

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

auto-split frame environment

Marco Daniel Elke Schubert

v1.6a

2012/05/18

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

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

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

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

## Contents

1. Motivation	1	5.5. Theorems . . . . .	12
2. Syntax	2	5.6. Footnotes . . . . .	13
3. The frames	3	6. Examples	13
4. Commands	3	7. Errors, Warnings and Messages	14
5. Options	4	8. Known Problems	15
5.1. Global Options . . . . .	5	9. ToDo	15
5.2. Global and Local Options . . . .	5	10. Acknowledgements	15
5.3. Hidden Lines . . . . .	10	A. More information	16
5.4. Frametitle . . . . .	11		

## 1. Motivation

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

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

---

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

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

The frame was defined with the following settings.

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

## 2. Syntax

### Loadings `mdframed`

The package itself loads the packages

- `kvoptions`,
- `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.

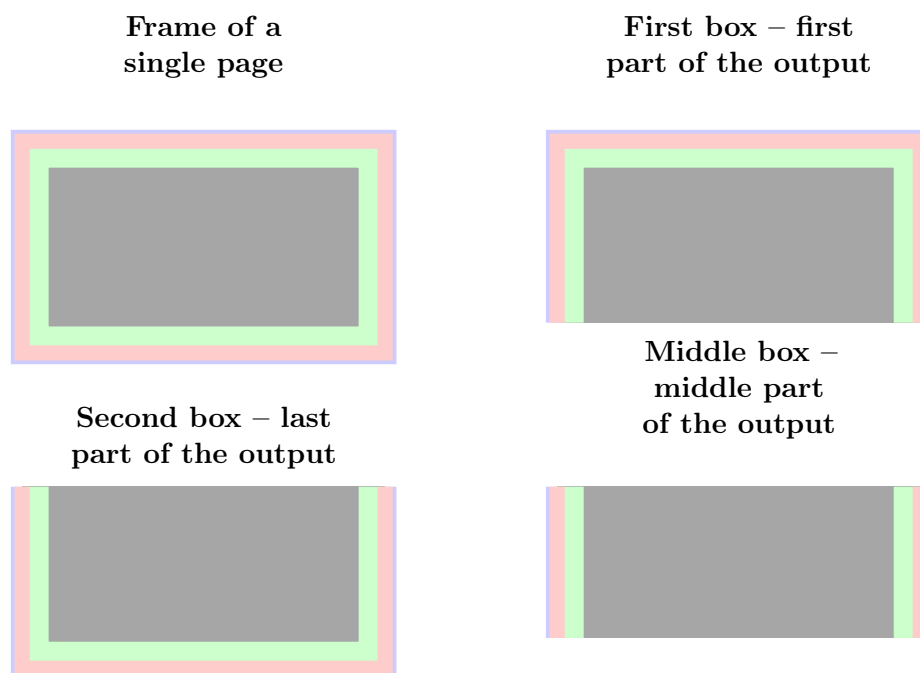


Figure 1: The basic frames

## 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>

## 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`.

<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>

## 5.1. 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.

**defaultunit** default=`pt`

see the sentence above.

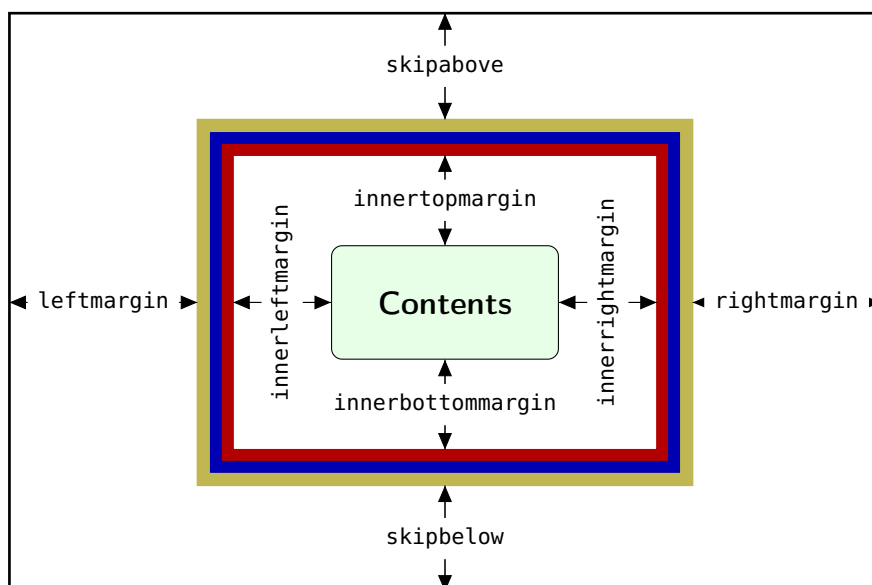


Figure 2: adjustable lengths of mdframed

`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.  
This works only with `framemethod=default`.

`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` or `PSTricks`.

### 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, the package provides a command to simplify this process. The command has the following syntax:

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

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

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

So far there is no `\renewmdtheoremenv`!

### `\mdtheorem`

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

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

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

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

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

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

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

### `theoremseparator`

default={:}

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

### `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  $\text{\LaTeX}$ -editors like `TeXMaker` or `TeXStudio` have a special tab for errors and warnings but not for messages. So you should look in the `log-File` itself.

The 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{%
\begin{group}%
\def\@captive{figure}%
\refstepcounter\@captive\@dblarg{\@newcaption\@captive}%
\end{group}%
}
\makeatother
```

## 9. ToDo

**It is important to update the documentation**

1. see "Known Problems".
2. So far it isn't possible to combine the environment `\begin{multicols}` of the package `multicol` with `mdframed` with the whole option list.
3. Create new styles.
4. Improve page breaks.
5. Improve footnotes.
6. Improve documentation and examples.
7. Create styles for `frametitle`.
8. Create an inline version of `mdframed` that's works like `\fbox`
9. Add `\ht\strutbox` to file `md-frame-1.mdf`

## 10. Acknowledgements

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

Thanks for proofreading

Alan Munn and Nahid Shajari

I hope I forgot nobody.

## A. More information

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

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

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

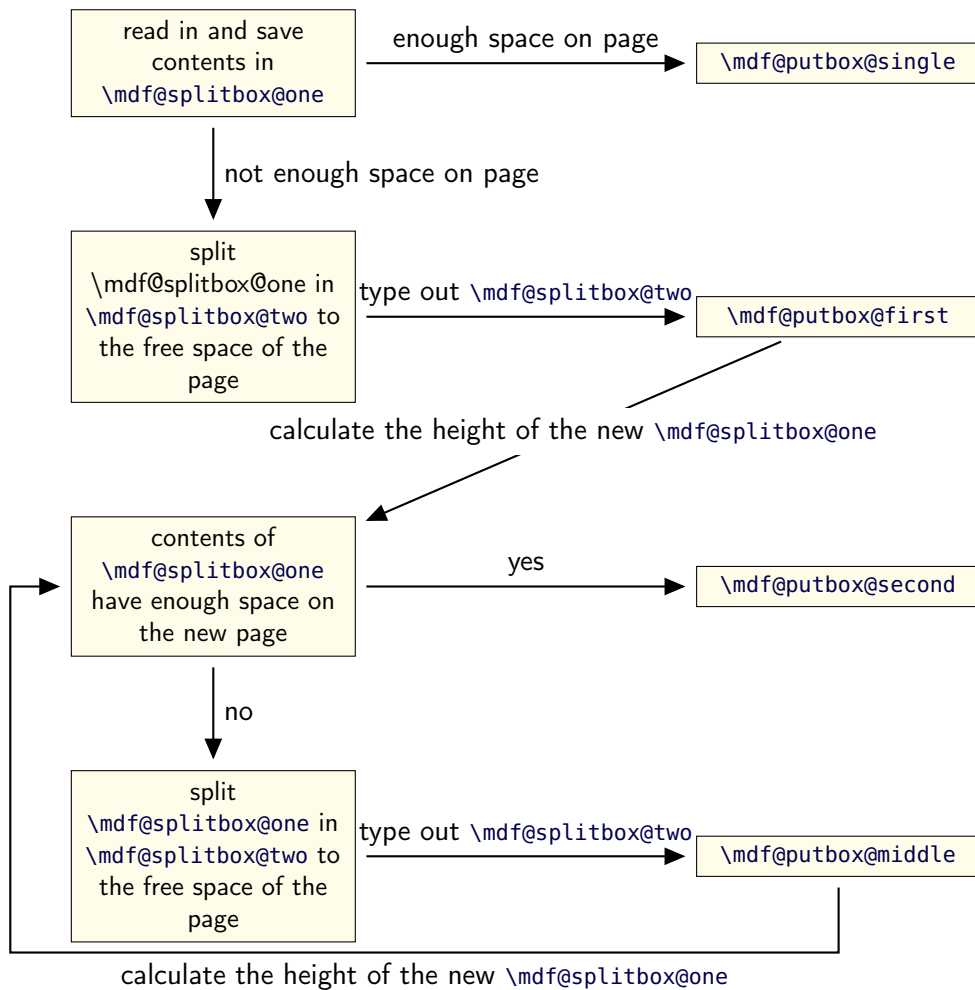


Figure 3: Setting the contents of `mdframed`

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 1.5a submitted DD MMM 2012

- improved formatting of the file `mdframed.dtx`

### Version 1.5a submitted DD MMM 2012

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

### Version 1.5 submitted 10 Mar 2012

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

### Version 1.4d submitted 30 Mar 2012

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

### Version 1.4 submitted 4 Mar 2012

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

### Version 1.3a submitted 5 Feb 2012

- fixed bug (Thanks to Dietrich Grau)

### Version 1.3 submitted 4 Feb 2012

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

### Version 1.2 submitted 8 Jan 2012

- fixed documentation (Thanks to Dietrich Grau) • fixed bug in combination with `amsthm` • fixed bug in `\newmdtheoremenv` • defined new styles via `\newpsstyle`
- This works only with `framemethod=PSTricks`. • added new commands for interaction with TikZ and PSTricks
- expand frame title option by option `frametitleule`, `frametitleulewidth`, `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  $\varepsilon$ -TeX `\dimexpr` • expand documentation • trying to fix problems with `xcolor` • fixed bug with `framemethod=pstricks` • create file `mdframed-example-default` • create file `mdframed-example-tikz` • create file `mdframed-example-pstricks` • create file `mdframed-example-texsx` (`texsx` stands for `tex stackexchange`)

### Version 0.9g submitted 08 Oct 2011

- fixed documentation • added small footnote compatibility

### Version 0.9f submitted 04 Oct 2011

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

### Version 0.9e submitted 11 Sep 2011

- working with `twoside` modus

**Version 0.9d submitted 10 Sep 2011**

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

**Version 0.9b submitted 7 Sep 2011**

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

**Version 0.9a submitted 5 Sep 2011**

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

**Version 0.9 submitted 4 Sep 2011**

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

**Version 0.8a**

- fixes bugs • fixes documentation

**Version 0.8 submitted 22 Aug 2011**

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

**Version 0.7a submitted 6 August 2011**

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

**Version 0.6a submitted 22 Dec 2010**

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

## B. Implementation

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

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

*Id : mdframed.dtx4042012-05-1809:29:01Zmarco Rev : 404 Author : marco*

*Date : 2012-05-1811:29:01+0200(Fr,18Mai2012)*

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

Set package information

```
1 \def\mdversion{v1.6a}
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 404 2012-05-18 09:29:01Z marco $%
7     \mdversion: \mdframedpackagename]
```

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

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

```
8 \newcommand*\mdf@PackageError[1]{\PackageError{\mdframedpackagename}{#1}}
9 \newcommand*\mdf@PackageWarning[1]{\PackageWarning{\mdframedpackagename}{#1}}
10 \newcommand*\mdf@PackageInfo[1]{\PackageInfo{\mdframedpackagename}{#1}}
11 \newcommand*\mdf@LoadFile@IfExist[1]{%
12   \IfFileExists{#1.sty}{%
13     \RequirePackage{#1}%
14   }{%
15     \mdf@PackageWarning{The file #1 does not exist\MessageBreak
16                           but needed by \mdframedpackagename\MessageBreak
17                           see documentation fo further information
18     }%
19   }
20 }
```

Loading required packages

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

Set the family and the prefix of all options.

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

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

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

```

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

```

`\mdf@dolist`

Loop used by *mdframed*.

```

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

```

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

Command to define a new length width a default value.

```

\mdf@option@length{<name of length>}{<Defaultwert>}
44 \newrobustcmd*{\mdf@option@length}[2]{%
45   \expandafter\newlength\csname mdfl@#1@length\endcsname%
46   \expandafter\setlength\csname mdfl@#1@length\endcsname{#2}%
47 }

```

Command to create a new length option. `\mdf@define@key@length{<name of length option>}`

```

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

```

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

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

```

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

```

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

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

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

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

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

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

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

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

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

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

Start declaration of options

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

Only provide to be backward compatible

```
92 \define@key{mdf}{style}{%
93   \mdf@PackageWarning{package option style is depreciated^^J
94     use framemethod instead\MessageBreak}%
95   \renewcommand*\mdfglobal@style{#1}%
96   \defcounter{mdf@globalstyle@cnt}{#1}%
97 }
```

```

97  \ifcase\value{mdf@globalstyle@cnt}\relax
98    \or\mdf@LoadFile@IfExist{tikz}%=1
99    \or\mdf@LoadFile@IfExist{pstricks-add}%=2
100   \or\defcounter{mdf@globalstyle@cnt}{2}%=3
101     \mdf@LoadFile@IfExist{pst-node}%
102     \or\mdf@LoadFile@IfExist{pst-node}%=4
103   \else%>4
104     \mdf@PackageWarning{Unknown global style \value{mdf@globalstyle@cnt}}%
105   \fi%
106 }

```

\mdf@framemethod

Defining the global option framemethod.

```

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

111 \define@key{mdf}{framemethod}[default]{%
112   \lowercase{\def\mdf@tempa{#1}}%lowercase not expandable
113   \forcsvlist{\listadd\mdf@framemethod@i}{default,tex,latex,none,0}
114   \forcsvlist{\listadd\mdf@framemethod@ii}{pgf,tikz,1}
115   \forcsvlist{\listadd\mdf@framemethod@iii}{pstricks,ps,2,postscript}
116   \xifinlist{\mdf@tempa}{\mdf@framemethod@i}%
117     {\def\mdf@@framemethod{default}\defcounter{mdf@globalstyle@cnt}{0}}%
118     {\xifinlist{\mdf@tempa}{\mdf@framemethod@ii}%
119       {\def\mdf@@framemethod{tikz}\defcounter{mdf@globalstyle@cnt}{1}}%
120       {\xifinlist{\mdf@tempa}{\mdf@framemethod@iii}%
121         {\def\mdf@@framemethod{pstricks}\defcounter{mdf@globalstyle@cnt}{2}}%
122         {\mdf@LoadFile@IfExist{#1}}%
123       }%
124     }%
125   \ifcase\value{mdf@globalstyle@cnt}\relax%
126     \or\mdf@LoadFile@IfExist{tikz}%=1
127     \or\mdf@LoadFile@IfExist{pst-node}%=2
128     \or\mdf@LoadFile@IfExist{pst-node}%=3
129   \fi%
130 }

```

\mdf@do@lengthoption

Here the declaration of all length options.

```

131 \mdf@dolist{\mdf@do@lengthoption}{%
132   {skipabove==\z@},%
133   {skipbelow==\z@},%
134   {leftmargin==\z@},%
135   {rightmargin==\z@},%
136   {innerleftmargin==10pt},%
137   {innerrightmargin==10pt},%
138   {innertopmargin==0.4\baselineskip},%
139   {innerbottommargin==0.4\baselineskip},%
140   {splittopskip==\z@},%
141   {splitbottomskip==\z@},%

```

```

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

```

\mdf@do@lengthoption

Here the declaration of the string options.

```

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

```

\mdf@do@booloption

Here the declaration of all bool options.



```

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

```

`\mdf@do@alignoption`

Here the declaration of all align options.

```

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

```

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

Set the alignment.

```

223 \newcommand*\mdf@align{}%
224 \newcommand*\mdf@makeboxalign@left{\null\hspace*{\mdf@leftmargin@length}}%
225 \newcommand*\mdf@makeboxalign@right{}%
226 \define@key{mdf}{align}[left]{%
227   \ifcsundef{mdf@align@#1@left}{%
228     \mdf@PackageWarning{Unknown alignment #1\MessageBreak}%
229     \letcs\mdf@makeboxalign@left{mdf@align@left@left}%
230     \letcs\mdf@makeboxalign@right{mdf@align@left@right}%
231   }{%
232     \def\mdf@makeboxalign@left{\csuse{mdf@align@#1@left}}%

```

```

233     \def\mdf@makeboxalign@right{\csuse{mdf@align@#1@right}}%
234   }%
235 }

```

```

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

```

Option to pass options to tikz or pstricks

```

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

```

```
\mdf@xcolor
```

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

```

251 \def\mdf@xcolor{}
252 \define@key{mdf}{xcolor}[]{}%
253 \def\@tempa{#1}%
254 \ifpackageloaded{xcolor}{%
255   \let\mdf@xcolor\@empty %ignoriere die Eingabe der Optionen
256   \def\@tempa{}%
257 }{}%
258 \ifx\relax\@tempa\relax\else
259   \PassOptionsToPackage{\mdf@xcolor}{xcolor}%
260   \RequirePackage{xcolor}%
261 \fi%
262 }%

```

```
\mdf@needspace
```

Defining the option needspace

```

263 \define@key{mdf}{needspace}[\z@]{%
264   \begingroup%
265     \setlength{\dimen@}{#1}%
266     \vskip\z@\@plus\dimen@%
267     \penalty -100\vskip\z@\@plus -\dimen@%
268     \vskip\dimen@%
269     \penalty 9999%
270     \vskip -\dimen@%
271     \vskip\z@skip % hide the previous |\vskip| from |\addvspace|
272   \endgroup%
273 }

```

```

274 \DeclareDefaultOption{%
275   \mdf@PackageError{Unknown Option '\CurrentOption' for mdframed}}
276 \ProcessKeyvalOptions*\relax

```

\mdfsetup

Short form of `\setkeys{mdf}`

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

\mdf@style

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

```

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

```

\mdf@print@space

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

```

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

```

\new...

Initialize all commands and length which will we used later

```

308 \newsavebox\mdf@frametitlebox
309 \newsavebox\mdf@footnotebox
310 \newsavebox\mdf@splitbox@one

```

```

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

```

```

\mdf@lrbox
\endmdf@lrbox

```

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

```

345 \def\mdf@lrbox#1{%
346 %%patch to work with amsthm
347 \mdf@patchamsthm
348 %%%end patch
349 \edef\mdf@restoreparams{%
350 \parindent=\the\parindent\relax \parskip=\the\parskip\relax}%
351 \setbox#1\vbox\bgroup%
352 \color@begingroup%
353 \mdf@horizontalmargin@equation%
354 \columnwidth=\hsize%
355 \textwidth=\hsize%
356 \let\if@nobreak\iffalse%
357 \let\if@noskipsec\iffalse%
358 \let\par\@par%
359 \let\-\@dischph%
360 \let\'@acci\let\'@accii\let\=@acciii%

```

```

361 \parindent\z@ \parskip\z@skip%
362 \linewidth\hsize%
363 \@totalleftmargin\z@%
364 \leftskip\z@skip \rightskip\z@skip \@rightskip\z@skip%
365 \parfillskip\@flushglue \lineskip\normallineskip%
366 \baselineskip\normalbaselineskip%
367 %% \sloppy%
368 \let\\@normalcr%
369 \mdf@restoreparams\relax%
370 \@afterindentfalse%
371 \@afterheading%
372 }
373
374 \def\endmdf@lrbx{\color@endgroup\egroup}
375

```

```

\mdf@ignorevbadness
\mdf@restorevbadness

```

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

```

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

```

381 \@ifpackageloaded{amsthm}%
382 {%
383 \newrobustcmd\mdf@patchamsth{%
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 theoreem header of amsthm\MessageBreak}%
388 }{%
389 \mdf@PackageError{mdframed detected package amsthm ^^J
390 changed the theoreem header of amsthm failed\MessageBreak}%
391 }%
392 }%
393 }\let\mdf@patchamsth\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 \@nmbrrlistfalse%
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 \immediate\typeout{^^J***** mdframed patching \string\endmdf@trivlist}%
412 \immediate\typeout{^^J***** -- success*****^^J}%
413 }{%
414 \immediate\typeout{^^J***** mdframed patching \string\endmdf@trivlist}%
415 \immediate\typeout{^^J***** -- failed*****^^J}%
416 }
417 \def\mdf@endparenv{%
418 \addpenalty\@endparpenalty\addvspace\mdf@skipbelow@length\@endpetrue}
419

```

```

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

```

```

420 \newrobustcmd*\mdf@makebox@out[2][\linewidth]{%
421 \noindent\hb@xt@{\z@}{%
422 \noindent\makebox[\dimexpr #1\relax][l]{#2}%
423 \hss}%
424 }%
425 \newrobustcmd*\mdf@makebox@in[2][\mdf@userdefinedwidth@length]{%
426 \noindent\makebox[\dimexpr #1\relax][l]{#2}%
427 }

```

```

\mdfdefinestyle
\mdfapptodefinestyle

```

See explanation of this commands in the main documentation.

```

428 \newrobustcmd*\mdfdefinestyle[2]{%
429 \csdef{mdf@definestyle@#1}{#2}%
430 }
431 \newrobustcmd*\mdfapptodefinestyle[2]{%
432 \ifcsundef{mdf@definestyle@#1}%
433 {\mdf@PackageWarning{Unknown style #1}}%
434 {\csappto{mdf@definestyle@#1}{, #2}}%
435 }

```

```

\mdflength
\surroundwithmdframed

```

Helper macros to work with *mdframed*

```

436 \newrobustcmd*\mdflength[1]{\csuse{mdf@#1@length}}
437
438 \newrobustcmd*\surroundwithmdframed[2][\length]{%
439 \BeforeBeginEnvironment{#2}{\begin{mdframed}[#1]}%

```

```

440 \AfterEndEnvironment{#2}{\end{mdframed}}%
441 }

```

```

\newmdenv
\renewmdenv
\newmdtheoremenv
\mdtheorem

```

Defining of the new environment definitions.

```

442 \newrobustcmd*\newmdenv[2][ ]{%
443   \newenvironment{#2}{%
444     \mdfsetup{#1}%
445     \begin{mdframed}%
446   }{%
447     \end{mdframed}%
448   }%
449 }
450 \newrobustcmd*\renewmdenv[2][ ]{%
451   \expandafter\let\csname #2\endcsname\relax%
452   \expandafter\let\csname end#2\endcsname\relax%
453   \newmdenv[#1]{#2}%
454 }%

```

Definitions of the standard Theorems surrounded by *mdframed*.

```

455 \DeclareDocumentCommand\newmdtheoremenv{0}{ m o m o }{%
456   \ifboolexpr{ test {\IfNoValueTF {#3}} and test {\IfNoValueTF {#5}} }{%
457     {\newtheorem{#2}{#4}}{%
458       \IfValueTF{#3}{\newtheorem{#2}[#3]{#4}}{%
459         \IfValueTF{#5}{\newtheorem{#2}{#4}[#5]}{%
460           }%
461       }
462     }
463   }
464   \BeforeBeginEnvironment{#2}{%
465     \begin{mdframed}[#1]}%
466   \AfterEndEnvironment{#2}{%
467     \end{mdframed}}%
468 }

```

Compatible with *ntheorem*'s `\listoftheorems`.

```

466 \newrobustcmd*\mdf@thm@caption[2]{%
467   \AtBeginDocument{%
468     \@ifpackageloaded{ntheorem}%
469     {\renewrobustcmd*\mdf@thm@caption{\thm@thmcaption}}{%
470   }

```

Defining a complete new theorem set by *mdframed*

```

471 \DeclareDocumentCommand{\mdtheorem}{ 0{ } m o m o }%
472 {\ifcsdef{#2}%
473   {\mdf@PackageWarning{Environment #2 already exists\MessageBreak}}%
474   {%
475     \IfNoValueTF {#3}%
476     {%#3 not given -- number relationship
477       \IfNoValueTF {#5}%
478       {%#3+#5 not given
479         \@definecounter{#2}%
480         \expandafter\xdef\csname the#2\endcsname{\@thmcounter{#2}}%
481         \newenvironment{#2}[1][ ]{%
482           \refstepcounter{#2}%
483           \ifstrempy{##1}%

```

```

484         {\let\@temptitle\relax}%
485     {%
486         \def\@temptitle{\mdf@theoremseparator%
487             \mdf@theoremspace%
488             \mdf@theoremtitlefont%
489             ##1}%
490         \mdf@thm@caption{#2}{\csname the#2\endcsname}{##1}}%
491     }%
492     \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}]]%
493     {\end{mdframed}}}%
494 \newenvironment{#2*}[1][{%
495     \ifstrepty{##1}{\let\@temptitle\relax}{\def\@temptitle{: \ ##1}}%
496     \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]]%
497     {\end{mdframed}}}%
498 }%
499 {%#5 given -- reset counter
500 \definecounter{#2}\@newctr{#2}[#5]%
501 \expandafter\xdef\csname the#2\endcsname{\@thmcounter{#2}}%
502 \expandafter\xdef\csname the#2\endcsname{%
503     \expandafter\noexpand\csname the#5\endcsname \@thmcountersep%
504     \@thmcounter{#2}}%
505 \newenvironment{#2}[1][{%
506     \refstepcounter{#2}%
507     \ifstrepty{##1}%
508     {\let\@temptitle\relax}%
509     {%
510         \def\@temptitle{\mdf@theoremseparator%
511             \mdf@theoremspace%
512             \mdf@theoremtitlefont%
513             ##1}%
514         \mdf@thm@caption{#2}{\csname the#2\endcsname}{##1}}%
515     }
516     \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}]]%
517     {\end{mdframed}}}%
518 \newenvironment{#2*}[1][{%
519     \ifstrepty{##1}%
520     {\let\@temptitle\relax}%
521     {%
522         \def\@temptitle{\mdf@theoremseparator%
523             \mdf@theoremspace%
524             \mdf@theoremtitlefont%
525             ##1}%
526         \mdf@thm@caption{#2}{\csname the#2\endcsname}{##1}}%
527     }%
528     \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]]%
529     {\end{mdframed}}}%
530 }%
531 }%
532 {%#3 given -- number relationship
533 \global\@namedef{the#2}{\@nameuse{the#3}}%
534 \newenvironment{#2}[1][{%
535     \refstepcounter{#3}%
536     \ifstrepty{##1}%
537     {\let\@temptitle\relax}%
538     {%
539         \def\@temptitle{\mdf@theoremseparator%

```



```

540             \mdf@theoremspace%
541             \mdf@theoremtitlefont%
542             ##1}%
543         \mdf@thm@caption{#2}{#4}{\csname the#2\endcsname}{##1}}%
544     }
545     \begin{mdframed}[#1,frametitle={\strut#4 \csname the#2\endcsname \@temptitle}]]%
546     {\end{mdframed}}}%
547     \newenvironment{#2*}[1][]%
548     {\ifstrepty{##1}{\let\@temptitle\relax}{\def\@temptitle{: \ ##1}}}%
549     {\begin{mdframed}[#1,frametitle={\strut#4 \@temptitle}]]%
550     {\end{mdframed}}}%
551 }%
552 }%
553 }
554

```

```

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

```

Default definition of the frame tile used by `mdframed`. **Need a better documenation and must be improved!!!**

```

555 \newrobustcmd\mdfframedtitleenv[1]{%
556     \mdf@lrbox{\mdf@frametitlebox}%
557     \mdf@frametitlealignment%
558     \leavevmode\color{\mdf@frametitlefontcolor}%
559     \normalfont\mdf@frametitlefont{#1}\par\unskip%
560     \hrule \@height\z@ \@width\hsize
561     \endmdf@lrbox\relax%
562     \mdf@ignorevbadness%
563     \setbox\mdf@frametitlebox=\vbox{\unvbox\mdf@frametitlebox}%
564     \mdfframetitleboxwidth=\wd\mdf@frametitlebox\relax%
565     \mdfframetitleboxheight=\ht\mdf@frametitlebox\relax%
566     \mdfframetitleboxdepth=\dp\mdf@frametitlebox\relax%
567     \mdfframetitleboxtotalheight=\dimexpr
568         \ht\mdf@frametitlebox
569         +\dp\mdf@frametitlebox%
570         +\mdf@frametitleaboveskip@length
571         +\mdf@frametitlebelowskip@length
572         \relax%
573 }
574
575 \newrobustcmd*\mdf@frametitle{%
576     \mdfframedtitleenv{\mdf@frametitle}%
577 }
578
579 \newrobustcmd*\mdf@frametitle@use{%
580     \parskip\z@\relax%
581     \parindent\z@\relax%
582     \offinterlineskip\relax%
583     \mdf@ignorevbadness%
584     \setbox\mdf@splitbox@one=\vbox{%
585         \unvcopy\mdf@frametitlebox\relax%
586         \mdf@frametitlerule\relax%
587         \unvbox\mdf@splitbox@one\relax%

```

```

588   }%
589   \mdf@ignorevbadness%
590   \setbox\mdf@splitbox@one=\vbox{\unvbox\mdf@splitbox@one}%
591   \mdfsetup{innertopmargin=\mdf@frametitleaboveskip@length}%
592 }

```

`\mdf@checkntheorem`

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

```

593 \newrobustcmd*\mdf@checkntheorem{%
594   \ifbool{mdf@ntheorem}%
595     {\ifundef{\theorempreskipamount}%
596       {\mdf@PackageWarning{You have not loaded ntheorem yet}}%
597       {\setlength{\theorempreskipamount}{\z@}%
598        \setlength{\theorempostskipamount}{\z@}%
599       }%
600     }{}%
601 }

```

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

Support for footnotes. See source2e.

```

602 \newrobustcmd*\mdf@footnoterule{%
603   \kern0\p@%
604   \hrule \@width 1in \kern 2.6\p@}
605 \newrobustcmd*\mdf@footnoteoutput{%
606   \ifvoid\@mpfootins\else%
607     \nobreak%
608     \vskip\mdf@footnotedistance@length%
609     \normalcolor%
610     \mdf@footnoterule%
611     \unvbox\@mpfootins%
612   \fi%
613 }
614 \newrobustcmd*\mdf@footnoteinput{%
615   \def\@mpfn{mpfootnote}%
616   \def\thempfn{\thempfootnote}%
617   \c@mpfootnote\z@%
618   \let\@footnotetext\@mpfootnotetext%
619 }

```

`\mdf@load@style`

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

```

620 \newrobustcmd*\mdf@load@style{%
621   \ifcase\value{mdf@globalstyle@cnt}\relax%
622     \input{md-frame-0.mdf}%
623     \or\input{md-frame-1.mdf}%
624     \or\input{md-frame-2.mdf}%
625     \or\input{md-frame-3.mdf}%
626   \else%
627     \IfFileExists{md-frame-\value{mdf@globalstyle@cnt}.mdf}%

```

```

628     {\input{md-frame-\value{mdf@globalstyle@cnt}.mdf}}%
629     {%
630     \input{md-frame-0.mdf}%
631     \mdf@PackageWarning{The style number \value{mdf@globalstyle@cnt}
632                         does not exist^^J
633                         mdframed uses instead style=0 \mdframedpackagename}%
634     }%
635 \fi%
636 }%
637 \mdf@load@style

```

\mdf@styledefinition

The default frame method needs special handling.

```

638 \newrobustcmd*{\mdf@styledefinition}{%AVOID!!!Needed for framemethod=default
639     \ifnumequal{\value{mdf@globalstyle@cnt}}{0}%
640     {\deflength{\mdf@innerlinewidth@length}{\z@}%
641     \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%
642     \deflength{\mdf@outerlinewidth@length}{\z@}%
643     \let\mdf@innerlinecolor\mdf@linecolor%
644     \let\mdf@middlelinecolor\mdf@linecolor%
645     \let\mdf@outerlinecolor\mdf@linecolor%
646     }{}}%
647 }

```

\detected@mdf@put@frame

Detect whether inside a non breakable environment.

```

648 \let\mdf@reserved@a\@empty
649 \newrobustcmd*{\detected@mdf@put@frame}{%
650     \ifmdf@nobreak%Option nobreak=true?
651     \def\mdf@reserved@a{\mdf@put@frame@standalone}%
652     \else
653     \def\mdf@reserved@a{\mdf@put@frame}%
654     \ifx\@cuptype\@undefined
655     \def\mdf@reserved@a{\mdf@put@frame}%
656     \else
657     \mdf@PackageInfo{mdframed inside float ^^J
658                     mdframed uses option nobreak \mdframedpackagename}%
659     \def\mdf@reserved@a{\mdf@put@frame@standalone}%
660     \fi
661     \if@minipage%
662     \mdf@PackageInfo{mdframed inside minipage ^^J
663                     mdframed uses option nobreak \mdframedpackagename}%
664     \def\mdf@reserved@a{\mdf@put@frame@standalone}%
665     \fi%
666     \ifinner%
667     \mdf@PackageInfo{mdframed inside a box ^^J
668                     mdframed uses option nobreak \mdframedpackagename}%
669     \def\mdf@reserved@a{\mdf@put@frame@standalone}%
670     \fi%
671     \fi%
672 \mdf@reserved@a%
673 }

```

`\mdframed`

The user environment.

```

674 \newenvironment{mdframed}[1][{}]{%
675 \color@begingroup%
676 \mdfsetup{userdefinedwidth=\linewidth,#1}%
677 \mdf@twoside@checklength%
678 \let\width\z@%
679 \let\height\z@%
680 \mdf@checktheorem%
681 \mdf@styledefinition%
682 \mdf@footnoteinput%
683 \color{\mdf@fontcolor}%
684 \mdf@font%
685 \ifvmode\nointerlineskip\fi%
686 \mdf@trivlist{\mdf@skipabove@length}%
687 \ifdefempty{\mdf@frametitle}{}{\mdf@@frametitle}%
688 \mdf@settings%
689 \mdf@lrbox{\mdf@splitbox@one}%
690 }%
691 {\par\unskip\ifvmode\nointerlineskip\hrule \@height\z@ \@width\hsize\fi%
692 \ifmdf@footnoteinside%
693 \def\mdf@reserveda{%
694 \mdf@footnoteoutput%
695 \endmdf@lrbox%
696 \ifdefempty{\mdf@frametitle}{}{\mdf@@frametitle@use}%
697 \detected@mdf@put@frame}%
698 \else%
699 \def\mdf@reserveda{%
700 \endmdf@lrbox%
701 \ifdefempty{\mdf@frametitle}{}{\mdf@@frametitle@use}%
702 \detected@mdf@put@frame%
703 \mdf@footnoteoutput%
704 }%
705 \fi%
706 \mdf@reserveda%
707 \endmdf@trivlist%
708 \color@endgroup\@doendpe%
709 }
710
```

`\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.

```

711 \newtoggle{md:checktwoside}
712 \settoggle{md:checktwoside}{false}
713 \newrobustcmd*{\mdf@twoside@checklength}{%
714 \if@twoside
715 \ifbool{mdf@usetwoside}%
716 {\mdf@PackageInfo{mdframed works in twoside mode}%
717 \settoggle{md:checktwoside}{true}%

```

```

718     \setlength\mdf@rightmargin@length{\mdf@outermargin@length}%
719     \setlength\mdf@leftmargin@length{\mdf@innermargin@length}%
720     }%
721     {\mdf@PackageInfo{mdframed inside twoside mode but\MessageBreak
722         works with oneside mode}%
723     \settoggle{md:checktwoside}{false}%
724     }%
725 \fi%
726 }
727
728 \newcounter{mdf@zref@counter}%keine doppelten laebes
729 \zref@newprop*{mdf@pagevalue}[0]{\number\value{page}}
730 \zref@addprop{\ZREF@mainlist}{mdf@pagevalue}
731 \newrobustcmd*{\mdf@zref@label{%
732     \stepcounter{mdf@zref@counter}
733     \zref@label{mdf@pagelabel-\number\value{mdf@zref@counter}}}%
734 }
735 \newrobustcmd*{if@mdf@pageodd{%
736     \zref@refused{mdf@pagelabel-\the\value{mdf@zref@counter}}}%
737     \ifodd\zref@extract{mdf@pagelabel-\the\value{mdf@zref@counter}}{mdf@pagevalue}%
738     \setlength\mdf@rightmargin@length{\mdf@outermargin@length}%
739     \setlength\mdf@leftmargin@length{\mdf@innermargin@length}%
740 \else
741     \setlength\mdf@rightmargin@length{\mdf@innermargin@length}%
742     \setlength\mdf@leftmargin@length{\mdf@outermargin@length}%
743 \fi%
744 }
745 \newrobustcmd*{\mdf@@setzref{%
746     \iftoggle{md:checktwoside}{\mdf@zref@label\if@mdf@pageodd}{}}%
747 }

```

`\mdf@freepagevspace`

```

748 \newrobustcmd*{\mdf@freepagevspace{%
749     \penalty\@M\relax\vskip 2\baselineskip\relax%
750     \penalty9999\relax\vskip -2\baselineskip\relax%
751     \penalty9999%
752     \ifdimequal{\pagegoal}{\maxdimen}%
753         {\mdf@freespace@length\vsize}%
754         {\mdf@freespace@length=\pagegoal\relax%
755         \advance\mdf@freespace@length by -\pagetotal\relax%
756         \addtolength\mdf@freespace@length{\dimexpr-\parskip\relax}\relax%
757         }%
758 }

```

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

Command used for loop

```

759 \newrobustcmd*{\mdf@advancelength@horizontalmargin@sub[1]{%
760     \advance\mdf@horizontalsofbox by -\csname mdf@#1@length\endcsname\relax%
761 }

```

Compute the width of the box

```

762 \newlength\mdf@horizontalsofbox
763 \newrobustcmd*\mdf@horizontalmargin@equation{%
764   \setlength{\mdf@horizontalsofbox}{\mdf@userdefinedwidth@length}%
765   \mdf@dolist{\mdf@advancelength@horizontalmargin@sub}{%
766     leftmargin,outerlinewidth,middlelinewidth,%
767     innerlinewidth,innerleftmargin,inerrightmargin,%
768     innerlinewidth,middlelinewidth,outerlinewidth,%
769     rightmargin}%
770   \notbool{mdf@leftline}{%
771     \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
772     \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
773     \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
774   }{}%
775   \notbool{mdf@rightline}{%
776     \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
777     \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
778     \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
779   }{}%
780   \ifdimless{\mdf@horizontalsofbox}{3cm}%
781     {\mdf@PackageWarning{You have only a width of 3cm}}{}
782   \hsize=\mdf@horizontalsofbox%
783 }

```

`\mdf@keeplines@single`

Space in relation of horizontal lines.

```

784 \newrobustcmd*\mdf@keeplines@single{%
785   \notbool{mdf@topline}{%
786     \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
787     \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
788     \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
789   }{}%
790   \notbool{mdf@bottomline}{%
791     \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
792     \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
793     \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
794   }{}%
795 }

```

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

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

```

796 \newrobustcmd*\mdf@advancelength@verticalmarginwhole[1]{%
797   \advance\mdf@verticalmarginwhole@length by \csname mdf@#1@length\endcsname\relax%
798 }
799 \newrobustcmd*\mdf@advancelength@freevspace@sub[1]{%
800   \advance\dimen@ by -\csname mdf@#1@length\endcsname\relax%
801 }
802 \newrobustcmd*\mdf@advancelength@freevspace@add[1]{%
803   \advance\dimen@ by \csname mdf@#1@length\endcsname\relax%
804 }

```

`\mdf@reset`

Reset changes

```
805 \protected@edef\mdf@reset{\boxmaxdepth\the\boxmaxdepth
806 \splittopskip\the\splittopskip}%
```

`\mdf@put@frame@standalone`

Output of `mdframed` inside a non breakable environment.

```
807 \newrobustcmd*\mdf@put@frame@standalone{\relax%
808 \ifvoid\mdf@splitbox@one\relax
809 \mdf@PackageWarning{The environment is empty\MessageBreak}%
810 \let\mdf@reserved@a\relax%
811 \else
812 %Hier berechnung Box-Inhalt+Rahmen oben und unten
813 \setlength{\mdf@verticalmarginwhole@length}%
814 {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
815 \mdf@dolist{\mdf@advancelength@verticalmarginwhole}{%
816 outerlinewidth,middlelinewidth,innerlinewidth,innertopmargin,
817 innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth}%
818 \mdf@keep@lines@single%
819 \def\mdf@reserved@a{\mdf@putbox@single}%
820 \fi
821 \mdf@reserved@a%
822 }
```

`\mdf@put@frame`

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

```
823 \def\mdf@put@frame{\relax%
824 \ifvoid\mdf@splitbox@one\relax
825 \mdf@PackageWarning{The environment is empty\MessageBreak}%
826 \let\mdf@reserved@a\relax%
827 \else
828 \setlength\mdf@boundingboxwidth{\wd\mdf@splitbox@one}%
829 \mdf@print@space%
830 \mdf@freepage@space@gives \mdf@free@space@length
831 \mdf@PackageInfoSpace{\the\mdf@free@space@length before the
832 beginning of \MessageBreak
833 the environment ending on input line \MessageBreak}%
834 \ifdimless{\mdf@free@space@length}{2\baselineskip}
835 {%
836 \mdf@PackageInfo{Not enough space on this page}
837 \vfill\eject%
838 \def\mdf@reserved@a{\mdf@put@frame}%
839 }{%
840 %Hier berechnung Box-Inhalt+Rahmen oben und unten
841 \setlength{\mdf@verticalmarginwhole@length}%
842 {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
843 \mdf@dolist{\mdf@advancelength@verticalmarginwhole}%
844 {%
845 outerlinewidth,middlelinewidth,innerlinewidth,%
846 innertopmargin,innerbottommargin,%
847 innerlinewidth,middlelinewidth,outerlinewidth}%
848 \mdf@keep@lines@single%
849 \ifdimless{\mdf@verticalmarginwhole@length}{\mdf@free@space@length}%
```

```

850      {%passt auf Seite%
851      \begingroup\mdf@setzref\mdf@putbox@single\endgroup%Output no break
852      \let\mdf@reserved@a\relax%
853      }%
854      {%
855      \def\mdf@reserved@a{\mdf@put@frame@i}%passt nicht auf Seite
856      }
857      }%
858 \fi
859 \mdf@reserved@a%
860 }

```

`\mdf@put@frame@i`

Output of the first splitted box.

```

861 \def\mdf@put@frame@i{%Box must be splitted
Compute the vertical free space of the current page
862 \mdf@freepagevspace@gives \mdf@freevspace@length
Compute whether the width of the lines plus 2 \baselineskips can only be set on the current page.
863 \dimen@=\the\mdf@freevspace@length\relax%
864 \dimen@i=\mdf@innertopmargin@length\relax%
865 \advance\dimen@i by \mdf@innerlinewidth@length\relax%
866 \advance\dimen@i by \mdf@middlelinewidth@length\relax%
867 \advance\dimen@i by \mdf@outerlinewidth@length\relax%
868 \advance\dimen@i by 2\baselineskip\relax%
869 \ifdimless{\dimen@}{\dimen@i}%
force a page / column break and restart printing of the environment
870 {\hrule \@height\z@ \@width\hsize%
871 \vfill\@eject%
872 \def\mdf@reserved@a{\mdf@put@frame}%
873 }%
The page has enough space.
874 {%
compute the needed vertical space of the first frame. Subtract the dimension of the bottom frame
875 \mdf@dolist{\mdf@advancelength@freevspace@sub}{%calculate with \dimen@
876 outerlinewidth,middlelinewidth,innerlinewidth,%
877 innertopmargin,splitbottomskip}%
Reduce vertical space if option everyline is set to true
878 \ifbool{mdf@everyline}%
879 {%
880 \ifbool{mdf@bottomline}%
881 {%
882 \advance\dimen@ by -\mdf@innerlinewidth@length%
883 \advance\dimen@ by -\mdf@middlelinewidth@length%
884 \advance\dimen@ by -\mdf@outerlinewidth@length%
885 }}%
886 }}%
Add vertical space if option topline is set to false
887 \notbool{mdf@topline}%
888 {%
889 \advance\dimen@ by \mdf@innerlinewidth@length%
890 \advance\dimen@ by \mdf@middlelinewidth@length%
891 \advance\dimen@ by \mdf@outerlinewidth@length%

```



```

892     }{}%
Add a length of 0.8\pageshrink. I don't know whether it's needed! ;-)
893     \advance\dimen@.8\pageshrink
Test whether the contents has enough space and the last frame will be empty
894     \ifdimless{\ht\mdf@splitbox@one+\dp\mdf@splitbox@one}{\dimen@}%
895     {\mdf@PackageWarning{You got a bad break\MessageBreak
896         because the last box will be empty\MessageBreak
897         you have to change it manually\MessageBreak
898         by changing the text, the space\MessageBreak
899         or something else}%
900     \advance\dimen@ by -1.8\baselineskip\relax%needed????????????????????
901     }{}%

```

- save the original contents in a new save box,
- set the dimension for splitting
- ignore bad boxes and split

```

902     \setbox\mdf@splitbox@save=\vbox{\unvcopy\mdf@splitbox@one}%
903     \splittmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
904     \mdf@ignorevbadness%
905     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@
906     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
907     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%

```

**repeating frame title must be improved**

```

908     \ifbool{mdf@repeatframetitle}%
909     {%
910         \setbox\mdf@splitbox@one\vbox{%
911             \vbox to \mdf@splittopskip@length{\hsize\z@}
912             %\par\unskip\nointerlineskip
913             \unvcopy\mdf@frametitlebox%
914             \mdf@@frametitlerule%
915             \vbox to\dimexpr
916                 -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox
917                 +\mdf@innertopmargin@length\relax{\hsize\z@}%
918             \unvbox\mdf@splitbox@one}%
919     }{}%

```

Test whether the splitted box fits the required dimension

```

920     \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
921     {%splitted wrong
922         \mdf@PackageInfo{Box was splittet wrong^^M starting loop to iterate
923             the splitting point\MessageBreak}%

```

restore save box \mdf@splitbox@one by the save one \mdf@splitbox@save

```

924     \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%

```

Start loop until splitting fits – break after 100 attempts

```

925     \dimen@i=\dimen@\relax
926     \@tempcnta=\z@\relax
927     \loop
928     \ifdim\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax>\dimen@
929     \advance\dimen@i by -\p@\relax
930     \advance\@tempcnta by \@ne\relax
931     \ifnum\@tempcnta>100
932     \let\iterate\relax
933     \mdf@PackageWarning{correct box splittet fails^^M
934         It seems you are using a non splittable

```

```

935             contents\MessageBreak}
936         \fi
937         \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%
938         \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
939         \mdf@ignorevbadness%
940         \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@i
941         \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
942         \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
943     \repeat
944     }{}%
Test if the last frame is empty
945     \ifvoid\mdf@splitbox@one\relax%
946         \mdf@PackageWarning{You got a bad break because the splittet box is empty^^M
947             You have to change the page settings^^M
948             like enlargethispage or something else^^M
949             the package increases do \enlargethispage{\baselineskip}\MessageBreak}%
950         \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%
951         \enlargethispage{\baselineskip}%
952         \def\mdf@reserved@a{\mdf@put@frame}%
953     \fi%
Test if first splitted frame doesn't have the original with.
954     \ifdim\wd\mdf@splitbox@two=\wd\mdf@splitbox@one\relax
955     \else
956         \mdf@PackageInfo{You first box width is to small^^M
957             mdframed fixed it\MessageBreak}%
958         \setbox\mdf@splitbox@two=\vbox%
959             {%
960                 \hrule \@height\z@ \@width\wd\mdf@splitbox@one\relax
961                 \unvcopy\mdf@splitbox@two%
962             }
963     \fi%
Test if the first frame is empty
964     \ifvoid\mdf@splitbox@two\relax%
965         {\hrule \@height\f@size pt \@width\z@%
966         \hrule \@height\z@ \@width\hsize}%
967         \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%
968         \def\mdf@reserved@a{\mdf@put@frame}%
969     \else%
970         \ifdimequal{\ht\mdf@splitbox@two}{0pt}%
971             {\hrule \@height\z@ \@width\hsize%
972             \vfill\eject%
973             \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%
974             \def\mdf@reserved@a{\mdf@put@frame}%
975             }%
976             {%
Output of the first frame
977         \begingroup\mdf@@setzref\mdf@putbox@first\endgroup%
978         \hrule \@height\z@ \@width\hsize%
979         \vfill\eject%
980         \def\mdf@reserved@a{\mdf@put@frame@ii}%
981     }%
982     \fi%
983 }%
984 \mdf@reserved@a%

```

985 }

`\mdf@put@frame@ii`

Output of the middle and last box.

986 `\def\mdf@put@frame@ii{%`

After splitting the vertical free space is `\vsize` so you can set it directly.

987 `\setlength{\mdf@freevspace@length}{\vsize}%`

`\dimen@` is equal to the natural height of the rest

988 `\setlength{\dimen@}{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%`

Assume no middle box – add bottom length to the natural height of the contents

989 `\mdf@dolist{\mdf@advance@length@freevspace@add}%`990 `{%used \dimen@`991 `innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth,%`992 `}`

add top length of lines if `everyline` is set to `true`

993 `\ifbool{mdf@everyline}%`994 `{%`995 `\ifbool{mdf@topline}%`996 `{%`997 `\advance\dimen@ by \mdf@innerlinewidth@length%`998 `\advance\dimen@ by \mdf@middlelinewidth@length%`999 `\advance\dimen@ by \mdf@outerlinewidth@length%`1000 `}}}%`1001 `}}}%`

remove length of bottom if `bottomline` is set to `false`

1002 `\notbool{mdf@bottomline}%`1003 `{%`1004 `\advance\dimen@ by -\mdf@innerlinewidth@length%`1005 `\advance\dimen@ by -\mdf@middlelinewidth@length%`1006 `\advance\dimen@ by -\mdf@outerlinewidth@length%`1007 `\relax%`1008 `}}}%`

Test whether the complete height of the frame fits on the current page

1009 `\ifdimgreater{\dimen@}{\mdf@freevspace@length}%`1010 `{%have a middle box`

Use `\mdf@freevspace@length` to compute the splitting dimension. The conditionals `everyline`, `topline` and `bottomline` work like the test above.

1011 `\advance\mdf@freevspace@length by -\mdf@splitbottomskip@length\relax%`1012 `\ifbool{mdf@everyline}%`1013 `{%`1014 `\ifbool{mdf@topline}%`1015 `{%`1016 `\advance\mdf@freevspace@length by -\mdf@innerlinewidth@length%`1017 `\advance\mdf@freevspace@length by -\mdf@middlelinewidth@length%`1018 `\advance\mdf@freevspace@length by -\mdf@outerlinewidth@length%`1019 `}}}%`1020 `\ifbool{mdf@bottomline}%`1021 `{%`1022 `\advance\mdf@freevspace@length by -\mdf@innerlinewidth@length%`1023 `\advance\mdf@freevspace@length by -\mdf@middlelinewidth@length%`1024 `\advance\mdf@freevspace@length by -\mdf@outerlinewidth@length%`

```

1025     \relax\relax}%
1026     }{}%

```

- save the original contents in a new save box,
- set the dimension for splitting
- ignore bad boxes and split

```

1027     \setbox\mdf@splitbox@save=\vbox{\unvcopy\mdf@splitbox@one}%
1028     \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
1029     \mdf@ignorevbadness%
1030     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \mdf@freevspace@length%
1031     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}
1032     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}

```

Test whether the splitted box fits the required dimension

```

1033     \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
1034     {%splitted wrong
1035     \mdf@PackageInfo{Box was splittet wrong^^M starting loop to iterate
1036     the splitting point\MessageBreak}%

```

Start loop until splitting fits – break after 100 attempts

```

1037     \dimen@i=\mdf@freevspace@length%\relax
1038     \@tempcnta=\z@\relax
1039     \loop
1040     \ifdim\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax>\mdf@freevspace@length
1041     \advance\dimen@i by -\p@\relax
1042     \advance\@tempcnta by \@ne\relax
1043     \ifnum\@tempcnta>100
1044     \let\iterate\relax
1045     \mdf@PackageWarning{correct box splittet fails^^M
1046     It seems you are using a non splittable
1047     contents\MessageBreak}
1048     \fi
1049     \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%
1050     \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
1051     \mdf@ignorevbadness%
1052     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@i
1053     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
1054     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
1055     \repeat%
1056     }{}%

```

**repeating frame title must be improved**

```

1057     \ifbool{mdf@repeatframetitle}{%
1058     \setbox\mdf@splitbox@one\vbox{%
1059     \vbox to \mdf@splittopskip@length{\hsize\z@}
1060     %\par\unskip\nointerlineskip
1061     \unvcopy\mdf@frametitlebox%
1062     \mdf@@frametitlerule%
1063     \vbox to%
1064     \dimexpr%
1065     -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox%
1066     +\mdf@innertopmargin@length%
1067     \relax{\hsize\z@}%
1068     \unvbox\mdf@splitbox@one}%
1069     }{}%

```

Test whether last frame is empty

```

1070 \ifvoid\mdf@splitbox@one\relax%
1071 \mdf@PackageWarning{You got a bad break because the splittet box is
1072 empty^^M
1073 You have to change the page settings^^M
1074 like enlargethispage or something else^^M
1075 the package increases do
1076 \enlargethispage{\baselineskip}\MessageBreak}%
1077 \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%
1078 \enlargethispage{\baselineskip}%
1079 \def\mdf@reserved@a{\mdf@put@frame@ii}%

```

Output of the middle frame

```

1080 \else
1081 \begingroup\mdf@@setzref\mdf@putbox@middle\endgroup%
1082 \hrule \@height\z@ \@width\hsize%
1083 \vfill\ject%
1084 \def\mdf@reserved@a{\mdf@put@frame@ii}%
1085 \fi
1086 }%End middle box case

```

Starting output of last frame

```

1087 {%start last box case
1088 \ifvoid\mdf@splitbox@one
1089 \mdf@PackageWarning{You got a bad break\MessageBreak
1090 because the last split box is empty\MessageBreak
1091 You have to change the settings}%%
1092 \setbox\mdf@splitbox@one=\vbox%
1093 {%
1094 \unvbox\mdf@splitbox@one%
1095 \hrule \@height\z@ \@width\mdfboundingboxwidth
1096 }%
1097 \fi%

```

`\ifvoid` isn't enough – need to test the height

```

1098 \ifdimless{\ht\mdf@splitbox@one}{1sp}%
1099 {%
1100 \mdf@PackageWarning{You got a bad break\MessageBreak
1101 because the last split box is empty\MessageBreak
1102 You have to change the settings}%
1103
1104 \let\mdf@reserved@a\relax%
1105 \setbox\mdf@splitbox@one=\vbox%
1106 {%
1107 \unvbox\mdf@splitbox@one%
1108 \hrule \@height\z@ \@width\mdfboundingboxwidth
1109 }%
1110 }{}%

```

Output of the last frame

```

1111 \begingroup\mdf@@setzref\mdf@putbox@second\endgroup%
1112 \hrule \@height\z@ \@width\hsize%
1113 \let\mdf@reserved@a\relax%
1114 }%
1115 \mdf@reserved@a%
1116 }
1117

```

```

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

```

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

```

1118 %%%      ----t----
1119 %%%      |          |
1120 %%%      |          |
1121 %%%      |          |
1122 %%%      l|          |r
1123 %%%      |          |
1124 %%%      |          |
1125 %%%      |-----|
1126 %%%      b
1127 %%Zusammenhaenge abfragen:
1128 \newrobustcmd*\mdf@test@ltrb{%
1129     \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1130                 and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1131 %3-set
1132 \newrobustcmd*\mdf@test@ltr{%
1133     \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1134                 and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1135 \newrobustcmd*\mdf@test@ltb{%
1136     \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1137                 and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1138 \newrobustcmd*\mdf@test@trb{%
1139     \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1140                 and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1141 \newrobustcmd*\mdf@test@lrb{%
1142     \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1143                 and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1144 %2-set
1145 \newrobustcmd*\mdf@test@lb{%
1146     \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1147                 and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1148 \newrobustcmd*\mdf@test@rb{%
1149     \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1150                 and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1151 \newrobustcmd*\mdf@test@tr{%
1152     \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1153                 and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1154 \newrobustcmd*\mdf@test@lt{%
1155     \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1156                 and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}

```

```

1157 \newrobustcmd*\mdf@test@lr{%
1158     \ifboolexpr{not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1159               and (bool {mdf@leftline}) and (bool {mdf@rightline}})}
1160 \newrobustcmd*\mdf@test@tb{%
1161     \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1162               and not (bool {mdf@leftline}) and not (bool {mdf@rightline}})}
1163 %Einzellinien
1164 \newrobustcmd*\mdf@test@l{%
1165     \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1166               and (bool {mdf@leftline}) and not (bool {mdf@rightline}})}
1167 \newrobustcmd*\mdf@test@r{%
1168     \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1169               and not (bool {mdf@leftline}) and (bool {mdf@rightline}})}
1170 \newrobustcmd*\mdf@test@t{%
1171     \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1172               and not (bool {mdf@leftline}) and not (bool {mdf@rightline}})}
1173 \newrobustcmd*\mdf@test@b{%
1174     \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1175               and not (bool {mdf@leftline}) and not (bool {mdf@rightline}})}
1176 %keine Linien
1177 \newrobustcmd*\mdf@test@noline{%
1178     \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1179               and not (bool {mdf@leftline}) and not (bool {mdf@rightline}})}
1180 \newrobustcmd*\mdf@test@single{%
1181     \ifboolexpr{ not (test {\mdf@test@ltrb} or test {\mdf@test@ltr} or
1182               test {\mdf@test@ltb} or test {\mdf@test@trb} or
1183               test {\mdf@test@lrb} or test {\mdf@test@lb} or
1184               test {\mdf@test@rb} or test {\mdf@test@tr} or
1185               test {\mdf@test@lt} ) }}
1186 %
1187 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{framemethod}%
1188 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{xcolor}%
1189
1190 \endinput

```

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

```

1191 %% Style file for mdframed for package option 'framemethod=default'
1192 %%
1193 %% This package may be distributed under the terms of the LaTeX Project
1194 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1195 %% Either version 1.0 or, at your option, any later version.
1196 %%
1197 %%
1198 %%$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $
1199 %

```

```

\mdframed0packagename
\mdf@frame0date@svn

```

local settings

```

1200 \def\mdframed0packagename{md-frame-0}
1201 \def\mdf@frame0date@svn$#1: #2 #3 #4-#5-#6 #7 #8$#{#4/#5/#6\space }
1202 \ProvidesFile{md-frame-0.mdf}%
1203     [\mdf@frame0date@svn$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $]

```

```
1204 \mdversion: \mdframed0packagename]
```

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

short command

```
1205 \def\mdf@background@default{\color{\mdf@backgroundcolor}}
1206 \def\mdf@frametitlebackground@default{\color{\mdf@frametitlebackgroundcolor}}
1207 \def\mdf@shadow@default{\color{\mdf@shadowcolor}}
1208 \def\mdf@innerlinecolor@default{\color{\mdf@innerlinecolor}}
1209 \def\mdf@middlelinecolor@default{\color{\mdf@middlelinecolor}}
1210 \def\mdf@outerlinecolor@default{\color{\mdf@outerlinecolor}}
1211 \def\mdf@frametitlerulecolor@default{\color{\mdf@frametitlerulecolor}}
1212 \let\mdf@linecolor@default\mdf@middlelinecolor@default
1213 \def\mdf@@frametitlerule{%
1214   \ifbool{mdf@frametitlerule}{%
1215     \vbox{\hsize\mdfframetitleboxwidth%
1216       \par\unskip\vskip\mdf@frametitlebelowskip@length%
1217       \rlap{\noindent\hspace*{-\mdf@innerleftmargin@length}%
1218         \mdf@frametitlerulecolor@default%
1219         \rule{\dimexpr\mdfframetitleboxwidth%
1220           +\mdf@innerleftmargin@length
1221           +\mdf@innerrightmargin@length\relax
1222         }{\mdf@frametitlerulewidth@length}%
1223       }\hrule \@height\z@ \@width\hsize}%
1224   }{}%
1225   \par\unskip\vskip\mdf@innertopmargin@length%
1226 }%
1227
```

```
\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`

```
1228 \def\mdf@frame@background@single{%
1229   \ifbool{mdf@shadow}%
1230   {%
1231     \rlap%
1232     {%
1233       \smash%
1234       {%
1235         \mdf@shadow@default%
1236         \rule[\dimexpr
1237           -\mdfboundingboxdepth
1238           -\mdf@shadowsize@length
1239           \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{}
1240         ]{\relax}%
1241         {\dimexpr
1242           \mdfboundingboxtotalwidth
1243           +\mdf@shadowsize@length
```



```

1244         \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}
1245         \relax}%
1246     {\dimexpr
1247         \mdfboundingboxtotalheight
1248         +\mdf@shadowsize@length
1249         \ifbool{mdf@bottomline}{+\mdf@middlelinewidth@length}{}
1250         \relax}%
1251     }%
1252 }%
1253 }{}%
1254 \rlap%
1255 {%
1256     \mdf@background@default%
1257     \rule[-\mdfboundingboxdepth]%
1258         {\mdfboundingboxtotalwidth}%
1259         {\mdfboundingboxtotalheight}%
1260 }%
1261 }%
1262 \def\mdf@frame@frametitlebackground@single{%
1263     \rlap%
1264     {%
1265         \mdf@frametitlebackground@default%
1266         \rule[\dimexpr
1267             -\mdfboundingboxdepth
1268             +\mdfboundingboxtotalheight
1269             -\mdfframetitleboxtotalheight
1270             \relax]%
1271             {\mdfboundingboxtotalwidth}%
1272             {\mdfframetitleboxtotalheight}%
1273         }%
1274     }%
1275 \def\mdf@frame@topline@single{%
1276     \rlap%
1277     {%
1278         \mdf@linecolor@default%
1279         \ifbool{mdf@topline}%
1280         {%
1281             \rule[\dimexpr
1282                 \mdfboundingboxheight
1283                 -\mdfboundingboxdepth%
1284                 +\mdf@innerbottommargin@length
1285                 +\mdf@innertopmargin@length
1286                 \relax]%
1287                 {\mdfboundingboxtotalwidth}%
1288                 {\mdf@middlelinewidth@length}%
1289             }{}%
1290         }%
1291     }%
1292 \def\mdf@frame@bottomline@single{%
1293     \rlap%
1294     {%
1295         \ifbool{mdf@leftline}%
1296         {%
1297             \hspace*[-\mdf@middlelinewidth@length]%
1298             }{}%
1299         \mdf@linecolor@default%

```

```

1300 \ifbool{mdf@bottomline}%
1301 {%
1302 \rule[\dimexpr
1303 -\mdfboundingboxdepth
1304 -\mdf@middlelinewidth@length
1305 \relax]%
1306 {\dimexpr
1307 \mdfboundingboxtotalwidth
1308 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1309 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}%
1310 \relax}%
1311 {\mdf@middlelinewidth@length}%
1312 }{}%
1313 }%
1314 }%
1315 \def\mdf@frame@leftline@single{%
1316 \llap%
1317 {%
1318 \mdf@linecolor@default%
1319 \rule[-\mdfboundingboxdepth]%
1320 {\mdf@middlelinewidth@length}%
1321 {\dimexpr
1322 \mdfboundingboxtotalheight%
1323 \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}%
1324 \relax}%
1325 }%
1326 }%
1327 \def\mdf@frame@rightline@single{%
1328 \rlap%
1329 {%
1330 \mdf@linecolor@default%
1331 \hspace*{\mdfboundingboxwidth}%
1332 \hspace*{\mdf@innerrightmargin@length}%
1333 \rule[\dimexpr
1334 -\mdfboundingboxdepth%
1335 \relax]%
1336 {\mdf@middlelinewidth@length}%
1337 {\dimexpr
1338 \mdfboundingboxtotalheight%
1339 \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}%
1340 \relax}%
1341 }%
1342 }%
1343 \def\mdf@putbox@single{%
1344 \ifvoid\mdf@splitbox@one\relax
1345 \else%
1346 \mdf@makebox@out%
1347 {%
1348 \mdf@makeboxalign@left%
1349 \setlength{\mdfboundingboxwidth}%
1350 {\wd\mdf@splitbox@one}%
1351 \setlength{\mdfboundingboxtotalwidth}%
1352 {\dimexpr
1353 \mdfboundingboxwidth
1354 +\mdf@innerleftmargin@length%
1355 +\mdf@innerrightmargin@length

```

```

1356         \relax}%
1357     \setlength{\mdfboundingboxheight}%
1358         {\dimexpr
1359             \ht\mdf@splitbox@one
1360             +\dp\mdf@splitbox@one
1361             \relax}%
1362     \setlength{\mdfboundingboxdepth}%
1363         {\dimexpr
1364             \dp\mdf@splitbox@one
1365             +\mdf@innerbottommargin@length
1366             \relax}%
1367     \setlength{\mdfboundingboxtotalheight}%
1368         {\dimexpr
1369             \mdfboundingboxheight
1370             +\mdf@innertopmargin@length%
1371             +\mdf@innerbottommargin@length
1372             \relax}%
1373     \setlength{\mdftotallinewidth}%
1374         {\dimexpr
1375             \mdf@innerlinewidth@length
1376             +\mdf@middlelinewidth@length%
1377             +\mdf@outerlinewidth@length
1378             \relax}%
1379     \noindent%
1380     \setlength{\@tempdima}%
1381         {\dimexpr
1382             \mdfboundingboxtotalwidth%
1383             \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}%
1384             \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}
1385             \relax}%
1386     \mdf@makebox@in[\@tempdima]%
1387     {%
1388         \null%
1389         \ifbool{mdf@leftline}%
1390         {%
1391             \hspace*{\mdftotallinewidth}%
1392             \mdf@frame@leftline@single%
1393         }{}%
1394         \mdf@frame@topline@single%
1395         \mdf@frame@background@single%
1396         \mdf@frame@bottomline@single%
1397         \ifdefempty{\mdf@frametitle}{}{\mdf@frame@frametitlebackground@single}%
1398         \hspace*{\mdf@innerleftmargin@length}%
1399         \ifbool{mdf@rightline}%
1400         {%
1401             \mdf@frame@rightline@single%
1402         }{}%
1403         {\box\mdf@splitbox@one}%
1404     }%
1405     \mdf@makeboxalign@right%
1406 }%
1407 \fi%
1408 }

```

```

\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

```

1409 \def\mdf@frame@background@first{%
1410   \ifbool{mdf@shadow}%
1411   {%
1412     \rlap%
1413     {%
1414       \smash%
1415       {%
1416         \mdf@shadow@default%
1417         \rule[\dimexpr
1418           -\mdfboundingboxdepth
1419           -\mdf@shadowsize@length
1420           \relax]%
1421         {\dimexpr
1422           \mdfboundingboxtotalwidth
1423           +\mdf@shadowsize@length
1424           \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}}
1425         \relax}%
1426         {\dimexpr
1427           \mdfboundingboxtotalheight
1428           +\mdf@shadowsize@length
1429           \relax}%
1430       }%
1431     }%
1432   }{}%
1433   \rlap%
1434   {%
1435     \mdf@background@default%
1436     \rule[-\mdfboundingboxdepth]%
1437       {\mdfboundingboxtotalwidth}%
1438       {\mdfboundingboxtotalheight}%
1439   }%
1440 }%
1441 \def\mdf@frame@frametitlebackground@first{%
1442   \ifdimless{\mdfframetitleboxtotalheight}{\mdfboundingboxtotalheight}%
1443   {%
1444     \rlap%
1445     {%
1446       \mdf@frametitlebackground@default%
1447       \rule[\dimexpr
1448         -\mdfboundingboxdepth
1449         +\mdfboundingboxtotalheight
1450         -\mdfframetitleboxtotalheight
1451         \relax]%
1452       {\mdfboundingboxtotalwidth}%
1453       {\mdfframetitleboxtotalheight}%
1454     }%
1455     \global\mdfframetitleboxtotalheight=-\p@ \relax%
1456   }%
1457   {%

```

```

1458 \mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
1459             Current this isn't well supported}%
1460 \rlap%
1461 {%
1462     \mdf@frametitlebackground@default%
1463     \rule[-\mdfboundingboxdepth]%
1464         {\mdfboundingboxtotalwidth}%
1465         {\mdfboundingboxtotalheight}%
1466     }%
1467 \global\mdfframetitleboxtotalheight=%
1468     \dimexpr%
1469     \mdfframetitleboxtotalheight
1470     -\mdfboundingboxheight
1471     +\mdf@frametitlebelowskip@length
1472     +.5\baselineskip-1pt
1473 %     +\dp\strutbox
1474     \relax%
1475 }%
1476 }%
1477 \def\mdf@frame@leftline@first{%
1478     \llap%
1479     {%
1480         \mdf@linecolor@default%
1481         \rule[-\mdfboundingboxdepth]%
1482             {\mdf@middlelinewidth@length}%
1483             {\dimexpr
1484                 \mdfboundingboxtotalheight%
1485                 \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}
1486             \relax}%
1487     }%
1488 }%
1489 \def\mdf@frame@topline@first{%
1490     \rlap%
1491     {%
1492         \mdf@linecolor@default%
1493         \rule[\dimexpr
1494             \mdfboundingboxheight
1495             -\mdfboundingboxdepth
1496             +\mdf@splitbottomskip@length
1497             +\mdf@innertopmargin@length
1498             \relax]%
1499             {\mdfboundingboxtotalwidth}%
1500             {\mdf@middlelinewidth@length}%
1501     }%
1502 }
1503 \def\mdf@frame@rightline@first{%
1504     \rlap%
1505     {%
1506         \mdf@linecolor@default%
1507         \hspace*{\mdfboundingboxwidth}%
1508         \hspace*{\mdf@innerrightmargin@length}%
1509         \rule[-\mdfboundingboxdepth]%
1510             {\mdf@middlelinewidth@length}%
1511             {\dimexpr
1512                 \mdfboundingboxtotalheight%
1513                 \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}

```

```

1514         \relax}%
1515     }%
1516 }%
1517 \def\mdf@frame@bottomline@first{%
1518     \rlap%
1519     {%
1520         \ifbool{mdf@leftline}%
1521         {%
1522             \hspace*{-\mdf@middlelinewidth@length}%
1523         }{}%
1524         \mdf@linecolor@default%
1525         \ifbool{mdf@bottomline}%
1526         {%
1527             \rule[\dimexpr
1528                 -\mdf@boundingboxdepth
1529                 -\mdf@middlelinewidth@length
1530                 \relax]{%
1531                 {\dimexpr
1532                     \mdf@boundingboxtotalwidth
1533                     \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1534                     \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}
1535                     \relax}%
1536                 {\mdf@middlelinewidth@length}%
1537                 }{}%
1538             }%
1539 }%
1540 \def\mdf@putbox@first{%
1541     \ifvoid\mdf@splitbox@two\relax
1542     \else%
1543         \mdf@makebox@out[\linewidth]%
1544         {%
1545             \mdf@makeboxalign@left%
1546             \setlength{\mdf@boundingboxwidth}%
1547                 {\wd\mdf@splitbox@two}%
1548             \setlength{\mdf@boundingboxtotalwidth}%
1549                 {\dimexpr
1550                     \mdf@boundingboxwidth
1551                     +\mdf@innerleftmargin@length%
1552                     +\mdf@innerrightmargin@length
1553                     \relax}%
1554             \setlength{\mdf@boundingboxheight}%
1555                 {\dimexpr
1556                     \ht\mdf@splitbox@two
1557                     +\dp\mdf@splitbox@two
1558                     \relax}%
1559             \setlength{\mdf@boundingboxdepth}%
1560                 {\dimexpr
1561                     \dp\mdf@splitbox@two
1562                     +\mdf@splitbottomskip@length
1563                     \relax}%
1564             \setlength{\mdf@boundingboxtotalheight}%
1565                 {\dimexpr
1566                     \mdf@boundingboxheight
1567                     +\mdf@innertopmargin@length%
1568                     +\mdf@splitbottomskip@length
1569                     \relax}%

```

```

1570 \setlength{\@tempdima}%
1571         {\dimexpr
1572             \mdfboundingboxtotalwidth%
1573             \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}%
1574             \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1575             \relax}%
1576 \mdf@makebox@in[\@tempdima]%
1577 {%
1578     \null%
1579     \ifbool{mdf@leftline}%
1580     {%
1581         \hspace*{\mdf@middlelinewidth@length}%
1582         \mdf@frame@leftline@first%
1583     }{}%
1584     \ifbool{mdf@everyline}%
1585     {%
1586         \mdf@frame@bottomline@first%
1587     }{}%
1588     \ifbool{mdf@topline}%
1589     {%
1590         \mdf@frame@topline@first%
1591     }{}%
1592     \mdf@frame@background@first%
1593     \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@first}%
1594     \hspace*{\mdf@innerleftmargin@length}%
1595     \ifbool{mdf@rightline}%
1596     {%
1597         \mdf@frame@rightline@first%
1598     }{}%
1599     {\box\mdf@splitbox@two}%
1600 }%
1601 \mdf@makebox@align@right%
1602 }%
1603 \fi%
1604 }

```

```

\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*

```

1605 \def\mdf@frame@background@second{%
1606     \ifbool{mdf@shadow}%
1607     {%
1608         \rlap%
1609         {%
1610             \smash%
1611             {%
1612                 \mdf@shadow@default%
1613                 \rule[\dimexpr
1614                     -\mdfboundingboxdepth
1615                     -\mdf@shadowsize@length
1616                     \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{}
1617                     \relax]%

```

```

1618         {\dimexpr
1619             \mdfboundingboxtotalwidth
1620             +\mdf@shadowsize@length
1621             \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}}
1622         \relax}%
1623     {\dimexpr
1624         \mdfboundingboxtotalheight
1625         +\mdf@shadowsize@length
1626         \relax}%
1627     }%
1628 }%
1629 }{}%
1630 \rlap%
1631 {%
1632     \mdf@background@default%
1633     \rule[-\mdfboundingboxdepth]%
1634         {\mdfboundingboxtotalwidth}%
1635         {\mdfboundingboxtotalheight}%
1636 }%
1637 }%
1638 \def\mdf@frame@frametitlebackground@second{%
1639 \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1640 {}%
1641 {%
1642     \rlap%
1643     {%
1644         \mdf@frametitlebackground@default%
1645         \rule[\dimexpr
1646             -\mdfboundingboxdepth
1647             +\mdfboundingboxtotalheight
1648             -\mdfframetitleboxtotalheight
1649             \relax]%
1650             {\mdfboundingboxtotalwidth}%
1651             {\mdfframetitleboxtotalheight}%
1652         }%
1653     }%
1654 }%
1655 \def\mdf@frame@leftline@second{%
1656 \llap%
1657 {%
1658     \mdf@linecolor@default%
1659     \rule[-\mdfboundingboxdepth]%
1660         {\mdf@middlelinewidth@length}%
1661         {\dimexpr\mdfboundingboxtotalheight}%
1662 }%
1663 }%
1664 \def\mdf@frame@bottomline@second{%
1665 \rlap%
1666 {%
1667     \ifbool{mdf@leftline}%
1668     {%
1669         \hspace*{-\mdf@middlelinewidth@length}%
1670     }{}%
1671     \mdf@linecolor@default%
1672     \rule[\dimexpr
1673         -\mdfboundingboxdepth

```



```

1674         -\mdf@middlelinewidth@length
1675         \relax}%
1676     {\dimexpr
1677         \mdfboundingboxtotalwidth
1678         \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}
1679         \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}
1680         \relax}%
1681     {\mdf@middlelinewidth@length}%
1682 }%
1683 }%
1684 \def\mdf@frame@rightline@second{%
1685     \rlap%
1686     {%
1687         \mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1688         \hspace*{\mdf@innerrightmargin@length}%
1689         \rule[-\mdfboundingboxdepth]%
1690             {\mdf@middlelinewidth@length}%
1691             {\mdfboundingboxtotalheight}%
1692     }%
1693 }%
1694 \def\mdf@frame@topline@second{%
1695     \rlap%
1696     {%
1697         \ifbool{mdf@leftline}%
1698             {%
1699                 \hspace*{-\mdf@middlelinewidth@length}%
1700             }{}%
1701         \mdf@linecolor@default%
1702         \ifbool{mdf@topline}%
1703             {%
1704                 \rule[\dimexpr
1705                     \mdfboundingboxheight
1706                     -\mdfboundingboxdepth%
1707                     +\mdf@innerbottommargin@length
1708                     \relax]%
1709                 {\dimexpr
1710                     \mdfboundingboxtotalwidth
1711                     \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1712                     \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}
1713                     \relax}%
1714                 {\mdf@middlelinewidth@length}%
1715             }{}%
1716     }%
1717 }%
1718
1719 \def\mdf@putbox@second{%
1720     \ifvoid\mdf@splitbox@one\relax%
1721     \else
1722         \mdf@makebox@out%
1723         {%
1724             \mdf@makeboxalign@left%
1725             \setlength{\mdfboundingboxwidth}%
1726                 {\wd\mdf@splitbox@one}%
1727             \setlength{\mdfboundingboxtotalwidth}%
1728                 {\dimexpr
1729                     \mdfboundingboxwidth

```

```

1730         +\mdf@innerleftmargin@length%
1731         +\mdf@innerrightmargin@length
1732         \relax}%
1733     \setlength{\mdfboundingboxheight}%
1734         {\dimexpr
1735             \ht\mdf@splitbox@one
1736             +\dp\mdf@splitbox@one
1737             \relax}%
1738     \setlength{\mdfboundingboxdepth}%
1739         {\dimexpr
1740             \dp\mdf@splitbox@one
1741             +\mdf@innerbottommargin@length
1742             \relax}%
1743     \setlength{\mdfboundingboxtotalheight}%
1744         {\dimexpr
1745             \mdfboundingboxheight
1746             +\mdf@innerbottommargin@length
1747             \relax}%
1748     \setlength{\@tempdima}%
1749         {\dimexpr
1750             \mdfboundingboxtotalwidth%
1751             \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}%
1752             \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1753             \relax}%
1754     \mdf@makebox@in[\@tempdima]%
1755     {%
1756         \null%
1757         \ifbool{mdf@leftline}%
1758         {%
1759             \hspace*{\mdf@middlelinewidth@length}%
1760             \mdf@frame@leftline@second%
1761         }{}%
1762         \ifbool{mdf@everyline}%
1763         {%
1764             \mdf@frame@topline@second
1765         }{}%
1766         \mdf@frame@background@second%
1767         \ifbool{mdf@bottomline}%
1768         {%
1769             \mdf@frame@bottomline@second%
1770         }{}%
1771         \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@second}%
1772         \hspace*{\mdf@innerleftmargin@length}%
1773         \ifbool{mdf@rightline}%
1774         {%
1775             \mdf@frame@rightline@second%
1776         }{}%
1777         {\box\mdf@splitbox@one}%
1778     }%
1779     \mdf@makeboxalign@right%
1780 }%
1781 \fi%
1782 }%

```

```

\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

```

1783 \def\mdf@frame@leftline@middle{%
1784   \llap%
1785   {%
1786     \mdf@linecolor@default%
1787     \rule[-\mdfboundingboxdepth]%
1788       {\mdf@middlelinewidth@length}%
1789       {\mdfboundingboxtotalheight}%
1790   }%
1791 }%
1792 \def\mdf@frame@background@middle{%
1793   \ifbool{mdf@shadow}%
1794   {%
1795     \rlap%
1796     {%
1797       \smash%
1798       {%
1799         \mdf@shadow@default%
1800         \rule[\dimexpr
1801           -\mdfboundingboxdepth
1802           -\mdf@shadowsize@length
1803           \relax]%
1804         {\dimexpr
1805           \mdfboundingboxtotalwidth
1806           +\mdf@shadowsize@length
1807           \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}}
1808         \relax}%
1809         {\mdfboundingboxtotalheight}%
1810       }%
1811     }%
1812   }{}%
1813   \rlap%
1814   {%
1815     \mdf@background@default%
1816     \rule[-\mdfboundingboxdepth]%
1817       {\mdfboundingboxtotalwidth}%
1818       {\mdfboundingboxtotalheight}%
1819   }%
1820 }%
1821 \def\mdf@frame@frametitlebackground@middle{%
1822   \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1823   {%
1824     {%
1825       \rlap%
1826       {%
1827         \mdf@frametitlebackground@default%
1828         \rule[\dimexpr
1829           -\mdfboundingboxdepth
1830           +\mdfboundingboxtotalheight
1831           -\mdfframetitleboxtotalheight
1832           \relax]%

```

```

1833         {\mdfboundingboxtotalwidth}%
1834         {\mdfframetitleboxtotalheight}%
1835     }%
1836     \global\mdfframetitleboxtotalheight=-\p@\relax%
1837 }%
1838 }%
1839 \def\mdf@frame@rightline@middle{%
1840     \rlap%
1841     {%
1842         \mdf@linecolor@default%
1843         \hspace*{\mdfboundingboxwidth}%
1844         \hspace*{\mdf@innerrightmargin@length}%
1845         \rule[-\mdfboundingboxdepth]%
1846             {\mdf@middlelinewidth@length}%
1847             {\mdfboundingboxtotalheight}%
1848     }%
1849 }%
1850 \def\mdf@frame@topline@middle{%
1851     \rlap%
1852     {%
1853         \ifbool{mdf@leftline}%
1854         {%
1855             \hspace*{-\mdf@middlelinewidth@length}%
1856         }{}%
1857         \mdf@linecolor@default%
1858         \ifbool{mdf@topline}%
1859         {%
1860             \rule[\dimexpr
1861                 \mdfboundingboxtotalheight
1862                 -\mdfboundingboxdepth
1863                 \relax]%
1864             {\dimexpr
1865                 \mdfboundingboxtotalwidth
1866                 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1867                 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}%
1868                 \relax}%
1869             {\mdf@middlelinewidth@length}%
1870         }{}%
1871     }%
1872 }%
1873 \def\mdf@frame@bottomline@middle{%
1874     \rlap%
1875     {%
1876         \ifbool{mdf@leftline}%
1877         {%
1878             \hspace*{-\mdf@middlelinewidth@length}%
1879         }{}%
1880         \mdf@linecolor@default%
1881         \ifbool{mdf@bottomline}%
1882         {%
1883             \rule[\dimexpr
1884                 -\mdfboundingboxdepth
1885                 -\mdf@middlelinewidth@length
1886                 \relax]%
1887             {\dimexpr
1888                 \mdfboundingboxtotalwidth

```

```

1889         \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1890         \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{%
1891         \relax}%
1892     {\mdf@middlelinewidth@length}%
1893 }}}%
1894 }%
1895 }%
1896
1897 \def\mdf@putbox@middle{%
1898 \ifvoid\mdf@splitbox@two\relax%
1899 \else
1900 \mdf@makebox@out%
1901 {%
1902 \mdf@makeboxalign@left%
1903 \setlength{\mdfboundingboxwidth}%
1904     {\wd\mdf@splitbox@two}%
1905 \setlength{\mdfboundingboxtotalwidth}%
1906     {\dimexpr
1907         \mdfboundingboxwidth
1908         +\mdf@innerleftmargin@length%
1909         +\mdf@innerrightmargin@length
1910         \relax}%
1911 \setlength{\mdfboundingboxheight}%
1912     {\dimexpr
1913         \ht\mdf@splitbox@two
1914         +\dp\mdf@splitbox@two
1915         \relax}%
1916 \setlength{\mdfboundingboxdepth}%
1917     {\dimexpr
1918         \dp\mdf@splitbox@two
1919         +\mdf@splitbottomskip@length
1920         \relax}%
1921 \setlength{\mdfboundingboxtotalheight}%
1922     {\dimexpr
1923         \mdfboundingboxheight
1924         +\mdf@splitbottomskip@length
1925         \relax}%
1926 \setlength{\@tempdima}%
1927     {\dimexpr
1928         \mdfboundingboxtotalwidth%
1929         \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}%
1930         \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1931         \relax}%
1932 \mdf@makebox@in[\@tempdima}%
1933 {%
1934 \null%
1935 \ifbool{mdf@leftline}%
1936     {%
1937         \hspace*{\mdf@middlelinewidth@length}%
1938         \mdf@frame@leftline@middle%
1939     }{}%
1940 \mdf@frame@background@middle%
1941 \ifbool{mdf@everyline}%
1942     {%
1943         \mdf@frame@topline@middle
1944     }{}%

```

```

1945 \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@middle}%
1946 \ifbool{mdf@everyline}%
1947   {%
1948     \mdf@frame@bottomline@middle%
1949   }{}%
1950 \hspace*{\mdf@innerleftmargin@length}%
1951 \ifbool{mdf@rightline}%
1952   {%
1953     \mdf@frame@rightline@middle%
1954   }{}%
1955 {\box\mdf@splitbox@two}%
1956 }%
1957 \mdf@makeboxalign@right%
1958 }%
1959 \fi%
1960 }

1961 \endinput

```

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

```

1962 %% Style file for mdframed for package option 'framemethod=default'
1963 %%
1964 %% This package may be distributed under the terms of the LaTeX Project
1965 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1966 %% Either version 1.0 or, at your option, any later version.
1967 %%
1968 %%
1969 %%$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $
1970 %

```

```

\mdframedIpackagename
\mdf@frameIdate@svn

```

local settings

```

1971 \def\mdframedIpackagename{md-frame-1}
1972 \def\mdf@frameIdate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1973 \ProvidesFile{md-frame-1.mdf}%
1974 [\mdf@frameIdate@svn$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $ %
1975 \mdversion: \mdframedIpackagename]
1976 %

```

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

Define settings for tikz

```

1977 %Allgemeine Einstellungen fuer tikz
1978 \def\mdf@tikz@settings{%
1979 %
1980 \tikzset{mdfbox/.style={anchor=south west,%
1981 \tikzset{mdfbox/.style={anchor=south west,%
1982 \tikzset{mdfbox/.style={anchor=south west,%
1983 \tikzset{mdfbox/.style={anchor=south west,%
1984 \tikzset{mdfbox/.style={anchor=south west,%
1985 \tikzset{mdfbox/.style={anchor=south west,%
1986 \tikzset{mdfbox/.style={anchor=south west,%

```

```

1987 \tikzset{mdfbackground/.style={fill=\mdf@backgroundcolor,%
1988                                draw=\mdf@backgroundcolor%
1989                                }%
1990    }%
1991 \tikzset{mdfframetitlebackground/.style=%
1992     {%
1993     fill=\mdf@frametitlebackgroundcolor,%
1994     draw=none,%
1995     rounded corners={max(\mdf@roundcorner@length%
1996                        -\mdf@innerlinewidth@length%
1997                        -.5\mdf@middlelinewidth@length,0)%
1998                        }%
1999     }%
2000    }%
2001 %
2002 \tikzset{mdfouterline/.style={}}%
2003 % nur wenn outerlinewidth>0 wird aussere Linie gezeichnet
2004 \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
2005   {\tikzset{mdfouterline/.append style={%
2006     draw=\mdf@outerlinecolor,%
2007     line width=2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length}}}%
2008 %
2009 \tikzset{mdfinnerline/.style={}}%
2010 % nur wenn innerlinewidth>0 wird innere Linie gezeichnet
2011 \ifdimgreater{\mdf@innerlinewidth@length}{\z@}
2012   {\tikzset{mdfinnerline/.append style={%
2013     draw=\mdf@innerlinecolor,%
2014     line width=2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length}}}%
2015 %
2016 \tikzset{mdfshadow/.style={drop shadow={%
2017     shadow xshift=\mdf@shadowsize@length-2pt,
2018     shadow yshift=-\mdf@shadowsize@length+2pt,
2019     fill=\mdf@shadowcolor,
2020     every shadow }}}%
2021 %
2022 \mdf@tikzset@local
2023 \tikzset{mdfmiddleline/.style={}}%
2024 % nur wenn middlelinewidth>0 wird mittlere Linie gezeichnet
2025 \ifdimgreater{\mdf@middlelinewidth@length}{\z@}
2026   {\tikzset{mdfmiddleline/.append style={%
2027     preaction={draw=\mdf@middlelinecolor,%
2028               line width=\mdf@middlelinewidth@length},%
2029     line width=\mdf@middlelinewidth@length,%
2030     tikzsetting}}%
2031   }{}%
2032 }%

```

```

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

```

Befehle fuer Ausgabe von Rahmen und Hintergrund

```

2033 \newrobustcmd*\mdf@tikzbox@tfl[1]{%three or four borders
2034   \clip(0,0)rectangle(\mdf@boundingboxwidth,\mdf@boundingboxheight);%
2035   \begin{scope}[mdfcorners]%
2036     \clip[preaction=mdfouterline]%

```

```

2037         [postaction=mdfbackground]%
2038         [postaction=mdfinnerline]#1;%
2039     \end{scope}%
2040     \path[mdfmiddleline,mdfcorners]#1;
2041 }%
2042
2043
2044
2045 \newrobustcmd* \mdf@tikzbox@otl[2]{%one or two borders
2046     \clip(0,0)rectangle(\mdfboundingboxwidth,\mdfboundingboxheight);%
2047     \begin{scope}
2048         \path[mdfouterline,mdfcorners]#1;%
2049         \clip[postaction=mdfbackground]#2;%
2050         \path[mdfinnerline,mdfcorners]#1;%
2051     \end{scope}%
2052     \path[mdfmiddleline,mdfcorners]#1;}%

```

\mdf@put@frametitlerule

frametitlerule with tikz

```

2053 \tikzset{mdfframetitlerule/.style={%
2054     draw=none,
2055     fill=\mdf@frametitlerulecolor,
2056 }%
2057 }
2058 \def\mdf@@frametitlerule{%
2059     \ifbool{mdf@frametitlerule}{%
2060         \vbox{\hsize0pt
2061             \par\unskip\vskip\mdf@frametitlebelowskip@length
2062             \noindent\rlap{\hspace*{-\mdf@innerleftmargin@length}%
2063             \begingroup%
2064                 \pgfmathsetlength{\dimen@}{\mdfframetitleboxwidth
2065                                     +\mdf@innerleftmargin@length
2066                                     +\mdf@innerrightmargin@length}%
2067                 \tikz\draw[mdfframetitlerule] (0,0)%
2068                     rectangle (\dimen@,\mdf@frametitlerulewidth@length);
2069             \endgroup}
2070         }%
2071     }{}
2072     \par\unskip\vskip\mdf@innertopmargin@length%
2073 }%
2074

```

\mdf@putbox@single

Output of the non breakable contents.

```

2075 % Info zu den verwendeten Punkten:
2076 % O ist die untere linke Ecke der Mitte der middleline
2077 % P ist die obere rechte Ecke der Mitte der middleline
2078 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
2079 %
2080 \def\mdf@putbox@single{%
2081     \ifvoid\mdf@splitbox@one
2082     \else%
2083         \mdf@makebox@out{%

```



```

2084 \mdf@makeboxalign@left%
2085 \mdf@tikz@settings%
2086 %
2087 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2088 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2089 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2090 \ifbool{mdf@leftline}{%
2091   \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2092   \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2093   \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2094 \ifbool{mdf@rightline}{%
2095   \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2096   \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2097   \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2098 %
2099 \setlength\mdfboundingboxheight%
2100   {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2101 \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2102 \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2103 \ifbool{mdf@topline}{%
2104   \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2105   \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2106   \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2107 \ifbool{mdf@bottomline}{%
2108   \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2109   \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2110   \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2111 \mdf@makebox@in[\mdfboundingboxwidth]{%
2112 \null%
2113 \begin{tikzpicture}[remember picture]%
2114   \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2115   \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
2116   \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2117   \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2118   \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2119   \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2120   \ifbool{mdf@leftline}%
2121     {%
2122       \pgfmathsetlengthmacro\mdf@Ax%
2123         {\mdf@Ax+\mdf@outerlinewidth@length+
2124          \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2125       \pgfmathsetlengthmacro\mdf@Ox%
2126         {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2127     }{%
2128   \ifbool{mdf@rightline}%
2129     {%
2130       \pgfmathsetlengthmacro\mdf@Px%
2131         {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2132     }{%
2133   \ifbool{mdf@bottomline}%
2134     {%
2135       \pgfmathsetlengthmacro\mdf@Ay%
2136         {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length
2137          +\mdf@innerlinewidth@length}%
2138       \pgfmathsetlengthmacro\mdf@Oy%
2139         {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%

```

```

2140     }{}%
2141 \ifbool{mdf@topline}%
2142 {%
2143     \pgfmathsetlengthmacro\mdf@Py%
2144         {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2145     }{}%
2146 %
2147 \coordinate(0)at(\mdf@0x,\mdf@0y);%
2148 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2149 %
2150 \ifbool{mdf@shadow}
2151     {\path[mdfshadow,mdfcorners](0) rectangle (P);}{}%
2152 %
2153 \begin{scope}[use as bounding box]
2154 \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2155 %
2156 \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2157 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
2158 \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
2159 \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2160 %
2161 \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
2162             {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2163     }{}%
2164 \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
2165             {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2166     }{}%
2167 \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
2168             {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2169     }{}%
2170 \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
2171             {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2172     }{}%
2173 \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
2174             {(0)rectangle(P)}%
2175     }{}%
2176 \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
2177             {(0)rectangle(P)}%
2178     }{}%
2179 %
2180 \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2181             {(0)rectangle(P)}%
2182     }{}%
2183 \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2184             {(0)rectangle(P)}%
2185     }{}%
2186 \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2187             {(0)rectangle(P)}%
2188     }{}%
2189 \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2190             {(0)rectangle(P)}%
2191     }{}%
2192 %
2193 \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}{}%
2194 %
2195 %Frametitlebackground

```

```

2196         \drawbackgroundframetitle@single
2197 %
2198         \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};%output
2199         \end{scope}
2200         %HIER KOMMT EIN WEITERES MAKRO
2201         \mdf@singleextra
2202         \mdfcreateextratikz
2203         \end{tikzpicture}%
2204     }%
2205     \mdf@makeboxalign@right%
2206 }%
2207 \fi
2208 }%
2209 \def\drawbackgroundframetitle@single{%
2210 \ifdefempty{\mdf@frametitle}{}{%
2211     \drawbackgroundframetitle@@single%
2212 }%
2213 }%
2214 \def\drawbackgroundframetitle@@single{%
2215     \begin{scope}%background frame title
2216     \ifbool{mdf@leftline}{
2217         \pgfmathsetlengthmacro\mdf@0x%
2218             {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2219     }{}%
2220     \ifbool{mdf@rightline}{%
2221         \pgfmathsetlengthmacro\mdf@Px%
2222             {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2223     }{}%
2224     \ifbool{mdf@topline}{%
2225         \pgfmathsetlengthmacro\mdf@Py%
2226             {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2227     }{}%
2228     \pgfmathsetlengthmacro\mdf@Fy
2229         {\mdf@Py-\mdfframetitleboxtotalheight}
2230     \path[mdfframetitlebackground]
2231         (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2232         --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2233     \end{scope}
2234 }

```

`\mdf@putbox@first`

Output of the first breakable contents.

```

2235 \def\drawbackgroundframetitle@first{%
2236 \ifdefempty{\mdf@frametitle}{}%
2237 {%
2238     \ifdimgreater{\mdf@boundingboxheight}{\mdfframetitleboxtotalheight}%
2239     {%
2240         \drawbackgroundframetitle@@first
2241         \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
2242     }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
2243         Currently this isn't well supported}%
2244         \drawbackgroundframetitle@@first
2245         \pgfmathsetlength{\global\mdfframetitleboxtotalheight}%
2246             {\mdfframetitleboxtotalheight}

```

```

2247             -\mdfboundingboxheight
2248             -\mdf@innerlinewidth@length
2249             -0.5\mdf@middlelinewidth@length%
2250             +\mdf@frametitlebelowskip@length
2251             +\mdf@splitbottomskip@length
2252             +\mdf@splittopskip@length
2253             +\dp\strutbox%
2254         }%
2255     }%
2256 }%
2257 }%
2258 %
2259 \def\drawbackgroundframetitle@@first{%
2260 \begin{scope}%background frame title
2261     \ifbool{mdf@leftline}{%
2262         \pgfmathsetlengthmacro\mdf@0x%
2263             {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2264         }{}%
2265     \ifbool{mdf@rightline}{%
2266         \pgfmathsetlengthmacro\mdf@Px%
2267             {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2268         }{}%
2269     \ifbool{mdf@topline}{%
2270         \pgfmathsetlengthmacro\mdf@Py%
2271             {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2272         }{}%
2273         \pgfmathsetlengthmacro\mdf@Fy
2274             {max(0,\mdf@Py-\mdfframetitleboxtotalheight)}
2275         \path[mdfframetitlebackground]
2276             (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2277             --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2278     \end{scope}%
2279 }%
2280 %
2281 \def\mdf@putbox@first{%
2282     \ifvoid\mdf@splitbox@two
2283     \else%
2284         \mdf@makebox@out{%
2285             \mdf@makeboxalign@left%
2286             \mdf@tikz@settings%
2287             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2288             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2289             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2290             \ifbool{mdf@leftline}{%
2291                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2292                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2293                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2294             \ifbool{mdf@rightline}{%
2295                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2296                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2297                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2298             \setlength\mdfboundingboxheight%
2299                 {\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2300             \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2301             \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2302             \ifbool{mdf@topline}{%

```

```

2303      \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2304      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2305      \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2306 %%%%%%%%%%
2307      \ifbool{mdf@everyline}{%
2308      \ifbool{mdf@bottomline}{%
2309      \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2310      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2311      \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2312      }{}%
2313 %%%%%%%%%%
2314      %\ifdimequal{\pagegoal}{\maxdimen}{\enlargethispage{\baselineskip}}}% ???
2315      \ifdimgreater{\pagegoal-\maxdimen}{0pt}{\enlargethispage{\baselineskip}}%
2316      \mdf@makebox@in[\mdfboundingboxwidth]{%
2317      \null%
2318      \begin{tikzpicture}[remember picture]
2319      \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2320      \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2321      \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2322      \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2323      \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2324      \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2325      \ifbool{mdf@leftline}{
2326      {%
2327      \pgfmathsetlengthmacro\mdf@Ax%
2328      {\mdf@Ax+\mdf@outerlinewidth@length+
2329      \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2330      \pgfmathsetlengthmacro\mdf@Ox%
2331      {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2332      }{}%
2333      \ifbool{mdf@rightline}{%
2334      \pgfmathsetlengthmacro\mdf@Px%
2335      {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2336      }{}%
2337      \ifbool{mdf@topline}{%
2338      \pgfmathsetlengthmacro\mdf@Py%
2339      {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2340      }{}%
2341 %%
2342      \ifbool{mdf@everyline}{%
2343      \ifbool{mdf@bottomline}{%
2344      {%
2345      \pgfmathsetlengthmacro\mdf@Ay%
2346      {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
2347      +\mdf@innerlinewidth@length}%
2348      \pgfmathsetlengthmacro\mdf@Oy%
2349      {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2350      }{}%
2351      \ifbool{mdf@topline}{%
2352      {%
2353      \pgfmathsetlengthmacro\mdf@Py%
2354      {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2355      }{}%
2356      }{}%
2357 %%
2358      \coordinate(0)at(\mdf@Ox,\mdf@Oy);%

```

```

2359 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2360 \ifbool{mdf@shadow}
2361 {\path[mdfshadow] (0) -- (0|-P) to[mdfcorners] (P) -- (P|-0) -- (0);}%
2362 \begin{scope}[use as bounding box]
2363 %%%%%%%%%%
2364 \ifbool{mdf@everyline}{%
2365 \mdf@test@ltrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{%
2366 \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{%
2367 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{%
2368 \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{%
2369 \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{%
2370 \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
2371 {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2372 }{}%
2373 \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
2374 {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2375 }{}%
2376 \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
2377 {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2378 }{}%
2379 \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
2380 {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2381 }{}%
2382 \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
2383 {(0)rectangle(P)}%
2384 }{}%
2385 \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
2386 {(0)rectangle(P)}%
2387 }{}%
2388 \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2389 {(0)rectangle(P)}%
2390 }{}%
2391 \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2392 {(0)rectangle(P)}%
2393 }{}%
2394 \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2395 {(0)rectangle(P)}%
2396 }{}%
2397 \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2398 {(0)rectangle(P)}%
2399 }{}%
2400 \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
2401 }{
2402 \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@ltr}}%
2403 {\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}%
2404 {}%
2405 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}%
2406 {%
2407 \mdf@tikzbox@otl{(0)--(0|-P)--(P)}
2408 {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}
2409 }%
2410 {}%
2411 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2412 {%
2413 \mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}%
2414 {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}}%

```

```

2415     {}%
2416     \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}{%
2417         {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}}%
2418     }%
2419     \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}{%
2420         {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}}%
2421     }%
2422     \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}{%
2423         {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}}%
2424     }%
2425     \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}{%
2426         {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}}%
2427     }%
2428     \mdf@test@b{\path[mdfbackground](0)rectangle(P);}%
2429     \mdf@test@noline{\path[mdfbackground,mdfcorners](0)--(0|-P)--(P)--(P|-0);}%
2430     {}%
2431 }
2432 %%%%%%%%%%
2433 \drawbackgroundframetitle@first
2434 \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};%
2435 \end{scope}
2436 %HIER KOMMT EIN WEITERES MAKRO
2437 \mdf@firstextra
2438 \mdfcreateextratikz%
2439 \end{tikzpicture}%
2440 }%
2441 \mdf@makeboxalign@right%
2442 }%
2443 \fi
2444 }%

```

\mdf@putbox@middle

Output of the middle breakable contents.

```

2445 \def\drawbackgroundframetitle@middle{%
2446 \ifdefempty{\mdf@frametitle}}{}%
2447 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2448 {}{}%
2449 \drawbackgroundframetitle@@middle%
2450 \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
2451 }%
2452 }%
2453 }%
2454 %
2455 \def\drawbackgroundframetitle@@middle{%
2456 \begin{scope}%background frame title
2457 \ifbool{mdf@leftline}{
2458 \pgfmathsetlengthmacro\mdf@0x%
2459 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2460 }{}%
2461 \ifbool{mdf@rightline}{%
2462 \pgfmathsetlengthmacro\mdf@Px%
2463 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2464 }{}%
2465 \pgfmathsetlengthmacro\mdf@Fy

```



```

2466         {\mdf@Py-\mdfframetitleboxtotalheight}
2467     \path[mdfframetitlebackground,rounded corners=\z@]
2468         (\mdf@Ox,\mdf@Fy) -- (\mdf@Ox,\mdf@Py)%
2469         --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2470     \end{scope}
2471 }%
2472 %
2473 \def\drawbackgroundframetitle@middle{%
2474     \begin{scope}%background frame title
2475         \ifbool{mdf@leftline}{
2476             \pgfmathsetlengthmacro\mdf@Ox%
2477                 {\mdf@Ox+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2478             }{}%
2479         \ifbool{mdf@rightline}{%
2480             \pgfmathsetlengthmacro\mdf@Px%
2481                 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2482             }{}%
2483             \pgfmathsetlengthmacro\mdf@Fy
2484                 {\mdf@Py-\mdfframetitleboxtotalheight}
2485             \path[mdfframetitlebackground,rounded corners=\z@]
2486                 (\mdf@Ox,\mdf@Fy) -- (\mdf@Ox,\mdf@Py)%
2487                 --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2488         \end{scope}
2489 }%
2490 \def\mdf@putbox@middle{%
2491     \ifvoid\mdf@splitbox@two
2492     \else%
2493         \mdf@makebox@out{%
2494             \mdf@makeboxalign@left%
2495             \mdf@tikz@settings%
2496             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2497             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2498             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2499             \ifbool{mdf@leftline}{%
2500                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2501                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2502                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2503             \ifbool{mdf@rightline}{%
2504                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2505                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2506                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2507             \setlength\mdfboundingboxheight%
2508                 {\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2509             \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2510             %%%%%%%%%
2511             \ifbool{mdf@everyline}{%
2512                 \ifbool{mdf@topline}{%
2513                     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2514                     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2515                     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2516                 \ifbool{mdf@bottomline}{%
2517                     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2518                     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2519                     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2520                 }{}%
2521             %%%%%%%%%

```



```

2522 \mdf@makebox@in[\mdfboundingboxwidth]{%
2523 \null%
2524 \begin{tikzpicture}[remember picture]
2525 \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2526 \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2527 \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2528 \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2529 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2530 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2531 \ifbool{mdf@leftline}%
2532 {%
2533 \pgfmathsetlengthmacro\mdf@Ax%
2534 {\mdf@Ax+\mdf@outerlinewidth@length+
2535 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2536 \pgfmathsetlengthmacro\mdf@Ox%
2537 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2538 }{}%
2539 \ifbool{mdf@rightline}%
2540 {%
2541 \pgfmathsetlengthmacro\mdf@Px%
2542 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2543 }{}%
2544 %%
2545 \ifbool{mdf@everyline}{%
2546 \ifbool{mdf@bottomline}%
2547 {%
2548 \pgfmathsetlengthmacro\mdf@Ay%
2549 {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length
2550 +\mdf@innerlinewidth@length}%
2551 \pgfmathsetlengthmacro\mdf@Oy%
2552 {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2553 }{}%
2554 \ifbool{mdf@topline}%
2555 {%
2556 \pgfmathsetlengthmacro\mdf@Py%
2557 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2558 }{}%
2559 }{}%
2560 %%
2561 \coordinate(0)at(\mdf@Ox,\mdf@Oy);%
2562 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2563 \ifbool{mdf@shadow}
2564 {\path[mdfshadow](0) rectangle (P);}%
2565 \begin{scope}[use as bounding box]
2566 %%%%%%%%%%
2567 \ifbool{mdf@everyline}{%
2568 \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2569 \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2570 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
2571 \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
2572 \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2573 \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}
2574 {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2575 }{}%
2576 \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}
2577 {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%

```

```

2578         }{}%
2579     \mdf@test@tr{\mdf@tikzbox@otl{(0|P)--(P)--(P|0)}%
2580                 {(0)--(0|P)[mdfcorners]--(P)--(P|0)}%
2581         }{}%
2582     \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|P)--(P)}%
2583                 {(P|0)--(0)[mdfcorners]--(0|P)--(P)}%
2584         }{}%
2585     \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|P)(P)--(P|0)}%
2586                 {(0)rectangle(P)}%
2587         }{}%
2588     \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|P)(0|P)--(P)}%
2589                 {(0)rectangle(P)}%
2590         }{}%
2591     \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|P)}%
2592                 {(0)rectangle(P)}%
2593         }{}%
2594     \mdf@test@r{\mdf@tikzbox@otl{(0|P)--(P)}%
2595                 {(0)rectangle(P)}%
2596         }{}%
2597     \mdf@test@t{\mdf@tikzbox@otl{(0|P)--(P)}%
2598                 {(0)rectangle(P)}%
2599         }{}%
2600     \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|P)}%
2601                 {(0)rectangle(P)}%
2602         }{}%
2603     \mdf@test@online{\path[mdfbackground,mdfcorners](0)rectangle(P);}{}%
2604 }{
2605     \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
2606         {\mdf@tikzbox@otl{(0)--(0|P)(P)--(P|0)}{(0)rectangle(P)}}{}%
2607     \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
2608         {\mdf@tikzbox@otl{(0)--(0|P)}{(0)rectangle(P)}}{}%
2609     \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
2610         {\mdf@tikzbox@otl{(P)--(P|0)}{(0)rectangle(P)}}{}%
2611     \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
2612         {\path[mdfbackground](0)rectangle(P);}{}%
2613 }
2614 %%%
2615     \drawbrackgroundframetitle@middle
2616     \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};%
2617 \end{scope}
2618 \mdf@middleextra
2619 %HIER KOMMT EIN WEITERES MAKRO
2620 \mdfcreateextratikz
2621 \end{tikzpicture}%
2622 }%
2623 \mdf@makeboxalign@right%
2624 }%
2625 \fi
2626 }%

```

`\mdf@putbox@second`

Output of the last breakable contents.

```

2627 \def\drawbrackgroundframetitle@second{%
2628     \ifdefempty{\mdf@frametitle}{}{}%

```

```

2629 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2630 {}{}%
2631 \drawbackgroundframetitle@@second%
2632 }%
2633 }%
2634 }%
2635 %
2636 \def\drawbackgroundframetitle@@second{%
2637     \begin{scope}%background frame title
2638     \ifbool{mdf@leftline}{
2639         \pgfmathsetlengthmacro\mdf@0x%
2640             {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2641     }{}%
2642     \ifbool{mdf@rightline}{%
2643         \pgfmathsetlengthmacro\mdf@Px%
2644             {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2645     }{}%
2646     \pgfmathsetlengthmacro\mdf@Fy
2647         {\mdf@Py-\mdfframetitleboxtotalheight}
2648     \path[mdfframetitlebackground,rounded corners=\z@]
2649         (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2650         --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2651     \end{scope}
2652 }%
2653 \def\mdf@putbox@second{%
2654     \ifvoid\mdf@splitbox@one
2655     \else%
2656         \mdf@makebox@out{%
2657             \mdf@makeboxalign@left%
2658             \mdf@tikz@settings%
2659             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2660             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2661             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2662             \ifbool{mdf@leftline}{%
2663                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2664                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2665                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2666             \ifbool{mdf@rightline}{%
2667                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2668                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2669                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2670             \setlength\mdfboundingboxheight%
2671                 {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2672             \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2673             \ifbool{mdf@bottomline}{%
2674                 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2675                 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2676                 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2677             %%%%%%%%%
2678             \ifbool{mdf@everyline}{%
2679                 \ifbool{mdf@topline}{%
2680                     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2681                     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2682                     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2683                 }{}%
2684             %%%%%%%%%

```

```

2685 \mdf@makebox@in[\mdfboundingboxwidth]{%
2686 \null%
2687 \begin{tikzpicture}[remember picture]
2688 \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2689 \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
2690 \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2691 \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2692 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2693 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2694 \ifbool{mdf@leftline}%
2695 {%
2696 \pgfmathsetlengthmacro\mdf@Ax%
2697 {\mdf@Ax+\mdf@outerlinewidth@length+%
2698 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2699 \pgfmathsetlengthmacro\mdf@Ox%
2700 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2701 }{}%
2702 \ifbool{mdf@rightline}%
2703 {%
2704 \pgfmathsetlengthmacro\mdf@Px%
2705 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2706 }{}%
2707 \ifbool{mdf@bottomline}%
2708 {%
2709 \pgfmathsetlengthmacro\mdf@Ay%
2710 {\mdf@Ay+\mdf@outerlinewidth@length+%
2711 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2712 \pgfmathsetlengthmacro\mdf@Oy%
2713 {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2714 }{}%
2715 %%
2716 \ifbool{mdf@everyline}{%
2717 \ifbool{mdf@topline}%
2718 {%
2719 \pgfmathsetlengthmacro\mdf@Py%
2720 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2721 }{}%
2722 }{}%
2723 %%
2724 \coordinate(0)at(\mdf@Ox,\mdf@Oy);%
2725 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2726 \ifbool{mdf@shadow}
2727 {%
2728 \path[mdfshadow] (0|-P) to[mdfcorners] (0)
2729 to[mdfcorners] (P|-0) -- (P) -- (0|-P);%
2730 }{}%
2731 \begin{scope}[use as bounding box]
2732 %%%%%%%%%%
2733 \ifbool{mdf@everyline}{%
2734 \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2735 \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P))}}{}%
2736 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0))}}{}%
2737 \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0))}}{}%
2738 \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P))}}{}%
2739 \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P))}%
2740 {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}}{}%

```

```

2741      }{}%
2742      \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}%
2743                {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2744      }{}%
2745      \mdf@test@tr{\mdf@tikzbox@otl{(0|P)--(P)--(P|0)}%
2746                {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2747      }{}%
2748      \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}%
2749                {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2750      }{}%
2751      \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}%
2752                {(0)rectangle(P)}%
2753      }{}%
2754      \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|P)(0|-P)--(P)}%
2755                {(0)rectangle(P)}%
2756      }{}%
2757      \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}%
2758                {(0)rectangle(P)}%
2759      }{}%
2760      \mdf@test@r{\mdf@tikzbox@otl{(0|P)--(P)}%
2761                {(0)rectangle(P)}%
2762      }{}%
2763      \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}%
2764                {(0)rectangle(P)}%
2765      }{}%
2766      \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|P)}%
2767                {(0)rectangle(P)}%
2768      }{}%
2769      \mdf@test@online{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
2770  }{%
2771      \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@lr}}%
2772        {\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)--(P)}%
2773        }%
2774      \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
2775        {%
2776          \mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}%
2777            {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2778        }%
2779        {%
2780      \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
2781        {%
2782          \mdf@tikzbox@otl{(P)--(P|-0)--(0)}%
2783            {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2784        }%
2785        {%
2786      \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
2787        {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}}%
2788        {%
2789      \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}%
2790        {\mdf@tikzbox@otl{(0)--(0|P)}{(0)rectangle(P)}}%
2791        {%
2792      \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}%
2793        {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}}%
2794        {%
2795      \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}%
2796        {\mdf@tikzbox@otl{(0|P)--(P)}{(0)rectangle(P)}}%

```

```

2797      {}%
2798      \mdf@test@t{\path[mdfbackground,mdfcorners](0|-P)--(0)--(0-|P)--(P);}%
2799      \mdf@test@noline{\path[mdfbackground,mdfcorners](0|-P)--(0)--(0-|P)--(P);}%
2800      {}%
2801  }%
2802      \drawbrackgroundframetitle@second
2803      \node[mdfbox] at (\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};%
2804      \end{scope}
2805      \mdf@secondextra
2806      %HIER KOMMT EIN WEITERES MAKRO
2807      \mdfcreateextratikz
2808      \end{tikzpicture}%
2809  }%
2810      \mdf@makeboxalign@right%
2811  }%
2812  \fi
2813 }%

2814 \endinput

```

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

```

2815 %% Style file for mdframed for package option 'framemethod=default'
2816 %%
2817 %% This package may be distributed under the terms of the LaTeX Project
2818 %% Public License, as described in lppl.txt in the base LaTeX distribution.
2819 %% Either version 1.0 or, at your option, any later version.
2820 %%
2821 %%
2822 %%$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $
2823 %

```

```

\mdframedIIPackagename
\mdf@frameIIDate@svn

```

local settings

```

2824 \def\mdframedIIPackagename{md-frame-2}
2825 \def\mdf@frameIIDate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
2826 \ProvidesFile{md-frame-2.mdf}%
2827      [\mdf@frameIIDate@svn$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $ %
2828      \mdversion: \mdframedIIPackagename]

```

```

\mdf@ptlength@to@pscode
\ptTps

```

Command to calculate a latex length to postscript

```

2829 \def\mdf@ptlength@to@pscode#1{\pst@number{#1} \pst@number\psxunit div }
2830 \def\mdf@ptlength@to@pscode@length#1{%
2831   \pst@number{\csname md f@#1@length\endcsname}
2832   \pst@number\psxunit div\space}
2833 \let\ptTps\mdf@ptlength@to@pscode\relax
2834 \let\ptTpsL\mdf@ptlength@to@pscode@length\relax

```

```

\mdfbackgroundstyle
\mdflinestyle
\mdfframetitlerule
\mdfframetitlebackground

```

background and line settings for pstricks

```

2835 \def\mdfpstricks@settings{%expand by \addtopsstyle
2836   \newsstyle{mdfbackgroundstyle}%
2837   {linecolor=\mdf@backgroundcolor,fillstyle=solid,%
2838    fillcolor=\mdf@backgroundcolor,linestyle=none,%
2839    ,dimen=middle,%
2840    }%
2841 %
2842 \newsstyle{mdfframetitlebackgroundstyle}{%
2843   linecolor=\mdf@frametitlebackgroundcolor,
2844   fillcolor=\mdf@frametitlebackgroundcolor,
2845   fillstyle=solid,linestyle=none,
2846   linearc=\ifdimgreater{\mdf@roundcorner@length%
2847             -\mdf@innerlinewidth@length%
2848             -.5\mdf@middlelinewidth@length}%
2849             {\z@}{\dimexpr\mdf@roundcorner@length%
2850             -\mdf@innerlinewidth@length%
2851             -.5\mdf@middlelinewidth@length}{\z@},
2852 }
2853 %
2854 \newsstyle{mdfouterlinestyle}{linestyle=none}%
2855 \ifdimgreater{\mdf@outerlinewidth@length}{\z@}%
2856   {\newsstyle{mdfouterlinestyle}{%
2857    linecolor=\mdf@outerlinecolor,%
2858    linewidth=\dimexpr2\mdf@outerlinewidth@length
2859              +\mdf@middlelinewidth@length\relax,
2860    dimen=middle,
2861    }}}%
2862 %
2863 \newsstyle{mdfinnerlinestyle}{linestyle=none}%
2864 \ifdimgreater{\mdf@innerlinewidth@length}{\z@}%
2865   {\newsstyle{mdfinnerlinestyle}{%
2866    linecolor=\mdf@innerlinecolor,%
2867    linewidth=\dimexpr2\mdf@innerlinewidth@length
2868              +\mdf@middlelinewidth@length\relax,
2869    dimen=middle,
2870    }}}%
2871 %
2872 \newsstyle{mdfmiddlelinestyle}{linestyle=none}%
2873 \newsstyle{mdfshadow}{shadow=true,shadowcolor=\mdf@shadowcolor,
2874                  shadowsize=\mdf@shadowsize@length}%
2875 \ifdimgreater{\mdf@middlelinewidth@length}{\z@}%
2876   {\newsstyle{mdfmiddlelinestyle}{%
2877    linewidth=\mdf@middlelinewidth@length,%
2878    linecolor=\mdf@middlelinecolor,dimen=middle
2879    }}}%
2880 \mdfpstricks@appendsettings
2881 }%
2882 %
2883 \newrobustcmd*\mdf@pstricksbox@fl[2]{%four lines
2884   \psframe[style=mdfouterlinestyle](#1)(#2)%aussen=3mm

```



```

2885 \psframe[style=mdfbackgroundstyle](#1)(#2)%Hintergrund
2886 \psclip{\psframe[style=mdfmiddlelinestyle](#1)(#2)}
2887 \psframe[style=mdfinnerlinestyle](#1)(#2)%innere=3mm
2888 \endpsclip
2889 \psframe[style=mdfmiddlelinestyle](#1)(#2)%mittlere=2mm
2890 }%
2891 \newrobustcmd*\mdf@pstricksbox@tl[1]{%three lines
2892 \psline[style=mdfouterlinestyle]#1%ausen=3mm
2893 \psline[style=mdfbackgroundstyle]#1%Hintergrund
2894 \psclip{\psline[style=mdfmiddlelinestyle]#1}
2895 \psline[style=mdfinnerlinestyle]#1%innere=3mm
2896 \endpsclip
2897 \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2898 }%
2899 \newrobustcmd*\mdf@pstricksbox@tcl[2]{%two combined lines
2900 %%#1 background comple
2901 %%#2 line path
2902 \psline[style=mdfouterlinestyle]#2%ausen=3mm
2903 \psline[style=mdfbackgroundstyle]#2%Hintergrund
2904 \psclip{\pscustom[linestyle=none]{
2905 \psline[style=mdfmiddlelinestyle]#2
2906 \psline[linestyle=none,lineararc=0pt]#1}
2907 }
2908 \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2909 \psline[style=mdfinnerlinestyle]#2%innere=3mm
2910 \endpsclip
2911 \psline[style=mdfmiddlelinestyle]#2%mittlere=2mm
2912 }%
2913 \newrobustcmd*\mdf@pstricksbox@tncl[2]{%two not combined lines
2914 \beginngroup
2915 \psset{lineararc=0pt}
2916 \psline[style=mdfouterlinestyle](mdf@0)#1%ausen=3mm
2917 \psline[style=mdfouterlinestyle](mdf@P)#2%ausen=3mm
2918 \psclip{
2919 \pscustom[linestyle=none]{%
2920 \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2921 \psline[linestyle=none](mdf@0)#2
2922 \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2923 \psline[linestyle=none](mdf@P)#1
2924 }%
2925 }%
2926 \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2927 \psline[style=mdfinnerlinestyle](mdf@0)#1%innere=3mm
2928 \psline[style=mdfinnerlinestyle](mdf@P)#2%innere=3mm
2929 \endpsclip
2930 \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2931 \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2932 \endgroup
2933 }%
2934 \newrobustcmd*\mdf@pstricksbox@ol[1]{%one line
2935 \beginngroup
2936 \psset{lineararc=0pt}
2937 \psline[style=mdfouterlinestyle]#1%ausen=3mm
2938 \psline[style=mdfbackgroundstyle]#1%Hintergrund
2939 \psclip{\pscustom[linestyle=none]{
2940 \psline[style=mdfmiddlelinestyle]#1

```



```

2941      \psframe[linestyle=none,fillstyle=none,dimen=inner](mdf@0)(mdf@P)
2942      }}
2943      \psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)
2944      \psline[style=mdfinnerlinestyle]#1innere=3mm
2945      \endpsclip
2946      \psline[style=mdfmiddlelinestyle]#1mittlere=2mm
2947      \endgroup%
2948      }%
2949
2950      %
2951      \newsstyle{mdfframetitrerule}{%
2952          linecolor=\mdfframetitrerulecolor,%
2953          fillcolor=\mdfframetitrerulecolor,%
2954          fillstyle=solid,dimen=outer,%
2955      }
2956      %

```

\mdf@put@frametitrerule

frametitrerule with pstricks

```

2957 \def\mdf@@frametitrerule{%
2958     \ifbool{mdf@frametitrerule}{%
2959         \vbox{\hsize0pt
2960             \par\unskip\vskip\mdf@frametitlebelowskip@length
2961             \noindent\rlap{%
2962                 \begin{pspicture}(0,0)(0,\mdf@frametitrerulewidth@length)
2963                     \psframe[style=mdfframetitrerule]%
2964                         (!\ptTpsL{innerleftmargin} neg 0)%
2965                         (!\ptTpsL{innerrightmargin}
2966                         \ptTpsL{\mdfframetitleboxwidth} add \ptTpsL{frametitrerulewidth})
2967                     \end{pspicture}
2968                 \endgroup}
2969             }%
2970         }{}
2971     \par\unskip\vskip\mdf@innertopmargin@length%
2972 }%
2973 %
2974 %
2975 % \begin{macro}{mdf@putbox@single}
2976 % Single output
2977 % \begin{macrocode}
2978 % Info zu den verwendeten Punkten:
2979 % 0 ist die untere linke Ecke der Mitte der middleline
2980 % P ist die obere rechte Ecke der Mitte der middleline
2981 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
2982 \def\mdf@putbox@single{%
2983     \ifvoid\mdf@splitbox@one\relax
2984     \else%
2985         \mdf@makebox@out{%
2986             \mdf@makeboxalign@left%
2987             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2988             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2989             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2990             \ifbool{mdf@leftline}{%
2991                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%

```

```

2992 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2993 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2994 \ifbool{mdf@rightline}{%
2995 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2996 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2997 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2998 %
2999 \setlength\mdfboundingboxheight%
3000 {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
3001 \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
3002 \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
3003 \ifbool{mdf@topline}{%
3004 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3005 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3006 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
3007 \ifbool{mdf@bottomline}{%
3008 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3009 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3010 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
3011 %
3012 \setlength\mdftotallinewidth{\dimexpr\mdf@innerlinewidth@length%
3013 +\mdf@middlelinewidth@length
3014 +\mdf@outerlinewidth@length\relax}%
3015 \psset{unit=1truecm}%
3016 \mdf@makebox@in[\mdfboundingboxwidth]{%
3017 \null%
3018 \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
3019 \mdfpstricks@settings%
3020 \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
3021 \expandafter\psset\expandafter{\mdf@psset@local}%
3022 \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
3023 \pnode(0,0){mdf@0}
3024 \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3025 \ifbool{mdf@leftline}%
3026 {%
3027 \nodexn{(\mdf@A)+(\mdf@outerlinewidth@length,0)
3028 +(\mdf@middlelinewidth@length,0)
3029 +(\mdf@innerlinewidth@length,0)}}{mdf@A}%
3030 \nodexn{(\mdf@0)+(\mdf@outerlinewidth@length,0)
3031 +0.5(\mdf@middlelinewidth@length,0)}}{mdf@0}%
3032 }{}}%
3033 \ifbool{mdf@rightline}%
3034 {%
3035 \nodexn{(\mdf@P)-(\mdf@outerlinewidth@length,0)
3036 -0.5(\mdf@middlelinewidth@length,0)}}{mdf@P}%
3037 }{}}%
3038 \ifbool{mdf@bottomline}%
3039 {%
3040 \nodexn{(\mdf@A)+(0,\mdf@outerlinewidth@length)
3041 +(0,\mdf@middlelinewidth@length)
3042 +(0,\mdf@innerlinewidth@length)}}{mdf@A}%
3043 \nodexn{(\mdf@0)+(0,\mdf@outerlinewidth@length)
3044 +0.5(0,\mdf@middlelinewidth@length)}}{mdf@0}%
3045 }{}}%
3046 \ifbool{mdf@topline}%
3047 {%

```

```

3048      \nodexn{(mdf@P) - (0,\mdf@outerlinewidth@length)
3049              -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3050      }{}%
3051      \ifbool{mdf@shadow}
3052      { \psframe[style=mdfshadow](mdf@0)(mdf@P)}{}
3053      % \psclip{%
3054      %Four lines
3055      \mdf@test@ltrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3056      %three lines
3057      \mdf@test@ltb{%
3058          \mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}{}
3059      \mdf@test@trb{%
3060          \mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}{}
3061      \mdf@test@ltr{%
3062          \mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}{}
3063      \mdf@test@lrb{%
3064          \mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}{}
3065      %two lines combined
3066      \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3067                  {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}{}
3068      \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3069                  {(mdf@0)(mdf@P|mdf@0)(mdf@P)}{}
3070      \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3071                  {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}{}
3072      \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3073                  {(mdf@0)(mdf@0|mdf@P)(mdf@P)}{}
3074      %two lines not combined combined
3075      \mdf@test@lr{\mdf@pstricksbox@tnccl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
3076                  {}
3077      \mdf@test@tb{\mdf@pstricksbox@tnccl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
3078                  {}
3079      %single line
3080      \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}{}
3081      \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}{}
3082      \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}{}
3083      \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}{}
3084      %no line
3085      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}
3086      %
3087      %Frametitlebackground
3088      \drawbrackgroundframetitle@single
3089      %output%
3090      \rput[bl](mdf@A){\box\mdf@splitbox@one}
3091      % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3092      % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3093      % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
3094      %
3095      % \endpsclip
3096      \mdf@singleextra
3097      \end{pspicture}%
3098      }%
3099      \mdf@makeboxalign@right%
3100      }%
3101      \fi
3102      }%
3103      \def\drawbrackgroundframetitle@single{%

```

```

3104 \ifdefempty{\mdf@frametitle}{\}%
3105   \drawbackgroundframetitle@@single%
3106 }%
3107 }%
3108 \def\drawbackgroundframetitle@@single{%
3109   \begingroup%
3110   \ifbool{mdf@leftline}{%
3111     \nodexn{(\mdf@0)+(\mdf@innerlinewidth@length,0)
3112             +0.5(\mdf@middlelinewidth@length,0)}{\mdf@0}%
3113     }{}%
3114   \ifbool{mdf@rightline}{%
3115     \nodexn{(\mdf@P)-(\mdf@innerlinewidth@length,0)
3116             -0.5(\mdf@middlelinewidth@length,0)}{\mdf@P}%
3117     }{}%
3118   \ifbool{mdf@topline}{%
3119     \nodexn{(\mdf@P)-(0,\mdf@innerlinewidth@length)
3120             -0.5(0,\mdf@middlelinewidth@length)}{\mdf@P}%
3121     }{}%
3122   \nodexn{(\mdf@P)-(0,\mdfframetitleboxtotalheight)}{\mdf@F}%
3123   \psline[style=mdfframetitlebackgroundstyle](mdf@0|mdf@F)(mdf@0|mdf@P)
3124                                           (mdf@P)(mdf@P|mdf@F)%
3125   \endgroup
3126 }

```

\mdf@putbox@first

First output

```

3127 \def\mdf@putbox@first{%
3128   \ifvoid\mdf@splitbox@two
3129   \else%
3130     \mdf@makebox@out{%
3131       \mdf@makeboxalign@left%
3132       %\ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
3133       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
3134       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3135       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3136       \ifbool{mdf@leftline}{%
3137         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3138         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3139         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
3140       \ifbool{mdf@rightline}{%
3141         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3142         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3143         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
3144       \setlength\mdfboundingboxheight%
3145         {\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
3146       \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
3147       \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
3148       \ifbool{mdf@topline}{%
3149         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3150         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3151         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
3152       %%%%%%%%%
3153       \ifbool{mdf@everyline}{%
3154         \ifbool{mdf@bottomline}{%

```

```

3155 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3156 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3157 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
3158 }{}%
3159 %%%%%%%%%%
3160 \psset{lineararc=\mdf@roundcorner@length, cornersize=absolute}%
3161 \expandafter\psset\expandafter{\mdf@psset@local}%
3162 \mdf@makebox@in[\mdfboundingboxwidth]{%
3163 \null%
3164 \psset{unit=1truecm}%
3165 \ifdimgreater{\mdfboundingboxheight}{\vsize}
3166 {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
3167 {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
3168 \mdfpstricks@settings%
3169 \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
3170 \expandafter\psset\expandafter{\mdf@psset@local}%
3171 \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
3172 \pnode(0,0){mdf@0}
3173 \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3174 \ifbool{mdf@leftline}%
3175 {%
3176 \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3177 +(\mdf@middlelinewidth@length,0)
3178 +(\mdf@innerlinewidth@length,0)}{mdf@A}
3179 \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
3180 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
3181 }{}%
3182 \ifbool{mdf@rightline}%
3183 {%
3184 \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
3185 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
3186 }{}%
3187 \ifbool{mdf@topline}%
3188 {%
3189 \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3190 -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3191 }{}%
3192 %%%%%%%%%%
3193 \ifbool{mdf@everyline}{%
3194 \ifbool{mdf@bottomline}%
3195 {%
3196 \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3197 +(0,\mdf@middlelinewidth@length)
3198 +(0,\mdf@innerlinewidth@length)}{mdf@A}%
3199 \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
3200 +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
3201 }{}%
3202 }{}%
3203 %%%%%%%%%%
3204 \ifbool{mdf@shadow}
3205 {\pscustom[style=mdfshadow,linestyle=none]{%
3206 \psline[linejoin=2,linecap=1,]%
3207 (mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)%
3208 \psline[linejoin=2,linecap=1,lineararc=\z@]%
3209 (mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)
3210 \closedshadow

```

```

3211         }
3212     }{}
3213 %       \psclip{
3214 %%%%%%%%%%
3215     \ifbool{mdf@everyline}{%
3216         %Four lines
3217         \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3218     %three lines
3219     \mdf@test@ltb{%
3220         \mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3221     \mdf@test@trb{%
3222         \mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
3223     \mdf@test@ltr{%
3224         \mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
3225     \mdf@test@lrb{%
3226         \mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
3227 %two lines combined
3228     \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3229                                     {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3230     \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3231                                     {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3232     \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3233                                     {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3234     \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3235                                     {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3236 %two lines not combined combined
3237     \mdf@test@lr{\mdf@pstricksbox@tnc{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
3238                 }{}
3239     \mdf@test@tb{\mdf@pstricksbox@tnc{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
3240                 }{}
3241 %single line
3242     \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3243     \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3244     \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3245     \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3246 %no line
3247     \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3248 }{}
3249 %Four or Three lines
3250     \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@ltr}}%
3251     {\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}%
3252     {}%
3253 %two combined lines
3254     \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}
3255     {\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3256     {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3257     \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
3258     {\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3259     {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3260 %two not combined lines
3261     \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
3262     {\mdf@pstricksbox@tnc{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}
3263 %single line
3264     \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
3265     {\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3266     \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%

```

```

3267         {\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
3268     \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}{%
3269         {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
3270     %no line
3271     \mdf@test@b{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}}{}%
3272     \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}}{}%
3273 }%
3274 %
3275 %Frametitlebackground
3276     \drawbackgroundframetitle@first
3277 %output%
3278     \rput[bl](mdf@A){\box\mdf@splitbox@two}
3279 %     \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3280 %     \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3281 %     \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
3282 %     \endpsclip
3283     \mdf@firstextra
3284     \end{pspicture}
3285 }%
3286     \mdf@makeboxalign@right%
3287 }%
3288 \fi
3289 }%
3290 \def\drawbackgroundframetitle@first{%
3291     \ifdefempty{\mdf@frametitle}}{}{%
3292         \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}%
3293         {%
3294             \drawbackgroundframetitle@@first
3295             \global\mdfframetitleboxtotalheight=-\p@%
3296             }\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
3297                 Currently this isn't well supported}%
3298             \drawbackgroundframetitle@@first
3299             \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
3300                 -\mdfboundingboxheight
3301                 -\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
3302                 +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length
3303                 +\mdf@splittopskip@length
3304                 +\dp\strutbox\relax%
3305         }%
3306     }%
3307 }%
3308 \def\drawbackgroundframetitle@@first{%
3309     \begingroup%
3310     \ifbool{mdf@leftline}{%
3311         \nodexn{(mdf@O)+(\mdf@innerlinewidth@length,0)
3312             +0.5(\mdf@middlelinewidth@length,0)}}{mdf@O}%
3313     }{}%
3314     \ifbool{mdf@rightline}{%
3315         \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3316             -0.5(\mdf@middlelinewidth@length,0)}}{mdf@P}%
3317     }{}%
3318     \ifbool{mdf@topline}{%
3319         \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
3320             -0.5(0,\mdf@middlelinewidth@length)}}{mdf@P}%
3321     }{}%
3322     \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}

```



```

3323     {\nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}}%
3324     {\nodexn{(mdf@0)}{mdf@F}}%
3325     \psline[style=mdfframetitlebackgroundstyle](mdf@0|mdf@F)(mdf@0|mdf@P)
3326             (mdf@P)(mdf@P|mdf@F)%
3327 \endgroup
3328 }

```

\mdf@putbox@middle

Middle output

```

3329 \def\mdf@putbox@middle{%
3330   \ifvoid\mdf@splitbox@two
3331   \else%
3332     \mdf@makebox@out{%
3333       \mdf@makeboxalign@left%
3334       % \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
3335       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
3336       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3337       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3338       \ifbool{mdf@leftline}{%
3339         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3340         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3341         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
3342       \ifbool{mdf@rightline}{%
3343         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3344         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3345         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
3346       \setlength\mdfboundingboxheight%
3347         {\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
3348       \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
3349       %%%
3350       \ifbool{mdf@everyline}{%
3351         \ifbool{mdf@topline}{%
3352           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3353           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3354           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
3355         \ifbool{mdf@bottomline}{%
3356           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3357           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3358           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
3359         }{}%
3360       %%%
3361       \psset{unit=1truecm}%
3362       \mdf@makebox@in[\mdfboundingboxwidth]{%
3363         \null%
3364         \ifdimgreater{\mdfboundingboxheight}{\vsize}
3365           {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
3366           {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
3367             \mdfpstricks@settings%
3368             \psset{lineararc=0pt, cornersize=absolut,}%
3369             \expandafter\psset\expandafter{\mdf@psset@local}%
3370             %%%
3371             \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
3372             \pnode(0,0){mdf@0}
3373             \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}

```



```

3374 \ifbool{mdf@leftline}%
3375 {%
3376 \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3377          +(\mdf@middlelinewidth@length,0)
3378          +(\mdf@innerlinewidth@length,0)}{mdf@A}
3379 \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
3380          +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
3381 }{}%
3382 \ifbool{mdf@rightline}%
3383 {%
3384 \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
3385          -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
3386 }{}%
3387 %%
3388 %%%%%%%%%%
3389 \ifbool{mdf@everyline}{%
3390 \ifbool{mdf@bottomline}%
3391 {%
3392 \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3393          +(0,\mdf@middlelinewidth@length)
3394          +(0,\mdf@innerlinewidth@length)}{mdf@A}%
3395 \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
3396          +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
3397 }{}%
3398 \ifbool{mdf@topline}%
3399 {%
3400 \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3401          -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3402 }{}%
3403 }{}%
3404 %%%%%%%%%%
3405 %%
3406 \ifbool{mdf@shadow}
3407 {\psframe[style=mdfshadow](mdf@0)(mdf@P)}{}
3408 %%%%%%%%%%
3409 \ifbool{mdf@everyline}{%
3410 %Four lines
3411 \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3412 %three lines
3413 \mdf@test@ltb{%
3414 \mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}{}
3415 \mdf@test@trb{%
3416 \mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}{}
3417 \mdf@test@ltr{%
3418 \mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}{}
3419 \mdf@test@lrb{%
3420 \mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}{}
3421 %two lines combined
3422 \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3423             {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}{}
3424 \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3425             {(mdf@0)(mdf@P|mdf@0)(mdf@P)}{}
3426 \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3427             {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}{}
3428 \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3429             {(mdf@0)(mdf@0|mdf@P)(mdf@P)}{}

```

```

3430      %two lines not combinded combinded
3431      \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}
3432      {}
3433      \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}}
3434      {}
3435      %single line
3436      \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3437      \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3438      \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3439      \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3440      %no line
3441      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3442  }{%
3443      \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
3444          {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}%
3445      \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
3446          {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}%
3447      \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
3448          {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}%
3449      \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
3450          {\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3451  }%
3452      %Frametitlebackground
3453      \drawbackgroundframetitle@middle
3454      %output%
3455      \rput[bl](mdf@A){\box\mdf@splitbox@two}
3456 %      \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3457 %      \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3458 %      \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
3459      \mdf@middleextra
3460      \end{pspicture}%
3461  }%
3462      \mdf@makeboxalign@right%
3463  }%
3464  \fi
3465 }%
3466 \def\drawbackgroundframetitle@middle{%
3467 \ifdefempty{\mdf@frametitle}}{}{%
3468 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3469 {}{%
3470 \drawbackgroundframetitle@@middle
3471 \global\mdfframetitleboxtotalheight=-\p@{\relax%
3472 }%
3473 }%
3474 }%
3475 \def\drawbackgroundframetitle@@middle{%
3476 \begingroup%
3477 \ifbool{mdf@leftline}}{%
3478 \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
3479 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
3480 }{}%
3481 \ifbool{mdf@rightline}}{%
3482 \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3483 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3484 }{}%
3485 \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%

```

```

3486 \psline[style=mdfframetitlebackgroundstyle,linear=\z@]%
3487 (mdf@0|mdf@F)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@F)%
3488 \endgroup
3489 }

```

\mdf@putbox@second

Last output

```

3490 \def\mdf@putbox@second{
3491   \ifvoid\mdf@splitbox@one
3492   \else%
3493     \mdf@makebox@out{%
3494       \mdf@makeboxalign@left%
3495 %       \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
3496       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
3497       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3498       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3499       \ifbool{mdf@leftline}{%
3500         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3501         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3502         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
3503       \ifbool{mdf@rightline}{%
3504         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3505         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3506         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
3507       \setlength\mdfboundingboxheight%
3508         {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
3509       \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
3510       \ifbool{mdf@bottomline}{%
3511         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3512         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3513         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{}%
3514 %%%%%%%%%%
3515       \ifbool{mdf@everyline}{%
3516         \ifbool{mdf@topline}{%
3517           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3518           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3519           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{}%
3520       }{}%
3521 %%%%%%%%%%
3522       \psset{unit=1truecm}%
3523       \mdf@makebox@in[\mdfboundingboxwidth]{%
3524         \null%
3525         \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
3526           \mdfpstricks@settings%
3527           \psset{linear=\mdf@roundcorner@length, cornersize=absolut,}%
3528           \expandafter\psset\expandafter{\mdf@psset@local}%
3529           \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
3530           \pnode(0,0){mdf@0}
3531           \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3532           \ifbool{mdf@leftline}{%
3533             {%
3534               \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3535                 +(\mdf@middlelinewidth@length,0)
3536                 +(\mdf@innerlinewidth@length,0)}}{mdf@A}

```

```

3537      \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
3538              +0.5(\mdf@middlelinewidth@length,0)){mdf@0}
3539      }{}%
3540      \ifbool{mdf@rightline}%
3541      {%
3542          \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
3543                  -0.5(\mdf@middlelinewidth@length,0)){mdf@P}
3544          }{}%
3545      \ifbool{mdf@bottomline}%
3546      {%
3547          \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3548                  +(0,\mdf@middlelinewidth@length)
3549                  +(0,\mdf@innerlinewidth@length)){mdf@A}
3550          \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
3551                  +0.5(0,\mdf@middlelinewidth@length)){mdf@0}
3552          }{}%
3553      %%%%%%%%%%
3554      \ifbool{mdf@everyline}{%
3555          \ifbool{mdf@topline}%
3556          {%
3557              \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3558                      -0.5(0,\mdf@middlelinewidth@length)){mdf@P}
3559              }{}%
3560          }{}%
3561      %%%%%%%%%%
3562      %%
3563      \ifbool{mdf@shadow}
3564      {\pscustom[style=mdfshadow,linestyle=none]{%
3565          \psline[linejoin=2,linecap=1,](mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)%
3566          \psline[linejoin=2,linecap=1,lineararc=\z@](mdf@0|mdf@P)(mdf@P)
3567          \closedshadow
3568          }
3569      }{}
3570      %%%%%%%%%%
3571      \ifbool{mdf@everyline}{%
3572          %Four lines
3573          \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3574          %three lines
3575          \mdf@test@ltb{%
3576              \mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}{}
3577              \mdf@test@trb{%
3578                  \mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}{}
3579                  \mdf@test@ltr{%
3580                      \mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}{}
3581                      \mdf@test@lrb{%
3582                          \mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}{}
3583                      }%two lines combined
3584                      \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3585                          {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}{}
3586                      \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3587                          {(mdf@0)(mdf@P|mdf@0)(mdf@P)}{}
3588                      \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3589                          {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}{}
3590                      \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3591                          {(mdf@0)(mdf@0|mdf@P)(mdf@P)}{}
3592                      }%two lines not combined combined

```

```

3593      \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}
3594      }{}
3595      \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}}
3596      }{}
3597      %single line
3598      \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3599      \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3600      \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3601      \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3602      %no line
3603      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3604  }{%
3605      %Four + Three
3606      \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@lrb}}%
3607      {\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
3608  %Two combined
3609      \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
3610      {\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3611      {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3612      \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
3613      {\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3614      {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3615  %Two not combined
3616      \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
3617      {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}%
3618  %one line
3619      \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}%
3620      {\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3621      \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}%
3622      {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3623      \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}%
3624      {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3625  %no line
3626      \mdf@test@t{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3627      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3628  }%
3629  %Frametitlebackground
3630      \drawbrackgroundframetitle@second
3631  %output%
3632      \rput[bl](mdf@A){\box\mdf@splitbox@one}
3633      \mdf@secondextra
3634  %      \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3635  %      \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3636  %      \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
3637      \end{pspicture}%
3638  }%
3639      \mdf@makeboxalign@right%
3640  }%
3641  \fi
3642  }%
3643  \def\drawbrackgroundframetitle@second{%
3644      \ifdefempty{\mdf@frametitle}}{}{%
3645          \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3646          {}{%
3647              \drawbrackgroundframetitle@@second
3648          }%

```

```

3649 }%
3650 }%
3651 \def\drawbackgroundframetitle@@second{%
3652 \begingroup%
3653 \ifbool{mdf@leftline}{%
3654 \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
3655 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
3656 }{}%
3657 \ifbool{mdf@rightline}{%
3658 \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3659 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3660 }{}%
3661 \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3662 \psline[style=mdfframetitlebackgroundstyle,lineararc=\z@]%
3663 (mdf@0|mdf@F)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@F)%
3664 \endgroup
3665 }

3666 \endinput
3667 %eof

```

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

```

3668 %Documentation of the package mdframed
3669 %$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $
3670 \setcounter{errorcontextlines}{999}
3671 \documentclass[parskip=false,english,11pt]{ltxmdf}
3672 \ltxmdfsetifoot $Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $
3673
3674 \usepackage{showexpl}
3675 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3676
3677 \newcommand\Loadedframemethod{default}
3678 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3679
3680 \title{The \Pack{mdframed} package}
3681 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3682 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3683 \date{\mdfdateID$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $}
3684 \version{\mdversion}
3685 \introduction{In this document I collect various examples for
3686 \Opt{framemethod=\Loadedframemethod}.
3687 Some presented examples are more or less exorbitant.}
3688
3689 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3690 \newrobustcmd\ExampleText{%
3691 An \textit{inhomogeneous linear} differential equation has the form
3692 \begin{align}
3693 L[v] = f,
3694 \end{align}
3695 where  $L$  is a linear differential operator,  $v$  is
3696 the dependent variable, and  $f$  is a given non-zero
3697 function of the independent variables alone.
3698 }
3699

```

```

3700 \newcounter{examplecount}
3701 \setcounter{examplecount}{0}
3702 \renewcommand\thesubsection{}
3703 \newcommand\Examplesec[1]{%
3704 \stepcounter{examplecount}%
3705 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3706 }
3707
3708 \begin{document}
3709 \maketitle
3710 \section{Loading}
3711 In the preamble only the package \Pack{mdframed} with the option
3712 \Opt{framemethod=\Loadedframemethod} is loaded. All other modifications will be
3713 done by \Cmd{mdfdefinestyle} or \Cmd{mdfsetup}.
3714
3715 {\large\color{red!50!black}
3716 \NOTE Every \Cmd{global} inside the examples is necessary to work with the
3717 package \Pack{showexpl}.}
3718
3719 \section{Examples}
3720 All examples have the following settings:
3721
3722 \begin{tltxmdfexample}
3723 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3724 \newrobustcmd\ExampleText{%
3725 An \textit{inhomogeneous linear} differential equation
3726 has the form
3727 \begin{align}
3728 L[v] = f,
3729 \end{align}
3730 where  $L$  is a linear differential operator,  $v$  is
3731 the dependent variable, and  $f$  is a given non-zero
3732 function of the independent variables alone.
3733 }
3734 \end{tltxmdfexample}
3735 \clearpage
3736 \Examplesec{very simple}
3737 \begin{LTExample}
3738 \global\mdfdefinestyle{exampledefault}{%
3739     linecolor=red,linewidth=3pt,%
3740     leftmargin=1cm,rightmargin=1cm
3741 }
3742 \begin{mdframed}[style=exampledefault]
3743 \ExampleText
3744 \end{mdframed}
3745 \end{LTExample}
3746
3747 \Examplesec{hidden line + frame title}
3748 \begin{LTExample}
3749 \global\mdfapptodefinestyle{exampledefault}{%
3750     topline=false,rightline=true,bottomline=false}
3751 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3752 \ExampleText
3753 \end{mdframed}
3754 \end{LTExample}
3755 \clearpage

```



```

3756
3757 \Examplesec{colored frame title}
3758 \begin{LTExample}
3759
3760 \global\mdfapptodefinestyle{exampledefault}{%
3761     rightline=true,innerleftmargin=10,innerrightmargin=10,
3762     frametitle=rule=true,frametitlecolor=green,
3763     frametitlebackgroundcolor=yellow,
3764     frametitlewidth=2pt}
3765 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3766 \ExampleText
3767 \end{mdframed}
3768 \end{LTExample}
3769
3770 \Examplesec{framed picture which is centered}
3771 \begin{LTExample}
3772 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3773     linecolor=blue,linewidth=4pt]
3774 \includegraphics[width=\linewidth]{donald-duck}
3775 \end{mdframed}
3776 \end{LTExample}
3777
3778 \clearpage
3779 \Examplesec{Theorem environments}
3780 \begin{LTExample}
3781 \mdfdefinestyle{theoremstyle}{%
3782     linecolor=red,linewidth=2pt,%
3783     frametitle=rule=true,%
3784     frametitlebackgroundcolor=gray!20,
3785     innertopmargin=\topskip,
3786 }
3787 \mdtheorem[style=theoremstyle]{definition}{Definition}
3788 \begin{definition}
3789 \ExampleText
3790 \end{definition}
3791 \begin{definition}[Inhomogeneous linear]
3792 \ExampleText
3793 \end{definition}
3794 \begin{definition*}[Inhomogeneous linear]
3795 \ExampleText
3796 \end{definition*}
3797 \end{LTExample}
3798
3799
3800 \clearpage
3801 \Examplesec{theorem with separate header and the help of TikZ (complex)}
3802 \begin{LTExample}
3803 \newcounter{theo}[section]
3804 \newenvironment{theo}[1][1]{%
3805     \stepcounter{theo}%
3806     \ifstrepty{#1}%
3807     {\mdfsetup{%
3808         frametitle={%
3809             \tikz[baseline=(current bounding box.east),outer sep=0pt]
3810             \node[anchor=east,rectangle,fill=blue!20]
3811             {\strut Theorem~\thetheo};}}

```



```

3812 }%
3813 {\mdfsetup{%
3814   frametitle={%
3815     \tikz[baseline=(current bounding box.east),outer sep=0pt]
3816     \node[anchor=east,rectangle,fill=blue!20]
3817     {\strut Theorem~\thetheo:~\#1};}%
3818 }%
3819 \mdfsetup{innertopmargin=10pt,linecolor=blue!20,%
3820   linewidth=2pt,topline=true,
3821   frametitleaboveskip=\dimexpr-\ht\strutbox\relax,}
3822 \begin{mdframed}[]\relax%
3823   {\end{mdframed}}
3824 \begin{theo}[Inhomogeneous Linear]
3825 \ExampleText
3826 \end{theo}
3827
3828 \begin{theo}
3829 \ExampleText
3830 \end{theo}
3831 \end{LTXexample}
3832
3833 \clearpage
3834 \Examplesec{hide only a part of a line}
3835 The example below is inspired by the following post on StackExchange
3836 \href{http://tex.stackexchange.com/questions/24101/theorem-decorations-that-stay-with-theorem-environme
3837 {Theorem decorations that stay with theorem environment}
3838 \begin{LTXexample}
3839 \makeatletter
3840 \newlength{\interruptlength}
3841 \setlength{\interruptlength}{2.5ex}
3842 \newrobustcmd\overlaplines{%
3843   \appto\mdf@frame@leftline@single{%
3844     \llap{\color{white}%
3845       \rule[\dimexpr-\mdfboundingboxdepth+\interruptlength\relax]{%
3846         {\mdf@middlelinewidth@length}%
3847         {\dimexpr\mdfboundingboxtotalheight%
3848           \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}}
3849         -2\interruptlength\relax}%
3850     }%
3851   }%
3852   \appto\mdf@frame@rightline@single{%
3853     \rlap{\color{white}%
3854       \hspace*{\mdfboundingboxwidth}%
3855       \hspace*{\mdf@innerrightmargin@length}%
3856       \rule[\dimexpr-\mdfboundingboxdepth%
3857         +\interruptlength\relax]{%
3858         {\mdf@middlelinewidth@length}%
3859         {\dimexpr\mdfboundingboxtotalheight%
3860           +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}}
3861         -2\interruptlength\relax}%
3862     }%
3863   }%
3864 }
3865 \makeatother
3866 \overlaplines
3867

```

```

3868 \begin{mdframed}[linecolor=blue,linewidth=8pt]
3869 \ExampleText
3870 \end{mdframed}
3871 \end{LTXexample}
3872 \end{document}
3873 \endinput

```

## D. The file mdframed-example-tikz

```

3874 %Documenation of the package mdframed
3875 %$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $
3876 \setcounter{errorcontextlines}{999}
3877 \documentclass[parskip=false,english,11pt]{ltxmdf}
3878 \ltxmdfsetifoot $Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $
3879
3880
3881 \usepackage{showexpl}
3882 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3883
3884 \newcommand\Loadedframemethod{TikZ}
3885 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3886
3887 \title{The \Pack{mdframed} package}
3888 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3889 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3890 \date{\mdfdateID$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $}
3891 \version{\mdversion}
3892 \introduction{In this document I collect various examples for
3893               \Opt{framemethod=\Loadedframemethod}.
3894               Some presented examples are more or less exorbitant.}
3895
3896 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3897 \newrobustcmd\ExampleText{%
3898     An \textit{inhomogeneous linear} differential equation has the form
3899     \begin{align}
3900         L[v] &= f,
3901     \end{align}
3902     where  $L$  is a linear differential operator,  $v$  is
3903     the dependent variable, and  $f$  is a given non-zero
3904     function of the independent variables alone.
3905 }
3906
3907 \newcounter{examplecount}
3908 \setcounter{examplecount}{0}
3909 \renewcommand\thesubsection{}
3910 \newcommand\Examplesec[1]{%
3911 \stepcounter{examplecount}%
3912 \subsection{Example~\arabic{examplecount}~---~\relax}%
3913 }
3914
3915 \begin{document}
3916 \maketitle
3917 \section{Loading}
3918 In the preamble only the package \Pack{mdframed} with the option
3919 \Opt{framemethod=\Loadedframemethod} is loaded. All other modifications will be
3920 done by \Cmd{mdfdefinestyle} or \Cmd{mdfsetup}.

```

```

3921
3922 {\large\color{red!50!black}
3923 \NOTE Every \Cmd{global} inside the examples is necessary to work with the
3924 package \Pack{showexpl}.}
3925
3926 \section{Examples}
3927 All examples have the following settings:
3928
3929 \begin{tltxmdfexample}
3930 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3931 \newrobustcmd\ExampleText{%
3932 An \textit{inhomogeneous linear} differential equation
3933 has the form
3934 \begin{align}
3935 L[v] = f,
3936 \end{align}
3937 where  $L$  is a linear differential operator,  $v$  is
3938 the dependent variable, and  $f$  is a given non-zero
3939 function of the independent variables alone.
3940 }
3941 \end{tltxmdfexample}
3942 \clearpage
3943 \ExampleText{round corner}
3944 \begin{LTXexample}
3945 \global\mdfdefinestyle{exampledefault}{%
3946     outerlinewidth=5pt,innerlinewidth=0pt,
3947     outerlinecolor=red,roundcorner=5pt
3948 }
3949 \begin{mdframed}[style=exampledefault]
3950 \ExampleText
3951 \end{mdframed}
3952 \end{LTXexample}
3953
3954 \Examplesec{hidden line + frame title}
3955 \begin{LTXexample}
3956 \global\mdfapptodefinestyle{exampledefault}{%
3957     topline=false,leftline=false,}
3958 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3959 \ExampleText
3960 \end{mdframed}
3961 \end{LTXexample}
3962 \clearpage
3963 \Examplesec{framed picture which is centered}
3964 \begin{LTXexample}
3965 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3966     linecolor=blue,middlelinewidth=4pt,roundcorner=5pt]
3967 \includegraphics[width=\linewidth]{donald-duck}
3968 \end{mdframed}
3969 \end{LTXexample}
3970
3971 \Examplesec{Gimmick}
3972 \begin{LTXexample}
3973 \mdfsetup{splitbottomskip=0.8cm,splittopskip=0cm,
3974     innerrightmargin=2cm,innertopmargin=1cm,%
3975     innerlinewidth=2pt,outerlinewidth=2pt,
3976     middlelinewidth=10pt,backgroundcolor=red,

```

```

3977         linecolor=blue,middlelinecolor=gray,
3978         tikzsetting={draw=yellow,line width=3pt,%
3979                     dashed,%
3980                     dash pattern= on 10pt off 3pt},
3981         rightline=false,bottomline=false}
3982 \begin{mdframed}
3983 \ExampleText
3984 \end{mdframed}
3985 \end{LTXexample}
3986
3987 \Examplesec{complex example with TikZ}
3988
3989 \begin{tltxmdfexample}
3990 \tikzstyle{titregris} =
3991     [draw=gray, thick, fill=white, shading = exersicetitle, %
3992     text=gray, rectangle, rounded corners, right,minimum height=.7cm]
3993
3994 \pgfdeclarehorizontalshading{exersicebackground}{100bp}
3995     {color(0bp)=(green!40); color(100bp)=(black!5)}
3996
3997 \pgfdeclarehorizontalshading{exersicetitle}{100bp}
3998     {color(0bp)=(red!40);color(100bp)=(black!5)}
3999
4000 \newcounter{exercise}
4001 \renewcommand*{\theexercise}{Exercise~n\arabic{exercise}}
4002 \makeatletter
4003 \def\mdf@@exercisepoints{}%new mdframed key:
4004 \define@key{mdf}{exercisepoints}{%
4005     \def\mdf@@exercisepoints{#1}
4006 }
4007 \makeatother
4008
4009 \mdfdefinestyle{exercisestyle}{%
4010     outerlinewidth=1pt,innerlinewidth=0pt,
4011     roundcorner=2pt,linecolor=gray,
4012     tikzsetting={shading = exersicebackground},
4013     innertopmargin=1.2\baselineskip,
4014     skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
4015     needspace=3\baselineskip,
4016     frametitlefont=\sffamily\bfseries,
4017     settings={\global\stepcounter{exercise}},
4018     singleextra={%
4019         \node[titregris,xshift=1cm] at (P-|0) %
4020             {\~\mdf@frametitlefont{\theexercise}~};
4021         \ifdefempty{\mdf@@exercisepoints}%
4022             {}%
4023         {\node[titregris,left,xshift=-1cm] at (P)%
4024             {\~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
4025     },
4026     firstextra={%
4027         \node[titregris,xshift=1cm] at (P-|0) %
4028             {\~\mdf@frametitlefont{\theexercise}~};
4029         \ifdefempty{\mdf@@exercisepoints}%
4030             {}%
4031         {\node[titregris,left,xshift=-1cm] at (P)%
4032             {\~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%

```

```

4033   },
4034 }
4035 \begin{mdframed}[style=exercisestyle,]
4036 \ExampleText
4037 \end{mdframed}
4038
4039 \begin{mdframed}[style=exercisestyle,exercisepoints=10]
4040 \ExampleText
4041 \end{mdframed}
4042 \end{tltxmdfexample}
4043 \clearpage
4044 \Examplesec{Theorem environments}
4045 \begin{LTXexample}
4046 \mdfdefinestyle{theoremstyle}{%
4047     linecolor=red,linewidth=2pt,%
4048     frametitlerule=true,%
4049     apptotikzsetting={\tikzset{mdfframetitlebackground/.append style={%
4050         shade,left color=white, right color=blue!20}}},
4051     frametitlerulecolor=green!60,
4052     frametitlerulewidth=1pt,
4053     innertopmargin=\topskip,
4054 }
4055 \mdtheorem[style=theoremstyle]{definition}{Definition}
4056 \begin{definition}[Inhomogeneous linear]
4057 \ExampleText
4058 \end{definition}
4059 \begin{definition*}[Inhomogeneous linear]
4060 \ExampleText
4061 \end{definition*}
4062 \end{LTXexample}
4063
4064 \end{document}
4065 \endinput

```

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

```

4066 %Documentation of the package mdframed
4067 %$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $
4068 \setcounter{errorcontextlines}{999}
4069 \documentclass[parskip=false,english,11pt]{ltxmdf}
4070 \ltxmdfsetifoot$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $
4071
4072 \lstDeleteShortInline{[]}
4073 \newcommand\Loadedframemethod{PSTricks}
4074 \usepackage[framemethod=\Loadedframemethod]{mdframed}
4075
4076 \usepackage{showexpl}
4077 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
4078
4079 \title{The \Pack{mdframed} package}
4080 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
4081 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
4082 \date{\mdfdateID$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $}
4083 \version{\mdversion}
4084 \introduction{In this document I collect various examples for
4085     \Opt{framemethod=\Loadedframemethod}.

```

```

4086             Some presented examples are more or less exorbitant.}
4087
4088 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
4089 \newrobustcmd\ExampleText{%
4090     An \textit{inhomogeneous linear} differential equation has the form
4091     \begin{align}
4092         L[v] = f,
4093     \end{align}
4094     where  $L$  is a linear differential operator,  $v$  is
4095     the dependent variable, and  $f$  is a given non-zero
4096     function of the independent variables alone.
4097 }
4098
4099 \newcounter{examplecount}
4100 \setcounter{examplecount}{0}
4101 \renewcommand\thesubsection{}
4102 \newcommand\Examplesec[1]{%
4103 \stepcounter{examplecount}%
4104 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
4105 }
4106
4107 \begin{document}
4108 \maketitle
4109 \section{Loading}
4110 In the preamble only the package \Pack{mdframed} with the option
4111 \Opt{framemethod=\Loadedframemethod} is loaded. All other modifications will be
4112 done by \Cmd{mdfdefinestyle} or \Cmd{mdfsetup}.
4113
4114 {\large\color{red!50!black}
4115 \NOTE Every \Cmd{global} inside the examples is necessary to work with the
4116 package \Pack{showexpl}.}
4117 X
4118 \section{Examples}
4119 All examples have the following settings:
4120
4121 \begin{tltxmdfexample}
4122 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
4123 \newrobustcmd\ExampleText{%
4124 An \textit{inhomogeneous linear} differential equation
4125 has the form
4126 \begin{align}
4127 L[v] = f,
4128 \end{align}
4129 where  $L$  is a linear differential operator,  $v$  is
4130 the dependent variable, and  $f$  is a given non-zero
4131 function of the independent variables alone.
4132 }
4133 \end{tltxmdfexample}
4134 \clearpage
4135
4136 \Examplesec{very simple}
4137 \begin{LTExample}
4138 \global\mdfdefinestyle{exampledefault}{%
4139     linecolor=red,middlelinewidth=3pt,%
4140     leftmargin=1cm,rightmargin=1cm
4141 }

```

```

4142 \begin{mdframed}[style=exampledefault,roundcorner=5]
4143 \ExampleText
4144 \end{mdframed}
4145 \end{LTXexample}
4146
4147 \Examplesec{hidden line + frame title}
4148 \begin{LTXexample}
4149 \global\mdfapptodefinestyle{exampledefault}{%
4150   topline=false,rightline=false,bottomline=false,
4151   frametitlerule=true,innertopmargin=6pt,
4152   outerlinewidth=6pt,outerlinecolor=blue,
4153   pstricksappsetting={\addtopsstyle{mdfouterlinestyle}{linestyle=dashed}},
4154   innerlinecolor=yellow,innerlinewidth=5pt}%
4155 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
4156 \ExampleText
4157 \end{mdframed}
4158 \end{LTXexample}
4159
4160 \clearpage
4161
4162 \Examplesec{Dash Lines}
4163 \begin{LTXexample}
4164 \global\mdfdefinestyle{exampledefault}{%
4165   pstrickssetting={linestyle=dashed,},linecolor=red,linewidth=5pt}
4166 \begin{mdframed}[style=exampledefault,]
4167 \ExampleText
4168 \end{mdframed}
4169 \end{LTXexample}
4170
4171 \Examplesec{Double Lines}
4172 \begin{LTXexample}
4173 \global\mdfdefinestyle{exampledefault}{%
4174   pstrickssetting={doubleline=true,doublesep=6pt},
4175   linecolor=red,linewidth=5pt,middlelinewidth=4pt}
4176 \begin{mdframed}[style=exampledefault,]
4177 \ExampleText
4178 \end{mdframed}
4179 \end{LTXexample}
4180
4181 \Examplesec{Shadow frame}
4182 \begin{LTXexample}
4183 \newmdenv[shadow=true,
4184           shadowsize=11pt,
4185           linewidth=8pt,
4186           frametitlerule=true,
4187           roundcorner=10pt,
4188           ]{myshadowbox}
4189 \begin{myshadowbox}[frametitle={Inhomogeneous linear}]
4190 \ExampleText
4191 \end{myshadowbox}
4192 \end{LTXexample}
4193 \end{document}
4194 \endinput

```

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

```

4195 %Documentation of the package mdframed
4196 %%$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $
4197 \setcounter{errorcontextlines}{999}
4198 \documentclass[parskip=false,english,11pt,ltxlipsum]{ltxmdf}
4199 \ltxmdfsetifoot $Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $
4200
4201
4202 \usepackage{showexpl}
4203 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
4204 \usepackage{tikz}
4205 \usetikzlibrary{calc,arrows,shadings,shadows}
4206 \newcommand\Loadedframemethod{tikz}
4207 \usepackage[framemethod=\Loadedframemethod]{mdframed}
4208
4209 \title{The \Pack{mdframed} package}
4210 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
4211 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
4212 \date{\mdfdateID$Id: mdframed.dtx 404 2012-05-18 09:29:01Z marco $}
4213 \version{\mdversion}
4214 \introduction{In this document I collect various examples for
4215               \Opt{framemethod=\Loadedframemethod}.
4216               Some presented examples are more or less exorbitant.}
4217
4218 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
4219 \newrobustcmd\ExampleText{%
4220     An \textit{inhomogeneous linear} differential equation has the form
4221     \begin{align}
4222         L[v] &= f,
4223     \end{align}
4224     where  $L$  is a linear differential operator,  $v$  is
4225     the dependent variable, and  $f$  is a given non-zero
4226     function of the independent variables alone.
4227 }
4228
4229 \newcounter{examplecount}
4230 \setcounter{examplecount}{0}
4231 \renewcommand\thesubsection{}
4232 \newcommand\Examplesec[1]{%
4233 \stepcounter{examplecount}%
4234 \subsection{Example~\arabic{examplecount}~---~\relax}%
4235 }
4236
4237 \begin{document}
4238 \maketitle
4239 \section{Loading}
4240 In the preamble only the package \Pack{mdframed} with the option
4241 \Opt{framemethod=\Loadedframemethod} is loaded. All other modifications will be
4242 done by \Cmd{mdfdefinestyle} or \Cmd{mdfsetup}.
4243
4244 {\large\color{red!50!black}
4245 \NOTE Every \Cmd{global} inside the examples is necessary to work with the
4246 package \Pack{showexpl}.}
4247
4248 \section{Examples}
4249 All examples have the following settings:
4250

```



```

4251 \begin{tltxmdfexample}
4252 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
4253 \newrobustcmd\ExampleText{%
4254 An \textit{inhomogeneous linear} differential equation
4255 has the form
4256 \begin{align}
4257 L[v] = f,
4258 \end{align}
4259 where  $L$  is a linear differential operator,  $v$  is
4260 the dependent variable, and  $f$  is a given non-zero
4261 function of the independent variables alone.
4262 }
4263 \end{tltxmdfexample}
4264 \clearpage
4265 \Examplesec{Package listings}
4266 The example below is inspired by the following post on StackExchange
4267 \href{http://tex.stackexchange.com/questions/27673/background-overflows-when-using-rounded-corners-for-}
4268 {Background overflows when using rounded corners for listings (package: 'listings')}
4269
4270 Here the solution which can be decorate as usual.
4271
4272 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},
4273                        morekeywords={lstlisting}]
4274 \BeforeBeginEnvironment{lstlisting}{%
4275     \begin{mdframed}[<modification>%
4276     \vspace{-0.7em}}
4277 \AfterEndEnvironment{lstlisting}{%
4278     \vspace{-0.5em}%
4279     \end{mdframed}}
4280 \end{tltxmdfexample}
4281
4282 With the new command \Cmd{surroundwithmdframed} you can use
4283 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},
4284                        morekeywords={lstlisting}]
4285 \surroundwithmdframed{listings}
4286 \end{tltxmdfexample}
4287
4288 \Examplesec{Package multicol}
4289 How I wrote in \enquote{Known Problems} you can't combine \Pack{multicol} with
4290 \Pack{mdframed}. In a simple way without any breaks you can use:
4291 \begin{LTXexample}
4292 \begin{multicols}{2}
4293 \lipsum[1]
4294 \begin{mdframed}
4295 \ExampleText
4296 \end{mdframed}
4297 \lipsum[2]
4298 \end{multicols}
4299 \end{LTXexample}
4300 \clearpage
4301 \twocolumn[\Examplesec{Working in twocolumn mode}]
4302 \begin{tltxmdfexample}
4303 \twocolumn[%
4304     \Examplesec{Working in
4305         twocolumn mode}]
4306 \lipsum[1]\lipsum[2]

```

```

4307 \begin{mdframed}[%
4308     leftmargin=10pt,%
4309     rightmargin=10pt,%
4310     linecolor=red,
4311     backgroundcolor=yellow]
4312 \ExampleText
4313 \end{mdframed}
4314 \lipsum[2]
4315 \end{tltxmdfexample}
4316 \lipsum[1]\lipsum[2]
4317 \begin{mdframed}[leftmargin=10pt,%
4318     rightmargin=10pt,%
4319     linecolor=red,
4320     backgroundcolor=yellow]
4321 \ExampleText
4322 \end{mdframed}
4323 \lipsum[2]
4324 \clearpage
4325 \onecolumn
4326 \Examplesec{Working inside enumerate}
4327 \begin{LTXexample}
4328 Text Text Text Text Text Text Text Text
4329 \begin{enumerate}
4330 \item in the following \ldots
4331     \begin{mdframed}[linecolor=blue,linewidth=2]
4332         \ExampleText
4333     \end{mdframed}
4334 \item \lipsum[2]
4335 \end{enumerate}
4336 Text Text Text Text Text Text
4337 \end{LTXexample}
4338 \clearpage
4339 \Examplesec{Position a specific symbol at a line}
4340 \begin{LTXexample}
4341 \tikzset{
4342     warningsymbol/.style={
4343         rectangle,draw=red,
4344         fill=white,scale=1,
4345         overlay}}
4346 \mdfdefinestyle{warning}{%
4347     hidealllines=true,leftline=true,
4348     skipabove=12,skipbelow=12pt,
4349     innertopmargin=0.4em,%
4350     innerbottommargin=0.4em,%
4351     innerrightmargin=0.7em,%
4352     rightmargin=0.7em,%
4353     innerleftmargin=1.7em,%
4354     leftmargin=0.7em,%
4355     middlelinewidth=.2em,%
4356     linecolor=red,%
4357     fontcolor=red,%
4358     firstextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4359         node[warningsymbol] {\$}};,%
4360     secondextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4361         node[warningsymbol] {\$}};,%
4362     middleextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)

```

```

4363             node[warningsymbol] {\$};},%
4364 singleextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4365             node[warningsymbol] {\$};},%
4366 }
4367 \begin{mdframed}[style=warning]
4368 \ExampleText
4369 \end{mdframed}
4370 \end{LTXexample}
4371
4372 \clearpage
4373 \Examplesec{digression-environement inspired by Tobias Weh}
4374 \begin{lstlisting}
4375 \usetikzlibrary{calc,arrows}
4376 \tikzset{
4377     excursus arrow/.style={%
4378         line width=2pt,
4379         draw=gray!40,
4380         rounded corners=2ex,
4381     },
4382     excursus head/.style={
4383         fill=white,
4384         font=\bfseries\sffamily,
4385         text=gray!80,
4386         anchor=base west,
4387     },
4388 }
4389 \mdfdefinestyle{digressionarrows}{%
4390 singleextra={%
4391     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4392     \path let \p1=(Q), \p2=(0) in (\x1,{(\y1-\y2)/2}) coordinate (M);
4393     \path [excursus arrow, round cap-to]
4394         ($ (0)+(5em,0ex)$) -| (M) |- %
4395         ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4396         ++(23em,2ex);
4397     \node [excursus head] at ($ (Q)+(2.5em,-0.75pt)$) {Digression};},
4398 firstextra={%
4399     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4400     \path [excursus arrow,-to]
4401         (0) |- %
4402         ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4403         ++(23em,2ex);
4404     \node [excursus head] at ($ (Q)+(2.5em,-2pt)$) {Digression};},
4405 secondextra={%
4406     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4407     \path [excursus arrow,round cap-]
4408         ($ (0)+(5em,0ex)$) -| (Q);},
4409 middleextra={%
4410     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4411     \path [excursus arrow]
4412         (0) -- (Q);},
4413 middlelinewidth=2.5em,middlelinecolor=white,
4414 hidealllines=true,topline=true,
4415 innertopmargin=0.5ex,
4416 innerbottommargin=2.5ex,
4417 innerrightmargin=2pt,
4418 innerleftmargin=2ex,

```

```

4419     skipabove=0.87\baselineskip,
4420     skipbelow=0.62\baselineskip,
4421 }
4422
4423 \begin{mdframed}[style=digressionarrows]
4424     \ExampleText
4425 \end{mdframed}
4426 \end{lstlisting}
4427
4428 \tikzset{
4429     excursus arrow/.style={%
4430         line width=2pt,
4431         draw=gray!40,
4432         rounded corners=2ex,
4433     },
4434     excursus head/.style={
4435         fill=white,
4436         font=\bfseries\sffamily,
4437         text=gray!80,
4438         anchor=base west,
4439     },
4440 }
4441 \mdfdefinestyle{digressionarrows}{%
4442     singleextra={%
4443         \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4444         \path let \p1=(Q), \p2=(O) in (\x1,{(\y1-\y2)/2}) coordinate (M);
4445         \path [excursus arrow, round cap-to]
4446             ($ (O)+(5em,0ex)$) -| (M) |- %
4447             ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4448             ++(23em,2ex);
4449         \node [excursus head] at ($ (Q)+(2.5em,-0.75pt)$) {Digression}};
4450     firstextra={%
4451         \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4452         \path [excursus arrow,-to]
4453             (O) |- %
4454             ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4455             ++(23em,2ex);
4456         \node [excursus head] at ($ (Q)+(2.5em,-2pt)$) {Digression}};
4457     secondextra={%
4458         \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4459         \path [excursus arrow,round cap-]
4460             ($ (O)+(5em,0ex)$) -| (Q);},
4461     middleextra={%
4462         \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4463         \path [excursus arrow]
4464             (O) -- (Q);},
4465     middlelinewidth=2.5em,middlelinecolor=white,
4466     hidealllines=true,topline=true,
4467     innertopmargin=0.5ex,
4468     innerbottommargin=2.5ex,
4469     innerrightmargin=2pt,
4470     innerleftmargin=2ex,
4471     skipabove=0.87\baselineskip,
4472     skipbelow=0.62\baselineskip,
4473 }
4474

```

```

4475 \begin{mdframed}[style=digressionarrows]
4476     \ExampleText
4477 \end{mdframed}
4478
4479 \Examplesec{Theorem style shading background}
4480 \begin{LTXexample}
4481 %\usetikzlibrary{shadings,shadows}% loaded in the header
4482 \mdtheorem[%
4483   apptotikzsetting={\tikzset{mdfbackground/.append style =%
4484                               {top color=yellow!40!white,
4485                               bottom color=yellow!80!black},
4486   mdfframetitlebackground/.append style =%
4487                               {top color=purple!40!white,
4488                               bottom color=purple!80!black}
4489                               },
4490   },
4491   ,roundcorner=10pt,middlelinewidth=2pt,
4492   shadow=true,frametitlerule=true,frametitlerulewidth=4pt,
4493   innertopmargin=10pt,%
4494   ]{alternativtheorem}{Theorem}
4495 \begin{alternativtheorem}[Inhomogeneous linear]
4496 \ExampleText
4497 \end{alternativtheorem}
4498 \end{LTXexample}
4499 \end{document}
4500 \endinput

```

## G. Change History

v1.0a		command have the same prefix <code>\mdf@</code> . . . 1
General: Created dtx and fixes bugs . . . . .	1	
v1.1beta		v1.6
General: added lost semicolons . . . . .	62	General: Changes the complete definition of
Renamed some commands so that every		<code>\mdf@lrbox</code> to fix problem with <code>itemize</code> 28

## H. Index

The index only collect package relevant words.

Symbols	
<code>\\$</code> .....	4359, 4361, 4363, 4365
<code>\'</code> .....	360
<code>\-</code> .....	359
<code>\=</code> .....	360
<code>\@par</code> .....	358
<code>\@acci</code> .....	360
<code>\@accii</code> .....	360
<code>\@acciii</code> .....	360
<code>\@definecounter</code> .....	479, 500
<code>\@dischyph</code> .....	359
<code>\@doendpe</code> .....	708
<code>\@flushglue</code> .....	365
<code>\@itemlabel</code> .....	403
<code>\@namedef</code> .....	533
<code>\@nameuse</code> .....	533
<code>\@ne</code> .....	930, 1042
<code>\@newctr</code> .....	500
<code>\@nmbolistfalse</code> .....	398
<code>\@normalcr</code> .....	368
<code>\@rightskip</code> .....	364
<code>\@tempcnta</code> .....	926, 930, 931, 1038, 1042, 1043
<code>\@temptitle</code> .....	484, 486, 492, 495, 496, 508, 510, 516, 520, 522, 528, 537, 539, 545, 548, 549
<code>\@thmcounter</code> .....	480, 501, 504
<code>\@thmcountersep</code> .....	503
<code>\@totalleftmargin</code> .....	363
<code>\@trivlist</code> .....	399
<code>\@</code> .....	368
<code>\'</code> .....	360
<code>\_</code> .....	492, 495, 516, 545, 548
A	
<code>\addtolength</code> .....	756
<code>\addtopsstyle</code> .....	2835, 4153
<code>align (option)</code> .....	9
<code>apptotikzsetting (option)</code> .....	10
<code>\arabic</code> .....	3705, 3912, 4001, 4104, 4234
<code>\AtBeginDocument</code> .....	467
<code>\author</code> .....	3682, 3889, 4081, 4211
B	
<code>backgroundcolor (option)</code> .....	7
<code>bottomline (option)</code> .....	10
C	
<code>\clearpage</code> .....	3735, 3755, 3778, 3800, 3833, 3942, 3962, 4043, 4134, 4160, 4264, 4300, 4324, 4338, 4372
<code>\closedshadow</code> .....	3210, 3567
<code>\Cmd</code> .....	3713, 3716, 3920, 3923, 4112, 4115, 4242, 4245, 4282
<code>\csappto</code> .....	434
<code>\CurrentOption</code> .....	275
D	
<code>\date</code> .....	3683, 3890, 4082, 4212
<code>\DeclareDocumentCommand</code> .....	455, 471
<code>defaultunit (option)</code> .....	5
<code>\deferred@thm@head</code> .....	384, 385
<code>\detected@mdf@put@frame</code> ...	648, 649, 697, 702
<code>\DisableKeyvalOption</code> .....	1187, 1188
<code>\documentclass</code> .....	3671, 3877, 4069, 4198
<code>\draw</code> .....	2067
<code>\drawbrackgroundframetitle@@first</code> .....	2240, 2244, 2259, 3294, 3298, 3308
<code>\drawbrackgroundframetitle@@middle</code> .....	2449, 2455, 2473, 3470, 3475
<code>\drawbrackgroundframetitle@@second</code> .....	2631, 2636, 3647, 3651
<code>\drawbrackgroundframetitle@@single</code> .....	2211, 2214, 3105, 3108
<code>\drawbrackgroundframetitle@first</code> .....	2235, 2433, 3276, 3290
<code>\drawbrackgroundframetitle@middle</code> .....	2445, 2615, 3453, 3466
<code>\drawbrackgroundframetitle@second</code> .....	2627, 2802, 3630, 3643
<code>\drawbrackgroundframetitle@single</code> .....	2196, 2209, 3088, 3103
E	
<code>\endgroup</code> .....	31, 272, 851, 977, 1081, 1111, 2069, 2932, 2947, 2969, 3125, 3327, 3488, 3664
<code>\endmdf@lrbox</code> .....	345, 374, 561, 695, 700
<code>\endmdf@trivlist</code> ..	394, 409, 410, 411, 414, 707
<code>\endpsclip</code> .....	2888, 2896, 2910, 2929, 2945, 3095, 3282
<code>\enquote</code> .....	4289
<code>everyline (option)</code> .....	8
<code>\Examplesec</code> .....	3703, 3736, 3747, 3757, 3770, 3779, 3801, 3834, 3910, 3954, 3963, 3971, 3987, 4044, 4102, 4136, 4147, 4162, 4171, 4181, 4232, 4265, 4288, 4301, 4304, 4326, 4339, 4373, 4479
<code>\ExampleText</code> .....	3690, 3724, 3743, 3752, 3766, 3789, 3792, 3795, 3825, 3829, 3869, 3897, 3931, 3943, 3950, 3959, 3983, 4036, 4040, 4057, 4060, 4089, 4123, 4143, 4156, 4167, 4177, 4190, 4219, 4253, 4295, 4312, 4321, 4332, 4368, 4424, 4476, 4496
F	
<code>\f@size</code> .....	965

firstextra (option) ..... 10  
font (option) ..... 8  
fontcolor (option) ..... 8  
footnotedistance (option) ..... 13  
footnoteinside (option) ..... 13  
framemethod (option) ..... 5  
frametitle (option) ..... 11  
frametitleaboveskip (option) ..... 11  
frametitlealignment (option) ..... 11  
frametitlebackgroundcolor (option) ..... 11  
frametitlebelowskip (option) ..... 11  
frametitlefont (option) ..... 11  
frametitlerule (option) ..... 11  
frametitlerulewidth (option) ..... 11

**G**

\global .. 533, 1455, 1467, 1836, 2241, 2245,  
2450, 3295, 3299, 3471, 3738, 3749, 3760,  
3945, 3956, 4017, 4138, 4149, 4164, 4173

**H**

hidealllines (option) ..... 11  
\href ..... 3682, 3836, 3889, 4081, 4211, 4267

**I**

\if@mdf@pageodd ..... 711, 735, 746  
\if@nobreak ..... 356  
\if@noskipsec ..... 357  
\ifcsdef ..... 472  
\ifdefempty ..... 687, 696, 701,  
1397, 1593, 1771, 1945, 2210, 2236, 2446,  
2628, 3104, 3291, 3467, 3644, 4021, 4029  
\iffalse ..... 356, 357  
\ifmdf@footnoteinside ..... 692  
\ifmdf@nobreak ..... 650  
\IfNoValueTF ..... 456, 475, 477  
\ifstrempty .. 483, 495, 507, 519, 536, 548, 3806  
\IfValueTF ..... 458, 459  
\ifvmode ..... 685, 691  
\immediate ..... 411, 412, 414, 415  
\includegraphics ..... 3774, 3967  
\indent ..... 385  
innerbottommargin (option) ..... 7  
innerleftmargin (option) ..... 6  
innerlinecolor (option) ..... 8  
innerlinewidth (option) ..... 7  
innermargin (option) ..... 7  
innerrightmargin (option) ..... 6  
innertopmargin (option) ..... 6  
\interruptlength .....  
..... 3840, 3841, 3845, 3849, 3857, 3861  
\introduction ..... 3685, 3892, 4084, 4214  
\itemindent ..... 402  
\iterate ..... 932, 1044

**K**

\kvsetkeys ..... 212, 277

**L**

\labelwidth ..... 400  
\ldots ..... 4330  
\leavevmode ..... 405, 558  
leftline (option) ..... 11  
\leftmargin ..... 401  
leftmargin (option) ..... 6  
\leftskip ..... 364  
linecolor (option) ..... 7  
\lineskip ..... 365  
linewidth (option) ..... 7  
\lipsum 4293, 4297, 4306, 4314, 4316, 4323, 4334  
\Loadedframemethod .....  
..... 3677, 3678, 3681, 3686, 3712,  
3884, 3885, 3888, 3893, 3919, 4073, 4074,  
4080, 4085, 4111, 4206, 4207, 4210, 4215, 4241  
\loop ..... 927, 1039  
\lstDeleteShortInline ..... 4072  
\lstset ..... 3675, 3882, 4077, 4203  
\ltxmdfsetifoot ..... 3672, 3878, 4070, 4199

**M**

\makeatletter ..... 3839, 4002  
\makeatother ..... 3865, 4007  
\makelabel ..... 404  
\maketitle ..... 3709, 3916, 4108, 4238  
margin (option) ..... 6  
\mbox ..... 406  
\mdf@@exercisepoints .....  
..... 4003, 4005, 4021, 4024, 4029, 4032  
\mdf@@framemethod ..... 117, 119, 121  
\mdf@@frametitle ..... 555, 575, 687  
\mdf@@frametitle@use ..... 579, 696, 701  
\mdf@@frametitlerule .....  
..... 586, 914, 1062, 1213, 2058, 2957  
\mdf@@setzref .. 711, 745, 851, 977, 1081, 1111  
\mdf@advancelength@freevspace@add 796, 802, 989  
\mdf@advancelength@freevspace@sub 796, 799, 875  
\mdf@advancelength@horizontalmargin@add . 759  
\mdf@advancelength@horizontalmargin@sub .  
..... 759, 765  
\mdf@advancelength@verticalmarginwhole ..  
..... 796, 796, 815, 843  
\mdf@align ..... 223, 223  
\mdf@alignoption@tripledo ..... 82, 83, 85  
\mdf@Ax ..... 2114, 2122,  
2123, 2198, 2319, 2327, 2328, 2434, 2525,  
2533, 2534, 2616, 2688, 2696, 2697, 2803  
\mdf@Ay ..... 2115, 2135,  
2136, 2198, 2320, 2345, 2346, 2434, 2526,  
2548, 2549, 2616, 2689, 2709, 2710, 2803  
\mdf@background@default .....  
..... 1205, 1205, 1256, 1435, 1632, 1815  
\mdf@backgroundcolor .....  
... 169, 171, 1205, 1987, 1988, 2837, 2838  
\mdf@booloption@doubledo ..... 73, 74, 76



<code>\mdf@checknththeorem</code> .....	593, 593, 680
<code>\mdf@currentvbadness</code> .....	377, 380
<code>\mdf@defaultunit</code> .....	30
<code>\mdf@deferred@thm@head</code> .....	384
<code>\mdf@define@key@length</code> .....	44, 48, 62
<code>\mdf@do@alignoption</code> .....	82, 82, 216, 216
<code>\mdf@do@booloption</code> .....	73, 73, 189, 189
<code>\mdf@do@lengthoption</code> ....	57, 57, 131, 131, 159
<code>\mdf@do@stringoption</code> .....	64, 64, 159
<code>\mdf@dolist</code> .....	43, 43,
	131, 159, 189, 216, 765, 815, 843, 875, 989
<code>\mdf@endparenv</code> .....	410, 417
<code>\mdf@firstextra</code> .....	2437, 3283
<code>\mdf@font</code> .....	684
<code>\mdf@fontcolor</code> .....	683, 1983
<code>\mdf@footnotedistance@length</code> .....	608
<code>\mdf@footnotebox</code> .....	309
<code>\mdf@footnoteinput</code> .....	602, 614, 682
<code>\mdf@footnoteoutput</code> .....	602, 605, 694, 703
<code>\mdf@footnoterule</code> .....	602, 602, 610
<code>\mdf@frame@background@first</code> .	1409, 1409, 1592
<code>\mdf@frame@background@middle</code> .	1783, 1792, 1940
<code>\mdf@frame@background@second</code> .	1605, 1605, 1766
<code>\mdf@frame@background@single</code> .	1228, 1228, 1395
<code>\mdf@frame@bottomline@first</code> ....	1517, 1586
<code>\mdf@frame@bottomline@middle</code> ....	1873, 1948
<code>\mdf@frame@bottomline@second</code> .	1605, 1664, 1769
<code>\mdf@frame@bottomline@single</code> ....	1292, 1396
<code>\mdf@frame@frametitlebackground@first</code> ..	
	1441, 1593
<code>\mdf@frame@frametitlebackground@middle</code> ..	
	1821, 1945
<code>\mdf@frame@frametitlebackground@second</code> ..	
	1638, 1771
<code>\mdf@frame@frametitlebackground@single</code> ..	
	1262, 1397
<code>\mdf@frame@leftline@first</code> ..	1409, 1477, 1582
<code>\mdf@frame@leftline@middle</code> ..	1783, 1783, 1938
<code>\mdf@frame@leftline@second</code> ..	1605, 1655, 1760
<code>\mdf@frame@leftline@single</code> .....	
	1228, 1315, 1392, 3843
<code>\mdf@frame@rightline@first</code> ..	1409, 1503, 1597
<code>\mdf@frame@rightline@middle</code> .	1783, 1839, 1953
<code>\mdf@frame@rightline@second</code> .	1605, 1684, 1775
<code>\mdf@frame@rightline@single</code> .....	
	1228, 1327, 1401, 3852
<code>\mdf@frame@topandbottomline@single</code> ....	1228
<code>\mdf@frame@topline@first</code> ...	1409, 1489, 1590
<code>\mdf@frame@topline@middle</code> .....	1850, 1943
<code>\mdf@frame@topline@second</code> .....	1694, 1764
<code>\mdf@frame@topline@single</code> .....	1275, 1394
<code>\mdf@frameIdate@svn</code> .....	1971, 1972, 1974
<code>\mdf@frameIIDate@svn</code> .....	2824, 2825, 2827
<code>\mdf@framemethod</code> .....	107, 107
<code>\mdf@framemethod@i</code> .....	108, 113, 116
<code>\mdf@framemethod@ii</code> .....	109, 114, 118
<code>\mdf@framemethod@iii</code> .....	110, 115, 120
<code>\mdf@frameOdate@svn</code> .....	1200, 1201, 1203
<code>\mdf@frametitle</code> .....	576, 687,
	696, 701, 1397, 1593, 1771, 1945, 2210,
	2236, 2446, 2628, 3104, 3291, 3467, 3644
<code>\mdf@frametitleaboveskip@length</code> ....	570, 591
<code>\mdf@frametitlealignment</code> .....	557
<code>\mdf@frametitlebackground@default</code> .....	
	1206, 1265, 1446, 1462, 1644, 1827
<code>\mdf@frametitlebackgroundcolor</code> .....	
	1206, 1993, 2843, 2844
<code>\mdf@frametitlebelowskip@length</code> .....	
	571, 1216, 1471, 2061, 2250, 2960, 3302
<code>\mdf@frametitlebox</code> .....	308, 556,
	563, 564, 565, 566, 568, 569, 585, 913, 1061
<code>\mdf@frametitlefont</code> .....	559, 4020, 4024, 4028, 4032
<code>\mdf@frametitlefontcolor</code> .....	558
<code>\mdf@frametitlerulecolor</code> .....	1211, 2055, 2952, 2953
<code>\mdf@frametitlerulecolor@default</code> .	1211, 1218
<code>\mdf@frametitlerulewidth@length</code> .....	
	1222, 2068, 2963
<code>\mdf@freepagevspace</code> .....	748, 748, 830, 862
<code>\mdf@freevspace@length</code> .....	338,
	753, 754, 755, 756, 830, 831, 834, 849,
	862, 863, 987, 1009, 1011, 1016, 1017,
	1018, 1022, 1023, 1024, 1030, 1037, 1040
<code>\mdf@Fy</code> .....	2228,
	2231, 2232, 2273, 2276, 2277, 2465, 2468,
	2469, 2483, 2486, 2487, 2646, 2649, 2650
<code>\mdf@horizontalmargin@equation</code> .	353, 759, 763
<code>\mdf@horizontalsofbox</code> ..	759, 760, 762,
	764, 771, 772, 773, 776, 777, 778, 780, 782
<code>\mdf@horizontalwidthofbox@length</code> .....	339
<code>\mdf@iflength</code> .....	27, 28, 51
<code>\mdf@iflength@check</code> .....	27, 29, 33
<code>\mdf@iflength@cleanup</code> .....	39, 42
<code>\mdf@ifstrequal@expand</code> ....	289, 294, 296, 298
<code>\mdf@ignorevbadness</code> .....	376,
	376, 562, 583, 589, 904, 939, 1029, 1051
<code>\mdf@innerbottommargin@length</code> .....	
	1284, 1365, 1371, 1707, 1741, 1746, 2102,
	2115, 2672, 2689, 3001, 3022, 3509, 3529
<code>\mdf@innerleftmargin@length</code> .....	
	1217, 1220, 1354, 1398, 1551, 1594, 1730,
	1772, 1908, 1950, 2062, 2065, 2088, 2114,
	2288, 2319, 2497, 2525, 2660, 2688, 2988,
	3022, 3134, 3171, 3336, 3371, 3497, 3529
<code>\mdf@innerlinecolor</code> ....	643, 1208, 2013, 2866
<code>\mdf@innerlinecolor@default</code> .....	1208
<code>\mdf@innerlinewidth@length</code> .....	640,
	771, 776, 786, 791, 865, 882, 889, 997,
	1004, 1016, 1022, 1375, 1996, 2011, 2014,
	2091, 2095, 2104, 2108, 2124, 2137, 2218,
	2222, 2226, 2248, 2263, 2267, 2271, 2291,
	2295, 2303, 2309, 2329, 2347, 2459, 2463,
	2477, 2481, 2500, 2504, 2513, 2517, 2535,

2550, 2640, 2644, 2663, 2667, 2674, 2680, 2698, 2711, 2847, 2850, 2864, 2867, 2991, 2995, 3004, 3008, 3012, 3029, 3042, 3111, 3115, 3119, 3137, 3141, 3149, 3155, 3178, 3198, 3301, 3311, 3315, 3319, 3339, 3343, 3352, 3356, 3378, 3394, 3478, 3482, 3500, 3504, 3511, 3517, 3536, 3549, 3654, 3658	1937, 1997, 2007, 2014, 2025, 2028, 2029, 2092, 2096, 2105, 2109, 2124, 2126, 2131, 2136, 2139, 2144, 2218, 2222, 2226, 2249, 2263, 2267, 2271, 2292, 2296, 2304, 2310, 2329, 2331, 2335, 2339, 2346, 2349, 2354, 2459, 2463, 2477, 2481, 2501, 2505, 2514, 2518, 2535, 2537, 2542, 2549, 2552, 2557, 2640, 2644, 2664, 2668, 2675, 2681, 2698, 2700, 2705, 2711, 2713, 2720, 2848, 2851, 2859, 2868, 2875, 2877, 2992, 2996, 3005, 3009, 3013, 3028, 3031, 3036, 3041, 3044, 3049, 3112, 3116, 3120, 3132, 3138, 3142, 3150, 3156, 3177, 3180, 3185, 3190, 3197, 3200, 3301, 3312, 3316, 3320, 3334, 3340, 3344, 3353, 3357, 3377, 3380, 3385, 3393, 3396, 3401, 3479, 3483, 3495, 3501, 3505, 3512, 3518, 3535, 3538, 3543, 3548, 3551, 3558, 3655, 3659, 3846, 3848, 3858, 3860
\mdf@innermargin@length ..... 719, 739, 741	\mdf@needspace ..... 263
\mdf@innerrightmargin@length ..... ..... 1221, 1332, 1355, 1508, 1552, 1688, 1731, 1844, 1909, 2066, 2089, 2289, 2498, 2661, 2989, 3135, 3337, 3498, 3855	\mdf@option@length ..... 44, 44, 61
\mdf@innertopmargin@length ..... ..... 864, 917, 1066, 1225, 1285, 1370, 1497, 1567, 2072, 2101, 2300, 2972, 3002, 3146	\mdf@outerlinecolor .... 645, 1210, 2006, 2857
\mdf@keeplines@single ..... 784, 784, 818, 848	\mdf@outerlinecolor@default ..... 1210
\mdf@leftmargin@length ..... ..... 217, 221, 224, 719, 739, 742	\mdf@outerlinewidth@length ..... . 642, 773, 778, 788, 793, 867, 884, 891, 999, 1006, 1018, 1024, 1377, 2004, 2007, 2093, 2097, 2106, 2110, 2123, 2126, 2131, 2136, 2139, 2144, 2293, 2297, 2305, 2311, 2328, 2331, 2335, 2339, 2346, 2349, 2354, 2502, 2506, 2515, 2519, 2534, 2537, 2542, 2549, 2552, 2557, 2665, 2669, 2676, 2682, 2697, 2700, 2705, 2710, 2713, 2720, 2855, 2858, 2993, 2997, 3006, 3010, 3014, 3027, 3030, 3035, 3040, 3043, 3048, 3139, 3143, 3151, 3157, 3176, 3179, 3184, 3189, 3196, 3199, 3341, 3345, 3354, 3358, 3376, 3379, 3384, 3392, 3395, 3400, 3502, 3506, 3513, 3519, 3534, 3537, 3542, 3547, 3550, 3557
\mdf@lengthoption@doubledo ..... 57, 58, 60	\mdf@outermargin@length ..... 718, 738, 742
\mdf@linecolor 166, 167, 168, 170, 643, 644, 645	\mdf@0x ..... 2116, 2125, 2126, 2147, 2217, 2218, 2231, 2262, 2263, 2276, 2321, 2330, 2331, 2358, 2458, 2459, 2468, 2476, 2477, 2486, 2527, 2536, 2537, 2561, 2639, 2640, 2649, 2690, 2699, 2700, 2724
\mdf@linecolor@bottom ..... 1205	\mdf@0y ..... 2117, 2138, 2139, 2147, 2322, 2348, 2349, 2358, 2528, 2551, 2552, 2561, 2691, 2712, 2713, 2724
\mdf@linecolor@default .. 1205, 1212, 1278, 1299, 1318, 1330, 1480, 1492, 1506, 1524, 1658, 1671, 1687, 1701, 1786, 1842, 1857, 1880	\mdf@PackageError ..... 8, 275, 389
\mdf@linewidth@length ..... 146, 641	\mdf@PackageInfo ..... 8, 10, 386, 657, 662, 667, 716, 721, 836, 922, 956, 1035
\mdf@load@style ..... 620, 620, 637	\mdf@PackageInfoSpace ..... 306, 831
\mdf@LoadFile@IfExist ..... 8, 11, 98, 99, 101, 102, 122, 126, 127, 128	\mdf@PackageNoInfo ..... 288
\mdf@lrbbox ..... 345, 345, 556, 689	\mdf@PackageWarning ..... 8, 9, 15, 93, 104, 228, 280, 300, 433, 473, 596, 631, 781, 809, 825, 895, 933, 946, 1045, 1071, 1089, 1100, 1458, 2242, 3296
\mdf@maindate@svn ..... 1, 3, 6	\mdf@pageiseven ..... 711
\mdf@makebox@in ..... . 420, 425, 1386, 1576, 1754, 1932, 2111, 2316, 2522, 2685, 3016, 3162, 3362, 3523	
\mdf@makebox@out ..... . 420, 420, 1346, 1543, 1722, 1900, 2083, 2284, 2493, 2656, 2985, 3130, 3332, 3493	
\mdf@makeboxalign@left ..... 223, 224, 229, 232, 1348, 1545, 1724, 1902, 2084, 2285, 2494, 2657, 2986, 3131, 3333, 3494	
\mdf@makeboxalign@right ..... 223, 225, 230, 233, 1405, 1601, 1779, 1957, 2205, 2441, 2623, 2810, 3099, 3286, 3462, 3639	
\mdf@middleextra ..... 2618, 3459	
\mdf@middlelinecolor .... 644, 1209, 2027, 2878	
\mdf@middlelinecolor@default .... 1209, 1212	
\mdf@middlelinewidth@length ..... 641, 772, 777, 787, 792, 866, 883, 890, 998, 1005, 1017, 1023, 1239, 1244, 1249, 1288, 1297, 1304, 1308, 1309, 1311, 1320, 1323, 1336, 1339, 1376, 1383, 1384, 1424, 1482, 1485, 1500, 1510, 1513, 1522, 1529, 1533, 1534, 1536, 1573, 1574, 1581, 1616, 1621, 1660, 1669, 1674, 1678, 1679, 1681, 1690, 1699, 1711, 1712, 1714, 1751, 1752, 1759, 1788, 1807, 1846, 1855, 1866, 1867, 1869, 1878, 1885, 1889, 1890, 1892, 1929, 1930,	

\mdf@pageisodd .....	<a href="#">711</a>	\mdf@reset .....	<a href="#">805</a> , <a href="#">805</a>
\mdf@patchamsth .....	<a href="#">381</a>	\mdf@restoreparams .....	<a href="#">349</a> , <a href="#">369</a>
\mdf@patchamsthm .....	<a href="#">347</a> , <a href="#">383</a> , <a href="#">393</a>	\mdf@restorevbadness .....	<a href="#">376</a> , <a href="#">379</a> , <a href="#">380</a>
\mdf@print@space .....	<a href="#">288</a> , <a href="#">292</a> , <a href="#">829</a>	\mdf@rightmargin@length .....	<a href="#">219</a> , <a href="#">220</a> , <a href="#">718</a> , <a href="#">738</a> , <a href="#">741</a>
\mdf@printheight .....	<a href="#">290</a> , <a href="#">300</a>	\mdf@roundcorner@length .....	<a href="#">1986</a> , <a href="#">1995</a> , <a href="#">2846</a> , <a href="#">2849</a> , <a href="#">3020</a> , <a href="#">3160</a> , <a href="#">3169</a> , <a href="#">3527</a>
\mdf@psset@local .....	<a href="#">236</a> , <a href="#">243</a> , <a href="#">245</a> , <a href="#">3021</a> , <a href="#">3161</a> , <a href="#">3170</a> , <a href="#">3369</a> , <a href="#">3528</a>	\mdf@seconddextra .....	<a href="#">2805</a> , <a href="#">3633</a>
\mdf@pstricksbox@fl .....	<a href="#">2883</a> , <a href="#">3055</a> , <a href="#">3217</a> , <a href="#">3411</a> , <a href="#">3573</a>	\mdf@setopt@body .....	<a href="#">555</a>
\mdf@pstricksbox@ol .....	<a href="#">2934</a> , <a href="#">3080</a> , <a href="#">3081</a> , <a href="#">3082</a> , <a href="#">3083</a> , <a href="#">3242</a> , <a href="#">3243</a> , <a href="#">3244</a> , <a href="#">3245</a> , <a href="#">3265</a> , <a href="#">3267</a> , <a href="#">3269</a> , <a href="#">3436</a> , <a href="#">3437</a> , <a href="#">3438</a> , <a href="#">3439</a> , <a href="#">3446</a> , <a href="#">3448</a> , <a href="#">3598</a> , <a href="#">3599</a> , <a href="#">3600</a> , <a href="#">3601</a> , <a href="#">3620</a> , <a href="#">3622</a> , <a href="#">3624</a>	\mdf@setopt@title .....	<a href="#">555</a>
\mdf@pstricksbox@tcl .....	<a href="#">2899</a> , <a href="#">3066</a> , <a href="#">3068</a> , <a href="#">3070</a> , <a href="#">3072</a> , <a href="#">3228</a> , <a href="#">3230</a> , <a href="#">3232</a> , <a href="#">3234</a> , <a href="#">3255</a> , <a href="#">3258</a> , <a href="#">3422</a> , <a href="#">3424</a> , <a href="#">3426</a> , <a href="#">3428</a> , <a href="#">3584</a> , <a href="#">3586</a> , <a href="#">3588</a> , <a href="#">3590</a> , <a href="#">3610</a> , <a href="#">3613</a>	\mdf@settings .....	<a href="#">688</a>
\mdf@pstricksbox@tl .....	<a href="#">2891</a> , <a href="#">3058</a> , <a href="#">3060</a> , <a href="#">3062</a> , <a href="#">3064</a> , <a href="#">3220</a> , <a href="#">3222</a> , <a href="#">3224</a> , <a href="#">3226</a> , <a href="#">3251</a> , <a href="#">3414</a> , <a href="#">3416</a> , <a href="#">3418</a> , <a href="#">3420</a> , <a href="#">3576</a> , <a href="#">3578</a> , <a href="#">3580</a> , <a href="#">3582</a> , <a href="#">3607</a>	\mdf@shadow@default .....	<a href="#">1207</a> , <a href="#">1235</a> , <a href="#">1416</a> , <a href="#">1612</a> , <a href="#">1799</a>
\mdf@pstricksbox@tncl .....	<a href="#">2913</a> , <a href="#">3075</a> , <a href="#">3077</a> , <a href="#">3237</a> , <a href="#">3239</a> , <a href="#">3262</a> , <a href="#">3431</a> , <a href="#">3433</a> , <a href="#">3444</a> , <a href="#">3593</a> , <a href="#">3595</a> , <a href="#">3617</a>	\mdf@shadowcolor .....	<a href="#">1207</a> , <a href="#">2019</a> , <a href="#">2873</a>
\mdf@ptlength@to@pscode .....	<a href="#">2829</a> , <a href="#">2829</a> , <a href="#">2833</a>	\mdf@shadowsize@length .....	<a href="#">1238</a> , <a href="#">1243</a> , <a href="#">1248</a> , <a href="#">1419</a> , <a href="#">1423</a> , <a href="#">1428</a> , <a href="#">1615</a> , <a href="#">1620</a> , <a href="#">1625</a> , <a href="#">1802</a> , <a href="#">1806</a> , <a href="#">2017</a> , <a href="#">2018</a> , <a href="#">2874</a>
\mdf@ptlength@to@pscode@length .....	<a href="#">2830</a> , <a href="#">2834</a>	\mdf@singleextra .....	<a href="#">2201</a> , <a href="#">3096</a>
\mdf@put@frame .....	<a href="#">653</a> , <a href="#">655</a> , <a href="#">823</a> , <a href="#">823</a> , <a href="#">838</a> , <a href="#">872</a> , <a href="#">952</a> , <a href="#">968</a> , <a href="#">974</a>	\mdf@skipabove@length .....	<a href="#">686</a>
\mdf@put@frame@i .....	<a href="#">855</a> , <a href="#">861</a> , <a href="#">861</a>	\mdf@skipbelow@length .....	<a href="#">418</a>
\mdf@put@frame@ii .....	<a href="#">980</a> , <a href="#">986</a> , <a href="#">986</a> , <a href="#">1079</a> , <a href="#">1084</a>	\mdf@splitbottomskip@length .....	<a href="#">1011</a> , <a href="#">1496</a> , <a href="#">1562</a> , <a href="#">1568</a> , <a href="#">1919</a> , <a href="#">1924</a> , <a href="#">2251</a> , <a href="#">2301</a> , <a href="#">2320</a> , <a href="#">2509</a> , <a href="#">2526</a> , <a href="#">3147</a> , <a href="#">3171</a> , <a href="#">3302</a> , <a href="#">3348</a> , <a href="#">3371</a>
\mdf@put@frame@standalone .....	<a href="#">651</a> , <a href="#">659</a> , <a href="#">664</a> , <a href="#">669</a> , <a href="#">807</a> , <a href="#">807</a>	\mdf@splitbox@one .....	<a href="#">310</a> , <a href="#">584</a> , <a href="#">587</a> , <a href="#">590</a> , <a href="#">689</a> , <a href="#">808</a> , <a href="#">814</a> , <a href="#">824</a> , <a href="#">828</a> , <a href="#">842</a> , <a href="#">894</a> , <a href="#">902</a> , <a href="#">905</a> , <a href="#">907</a> , <a href="#">910</a> , <a href="#">918</a> , <a href="#">924</a> , <a href="#">937</a> , <a href="#">940</a> , <a href="#">942</a> , <a href="#">945</a> , <a href="#">950</a> , <a href="#">954</a> , <a href="#">960</a> , <a href="#">967</a> , <a href="#">973</a> , <a href="#">988</a> , <a href="#">1027</a> , <a href="#">1030</a> , <a href="#">1032</a> , <a href="#">1049</a> , <a href="#">1052</a> , <a href="#">1054</a> , <a href="#">1058</a> , <a href="#">1068</a> , <a href="#">1070</a> , <a href="#">1077</a> , <a href="#">1088</a> , <a href="#">1092</a> , <a href="#">1094</a> , <a href="#">1098</a> , <a href="#">1105</a> , <a href="#">1107</a> , <a href="#">1344</a> , <a href="#">1350</a> , <a href="#">1359</a> , <a href="#">1360</a> , <a href="#">1364</a> , <a href="#">1403</a> , <a href="#">1720</a> , <a href="#">1726</a> , <a href="#">1735</a> , <a href="#">1736</a> , <a href="#">1740</a> , <a href="#">1777</a> , <a href="#">2081</a> , <a href="#">2087</a> , <a href="#">2100</a> , <a href="#">2198</a> , <a href="#">2654</a> , <a href="#">2659</a> , <a href="#">2671</a> , <a href="#">2803</a> , <a href="#">2983</a> , <a href="#">2987</a> , <a href="#">3000</a> , <a href="#">3090</a> , <a href="#">3491</a> , <a href="#">3496</a> , <a href="#">3508</a> , <a href="#">3632</a>
\mdf@put@frametitulerule .....	<a href="#">2053</a> , <a href="#">2957</a>	\mdf@splitbox@save .....	<a href="#">312</a> , <a href="#">902</a> , <a href="#">924</a> , <a href="#">937</a> , <a href="#">950</a> , <a href="#">967</a> , <a href="#">973</a> , <a href="#">1027</a> , <a href="#">1049</a> , <a href="#">1077</a>
\mdf@putbox@first .....	<a href="#">977</a> , <a href="#">1409</a> , <a href="#">1540</a> , <a href="#">2235</a> , <a href="#">2281</a> , <a href="#">3127</a> , <a href="#">3127</a>	\mdf@splitbox@two .....	<a href="#">311</a> , <a href="#">905</a> , <a href="#">906</a> , <a href="#">920</a> , <a href="#">928</a> , <a href="#">940</a> , <a href="#">941</a> , <a href="#">954</a> , <a href="#">958</a> , <a href="#">961</a> , <a href="#">964</a> , <a href="#">970</a> , <a href="#">1030</a> , <a href="#">1031</a> , <a href="#">1033</a> , <a href="#">1040</a> , <a href="#">1052</a> , <a href="#">1053</a> , <a href="#">1541</a> , <a href="#">1547</a> , <a href="#">1556</a> , <a href="#">1557</a> , <a href="#">1561</a> , <a href="#">1599</a> , <a href="#">1898</a> , <a href="#">1904</a> , <a href="#">1913</a> , <a href="#">1914</a> , <a href="#">1918</a> , <a href="#">1955</a> , <a href="#">2282</a> , <a href="#">2287</a> , <a href="#">2299</a> , <a href="#">2434</a> , <a href="#">2491</a> , <a href="#">2496</a> , <a href="#">2508</a> , <a href="#">2616</a> , <a href="#">3128</a> , <a href="#">3133</a> , <a href="#">3145</a> , <a href="#">3278</a> , <a href="#">3330</a> , <a href="#">3335</a> , <a href="#">3347</a> , <a href="#">3455</a>
\mdf@putbox@middle .....	<a href="#">1081</a> , <a href="#">1783</a> , <a href="#">1897</a> , <a href="#">2445</a> , <a href="#">2490</a> , <a href="#">3329</a> , <a href="#">3329</a>	\mdf@splittopskip@length .....	<a href="#">903</a> , <a href="#">911</a> , <a href="#">916</a> , <a href="#">938</a> , <a href="#">1028</a> , <a href="#">1050</a> , <a href="#">1059</a> , <a href="#">1065</a> , <a href="#">2252</a> , <a href="#">3303</a>
\mdf@putbox@second .....	<a href="#">1111</a> , <a href="#">1605</a> , <a href="#">1719</a> , <a href="#">2627</a> , <a href="#">2653</a> , <a href="#">3490</a> , <a href="#">3490</a>	\mdf@stringoption@doubledo .....	<a href="#">64</a> , <a href="#">65</a> , <a href="#">67</a>
\mdf@putbox@single .....	<a href="#">819</a> , <a href="#">851</a> , <a href="#">1228</a> , <a href="#">1343</a> , <a href="#">2075</a> , <a href="#">2080</a> , <a href="#">2982</a>	\mdf@style .....	<a href="#">278</a>
\mdf@Px .....	<a href="#">2118</a> , <a href="#">2130</a> , <a href="#">2131</a> , <a href="#">2148</a> , <a href="#">2221</a> , <a href="#">2222</a> , <a href="#">2232</a> , <a href="#">2266</a> , <a href="#">2267</a> , <a href="#">2277</a> , <a href="#">2323</a> , <a href="#">2334</a> , <a href="#">2335</a> , <a href="#">2359</a> , <a href="#">2462</a> , <a href="#">2463</a> , <a href="#">2469</a> , <a href="#">2480</a> , <a href="#">2481</a> , <a href="#">2487</a> , <a href="#">2529</a> , <a href="#">2541</a> , <a href="#">2542</a> , <a href="#">2562</a> , <a href="#">2643</a> , <a href="#">2644</a> , <a href="#">2650</a> , <a href="#">2692</a> , <a href="#">2704</a> , <a href="#">2705</a> , <a href="#">2725</a>	\mdf@styledefinition .....	<a href="#">638</a> , <a href="#">638</a> , <a href="#">681</a>
\mdf@Py .....	<a href="#">2119</a> , <a href="#">2143</a> , <a href="#">2144</a> , <a href="#">2148</a> , <a href="#">2225</a> , <a href="#">2226</a> , <a href="#">2229</a> , <a href="#">2231</a> , <a href="#">2232</a> , <a href="#">2270</a> , <a href="#">2271</a> , <a href="#">2274</a> , <a href="#">2276</a> , <a href="#">2277</a> , <a href="#">2324</a> , <a href="#">2338</a> , <a href="#">2339</a> , <a href="#">2353</a> , <a href="#">2354</a> , <a href="#">2359</a> , <a href="#">2466</a> , <a href="#">2468</a> , <a href="#">2469</a> , <a href="#">2484</a> , <a href="#">2486</a> , <a href="#">2487</a> , <a href="#">2530</a> , <a href="#">2556</a> , <a href="#">2557</a> , <a href="#">2562</a> , <a href="#">2647</a> , <a href="#">2649</a> , <a href="#">2650</a> , <a href="#">2693</a> , <a href="#">2719</a> , <a href="#">2720</a> , <a href="#">2725</a>	\mdf@tempa .....	<a href="#">112</a> , <a href="#">116</a> , <a href="#">118</a> , <a href="#">120</a> , <a href="#">294</a> , <a href="#">296</a> , <a href="#">298</a> , <a href="#">302</a> , <a href="#">306</a>
\mdf@reserved@a .....	<a href="#">648</a> , <a href="#">651</a> , <a href="#">653</a> , <a href="#">655</a> , <a href="#">659</a> , <a href="#">664</a> , <a href="#">669</a> , <a href="#">672</a> , <a href="#">810</a> , <a href="#">819</a> , <a href="#">821</a> , <a href="#">826</a> , <a href="#">838</a> , <a href="#">852</a> , <a href="#">855</a> , <a href="#">859</a> , <a href="#">872</a> , <a href="#">952</a> , <a href="#">968</a> , <a href="#">974</a> , <a href="#">980</a> , <a href="#">984</a> , <a href="#">1079</a> , <a href="#">1084</a> , <a href="#">1104</a> , <a href="#">1113</a> , <a href="#">1115</a>	\mdf@templength .....	<a href="#">27</a> , <a href="#">30</a> , <a href="#">52</a> , <a href="#">53</a>
\mdf@reserveda .....	<a href="#">693</a> , <a href="#">699</a> , <a href="#">706</a>	\mdf@test@b .....	<a href="#">1118</a> , <a href="#">1173</a> , <a href="#">2189</a> , <a href="#">2397</a> , <a href="#">2428</a> , <a href="#">2600</a> , <a href="#">2766</a> , <a href="#">2789</a> , <a href="#">3083</a> , <a href="#">3245</a> , <a href="#">3271</a> , <a href="#">3439</a> , <a href="#">3601</a> , <a href="#">3619</a>
		\mdf@test@l .....	<a href="#">1118</a> , <a href="#">1164</a> , <a href="#">2180</a> , <a href="#">2388</a> , <a href="#">2422</a> , <a href="#">2591</a> , <a href="#">2757</a> , <a href="#">2792</a> , <a href="#">3080</a> , <a href="#">3242</a> , <a href="#">3266</a> , <a href="#">3436</a> , <a href="#">3598</a> , <a href="#">3621</a>

\mdf@test@lb	1118, 1145, 1183, 2161, 2370, 2422, 2573, 2739, 2774, 3066, 3228, 3266, 3422, 3584, 3609
\mdf@test@lr	1118, 1157, 2173, 2382, 2416, 2585, 2751, 2786, 3075, 3237, 3261, 3431, 3593, 3616
\mdf@test@lrb	1118, 1141, 1183, 2159, 2369, 2416, 2572, 2738, 2771, 3063, 3225, 3261, 3419, 3581, 3606
\mdf@test@lt	1118, 1154, 1185, 2170, 2379, 2405, 2582, 2748, 2792, 3072, 3234, 3254, 3428, 3590, 3621
\mdf@test@ltb	1118, 1135, 1182, 2156, 2366, 2405, 2569, 2735, 2774, 3057, 3219, 3254, 3413, 3575, 3609
\mdf@test@ltr	1118, 1132, 1181, 2158, 2368, 2402, 2571, 2737, 2786, 3061, 3223, 3250, 3417, 3579, 3616
\mdf@test@ltrb	1118, 1128, 1181, 2154, 2365, 2402, 2568, 2734, 2771, 3055, 3217, 3250, 3411, 3573, 3606
\mdf@test@noline	1118, 1177, 2193, 2400, 2429, 2603, 2769, 2799, 3085, 3247, 3272, 3441, 3603, 3627
\mdf@test@r	1118, 1167, 2183, 2391, 2425, 2594, 2760, 2795, 3081, 3243, 3268, 3437, 3599, 3623
\mdf@test@rb	1118, 1148, 1184, 2164, 2373, 2425, 2576, 2742, 2780, 3068, 3230, 3268, 3424, 3586, 3612
\mdf@test@single	1180
\mdf@test@t	1118, 1170, 2186, 2394, 2419, 2597, 2763, 2798, 3082, 3244, 3264, 3438, 3600, 3626
\mdf@test@tb	1118, 1160, 2176, 2385, 2419, 2588, 2754, 2789, 3077, 3239, 3264, 3433, 3595, 3619
\mdf@test@tr	1118, 1151, 1184, 2167, 2376, 2411, 2579, 2745, 2795, 3070, 3232, 3257, 3426, 3588, 3623
\mdf@test@trb	1118, 1138, 1182, 2157, 2367, 2411, 2570, 2736, 2780, 3059, 3221, 3257, 3415, 3577, 3612
\mdf@theoremseparator	486, 510, 522, 539
\mdf@theoremspace	487, 511, 523, 540
\mdf@theoremtitlefont	488, 512, 524, 541
\mdf@thm@caption	466, 469, 490, 514, 526, 543
\mdf@tikz@settings	1977, 1978, 2085, 2286, 2495, 2658
\mdf@tikzbox@otl	2033, 2045, 2161, 2164, 2167, 2170, 2173, 2176, 2180, 2183, 2186, 2189, 2370, 2373, 2376, 2379, 2382, 2385, 2388, 2391, 2394, 2397, 2407, 2413, 2417, 2420, 2423, 2426, 2573, 2576, 2579, 2582, 2585, 2588, 2591, 2594, 2597, 2600, 2606, 2608, 2610, 2739, 2742, 2745, 2748, 2751, 2754, 2757, 2760, 2763, 2766, 2776, 2782, 2787, 2790, 2793, 2796
\mdf@tikzbox@tfl	2033, 2033, 2154, 2156, 2157, 2158, 2159, 2365, 2366, 2367, 2368, 2369, 2403, 2568, 2569, 2570, 2571, 2572, 2734, 2735, 2736, 2737, 2738, 2772
\mdf@tikzset@local	236, 236, 238, 241, 2022
\mdf@trivlist	394, 394, 686
\mdf@twoside@checklength	677, 711, 713
\mdf@userdefinedwidth@length	425, 764
\mdf@verticalmarginwhole@length	340, 786, 787, 788, 791, 792, 793, 797, 813, 841, 849
\mdf@xcolor	251, 251, 255, 259
\mdf@zref@label	711, 731, 746
\mdfapptodefinestyle	4, 428, 431, 3749, 3760, 3956, 4149
\mdfbackgroundstyle	2835
\mdfboundingboxdepth	335, 1237, 1257, 1267, 1283, 1303, 1319, 1334, 1362, 1418, 1436, 1448, 1463, 1481, 1495, 1509, 1528, 1559, 1614, 1633, 1646, 1659, 1673, 1689, 1706, 1738, 1787, 1801, 1816, 1829, 1845, 1862, 1884, 1916, 3845, 3856
\mdfboundingboxheight	334, 1282, 1357, 1369, 1470, 1494, 1554, 1566, 1705, 1733, 1745, 1911, 1923, 2034, 2046, 2099, 2101, 2102, 2104, 2105, 2106, 2108, 2109, 2110, 2119, 2238, 2247, 2298, 2300, 2301, 2303, 2304, 2305, 2309, 2310, 2311, 2324, 2507, 2509, 2513, 2514, 2515, 2517, 2518, 2519, 2530, 2670, 2672, 2674, 2675, 2676, 2680, 2681, 2682, 2693, 2999, 3001, 3002, 3004, 3005, 3006, 3008, 3009, 3010, 3018, 3024, 3144, 3146, 3147, 3149, 3150, 3151, 3155, 3156, 3157, 3165, 3167, 3173, 3292, 3300, 3322, 3346, 3348, 3352, 3353, 3354, 3356, 3357, 3358, 3364, 3366, 3373, 3507, 3509, 3511, 3512, 3513, 3517, 3518, 3519, 3525, 3531
\mdfboundingboxtotalheight	336, 1247, 1259, 1268, 1322, 1338, 1367, 1427, 1438, 1442, 1449, 1465, 1484, 1512, 1564, 1624, 1635, 1647, 1661, 1691, 1743, 1789, 1809, 1818, 1830, 1847, 1861, 1921, 3847, 3859
\mdfboundingboxtotalwidth	332, 1242, 1258, 1271, 1287, 1307, 1351, 1382, 1422, 1437, 1452, 1464, 1499, 1532, 1548, 1572, 1619, 1634, 1650, 1677, 1710, 1727, 1750, 1805, 1817, 1833, 1865, 1888, 1905, 1928
\mdfboundingboxwidth	331, 828, 1095, 1108, 1331, 1349, 1353, 1507, 1546, 1550, 1687, 1725, 1729, 1843, 1903, 1907, 2034, 2046, 2087, 2088, 2089, 2091, 2092, 2093, 2095, 2096, 2097, 2111, 2118, 2287, 2288, 2289, 2291, 2292, 2293, 2295, 2296, 2297, 2316, 2323, 2496, 2497, 2498, 2500, 2501, 2502, 2504, 2505, 2506, 2522,



2529, 2659, 2660, 2661, 2663, 2664, 2665,  
2667, 2668, 2669, 2685, 2692, 2987, 2988,  
2989, 2991, 2992, 2993, 2995, 2996, 2997,  
3016, 3018, 3024, 3133, 3134, 3135, 3137,  
3138, 3139, 3141, 3142, 3143, 3162, 3166,  
3167, 3173, 3335, 3336, 3337, 3339, 3340,  
3341, 3343, 3344, 3345, 3362, 3365, 3366,  
3373, 3496, 3497, 3498, 3500, 3501, 3502,  
3504, 3505, 3506, 3523, 3525, 3531, 3854  
`\mdfcreateextratikz` 343, 2202, 2438, 2620, 2807  
`\mdfdateID` ..... 3683, 3890, 4082, 4212  
`\mdfdefinedstyle` ..... 282  
`\mdfdefinestyle` 4, 428, 428, 3738, 3781, 3945,  
4009, 4046, 4138, 4164, 4173, 4346, 4389, 4441  
`\mdffootnoteboxdepth` ..... 326  
`\mdffootnoteboxheight` ..... 325  
`\mdffootnoteboxtotalheight` ..... 327  
`\mdffootnoteboxtotalwidth` ..... 324  
`\mdffootnoteboxwidth` ..... 323  
`\mdfframedtitleenv` ..... 555, 555, 576  
`\mdfframetitlebackground` ..... 2835  
`\mdfframetitleboxdepth` ..... 321, 566  
`\mdfframetitleboxheight` ..... 320, 565  
`\mdfframetitleboxtotalheight` .....  
..... 322, 567, 1269, 1272, 1442,  
1450, 1453, 1455, 1467, 1469, 1639, 1648,  
1651, 1822, 1831, 1834, 1836, 2229, 2238,  
2241, 2245, 2246, 2274, 2447, 2450, 2466,  
2484, 2629, 2647, 3122, 3292, 3295, 3299,  
3322, 3323, 3468, 3471, 3485, 3645, 3661  
`\mdfframetitleboxtotalwidth` ..... 319  
`\mdfframetitleboxwidth` .....  
..... 318, 564, 1215, 1219, 2064, 2967  
`\mdfframetitlerule` ..... 2835  
`\mdfglobal@style` ..... 91, 95  
`\mdflength` ..... 4, 436, 436  
`\mdflinestyle` ..... 2835  
`\mdfpstricks@appendsettings` ... 247, 249, 2880  
`\mdfpstricks@settings` .....  
..... 2835, 3019, 3168, 3367, 3526  
`\mdfframed` ..... 674  
`\mdfframedIIPackagename` ..... 2824, 2824, 2828  
`\mdfframedIPackagename` ..... 1971, 1971, 1975  
`\mdfframedOPackagename` ..... 1200, 1200, 1204  
`\mdfframedPackagename` .....  
... 1, 2, 7, 8, 9, 10, 16, 633, 658, 663, 668  
`\mdfsetup` ..... 4, 277, 277, 285, 444,  
591, 676, 3689, 3723, 3807, 3813, 3819,  
3896, 3930, 3973, 4088, 4122, 4218, 4252  
`\mdfsplitboxdepth` ..... 316  
`\mdfsplitboxheight` ..... 315  
`\mdfsplitboxtotalheight` ..... 317  
`\mdfsplitboxtotalwidth` ..... 314  
`\mdfsplitboxwidth` ..... 313  
`\mdftotalllinewidth` ..... 329, 1373, 1391, 3012  
`\mdtheorem` ..... 12, 442, 471, 3787, 4055, 4482

`\mdversion` ..... 1, 1,  
7, 1204, 1975, 2828, 3684, 3891, 4083, 4213  
`middleextra` (option) ..... 10  
`middlelinecolor` (option) ..... 8  
`middlelinewidth` (option) ..... 7

## N

`needspace` (option) ..... 8  
`\new\protect_.\kern_.\fontdimen_3\font_.\kern_.\fontdimen_3\font_.`  
..... 308  
`\newmdenv` ..... 3, 442, 442, 453, 4183  
`\newmdtheoremenv` ..... 12, 442, 455  
`\newsavebox` ..... 308, 309, 310, 311, 312  
`nobreak` (option) ..... 8  
`\nodexn` ..... 3027, 3030, 3035, 3040,  
3043, 3048, 3111, 3115, 3119, 3122, 3176,  
3179, 3184, 3189, 3196, 3199, 3311, 3315,  
3319, 3323, 3324, 3376, 3379, 3384, 3392,  
3395, 3400, 3478, 3482, 3485, 3534, 3537,  
3542, 3547, 3550, 3557, 3654, 3658, 3661  
`\noexpand` ..... 503  
`\nointerlineskip` ..... 685, 691, 912, 1060  
`\normalbaselineskip` ..... 366  
`\normalfont` ..... 176, 559  
`\normallineskip` ..... 365  
`\NOTE` ..... 3716, 3923, 4115, 4245  
`ntheorem` (option) ..... 8

## O

`\offinterlineskip` ..... 582  
`\onecolumn` ..... 4325  
`\Opt` ..... 3681, 3686, 3712, 3888, 3893,  
3919, 4080, 4085, 4111, 4210, 4215, 4241  
options:  
`align` ..... 9  
`apptotikzsetting` ..... 10  
`backgroundcolor` ..... 7  
`bottomline` ..... 10  
`defaultunit` ..... 5  
`everyline` ..... 8  
`firstextra` ..... 10  
`font` ..... 8  
`fontcolor` ..... 8  
`footnotedistance` ..... 13  
`footnoteinside` ..... 13  
`framemethod` ..... 5  
`frametitle` ..... 11  
`frametitleaboveskip` ..... 11  
`frametitlealignment` ..... 11  
`frametitlebackgroundcolor` ..... 11  
`frametitlebelowskip` ..... 11  
`frametitlefont` ..... 11  
`frametitlerule` ..... 11  
`frametitlerulewidth` ..... 11  
`hidealllines` ..... 11  
`innerbottommargin` ..... 7

innerleftmargin	6	\pageshrink	893
innerlinecolor	8	\parsep	397
innerlinewidth	7	\parskip	350, 361, 580, 756
innermargin	7	\pgfdeclarehorizontalshading	3994, 3997
innerrightmargin	6	\pgfmathsetlength	2064, 2241, 2245, 2450
innertopmargin	6	\pnode	3022, 3023, 3024, 3171, 3172, 3173, 3371, 3372, 3373, 3529, 3530, 3531
leftline	11	\psclip	2886, 2894, 2904, 2918, 2939, 3053, 3213
leftmargin	6	\pscustom	2904, 2919, 2939, 3205, 3564
linecolor	7	\psdot	3091, 3092, 3093, 3279, 3280, 3281, 3456, 3457, 3458, 3634, 3635, 3636
linewidth	7	pstricksappsetting (option)	9
margin	6	pstrickssetting (option)	9
middleextra	10	\ptTps	2829, 2833, 2967
middlelinecolor	8	\ptTpsL	2834, 2965, 2966, 2967
middlelinewidth	7		
needspace	8	<b>R</b>	
nobreak	8	\refstepcounter	482, 506, 535
ntheorem	8	\renewmdenv	3, 442, 450
outerlinecolor	8	\renewrobustcmd	469
outerlinewidth	7	\repeat	943, 1055
outermargin	7	repeatframetitle (option)	11
pstricksappsetting	9	rightline (option)	11
pstrickssetting	9	rightmargin (option)	6
repeatframetitle	11	\rightskip	364
rightline	11	roundcorner (option)	7
rightmargin	6		
roundcorner	7	<b>S</b>	
secondextra	10	secondextra (option)	10
settings	8	\section	3710, 3719, 3917, 3926, 4109, 4118, 4239, 4248
shadow	9	\setcounter	3670, 3701, 3876, 3908, 4068, 4100, 4197, 4230
shadowcolor	9	settings (option)	8
shadowsize	9	\sffamily	4016, 4384, 4436
singleextra	10	shadow (option)	9
skipabove	6	shadowcolor (option)	9
skipbelow	6	shadowsize (option)	9
splitbottomskip	7	singleextra (option)	10
splittopskip	7	skipabove (option)	6
style	8	skipbelow (option)	6
theoremseparator	12	\sloppy	367
theoremspace	13	\smash	1233, 1414, 1610, 1797
theoremtitlefont	12	splitbottomskip (option)	7
tikzsetting	9	splittopskip (option)	7
topline	10	\strut	492, 496, 516, 528, 545, 549, 3811, 3817
userdefinedwidth	7	style (option)	8
usetwoside	8	\subsection	3705, 3912, 4104, 4234
xcolor	5	\subtitle	3681, 3888, 4080, 4210
outerlinecolor (option)	8	\surroundwithmdframed	4, 436, 438, 4285
outerlinewidth (option)	7		
outermargin (option)	7	<b>T</b>	
\overlaplines	3842, 3866	\textit	3691, 3725, 3898, 3932, 4090, 4124, 4220, 4254
		\theexercise	4001, 4020, 4028
<b>P</b>		\theorempostskipamount	598
\p	4358, 4360, 4362, 4364, 4391, 4392, 4399, 4406, 4410, 4443, 4444, 4451, 4458, 4462		
\Pack	3680, 3711, 3717, 3887, 3918, 3924, 4079, 4110, 4116, 4209, 4240, 4246, 4289, 4290		
\PackageError	8		

<code>\theorempreskipamount</code> . . . . .	595, 597	<code>\uput</code> . . . . .	3091, 3092, 3093, 3279, 3280, 3281, 3456, 3457, 3458, 3634, 3635, 3636
<code>theoremseparator</code> (option) . . . . .	12	<code>\usepackage</code> . . . . .	3674, 3678, 3881, 3885, 4074, 4076, 4202, 4204, 4207
<code>theoremspace</code> (option) . . . . .	13	<code>userdefinedwidth</code> (option) . . . . .	7
<code>theoremtitlefont</code> (option) . . . . .	12	<code>\usetikzlibrary</code> . . . . .	4205, 4375, 4481
<code>\thesubsection</code> . . . . .	3702, 3909, 4101, 4231	<code>usetwoside</code> (option) . . . . .	8
<code>\thetheo</code> . . . . .	3811, 3817		
<code>\thm@thmcaption</code> . . . . .	469		
<code>\tikz</code> . . . . .	2067, 3809, 3815		
<code>tikzsetting</code> (option) . . . . .	9		
<code>\tikzstyle</code> . . . . .	3990		
<code>\title</code> . . . . .	3680, 3887, 4079, 4209		
<code>topline</code> (option) . . . . .	10		
<code>\topskip</code> . . . . .	3689, 3723, 3785, 3896, 3930, 4014, 4053, 4088, 4122, 4218, 4252		
<code>\twocolumn</code> . . . . .	4301, 4303		
<code>\typeout</code> . . . . .	411, 412, 414, 415		
	<b>U</b>		<b>V</b>
<code>\unvcopy</code> . . . . .	585, 902, 913, 924, 937, 950, 961, 967, 973, 1027, 1049, 1061, 1077	<code>\vbadness</code> . . . . .	377, 378, 380
		<code>\version</code> . . . . .	3684, 3891, 4083, 4213
		<code>\vspace</code> . . . . .	4276, 4278
			<b>X</b>
		<code>\x</code> . . . . .	4358, 4360, 4362, 4364, 4391, 4392, 4399, 4406, 4410, 4443, 4444, 4451, 4458, 4462
		<code>xcolor</code> (option) . . . . .	5
		<code>\xdef</code> . . . . .	480, 501, 502
			<b>Y</b>
		<code>\y</code> . . . . .	4358, 4360, 4362, 4364, 4391, 4392, 4399, 4406, 4410, 4443, 4444, 4451, 4458, 4462