifoot $Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $
3934
3935
3936 \usepackage{showexpl}
3937 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}}},}
3938 \usepackage{tikz}
3939 \usetikzlibrary{calc,arrows,shadings,shadows}
3940 \newcommand\Loadedframemethod{tikz}
3941 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3942
3943 \title{The \Pack{mdframed} package}
3944 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3945 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3946 \date{\mdfdateID$Id: mdframed.dtx 389 2012-04-27 20:46:58Z marco $}
3947 \version{\mdversion}
3948 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3949 Some presented examples are more or less exorbitant.}
3950
3951 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3952 \newrobustcmd\ExampleText{%
3953     An \textit{inhomogeneous linear} differential equation has the form

```

```

3954     \begin{align}
3955         L[v] = f,
3956     \end{align}
3957     where  $L$  is a linear differential operator,  $v$  is
3958     the dependent variable, and  $f$  is a given non-zero
3959     function of the independent variables alone.
3960 }
3961
3962 \newcounter{examplecount}
3963 \setcounter{examplecount}{0}
3964 \renewcommand\thesubsection{}
3965 \newcommand\Examplesec[1]{%
3966     \stepcounter{examplecount}%
3967     \subsection{Example~\arabic{examplecount}~---#1\relax}%
3968 }
3969
3970 \begin{document}
3971 \maketitle
3972 \section{Loading}
3973 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3974
3975 {\large\color{red!50!black}
3976 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3977
3978 \section{Examples}
3979 All examples have the following settings:
3980
3981 \begin{tltxmdfexample}
3982 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3983 \newrobustcmd\ExampleText{%
3984 An \textit{inhomogeneous linear} differential equation
3985 has the form
3986 \begin{align}
3987 L[v] = f,
3988 \end{align}
3989 where  $L$  is a linear differential operator,  $v$  is
3990 the dependent variable, and  $f$  is a given non-zero
3991 function of the independent variables alone.
3992 }
3993 \end{tltxmdfexample}
3994 \clearpage
3995 \Examplesec{Package listings}
3996 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com}
3997
3998 Here the solution which can be decorate as usual.
3999
4000 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}
4001 \BeforeBeginEnvironment{lstlisting}{%
4002     \begin{mdframed}[<modification>%
4003     \vspace{-0.7em}}
4004 \AfterEndEnvironment{lstlisting}{%
4005     \vspace{-0.5em}%
4006     \end{mdframed}}
4007 \end{tltxmdfexample}
4008
4009 With the new command \Cmd{surroundwithmdframed} you can use

```

```

4010 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}]
4011 \surroundwithmdframed{listings}
4012 \end{tltxmdfexample}
4013
4014 \Examplesec{Package multicol}
4015 How I wrote in \enquote{Known Problems} you can't combine \Pack{multicol} with \Pack{mdframed}. In a s
4016 \begin{LTXexample}
4017 \begin{multicols}{2}
4018 \lipsum[1]
4019 \begin{mdframed}
4020 \ExampleText
4021 \end{mdframed}
4022 \lipsum[2]
4023 \end{multicols}
4024 \end{LTXexample}
4025 \clearpage
4026 \twocolumn[\Examplesec{Working in twocolumn mode}]
4027 \begin{tltxmdfexample}
4028 \twocolumn[%
4029   \Examplesec{Working in
4030     twocolumn mode}]
4031 \lipsum[1]\lipsum[2]
4032 \begin{mdframed}[%
4033   leftmargin=10pt,%
4034   rightmargin=10pt,%
4035   linecolor=red,
4036   backgroundcolor=yellow]
4037 \ExampleText
4038 \end{mdframed}
4039 \lipsum[2]
4040 \end{tltxmdfexample}
4041 \lipsum[1]\lipsum[2]
4042 \begin{mdframed}[leftmargin=10pt,%
4043   rightmargin=10pt,%
4044   linecolor=red,
4045   backgroundcolor=yellow]
4046 \ExampleText
4047 \end{mdframed}
4048 \lipsum[2]
4049 \clearpage
4050 \onecolumn
4051 \Examplesec{Working inside enumerate}
4052 \begin{LTXexample}
4053 Text Text Text Text Text Text Text Text
4054 \begin{enumerate}
4055 \item in the following \ldots
4056   \begin{mdframed}[linecolor=blue,linewidth=2]
4057     \ExampleText
4058   \end{mdframed}
4059 \item \lipsum[2]
4060 \end{enumerate}
4061 Text Text Text Text Text Text
4062 \end{LTXexample}
4063 \clearpage
4064 \Examplesec{Position a specific symbol at a line}
4065 \begin{LTXexample}

```

```

4066 \tikzset{
4067   warningsymbol/.style={
4068     rectangle,draw=red,
4069     fill=white,scale=1,
4070     overlay}}
4071 \mdfdefinestyle{warning}{%
4072   hidealllines=true,leftline=true,
4073   skipabove=12,skipbelow=12pt,
4074   innertopmargin=0.4em,%
4075   innerbottommargin=0.4em,%
4076   innerrightmargin=0.7em,%
4077   rightmargin=0.7em,%
4078   innerleftmargin=1.7em,%
4079   leftmargin=0.7em,%
4080   middlelinewidth=.2em,%
4081   linecolor=red,%
4082   fontcolor=red,%
4083   firstextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4084               node[warningsymbol] {\$}};,%
4085   secondextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4086               node[warningsymbol] {\$}};,%
4087   middleextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4088               node[warningsymbol] {\$}};,%
4089   singleextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4090               node[warningsymbol] {\$}};,%
4091 }
4092 \begin{mdframed}[style=warning]
4093 \ExampleText
4094 \end{mdframed}
4095 \end{LTXexample}
4096
4097 \clearpage
4098 \Examplesec{digression-environement inspired by Tobias Weh}
4099 \begin{lstlisting}
4100 \usetikzlibrary{calc,arrows}
4101 \tikzset{
4102   excursus arrow/.style={%
4103     line width=2pt,
4104     draw=gray!40,
4105     rounded corners=2ex,
4106   },
4107   excursus head/.style={
4108     fill=white,
4109     font=\bfseries\sffamily,
4110     text=gray!80,
4111     anchor=base west,
4112   },
4113 }
4114 \mdfdefinestyle{digressionarrows}{%
4115   singleextra={%
4116     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4117     \path let \p1=(Q), \p2=(0) in (\x1,{(\y1-\y2)/2}) coordinate (M);
4118     \path [excursus arrow, round cap-to]
4119         ($ (0)+(5em,0ex)$) -| (M) |- %
4120         ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4121         ++(23em,2ex);

```

```

4122     \node [excursus head] at ($(Q)+(2.5em,-0.75pt)$) {Digression}};},
4123 firstextra={%
4124     \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4125     \path [excursus arrow,-to]
4126         (O) |- %
4127         ($(Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4128         ++(23em,2ex);
4129     \node [excursus head] at ($(Q)+(2.5em,-2pt)$) {Digression}};},
4130 secondextra={%
4131     \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4132     \path [excursus arrow,round cap-]
4133         ($(O)+(5em,0ex)$) -| (Q)};},
4134 middleextra={%
4135     \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4136     \path [excursus arrow]
4137         (O) -- (Q)};},
4138 middlelinewidth=2.5em,middlelinecolor=white,
4139 hidealllines=true,topline=true,
4140 innertopmargin=0.5ex,
4141 innerbottommargin=2.5ex,
4142 innerrightmargin=2pt,
4143 innerleftmargin=2ex,
4144 skipabove=0.87\baselineskip,
4145 skipbelow=0.62\baselineskip,
4146 }
4147
4148 \begin{mdframed}[style=digressionarrows]
4149     \ExampleText
4150 \end{mdframed}
4151 \end{lstlisting}
4152
4153 \tikzset{
4154     excursus arrow/.style={%
4155         line width=2pt,
4156         draw=gray!40,
4157         rounded corners=2ex,
4158     },
4159     excursus head/.style={
4160         fill=white,
4161         font=\bfseries\sffamily,
4162         text=gray!80,
4163         anchor=base west,
4164     },
4165 }
4166 \mdfdefinestyle{digressionarrows}{%
4167     singleextra={%
4168         \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4169         \path let \p1=(Q), \p2=(O) in (\x1,{(\y1-\y2)/2}) coordinate (M);
4170         \path [excursus arrow, round cap-to]
4171             ($(O)+(5em,0ex)$) -| (M) |- %
4172             ($(Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4173             ++(23em,2ex);
4174         \node [excursus head] at ($(Q)+(2.5em,-0.75pt)$) {Digression}};},
4175 firstextra={%
4176     \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4177     \path [excursus arrow,-to]

```

```

4178         (0) |- %
4179         ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4180         ++(23em,2ex);
4181         \node [excursus head] at ($ (Q)+(2.5em,-2pt)$) {Digression};},
4182 secondextra={%
4183         \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4184         \path [excursus arrow,round cap-]
4185         ($ (0)+(5em,0ex)$) -| (Q);},
4186 middleextra={%
4187         \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4188         \path [excursus arrow]
4189         (0) -- (Q);},
4190 middlelinewidth=2.5em,middlelinecolor=white,
4191 hidealllines=true,topline=true,
4192 innertopmargin=0.5ex,
4193 innerbottommargin=2.5ex,
4194 innerrightmargin=2pt,
4195 innerleftmargin=2ex,
4196 skipabove=0.87\baselineskip,
4197 skipbelow=0.62\baselineskip,
4198 }
4199
4200 \begin{mdframed}[style=digressionarrows]
4201     \ExampleText
4202 \end{mdframed}
4203
4204 \Examplesec{Theorem style shading background}
4205 \begin{LTXexample}
4206 %\usetikzlibrary{shadings,shadows}% loaded in the header
4207 \mdtheorem[%
4208     apptotikzsetting={\tikzset{mdfbackground/.append style =%
4209                             {top color=yellow!40!white,
4210                             bottom color=yellow!80!black},
4211                             mdfframetitlebackground/.append style =%
4212                             {top color=purple!40!white,
4213                             bottom color=purple!80!black}
4214                             },
4215     },roundcorner=10pt,middlelinewidth=2pt,
4216     shadow=true,frametitlerule=true,frametitlerulewidth=4pt,
4217     innertopmargin=10pt,%
4218     ]{alternativtheorem}{Theorem}
4220 \begin{alternativtheorem}[Inhomogeneous linear]
4221     \ExampleText
4222 \end{alternativtheorem}
4223 \end{LTXexample}
4224 \end{document}
4225 \endinput

```



## G. Change History

v1.0a		\item\mbox\relax – Need for amsthm	30
General: Created dtx and fixes bugs	1	changed definition of \mdf@lrbox (Thanks	
v1.0b		Lars Madsen)	29
General: added command \@parboxrestore		Changed the enddefinition of mdframed.	
to \mdf@lrbox	29	Uses now \@doendpe instead of	
removed \setbox\mdf@splitbox@two		\endparenv	37
\vbox\unvbox \mdf@splitbox@two	41	Edit algorithm to combine the	
v1.1beta		saveboxes \mdf@frametitlebox and	
General: added command to avoid overfull		\mdf@splitboxone by the predefined set-	
box warning by vsplit	29	tings: \parskip\z@, \parindent\z@ and	
Added frametitle detection to		\offinterlineskip	33
\detected@mdf@put@frame	36	v1.2a	
added lost semicolons	58	General: take account of \parskip for the	
Added method frame title via \savebox	33	vertical calculation	39
Added option frametitlerulecolor,		v1.3	
frametitlebackgroundcolor, font	24	General: Added option shadow	25
Added option titleaboveskip,		Use now \item\mbox\relax	30
titlebelowskip, frametitlerulewidth	23	v1.3a	
Added option usetwoside	25	General: fixes bug with \@doendpe (Thanks	
Changed the definition of \mdf@trivlist	37	Dietrich Grau)	29
Create new \savebox and renamed		v1.4	
\@tempboxa	28	General: Changed the detecting of float en-	
Defining mdframed with \newenvironment	37	vironments. Now mdframed uses only	
Joining all new definitions	28	\@capttype instead of \@floatpenalty	36
Redefinition of \newmdtheoremenv. – Now		Changed the enddefinition of mdframed.	
check of theorem definition.	31	Uses now a line to provide the defined	
Removing \@arrayparboxrestore	39	width	37
Renamed some commands so that every		v1.4a	
command have the same prefix \mdf@	1	General: added extra test for a wrong splitted	
v1.1release		box	41
General: Added \mbox to the definition.			

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The index only collect package relevant words.

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