

The `mdframed` package ¹

auto-split frame environment

Marco Daniel Elke Schubert

v1.4e

2012/04/03

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	11
2. Syntax	2	5.6. Footnotes	12
3. The frames	3	6. Examples	13
4. Commands	3	7. Errors, Warnings and Messages	13
5. Options	4	8. Known Problems	14
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	10		

1. Motivation

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

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

¹Extending the package `framed.sty`

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

The frame was defined with the following settings.

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

2. Syntax

Loadings `mdframed`

The package itself loads the packages

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

Depending on the options `mdframed` will load

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

Load the package as usual:

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

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

Provided environment

The package defines only one environment with the following syntax:

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

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

Autodetecting floats

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

Twoside-mode

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

3. The frames

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

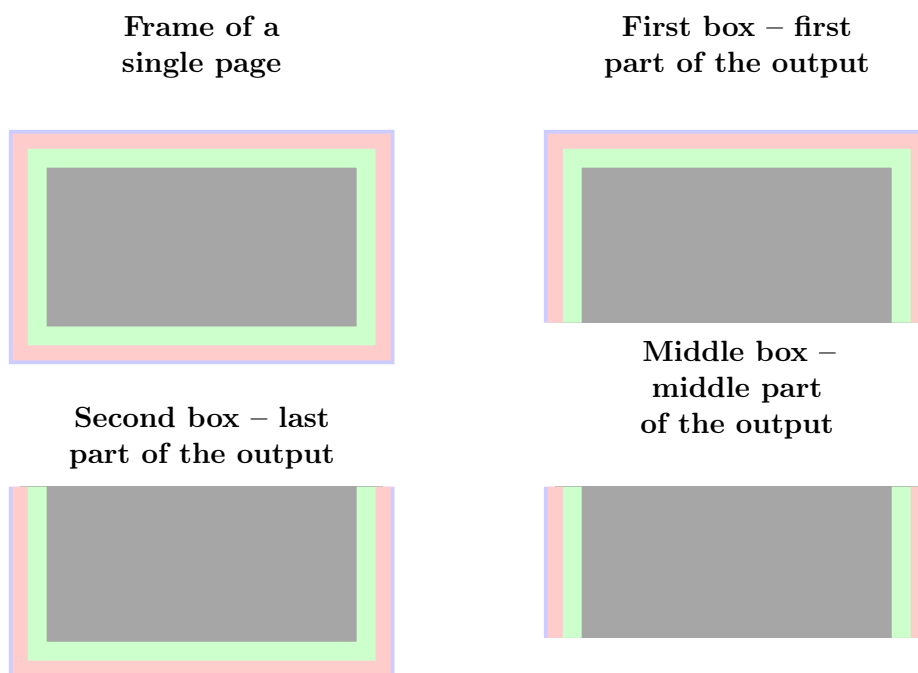


Figure 1: The basic frames

4. Commands

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

`\newmdenv`

The command has the following syntax:

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

In this way you can simply use:

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

`\renewmdenv`

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

`\surroundwithmdframed`

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

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

`\mdflength`

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

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

`\mdfsetup`

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

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

`\mdfdefinestyle`

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

Here a small example:

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

`\mdfapptodefinestyle`

This commands allows to expand a defined style.³

5. Options

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

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

³Thanks to Martin Scharrer and Enrico Gregorio:

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

5.1. Global Options

The following options are only global options.

`xcolor` default=`none`

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

`framemethod` default=`default`

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

1. \LaTeX -commands `\hrule`, `\vrule`, `\rule`,
2. `TikZ` (the package `TikZ` will be loaded) or
3. `PSTricks` (the package `pstricks` will be loaded).

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

Table 1: Allowed keys for `framemethod`

Method	Allowed keys
\LaTeX -commands	<code>default</code> , <code>tex</code> , <code>latex</code> , <code>none</code> , <code>0</code>
<code>TikZ</code>	<code>tikz</code> , <code>pgf</code> , <code>1</code>
<code>PSTricks</code>	<code>pstricks</code> , <code>ps</code> , <code>postscript</code> , <code>2</code>

FYI

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

Note

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

5.2. Global and Local Options

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

5.2.1. Options with lengths

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

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

`defaultunit` default=`pt`

see the sentence above.

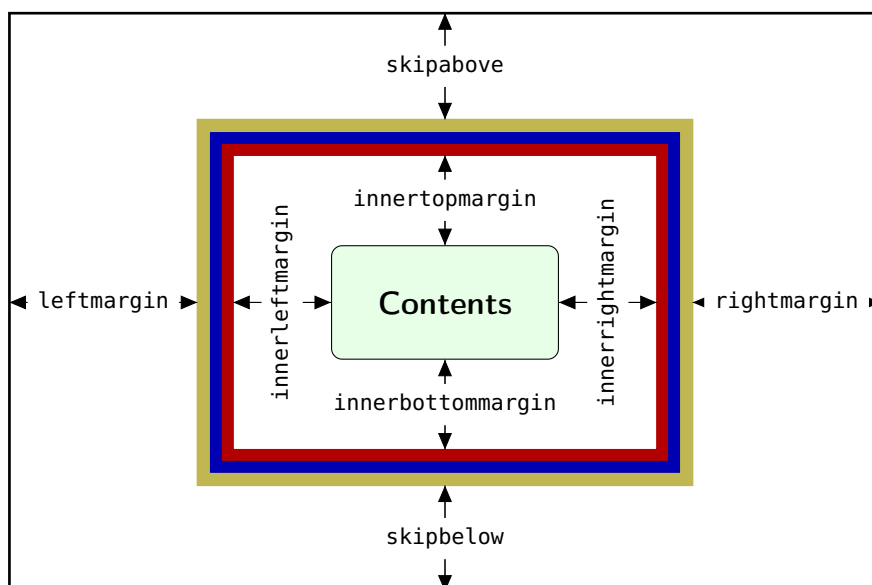


Figure 2: adjustable lengths of mdframed

`skipabove` default=0pt

Sets an additional skip above the frame.

`skipbelow` default=0pt

Sets an additional skip below the frame.

`margin`

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

`leftmargin` default=0pt

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

`rightmargin` default=0pt

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

`innerleftmargin` default=10pt

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

`innerrightmargin` default=10pt

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

`innertopmargin` default=.4\baselineskip

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

`innerbottommargin` default=.4\baselineskip
 Sets the length of the inner bottom margin of the environment.

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

`userdefinedwidth` default=0pt
 Sets the width of the whole `mdframed` environment. The width represent the width including the line width and the inner margins. The outer margins will be ignored.

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

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

`splittopskip` default=0pt
 Sets the length of the skip above the split part of the environment.

`splitbottomskip` default=0pt
 Sets the length of the skip below the split part of the environment.

`linewidth` default=0.4pt
 Sets the width of the line around the environment.

`roundcorner` default=0pt
 Sets the size of the radius of the corners of the frames.
 This works only with `framemethod=TikZ` or `PSTricks`.

`innerlinewidth` default=0pt
 Sets the width of the inner line around the environment.
 This works only with `framemethod=TikZ` or `PSTricks`.

`outerlinewidth` default=0pt
 Sets the width of the outer line around the environment.
 This works only with `framemethod=TikZ` or `PSTricks`.

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

5.2.2. Colored Options

`linecolor` default=black
 Sets the color of the line around the environment.

`backgroundcolor` default=white

Sets the color of the background of the environment.

`fontcolor` default=`black`

Sets the color of the contents of the environment.

`innerlinecolor` default=`linecolor`

Sets the color of the inner line around the environment.

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

`middlelinecolor` default=`linecolor`

Sets the color of the middle line around the environment.

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

`outerlinecolor` default=`linecolor`

Sets the color of the outer line around the environment.

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

5.2.3. General options

`everyline` default=`false`

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

`font` default=`{}`

Sets the font of the environment.

`ntheorem` default=`false`

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

`nobreak` default=`false`

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

`usetwoside` default=`true`

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

`needspace` default=`0pt`

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

`style`

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

`settings` default=`none`

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

`align` default=`left`

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

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

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

`shadow` default=`false`

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

`shadowsize` default=`8pt`

Specify the size of the shadow.

`shadowcolor` default=`black!50`

Specify the color of the shadow.

`pstrickssetting` default=`none`

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

This works only with `framemethod=PSTricks`.

`pstricksappsetting` default=`none`

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

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

Before you change one please have a look at the file `md-frame-2.mdf` to see the settings.

This works only with `framemethod=PSTricks`.

`tikzsetting` default=`none`

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

This works only with `framemethod=TikZ`.

`apptotikzsetting` default=`none`

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

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

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

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.

<code>frametitlefont</code>	default= <code>\normalfont\bfseries</code>
Sets the format of the <code>frametitle</code> .	
<code>frametitlealignment</code>	default= <code>\raggedleft</code>
Align the <code>frametitle</code> . This option must be set via <code>\mdfsetup</code> .	
<code>frametitlerule</code>	default= <code>false</code>
Set this key to <code>true</code> to get a line between the frame title and the text.	
<code>frametitlerulewidth</code>	default= <code>.2pt</code>
Sets the width of the line between the text and the title of <code>mdframed</code> .	
<code>frametitleaboveskip</code>	default= <code>5pt</code>
Sets the skip of the frame title to the margin above of <code>mdframed</code> .	
<code>frametitlebelowskip</code>	default= <code>5pt</code>
Sets the skip of the frame title to the rule of the frame title.	
<code>frametitlebackgroundcolor</code>	default= <code>white</code>
Sets the color of the background of the <code>frametitle</code>	

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`.

<code>repeatframetitle</code>	default= <code>false</code>
Repeat the frame title on every frame. The feature is currently not well implemented!!!	

5.5. Theorems

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

`\newmdtheoremenv`

Since the package is often used to highlight theorem environments, I have created a command⁴ to simplify this process. The command has the following syntax:

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

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

```
\theoremstyle{<some style>}
\newmdtheoremenv[linecolor=blue]{lemma}%
{Lemma}[section]
```

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

```
...
\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_EXGroup created a very nice presentation. I want to show the link because it's really a great work: [kts 2012 mdframed](#).

7. Errors, Warnings and Messages

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

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

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

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

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

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

Unknown **framemethod** **mdframed**

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

You have not loaded **nttheorem** 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 `\@captype` global. To work with the package `picins` you can use the following hack.

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

```

\endgroup%
}
\makeatother

```

9. ToDo

It is important to update the documentation

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

10. Acknowledgements

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

Thanks for proofreading

Alan Munn and Nahid Shajari

I hope I forgot nobody.

A. More information

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

A.1. How does `mdframed` work?

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

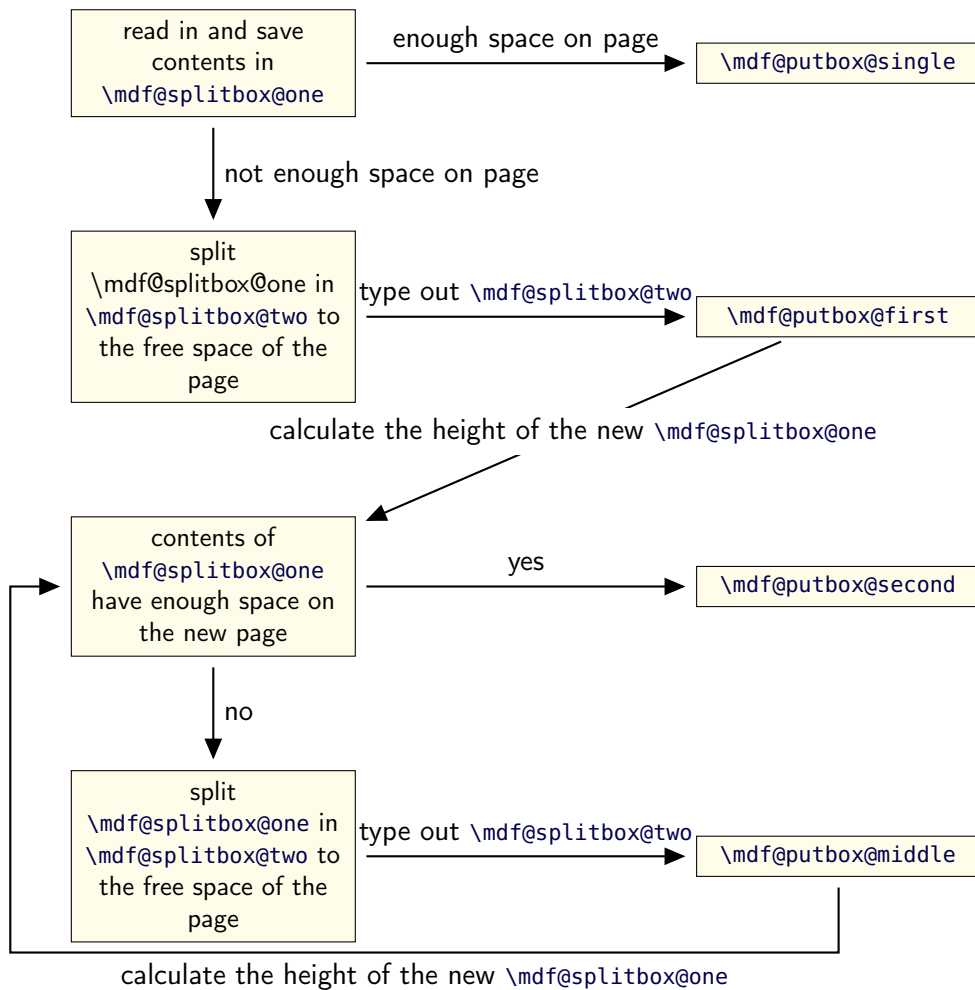


Figure 3: Setting the contents of `mdframed`

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 1.4e submitted DD MM 2012

- fixed bug (Thanks Nicolas Roy) • expand documentation (Thanks Martin Wilhelm Leidig)

Version 1.4d submitted 30 Mar 2012

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

Version 1.4 submitted 4 Mar 2012

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

Version 1.3a submitted 5 Feb 2012

- fixed bug (Thanks to Dietrich Grau)

Version 1.3 submitted 4 Feb 2012

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

Version 1.2 submitted 8 Jan 2012

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

Version 1.0b submitted 9 Dec 2011

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

Version 1.0 submitted 13 Nov 2011

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

Version 0.9g submitted 08 Oct 2011

- fixed documentation • added small footnote compatibility

Version 0.9f submitted 04 Oct 2011

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

Version 0.9e submitted 11 Sep 2011

- working with `twoside` modus

Version 0.9d submitted 10 Sep 2011

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

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

Version 0.9b submitted 7 Sep 2011

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

Version 0.9a submitted 5 Sep 2011

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

Version 0.9 submitted 4 Sep 2011

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

Version 0.8a

- fixes bugs • fixes documentation

Version 0.8 submitted 22 Aug 2011

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

Version 0.7a submitted 6 August 2011

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

Version 0.6a submitted 22 Dec 2010

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

B. Implementation

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

B.1. The Explanation of mdframed.sty

Id : mdframed.dtx3682012-04-03 16:11:28Zmarco Rev : 368 Author : marco

Date : 2012-04-03 16:11:28 +0200(Di, 03.Apr2012)

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

Set package information

```
1 \def\mdversion{v1.4e}
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 368 2012-04-03 16:11:28Z marco $%
7     \mdversion: \mdframedpackagename]
```

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

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

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

Loading required packages

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

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

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

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

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

```

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

`\mdf@dolist`

Loop used by *mdframed*.

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

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

Command to define a new length with a default value.

```

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

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

```

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

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

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

```

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

```

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

```

```

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

```

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

```

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

```

```

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

```

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

```

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

```

```

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

```

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

```

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

```

Start declaration of options

```

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

```

Only provide to be backward compatible

```

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

```

```

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

```

`\mdf@framemethod`

```

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

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

```

`\mdf@do@lengthoption`

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

```

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

```

```

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

```

`\mdf@do@lengthoption`

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

```

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

```

`\mdf@do@booloption`

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

```

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

`\mdf@do@alignoption`

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

```

213 \mdf@dolist{\mdf@do@alignoption}{%
214     {left==\mdf@leftmargin@length==\z@},%
215     {center==\fill==\fill},%
216     {right==\fill==\mdf@rightmargin@length},%
217     {outer==\fill==\mdf@rightmargin@length},%not supported yet
218     {outer==\mdf@leftmargin@length==\fill},%not supported yet
219 }
```

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

Set the alignment.

```

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

```

```

228   }{%
229       \def\mdf@makeboxalign@left{\csuse{mdf@align@#1@left}}%
230       \def\mdf@makeboxalign@right{\csuse{mdf@align@#1@right}}%
231   }%
232 }

```

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

Option to pass options to tikz or pstricks

```

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

```

`\mdf@xcolor`

Problem with xcolor. This part must be reworked!

```

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

```

`\mdf@needspace`

Defining the option needspace

```

261 \define@key{mdf}{needspace}[\z@]{%
262     \begingroup%
263         \setlength{\dimen@}{#1}%
264         \vskip\z@\@plus\dimen@%
265         \penalty -100\vskip\z@\@plus -\dimen@%
266         \vskip\dimen@%
267         \penalty 9999%
268         \vskip -\dimen@%

```

```

269      \vskip\z@skip % hide the previous |\vskip| from |\addvspace|
270      \endgroup%
271 }

272 \DeclareDefaultOption{%
273   \mdf@PackageWarning{Unknown Option '\CurrentOption' for mdframed}}
274 \ProcessKeyvalOptions*\relax

```

\mdfsetup

Short form of `\setkeys{mdf}`

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

\mdf@style

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

```

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

```

\mdf@print@space

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

```

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

```

\new...

Initialize all commands and length which will we used later

```

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

```

```

\mdf@lrbox
\endmdf@lrbox

```

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

```

342
343 \def\mdf@lrbox#1{%
344 %%patch to work with amsthm
345 \mdf@patchamsthm
346 %%end patch
347 \edef\mdf@restoreparams{%
348 \parindent=\the\parindent \parskip=\the\parskip}
349 \setbox#1\vbox\bgroup
350 \color@begingroup%
351 \mdf@horizontalmargin@equation%
352 \columnwidth=\hsize%
353 \textwidth=\hsize%

```

```

354 \parboxrestore%
355 \mdf@restoreparams%
356 %SETZE
357 \afterindentfalse%
358 \afterheading%
359 %STREICHE
360 %\doendpe
361 }
362
363 \def\endmdf@lrbox{\color@endgroup\egroup}
364

```

```

\mdf@ignorevbadness
\mdf@restorevbadness

```

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

```

365 \newrobustcmd*\mdf@ignorevbadness{%
366 \edef\mdf@currentvbadness{\the\vbadness}%
367 \vbadness=\@M%
368 \afterassignment\mdf@restorevbadness}
369 \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`.

```

370 \ifpackageloaded{amsthm}{%
371 \newrobustcmd\mdf@patchamsth{%
372 \let\mdf@deferred@thm@head\deferred@thm@head
373 \patchcmd{\deferred@thm@head}{\indent}{\relax}{}{}
374 }%
375 }\let\mdf@patchamsth\relax}%

```

```

\mdf@trivlist
\endmdf@trivlist

```

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

```

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

```

```

391 \let\endmdf@trivlist\endtrivlist
392 \patchcmd\endmdf@trivlist\@endparenv\mdf@endparenv{}\{\}
393 \def\mdf@endparenv{%
394   \addpenalty\@endparpenalty\addvspace\mdf@skipbelow@length\@endpetrue}
395

```

```

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

```

```

396 \newrobustcmd*\mdf@makebox@out[2][\linewidth]{%
397   \noindent\hb@xt@\z@{%
398     \noindent\makebox[\dimexpr #1\relax][l]{#2}%
399   \hss}%
400 }%
401 \newrobustcmd*\mdf@makebox@in[2][\mdf@userdefinedwidth@length]{%
402   \noindent\makebox[\dimexpr #1\relax][l]{#2}%
403 }

```

```

\mdfdefinestyle
\mdfapptodefinestyle

```

See explanation of this commands above.

```

404 \newrobustcmd*\mdfdefinestyle[2]{%
405   \csdef{mdf@definestyle@#1}{#2}%
406 }
407 \newrobustcmd*\mdfapptodefinestyle[2]{%
408   \ifcsundef{mdf@definestyle@#1}%
409     {\mdf@PackageWarning{Unknown style #1}}%
410     {\csappto{mdf@definestyle@#1}{, #2}}%
411 }

```

```

\mdflength
\surroundwithmdframed

```

Helper macros to work with *mdframed*

```

412 \newrobustcmd*\mdflength[1]{\csuse{mdf@#1@length}}
413
414 \newrobustcmd*\surroundwithmdframed[2][\]{%
415   \BeforeBeginEnvironment{#2}{\begin{mdframed}[#1]}%
416   \AfterEndEnvironment{#2}{\end{mdframed}}%
417 }

```

```

\newmdenv
\renewmdenv
\newmdtheoremenv
\mdtheorem

```

Defining of the new environment definitions.

```

418 \newrobustcmd*\newmdenv[2][\]{%
419   \newenvironment{#2}{%
420     \mdfsetup{#1}%
421     \begin{mdframed}%

```

```

422     }{%
423     \end{mdframed}%
424 }%
425 }
426 \newrobustcmd*\renewmdenv[2][ ]{%
427   \expandafter\let\csname #2\endcsname\relax%
428   \expandafter\let\csname end#2\endcsname\relax%
429   \newmdenv[#1]{#2}%
430 }%
431
432
433 \DeclareDocumentCommand\newmdtheoremenv{0}{ m o m o }{%
434   \ifboolexpr{ test {\IfNoValueTF {#3}} and test {\IfNoValueTF {#5}} }{%
435     {\newtheorem{#2}{#4}}{%
436       \IfValueTF{#3}{\newtheorem{#2}[#3]{#4}}{%
437         \IfValueTF{#5}{\newtheorem{#2}{#4}[#5]}{%
438           }%
439         \BeforeBeginEnvironment{#2}{%
440           \begin{mdframed}[#1]}%
441         \AfterEndEnvironment{#2}{%
442           \end{mdframed}}%
443       }%
444     }%
445   \DeclareDocumentCommand{\mdtheorem}{ 0{ } m o m o }%
446   {\ifcsdef{#2}%
447     {\mdf@PackageWarning{Environment #2 already exists\MessageBreak}}%
448     {%
449       \IfNoValueTF {#3}%
450       {%#3 not given -- number relationship
451         \IfNoValueTF {#5}
452         {%#3+#5 not given
453           \@definecounter{#2}%
454           \expandafter\xdef\csname the#2\endcsname{\@thmcounter{#2}}
455           \newenvironment{#2}[1][ ]{%
456             \refstepcounter{#2}
457             \ifstrempy{##1}%
458             {\let\@temptitle\relax}%
459             {%
460               \def\@temptitle{\mdf@theoremseparator%
461                 \mdf@theoremspace%
462                 \mdf@theoremtitlefont%
463                 ##1}%
464             }
465             \begin{mdframed}[#1,frametitle={\strut#4 \csname the#2\endcsname\@temptitle}}}%
466             {\end{mdframed}}%
467           \newenvironment{#2*}[1][ ]{%
468             \ifstrempy{##1}{\let\@temptitle\relax}{\def\@temptitle{: \ ##1}}
469             \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}}}%
470             {\end{mdframed}}%
471           }%
472           {%#5 given -- reset counter
473             \@definecounter{#2}\@newctr{#2}[#5]%
474             \expandafter\xdef\csname the#2\endcsname{\@thmcounter{#2}}
475             \expandafter\xdef\csname the#2\endcsname{%
476               \expandafter\noexpand\csname the#5\endcsname \@thmcountersep
477               \@thmcounter{#2}}%

```

```

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

```

<pre> \mdfframedtitleenv \mdf@frametitle \mdf@setopt@body \mdf@setopt@title </pre>
--

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


```

525 %TESTVERSION
526 % \newrobustcmd*\mdf@setopt@title{%
527 %   \ifbool{mdf@frametitulerule}{\booltrue{mdf@bottomline}}{\boolfalse{mdf@bottomline}}%
528 %   \let\ifmdf@leftline\ifmdf@frametitleleftline%
529 %   \let\ifmdf@topline\ifmdf@frametitletopline%
530 %   \let\ifmdf@rightline\ifmdf@frametitlerightline%
531 %   \let\ifmdf@bottomline\ifmdf@frametitlebottomline%
532 %   \mdfsetup{innerbottommargin=\mdf@titlebelowskip@length,%
533 %             innertopmargin=\mdf@titleaboveskip@length,%
534 %             middlelinecolor=\mdf@frametitulerulecolor,%
535 %             backgroundcolor=\mdf@frametitlebackgroundcolor,%
536 %             middlelinewidth=\mdf@frametitulerulewidth@length,%
537 %             innerleftmargin=\mdf@frametitleleftmargin@length,%
538 %             innerrightmargin=\mdf@frametitlerightmargin@length,%
539 %             alignment=\mdf@frametitlealignment,
540 %             skipbelow=\z@}%
541 % \def\mdf@linecolor@bottom{\color{\mdf@frametitlebottomrulecolor}}%
542 % \mdf@frametitlesettings%
543 % }
544 %
545 % \newrobustcmd*\mdf@setopt@body{%
546 %   \mdfsetup{topline=false,skipabove=\z@}%
547 %   \unskip\nointerlineskip%
548 % }
549 %
550 % \newrobustcmd\mdfframedtitleenv[1]{%
551 %   \begingroup
552 %     \mdf@setopt@title
553 %     \color@setgroup
554 %     \mdf@frametitlefont
555 %     \mdf@lrbox{\mdf@splitbox@one}%
556 %     \mdf@frametitlealignment
557 %     #1\par\unskip
558 %   \endmdf@lrbox
559 %   \mdf@ignorevbadness
560 %   \global\setbox\mdf@frametitlebox\vbox{\unvbox\mdf@splitbox@one}%
561 %   \mdf@ignorevbadness
562 %   \global\setbox\mdf@splitbox@one\vbox{\unvcopy\mdf@frametitlebox}%
563 %   \detected@mdf@put@frame%
564 %   \color@endgroup%
565 %   \endgroup
566 % }
567 % \newrobustcmd\mdfframedtitleenv[1]{%
568 %   \color@begingroup%
569 %     \mdf@lrbox{\mdf@frametitlebox}%
570 %     \mdf@frametitlealignment%
571 %     \color{\mdf@frametitlefontcolor}%
572 %     \normalfont\mdf@frametitlefont{#1}\par\unskip
573 %   \endmdf@lrbox%
574 %   \mdf@ignorevbadness%
575 %   \global\setbox\mdf@frametitlebox\vbox{\unvbox\mdf@frametitlebox}%
576 %   \global\mdfframetitleboxwidth=\wd\mdf@frametitlebox\relax%
577 %   \global\mdfframetitleboxheight=\ht\mdf@frametitlebox\relax%
578 %   \global\mdfframetitleboxdepth=\dp\mdf@frametitlebox\relax%
579 %   \global\mdfframetitleboxtotalheight=\dimexpr\ht\mdf@frametitlebox+\dp\mdf@frametitlebox
580 %     +\mdf@frametitleaboveskip@length+\mdf@frametitlebelowskip@length\relax%

```

```

581   \color@endgroup%
582 }
583
584 \newrobustcmd*\mdf@@frametitle{%
585   \mdfframedtitleenv{\mdf@frametitle}%
586 }
587
588 \newrobustcmd*\mdf@@frametitle@use{%
589   \begingroup
590   \parskip\z@
591   \parindent\z@
592   \offinterlineskip
593   \mdf@ignorevbadness%
594   \global\setbox\mdf@splitbox@one\vbox{%
595     \unvcopy\mdf@frametitlebox%
596     \mdf@@frametitlerule%
597     \unvbox\mdf@splitbox@one
598   }%
599   \mdf@ignorevbadness%
600   \global\setbox\mdf@splitbox@one\vbox{%
601     \unvbox\mdf@splitbox@one}%
602   \endgroup
603   \mdfsetup{innertopmargin=\mdf@frametitleaboveskip@length}%
604 }

```

`\mdf@checkntheorem`

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

```

605
606 \newrobustcmd*\mdf@checkntheorem{%
607   \ifbool{mdf@ntheorem}%
608     {\ifundef{\theorempreskipamount}%
609       {\mdf@PackageWarning{You have not loaded ntheorem yet}}%
610       {\setlength{\theorempreskipamount}{\z@}%
611         \setlength{\theorempostskipamount}{\z@}%
612       }%
613     }{}%
614 }

```

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

Support for footnotes.

```

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

```

```

626 }
627 \newrobustcmd*\mdf@footnoteinput{%
628   \def\@mpfn{mpfootnote}%
629   \def\thempfn{\thempfootnote}%
630   \c@mpfootnote\z@%
631   \let\@footnotetext\@mpfootnotetext%
632 }

```

```

\mdf@load@style
\mdf@styledefinition

```

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

```

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

```

```

\detected@mdf@put@frame

```

Detect whether inside a non breakable environment.

```

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

```

`\mdf@hidealllines@check`

```

714 \newrobustcmd*\mdf@hidealllines@check{%
715   \ifbool{mdf@hidealllines}{%
716     \boolfalse{mdf@leftline}\boolfalse{mdf@rightline}%
717     \boolfalse{mdf@topline}\boolfalse{mdf@bottomline}%
718     \boolfalse{mdf@frametitleleftline}\boolfalse{mdf@frametitlerightline}%
719     \boolfalse{mdf@frametitletopline}\boolfalse{mdf@frametitlebottomline}%
720   }{}%
721 }

```

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

That the user environment.

```
722 \newenvironment{mdframed}[1][{}]{%
723 \color@begingroup%
724 \mdfsetup{userdefinedwidth=\linewidth,#1}%
725 %%% \mdf@hidealllines@check%
726 \mdf@twoside@checklength%
727 \let\width\z@%
728 \let\height\z@%
729 \mdf@checktheorem%
730 \mdf@styledefinition%
731 \mdf@footnoteinput%
732 \color{\mdf@fontcolor}%
733 \mdf@font%
734 \ifvmode\nointerlineskip\fi%
735 \mdf@trivlist{\mdf@skipabove@length}%
736 \ifdefempty{\mdf@frametitle}{\mdf@@frametitle}%
737 \mdf@settings%
738 \mdf@lrbox{\mdf@splitbox@one}%
739 }%
740 {\par\unskip\ifvmode\nointerlineskip\hrule \@height\z@ \@width\hsize\fi%
741 \ifmdf@footnoteinside%
742 \def\mdf@reserveda{%
743 \mdf@footnoteoutput%
744 \endmdf@lrbox%
745 \ifdefempty{\mdf@frametitle}{\mdf@@frametitle@use}%
746 \detected@mdf@put@frame}%
747 \else%
748 \def\mdf@reserveda{%
749 \endmdf@lrbox%
750 \ifdefempty{\mdf@frametitle}{\mdf@@frametitle@use}%
751 \detected@mdf@put@frame%
752 \mdf@footnoteoutput%
753 }%
754 \fi%
755 \mdf@reserveda%
756 \endmdf@trivlist%
757 \color@endgroup\@doendpe%
758 }
759
760
```

```
\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.

```
761 \newtoggle{md:checktwoside}
762 \settoggle{md:checktwoside}{false}
```

```

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

```

`\mdf@freepagevspace`

```

798 \newrobustcmd*\mdf@freepagevspace{%
799   \penalty\@M \vskip 2\baselineskip
800   \penalty9999 \vskip -2\baselineskip
801   \penalty9999
802   \ifdimequal{\pagegoal}{\maxdimen}%
803     {\mdf@freevspace@length\vsiz}%
804     {\mdf@freevspace@length=\pagegoal\relax%
805      \advance\mdf@freevspace@length by -\pagetotal\relax%
806      \addtolength\mdf@freevspace@length{\dimexpr-\parskip\relax}\relax%
807     }%
808 }

```

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

Width of the box

```
809 \newrobustcmd*\mdf@advancelength@horizontalmargin@sub[1]{%
810   \advance\mdf@horizontalsofbox by -\csname mdf@#1@length\endcsname\relax%
811 }
812 \newlength\mdf@horizontalsofbox
813 \newrobustcmd*\mdf@horizontalmargin@equation{%
814   \setlength{\mdf@horizontalsofbox}{\mdf@userdefinedwidth@length}%
815   \mdf@dolist{\mdf@advancelength@horizontalmargin@sub}{%
816     leftmargin,outerlinewidth,middlelinewidth,%
817     innerlinewidth,innerleftmargin,innerlinewidth,%
818     innerlinewidth,middlelinewidth,outerlinewidth,%
819     rightmargin}%
820   \notbool{mdf@leftline}{%
821     \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
822     \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
823     \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
824   }{}%
825   \notbool{mdf@rightline}{%
826     \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
827     \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
828     \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
829   }{}%
830   \ifdimless{\mdf@horizontalsofbox}{3cm}%
831     {\mdf@PackageWarning{You have only a width of 3cm}}{}
832   \hsize=\mdf@horizontalsofbox%
833 }
```

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

horizontal space in relation of the lines.

```
834 \newrobustcmd*\mdf@keeplines@single{%
835   \notbool{mdf@topline}{%
836     \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
837     \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
838     \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
839   }{}%
840   \notbool{mdf@bottomline}{%
841     \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
842     \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
843     \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
844   }{}%
845 }
```

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

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

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

```

848 }
849 \newrobustcmd*\mdf@advancelength@freevspace@sub[1]{%
850   \advance\dimen@ by -\csname md f@#1@length\endcsname\relax%
851 }
852 \newrobustcmd*\mdf@advancelength@freevspace@add[1]{%
853   \advance\dimen@ by \csname md f@#1@length\endcsname\relax%
854 }

```

\mdf@reset

Reset changes

```

855 \protected@edef\mdf@reset{\boxmaxdepth\the\boxmaxdepth
856   \splittopskip\the\splittopskip}%

```

\mdf@put@frame@standalone

Output of **mdframed** inside a non breakable environment.

```

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

```

\mdf@put@frame

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

```

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

```



```

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

```

`\mdf@put@frame@i`

Output of the first splitted box.

```

907 \def\mdf@put@frame@i{%Box muss gesplittet werden -- Ausgabe der ersten Teilbox
908 %Berechnung der Splittgroesse -- Linien und Abstand oben
909 %\vbox to 0pt{%
910 %\rlap{\smash{\the\mdf@freevspace@length}}%\hrule \@height\z@ \@width\hsize
911 \mdf@freepagevspace%gives \mdf@freevspace@length
912 %Berechnung ob nur oberen Linien nur auf die Seite passe
913 \dimen@=\the\mdf@freevspace@length%
914 \dimen@i=\mdf@innertopmargin@length%
915 \advance\dimen@i by \mdf@innerlinewidth@length%
916 \advance\dimen@i by \mdf@middlelinewidth@length%
917 \advance\dimen@i by \mdf@outerlinewidth@length%
918 \advance\dimen@i by 2\baselineskip%
919 \ifdimless{\dimen@}{\dimen@i}%
920     {\hrule \@height\z@ \@width\hsize%
921         \vfill\ eject%
922         \def\mdf@reserved@a{\mdf@put@frame}%
923     }{%
924         \mdf@freepagevspace%
925         \dimen@=\the\mdf@freevspace@length%
926         \mdf@dolist{\mdf@advancelength@freevspace@sub}{%calculate with \dimen@
927             outerlinewidth,middlelinewidth,innerlinewidth,%
928             innertopmargin,splitbottomskip}%
929         \ifbool{\mdf@everyline}{%
930             \ifbool{\mdf@bottomline}{%
931                 \advance\dimen@ by -\mdf@innerlinewidth@length%
932                 \advance\dimen@ by -\mdf@middlelinewidth@length%
933                 \advance\dimen@ by -\mdf@outerlinewidth@length%
934             }{}%
935         }{}%
936         \ifbool{\mdf@topline}{%
937             \advance\dimen@ by \mdf@innerlinewidth@length%
938             \advance\dimen@ by \mdf@middlelinewidth@length%

```

```

939         \advance\dimen@ by \mdf@outerlinewidth@length%
940     }%
941     \advance\dimen@.8\pageshrink
942     \ifdimless{\ht\mdf@splitbox@one+\dp\mdf@splitbox@one}{\dimen@}%
943     {\mdf@PackageWarning{You got a bad break\MessageBreak
944         you have to change it manually\MessageBreak
945         by changing the text, the space\MessageBreak
946         or something else}%
947     \advance\dimen@ by -1.8\baselineskip\relax%
948     }{}%
949 %
950     \advance\dimen@ by -1pt\relax%Box darf nicht zu Groß werden.
951     \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
952     \mdf@ignorevbadness%
953     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@
954     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
955     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
956     \ifbool{\mdf@repeatframetitle}{%
957         \setbox\mdf@splitbox@one\vbox{%
958             \vbox to \mdf@splittopskip@length{\hsize\z@}
959             %\par\unskip\nointerlineskip
960             \unvcopy\mdf@frametitlebox%
961             \mdf@@frametitlerule%
962             \vbox to\dimexpr
963                 -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox
964                 +\mdf@innertopmargin@length\relax{\hsize\z@}%
965             \unvbox\mdf@splitbox@one}%
966     }{}%
967     \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
968     {%Falsch gesplittet
969     \mdf@PackageInfo{Box was splittet wrong\MessageBreak}%
970     \dimen@i=\dimen@
971     \advance\dimen@ by -\ht\mdf@splitbox@two
972     \advance\dimen@ by -\dp\mdf@splitbox@two
973     \advance\dimen@i by 0.5\dimen@
974     \splittopskip\z@%
975     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two%
976         %benoetigt um Tiefe zu haben
977         \hrule \@height\dp\strutbox \@width\z@
978         \unvbox\mdf@splitbox@one}
979     \splittopskip\mdf@splittopskip@length%
980     \mdf@ignorevbadness%
981     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@i
982     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
983     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
984     \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
985     {%
986     \splittopskip\z@\mdf@ignorevbadness%
987     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two%
988         %benoetigt um Tiefe zu haben
989         \hrule \@height\dp\strutbox \@width\z@
990         \unvbox\mdf@splitbox@one}%
991     \mdf@ignorevbadness%
992     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
993     }{}%
994     \ifbool{\mdf@repeatframetitle}{%
995         \setbox\mdf@splitbox@one\vbox{%

```

```

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

```

`\mdf@put@frame@ii`

Output of the middle and last box.

```

1043 \def\mdf@put@frame@ii{%Ausgabe der mittleren Box(en) wenn vorhanden
1044   \setlength{\mdf@freevspace@length}{\vsize}%
1045   \setlength{\mdimen@}{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%

```

```

1046 \mdf@dolist{\mdf@advance\length@freespace@add}{%used \dimen@
1047         outerlinewidth,middlelinewidth,innerlinewidth,%
1048         innerbottommargin}%%Addition der Linien unten
1049 \ifbool{mdf@everyline}{%
1050     \ifbool{mdf@topline}{%
1051         \advance\dimen@ by \mdf@innerlinewidth@length%
1052         \advance\dimen@ by \mdf@middlelinewidth@length%
1053         \advance\dimen@ by \mdf@outerlinewidth@length%
1054     }{}%
1055 }{}%
1056 \ifbool{mdf@bottomline}{%
1057     \advance\dimen@ by -\mdf@innerlinewidth@length%
1058     \advance\dimen@ by -\mdf@middlelinewidth@length%
1059     \advance\dimen@ by -\mdf@outerlinewidth@length%
1060     \relax}%
1061 \ifdimgreater{\dimen@}{\mdf@freespace@length}%
1062 {%
1063     \advance\mdf@freespace@length by -\mdf@splitbottomskip@length\relax%
1064     \advance\mdf@freespace@length by .5\ht\strutbox\relax%
1065     \ifbool{mdf@everyline}{%
1066         \ifbool{mdf@topline}{%
1067             \advance\mdf@freespace@length by -\mdf@innerlinewidth@length%
1068             \advance\mdf@freespace@length by -\mdf@middlelinewidth@length%
1069             \advance\mdf@freespace@length by -\mdf@outerlinewidth@length%
1070         }{}%
1071         \ifbool{mdf@bottomline}{%
1072             \advance\mdf@freespace@length by -\mdf@innerlinewidth@length%
1073             \advance\mdf@freespace@length by -\mdf@middlelinewidth@length%
1074             \advance\mdf@freespace@length by -\mdf@outerlinewidth@length%
1075         }\relax{}%
1076     }{}%
1077     \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
1078     \mdf@ignorevbadness%
1079     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \mdf@freespace@length%
1080     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%PRUEFEN!!!
1081     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%PRUEFEN!!!
1082     \ifbool{mdf@repeatframetitle}{%
1083         \setbox\mdf@splitbox@one\vbox{%
1084             \vbox to \mdf@splittopskip@length{\hsize\z@}
1085             %\par\unskip\nointerlineskip
1086             \unvcopy\mdf@frametitlebox%
1087             \mdf@@frametitlerule%
1088             \vbox to\dimexpr
1089                 -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox
1090                 +\mdf@innertopmargin@length\relax{\hsize\z@}%
1091             \unvbox\mdf@splitbox@one}%
1092     }{}%
1093     \ifvoid\mdf@splitbox@one\relax%
1094         \mdf@PackageWarning{You got a bad break\MessageBreak
1095             because the split box is empty\MessageBreak
1096             You have to change the settings}%
1097         \setbox\mdf@splitbox@one{\unvbox\mdf@splitbox@two}%
1098         \def\mdf@reserved@a{\enlargethispage{\baselineskip}\mdf@put@frame@ii}%
1099     \else
1100         \begingroup
1101         \mdf@@setzref

```

```

1102      \mdf@putbox@middle%
1103      \endgroup
1104      \hrule \@height\z@ \@width\hsize
1105      \vfill\ject
1106      \def\mdf@reserved@a{\mdf@put@frame@ii}%
1107      \fi
1108      }%Hier die Ausgabe der mittleren Box
1109      {\ifvoid\mdf@splitbox@one
1110        \mdf@PackageWarning{You got a bad break\MessageBreak
1111                           because the last split box is empty\MessageBreak
1112                           You have to change the settings}%
1113        \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one\hrule \@height\z@ \@width\mdfbounding
1114        \fi%
1115        \ifdimless{\ht\mdf@splitbox@one}{lsp}}{%
1116          \mdf@PackageWarning{You got a bad break\MessageBreak
1117                              because the last split box is empty\MessageBreak
1118                              You have to change the settings}%
1119          %\hb@xt@\z@{\box\mdf@splitbox@one}%
1120          \let\mdf@reserved@a\relax%
1121          \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one\hrule \@height\z@ \@width\mdfboundin
1122        }{}%
1123        \begingroup%
1124          \mdf@@@setzref
1125          \mdf@putbox@second%
1126          \hrule \@height\z@ \@width\hsize%
1127        \endgroup%
1128        \let\mdf@reserved@a\relax%
1129      }%Hier kommt die Ausgabe der letzten Box
1130      \mdf@reserved@a%
1131    }
1132

```

```

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

```

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

```

1133 %%%%      -----t-----
1134 %%%%      |                |
1135 %%%%      |                |
1136 %%%%      |                |
1137 %%%%      l|                |r
1138 %%%%      |                |

```

```

1139 %%% | |
1140 %%% |-----|
1141 %%% b
1142 %%Zusammenhaenge abfragen:
1143 \newrobustcmd*{\mdf@test@ltr}%
1144 \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1145 and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1146 %3-set
1147 \newrobustcmd*{\mdf@test@ltr}%
1148 \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1149 and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1150 \newrobustcmd*{\mdf@test@ltb}%
1151 \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1152 and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1153 \newrobustcmd*{\mdf@test@trb}%
1154 \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1155 and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1156 \newrobustcmd*{\mdf@test@lrb}%
1157 \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1158 and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1159 %2-set
1160 \newrobustcmd*{\mdf@test@lb}%
1161 \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1162 and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1163 \newrobustcmd*{\mdf@test@rb}%
1164 \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1165 and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1166 \newrobustcmd*{\mdf@test@tr}%
1167 \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1168 and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1169 \newrobustcmd*{\mdf@test@lt}%
1170 \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1171 and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1172 \newrobustcmd*{\mdf@test@lr}%
1173 \ifboolexpr{not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1174 and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1175 \newrobustcmd*{\mdf@test@tb}%
1176 \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1177 and not (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1178 %Einzellinien
1179 \newrobustcmd*{\mdf@test@l}%
1180 \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1181 and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1182 \newrobustcmd*{\mdf@test@r}%
1183 \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1184 and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1185 \newrobustcmd*{\mdf@test@t}%
1186 \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1187 and not (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1188 \newrobustcmd*{\mdf@test@b}%
1189 \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1190 and not (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1191 %keine Linien
1192 \newrobustcmd*{\mdf@test@noline}%
1193 \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1194 and not (bool {mdf@leftline}) and not (bool {mdf@rightline})}}

```

```

1195 \newrobustcmd*\mdf@test@single{%
1196     \ifboolexpr{ not (test {\mdf@test@lrb} or test {\mdf@test@ltr} or
1197         test {\mdf@test@ltb} or test {\mdf@test@trb} or
1198         test {\mdf@test@lrb} or test {\mdf@test@lb} or
1199         test {\mdf@test@rb} or test {\mdf@test@tr} or
1200         test {\mdf@test@lt} ) }}
1201 %

1202 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{framemethod}%
1203 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{xcolor}%
1204
1205 \endinput

```

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

```

1206 %% Style file for mdframed for package option 'framemethod=default'
1207 %%
1208 %% This package may be distributed under the terms of the LaTeX Project
1209 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1210 %% Either version 1.0 or, at your option, any later version.
1211 %%
1212 %%
1213 %%$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $
1214 %

```

```

\mdframed0packagename
\mdf@frame0date@svn

```

local settings

```

1215 \def\mdframed0packagename{md-frame-0}
1216 \def\mdf@frame0date@svn$#1: #2 #3 #4-#5-#6 #7 #8$#{#4/#5/#6\space }
1217 \ProvidesFile{md-frame-0.mdf}%
1218     [\mdf@frame0date@svn$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $%
1219     \mdversion: \mdframed0packagename]

```

```

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

```

short command

```

1220 \def\mdf@background@default{\color{\mdf@backgroundcolor}}
1221 \def\mdf@frametitlebackground@default{\color{\mdf@frametitlebackgroundcolor}}
1222 \def\mdf@shadow@default{\color{\mdf@shadowcolor}}
1223 \def\mdf@innerlinecolor@default{\color{\mdf@innerlinecolor}}
1224 \def\mdf@middlelinecolor@default{\color{\mdf@middlelinecolor}}
1225 \def\mdf@outerlinecolor@default{\color{\mdf@outerlinecolor}}
1226 \def\mdf@frametitlerulecolor@default{\color{\mdf@frametitlerulecolor}}
1227 \let\mdf@linecolor@default\mdf@middlelinecolor@default
1228 \def\mdf@@frametitlerule{%
1229     \ifbool{mdf@frametitlerule}{%
1230         \vbox to \mdf@frametitlerulewidth@length {\hsize\mdfframetitleboxwidth%
1231             \par\unskip\vskip\mdf@frametitlebelowskip@length%
1232             \rlap{\noindent\hspace*{-\mdf@innerleftmargin@length}%
1233                 \mdf@frametitlerulecolor@default%
1234                 \rule{\dimexpr\mdfframetitleboxwidth%

```

```

1235         +\mdf@innerleftmargin@length
1236         +\mdf@innerrightmargin@length\relax
1237     }\mdf@frametitlewidth@length}%
1238 }}%
1239 }{}
1240 \par\unskip\vskip\mdf@innertopmargin@length%
1241 }%
1242

```

```

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

```

The frame of a non splitted contents of *mdframed*

```

1243 \def\mdf@frame@background@single{%
1244     \ifbool{mdf@shadow}{%
1245         \rlap{\smash{\mdf@shadow@default%
1246             \rule[\dimexpr-\mdf@boundingboxdepth
1247                 -\mdf@shadowsize@length
1248                 \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{\relax}%
1249             {\dimexpr\mdf@boundingboxtotalwidth
1250                 +\mdf@shadowsize@length
1251                 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{\relax}%
1252             {\dimexpr\mdf@boundingboxtotalheight
1253                 +\mdf@shadowsize@length
1254                 \ifbool{mdf@bottomline}{+\mdf@middlelinewidth@length}{\relax}%
1255             }%
1256         }}}%
1257     \rlap{\mdf@background@default%
1258         \rule[-\mdf@boundingboxdepth]%
1259             {\mdf@boundingboxtotalwidth}%
1260             {\mdf@boundingboxtotalheight}%
1261         }%
1262 }%
1263 \def\mdf@frame@frametitlebackground@single{%
1264     \rlap{\mdf@frametitlebackground@default%
1265         \rule[\dimexpr-\mdf@boundingboxdepth+\mdf@boundingboxtotalheight-\mdf@frametitleboxtotalheight\relax]%
1266             {\mdf@boundingboxtotalwidth}%
1267             {\mdf@frametitleboxtotalheight}%
1268         }%
1269 }%
1270
1271 \def\mdf@frame@topline@single{%
1272     \rlap{\mdf@linecolor@default%
1273         \ifbool{mdf@topline}{%
1274             \rule[\dimexpr\mdf@boundingboxheight-\mdf@boundingboxdepth%
1275                 +\mdf@innerbottommargin@length+\mdf@innertopmargin@length\relax]%
1276                 {\mdf@boundingboxtotalwidth}%
1277                 {\mdf@middlelinewidth@length}}%
1278         }%
1279     }%
1280 }%
1281 \def\mdf@frame@bottomline@single{%

```



```

1282 \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1283 \ifbool{mdf@bottomline}{%
1284 \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]{%
1285 {\dimexpr\mdfboundingboxtotalwidth
1286 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}}%
1287 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}}{\relax}%
1288 {\mdf@middlelinewidth@length}}}%
1289 }%
1290 }%
1291 }%
1292 \def\mdf@frame@leftline@single{%
1293 \llap{\mdf@linecolor@default%
1294 \rule[-\mdfboundingboxdepth]{%
1295 {\mdf@middlelinewidth@length}%
1296 {\dimexpr\mdfboundingboxtotalheight%
1297 \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}}{\relax}%
1298 }%
1299 }%
1300 \def\mdf@frame@rightline@single{%
1301 \rlap{\mdf@linecolor@default%
1302 \hspace*{\mdfboundingboxwidth}%
1303 \hspace*{\mdf@innerrightmargin@length}%
1304 \rule[\dimexpr-\mdfboundingboxdepth%
1305 \relax]{%
1306 {\mdf@middlelinewidth@length}%
1307 {\dimexpr\mdfboundingboxtotalheight%
1308 +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}}{\relax}%
1309 }%
1310 }%
1311 \def\mdf@putbox@single{%%%% Ausgabe der ungesplitteten Gesamtbox
1312 \ifvoid\mdf@splitbox@one
1313 \else%
1314 \mdf@makebox@out{%
1315 \mdf@makeboxalign@left%
1316 \setlength{\mdfboundingboxwidth}%
1317 {\wd\mdf@splitbox@one}%
1318 \setlength{\mdfboundingboxtotalwidth}%
1319 {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1320 +\mdf@innerrightmargin@length\relax}%
1321 \setlength{\mdfboundingboxheight}%
1322 {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1323 \setlength{\mdfboundingboxdepth}%
1324 {\dimexpr\dp\mdf@splitbox@one+\mdf@innerbottommargin@length\relax}%
1325 \setlength{\mdfboundingboxtotalheight}%
1326 {\dimexpr\mdfboundingboxheight+\mdf@innertopmargin@length%
1327 +\mdf@innerbottommargin@length\relax}%
1328 \setlength{\mdftotalllinewidth}{%
1329 \dimexpr\mdf@innerlinewidth@length+\mdf@middlelinewidth@length%
1330 +\mdf@outerlinewidth@length}%
1331 \noindent%
1332 \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1333 +\ifbool{mdf@leftline}%
1334 {\mdf@middlelinewidth@length}{\z@}%
1335 +\ifbool{mdf@rightline}%
1336 {\mdf@middlelinewidth@length}{\z@}\relax}%
1337 \mdf@makebox@in[\@tempdima]{%

```

```

1338      \null%
1339      \ifbool{mdf@leftline}{%
1340        \hspace*{\mdftotalllinewidth}%
1341        \mdf@frame@leftline@single%
1342      }{}%
1343      \mdf@frame@topline@single%
1344      \mdf@frame@background@single%
1345      \mdf@frame@bottomline@single%
1346      \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@single}%
1347      \hspace*{\mdf@innerleftmargin@length}%
1348      \ifbool{mdf@rightline}{%
1349        \mdf@frame@rightline@single%
1350      }{}%
1351      {\box\mdf@splitbox@one}%
1352    }%
1353    \mdf@makeboxalign@right%
1354  }%
1355  \fi%
1356 }

```

```

\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

```

1357 \def\mdf@frame@background@first{%
1358   \ifbool{mdf@shadow}{%
1359     \rlap{\smash{\mdf@shadow@default%
1360       \rule[\dimexpr-\mdfboundingboxdepth
1361         -\mdf@shadowsize@length\relax]%
1362         {\dimexpr\mdfboundingboxtotalwidth
1363           +\mdf@shadowsize@length
1364           \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}{\relax}%
1365         {\dimexpr\mdfboundingboxtotalheight
1366           +\mdf@shadowsize@length\relax}%
1367       }%
1368     }}{}%
1369     \rlap{\mdf@background@default%
1370       \rule[-\mdfboundingboxdepth]%
1371         {\mdfboundingboxtotalwidth}%
1372         {\mdfboundingboxtotalheight}%
1373     }%
1374   }%
1375 \def\mdf@frame@frametitlebackground@first{%
1376   \ifdimless{\mdfframetitleboxtotalheight}{\mdfboundingboxtotalheight}%
1377   {%
1378     \rlap{\mdf@frametitlebackground@default%
1379       \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1380         {\mdfboundingboxtotalwidth}%
1381         {\mdfframetitleboxtotalheight}%
1382     }%
1383     \global\mdfframetitleboxtotalheight=-\p@{\relax%
1384   }{\mdf@PackageWarning{You got a page break inside the frame title}\MessageBreak

```

```

1385             Current this isn't well supported}%
1386 \rlap{\mdf@frametitlebackground@default%
1387 \rule[-\mdfboundingboxdepth]%
1388 {\mdfboundingboxtotalwidth}%
1389 {\mdfboundingboxtotalheight}%
1390 }%
1391 \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
1392 -\mdfboundingboxheight
1393 +\mdf@frametitlebelowskip@length
1394 +.5\baselineskip-1pt
1395 % \dp\strutbox
1396 \relax%
1397 }%
1398 }%
1399 \def\mdf@frame@leftline@first{%
1400 \llap{\mdf@linecolor@default%
1401 \rule[-\mdfboundingboxdepth]%
1402 {\mdf@middlelinewidth@length}%
1403 {\dimexpr\mdfboundingboxtotalheight%
1404 +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}}\relax}%
1405 }%
1406 }%
1407 \def\mdf@frame@topline@first{%
1408 \rlap{\mdf@linecolor@default%
1409 \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth+
1410 \mdf@splitbottomskip@length+\mdf@innertopmargin@length\relax]%
1411 {\mdfboundingboxtotalwidth}%
1412 {\mdf@middlelinewidth@length}%
1413 }%
1414 }
1415 \def\mdf@frame@rightline@first{%
1416 \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1417 \hspace*{\mdf@innerrightmargin@length}%
1418 \rule[-\mdfboundingboxdepth]%
1419 {\mdf@middlelinewidth@length}%
1420 {\dimexpr\mdfboundingboxtotalheight%
1421 +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}}\relax}%
1422 }%
1423 }%
1424 \def\mdf@frame@bottomline@first{%
1425 \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1426 \ifbool{mdf@bottomline}{%
1427 \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1428 {\dimexpr\mdfboundingboxtotalwidth
1429 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1430 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}\relax}%
1431 {\mdf@middlelinewidth@length}}%
1432 {}}%
1433 }%
1434 }%
1435 \def\mdf@putbox@first{%%%% Ausgabe der Teilbox 1
1436 \ifvoid\mdf@splitbox@two
1437 \else%
1438 \mdf@makebox@out[\linewidth]{%
1439 \mdf@makeboxalign@left%
1440 \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@two}%

```

```

1441 \setlength{\mdfboundingboxtotalwidth}%
1442         {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1443         +\mdf@innerrightmargin@length\relax}%
1444 \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
1445 \setlength{\mdfboundingboxdepth}%
1446         {\dimexpr\dp\mdf@splitbox@two+\mdf@splitbottomskip@length\relax}%
1447 \setlength{\mdfboundingboxtotalheight}%
1448         {\dimexpr\mdfboundingboxheight+\mdf@innertopmargin@length%
1449         +\mdf@splitbottomskip@length\relax}%
1450 \setlength{\@tempdima}%
1451         {\dimexpr\mdfboundingboxtotalwidth%
1452         +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1453         +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1454         \relax}%
1455 \mdf@makebox@in[\@tempdima]{%
1456     \null%
1457     \ifbool{mdf@leftline}{%
1458         \hspace*{\mdf@middlelinewidth@length}%
1459         \mdf@frame@leftline@first}{}%
1460     \ifbool{mdf@everyline}%
1461         {\mdf@frame@bottomline@first}{}%
1462     \ifbool{mdf@topline}{%
1463         \mdf@frame@topline@first}{}%
1464     \mdf@frame@background@first%
1465     \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@first}%
1466     \hspace*{\mdf@innerleftmargin@length}%
1467     \ifbool{mdf@rightline}{%
1468         \mdf@frame@rightline@first}{}%
1469     {\box\mdf@splitbox@two}%
1470 }%
1471 \mdf@makeboxalign@right%
1472 }%
1473 \fi%
1474 }

```

```

\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 mdfamed

```

1475 \def\mdf@frame@background@second{%
1476     \ifbool{mdf@shadow}{%
1477         \rlap{\smash{\mdf@shadow@default%
1478             \rule[\dimexpr-\mdfboundingboxdepth
1479                 -\mdf@shadowsize@length
1480                 \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{\relax}%
1481                 {\dimexpr\mdfboundingboxtotalwidth
1482                     +\mdf@shadowsize@length
1483                     \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{\relax}%
1484                 {\dimexpr\mdfboundingboxtotalheight
1485                     +\mdf@shadowsize@length\relax}%
1486                 }%
1487             }}{}}%

```

```

1488 \rlap{\mdf@background@default%
1489 \rule[-\mdfboundingboxdepth]%
1490 {\mdfboundingboxtotalwidth}%
1491 {\mdfboundingboxtotalheight}%
1492 }%
1493 }%
1494 \def\mdf@frame@frametitlebackground@second{%
1495 \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1496 {}%
1497 {\rlap{\mdf@frametitlebackground@default%
1498 \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1499 {\mdfboundingboxtotalwidth}%
1500 {\mdfframetitleboxtotalheight}%
1501 }%
1502 }%
1503 }%
1504 \def\mdf@frame@leftline@second{%
1505 \llap{\mdf@linecolor@default%
1506 \rule[-\mdfboundingboxdepth]%
1507 {\mdf@middlelinewidth@length}%
1508 {\dimexpr\mdfboundingboxtotalheight}%
1509 }%
1510 }%
1511 \def\mdf@frame@bottomline@second{%
1512 \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1513 \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1514 {\dimexpr\mdfboundingboxtotalwidth
1515 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{\relax}%
1516 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{\relax}%
1517 {\mdf@middlelinewidth@length}%
1518 }%
1519 }%
1520 \def\mdf@frame@rightline@second{%
1521 \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1522 \hspace*{\mdf@innerrightmargin@length}%
1523 \rule[-\mdfboundingboxdepth]%
1524 {\mdf@middlelinewidth@length}%
1525 {\mdfboundingboxtotalheight}%
1526 }%
1527 }%
1528 \def\mdf@frame@topline@second{%
1529 \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1530 \ifbool{mdf@topline}{%
1531 \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth%
1532 +\mdf@innerbottommargin@length\relax]%
1533 {\dimexpr\mdfboundingboxtotalwidth
1534 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{\relax}%
1535 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{\relax}%
1536 }%
1537 {\mdf@middlelinewidth@length}}%
1538 {}%
1539 }%
1540 }%
1541
1542 \def\mdf@putbox@second{%
1543 \ifvoid\mdf@splitbox@one%

```

```

1544 \else
1545 \mdf@makebox@out{%
1546 \mdf@makeboxalign@left%
1547 \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@one}%
1548 \setlength{\mdfboundingboxtotalwidth}%
1549 {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1550 +\mdf@innerrightmargin@length\relax}%
1551 \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1552 \setlength{\mdfboundingboxdepth}%
1553 {\dimexpr\dp\mdf@splitbox@one+\mdf@innerbottommargin@length\relax}%
1554 \setlength{\mdfboundingboxtotalheight}%
1555 {\dimexpr\mdfboundingboxheight+\mdf@innerbottommargin@length\relax}%
1556 \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1557 +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1558 +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1559 \relax}%
1560 \mdf@makebox@in[\@tempdima]{%
1561 \null%
1562 \ifbool{mdf@leftline}{%
1563 \hspace*{\mdf@middlelinewidth@length}%
1564 \mdf@frame@leftline@second}{}%
1565 \ifbool{mdf@everyline}{%
1566 {\mdf@frame@topline@second}}}%
1567 \mdf@frame@background@second%
1568 \ifbool{mdf@bottomline}{%
1569 \mdf@frame@bottomline@second}}}%
1570 \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@second}%
1571 \hspace*{\mdf@innerleftmargin@length}%
1572 \ifbool{mdf@rightline}{%
1573 \mdf@frame@rightline@second}}}%
1574 {\box\mdf@splitbox@one}%
1575 }%
1576 \mdf@makeboxalign@right%
1577 }%
1578 \fi%
1579 }%

```

```

\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

```

1580 \def\mdf@frame@leftline@middle{%
1581 \llap{\mdf@linecolor@default%
1582 \rule[-\mdfboundingboxdepth]%
1583 {\mdf@middlelinewidth@length}%
1584 {\mdfboundingboxtotalheight}}%
1585 }%
1586 }%
1587 \def\mdf@frame@background@middle{%
1588 \ifbool{mdf@shadow}{%
1589 \rlap{\smash{\mdf@shadow@default%
1590 \rule[\dimexpr-\mdfboundingboxdepth
1591 -\mdf@shadowsize@length\relax}%

```

```

1592         {\dimexpr\mdfboundingboxtotalwidth
1593             +\mdf@shadowsize@length
1594             \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}{\relax}%
1595     {\dimexpr\mdfboundingboxtotalheight\relax}%
1596 }%
1597 }}{}%
1598 \rlap{\mdf@background@default%
1599     \rule[-\mdfboundingboxdepth]%
1600         {\mdfboundingboxtotalwidth}%
1601         {\mdfboundingboxtotalheight}%
1602 }%
1603 }%
1604 \def\mdf@frame@frametitlebackground@middle{%
1605 \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1606 {}%
1607 {\rlap{\mdf@frametitlebackground@default%
1608     \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1609         {\mdfboundingboxtotalwidth}%
1610         {\mdfframetitleboxtotalheight}%
1611 }%
1612 \global\mdfframetitleboxtotalheight=-\p@ \relax%
1613 }%
1614 }%
1615 \def\mdf@frame@rightline@middle{%
1616 \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1617     \hspace*{\mdf@innerrightmargin@length}%
1618     \rule[-\mdfboundingboxdepth]%
1619         {\mdf@middlelinewidth@length}%
1620         {\mdfboundingboxtotalheight}%
1621 }%
1622 }%
1623 \def\mdf@frame@topline@middle{%
1624 \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1625     \ifbool{mdf@topline}{%
1626         \rule[\dimexpr\mdfboundingboxtotalheight-\mdfboundingboxdepth\relax]%
1627             {\dimexpr\mdfboundingboxtotalwidth
1628                 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}{\relax}
1629                 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}}{\relax}
1630             }%
1631             {\mdf@middlelinewidth@length}}%
1632 {}%
1633 }%
1634 }%
1635 \def\mdf@frame@bottomline@middle{%
1636 \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1637     \ifbool{mdf@bottomline}{%
1638         \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1639             {\dimexpr\mdfboundingboxtotalwidth
1640                 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}{\relax}
1641                 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}}{\relax}%
1642             {\mdf@middlelinewidth@length}}%
1643 {}%
1644 }%
1645 }%
1646
1647 \def\mdf@putbox@middle{%

```

```

1648 \ifvoid\mdf@splitbox@two%
1649 \else
1650 \mdf@makebox@out{%
1651 \mdf@makeboxalign@left%
1652 \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@two}%
1653 \setlength{\mdfboundingboxtotalwidth}%
1654 {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1655 +\mdf@innerrightmargin@length\relax}%
1656 \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
1657 \setlength{\mdfboundingboxdepth}%
1658 {\dimexpr\dp\mdf@splitbox@two+\mdf@splitbottomskip@length\relax}%
1659 \setlength{\mdfboundingboxtotalheight}%
1660 {\dimexpr\mdfboundingboxheight+\mdf@splitbottomskip@length\relax}%
1661 \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1662 +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1663 +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1664 \relax}%
1665 \mdf@makebox@in[\@tempdima]{%
1666 \null%
1667 \ifbool{mdf@leftline}{%
1668 \hspace*{\mdf@middlelinewidth@length}%
1669 \mdf@frame@leftline@middle}{}%
1670 \mdf@frame@background@middle%
1671 \ifbool{mdf@everyline}%
1672 {\mdf@frame@topline@middle}{}%
1673 \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@middle}%
1674 \ifbool{mdf@everyline}%
1675 {\mdf@frame@bottomline@middle}{}%
1676 \hspace*{\mdf@innerleftmargin@length}%
1677 \ifbool{mdf@rightline}{%
1678 \mdf@frame@rightline@middle}{}%
1679 {\box\mdf@splitbox@two}%
1680 }%
1681 \mdf@makeboxalign@right%
1682 }
1683 \fi%
1684 }

1685 \endinput

```

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

```

1686 %% Style file for mdframed for package option 'framemethod=default'
1687 %%
1688 %% This package may be distributed under the terms of the LaTeX Project
1689 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1690 %% Either version 1.0 or, at your option, any later version.
1691 %%
1692 %%
1693 %%$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $
1694 %

```

```

\mdframedIpackagename
\mdf@frameIdate@svn

```

local settings


```

1695 \def\mdframedIpackagename{md-frame-1}
1696 \def\mdf@frameIdate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1697 \ProvidesFile{md-frame-1.mdf}%
1698      [\mdf@frameIdate@svn$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $ %
1699      \mdversion: \mdframedIpackagename]
1700 %

```

\mdf@tikz@settings

Define settings for tikz

```

1701 %Allgemeine Einstellungen fuer tikz
1702 \def\mdf@tikz@settings{%
1703 %
1704   \tikzset{mdfbox/.style={anchor=south west,%
1705                           inner sep=0pt,%
1706                           outer sep=0pt,%
1707                           \mdf@fontcolor,}}% anchor der Ausgabebox ist unten links
1708   \tikzset{mdfcorners/.style={rounded corners=\mdf@roundcorner@length}}%
1709   \tikzset{mdfbackground/.style={fill=\mdf@backgroundcolor,%
1710                                   draw=\mdf@backgroundcolor}}%
1711   \tikzset{mdfframetitlebackground/.style={fill=\mdf@frametitlebackgroundcolor,%
1712                                               draw=none,%
1713                                               rounded corners={max(\mdf@roundcorner@length%
1714                                                                -\mdf@innerlinewidth@length%
1715                                                                -.5\mdf@middlelinewidth@length,0)}}}%
1716 %
1717   \tikzset{mdfouterline/.style={}}%
1718 % nur wenn outerlinewidth>0 wird aussere Linie gezeichnet
1719   \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
1720     {\tikzset{mdfouterline/.append style={%
1721             draw=\mdf@outerlinecolor,%
1722             line width=2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length}}}%
1723 %
1724   \tikzset{mdfinnerline/.style={}}%
1725 % nur wenn innerlinewidth>0 wird innere Linie gezeichnet
1726   \ifdimgreater{\mdf@innerlinewidth@length}{\z@}
1727     {\tikzset{mdfinnerline/.append style={%
1728             draw=\mdf@innerlinecolor,%
1729             line width=2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length}}}%
1730 %
1731   \tikzset{mdfshadow/.style={drop shadow={%
1732                                   shadow xshift=\mdf@shadowsize@length-2pt,
1733                                   shadow yshift=-\mdf@shadowsize@length+2pt,
1734                                   fill=\mdf@shadowcolor,
1735                                   every shadow }}}%
1736 %
1737   \mdf@tikzset@local
1738   \tikzset{mdfmiddleline/.style={}}%
1739 % nur wenn middlelinewidth>0 wird mittlere Linie gezeichnet
1740   \ifdimgreater{\mdf@middlelinewidth@length}{\z@}
1741     {\tikzset{mdfmiddleline/.append style={%
1742             preaction={draw=\mdf@middlelinecolor,%
1743                       line width=\mdf@middlelinewidth@length},%
1744             line width=\mdf@middlelinewidth@length,%
1745             tikzsetting}}%

```

```

1746     }{}%
1747 }%

```

```

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

```

Befehle fuer Ausgabe von Rahmen und Hintergrund

```

1748 \newrobustcmd*\mdf@tikzbox@tfl[1]{%three or four borders
1749     \clip(0,0)rectangle(\mdfboundingboxwidth,\mdfboundingboxheight);%
1750     \begin{scope}[mdfcorners]%
1751         \clip[preaction=mdfouterline]%
1752             [postaction=mdfbackground]%
1753             [postaction=mdfinnerline]#1;%
1754     \end{scope}%
1755     \path[mdfmiddleline,mdfcorners]#1;
1756 }%
1757
1758
1759
1760 \newrobustcmd*\mdf@tikzbox@otl[2]{%one or two borders
1761     \clip(0,0)rectangle(\mdfboundingboxwidth,\mdfboundingboxheight);%
1762     \begin{scope}
1763         \path[mdfouterline,mdfcorners]#1;%
1764         \clip[postaction=mdfbackground]#2;%
1765         \path[mdfinnerline,mdfcorners]#1;%
1766     \end{scope}%
1767     \path[mdfmiddleline,mdfcorners]#1;%

```

```

\mdf@put@frametitlerule

```

frametitlerule with tikz

```

1768 \tikzset{mdfframetitlerule/.style={%
1769     draw=none,
1770     fill=\mdf@frametitlerulecolor,
1771 }%
1772 }
1773 \def\mdf@@frametitlerule{%
1774     \ifbool{mdf@frametitlerule}{%
1775         \vbox{\hsize0pt
1776             \par\unskip\vskip\mdf@frametitlebelowskip@length
1777             \noindent\rlap{\hspace*{-\mdf@innerleftmargin@length}%
1778             \begingroup%
1779                 \pgfmathsetlength{\dimen@}{\mdfframetitleboxwidth+\mdf@innerleftmargin@length+\mdf@innerrightmargin@length}
1780                 \tikz\draw[mdfframetitlerule] (0,0)%
1781                     rectangle (\dimen@,\mdf@frametitlerulewidth@length);
1782             \endgroup}
1783         }%
1784     }{}
1785     \par\unskip\vskip\mdf@innertopmargin@length%
1786 }%
1787

```

```

\mdf@putbox@single

```

Output of the non breakable contents.

```

1788 % Info zu den verwendeten Punkten:
1789 % O ist die untere linke Ecke der Mitte der middleline
1790 % P ist die obere rechte Ecke der Mitte der middleline
1791 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
1792 %
1793 \def\mdf@putbox@single{%
1794   \ifvoid\mdf@splitbox@one
1795   \else%
1796     \mdf@makebox@out{%
1797       \mdf@makeboxalign@left%
1798       \mdf@tikz@settings%
1799 %
1800       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
1801       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
1802       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
1803       \ifbool{mdf@leftline}{%
1804         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1805         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1806         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
1807       \ifbool{mdf@rightline}{%
1808         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1809         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1810         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
1811 %
1812       \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1813       \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
1814       \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
1815       \ifbool{mdf@topline}{%
1816         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1817         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1818         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{%
1819       \ifbool{mdf@bottomline}{%
1820         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1821         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1822         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
1823       \mdf@makebox@in[\mdfboundingboxwidth]{%
1824       \null%
1825       \begin{tikzpicture}[remember picture]%
1826         \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
1827         \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
1828         \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
1829         \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
1830         \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
1831         \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
1832         \ifbool{mdf@leftline}%
1833         {%
1834           \pgfmathsetlengthmacro\mdf@Ax%
1835             {\mdf@Ax+\mdf@outerlinewidth@length+
1836             \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
1837           \pgfmathsetlengthmacro\mdf@Ox%
1838             {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1839         }%
1840         \ifbool{mdf@rightline}%
1841         {%
1842           \pgfmathsetlengthmacro\mdf@Px%

```

```

1843         {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1844     }{}%
1845 \ifbool{mdf@bottomline}%
1846 {%
1847     \pgfmathsetlengthmacro\mdf@Ay%
1848         {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
1849         +\mdf@innerlinewidth@length}%
1850     \pgfmathsetlengthmacro\mdf@Oy%
1851         {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1852     }{}%
1853 \ifbool{mdf@topline}%
1854 {%
1855     \pgfmathsetlengthmacro\mdf@Py%
1856         {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1857     }{}%
1858 %
1859 \coordinate(0)at(\mdf@0x,\mdf@0y);%
1860 \coordinate(P)at(\mdf@Px,\mdf@Py);%
1861 %
1862 \ifbool{mdf@shadow}
1863     {\path[mdfshadow,mdfcorners](0) rectangle (P);}{}%
1864 %
1865 \begin{scope}[use as bounding box]
1866     \mdf@test@ltrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
1867 %
1868     \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
1869     \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
1870     \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
1871     \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
1872 %
1873     \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
1874         {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
1875     }{}%
1876     \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
1877         {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
1878     }{}%
1879     \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
1880         {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
1881     }{}%
1882     \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
1883         {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
1884     }{}%
1885     \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
1886         {(0)rectangle(P)}%
1887     }{}%
1888     \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
1889         {(0)rectangle(P)}%
1890     }{}%
1891 %
1892     \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
1893         {(0)rectangle(P)}%
1894     }{}%
1895     \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
1896         {(0)rectangle(P)}%
1897     }{}%
1898     \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%

```

```

1899             {(0)rectangle(P)}%
1900         }{}%
1901     \mdf@test@b{\mdf@tikzbox@otl{(0)--(0-|P)}%
1902             {(0)rectangle(P)}%
1903         }{}%
1904 %
1905     \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
1906 %
1907     %Frametitlebackground
1908     \drawbrackgroundframetitle@single
1909 %
1910     \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};% Ausgabebox einfuegen
1911 \end{scope}
1912 %HIER KOMMT EIN WEITERES MAKRO
1913 \mdfcreateextratikz
1914 \end{tikzpicture}%
1915 }%
1916 \mdf@makeboxalign@right%
1917 }%
1918 \fi
1919 }%
1920 \def\drawbrackgroundframetitle@single{%
1921 \ifdefempty{\mdf@frametitle}{}{}%
1922 \drawbrackgroundframetitle@@single%
1923 }%
1924 }%
1925 \def\drawbrackgroundframetitle@@single{%
1926 \begin{scope}%background frame title
1927 \ifbool{mdf@leftline}{
1928 \pgfmathsetlengthmacro\mdf@0x%
1929 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
1930 }{}%
1931 \ifbool{mdf@rightline}{%
1932 \pgfmathsetlengthmacro\mdf@Px%
1933 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1934 }{}%
1935 \ifbool{mdf@topline}{%
1936 \pgfmathsetlengthmacro\mdf@Py%
1937 {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1938 }{}%
1939 \pgfmathsetlengthmacro\mdf@Fy
1940 {\mdf@Py-\mdfframetitleboxtotalheight}
1941 \path[mdfframetitlebackground]
1942 (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
1943 --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
1944 \end{scope}
1945 }

```

\mdf@putbox@first

Output of the first breakable contents.

```

1946 \def\drawbrackgroundframetitle@first{%
1947 \ifdefempty{\mdf@frametitle}{}{}%
1948 \ifdimgreater{\mdf@boundingboxheight}{\mdfframetitleboxtotalheight}%
1949 {%

```

```

1950 \drawbrackgroundframetitle@@first
1951 \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
1952 }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
1953     Currently this isn't well supported}%
1954 \drawbrackgroundframetitle@@first
1955 \pgfmathsetlength{\global\mdfframetitleboxtotalheight}%
1956     {\mdfframetitleboxtotalheight-\mdfboundingboxheight-
1957     \mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
1958     +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length+\mdf@splittopskip@length%
1959     +\dp\strutbox%
1960     }%
1961 }%
1962 }%
1963 }%
1964 %
1965 \def\drawbrackgroundframetitle@@first{%
1966 \begin{scope}%background frame title
1967     \ifbool{mdf@leftline}{%
1968         \pgfmathsetlengthmacro\mdf@0x%
1969             {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
1970     }{}%
1971     \ifbool{mdf@rightline}{%
1972         \pgfmathsetlengthmacro\mdf@Px%
1973             {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1974     }{}%
1975     \ifbool{mdf@topline}{%
1976         \pgfmathsetlengthmacro\mdf@Py%
1977             {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1978     }{}%
1979     \pgfmathsetlengthmacro\mdf@Fy
1980         {max(0,\mdf@Py-\mdfframetitleboxtotalheight)}
1981     \path[mdfframetitlebackground]
1982         (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
1983         --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
1984 \end{scope}%
1985 }%
1986 %
1987 \def\mdf@putbox@first{%
1988     \ifvoid\mdf@splitbox@two
1989     \else%
1990         \mdf@makebox@out{%
1991             \mdf@makeboxalign@left%
1992             \mdf@tikz@settings%
1993             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
1994             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
1995             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
1996             \ifbool{mdf@leftline}{%
1997                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1998                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1999                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2000             \ifbool{mdf@rightline}{%
2001                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2002                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2003                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2004             \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2005             \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%

```

```

2006 \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2007 \ifbool{mdf@topline}{%
2008 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2009 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2010 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}%
2011 %%%%%%%%%
2012 \ifbool{mdf@everyline}{%
2013 \ifbool{mdf@bottomline}{%
2014 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2015 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2016 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}%
2017 }{}%
2018 %%%%%%%%%
2019 %\ifdimequal{\pagegoal}{\maxdimen}{\enlargethispage{\baselineskip}}}% ???
2020 \ifdimgreater{\pagegoal-\maxdimen}{0pt}{\enlargethispage{\baselineskip}}%
2021 \mdf@makebox@in[\mdfboundingboxwidth]{%
2022 \null%
2023 \begin{tikzpicture}[remember picture]
2024 \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2025 \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2026 \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2027 \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2028 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2029 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2030 \ifbool{mdf@leftline}{
2031 {%
2032 \pgfmathsetlengthmacro\mdf@Ax%
2033 {\mdf@Ax+\mdf@outerlinewidth@length+
2034 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2035 \pgfmathsetlengthmacro\mdf@Ox%
2036 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2037 }{}%
2038 \ifbool{mdf@rightline}{%
2039 \pgfmathsetlengthmacro\mdf@Px%
2040 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2041 }{}%
2042 \ifbool{mdf@topline}{%
2043 \pgfmathsetlengthmacro\mdf@Py%
2044 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2045 }{}%
2046 %%
2047 \ifbool{mdf@everyline}{%
2048 \ifbool{mdf@bottomline}{%
2049 {%
2050 \pgfmathsetlengthmacro\mdf@Ay%
2051 {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length
2052 +\mdf@innerlinewidth@length}%
2053 \pgfmathsetlengthmacro\mdf@Oy%
2054 {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2055 }{}%
2056 \ifbool{mdf@topline}{%
2057 {%
2058 \pgfmathsetlengthmacro\mdf@Py%
2059 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2060 }{}%
2061 }{}%

```



```

2062 %%
2063 \coordinate(0)at(\mdf@0x,\mdf@0y);%
2064 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2065 \ifbool{mdf@shadow}
2066   {\path[mdfshadow] (0) -- (0|-P) to[mdfcorners] (P) -- (P|-0) -- (0);}%
2067 \begin{scope}[use as bounding box]
2068 %%%%%%%%%%
2069 \ifbool{mdf@everyline}{%
2070   \mdf@test@ltrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{%
2071   \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{%
2072   \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{%
2073   \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{%
2074   \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{%
2075   \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
2076     {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2077   }{%
2078   \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
2079     {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2080   }{%
2081   \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
2082     {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2083   }{%
2084   \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
2085     {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2086   }{%
2087   \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
2088     {(0)rectangle(P)}%
2089   }{%
2090   \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
2091     {(0)rectangle(P)}%
2092   }{%
2093   \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2094     {(0)rectangle(P)}%
2095   }{%
2096   \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2097     {(0)rectangle(P)}%
2098   }{%
2099   \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2100     {(0)rectangle(P)}%
2101   }{%
2102   \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2103     {(0)rectangle(P)}%
2104   }{%
2105   \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
2106 }{
2107 \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@ltr}}%
2108   {\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}%
2109   {%
2110 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}%
2111   {\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}{(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}}%
2112   {%
2113 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2114   {\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}{(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}}%
2115   {%
2116 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
2117   {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}{(0)rectangle(P)}}%

```



```

2118      {}%
2119      \ifbool{test {\mdf@test@tb} or test {\mdf@test@t}}%
2120      {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}}%
2121      {}%
2122      \ifbool{test {\mdf@test@lb} or test {\mdf@test@l}}%
2123      {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}}%
2124      {}%
2125      \ifbool{test {\mdf@test@rb} or test {\mdf@test@r}}%
2126      {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}}%
2127      {}%
2128      \mdf@test@b{\path[mdfbackground](0)rectangle(P);}%
2129      \mdf@test@noline{\path[mdfbackground,mdfcorners](0)--(0|-P)--(P)--(P|-0);}%
2130  }
2131  %%%%%%%%%%
2132  \drawbackgroundframetitle@first
2133  \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};% Ausgabebox einfuegen
2134  \end{scope}
2135  %HIER KOMMT EIN WEITERES MAKRO
2136  \mdfcreateextratikz%
2137  \end{tikzpicture}%
2138  }%
2139  \mdf@makeboxalign@right%
2140  }%
2141  \fi
2142  }%

```

\mdf@putbox@middle

Output of the middle breakable contents.

```

2143 \def\drawbackgroundframetitle@middle{%
2144 \ifdefempty{\mdf@frametitle}}{}%
2145 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2146 {}{}%
2147 \drawbackgroundframetitle@@middle%
2148 \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
2149 }%
2150 }%
2151 }%
2152 %
2153 \def\drawbackgroundframetitle@@middle{%
2154 \begin{scope}%background frame title
2155 \ifbool{mdf@leftline}{
2156 \pgfmathsetlengthmacro\mdf@0x%
2157 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2158 }{}%
2159 \ifbool{mdf@rightline}{%
2160 \pgfmathsetlengthmacro\mdf@Px%
2161 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2162 }{}%
2163 \pgfmathsetlengthmacro\mdf@Fy
2164 {\mdf@Py-\mdfframetitleboxtotalheight}
2165 \path[mdfframetitlebackground,rounded corners=\z@]
2166 (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2167 --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2168 \end{scope}

```

```

2169 }%
2170 %
2171 \def\drawbackgroundframetitle@@middle{%
2172     \begin{scope}%background frame title
2173     \ifbool{mdf@leftline}{
2174         \pgfmathsetlengthmacro\mdf@0x%
2175             {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2176     }{}%
2177     \ifbool{mdf@rightline}{%
2178         \pgfmathsetlengthmacro\mdf@Px%
2179             {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2180     }{}%
2181     \pgfmathsetlengthmacro\mdf@Fy
2182         {\mdf@Py-\mdfframetitleboxtotalheight}
2183     \path[mdfframetitlebackground,rounded corners=\z@]
2184         (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2185         --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2186     \end{scope}
2187 }%
2188 \def\mdf@putbox@middle{%
2189     \ifvoid\mdf@splitbox@two
2190     \else%
2191         \mdf@makebox@out{%
2192             \mdf@makeboxalign@left%
2193             \mdf@tikz@settings%
2194             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2195             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2196             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2197             \ifbool{mdf@leftline}{%
2198                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2199                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2200                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
2201             \ifbool{mdf@rightline}{%
2202                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2203                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2204                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
2205             \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2206             \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2207             %%%%%%%%%
2208             \ifbool{mdf@everyline}{%
2209                 \ifbool{mdf@topline}{%
2210                     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2211                     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2212                     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
2213                 \ifbool{mdf@bottomline}{%
2214                     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2215                     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2216                     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
2217                 }{}%
2218             %%%%%%%%%
2219             \mdf@makebox@in[\mdfboundingboxwidth]{%
2220                 \null%
2221                 \begin{tikzpicture}[remember picture]
2222                     \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2223                     \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2224                     \pgfmathsetlengthmacro\mdf@0x{+0pt}%

```

```

2225 \pgfmathsetlengthmacro\mdf@0y{+0pt}%
2226 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2227 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2228 \ifbool{mdf@leftline}%
2229 {%
2230 \pgfmathsetlengthmacro\mdf@Ax%
2231 {\mdf@Ax+\mdf@outerlinewidth@length+
2232 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2233 \pgfmathsetlengthmacro\mdf@0x%
2234 {\mdf@0x+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2235 }{}%
2236 \ifbool{mdf@rightline}%
2237 {%
2238 \pgfmathsetlengthmacro\mdf@Px%
2239 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2240 }{}%
2241 %%
2242 \ifbool{mdf@everyline}{%
2243 \ifbool{mdf@bottomline}%
2244 {%
2245 \pgfmathsetlengthmacro\mdf@Ay%
2246 {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length
2247 +\mdf@innerlinewidth@length}%
2248 \pgfmathsetlengthmacro\mdf@0y%
2249 {\mdf@0y+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2250 }{}%
2251 \ifbool{mdf@topline}%
2252 {%
2253 \pgfmathsetlengthmacro\mdf@Py%
2254 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2255 }{}%
2256 }{}%
2257 %%
2258 \coordinate(0)at(\mdf@0x,\mdf@0y);%
2259 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2260 \ifbool{mdf@shadow}
2261 {\path[mdfshadow](0) rectangle (P);}%
2262 \begin{scope}[use as bounding box]
2263 %%%%%%%%%%
2264 \ifbool{mdf@everyline}{%
2265 \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2266 \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2267 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
2268 \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
2269 \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2270 \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}%
2271 {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}}{}%
2272 }{}%
2273 \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}%
2274 {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}}{}%
2275 }{}%
2276 \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}%
2277 {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}}{}%
2278 }{}%
2279 \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}%
2280 {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}}{}%

```

```

2281         }{}%
2282     \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
2283         {(0)rectangle(P)}%
2284     }{}%
2285     \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
2286         {(0)rectangle(P)}%
2287     }{}%
2288     \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2289         {(0)rectangle(P)}%
2290     }{}%
2291     \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2292         {(0)rectangle(P)}%
2293     }{}%
2294     \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2295         {(0)rectangle(P)}%
2296     }{}%
2297     \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2298         {(0)rectangle(P)}%
2299     }{}%
2300     \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}{}%
2301 }{
2302     \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
2303         {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}{(0)rectangle(P)}{}%
2304     \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
2305         {\mdf@tikzbox@otl{(0)--(0|-P)}}{(0)rectangle(P)}{}%
2306     \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
2307         {\mdf@tikzbox@otl{(P)--(P|-0)}}{(0)rectangle(P)}{}%
2308     \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
2309         {\path[mdfbackground](0)rectangle(P);}{}%
2310 }
2311 %%%%%%%%%
2312     \drawbrackgroundframetitle@middle
2313     \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};% Ausgabebox einfuegen
2314     \end{scope}
2315     %HIER KOMMT EIN WEITERES MAKRO
2316     \mdfcreateextratikz
2317     \end{tikzpicture}%
2318     }%
2319     \mdf@makeboxalign@right%
2320 }%
2321 \fi
2322 }%

```

\mdf@putbox@second

Output of the last breakable contents.

```

2323 \def\drawbrackgroundframetitle@second{%
2324     \ifdefempty{\mdf@frametitle}{}{}%
2325     \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2326     {}{}%
2327     \drawbrackgroundframetitle@@second%
2328     }%
2329 }%
2330 }%
2331 %

```

```

2332 \def\drawbackgroundframetitle@@second{%
2333     \begin{scope}%background frame title
2334     \ifbool{mdf@leftline}{
2335         \pgfmathsetlengthmacro\mdf@0x%
2336             {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2337     }{}%
2338     \ifbool{mdf@rightline}{%
2339         \pgfmathsetlengthmacro\mdf@Px%
2340             {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2341     }{}%
2342     \pgfmathsetlengthmacro\mdf@Fy
2343         {\mdf@Py-\mdfframetitleboxtotalheight}
2344     \path[mdfframetitlebackground,rounded corners=\z@]
2345         (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2346         --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2347     \end{scope}
2348 }%
2349 \def\mdf@putbox@second{%
2350     \ifvoid\mdf@splitbox@one
2351     \else%
2352         \mdf@makebox@out{%
2353             \mdf@makeboxalign@left%
2354             \mdf@tikz@settings%
2355             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2356             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2357             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2358             \ifbool{mdf@leftline}{%
2359                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2360                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2361                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2362             \ifbool{mdf@rightline}{%
2363                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2364                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2365                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2366             \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2367             \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2368             \ifbool{mdf@bottomline}{%
2369                 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2370                 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2371                 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2372             %%%%%%%%%
2373             \ifbool{mdf@everyline}{%
2374                 \ifbool{mdf@topline}{%
2375                     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2376                     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2377                     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2378                 }{}%
2379             %%%%%%%%%
2380             \mdf@makebox@in[\mdfboundingboxwidth]{%
2381                 \null%
2382                 \begin{tikzpicture}[remember picture]
2383                     \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2384                     \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
2385                     \pgfmathsetlengthmacro\mdf@0x{+0pt}%
2386                     \pgfmathsetlengthmacro\mdf@0y{+0pt}%
2387                     \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%

```

```

2388 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2389 \ifbool{mdf@leftline}%
2390 {%
2391 \pgfmathsetlengthmacro\mdf@Ax%
2392 {\mdf@Ax+\mdf@outerlinewidth@length+
2393 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2394 \pgfmathsetlengthmacro\mdf@Ox%
2395 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2396 }{}%
2397 \ifbool{mdf@rightline}%
2398 {%
2399 \pgfmathsetlengthmacro\mdf@Px%
2400 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2401 }{}%
2402 \ifbool{mdf@bottomline}%
2403 {%
2404 \pgfmathsetlengthmacro\mdf@Ay%
2405 {\mdf@Ay+\mdf@outerlinewidth@length+
2406 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2407 \pgfmathsetlengthmacro\mdf@Oy%
2408 {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2409 }{}%
2410 %%
2411 \ifbool{mdf@everyline}{%
2412 \ifbool{mdf@topline}%
2413 {%
2414 \pgfmathsetlengthmacro\mdf@Py%
2415 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2416 }{}%
2417 }{}%
2418 %%
2419 \coordinate(0)at(\mdf@Ox,\mdf@Oy);%
2420 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2421 \ifbool{mdf@shadow}
2422 {\path[mdfshadow] (0|-P) to[mdfcorners] (0) to[mdfcorners] (P|-0) -- (P) -- (0|-P);}%
2423 \begin{scope}[use as bounding box]
2424 %%%%%%%%%%
2425 \ifbool{mdf@everyline}{%
2426 \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2427 \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2428 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
2429 \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
2430 \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2431 \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
2432 {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2433 }{}%
2434 \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
2435 {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2436 }{}%
2437 \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
2438 {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2439 }{}%
2440 \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
2441 {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2442 }{}%
2443 \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%

```

```

2444             {(0)rectangle(P)}%
2445         }{}%
2446     \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0-|P)(0|-P)--(P)}%
2447             {(0)rectangle(P)}%
2448         }{}%
2449     \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}%
2450             {(0)rectangle(P)}%
2451         }{}%
2452     \mdf@test@r{\mdf@tikzbox@otl{(0-|P)--(P)}%
2453             {(0)rectangle(P)}%
2454         }{}%
2455     \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}%
2456             {(0)rectangle(P)}%
2457         }{}%
2458     \mdf@test@b{\mdf@tikzbox@otl{(0)--(0-|P)}%
2459             {(0)rectangle(P)}%
2460         }{}%
2461     \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}{}%
2462 }{%
2463     \ifboolexpr{test {\mdf@test@l@trb} or test {\mdf@test@l@rb}}%
2464         {\mdf@tikzbox@otl{(P-|0)--(0)--(0-|P)--(P)}%
2465         }{}%
2466     \ifboolexpr{test {\mdf@test@l@tb} or test {\mdf@test@l@b}}%
2467         {\mdf@tikzbox@otl{(P-|0)--(0)--(0-|P)}{(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2468         }{}%
2469     \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
2470         {\mdf@tikzbox@otl{(P)--(P|-0)--(0)}{(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2471         }{}%
2472     \ifboolexpr{test {\mdf@test@l@tr} or test {\mdf@test@l@r}}%
2473         {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}%
2474         }{}%
2475     \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}%
2476         {\mdf@tikzbox@otl{(0)--(0-|P)}{(0)rectangle(P)}%
2477         }{}%
2478     \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}%
2479         {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}%
2480         }{}%
2481     \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}%
2482         {\mdf@tikzbox@otl{(0-|P)--(P)}{(0)rectangle(P)}%
2483         }{}%
2484     \mdf@test@t{\path[mdfbackground,mdfcorners](0|-P)--(0)--(0-|P)--(P);}{}%
2485     \mdf@test@noline{\path[mdfbackground,mdfcorners](0|-P)--(0)--(0-|P)--(P);}{}%
2486 }%
2487     \drawbackgroundframetitle@second
2488     \node[mdfbox] at (\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};% Ausgabebox einfuegen
2489 \end{scope}
2490 %HIER KOMMT EIN WEITERES MAKRO
2491 \mdfcreateextratikz
2492 \end{tikzpicture}%
2493 }%
2494 \mdf@makeboxalign@right%
2495 }%
2496 \fi
2497 }%

2498 \endinput

```


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

```

2499 %% Style file for mdframed for package option 'framemethod=default'
2500 %%
2501 %% This package may be distributed under the terms of the LaTeX Project
2502 %% Public License, as described in lppl.txt in the base LaTeX distribution.
2503 %% Either version 1.0 or, at your option, any later version.
2504 %%
2505 %%
2506 %%$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $
2507 %

```

```

\mdframedIIPackagename
\mdf@frameIIDate@svn

```

local settings

```

2508 \def\mdframedIIPackagename{md-frame-2}
2509 \def\mdf@frameIIDate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
2510 \ProvidesFile{md-frame-2.mdf}%
2511      [\mdf@frameIIDate@svn$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $ %
2512      \mdversion: \mdframedIIPackagename]

```

```

\mdf@ptlength@to@pscode
\ptTps

```

Command to calculate a latex length to postscript

```

2513 \def\mdf@ptlength@to@pscode#1{\pst@number{#1} \pst@number\psxunit div }
2514 \def\mdf@ptlength@to@pscode@length#1{\pst@number{\csname mdf@#1@length\endcsname} \pst@number\psxunit c
2515 \let\ptTps\mdf@ptlength@to@pscode\relax
2516 \let\ptTpsL\mdf@ptlength@to@pscode@length\relax

```

```

\mdfbackgroundstyle
\mdflinestyle
\mdfframetitlerule
\mdfframetitlebackground

```

background and line settings for pstricks

```

2517 \def\mdf@pstricks@settings{%expand by \addtopsstyle
2518   \newpsstyle{mdfbackgroundstyle}%
2519   {linecolor=\mdf@backgroundcolor,fillstyle=solid,%
2520    fillcolor=\mdf@backgroundcolor,linestyle=none,%
2521    ,dimen=middle,%
2522    }%
2523 %
2524 \newpsstyle{mdfframetitlebackgroundstyle}{%
2525   linecolor=\mdf@frametitlebackgroundcolor,
2526   fillcolor=\mdf@frametitlebackgroundcolor,
2527   fillstyle=solid,linestyle=none,
2528   linearc=\ifdimgreater{\mdf@roundcorner@length%
2529               -\mdf@innerlinewidth@length%
2530               -.5\mdf@middlelinewidth@length}
2531   {\z@}{\dimexpr\mdf@roundcorner@length%
2532   -\mdf@innerlinewidth@length%
2533   -.5\mdf@middlelinewidth@length}{\z@},
2534 }

```



```

2535 %
2536 \newsstyle{mdfouterlinestyle}{linestyle=none}%
2537 \ifdimgreater{\mdf@outerlinewidth@length}{\z@}%
2538   {\newsstyle{mdfouterlinestyle}{%
2539     linecolor=\mdf@outerlinecolor,%
2540     linewidth=\dimexpr2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length\relax,
2541     dimen=middle,
2542   }}}%
2543 %
2544 \newsstyle{mdfinnerlinestyle}{linestyle=none}%
2545 \ifdimgreater{\mdf@innerlinewidth@length}{\z@}%
2546   {\newsstyle{mdfinnerlinestyle}{%
2547     linecolor=\mdf@innerlinecolor,%
2548     linewidth=\dimexpr2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length\relax,
2549     dimen=middle,
2550   }}}%
2551 %
2552 \newsstyle{mdfmiddlelinestyle}{linestyle=none}%
2553 \newsstyle{mdfshadow}{shadow=true,shadowcolor=\mdf@shadowcolor,shadowsize=\mdf@shadowsize@length}%
2554 \ifdimgreater{\mdf@middlelinewidth@length}{\z@}%
2555   {\newsstyle{mdfmiddlelinestyle}{%
2556     linewidth=\mdf@middlelinewidth@length,%
2557     linecolor=\mdf@middlelinecolor,dimen=middle
2558   }}}%
2559 \mdfpstricks@appendsettings
2560 }%
2561 %
2562 \newrobustcmd*\mdf@pstricksbox@fl[2]{%four lines
2563   \psframe[style=mdfouterlinestyle](#1)(#2)%ausen=3mm
2564   \psframe[style=mdfbackgroundstyle](#1)(#2)%Hintergrund
2565   \psclip{\psframe[style=mdfmiddlelinestyle](#1)(#2)}
2566     \psframe[style=mdfinnerlinestyle](#1)(#2)%innere=3mm
2567   \endpsclip
2568   \psframe[style=mdfmiddlelinestyle](#1)(#2)%mittlere=2mm
2569 }%
2570 \newrobustcmd*\mdf@pstricksbox@tl[1]{%three lines
2571   \psline[style=mdfouterlinestyle]#1%ausen=3mm
2572   \psline[style=mdfbackgroundstyle]#1%Hintergrund
2573   \psclip{\psline[style=mdfmiddlelinestyle]#1}
2574     \psline[style=mdfinnerlinestyle]#1%innere=3mm
2575   \endpsclip
2576   \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2577 }%
2578 \newrobustcmd*\mdf@pstricksbox@tcl[2]{%two combined lines
2579 % #1 background comple
2580 % #2 line path
2581   \psline[style=mdfouterlinestyle]#2%ausen=3mm
2582   \psline[style=mdfbackgroundstyle]#2%Hintergrund
2583   \psclip{\pscustom{linestyle=none}{
2584     \psline[style=mdfmiddlelinestyle]#2
2585     \psline[linestyle=none,lineararc=0pt]#1}
2586   }}
2587   \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2588   \psline[style=mdfinnerlinestyle]#2%innere=3mm
2589 \endpsclip
2590 \psline[style=mdfmiddlelinestyle]#2%mittlere=2mm

```

```

2591 }%
2592 \newrobustcmd*\mdf@pstricksbox@tncl[2]{%two not combined lines
2593 \beginpgroup
2594 \psset{linearc=0pt}
2595 \psline[style=mdfouterlinestyle](mdf@0)#1%ausser=3mm
2596 \psline[style=mdfouterlinestyle](mdf@P)#2%ausser=3mm
2597 \psclip{
2598 \pscustom[linestyle=none]{%
2599 \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2600 \psline[linestyle=none](mdf@0)#2
2601 \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2602 \psline[linestyle=none](mdf@P)#1
2603 }%
2604 }%
2605 \psframe[style=mdfbackgroundstyle,linearc=0pt](mdf@0)(mdf@P)%Hintergrund
2606 \psline[style=mdfinnerlinestyle](mdf@0)#1%innere=3mm
2607 \psline[style=mdfinnerlinestyle](mdf@P)#2%innere=3mm
2608 \endpsclip
2609 \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2610 \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2611 \endpgroup
2612 }%
2613 \newrobustcmd*\mdf@pstricksbox@ol[1]{%one line
2614 \beginpgroup
2615 \psset{linearc=0pt}
2616 \psline[style=mdfouterlinestyle]#1%ausser=3mm
2617 \psline[style=mdfbackgroundstyle]#1%Hintergrund
2618 \psclip{\pscustom[linestyle=none]{
2619 \psline[style=mdfmiddlelinestyle]#1
2620 \psframe[linestyle=none,fillstyle=none,dimen=inner](mdf@0)(mdf@P)
2621 }}
2622 \psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)
2623 \psline[style=mdfinnerlinestyle]#1%innere=3mm
2624 \endpsclip
2625 \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2626 \endpgroup%
2627 }%
2628
2629 %
2630 \newpsstyle{mdfframetitlerule}{%
2631 linecolor=\mdf@frametitlerulecolor,%
2632 fillcolor=\mdf@frametitlerulecolor,%
2633 fillstyle=solid,dimen=outer,%
2634 }
2635 %

```

`\mdf@put@frametitlerule`

frametitlerule with pstricks

```

2636 \def\mdf@put@frametitlerule{%
2637 \ifbool{mdf@frametitlerule}{%
2638 \vbox{\hsize0pt
2639 \par\unskip\vskip\mdf@frametitlebelowskip@length
2640 \noindent\rlap{%
2641 \beginpgroup%

```

```

2642 \begin{pspicture}(0,0)(0,\mdf@frametitulerulewidth@length)
2643 \psframe[style=mdfframetitulerule](!\ptTpsL{innerleftmargin} neg 0)%
2644 (! \ptTpsL{innerrightmargin}
2645 \ptTps{\mdfframetitleboxwidth} add \ptTpsL{frametitulerulewidth})
2646 \end{pspicture}
2647 \endgroup}
2648 }%
2649 }{}
2650 \par\unskip\vskip\mdf@innertopmargin@length%
2651 }%
2652 %
2653 % \begin{macro}{mdf@putbox@single}
2654 % Single output
2655 % \begin{macrocode}
2656 % Info zu den verwendeten Punkten:
2657 % O ist die untere linke Ecke der Mitte der middleline
2658 % P ist die obere rechte Ecke der Mitte der middleline
2659 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
2660 \def\mdf@putbox@single{%
2661 \ifvoid\mdf@splitbox@one
2662 \else%
2663 \mdf@makebox@out{%
2664 \mdf@makeboxalign@left%
2665 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2666 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2667 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2668 \ifbool{mdf@leftline}{%
2669 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2670 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2671 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
2672 \ifbool{mdf@rightline}{%
2673 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2674 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2675 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2676 %
2677 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2678 \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2679 \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2680 \ifbool{mdf@topline}{%
2681 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2682 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2683 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{%
2684 \ifbool{mdf@bottomline}{%
2685 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2686 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2687 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2688 %
2689 \setlength\mdftotalllinewidth{\dimexpr\mdf@innerlinewidth@length%
2690 +\mdf@middlelinewidth@length
2691 +\mdf@outerlinewidth@length\relax}%
2692 \psset{unit=1truecm}%
2693 \mdf@makebox@in[\mdfboundingboxwidth]{%
2694 \null%
2695 \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
2696 \mdfpstricks@settings%
2697 \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%

```

```

2698 \expandafter\psset\expandafter{\mdf@psset@local}%
2699 \node(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
2700 \node(0,0){mdf@0}
2701 \node(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2702 \ifbool{mdf@leftline}%
2703 {%
2704 \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
2705 +(\mdf@middlelinewidth@length,0)
2706 +(\mdf@innerlinewidth@length,0)}{mdf@A}%
2707 \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
2708 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
2709 }{}%
2710 \ifbool{mdf@rightline}%
2711 {%
2712 \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
2713 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2714 }{}%
2715 \ifbool{mdf@bottomline}%
2716 {%
2717 \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
2718 +(0,\mdf@middlelinewidth@length)
2719 +(0,\mdf@innerlinewidth@length)}{mdf@A}%
2720 \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
2721 +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
2722 }{}%
2723 \ifbool{mdf@topline}%
2724 {%
2725 \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
2726 -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
2727 }{}%
2728 \ifbool{mdf@shadow}
2729 {\psframe[style=mdfshadow](mdf@0)(mdf@P)}{}
2730 %
2731 %Four lines
2732 \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
2733 %three lines
2734 \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2735 \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
2736 \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
2737 \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
2738 %two lines combined
2739 \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
2740 {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
2741 \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
2742 {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
2743 \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2744 {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
2745 \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2746 {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2747 %two lines not combined
2748 \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}
2749 {}
2750 \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}}
2751 {}
2752 %single line
2753 \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}

```

```

2754      \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
2755      \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@O|mdf@P)}}{}
2756      \mdf@test@b{\mdf@pstricksbox@ol{(mdf@O)(mdf@P|mdf@O)}}{}
2757      %no line
2758      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}
2759 %      }
2760      %Frametitlebackground
2761      \drawbackgroundframetitle@single
2762      %output%
2763      \rput[bl](mdf@A){\box\mdf@splitbox@one}
2764 %      \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2765 %      \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2766 %      \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
2767 %
2768 %      \endpsclip
2769      \end{pspicture}%
2770  }%
2771      \mdf@makeboxalign@right%
2772  }%
2773 \fi
2774 }%
2775 \def\drawbackgroundframetitle@single{%
2776 \ifdefempty{\mdf@frametitle}}{}%
2777 \drawbackgroundframetitle@@single%
2778 }%
2779 }%
2780 \def\drawbackgroundframetitle@@single{%
2781 \begingroup%
2782 \ifbool{mdf@leftline}{%
2783 \nodexn{(mdf@O)+(\mdf@innerlinewidth@length,0)
2784 +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
2785 }{}%
2786 \ifbool{mdf@rightline}{%
2787 \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
2788 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2789 }{}%
2790 \ifbool{mdf@topline}{%
2791 \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
2792 -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}%
2793 }{}%
2794 \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
2795 \psline[style=mdfframetitlebackgroundstyle](mdf@O|mdf@F)(mdf@O|mdf@P)
2796 (mdf@P)(mdf@P|mdf@F)%
2797 \endgroup
2798 }

```

\mdf@putbox@first

First output

```

2799 \def\mdf@putbox@first{%
2800 \ifvoid\mdf@splitbox@two
2801 \else%
2802 \mdf@makebox@out{%
2803 \mdf@makeboxalign@left%
2804 %\ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%

```

```

2805 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2806 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2807 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2808 \ifbool{mdf@leftline}{%
2809   \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2810   \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2811   \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2812 \ifbool{mdf@rightline}{%
2813   \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2814   \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2815   \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2816 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2817 \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2818 \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2819 \ifbool{mdf@topline}{%
2820   \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2821   \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2822   \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2823 %%%%%%%%%%
2824 \ifbool{mdf@everyline}{%
2825   \ifbool{mdf@bottomline}{%
2826     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2827     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2828     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2829   }{}%
2830 %%%%%%%%%%
2831 \psset{lineararc=\mdf@roundcorner@length, cornersize=absolute}%
2832 \expandafter\psset\expandafter{\mdf@psset@local}%
2833 \mdf@makebox@in[\mdfboundingboxwidth]{%
2834   \null%
2835   \psset{unit=1truecm}%
2836   \ifdimgreater{\mdfboundingboxheight}{\vsize}
2837   {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
2838   {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
2839     \mdfpstricks@settings%
2840     \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
2841     \expandafter\psset\expandafter{\mdf@psset@local}%
2842     \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
2843     \pnode(0,0){mdf@0}
2844     \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2845     \ifbool{mdf@leftline}{%
2846       {%
2847         \nodexn{(\mdf@A)+(\mdf@outerlinewidth@length,0)
2848               +(\mdf@middlelinewidth@length,0)
2849               +(\mdf@innerlinewidth@length,0)}{mdf@A}
2850         \nodexn{(\mdf@0)+(\mdf@outerlinewidth@length,0)
2851               +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
2852       }{}%
2853     \ifbool{mdf@rightline}{%
2854       {%
2855         \nodexn{(\mdf@P)-(\mdf@outerlinewidth@length,0)
2856               -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
2857       }{}%
2858     \ifbool{mdf@topline}{%
2859       {%
2860         \nodexn{(\mdf@P)-(0,\mdf@outerlinewidth@length)

```

```

2861                 -0.5(0,\mdf@middlelinewidth@length)){mdf@P}
2862             }{}%
2863 %%%%%%%%%%
2864         \ifbool{mdf@everyline}{%
2865         \ifbool{mdf@bottomline}%
2866         {%
2867             \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
2868                 +(0,\mdf@middlelinewidth@length)
2869                 +(0,\mdf@innerlinewidth@length)){mdf@A}%
2870             \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
2871                 +0.5(0,\mdf@middlelinewidth@length)){mdf@0}%
2872             }{}%
2873         }{}%
2874 %%%%%%%%%%
2875         \ifbool{mdf@shadow}
2876         {\pscustom[style=mdfshadow,linestyle=none]{%
2877             \psline[linejoin=2,linecap=1,](mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)%
2878             \psline[linejoin=2,linecap=1,lineararc=\zeta](mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)
2879             \closedshadow
2880         }
2881         }{}
2882 %         \psclip{
2883 %%%%%%%%%%
2884         \ifbool{mdf@everyline}{%
2885             %Four lines
2886             \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
2887             %three lines
2888             \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2889             \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
2890             \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
2891             \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
2892             %two lines combined
2893             \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
2894                 {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
2895             \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
2896                 {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
2897             \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2898                 {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
2899             \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2900                 {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2901             %two lines not combined combined
2902             \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
2903                 {}}
2904             \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
2905                 {}}
2906             %single line
2907             \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
2908             \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
2909             \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
2910             \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
2911             %no line
2912             \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
2913         }{}
2914         %Four or Three lines
2915         \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@ltr}}%
2916         {\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}

```



```

2917     {}%
2918 %two combined lines
2919 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}%
2920     {\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2921         {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}%
2922 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2923     {\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2924         {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
2925 %two not combined lines
2926 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
2927     {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}%
2928 %single line
2929 \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
2930     {\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}%
2931 \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%
2932     {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}%
2933 \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}%
2934     {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}%
2935 %no line
2936 \mdf@test@b{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
2937 \mdf@test@online{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
2938 }%
2939 %
2940 %Frametitlebackground
2941 \drawbackgroundframetitle@first
2942 %output%
2943 \rput[bl](mdf@A){\box\mdf@splitbox@two}
2944 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2945 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2946 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
2947 % \endpsclip
2948 \end{pspicture}
2949 }%
2950 \mdf@makeboxalign@right%
2951 }%
2952 \fi
2953 }%
2954 \def\drawbackgroundframetitle@first{%
2955 \ifdefempty{\mdf@frametitle}}{}%
2956 \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}%
2957 {%
2958 \drawbackgroundframetitle@@first
2959 \global\mdfframetitleboxtotalheight=-\p@%
2960 }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
2961     Currently this isn't well supported}%
2962 \drawbackgroundframetitle@@first
2963 \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
2964     -\mdfboundingboxheight
2965     -\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
2966     +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length
2967     +\mdf@splittopskip@length
2968     +\dp\strutbox\relax%
2969 }%
2970 }%
2971 }%
2972 \def\drawbackgroundframetitle@@first{%

```



```

2973 \beginingroup%
2974 \ifbool{mdf@leftline}{%
2975     \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
2976         +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
2977     }{}%
2978 \ifbool{mdf@rightline}{%
2979     \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
2980         -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2981     }{}%
2982 \ifbool{mdf@topline}{%
2983     \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
2984         -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}%
2985     }{}%
2986 \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}
2987     {\nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}}%
2988     {\nodexn{(mdf@0)}{mdf@F}}%
2989 \psline[style=mdfframetitlebackgroundstyle](mdf@0|mdf@F)(mdf@0|mdf@P)
2990     (mdf@P)(mdf@P|mdf@F)%
2991 \endgroup
2992 }

```

\mdf@putbox@middle

Middle output

```

2993 \def\mdf@putbox@middle{%
2994     \ifvoid\mdf@splitbox@two
2995     \else%
2996         \mdf@makebox@out{%
2997             \mdf@makeboxalign@left%
2998 %             \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
2999             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
3000             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3001             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3002             \ifbool{mdf@leftline}{%
3003                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3004                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3005                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
3006             \ifbool{mdf@rightline}{%
3007                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3008                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3009                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
3010             \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
3011             \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
3012 %%%%%%%%%%
3013             \ifbool{mdf@everyline}{%
3014                 \ifbool{mdf@topline}{%
3015                     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3016                     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3017                     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
3018                 \ifbool{mdf@bottomline}{%
3019                     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3020                     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3021                     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
3022                 }{}%
3023 %%%%%%%%%%

```

```

3024 \psset{unit=1truecm}%
3025 \mdf@makebox@in[\mdfboundingboxwidth]{%
3026 \null%
3027 \ifdimgreater{\mdfboundingboxheight}{\vsize}
3028 {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
3029 {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
3030 \mdfpstricks@settings%
3031 \psset{lineararc=0pt, cornersize=absolut,}%
3032 \expandafter\psset\expandafter{\mdf@psset@local}%
3033 %%%
3034 \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
3035 \pnode(0,0){mdf@0}
3036 \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3037 \ifbool{mdf@leftline}%
3038 {%
3039 \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3040 +(\mdf@middlelinewidth@length,0)
3041 +(\mdf@innerlinewidth@length,0)}{mdf@A}
3042 \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
3043 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
3044 }{}%
3045 \ifbool{mdf@rightline}%
3046 {%
3047 \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
3048 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
3049 }{}%
3050 %%
3051 %%%%%%%%%
3052 \ifbool{mdf@everyline}{%
3053 \ifbool{mdf@bottomline}%
3054 {%
3055 \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3056 +(0,\mdf@middlelinewidth@length)
3057 +(0,\mdf@innerlinewidth@length)}{mdf@A}%
3058 \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
3059 +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
3060 }{}%
3061 \ifbool{mdf@topline}%
3062 {%
3063 \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3064 -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3065 }{}%
3066 }{}%
3067 %%%%%%%%%
3068 %%
3069 \ifbool{mdf@shadow}
3070 {\psframe[style=mdfshadow](mdf@0)(mdf@P)}{}
3071 %%%%%%%%%
3072 \ifbool{mdf@everyline}{%
3073 %Four lines
3074 \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3075 %three lines
3076 \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3077 \mdf@test@trb{\mdf@pstricksbox@tr{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
3078 \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3079 \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}

```

```

3080      %two lines combined
3081      \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}%
3082              {(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)}}{}
3083      \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@O|mdf@P)(mdf@O)}%
3084              {(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}
3085      \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)}%
3086              {(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}
3087      \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@O)(mdf@P|mdf@O)(mdf@P)}%
3088              {(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
3089      %two lines not combined combined
3090      \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}
3091              {}}
3092      \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@O)}{(mdf@O|mdf@P)}
3093              {}}
3094      %single line
3095      \mdf@test@l{\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
3096      \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
3097      \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@O|mdf@P)}}{}
3098      \mdf@test@b{\mdf@pstricksbox@ol{(mdf@O)(mdf@P|mdf@O)}}{}
3099      %no line
3100      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
3101  }{%
3102      \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
3103          {\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}}{}%
3104      \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
3105          {\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}%
3106      \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
3107          {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}%
3108      \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
3109          {\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
3110  }%
3111      %Frametitlebackground
3112      \drawbackgroundframetitle@middle
3113      %output%
3114      \rput[bl](mdf@A){\box\mdf@splitbox@two}
3115      % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3116      % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3117      % \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
3118      \end{pspicture}%
3119  }%
3120      \mdf@makeboxalign@right%
3121  }%
3122  \fi
3123 }%
3124 \def\drawbackgroundframetitle@middle{%
3125 \ifdefempty{\mdf@frametitle}}{}{%
3126 \ifdimless{\mdfframetitleboxtotalheight}}{\z@}
3127 {}{%
3128 \drawbackgroundframetitle@@middle
3129 \global\mdfframetitleboxtotalheight=-\p@relax%
3130 }%
3131 }%
3132 }%
3133 \def\drawbackgroundframetitle@@middle{%
3134 \begingroup%
3135 \ifbool{mdf@leftline}{%

```

```

3136      \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
3137              +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
3138      }{}%
3139      \ifbool{mdf@rightline}{%
3140          \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3141                  -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3142          }{}%
3143      \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3144      \psline[style=mdfframetitlebackgroundstyle,lineararc=\z@](mdf@0|mdf@F)(mdf@0|mdf@P)
3145                      (mdf@P)(mdf@P|mdf@F)%
3146      \endgroup
3147  }

```

\mdf@putbox@second

Last output

```

3148 \def\mdf@putbox@second{
3149   \ifvoid\mdf@splitbox@one
3150   \else%
3151     \mdf@makebox@out{%
3152       \mdf@makeboxalign@left%
3153     %   \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
3154     \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
3155     \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3156     \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3157     \ifbool{mdf@leftline}{%
3158       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3159       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3160       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
3161     \ifbool{mdf@rightline}{%
3162       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3163       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3164       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
3165     \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
3166     \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
3167     \ifbool{mdf@bottomline}{%
3168       \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3169       \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3170       \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
3171     %%%%%%%%%%
3172     \ifbool{mdf@everyline}{%
3173       \ifbool{mdf@topline}{%
3174         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3175         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3176         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%
3177       }{}%
3178     %%%%%%%%%%
3179     \psset{unit=1truecm}%
3180     \mdf@makebox@in[\mdfboundingboxwidth]{%
3181       \null%
3182       \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
3183         \mdfpstricks@settings%
3184         \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
3185         \expandafter\psset\expandafter{\mdf@psset@local}%
3186         \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}

```

```

3187 \node(0,0){mdf@0}
3188 \node(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3189 \ifbool{mdf@leftline}%
3190 {%
3191 \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3192 +(\mdf@middlelinewidth@length,0)
3193 +(\mdf@innerlinewidth@length,0)){mdf@A}
3194 \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
3195 +0.5(\mdf@middlelinewidth@length,0)){mdf@0}
3196 }{}%
3197 \ifbool{mdf@rightline}%
3198 {%
3199 \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
3200 -0.5(\mdf@middlelinewidth@length,0)){mdf@P}
3201 }{}%
3202 \ifbool{mdf@bottomline}%
3203 {%
3204 \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3205 +(0,\mdf@middlelinewidth@length)
3206 +(0,\mdf@innerlinewidth@length)){mdf@A}
3207 \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
3208 +0.5(0,\mdf@middlelinewidth@length)){mdf@0}
3209 }{}%
3210 %%%%%%%%%%
3211 \ifbool{mdf@everyline}{%
3212 \ifbool{mdf@topline}%
3213 {%
3214 \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3215 -0.5(0,\mdf@middlelinewidth@length)){mdf@P}
3216 }{}%
3217 }{}%
3218 %%%%%%%%%%
3219 %%
3220 \ifbool{mdf@shadow}
3221 {\pscustom[style=mdfshadow,linestyle=none]{%
3222 \psline[linejoin=2,linecap=1,](mdf@0)(mdf@P)(mdf@0)(mdf@P)(mdf@0)(mdf@P)%
3223 \psline[linejoin=2,linecap=1,linearc=\z@](mdf@0)(mdf@P)(mdf@P)
3224 \closedshadow
3225 }
3226 }{}
3227 %%%%%%%%%%
3228 \ifbool{mdf@everyline}{%
3229 %Four lines
3230 \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3231 %three lines
3232 \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3233 \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
3234 \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3235 \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3236 %two lines combined
3237 \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3238 {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3239 \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3240 {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3241 \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3242 {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}

```

```

3243 \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}}%
3244 {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3245 %two lines not combinded combinded
3246 \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}}{(mdf@P|mdf@0)}
3247 {}
3248 \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}}{(mdf@0|mdf@P)}
3249 {}
3250 %single line
3251 \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3252 \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3253 \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3254 \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3255 %no line
3256 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}{}%
3257 }{}%
3258 %Four + Three
3259 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lrb}}%
3260 {\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
3261 %Two combinded
3262 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
3263 {\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}%
3264 {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3265 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
3266 {\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}}%
3267 {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3268 %Two not combinded
3269 \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
3270 {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}}{(mdf@P|mdf@0)}}{}%
3271 %one line
3272 \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}%
3273 {\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3274 \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}%
3275 {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3276 \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}%
3277 {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3278 %no line
3279 \mdf@test@t{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}{}%
3280 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}{}%
3281 }{}%
3282 %Frametitlebackground
3283 \drawbrackgroundframetitle@second
3284 %output%
3285 \rput[bl](mdf@A){\box\mdf@splitbox@one}
3286 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3287 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3288 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
3289 \end{pspicture}%
3290 }{}%
3291 \mdf@makeboxalign@right%
3292 }{}%
3293 \fi
3294 }{}%
3295 \def\drawbrackgroundframetitle@second{%
3296 \ifdefempty{\mdf@frametitle}}{}%
3297 \ifdimless{\mdf@frametitleboxtotalheight}}{\z@}
3298 {}{}%

```

```

3299 \drawbrackgroundframetitle@@second
3300 }%
3301 }%
3302 }%
3303 \def\drawbrackgroundframetitle@@second{%
3304 \beginingroup%
3305 \ifbool{mdf@leftline}{%
3306 \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
3307 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
3308 }{}%
3309 \ifbool{mdf@rightline}{%
3310 \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3311 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3312 }{}%
3313 \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3314 \psline[style=mdfframetitlebackgroundstyle,lineararc=\z@](mdf@0|mdf@F)(mdf@0|mdf@P)
3315 (mdf@P)(mdf@P|mdf@F)%
3316 \endgroup
3317 }

3318 \endinput
3319 %eof

```

C. The file *mdframed-example-default*

```

3320 %Documentation of the package mdframed
3321 %$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $
3322 \setcounter{errorcontextlines}{999}
3323 \documentclass[parskip=false,english,11pt]{ltxmdf}
3324 \ltxmdfsetifoot $Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $
3325
3326 \usepackage{showexpl}
3327 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3328
3329 \newcommand\Loadedframemethod{default}
3330 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3331
3332 \title{The \Pack{mdframed} package}
3333 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3334 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3335 \date{\mdfdateID$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $}
3336 \version{\mdversion}
3337 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3338 Some presented examples are more or less exorbitant.}
3339
3340 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3341 \newrobustcmd\ExampleText{%
3342 An \textit{inhomogeneous linear} differential equation has the form
3343 \begin{align}
3344 L[v] = f,
3345 \end{align}
3346 where  $L$  is a linear differential operator,  $v$  is
3347 the dependent variable, and  $f$  is a given non-zero
3348 function of the independent variables alone.
3349 }

```



```

3350
3351 \newcounter{examplecount}
3352 \setcounter{examplecount}{0}
3353 \renewcommand\thesubsection{}
3354 \newcommand\Examplesec[1]{%
3355 \stepcounter{examplecount}%
3356 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3357 }
3358
3359 \begin{document}
3360 \maketitle
3361 \section{Loading}
3362 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3363
3364 {\large\color{red!50!black}
3365 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3366
3367 \section{Examples}
3368 All examples have the following settings:
3369
3370 \begin{tltxmdfexample}
3371 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3372 \newrobustcmd\ExampleText{%
3373 An \textit{inhomogeneous linear} differential equation
3374 has the form
3375 \begin{align}
3376 L[v] = f,
3377 \end{align}
3378 where  $L$  is a linear differential operator,  $v$  is
3379 the dependent variable, and  $f$  is a given non-zero
3380 function of the independent variables alone.
3381 }
3382 \end{tltxmdfexample}
3383 \clearpage
3384 \Examplesec{very simple}
3385 \begin{LTxexample}
3386 \global\mdfdefinestyle{exampledefault}{%
3387     linecolor=red,linewidth=3pt,%
3388     leftmargin=1cm,rightmargin=1cm
3389 }
3390 \begin{mdframed}[style=exampledefault]
3391 \ExampleText
3392 \end{mdframed}
3393 \end{LTxexample}
3394
3395 \Examplesec{hidden line + frame title}
3396 \begin{LTxexample}
3397 \global\mdfapptodefinestyle{exampledefault}{%
3398     topline=false,rightline=true,bottomline=false}
3399 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3400 \ExampleText
3401 \end{mdframed}
3402 \end{LTxexample}
3403 \clearpage
3404
3405 \Examplesec{colored frame title}

```



```

3406 \begin{LTExample}
3407
3408 \global\mdfapptodefinestyle{exampledefault}{%
3409     rightline=true,innerleftmargin=10,innerrightmargin=10,
3410     frametitle=rule=true,frametitlecolor=green,
3411     frametitlebackgroundcolor=yellow,
3412     frametitlewidth=2pt}
3413 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3414 \ExampleText
3415 \end{mdframed}
3416 \end{LTExample}
3417
3418 \Examplesec{framed picture which is centered}
3419 \begin{LTExample}
3420 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3421                 linecolor=blue,linewidth=4pt]
3422 \includegraphics[width=\linewidth]{donald-duck}
3423 \end{mdframed}
3424 \end{LTExample}
3425
3426 \clearpage
3427 \Examplesec{Theorem environments}
3428 \begin{LTExample}
3429 \mdfdefinestyle{theoremstyle}{%
3430     linecolor=red,linewidth=2pt,%
3431     frametitle=rule=true,%
3432     frametitlebackgroundcolor=gray!20,
3433     innertopmargin=\topskip,
3434 }
3435 \mdtheorem[style=theoremstyle]{definition}{Definition}
3436 \begin{definition}
3437 \ExampleText
3438 \end{definition}
3439 \begin{definition}[Inhomogeneous linear]
3440 \ExampleText
3441 \end{definition}
3442 \begin{definition*}[Inhomogeneous linear]
3443 \ExampleText
3444 \end{definition*}
3445 \end{LTExample}
3446
3447
3448 \clearpage
3449 \Examplesec{theorem with separate header and the help of TikZ (complex)}
3450 \begin{LTExample}
3451 \newcounter{theo}[section]
3452 \newenvironment{theo}[1][1][1]{%
3453     \stepcounter{theo}%
3454     \ifstrempy{#1}%
3455     {\mdfsetup{%
3456         frametitle={%
3457             \tikz[baseline=(current bounding box.east),outer sep=0pt]
3458             \node[anchor=east,rectangle,fill=blue!20]
3459             {\strut Theorem~\thetheo};}}
3460     }%
3461     {\mdfsetup{%

```

```

3462     frametitle={%
3463         \tikz[baseline=(current bounding box.east),outer sep=0pt]
3464         \node[anchor=east,rectangle,fill=blue!20]
3465         {\strut Theorem~\thetheo:~\#1};}%
3466     }%
3467     \mdfsetup{innertopmargin=10pt,linecolor=blue!20,%
3468         linewidth=2pt,topline=true,
3469         frametitleaboveskip=\dimexpr-\ht\strutbox\relax,}
3470     \begin{mdframed}[]\relax%
3471     }\end{mdframed}}
3472 \begin{theo}[Inhomogeneous Linear]
3473 \ExampleText
3474 \end{theo}
3475
3476 \begin{theo}
3477 \ExampleText
3478 \end{theo}
3479 \end{LTXexample}
3480
3481 \clearpage
3482 \Examplesec{hide only a part of a line}
3483 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com}
3484 \begin{LTXexample}
3485 \makeatletter
3486 \newlength{\interruptlength}
3487 \setlength{\interruptlength}{2.5ex}
3488 \newrobustcmd\overlaplines{%
3489     \appto\mdf@frame@leftline@single{%
3490         \llap{\color{white}%
3491             \rule[\dimexpr-\mdfboundingboxdepth+\interruptlength\relax]{%
3492                 {\mdf@middlelinewidth@length}%
3493                 {\dimexpr\mdfboundingboxtotalheight%
3494                 \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}}
3495                 -2\interruptlength\relax}%
3496             }%
3497         }%
3498     \appto\mdf@frame@rightline@single{%
3499         \rlap{\color{white}%
3500             \hspace*{\mdfboundingboxwidth}%
3501             \hspace*{\mdf@innerrightmargin@length}%
3502             \rule[\dimexpr-\mdfboundingboxdepth%
3503                 +\interruptlength\relax]{%
3504                 {\mdf@middlelinewidth@length}%
3505                 {\dimexpr\mdfboundingboxtotalheight%
3506                 +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}}
3507                 -2\interruptlength\relax}%
3508             }%
3509         }%
3510     }
3511 \makeatother
3512 \overlaplines
3513
3514 \begin{mdframed}[linecolor=blue,linewidth=8pt]
3515 \ExampleText
3516 \end{mdframed}
3517 \end{LTXexample}

```

```

3518 \end{document}
3519 \endinput

```

D. The file mdframed-example-tikz

```

3520 %Documenation of the package mdframed
3521 %$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $
3522 \setcounter{errorcontextlines}{999}
3523 \documentclass[parskip=false,english,11pt]{ltxmdf}
3524 \ltxmdfsetifoot $Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $
3525
3526
3527 \usepackage{showexpl}
3528 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3529
3530 \newcommand\Loadedframemethod{TikZ}
3531 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3532
3533 \title{The \Pack{mdframed} package}
3534 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3535 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3536 \date{\mdfdateID$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $}
3537 \version{\mdversion}
3538 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3539 Some presented examples are more or less exorbitant.}
3540
3541 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3542 \newrobustcmd\ExampleText{%
3543     An \textit{inhomogeneous linear} differential equation has the form
3544     \begin{align}
3545         L[v] &= f,
3546     \end{align}
3547     where  $L$  is a linear differential operator,  $v$  is
3548     the dependent variable, and  $f$  is a given non-zero
3549     function of the independent variables alone.
3550 }
3551
3552 \newcounter{examplecount}
3553 \setcounter{examplecount}{0}
3554 \renewcommand\thesubsection{}
3555 \newcommand\Examplesec[1]{%
3556 \stepcounter{examplecount}%
3557 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3558 }
3559
3560 \begin{document}
3561 \maketitle
3562 \section{Loading}
3563 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3564
3565 {\large\color{red!50!black}
3566 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3567
3568 \section{Examples}
3569 All examples have the following settings:
3570

```

```

3571 \begin{tltxmdfexample}
3572 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3573 \newrobustcmd\ExampleText{%
3574 An \textit{inhomogeneous linear} differential equation
3575 has the form
3576 \begin{align}
3577 L[v] = f,
3578 \end{align}
3579 where  $L$  is a linear differential operator,  $v$  is
3580 the dependent variable, and  $f$  is a given non-zero
3581 function of the independent variables alone.
3582 }
3583 \end{tltxmdfexample}
3584 \clearpage
3585 \ExampleText{round corner}
3586 \begin{LTXexample}
3587 \global\mdfdefinestyle{exampledefault}{%
3588     outerlinewidth=5pt,innerlinewidth=0pt,
3589     outerlinecolor=red,roundcorner=5pt
3590 }
3591 \begin{mdframed}[style=exampledefault]
3592 \ExampleText
3593 \end{mdframed}
3594 \end{LTXexample}
3595
3596 \Examplesec{hidden line + frame title}
3597 \begin{LTXexample}
3598 \global\mdfapptodefinestyle{exampledefault}{%
3599     topline=false,leftline=false,}
3600 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3601 \ExampleText
3602 \end{mdframed}
3603 \end{LTXexample}
3604 \clearpage
3605 \Examplesec{framed picture which is centered}
3606 \begin{LTXexample}
3607 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3608     linecolor=blue,middlelinewidth=4pt,roundcorner=5pt]
3609 \includegraphics[width=\linewidth]{donald-duck}
3610 \end{mdframed}
3611 \end{LTXexample}
3612
3613 \Examplesec{Gimmick}
3614 \begin{LTXexample}
3615 \mdfsetup{splitbottomskip=0.8cm,splittopskip=0cm,
3616     innerrightmargin=2cm,innertopmargin=1cm,%
3617     innerlinewidth=2pt,outerlinewidth=2pt,
3618     middlelinewidth=10pt,backgroundcolor=red,
3619     linecolor=blue,middlelinecolor=gray,
3620     tikzsetting={draw=yellow,line width=3pt,%
3621         dashed,%
3622         dash pattern= on 10pt off 3pt},
3623     rightline=false,bottomline=false}
3624 \begin{mdframed}
3625 \ExampleText
3626 \end{mdframed}

```

```

3627 \end{LTXexample}
3628
3629 \Examplesec{complex example with TikZ}
3630
3631 \begin{tltxmdfexample}
3632 \tikzstyle{titregris} =
3633     [draw=gray, thick, fill=white, shading = exersicetitle, %
3634     text=gray, rectangle, rounded corners,
3635     right,minimum height=.7cm]
3636
3637 \pgfdeclarehorizontalshading{exersicebackground}{100bp}
3638 {color(0bp)=(green!40);
3639 color(100bp)=(black!5)}
3640
3641 \pgfdeclarehorizontalshading{exersicetitle}{100bp}
3642 {color(0bp)=(red!40);
3643 color(100bp)=(black!5)}
3644
3645 \newcounter{exercise}
3646 \renewcommand\theexercise{Exercise~n\arabic{exercise}}
3647 \makeatletter
3648 \def\mdf@@exercisepoints{}
3649 \define@key{mdf}{exercisepoints}{%
3650     \def\mdf@@exercisepoints{#1}
3651 }
3652 \renewrobustcmd\mdfcreateextratikz{%
3653     \node[titregris,xshift=1cm] at (P-|0) %
3654     {\mdf@frametitlefont{\theexercise}~};
3655     \ifdefempty{\mdf@@exercisepoints}%
3656     {}%
3657     {\node[titregris,left,xshift=-1cm] at (P)%
3658     {\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
3659 }
3660 \makeatother
3661
3662 \mdfdefinestyle{exercisestyle}{%
3663     outerlinewidth=1pt,
3664     innerlinewidth=0pt,
3665     roundcorner=2pt,
3666     linecolor=gray,
3667     tikzsetting={shading = exersicebackground},
3668     innertopmargin=1.2\baselineskip,
3669     skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
3670     needspace=3\baselineskip,
3671     frametitlefont=\sffamily\bfseries,
3672     settings={\global\stepcounter{exercise}},
3673 }
3674
3675 \begin{mdframed}[style=exercisestyle,]
3676 \ExampleText
3677 \end{mdframed}
3678
3679 \begin{mdframed}[style=exercisestyle,exercisepoints=10]
3680 \ExampleText
3681 \end{mdframed}
3682 \end{tltxmdfexample}

```

```

3683
3684 \tikzstyle{titregris} =
3685     [draw=gray, thick, fill=white, shading = exersicetitle, %
3686     text=gray, rectangle, rounded corners,
3687     right,minimum height=.7cm]
3688
3689 \pgfdeclarehorizontalshading{exersicebackground}{100bp}
3690 {color(0bp)=(green!40);
3691 color(100bp)=(black!5)}
3692
3693 \pgfdeclarehorizontalshading{exersicetitle}{100bp}
3694 {color(0bp)=(red!40);
3695 color(100bp)=(black!5)}
3696
3697 \newcounter{exercise}
3698 \renewcommand\theexercise{Exercise~\arabic{exercise}}
3699 \makeatletter
3700 \def\mdf@@exercisepoints{}
3701 \define@key{mdf}{exercisepoints}{%
3702     \def\mdf@@exercisepoints{#1}
3703 }
3704 \newrobustcmd\mdfcreateextratikzlocal{%
3705     \node[titregris,xshift=1cm] at (P-|0) {\textbf{\theexercise}~};
3706     \ifdefempty{\mdf@@exercisepoints}%
3707     {}%
3708     {\node[titregris,left,xshift=-1cm] at (P)%
3709         {\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
3710 }
3711 \makeatother
3712
3713 \mdfdefinestyle{exercisestyle}{%
3714     outerlinewidth=1pt,
3715     innerlinewidth=0pt,
3716     roundcorner=2pt,
3717     linecolor=gray,
3718     tikzsetting={shading = exersicebackground},
3719     innertopmargin=1.2\baselineskip,
3720     skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
3721     needspace=3\baselineskip,
3722     frametitlefont=\sffamily\bfseries,
3723     settings={\global\stepcounter{exercise}\let\mdfcreateextratikz\mdfcreateextratikzlocal},
3724 }
3725
3726 \begin{mdframed}[style=exercisestyle,]
3727 \ExampleText
3728 \end{mdframed}
3729
3730 \begin{mdframed}[style=exercisestyle,exercisepoints=10]
3731 \ExampleText
3732 \end{mdframed}
3733
3734 \clearpage
3735 \Examplesec{Theorem environments}
3736 \begin{LTXexample}
3737 \mdfdefinestyle{theoremstyle}{%
3738     linecolor=red,linewidth=2pt,%

```

```

3739     frametitleule=true,%
3740     apptotikzsetting={\tikzset{mdfframetitlebackground/.append style={%
3741         shade,left color=white, right color=blue!20}}},
3742     frametitleulecolor=green!60,
3743     frametitleulewidth=1pt,
3744     innertopmargin=\topskip,
3745 }
3746 \mdtheorem[style=theoremstyle]{definition}{Definition}
3747 \begin{definition}[Inhomogeneous linear]
3748 \ExampleText
3749 \end{definition}
3750 \begin{definition*}[Inhomogeneous linear]
3751 \ExampleText
3752 \end{definition*}
3753 \end{LTXexample}
3754
3755 \end{document}
3756 \endinput

```

E. The file *mdframed-example-pstricks*

```

3757 %Documenation of the package mdframed
3758 %$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $
3759 \setcounter{errorcontextlines}{999}
3760 \documentclass[parskip=false,english,11pt]{ltxmdf}
3761 \ltxmdfsetifoot$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $
3762
3763 \lstDeleteShortInline{||}
3764 \newcommand\Loadedframemethod{PSTricks}
3765 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3766
3767 \usepackage{showexpl}
3768 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}}},}
3769
3770 \title{The \Pack{mdframed} package}
3771 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3772 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3773 \date{\mdfdateID$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $}
3774 \version{\mdversion}
3775 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3776 Some presented examples are more or less exorbitant.}
3777
3778 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3779 \newrobustcmd\ExampleText{%
3780     An \textit{inhomogeneous linear} differential equation has the form
3781     \begin{align}
3782         L[v] &= f,
3783     \end{align}
3784     where  $L$  is a linear differential operator,  $v$  is
3785     the dependent variable, and  $f$  is a given non-zero
3786     function of the independent variables alone.
3787 }
3788
3789 \newcounter{examplecount}
3790 \setcounter{examplecount}{0}
3791 \renewcommand\thesubsection{}

```

```

3792 \newcommand\Examplesec[1]{%
3793 \stepcounter{examplecount}%
3794 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3795 }
3796
3797 \begin{document}
3798 \maketitle
3799 \section{Loading}
3800 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3801
3802 {\large\color{red!50!black}
3803 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3804 X
3805 \section{Examples}
3806 All examples have the following settings:
3807
3808 \begin{tltxmdfexample}
3809 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3810 \newrobustcmd\ExampleText{%
3811 An \textit{inhomogeneous linear} differential equation
3812 has the form
3813 \begin{align}
3814 L[v] = f,
3815 \end{align}
3816 where  $L$  is a linear differential operator,  $v$  is
3817 the dependent variable, and  $f$  is a given non-zero
3818 function of the independent variables alone.
3819 }
3820 \end{tltxmdfexample}
3821 \clearpage
3822
3823 \Examplesec{very simple}
3824 \begin{LTExample}
3825 \global\mdfdefinestyle{exampledefault}{%
3826     linecolor=red,middlelinewidth=3pt,%
3827     leftmargin=1cm,rightmargin=1cm
3828 }
3829 \begin{mdframed}[style=exampledefault,roundcorner=5]
3830 \ExampleText
3831 \end{mdframed}
3832 \end{LTExample}
3833
3834 \Examplesec{hidden line + frame title}
3835 \begin{LTExample}
3836 \global\mdfapptodefinestyle{exampledefault}{%
3837     topline=false,rightline=false,bottomline=false,
3838     frametitlerule=true,innertopmargin=6pt,
3839     outerlinewidth=6pt,outerlinecolor=blue,
3840     pstricksappsetting={\addtopsstyle{mdfouterlinestyle}{linestyle=dashed}},
3841     innerlinecolor=yellow,innerlinewidth=5pt}%
3842 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3843 \ExampleText
3844 \end{mdframed}
3845 \end{LTExample}
3846
3847 \clearpage

```



```

3848
3849 \Examplesec{Dash Lines}
3850 \begin{LTXexample}
3851 \global\mdfdefinestyle{exampledefault}{%
3852   pstrickssetting={linestyle=dashed,,linecolor=red,linewidth=5pt}
3853 \begin{mdframed}[style=exampledefault,]
3854 \ExampleText
3855 \end{mdframed}
3856 \end{LTXexample}
3857
3858 \Examplesec{Double Lines}
3859 \begin{LTXexample}
3860 \global\mdfdefinestyle{exampledefault}{%
3861   pstrickssetting={doubleline=true,doublesep=6pt},
3862   linecolor=red,linewidth=5pt,middlelinewidth=4pt}
3863 \begin{mdframed}[style=exampledefault,]
3864 \ExampleText
3865 \end{mdframed}
3866 \end{LTXexample}
3867
3868 \Examplesec{Shadow frame}
3869 \begin{LTXexample}
3870 \newmdenv[shadow=true,
3871   shadowsize=11pt,
3872   linewidth=8pt,
3873   frametitlerule=true,
3874   roundcorner=10pt,
3875   ]{myshadowbox}
3876 \begin{myshadowbox}[frametitle={Inhomogeneous linear}]
3877 \ExampleText
3878 \end{myshadowbox}
3879 \end{LTXexample}
3880 \end{document}
3881 \endinput

```

F. The file *mdframed-example-texsx*

```

3882 %Documentation of the package mdframed
3883 %$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $
3884 \setcounter{errorcontextlines}{999}
3885 \documentclass[parskip=false,english,11pt,ltxlipsum]{ltxmdf}
3886 \ltxmdfsetifoot $Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $
3887
3888
3889 \usepackage{showexpl}
3890 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3891
3892 \newcommand\Loadedframemethod{default}
3893 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3894
3895 \title{The \Pack{mdframed} package}
3896 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3897 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3898 \date{\mdfdateID$Id: mdframed.dtx 368 2012-04-03 16:11:28Z marco $}
3899 \version{\mdversion}
3900 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.

```

```

3901 Some presented examples are more or less exorbitant.}
3902
3903 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3904 \newrobustcmd\ExampleText{%
3905     An \textit{inhomogeneous linear} differential equation has the form
3906     \begin{align}
3907         L[v] = f,
3908     \end{align}
3909     where  $L$  is a linear differential operator,  $v$  is
3910     the dependent variable, and  $f$  is a given non-zero
3911     function of the independent variables alone.
3912 }
3913
3914 \newcounter{examplecount}
3915 \setcounter{examplecount}{0}
3916 \renewcommand\thesubsection{}
3917 \newcommand\Examplesec[1]{%
3918 \stepcounter{examplecount}%
3919 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3920 }
3921
3922 \begin{document}
3923 \maketitle
3924 \section{Loading}
3925 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=Loadedframemethod}
3926
3927 {\large\color{red!50!black}
3928 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3929
3930 \section{Examples}
3931 All examples have the following settings:
3932
3933 \begin{tltxmdfexample}
3934 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3935 \newrobustcmd\ExampleText{%
3936 An \textit{inhomogeneous linear} differential equation
3937 has the form
3938 \begin{align}
3939 L[v] = f,
3940 \end{align}
3941 where  $L$  is a linear differential operator,  $v$  is
3942 the dependent variable, and  $f$  is a given non-zero
3943 function of the independent variables alone.
3944 }
3945 \end{tltxmdfexample}
3946 \clearpage
3947 \Examplesec{Package listings}
3948 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com}
3949
3950 Here the solution which can be decorate as usual.
3951
3952 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}
3953 \BeforeBeginEnvironment{lstlisting}{%
3954     \begin{mdframed}[<modification>%
3955         \vspace{-0.7em}}
3956 \AfterEndEnvironment{lstlisting}{%

```

```

3957 \vspace{-0.5em}%
3958 \end{mdframed}}
3959 \end{tltxmdfexample}
3960
3961 With the new command \Cmd{surroundwithmdframed} you can use
3962 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}]
3963 \surroundwithmdframed{listings}
3964 \end{tltxmdfexample}
3965
3966 \Examplesec{Package multicol}
3967 How I wrote in \enquote{Known Problems} you can't combine \Pack{multicol} with \Pack{mdframed}. In a s
3968 \begin{LTXexample}
3969 \begin{multicols}{2}
3970 \lipsum[1]
3971 \begin{mdframed}
3972 \ExampleText
3973 \end{mdframed}
3974 \lipsum[2]
3975 \end{multicols}
3976 \end{LTXexample}
3977 \clearpage
3978 \twocolumn[\Examplesec{Working in twocolumn mode}]
3979 \begin{tltxmdfexample}
3980 \twocolumn[%
3981 \Examplesec{Working in
3982 twocolumn mode}]
3983 \lipsum[1]\lipsum[2]
3984 \begin{mdframed}[%
3985 leftmargin=10pt,%
3986 rightmargin=10pt,%
3987 linecolor=red,
3988 backgroundcolor=yellow]
3989 \ExampleText
3990 \end{mdframed}
3991 \lipsum[2]
3992 \end{tltxmdfexample}
3993 \lipsum[1]\lipsum[2]
3994 \begin{mdframed}[leftmargin=10pt,%
3995 rightmargin=10pt,%
3996 linecolor=red,
3997 backgroundcolor=yellow]
3998 \ExampleText
3999 \end{mdframed}
4000 \lipsum[2]
4001 \clearpage
4002 \onecolumn
4003 \Examplesec{Working inside enumerate}
4004 \begin{LTXexample}
4005 Text Text Text Text Text Text Text Text
4006 \begin{enumerate}
4007 \item in the following \ldots
4008 \begin{mdframed}[linecolor=blue,linewidth=2]
4009 \ExampleText
4010 \end{mdframed}
4011 \item \lipsum[2]
4012 \end{enumerate}

```

```
4013 Text Text Text Text Text Text
4014 \end{LTXexample}
4015 \end{document}
4016 \endinput
```

G. Change History

v1.0a		\item\mbox\relax – Need for amsthm	29
General: Created dtx and fixes bugs	1	changed definition of \mdf@lrbox (Thanks	
v1.0b		Lars Madsen)	28
General: added command \@parboxrestore		Changed the enddefinition of mdframed.	
to \mdf@lrbox	28	Uses now \@doendpe instead of	
removed \setbox\mdf@splitbox@two		\endparenv	36
\vbox\unvbox \mdf@splitbox@two	41	Edit algorithm to combine the	
v1.1beta		saveboxes \mdf@frametitlebox and	
General: added command to avoid overfull		\mdf@splitboxone by the predefined set-	
box warning by vsplit	29	tings: \parskip\z@, \parindent\z@ and	
Added frametitle detection to		\offinterlineskip	32
\detected@mdf@put@frame	35	v1.2a	
added lost semicolons	56	General: take account of \parskip for the	
Added method frame title via \savebox	32	vertical calculation	38
Added option frametitlerulecolor,		v1.3	
frametitlebackgroundcolor, font	24	General: Added option shadow	24
Added option titleaboveskip,		Use now \item\mbox\relax	29
titlebelowskip, frametitlerulewidth	23	v1.3a	
Added option usetwoside	24	General: fixes bug with \@doendpe (Thanks	
Changed the definition of \mdf@trivlist	36	Dietrich Grau)	28
Create new \savebox and renamed		v1.4	
\@tempboxa	27	General: Changed the detecting of float en-	
Defining mdframed with \newenvironment	36	vironments. Now mdframed uses only	
Joining all new definitions	27	\@capttype instead of \@floatpenalty	35
Redefinition of \newmdtheoremenv. – Now		Changed the enddefinition of mdframed.	
check of theorem definition.	30	Uses now a line to provide the defined	
Removing \@arrayparboxrestore	38	width	36
Renamed some commands so that every		v1.4a	
command have the same prefix \mdf@	1	General: added extra test for a wrong splitted	
v1.1release		box	41
General: Added \mbox to the definition.			

H. Index

The index only collect package relevant words.

Symbols	
<code>\@definecounter</code>	453, 473
<code>\@doendpe</code>	360, 757
<code>\@itemlabel</code>	385
<code>\@namedef</code>	504
<code>\@nameuse</code>	504
<code>\@newctr</code>	473
<code>\@nmbrlistfalse</code>	380
<code>\@parboxrestore</code>	354
<code>\@temptitle</code> 458, 460, 465, 468, 469, 481, 483, 488, 492, 494, 499, 508, 510, 515, 518, 519	
<code>\@thmcounter</code>	454, 474, 477
<code>\@thmcountersep</code>	476
<code>\@trivlist</code>	381
 <code>_</code>	465, 468, 488, 515, 518
A	
<code>\addtolength</code>	806
<code>\addtopsstyle</code>	2517, 3840
<code>align</code> (option)	8
<code>apptotikzsetting</code> (option)	9
<code>\arabic</code>	3356, 3557, 3646, 3698, 3794, 3919
<code>\author</code>	3334, 3535, 3772, 3897
B	
<code>backgroundcolor</code> (option)	7
<code>\booltrue</code>	527
<code>bottomline</code> (option)	10
C	
<code>\clearpage</code> 3383, 3403, 3426, 3448, 3481, 3584, 3604, 3734, 3821, 3847, 3946, 3977, 4001	
<code>\closedshadow</code>	2879, 3224
<code>\Cmd</code>	3362, 3365, 3563, 3566, 3800, 3803, 3925, 3928, 3961
<code>\csappto</code>	410
<code>\CurrentOption</code>	273
D	
<code>\date</code>	3335, 3536, 3773, 3898
<code>\DeclareDocumentCommand</code>	433, 445
<code>defaultunit</code> (option)	5
<code>\deferred@thm@head</code>	372, 373
<code>\detected@mdf@put@frame</code> 563, 673, 674, 746, 751	
<code>\DisableKeyvalOption</code>	1202, 1203
<code>\documentclass</code>	3323, 3523, 3760, 3885
<code>\draw</code>	1780
<code>\drawbrackgroundframetitle@first</code>	1950, 1954, 1965, 2958, 2962, 2972
<code>\drawbrackgroundframetitle@middle</code>	2147, 2153, 2171, 3128, 3133
<code>\drawbrackgroundframetitle@second</code>	2327, 2332, 3299, 3303
<code>\drawbrackgroundframetitle@single</code>	1922, 1925, 2777, 2780
<code>\drawbrackgroundframetitle@first</code>	1946, 2132, 2941, 2954
<code>\drawbrackgroundframetitle@middle</code>	2143, 2312, 3112, 3124
<code>\drawbrackgroundframetitle@second</code>	2323, 2487, 3283, 3295
<code>\drawbrackgroundframetitle@single</code>	1908, 1920, 2761, 2775
E	
<code>\endgroup</code>	30, 270, 565, 602, 900, 1034, 1103, 1127, 1782, 2611, 2626, 2647, 2797, 2991, 3146, 3316
<code>\endmdf@lrbox</code>	342, 363, 558, 573, 744, 749
<code>\endmdf@trivlist</code>	376, 391, 392, 756
<code>\endpsclip</code> 2567, 2575, 2589, 2608, 2624, 2768, 2947	
<code>\enquote</code>	3967
<code>everyline</code> (option)	8
<code>\Examplesec</code> ...	3354, 3384, 3395, 3405, 3418, 3427, 3449, 3482, 3555, 3596, 3605, 3613, 3629, 3735, 3792, 3823, 3834, 3849, 3858, 3868, 3917, 3947, 3966, 3978, 3981, 4003
<code>\ExampleText</code>	3341, 3372, 3391, 3400, 3414, 3437, 3440, 3443, 3473, 3477, 3515, 3542, 3573, 3585, 3592, 3601, 3625, 3676, 3680, 3727, 3731, 3748, 3751, 3779, 3810, 3830, 3843, 3854, 3864, 3877, 3904, 3935, 3972, 3989, 3998, 4009
F	
<code>\f@size</code>	1016
<code>font</code> (option)	8
<code>fontcolor</code> (option)	7
<code>footnotedistance</code> (option)	12
<code>footnoteinside</code> (option)	12
<code>framemethod</code> (option)	4
<code>frametitle</code> (option)	10
<code>frametitleaboveskip</code> (option)	10
<code>frametitlealignment</code> (option)	10
<code>frametitlebackgroundcolor</code> (option)	11
<code>frametitlebelowskip</code> (option)	10
<code>frametitlefont</code> (option)	10
<code>frametitlerule</code> (option)	10
<code>frametitlerulewidth</code> (option)	10
G	
<code>\global</code>	504, 560, 562, 575, 576, 577, 578, 579, 594, 600, 1383, 1391, 1612, 1951, 1955, 2148,

2959, 2963, 3129, 3386, 3397, 3408, 3587, 3598, 3672, 3723, 3825, 3836, 3851, 3860	\lstset 3327, 3528, 3768, 3890 \ltxmdfsetifoot 3324, 3524, 3761, 3886
H	M
hidealllines (option) 10 \href 3334, 3483, 3535, 3772, 3897, 3948	\makeatletter 3485, 3647, 3699 \makeatother 3511, 3660, 3711 \makelabel 386 \maketitle 3360, 3561, 3798, 3923 margin (option) 6 \mbox 388 \mdf@@exercisepoints 3648, 3650, 3655, 3658, 3700, 3702, 3706, 3709 \mdf@@framemethod 116, 118, 120 \mdf@@frametitle 525, 584, 736 \mdf@@frametitle@use 588, 745, 750 \mdf@@frametitlerule 596, 960, 998, 1087, 1228, 1773, 2636 \mdf@@setzref .. 761, 795, 898, 1032, 1101, 1124 \mdf@advancelength@freevspace@add 846, 852, 1046 \mdf@advancelength@freevspace@sub 846, 849, 926 \mdf@advancelength@horizontalmargin@add . 809 \mdf@advancelength@horizontalmargin@sub 809, 815 \mdf@advancelength@verticalmargin@whole 846, 846, 865, 891 \mdf@align 220, 220 \mdf@alignoption@tripledo 81, 82, 84 \mdf@Ax 1826, 1834, 1835, 1910, 2024, 2032, 2033, 2133, 2222, 2230, 2231, 2313, 2383, 2391, 2392, 2488 \mdf@Ay 1827, 1847, 1848, 1910, 2025, 2050, 2051, 2133, 2223, 2245, 2246, 2313, 2384, 2404, 2405, 2488 \mdf@background@default 1220, 1220, 1257, 1369, 1488, 1598 \mdf@backgroundcolor 170, 172, 1220, 1709, 1710, 2519, 2520 \mdf@booloption@doubledo 72, 73, 75 \mdf@checknththeorem 605, 606, 729 \mdf@currentvbadness 366, 369 \mdf@defaultunit 29 \mdf@deferred@thm@head 372 \mdf@define@key@length 43, 47, 61 \mdf@do@alignoption 81, 81, 213, 213 \mdf@do@booloption 72, 72, 186, 186 \mdf@do@lengthoption 56, 56, 133, 133, 160 \mdf@do@stringoption 63, 63, 160 \mdf@dolist 42, 42, 133, 160, 186, 213, 815, 865, 891, 926, 1046 \mdf@endparenv 392, 393 \mdf@font 733 \mdf@fontcolor 732, 1707 \mdf@footnotedistance@length 621 \mdf@footnotebox 307 \mdf@footnoteinput 615, 627, 731
I	
\if@mdf@pageodd 761, 785, 796 \ifcsdef 446 \ifdefempty 736, 745, 750, 1346, 1465, 1570, 1673, 1921, 1947, 2144, 2324, 2776, 2955, 3125, 3296, 3655, 3706 \ifmdf@bottomline 531 \ifmdf@footnoteinside 741 \ifmdf@frametitlebottomline 531 \ifmdf@frametitleleftline 528 \ifmdf@frametitlerightline 530 \ifmdf@frametitletopline 529 \ifmdf@leftline 528 \ifmdf@nobreak 675 \ifmdf@rightline 530 \ifmdf@topline 529 \IfNoValueTF 434, 449, 451 \ifstrempty .. 457, 468, 480, 491, 507, 518, 3454 \IfValueTF 436, 437 \ifvmode 734, 740 \includegraphics 3422, 3609 \indent 373 innerbottommargin (option) 6 innerleftmargin (option) 6 innerlinecolor (option) 7 innerlinewidth (option) 7 innermargin (option) 6 innerrightmargin (option) 6 innertopmargin (option) 6 \interruptlength 3486, 3487, 3491, 3495, 3503, 3507 \introduction 3337, 3538, 3775, 3900 \itemindent 384	
L	
\labelwidth 382 \ldots 4007 \leavevmode 387 leftline (option) 10 \leftmargin 383 leftmargin (option) 6 linecolor (option) 7 linewidth (option) 7 \lipsum 3970, 3974, 3983, 3991, 3993, 4000, 4011 \Loadedframemethod 3329, 3330, 3333, 3337, 3362, 3530, 3531, 3534, 3538, 3563, 3764, 3765, 3771, 3775, 3800, 3892, 3893, 3896, 3900, 3925 \lstDeleteShortInline 3763	

- \mdf@footnoteoutput 615, 618, 743, 752
- \mdf@footnoterule 615, 615, 623
- \mdf@frame@background@first . 1357, 1357, 1464
- \mdf@frame@background@middle 1580, 1587, 1670
- \mdf@frame@background@second 1475, 1475, 1567
- \mdf@frame@background@single 1243, 1243, 1344
- \mdf@frame@bottomline@first 1424, 1461
- \mdf@frame@bottomline@middle 1635, 1675
- \mdf@frame@bottomline@second 1475, 1511, 1569
- \mdf@frame@bottomline@single 1281, 1345
- \mdf@frame@frametitlebackground@first ..
..... 1375, 1465
- \mdf@frame@frametitlebackground@middle ..
..... 1604, 1673
- \mdf@frame@frametitlebackground@second ..
..... 1494, 1570
- \mdf@frame@frametitlebackground@single ..
..... 1263, 1346
- \mdf@frame@leftline@first .. 1357, 1399, 1459
- \mdf@frame@leftline@middle .. 1580, 1580, 1669
- \mdf@frame@leftline@second .. 1475, 1504, 1564
- \mdf@frame@leftline@single
..... 1243, 1292, 1341, 3489
- \mdf@frame@rightline@first .. 1357, 1415, 1468
- \mdf@frame@rightline@middle . 1580, 1615, 1678
- \mdf@frame@rightline@second . 1475, 1520, 1573
- \mdf@frame@rightline@single
..... 1243, 1300, 1349, 3498
- \mdf@frame@topandbottomline@single 1243
- \mdf@frame@topline@first ... 1357, 1407, 1463
- \mdf@frame@topline@middle 1623, 1672
- \mdf@frame@topline@second 1528, 1566
- \mdf@frame@topline@single 1271, 1343
- \mdf@frameIdate@svn 1695, 1696, 1698
- \mdf@frameIIdate@svn 2508, 2509, 2511
- \mdf@framemethod 106, 106
- \mdf@framemethod@i 107, 112, 115
- \mdf@framemethod@ii 108, 113, 117
- \mdf@framemethod@iii 109, 114, 119
- \mdf@frameOdate@svn 1215, 1216, 1218
- \mdf@frametitle 585, 736,
745, 750, 1346, 1465, 1570, 1673, 1921,
1947, 2144, 2324, 2776, 2955, 3125, 3296
- \mdf@frametitleaboveskip@length 580, 603
- \mdf@frametitlealignment 539, 556, 570
- \mdf@frametitlebackground@default
..... 1221, 1264, 1378, 1386, 1497, 1607
- \mdf@frametitlebackgroundcolor
..... 535, 1221, 1711, 2525, 2526
- \mdf@frametitlebelowskip@length
.. 580, 1231, 1393, 1776, 1958, 2639, 2966
- \mdf@frametitlebottomrulecolor 541
- \mdf@frametitlebox 306, 560, 562, 569,
575, 576, 577, 578, 579, 595, 959, 997, 1086
- \mdf@frametitlefont 554, 572, 3654, 3658, 3709
- \mdf@frametitlefontcolor 571
- \mdf@frametitleleftmargin@length 537
- \mdf@frametitlerightmargin@length 538
- \mdf@frametitlerulecolor
..... 534, 1226, 1770, 2631, 2632
- \mdf@frametitlerulecolor@default . 1226, 1233
- \mdf@frametitlerulewidth@length
..... 536, 1230, 1237, 1781, 2642
- \mdf@frametitlesettings 542
- \mdf@freepagevspace ... 798, 798, 880, 911, 924
- \mdf@freevspace@length 335, 803,
804, 805, 806, 880, 881, 883, 895, 910,
911, 913, 925, 1044, 1061, 1063, 1064,
1067, 1068, 1069, 1072, 1073, 1074, 1079
- \mdf@Fy 1939,
1942, 1943, 1979, 1982, 1983, 2163, 2166,
2167, 2181, 2184, 2185, 2342, 2345, 2346
- \mdf@hidealllines@check 714, 714, 725
- \mdf@horizontalmargin@equation . 351, 809, 813
- \mdf@horizontalsofbox .. 809, 810, 812,
814, 821, 822, 823, 826, 827, 828, 830, 832
- \mdf@horizontalwidthofbox@length 336
- \mdf@iflength 26, 27, 50
- \mdf@iflength@check 26, 28, 32
- \mdf@iflength@cleanup 38, 41
- \mdf@ifstrequal@expand 287, 292, 294, 296
- \mdf@ignorevbadness 365, 365, 559,
561, 574, 593, 599, 951, 979, 985, 990, 1078
- \mdf@innerbottommargin@length
... 1275, 1324, 1327, 1532, 1553, 1555,
1814, 1827, 2367, 2384, 2678, 2699, 3166, 3186
- \mdf@innerleftmargin@length
1232, 1235, 1319, 1347, 1442, 1466, 1549,
1571, 1654, 1676, 1777, 1779, 1801, 1826,
1994, 2024, 2195, 2222, 2356, 2383, 2666,
2699, 2806, 2842, 3000, 3034, 3155, 3186
- \mdf@innerlinecolor
..... 656, 664, 670, 1223, 1728, 2547
- \mdf@innerlinecolor@default 1223
- \mdf@innerlinewidth@length .. 653, 661, 667,
821, 826, 836, 841, 915, 931, 937, 1051,
1057, 1067, 1072, 1329, 1714, 1726, 1729,
1804, 1808, 1816, 1820, 1836, 1849, 1929,
1933, 1937, 1957, 1969, 1973, 1977, 1997,
2001, 2008, 2014, 2034, 2052, 2157, 2161,
2175, 2179, 2198, 2202, 2210, 2214, 2232,
2247, 2336, 2340, 2359, 2363, 2369, 2375,
2393, 2406, 2529, 2532, 2545, 2548, 2669,
2673, 2681, 2685, 2689, 2706, 2719, 2783,
2787, 2791, 2809, 2813, 2820, 2826, 2849,
2869, 2965, 2975, 2979, 2983, 3003, 3007,
3015, 3019, 3041, 3057, 3136, 3140, 3158,
3162, 3168, 3174, 3193, 3206, 3306, 3310
- \mdf@innermargin@length 769, 789, 791
- \mdf@innerrightmargin@length
..... 1236, 1303, 1320, 1417,

1443, 1522, 1550, 1617, 1655, 1779, 1802, 1995, 2196, 2357, 2667, 2807, 3001, 3156, 3501	2686, 2690, 2705, 2708, 2713, 2718, 2721, 2726, 2784, 2788, 2792, 2804, 2810, 2814, 2821, 2827, 2848, 2851, 2856, 2861, 2868, 2871, 2965, 2976, 2980, 2984, 2998, 3004, 3008, 3016, 3020, 3040, 3043, 3048, 3056, 3059, 3064, 3137, 3141, 3153, 3159, 3163, 3169, 3175, 3192, 3195, 3200, 3205, 3208, 3215, 3307, 3311, 3492, 3494, 3504, 3506
\mdf@innertopmargin@length 914, 963, 1001, 1090, 1240, 1275, 1326, 1410, 1448, 1785, 1813, 2005, 2650, 2679, 2817	\mdf@needspace 261
\mdf@keep@lines@single 834, 834, 868, 894	\mdf@option@length 43, 43, 60
\mdf@leftmargin@length 214, 218, 221, 769, 789, 792	\mdf@outerlinecolor 658, 1225, 1721, 2539
\mdf@lengthoption@doubledo 56, 57, 59	\mdf@outerlinecolor@default 1225
\mdf@linecolor 167, 168, 169, 171, 656, 657, 658, 664, 670	\mdf@outerlinewidth@length 655, 663, 669, 823, 828, 838, 843, 917, 933, 939, 1053, 1059, 1069, 1074, 1330, 1719, 1722, 1806, 1810, 1818, 1822, 1835, 1838, 1843, 1848, 1851, 1856, 1999, 2003, 2010, 2016, 2033, 2036, 2040, 2044, 2051, 2054, 2059, 2200, 2204, 2212, 2216, 2231, 2234, 2239, 2246, 2249, 2254, 2361, 2365, 2371, 2377, 2392, 2395, 2400, 2405, 2408, 2415, 2537, 2540, 2671, 2675, 2683, 2687, 2691, 2704, 2707, 2712, 2717, 2720, 2725, 2811, 2815, 2822, 2828, 2847, 2850, 2855, 2860, 2867, 2870, 3005, 3009, 3017, 3021, 3039, 3042, 3047, 3055, 3058, 3063, 3160, 3164, 3170, 3176, 3191, 3194, 3199, 3204, 3207, 3214
\mdf@linecolor@bottom 541, 1220	\mdf@outermargin@length 768, 788, 792
\mdf@linecolor@default . . . 1220, 1227, 1272, 1282, 1293, 1301, 1400, 1408, 1416, 1425, 1505, 1512, 1521, 1529, 1581, 1616, 1624, 1636	\mdf@0x 1828, 1837, 1838, 1859, 1928, 1929, 1942, 1968, 1969, 1982, 2026, 2035, 2036, 2063, 2156, 2157, 2166, 2174, 2175, 2184, 2224, 2233, 2234, 2258, 2335, 2336, 2345, 2385, 2394, 2395, 2419
\mdf@linewidth@length 148, 654, 662, 668	\mdf@0y 1829, 1850, 1851, 1859, 2027, 2053, 2054, 2063, 2225, 2248, 2249, 2258, 2386, 2407, 2408, 2419
\mdf@load@style 633, 633, 649	\mdf@PackageInfo 8, 9, 682, 691, 696, 702, 707, 766, 771, 884, 968
\mdf@LoadFile@IfExist 8, 10, 98, 99, 101, 102, 122, 128, 129, 130	\mdf@PackageInfoSpace 304, 881
\mdf@lrbox 342, 343, 555, 569, 738	\mdf@PackageNoInfo 286
\mdf@maindate@svn 1, 3, 6	\mdf@PackageWarning 8, 8, 14, 92, 103, 225, 273, 278, 298, 409, 447, 609, 644, 831, 859, 875, 943, 1006, 1094, 1110, 1116, 1384, 1952, 2960
\mdf@makebox@in 396, 401, 1337, 1455, 1560, 1665, 1823, 2021, 2219, 2380, 2693, 2833, 3025, 3180	\mdf@pageiseven 761
\mdf@makebox@out 396, 396, 1314, 1438, 1545, 1650, 1796, 1990, 2191, 2352, 2663, 2802, 2996, 3151	\mdf@pageisodd 761
\mdf@makebox@align@left 220, 221, 226, 229, 1315, 1439, 1546, 1651, 1797, 1991, 2192, 2353, 2664, 2803, 2997, 3152	\mdf@patchamsth 345, 371, 375
\mdf@makebox@align@right 220, 222, 227, 230, 1353, 1471, 1576, 1681, 1916, 2139, 2319, 2494, 2771, 2950, 3120, 3291	\mdf@print@space 286, 290, 879
\mdf@middlelinecolor 657, 1224, 1742, 2557	\mdf@printheight 288, 298
\mdf@middlelinecolor@default 1224, 1227	\mdf@psset@local 233, 240, 242, 2698, 2832, 2841, 3032, 3185
\mdf@middlelinewidth@length . 654, 662, 668, 822, 827, 837, 842, 916, 932, 938, 1052, 1058, 1068, 1073, 1248, 1251, 1254, 1277, 1282, 1284, 1286, 1287, 1288, 1295, 1297, 1306, 1308, 1329, 1334, 1336, 1364, 1402, 1404, 1412, 1419, 1421, 1425, 1427, 1429, 1430, 1431, 1452, 1453, 1458, 1480, 1483, 1507, 1512, 1513, 1515, 1516, 1517, 1524, 1529, 1534, 1535, 1537, 1557, 1558, 1563, 1583, 1594, 1619, 1624, 1628, 1629, 1631, 1636, 1638, 1640, 1641, 1642, 1662, 1663, 1668, 1715, 1722, 1729, 1740, 1743, 1744, 1805, 1809, 1817, 1821, 1836, 1838, 1843, 1848, 1851, 1856, 1929, 1933, 1937, 1957, 1969, 1973, 1977, 1998, 2002, 2009, 2015, 2034, 2036, 2040, 2044, 2051, 2054, 2059, 2157, 2161, 2175, 2179, 2199, 2203, 2211, 2215, 2232, 2234, 2239, 2246, 2249, 2254, 2336, 2340, 2360, 2364, 2370, 2376, 2393, 2395, 2400, 2406, 2408, 2415, 2530, 2533, 2540, 2548, 2554, 2556, 2670, 2674, 2682,	\mdf@pstricksbox@fl 2562, 2732, 2886, 3074, 3230
	\mdf@pstricksbox@ol 2613, 2753, 2754, 2755, 2756, 2907, 2908, 2909, 2910, 2930, 2932, 2934, 3095, 3096, 3097, 3098, 3105, 3107, 3251, 3252, 3253, 3254, 3273, 3275, 3277

\mdf@pstricksbox@tcl	2578, 2739, 2741, 2743, 2745, 2893, 2895, 2897, 2899, 2920, 2923, 3081, 3083, 3085, 3087, 3237, 3239, 3241, 3243, 3263, 3266
\mdf@pstricksbox@tl	2570, 2734, 2735, 2736, 2737, 2888, 2889, 2890, 2891, 2916, 3076, 3077, 3078, 3079, 3232, 3233, 3234, 3235, 3260
\mdf@pstricksbox@tncl	2592, 2748, 2750, 2902, 2904, 2927, 3090, 3092, 3103, 3246, 3248, 3270
\mdf@ptlength@to@pscode	2513, 2513, 2515
\mdf@ptlength@to@pscode@length	2514, 2516
\mdf@put@frame	678, 680, 689, 873, 873, 886, 922, 1013, 1022, 1028
\mdf@put@frame@i	902, 907, 907
\mdf@put@frame@ii	1037, 1043, 1043, 1098, 1106
\mdf@put@frame@standalone	676, 684, 693, 698, 704, 709, 857, 857
\mdf@put@frametitrerule	1768, 2636
\mdf@putbox@first	1033, 1357, 1435, 1946, 1987, 2799, 2799
\mdf@putbox@middle	1102, 1580, 1647, 2143, 2188, 2993, 2993
\mdf@putbox@second	1125, 1475, 1542, 2323, 2349, 3148, 3148
\mdf@putbox@single	869, 899, 1243, 1311, 1788, 1793, 2660
\mdf@Px	1830, 1842, 1843, 1860, 1932, 1933, 1943, 1972, 1973, 1983, 2028, 2039, 2040, 2064, 2160, 2161, 2167, 2178, 2179, 2185, 2226, 2238, 2239, 2259, 2339, 2340, 2346, 2387, 2399, 2400, 2420
\mdf@Py	1831, 1855, 1856, 1860, 1936, 1937, 1940, 1942, 1943, 1976, 1977, 1980, 1982, 1983, 2029, 2043, 2044, 2058, 2059, 2064, 2164, 2166, 2167, 2182, 2184, 2185, 2227, 2253, 2254, 2259, 2343, 2345, 2346, 2388, 2414, 2415, 2420
\mdf@reserved@a	673, 676, 678, 680, 684, 689, 693, 698, 704, 709, 712, 860, 869, 871, 876, 886, 901, 902, 905, 922, 1013, 1022, 1028, 1037, 1041, 1098, 1106, 1120, 1128, 1130
\mdf@reserved@a	742, 748, 755
\mdf@reset	855, 855
\mdf@restoreparams	347, 355
\mdf@restorevbadness	365, 368, 369
\mdf@rightmargin@length	216, 217, 768, 788, 791
\mdf@roundcorner@length	1708, 1713, 2528, 2531, 2697, 2831, 2840, 3184
\mdf@setopt@body	525, 545
\mdf@setopt@title	525, 526, 552
\mdf@settings	737
\mdf@shadow@default	1222, 1245, 1359, 1477, 1589
\mdf@shadowcolor	1222, 1734, 2553
\mdf@shadowsize@length	1247, 1250, 1253, 1361, 1363, 1366, 1479, 1482, 1485, 1591, 1593, 1732, 1733, 2553
\mdf@skipabove@length	735
\mdf@skipbelow@length	394
\mdf@splitbottomskip@length	1063, 1410, 1446, 1449, 1658, 1660, 1958, 2006, 2025, 2206, 2223, 2818, 2842, 2966, 3011, 3034
\mdf@splitbox@one	308, 555, 560, 562, 594, 597, 600, 601, 738, 858, 864, 874, 878, 890, 942, 952, 954, 956, 964, 974, 977, 980, 982, 986, 989, 991, 994, 1002, 1005, 1010, 1011, 1027, 1045, 1079, 1081, 1083, 1091, 1093, 1097, 1109, 1113, 1115, 1119, 1121, 1312, 1317, 1322, 1324, 1351, 1543, 1547, 1551, 1553, 1574, 1794, 1800, 1812, 1910, 2350, 2355, 2366, 2488, 2661, 2665, 2677, 2763, 3149, 3154, 3165, 3285
\mdf@splitbox@two	309, 952, 953, 966, 970, 971, 974, 980, 981, 983, 986, 1010, 1015, 1024, 1027, 1079, 1080, 1097, 1436, 1440, 1444, 1446, 1469, 1648, 1652, 1656, 1658, 1679, 1988, 1993, 2004, 2133, 2189, 2194, 2205, 2313, 2800, 2805, 2816, 2943, 2994, 2999, 3010, 3114
\mdf@splittopskip@length	950, 957, 962, 978, 995, 1000, 1077, 1084, 1089, 1958, 2967
\mdf@stringoption@doubledo	63, 64, 66
\mdf@style	276
\mdf@styledefinition	633, 651, 730
\mdf@tempa	111, 115, 117, 119, 292, 294, 296, 300, 304
\mdf@templength	26, 29, 51, 52
\mdf@test@b	1133, 1188, 1901, 2102, 2128, 2297, 2458, 2475, 2756, 2910, 2936, 3098, 3254, 3272
\mdf@test@l	1133, 1179, 1892, 2093, 2122, 2288, 2449, 2478, 2753, 2907, 2931, 3095, 3251, 3274
\mdf@test@lb	1133, 1160, 1198, 1873, 2075, 2122, 2270, 2431, 2466, 2739, 2893, 2931, 3081, 3237, 3262
\mdf@test@lr	1133, 1172, 1885, 2087, 2116, 2282, 2443, 2472, 2748, 2902, 2926, 3090, 3246, 3269
\mdf@test@lrb	1133, 1156, 1198, 1871, 2074, 2116, 2269, 2430, 2463, 2737, 2891, 2926, 3079, 3235, 3259
\mdf@test@lt	1133, 1169, 1200, 1882, 2084, 2110, 2279, 2440, 2478, 2745, 2899, 2919, 3087, 3243, 3274
\mdf@test@ltb	1133, 1150, 1197, 1868, 2071, 2110, 2266, 2427, 2466, 2734, 2888, 2919, 3076, 3232, 3262
\mdf@test@ltr	1133, 1147, 1196, 1870, 2073, 2107, 2268, 2429,

2472, 2736, 2890, 2915, 3078, 3234, 3269	\mdfbackgroundstyle 2517
\mdf@test@lrb 1133,	\mdfboundingboxdepth 332,
1143, 1196, 1866, 2070, 2107, 2265, 2426,	1246, 1258, 1265, 1274, 1284, 1294, 1304,
2463, 2732, 2886, 2915, 3074, 3230, 3259	1323, 1360, 1370, 1379, 1387, 1401, 1409,
\mdf@test@noline	1418, 1427, 1445, 1478, 1489, 1498, 1506,
1133, 1192, 1905, 2105, 2129, 2300, 2461,	1513, 1523, 1531, 1552, 1582, 1590, 1599,
2485, 2758, 2912, 2937, 3100, 3256, 3280	1608, 1618, 1626, 1638, 1657, 3491, 3502
\mdf@test@r	\mdfboundingboxheight 331, 1274, 1321, 1326,
1133, 1182, 1895, 2096, 2125, 2291, 2452,	1392, 1409, 1444, 1448, 1531, 1551, 1555,
2481, 2754, 2908, 2933, 3096, 3252, 3276	1656, 1660, 1749, 1761, 1812, 1813, 1814,
\mdf@test@rb 1133,	1816, 1817, 1818, 1820, 1821, 1822, 1831,
1163, 1199, 1876, 2078, 2125, 2273, 2434,	1948, 1956, 2004, 2005, 2006, 2008, 2009,
2469, 2741, 2895, 2933, 3083, 3239, 3265	2010, 2014, 2015, 2016, 2029, 2205, 2206,
\mdf@test@single 1195	2210, 2211, 2212, 2214, 2215, 2216, 2227,
\mdf@test@t	2366, 2367, 2369, 2370, 2371, 2375, 2376,
1133, 1185, 1898, 2099, 2119, 2294, 2455,	2377, 2388, 2677, 2678, 2679, 2681, 2682,
2484, 2755, 2909, 2929, 3097, 3253, 3279	2683, 2685, 2686, 2687, 2695, 2701, 2816,
\mdf@test@tb	2817, 2818, 2820, 2821, 2822, 2826, 2827,
1133, 1175, 1888, 2090, 2119, 2285, 2446,	2828, 2836, 2838, 2844, 2956, 2964, 2986,
2475, 2750, 2904, 2929, 3092, 3248, 3272	3010, 3011, 3015, 3016, 3017, 3019, 3020,
\mdf@test@tr 1133,	3021, 3027, 3029, 3036, 3165, 3166, 3168,
1166, 1199, 1879, 2081, 2113, 2276, 2437,	3169, 3170, 3174, 3175, 3176, 3182, 3188
2481, 2743, 2897, 2922, 3085, 3241, 3276	\mdfboundingboxtotalheight 333,
\mdf@test@trb 1133,	1252, 1260, 1265, 1296, 1307, 1325, 1365,
1153, 1197, 1869, 2072, 2113, 2267, 2428,	1372, 1376, 1379, 1389, 1403, 1420, 1447,
2469, 2735, 2889, 2922, 3077, 3233, 3265	1484, 1491, 1498, 1508, 1525, 1554, 1584,
\mdf@theoremseparator 460, 483, 494, 510	1595, 1601, 1608, 1620, 1626, 1659, 3493, 3505
\mdf@theoremspace 461, 484, 495, 511	\mdfboundingboxtotalwidth 329,
\mdf@theoremtitlefont 462, 485, 496, 512	1249, 1259, 1266, 1276, 1285, 1318, 1332,
\mdf@tikz@settings	1362, 1371, 1380, 1388, 1411, 1428, 1441,
. 1701, 1702, 1798, 1992, 2193, 2354	1451, 1481, 1490, 1499, 1514, 1533, 1548,
\mdf@tikzbox@otl 1748,	1556, 1592, 1600, 1609, 1627, 1639, 1653, 1661
1760, 1873, 1876, 1879, 1882, 1885, 1888,	\mdfboundingboxwidth 328,
1892, 1895, 1898, 1901, 2075, 2078, 2081,	878, 1113, 1121, 1302, 1316, 1319, 1416,
2084, 2087, 2090, 2093, 2096, 2099, 2102,	1440, 1442, 1521, 1547, 1549, 1616, 1652,
2111, 2114, 2117, 2120, 2123, 2126, 2270,	1654, 1749, 1761, 1800, 1801, 1802, 1804,
2273, 2276, 2279, 2282, 2285, 2288, 2291,	1805, 1806, 1808, 1809, 1810, 1823, 1830,
2294, 2297, 2303, 2305, 2307, 2431, 2434,	1993, 1994, 1995, 1997, 1998, 1999, 2001,
2437, 2440, 2443, 2446, 2449, 2452, 2455,	2002, 2003, 2021, 2028, 2194, 2195, 2196,
2458, 2467, 2470, 2473, 2476, 2479, 2482	2198, 2199, 2200, 2202, 2203, 2204, 2219,
\mdf@tikzbox@tfl 1748, 1748, 1866,	2226, 2355, 2356, 2357, 2359, 2360, 2361,
1868, 1869, 1870, 1871, 2070, 2071, 2072,	2363, 2364, 2365, 2380, 2387, 2665, 2666,
2073, 2074, 2108, 2265, 2266, 2267, 2268,	2667, 2669, 2670, 2671, 2673, 2674, 2675,
2269, 2426, 2427, 2428, 2429, 2430, 2464	2693, 2695, 2701, 2805, 2806, 2807, 2809,
\mdf@tikzset@local . . . 233, 233, 235, 238, 1737	2810, 2811, 2813, 2814, 2815, 2833, 2837,
\mdf@titleaboveskip@length 533	2838, 2844, 2999, 3000, 3001, 3003, 3004,
\mdf@titlebelowskip@length 532	3005, 3007, 3008, 3009, 3025, 3028, 3029,
\mdf@trivlist 376, 376, 735	3036, 3154, 3155, 3156, 3158, 3159, 3160,
\mdf@twoside@checklength 726, 761, 763	3162, 3163, 3164, 3180, 3182, 3188, 3500
\mdf@userdefinedwidth@length 401, 814	\mdfcreateextratikz
\mdf@verticalmarginwhole@length . 337, 836,	. . . 340, 1913, 2136, 2316, 2491, 3652, 3723
837, 838, 841, 842, 843, 847, 863, 889, 895	\mdfcreateextratikzlocal 3704, 3723
\mdf@xcolor 249, 249, 253, 257	\mdfdateID 3335, 3536, 3773, 3898
\mdf@zref@label 761, 781, 796	\mdfdefinedstyle 280
\mdfapptodefinestyle	\mdfdefinestyle 4, 404, 404, 3386, 3429,
. 4, 404, 407, 3397, 3408, 3598, 3836	3587, 3662, 3713, 3737, 3825, 3851, 3860

`\mdffootnoteboxdepth` 323
`\mdffootnoteboxheight` 322
`\mdffootnoteboxtotalheight` 324
`\mdffootnoteboxtotalwidth` 321
`\mdffootnoteboxwidth` 320
`\mdfframedtitleenv` 525, 550, 567, 585
`\mdfframetitlebackground` 2517
`\mdfframetitleboxdepth` 318, 578
`\mdfframetitleboxheight` 317, 577
`\mdfframetitleboxtotalheight`
 319, 579, 1265, 1267,
 1376, 1379, 1381, 1383, 1391, 1495, 1498,
 1500, 1605, 1608, 1610, 1612, 1940, 1948,
 1951, 1955, 1956, 1980, 2145, 2148, 2164,
 2182, 2325, 2343, 2794, 2956, 2959, 2963,
 2986, 2987, 3126, 3129, 3143, 3297, 3313
`\mdfframetitleboxtotalwidth` 316
`\mdfframetitleboxwidth`
 315, 576, 1230, 1234, 1779, 2645
`\mdfframetitlerule` 2517
`\mdfglobal@style` 90, 94
`\mdflength` 3, 412, 412
`\mdflinestyle` 2517
`\mdfpstricks@appendsettings` ... 244, 246, 2559
`\mdfpstricks@settings`
 2517, 2696, 2839, 3030, 3183
`\mdframed` 722
`\mdframed@i` 722
`\mdframed@ii` 722
`\mdframedIIPackagename` 2508, 2508, 2512
`\mdframedIPackagename` 1695, 1695, 1699
`\mdframedOPackagename` 1215, 1215, 1219
`\mdframedpackagename` 1,
 2, 7, 8, 9, 15, 645, 683, 692, 697, 703, 708
`\mdfsetup` ... 3, 275, 275, 283, 420, 532, 546,
 603, 724, 3340, 3371, 3455, 3461, 3467,
 3541, 3572, 3615, 3778, 3809, 3903, 3934
`\mdfsplitboxdepth` 313
`\mdfsplitboxheight` 312
`\mdfsplitboxtotalheight` 314
`\mdfsplitboxtotalwidth` 311
`\mdfsplitboxwidth` 310
`\mdftotallinewidth` 326, 1328, 1340, 2689
`\mdtheorem` 11, 418, 445, 3435, 3746
`\mdversion` 1, 1,
 7, 1219, 1699, 2512, 3336, 3537, 3774, 3899
`middlelinecolor` (option) 7
`middlelinewidth` (option) 7

N

`needspace` (option) 8
`\new\protect_\kern_\fontdimen_3\font_\kern_\fontdimen_3\font_`
 306
`\newmdenv` 3, 418, 418, 429, 3870
`\newmdtheoremenv` 11, 418, 433
`\newsavebox` 306, 307, 308, 309

`nobreak` (option) 8
`\nodexn` 2704, 2707, 2712, 2717,
 2720, 2725, 2783, 2787, 2791, 2794, 2847,
 2850, 2855, 2860, 2867, 2870, 2975, 2979,
 2983, 2987, 2988, 3039, 3042, 3047, 3055,
 3058, 3063, 3136, 3140, 3143, 3191, 3194,
 3199, 3204, 3207, 3214, 3306, 3310, 3313
`\noexpand` 476
`\nointerlineskip` . 547, 734, 740, 958, 996, 1085
`\normalfont` 177, 572
`\NOTE` 3365, 3566, 3803, 3928
`ntheorem` (option) 8

O

`\offinterlineskip` 592
`\onecolumn` 4002
`\Opt` 3333, 3337, 3362, 3534, 3538,
 3563, 3771, 3775, 3800, 3896, 3900, 3925

options:

`align` 8
`apptotikzsetting` 9
`backgroundcolor` 7
`bottomline` 10
`defaultunit` 5
`everyline` 8
`font` 8
`fontcolor` 7
`footnotedistance` 12
`footnoteinside` 12
`framemethod` 4
`frametitle` 10
`frametitleaboveskip` 10
`frametitlealignment` 10
`frametitlebackgroundcolor` 11
`frametitlebelowskip` 10
`frametitlefont` 10
`frametitlerule` 10
`frametitlerulewidth` 10
`hidealllines` 10
`innerbottommargin` 6
`innerleftmargin` 6
`innerlinecolor` 7
`innerlinewidth` 7
`innermargin` 6
`innerrightmargin` 6
`innertopmargin` 6
`leftline` 10
`leftmargin` 6
`linecolor` 7
`linewidth` 7
`margin` 6
`middlelinecolor` 7
`middlelinewidth` 7
`needspace` 8
`nobreak` 8
`ntheorem` 8

outerlinecolor 7
 outerlinewidth 7
 outermargin 6
 pstricksappsetting 9
 pstrickssetting 9
 repeatframetitle 11
 rightline 10
 rightmargin 6
 roundcorner 7
 settings 8
 shadow 8
 shadowcolor 9
 shadowsize 8
 skipabove 6
 skipbelow 6
 splitbottomskip 6
 splittopskip 6
 style 8
 theoremseparator 12
 theoremspace 12
 theoremtitlefont 12
 tikzsetting 9
 topline 10
 userdefinedwidth 6
 usetwoside 8
 xcolor 4
 outerlinecolor (option) 7
 outerlinewidth (option) 7
 outermargin (option) 6
 \overlappelines 3488, 3512

P

\Pack ... 3332, 3362, 3365, 3533, 3563, 3566,
 3770, 3800, 3803, 3895, 3925, 3928, 3967
 \pageshrink 941
 \parsep 379
 \parskip 348, 590, 806
 \pgfdeclarehorizontalshading
 3637, 3641, 3689, 3693
 \pgfmathsetlength 1779, 1951, 1955, 2148
 \pnode 2699, 2700, 2701, 2842, 2843,
 2844, 3034, 3035, 3036, 3186, 3187, 3188
 \psclip 2565, 2573, 2583, 2597, 2618, 2730, 2882
 \pscustom 2583, 2598, 2618, 2876, 3221
 \psdot 2764, 2765, 2766, 2944, 2945,
 2946, 3115, 3116, 3117, 3286, 3287, 3288
 pstricksappsetting (option) 9
 pstrickssetting (option) 9
 \ptTps 2513, 2515, 2645
 \ptTpsL 2516, 2643, 2644, 2645

R

\refstepcounter 456, 479, 506
 \renewmdenv 3, 418, 426
 \renewrobustcmd 3652
 repeatframetitle (option) 11

rightline (option) 10
 rightmargin (option) 6
 roundcorner (option) 7

S

\section 3361,
 3367, 3562, 3568, 3799, 3805, 3924, 3930
 \setcounter 3322,
 3352, 3522, 3553, 3759, 3790, 3884, 3915
 settings (option) 8
 \sffamily 3671, 3722
 shadow (option) 8
 shadowcolor (option) 9
 shadowsize (option) 8
 skipabove (option) 6
 skipbelow (option) 6
 \smash 910, 1245, 1359, 1477, 1589
 splitbottomskip (option) 6
 splittopskip (option) 6
 \strut . 465, 469, 488, 499, 515, 519, 3459, 3465
 style (option) 8
 \subsection 3356, 3557, 3794, 3919
 \subtitle 3333, 3534, 3771, 3896
 \surroundwithmdframed 3, 412, 414, 3963

T

\textbf 3705
 \textit 3342,
 3373, 3543, 3574, 3780, 3811, 3905, 3936
 \theexercise 3646, 3654, 3698, 3705
 \theorempostskipamount 611
 \theorempreskipamount 608, 610
 theoremseparator (option) 12
 theoremspace (option) 12
 theoremtitlefont (option) 12
 \thesubsection 3353, 3554, 3791, 3916
 \thetheo 3459, 3465
 \tikz 1780, 3457, 3463
 tikzsetting (option) 9
 \tikzstyle 3632, 3684
 \title 3332, 3533, 3770, 3895
 topline (option) 10
 \topskip 3340, 3371, 3433, 3541, 3572,
 3669, 3720, 3744, 3778, 3809, 3903, 3934
 \twocolumn 3978, 3980

U

\unvcopy 562, 595, 959, 997, 1086
 \uput 2764, 2765, 2766, 2944, 2945,
 2946, 3115, 3116, 3117, 3286, 3287, 3288
 \usepackage 3326,
 3330, 3527, 3531, 3765, 3767, 3889, 3893
 userdefinedwidth (option) 6
 usetwoside (option) 8

V

\vbadness 366, 367, 369

<code>\version</code>	3336, 3537, 3774, 3899	<code>\xdef</code>	454, 474, 475
<code>\vspace</code>	3955, 3957		
X			
<code>xcolor</code> (option)	4		