The `mdframed` package [1]

auto-split frame environment

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

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

Linked files: mdframed-example-default.pdf   mdframed-example-tikz.pdf
                  mdframed-example-pstricks.pdf   mdframed-example-texsx.pdf

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

Contents

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.*

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[1] Extending the package `framed.sty`

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

The frame was defined with the following settings.

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

2. Syntax

Loadings `mdframed`

The package itself loads the packages

- `kvoptions`,

- `xparse` (new),

- `etoolbox` and

- `color`.

Depending on the options `mdframed` will load

- `xcolor`,

- `tikz` or

- `pstricks`.

Load the package as usual:

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

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

Provided environment

The package defines only one environment with the following syntax:

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

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

Autodetecting floats

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

Twoside-mode

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

3. The frames

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

**Frame of a
single page**

**First box – first
part of the output**

**Second box – last
part of the output**

**Middle box –
middle part
of the output**
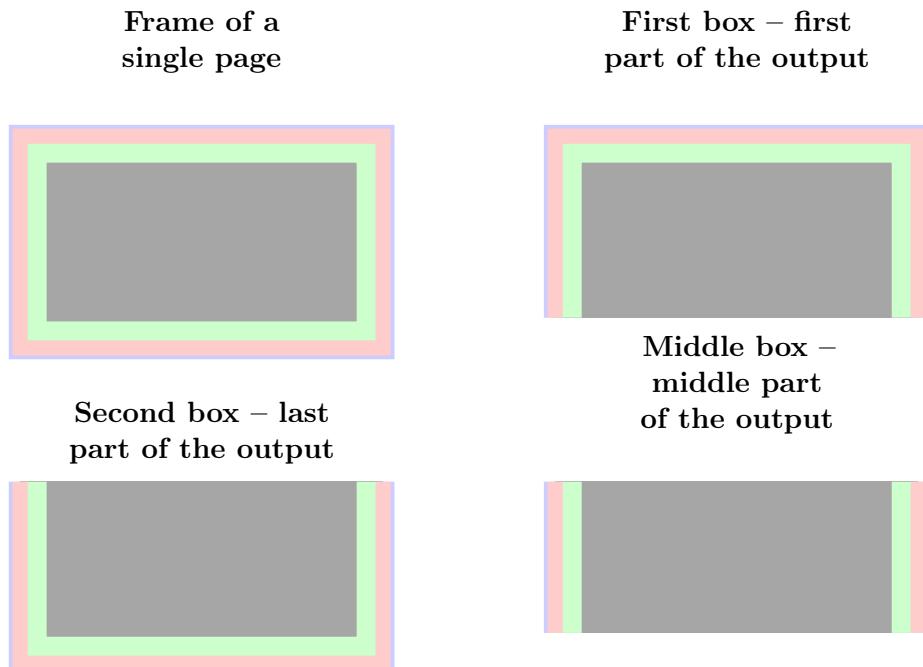
Figure 1: The basic frames

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`.

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[2]Thanks to Heiko Oberdiek and Philipp Stephani kvoptions-Declaration von Optionen schlägt fehl
[3]Thanks to Martin Scharrer and Enrico Gregorio:
   http://tex.stackexchange.com/questions/34684/argument-of-setkeys

5.1. Global Options

The following options are only global options.

`xcolor`   default=`none`

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

`framemethod`   default=`default`

> With this key you can change the way frames are drawn. You can decide whether the frame is drawn with
>
> 1. 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	default, tex, latex, none, 0
TikZ	tikz, pgf, 1
PSTricks	pstricks, ps, postscript, 2

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.
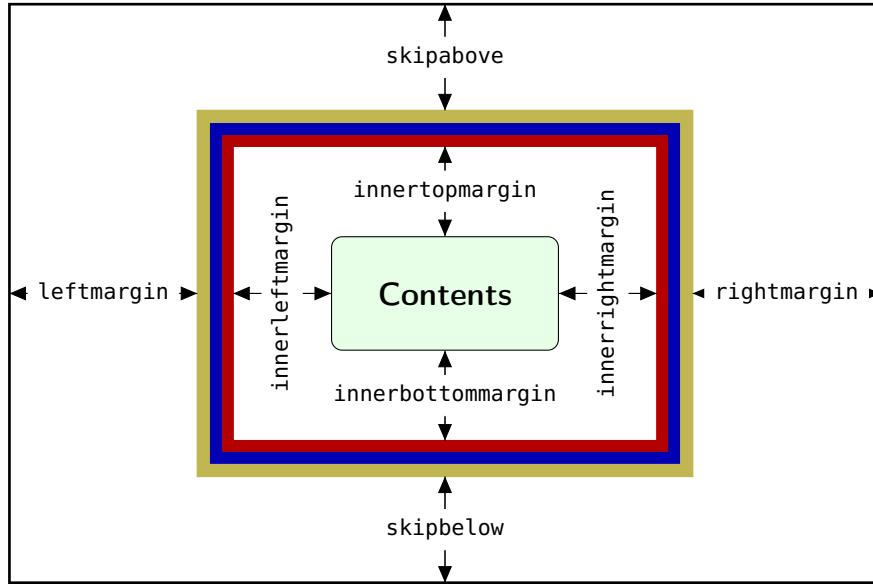
Figure 2: adjustable lengths of `mdframed`

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.

rightmargin   default=`0pt`

    Sets the length of the right margin of the environment.

innerleftmargin   default=`10pt`

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

innerrightmargin   default=`10pt`

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

innertopmargin   default=`.4\baselineskip`

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

innerbottommargin   default=`.4\baselineskip`

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

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

`userdefinedwidth`   default=`0pt`

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

`outermargin`

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

`innermargin`

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

`splittopskip`   default=`0pt`

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

`splitbottomskip`   default=`0pt`

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

`linewidth`   default=`0.4pt`

Sets the width of the line around the environment.

`roundcorner`   default=`0pt`

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

`innerlinewidth`   default=`0pt`

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

`outerlinewidth`   default=`0pt`

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

`middlelinewidth`   default=`linewidth`

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

5.2.2. Colored Options

`linecolor`   default=`black`

Sets the color of the line around the environment.

`backgroundcolor`   default=`white`

Sets the color of the background of the environment.

`fontcolor`   default=`black`

Sets the color of the contents of the environment.

`innerlinecolor`   default=`linecolor`

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

`middlelinecolor`   default=`linecolor`

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

`outerlinecolor`   default=`linecolor`

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

5.2.3. General options

`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 0 pt.

`nobreak`   default=`false`

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

`usetwoside`   default=`true`

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

`needspace`   default=`0pt`

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

`style`

If you define a special style with `\mdfdefinstyle` 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=`8 pt`

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 `\addtopsstyle` 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.

`frametitlefont`   default=`\normalfont\bfseries`

Sets the format of the `frametitle`.

`frametitlealignment`   default=`\raggedleft`

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

`frametitlerule`   default=`false`

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

`frametitlerulewidth`   default=`.2pt`

Sets the width of the line between the text and the title of `mdframed`.

`frametitleaboveskip`   default=`5pt`

Sets the skip of the frame title to the margin above of `mdframed`.

`frametitlebelowskip`   default=`5pt`

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

`frametitlebackgroundcolor`   default=`white`

Sets the color of the background of the frametitle

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

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

`repeatframetitle`   default=`false`

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

5.5. Theorems

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

`\newmdtheoremenv`

Since the package is often used to highlight theorem environments, I have created a command[4] 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**]
> ...

---

[4]Thanks 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 formating 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 TEXGroup created a very nice presentation. I want to show the link because it's really a great work: kts 2012 mdframed.

7. Errors, Warnings and Messages

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

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

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

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

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

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

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

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

> You have not loaded **ntheorem** yet

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

> You have only a width of 3cm

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

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

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

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

See the explanation above.

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

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

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

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

8. Known Problems

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

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 sequently (done by `md-frame-X.mdf`). The following figure demonstrates this.
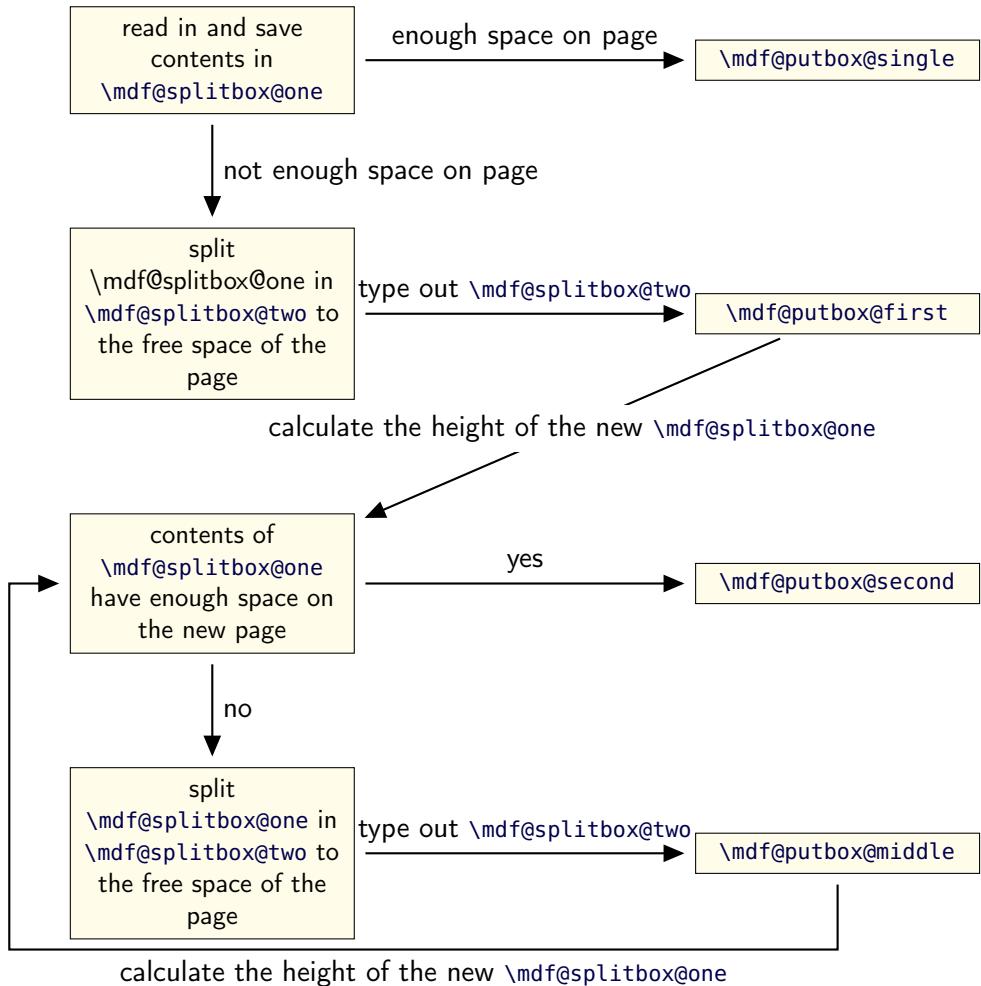
Figure 3: Setting the contents of `mdframed`

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 1.4d 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 unnessary groups
(Thanks Yi, Hoze) ● changed the definition of `listings` to allow copy paste of the examples

Version 1.3a submitted 5 Feb 2012

● fixed bug (Thanks to Dietrich Grau)

Version 1.3 submitted 4 Feb 2012

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

Version 1.2 submitted 8 Jan 2012

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

Version 1.0b submitted 9 Dec 2011

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

Version 1.0 submitted 13 Nov 2011

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

Version 0.9g submitted 08 Oct 2011

● fixed documentation ● added small footnote compatibility

Version 0.9f submitted 04 Oct 2011

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

Version 0.9e submitted 11 Sep 2011

● working with `twoside` modus

Version 0.9d submitted 10 Sep 2011

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

Version 0.9b submitted 7 Sep 2011

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

Version 0.9a submitted 5 Sep 2011

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

Version 0.9 submitted 4 Sep 2011

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

Version 0.8a

• fixes bugs • fixes documentation

Version 0.8 submitted 22 Aug 2011

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

Version 0.7a submitted 6 August 2011

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

Version 0.6a submitted 22 Dec 2010

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

B. Implementation

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

B.1. The Explanation of mdframed.sty

*Id : mdframed.dtx3622012 − 03 − 3006 : 55 : 35Zmarco Rev : 362 Author : marco
Date : 2012 − 03 − 3008 : 55 : 35 + 0200(Fr, 30.Mr2012)*

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

Set package information

```
1 \def\mdversion{v1.4d}
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 362 2012-03-30 06:55:35Z 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 width a default value.
`\mdf@option@length{<Laengenbezeichnung>}{<Defaultwert>}`

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

Command to create a new length option.`\mdf@define@key@length{<Bezeichnungder 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@templength}}%
53     \expandafter\setlength\csname mdf@#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 to 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@tripledo`

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

```
81  \def\mdf@do@alignoption#1{%
82      \mdf@alignoption@tripledo#1\@nil%
83  }
84  \def\mdf@alignoption@tripledo#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 width 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@patchamsthm{%
372     \let\mdf@deferred@thm@head\deferred@thm@head
373     \patchcmd{\deferred@thm@head}{\indent}{}{}{}
374     }%
375 }{\let\mdf@patchamsthm\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   \@nmbrlistfalse%
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 defintions.

```
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{O{} 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}{ O{} m o m o }%
446  {\ifcsdef{#2}%
447      {\mdf@PackageWarning{Environment #2 already exits\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                  \ifstrempty{##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                \ifstrempty{##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            \ifstrempty{##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            \ifstrempty{##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            \ifstrempty{##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            \ifstrempty{##1}{\let\@temptitle\relax}{\def\@temptitle{:\ ##1}}
519            \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]}%
520            {\end{mdframed}}%
521        }%
522      }%
523    }
524
```

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

Default definition of the frame tile used by mdframed.

```
525 %TESTVERSION
526 % \newrobustcmd*\mdf@setopt@title{%
527 %  \ifbool{mdf@frametitlerule}{\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@frametitlerulecolor,%
535 %             backgroundcolor=\mdf@frametitlebackgroundcolor,%
536 %             middlelinewidth=\mdf@frametitlerulewidth@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@footenotedistance@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\@captype\@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\@captype\@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 environement.

```
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@checkntheorem%
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\vsize}%
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@horizontalspaceofbox
\mdf@horizontalmargin@equation
```

Width of the box

```
809 \newrobustcmd*\mdf@advancelength@horizontalmargin@sub[1]{%
810   \advance\mdf@horizontalspaceofbox by -\csname mdf@#1@length\endcsname\relax%
811 }
812 \newlength\mdf@horizontalspaceofbox
813 \newrobustcmd*\mdf@horizontalmargin@equation{%
814     \setlength{\mdf@horizontalspaceofbox}{\mdf@userdefinedwidth@length}%
815     \mdf@dolist{\mdf@advancelength@horizontalmargin@sub}{%
816             leftmargin,outerlinewidth,middlelinewidth,%
817             innerlinewidth,innerleftmargin,innerrightmargin,%
818             innerlinewidth,middlelinewidth,outerlinewidth,%
819             rightmargin}%
820     \notbool{mdf@leftline}{%
821             \advance\mdf@horizontalspaceofbox by \mdf@innerlinewidth@length\relax%
822             \advance\mdf@horizontalspaceofbox by \mdf@middlelinewidth@length\relax%
823             \advance\mdf@horizontalspaceofbox by \mdf@outerlinewidth@length\relax%
824         }{}%
825     \notbool{mdf@rightline}{%
826             \advance\mdf@horizontalspaceofbox by \mdf@innerlinewidth@length\relax%
827             \advance\mdf@horizontalspaceofbox by \mdf@middlelinewidth@length\relax%
828             \advance\mdf@horizontalspaceofbox by \mdf@outerlinewidth@length\relax%
829         }{}%
830     \ifdimless{\mdf@horizontalspaceofbox}{3cm}%
831             {\mdf@PackageWarning{You have only a width of 3cm}}{}%
832     \hsize=\mdf@horizontalspaceofbox%
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 mdf@#1@length\endcsname\relax%
851 }
852 \newrobustcmd*\mdf@advancelength@freevspace@add[1]{%
853   \advance\dimen@ by \csname mdf@#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 environement.

```
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@keeplines@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 environement. 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\mdfboundingboxwidth{\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 %       \advance\dimen@ by -1pt\relax%Box darf nicht zu Groß werden.
950          \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
951          \mdf@ignorevbadness%
952          \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@
953          \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
954          \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
955          \ifbool{mdf@repeatframetitle}{%
956              \setbox\mdf@splitbox@one\vbox{%
957                  \vbox to \mdf@splittopskip@length{\hsize\z@}
958                  %\par\unskip\nointerlineskip
959                  \unvcopy\mdf@frametitlebox%
960                  \mdf@@frametitlerule%
961                  \vbox to\dimexpr
962                      -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox
963                      +\mdf@innertopmargin@length\relax{\hsize\z@}%
964                  \unvbox\mdf@splitbox@one}%
965              }{}%
966          \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
967            {%Falsch gesplittet
968             \mdf@PackageInfo{Box was splittet wrong\MessageBreak}%
969             \dimen@i=\dimen@
970              \advance\dimen@ by -\ht\mdf@splitbox@two
971              \advance\dimen@ by -\dp\mdf@splitbox@two
972              \advance\dimen@i by 0.5\dimen@
973             \splittopskip\z@%
974             \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two%
975                      %benoetigt um Tiefe zu haben
976                      \hrule \@height\dp\strutbox \@width\z@
977                      \unvbox\mdf@splitbox@one}
978             \splittopskip\mdf@splittopskip@length%
979             \mdf@ignorevbadness%
980             \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@i
981             \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
982             \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
983             \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
984                  {%
985                  \splittopskip\z@\mdf@ignorevbadness%%
986                  \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two%
987                                      %benoetigt um Tiefe zu haben
988                                      \hrule \@height\dp\strutbox \@width\z@
989                                      \unvbox\mdf@splitbox@one}%
990                  \mdf@ignorevbadness%
991                  \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
992                  }{}%
993          \ifbool{mdf@repeatframetitle}{%
994              \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                    %benoetigt um Tiefe zu haben
1012                    \hrule \@height\dp\strutbox \@width\z@
1013                    \unvbox\mdf@splitbox@one}%
1014        \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
1015        \enlargethispage{\baselineskip}%
1016        \def\mdf@reserved@a{\mdf@put@frame}%
1017      \fi
1018      \ifvoid\mdf@splitbox@two%%pruefe, ob erste Box leer ist
1019       \hrule \@height\z@ \@width\hsize
1020       %%\vfill\eject%
1021          \def\mdf@reserved@a{\mdf@put@frame}%
1022      \else
1023       \ifdimequal{\ht\mdf@splitbox@two}{0pt}%
1024         {\hrule \@height\z@ \@width\hsize%
1025          \vfill\eject%
1026          \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two\unvbox\mdf@splitbox@one}
1027          \def\mdf@reserved@a{\mdf@put@frame}%
1028         }%
1029         {%
1030         \begingroup%
1031            \mdf@@setzref
1032            \mdf@putbox@first%%Groesse des Splittens passt
1033         \endgroup%
1034         \hrule \@height\z@ \@width\hsize%
1035         \vfill\eject%
1036         \def\mdf@reserved@a{\mdf@put@frame@ii}%
1037         }%
1038      \fi%
1039    }%
1040 \mdf@reserved@a%
1041 }
```

\mdf@put@frame@ii

Output of the middle and last box.

```
1042 \def\mdf@put@frame@ii{%Ausgabe der mittleren Box(en) wenn vorhanden
1043  \setlength{\mdf@freevspace@length}{\vsize}%
1044  \setlength{\dimen@}{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1045  \mdf@dolist{\mdf@advancelength@freevspace@add}{%used \dimen@
```

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

```
1102            \endgroup
1103            \hrule \@height\z@ \@width\hsize
1104            \vfill\eject
1105            \def\mdf@reserved@a{\mdf@put@frame@ii}%
1106          \fi
1107        }%Hier die Ausgabe der mittleren Box
1108        {\ifvoid\mdf@splitbox@one
1109            \mdf@PackageWarning{You got a bad break\MessageBreak
1110                              because the last split box is empty\MessageBreak
1111                              You have to change the settings}%%
1112            \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one\hrule \@height\z@ \@width\mdfbounding
1113        \fi%
1114        \ifdimless{\ht\mdf@splitbox@one}{1sp}{%
1115            \mdf@PackageWarning{You got a bad break\MessageBreak
1116                              because the last split box is empty\MessageBreak
1117                              You have to change the settings}%
1118            %\hb@xt@\z@{\box\mdf@splitbox@one}%
1119            \let\mdf@reserved@a\relax%
1120            \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one\hrule \@height\z@ \@width\mdfboundir
1121        }{}%
1122        \begingroup%
1123          \mdf@@setzref
1124          \mdf@putbox@second%
1125          \hrule \@height\z@ \@width\hsize%
1126        \endgroup%
1127        \let\mdf@reserved@a\relax%
1128      }%Hier kommt die Ausgabe der letzten Box
1129    \mdf@reserved@a%
1130 }
1131
```

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

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

```
1132 %%%%      _____t_____
1133 %%%%    |           |
1134 %%%%    |           |
1135 %%%%    |           |
1136 %%%%  l|           |r
1137 %%%%    |           |
1138 %%%%    |           |
```

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

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

1201 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{framemethod}%
1202 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{xcolor}%
1203
1204  \endinput
```

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

```
1205 %% Style file for mdframed for package option 'framemethod=default'
1206 %%
1207 %% This package may be distributed under the terms of the LaTeX Project
1208 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1209 %% Either version 1.0 or, at your option, any later version.
1210 %%
1211 %%
1212 %%$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $
1213 %
```

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

local settings

```
1214 \def\mdframed0packagename{md-frame-0}
1215 \def\mdf@frame0date@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1216 \ProvidesFile{md-frame-0.mdf}%
1217    [\mdf@frame0date@svn$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $%
1218     \mdversion: \mdframed0packagename]
```

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

short command

```
1219 \def\mdf@background@default{\color{\mdf@backgroundcolor}}
1220 \def\mdf@frametitlebackground@default{\color{\mdf@frametitlebackgroundcolor}}
1221 \def\mdf@shadow@default{\color{\mdf@shadowcolor}}
1222 \def\mdf@innerlinecolor@default{\color{\mdf@innerlinecolor}}
1223 \def\mdf@middlelinecolor@default{\color{\mdf@middlelinecolor}}
1224 \def\mdf@outerlinecolor@default{\color{\mdf@outerlinecolor}}
1225 \def\mdf@frametitlerulecolor@default{\color{\mdf@frametitlerulecolor}}
1226 \let\mdf@linecolor@default\mdf@middlelinecolor@default
1227 \def\mdf@@frametitlerule{%
1228   \ifbool{mdf@frametitlerule}{%
1229    \vbox to \mdf@frametitlerulewidth@length {\hsize\mdfframetitleboxwidth%
1230      \par\unskip\vskip\mdf@frametitlebelowskip@length%
1231      \rlap{\noindent\hspace*{-\mdf@innerleftmargin@length}%
1232      \mdf@frametitlerulecolor@default%
1233      \rule{\dimexpr\mdfframetitleboxwidth%
1234           +\mdf@innerleftmargin@length
```

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

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

The frame of of a non splitted contents of mdframed

```
1242 \def\mdf@frame@background@single{%
1243   \ifbool{mdf@shadow}{%
1244    \rlap{\smash{\mdf@shadow@default%
1245       \rule[\dimexpr-\mdfboundingboxdepth
1246                   -\mdf@shadowsize@length
1247                   \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{}\relax]%
1248          {\dimexpr\mdfboundingboxtotalwidth
1249               +\mdf@shadowsize@length
1250               \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}\relax}%
1251          {\dimexpr\mdfboundingboxtotalheight
1252               +\mdf@shadowsize@length
1253               \ifbool{mdf@bottomline}{+\mdf@middlelinewidth@length}{}\relax}%
1254       }%
1255   }}{}%
1256   \rlap{\mdf@background@default%
1257       \rule[-\mdfboundingboxdepth]%
1258           {\mdfboundingboxtotalwidth}%
1259           {\mdfboundingboxtotalheight}%
1260       }%
1261 }%
1262 \def\mdf@frame@frametitlebackground@single{%
1263   \rlap{\mdf@frametitlebackground@default%
1264       \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1265           {\mdfboundingboxtotalwidth}%
1266           {\mdfframetitleboxtotalheight}%
1267     }%
1268 }%
1269
1270 \def\mdf@frame@topline@single{%
1271   \rlap{\mdf@linecolor@default%
1272       \ifbool{mdf@topline}{%
1273           \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth%
1274                   +\mdf@innerbottommargin@length+\mdf@innertopmargin@length\relax]%
1275               {\mdfboundingboxtotalwidth}%
1276               {\mdf@middlelinewidth@length}}%
1277           {}%
1278     }%
1279 }%
1280 \def\mdf@frame@bottomline@single{%
1281   \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{}\mdf@linecolor@default%
```

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

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

```
\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

```
1356 \def\mdf@frame@background@first{%
1357   \ifbool{mdf@shadow}{%
1358    \rlap{\smash{\mdf@shadow@default%
1359      \rule[\dimexpr-\mdfboundingboxdepth
1360                  -\mdf@shadowsize@length\relax]%
1361          {\dimexpr\mdfboundingboxtotalwidth
1362                +\mdf@shadowsize@length
1363                \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}\relax}%
1364          {\dimexpr\mdfboundingboxtotalheight
1365                +\mdf@shadowsize@length\relax}%
1366      }%
1367   }}{}%
1368   \rlap{\mdf@background@default%
1369      \rule[-\mdfboundingboxdepth]%
1370          {\mdfboundingboxtotalwidth}%
1371          {\mdfboundingboxtotalheight}%
1372   }%
1373 }%
1374 \def\mdf@frame@frametitlebackground@first{%
1375  \ifdimless{\mdfframetitleboxtotalheight}{\mdfboundingboxtotalheight}%
1376  {%
1377   \rlap{\mdf@frametitlebackground@default%
1378     \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1379          {\mdfboundingboxtotalwidth}%
1380          {\mdfframetitleboxtotalheight}%
1381      }%
1382   \global\mdfframetitleboxtotalheight=-\p@\relax%
1383  }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
1384                     Current this isn't well supported}%
```

```
1385       \rlap{\mdf@frametitlebackground@default%
1386         \rule[-\mdfboundingboxdepth]%
1387              {\mdfboundingboxtotalwidth}%
1388              {\mdfboundingboxtotalheight}%
1389       }%
1390     \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
1391                      -\mdfboundingboxheight
1392                      +\mdf@frametitlebelowskip@length
1393                      +.5\baselineskip-1pt
1394 %                     +\dp\strutbox
1395                      \relax%
1396   }%
1397 }%
1398 \def\mdf@frame@leftline@first{%
1399   \llap{\mdf@linecolor@default%
1400       \rule[-\mdfboundingboxdepth]%
1401            {\mdf@middlelinewidth@length}%
1402            {\dimexpr\mdfboundingboxtotalheight%
1403             +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1404   }%
1405 }%
1406 \def\mdf@frame@topline@first{%
1407   \rlap{\mdf@linecolor@default%
1408       \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth+%
1409            \mdf@splitbottomskip@length+\mdf@innertopmargin@length\relax]%
1410            {\mdfboundingboxtotalwidth}%
1411            {\mdf@middlelinewidth@length}%
1412   }%
1413 }
1414 \def\mdf@frame@rightline@first{%
1415   \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1416       \hspace*{\mdf@innerrightmargin@length}%
1417       \rule[-\mdfboundingboxdepth]%
1418            {\mdf@middlelinewidth@length}%
1419            {\dimexpr\mdfboundingboxtotalheight%
1420             +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1421   }%
1422 }%
1423 \def\mdf@frame@bottomline@first{%
1424   \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{}\mdf@linecolor@default%
1425       \ifbool{mdf@bottomline}{%
1426           \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1427                {\dimexpr\mdfboundingboxtotalwidth
1428                     \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1429                     \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}\relax}%
1430                {\mdf@middlelinewidth@length}}%
1431           {}%
1432   }%
1433 }%
1434 \def\mdf@putbox@first{%%%% Ausgabe der Teilbox 1
1435   \ifvoid\mdf@splitbox@two
1436   \else%
1437     \mdf@makebox@out[\linewidth]{%
1438       \mdf@makeboxalign@left%
1439       \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@two}%
1440       \setlength{\mdfboundingboxtotalwidth}%
```

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

┌───┐
│ \mdf@putbox@second   │
│ \mdf@frame@background@second   │
│ \mdf@frame@leftline@second   │
│ \mdf@frame@bottomline@second   │
│ \mdf@frame@rightline@second   │
└───┘

The last frame of of a splitted contents of mdframed

```
1474 \def\mdf@frame@background@second{%
1475   \ifbool{mdf@shadow}{%
1476    \rlap{\smash{\mdf@shadow@default%
1477      \rule[\dimexpr-\mdfboundingboxdepth
1478                  -\mdf@shadowsize@length
1479                  \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{}\relax]%
1480         {\dimexpr\mdfboundingboxtotalwidth
1481               +\mdf@shadowsize@length
1482               \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}\relax}%
1483         {\dimexpr\mdfboundingboxtotalheight
1484               +\mdf@shadowsize@length\relax}%
1485      }%
1486   }}{}%
1487  \rlap{\mdf@background@default%
```

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

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

```
\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

```
1579 \def\mdf@frame@leftline@middle{%
1580   \llap{\mdf@linecolor@default%
1581      \rule[-\mdfboundingboxdepth]%
1582            {\mdf@middlelinewidth@length}%
1583            {\mdfboundingboxtotalheight}%
1584   }%
1585 }%
1586 \def\mdf@frame@background@middle{%
1587   \ifbool{mdf@shadow}{%
1588    \rlap{\smash{\mdf@shadow@default%
1589      \rule[\dimexpr-\mdfboundingboxdepth
1590                  -\mdf@shadowsize@length\relax]%
1591            {\dimexpr\mdfboundingboxtotalwidth
```

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

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


1684  \endinput
```

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

```
1685 %% Style file for mdframed for package option 'framemethod=default'
1686 %%
1687 %% This package may be distributed under the terms of the LaTeX Project
1688 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1689 %% Either version 1.0 or, at your option, any later version.
1690 %%
1691 %%
1692 %%$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $
1693 %
```

> \mdframedIpackagename
> \mdf@frameIdate@svn

local settings

```
1694 \def\mdframedIpackagename{md-frame-1}
```

```
1695 \def\mdf@frameIdate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1696 \ProvidesFile{md-frame-1.mdf}%
1697        [\mdf@frameIdate@svn$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $ %
1698         \mdversion: \mdframedIpackagename]
1699 %
```

┌─────────────────────────┐
│ \mdf@tikz@settings   │
└─────────────────────────┘

Define settings for tikz

```
1700 %Allgemeine Einstellungen fuer tikz
1701 \def\mdf@tikz@settings{%
1702 %
1703   \tikzset{mdfbox/.style={anchor=south west,%
1704                           inner sep=0pt,%
1705                           outer sep=0pt,%
1706                           \mdf@fontcolor,}}% anchor der Ausgabebox ist unten links
1707   \tikzset{mdfcorners/.style={rounded corners=\mdf@roundcorner@length}}%
1708   \tikzset{mdfbackground/.style={fill=\mdf@backgroundcolor,%
1709                                 draw=\mdf@backgroundcolor}}%
1710   \tikzset{mdfframetitlebackground/.style={fill=\mdf@frametitlebackgroundcolor,%
1711                                 draw=none,%
1712                                 rounded corners={max(\mdf@roundcorner@length%
1713                                              -\mdf@innerlinewidth@length%
1714                                              -.5\mdf@middlelinewidth@length,0)}}}}%
1715 %
1716   \tikzset{mdfouterline/.style={}}%
1717 % nur wenn outerlinewidth>0 wird aussere Linie gezeichnet
1718   \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
1719     {\tikzset{mdfouterline/.append style={%
1720       draw=\mdf@outerlinecolor,%
1721       line width=2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length}}}{}%
1722 %
1723   \tikzset{mdfinnerline/.style={}}%
1724 % nur wenn innerlinewidth>0 wird innere Linie gezeichnet
1725   \ifdimgreater{\mdf@innerlinewidth@length}{\z@}
1726     {\tikzset{mdfinnerline/.append style={%
1727       draw=\mdf@innerlinecolor,%
1728       line width=2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length}}}{}%
1729 %
1730   \tikzset{mdfshadow/.style={drop shadow={%
1731                           shadow xshift=\mdf@shadowsize@length-2pt,
1732                           shadow yshift=-\mdf@shadowsize@length+2pt,
1733                           fill=\mdf@shadowcolor,
1734                           every shadow }}}%
1735 %
1736   \mdf@tikzset@local
1737   \tikzset{mdfmiddleline/.style={}}%
1738 % nur wenn middlelinewidth>0 wird mittlere Linie gezeichnet
1739   \ifdimgreater{\mdf@middlelinewidth@length}{\z@}
1740     {\tikzset{mdfmiddleline/.append style={%
1741       preaction={draw=\mdf@middlelinecolor,%
1742                 line width=\mdf@middlelinewidth@length},%
1743       line width=\mdf@middlelinewidth@length,%
1744       tikzsetting}}%
1745     }{}%
```

```
1746 }%
```

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

Befehle fuer Ausgabe von Rahmen und Hintergrund

```
1747 \newrobustcmd*\mdf@tikzbox@tfl[1]{%three or four borders
1748     \clip(0,0)rectangle(\mdfboundingboxwidth,\mdfboundingboxheight);%
1749     \begin{scope}[mdfcorners]%
1750        \clip[preaction=mdfouterline]%
1751             [postaction=mdfbackground]%
1752             [postaction=mdfinnerline]#1;%
1753     \end{scope}%
1754     \path[mdfmiddleline,mdfcorners]#1;
1755   }%
1756
1757
1758
1759 \newrobustcmd*\mdf@tikzbox@otl[2]{%one or two borders
1760     \clip(0,0)rectangle(\mdfboundingboxwidth,\mdfboundingboxheight);%
1761     \begin{scope}
1762        \path[mdfouterline,mdfcorners]#1;%
1763        \clip[postaction=mdfbackground]#2;%
1764        \path[mdfinnerline,mdfcorners]#1;%
1765     \end{scope}%
1766     \path[mdfmiddleline,mdfcorners]#1;}%
```

`\mdf@put@frametitlerule`

frametitlerule with tikz

```
1767 \tikzset{mdfframetitlerule/.style={%
1768    draw=none,
1769    fill=\mdf@frametitlerulecolor,
1770    }%
1771 }
1772 \def\mdf@@frametitlerule{%
1773   \ifbool{mdf@frametitlerule}{%
1774    \vbox{\hsize0pt
1775       \par\unskip\vskip\mdf@frametitlebelowskip@length
1776       \noindent\rlap{\hspace*{-\mdf@innerleftmargin@length}}%
1777       \begingroup%
1778       \pgfmathsetlength{\dimen@}{\mdfframetitleboxwidth+\mdf@innerleftmargin@length+\mdf@innerrightmargi
1779       \tikz\draw[mdfframetitlerule] (0,0)%
1780             rectangle (\dimen@,\mdf@frametitlerulewidth@length);
1781       \endgroup}
1782    }%
1783   }{}
1784   \par\unskip\vskip\mdf@innertopmargin@length%
1785 }%
1786
```

`\mdf@putbox@single`

Output of the non breakable contents.

```
1787 % Info zu den verwendeten Punkten:
1788 % O ist die untere linke Ecke der Mitte der middleline
1789 % P ist die obere rechte Ecke der Mitte der middleline
1790 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
1791 %
1792 \def\mdf@putbox@single{%
1793   \ifvoid\mdf@splitbox@one
1794   \else%
1795    \mdf@makebox@out{%
1796      \mdf@makeboxalign@left%
1797      \mdf@tikz@settings%
1798 %
1799      \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
1800      \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
1801      \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
1802      \ifbool{mdf@leftline}{%
1803        \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1804        \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1805        \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
1806      \ifbool{mdf@rightline}{%
1807        \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1808        \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1809        \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
1810 %
1811      \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1812      \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
1813      \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
1814      \ifbool{mdf@topline}{%
1815        \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1816        \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1817        \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
1818      \ifbool{mdf@bottomline}{%
1819        \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1820        \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1821        \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
1822      \mdf@makebox@in[\mdfboundingboxwidth]{%
1823      \null%
1824      \begin{tikzpicture}[remember picture]%
1825        \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
1826        \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
1827        \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
1828        \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
1829        \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
1830        \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
1831        \ifbool{mdf@leftline}%
1832          {%
1833            \pgfmathsetlengthmacro\mdf@Ax%
1834                {\mdf@Ax+\mdf@outerlinewidth@length+%
1835                 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
1836            \pgfmathsetlengthmacro\mdf@Ox%
1837                {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1838          }{}%
1839        \ifbool{mdf@rightline}%
1840          {%
1841            \pgfmathsetlengthmacro\mdf@Px%
1842                {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
```

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

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

`\mdf@putbox@first`

Output of the first breakable contents.

```
1945 \def\drawbrackgroundframetitle@first{%
1946 \ifdefempty{\mdf@frametitle}{}{%
1947  \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}%
1948  {%
1949   \drawbrackgroundframetitle@@first
```

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

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

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

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

$\boxed{\texttt{\textbackslash mdf@putbox@middle}}$

Output of the middle breakable contents.

```
2142 \def\drawbrackgroundframetitle@middle{%
2143  \ifdefempty{\mdf@frametitle}{}{%
2144   \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2145   {}{%
2146    \drawbrackgroundframetitle@@middle%
2147    \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
2148   }%
2149  }%
2150 }%
2151 %
2152 \def\drawbrackgroundframetitle@@middle{%
2153      \begin{scope}%background frame title
2154       \ifbool{mdf@leftline}{
2155        \pgfmathsetlengthmacro\mdf@Ox%
2156           {\mdf@Ox+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2157        }{}%
2158       \ifbool{mdf@rightline}{%
2159        \pgfmathsetlengthmacro\mdf@Px%
2160           {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2161        }{}%
2162       \pgfmathsetlengthmacro\mdf@Fy
2163           {\mdf@Py-\mdfframetitleboxtotalheight}
2164       \path[mdfframetitlebackground,rounded corners=\z@]
2165           (\mdf@Ox,\mdf@Fy) -- (\mdf@Ox,\mdf@Py)%
2166           --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2167      \end{scope}
2168 }%
```

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

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

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

\mdf@putbox@second

Output of the last breakable contents.

```
2322 \def\drawbrackgroundframetitle@second{%
2323  \ifdefempty{\mdf@frametitle}{}{%
2324   \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2325   {}{%
2326    \drawbrackgroundframetitle@@second%
2327   }%
2328  }%
2329 }%
2330 %
2331 \def\drawbrackgroundframetitle@@second{%
```

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

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

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


2497 \endinput
```

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

```
2498 %% Style file for mdframed for package option 'framemethod=default'
2499 %%
2500 %% This package may be distributed under the terms of the LaTeX Project
2501 %% Public License, as described in lppl.txt in the base LaTeX distribution.
2502 %% Either version 1.0 or, at your option, any later version.
2503 %%
2504 %%
2505 %%$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $
2506 %
```

`\mdframedIIpackagename`
`\mdf@frameIIdate@svn`

---

local settings

```
2507 \def\mdframedIIpackagename{md-frame-2}
2508 \def\mdf@frameIIdate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
2509 \ProvidesFile{md-frame-2.mdf}%
2510        [\mdf@frameIIdate@svn$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $ %
2511         \mdversion: \mdframedIIpackagename]
```

`\mdf@ptlength@to@pscode`
`\ptTps`

Command to calculate a latex length to postscript

```
2512 \def\mdf@ptlength@to@pscode#1{\pst@number{#1} \pst@number\psxunit div }
2513 \def\mdf@ptlength@to@pscode@length#1{\pst@number{\csname mdf@#1@length\endcsname} \pst@number\psxunit
2514 \let\ptTps\mdf@ptlength@to@pscode\relax
2515 \let\ptTpsL\mdf@ptlength@to@pscode@length\relax
```

`\mdfbackgroundstyle`
`\mdflinestyle`
`\mdfframetitlerule`
`\mdfframetitlebackground`

---

background and line settings for pstricks

```
2516 \def\mdfpstricks@settings{%expand by \addtopsstyle
2517   \newpsstyle{mdfbackgroundstyle}%
2518     {linecolor=\mdf@backgroundcolor,fillstyle=solid,%
2519      fillcolor=\mdf@backgroundcolor,linestyle=none,%
2520     ,dimen=middle,%
2521     }%
2522 %
2523   \newpsstyle{mdfframetitlebackgroundstyle}{%
2524     linecolor=\mdf@frametitlebackgroundcolor,
2525     fillcolor=\mdf@frametitlebackgroundcolor,
2526     fillstyle=solid,linestyle=none,
2527     linearc=\ifdimgreater{\mdf@roundcorner@length%
2528                         -\mdf@innerlinewidth@length%
2529                         -.5\mdf@middlelinewidth@length}
2530                     {\z@}{\dimexpr\mdf@roundcorner@length%
2531                         -\mdf@innerlinewidth@length%
2532                         -.5\mdf@middlelinewidth@length}{\z@},
2533   }
```

```
2534 %
2535   \newpsstyle{mdfouterlinestyle}{linestyle=none}%
2536   \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
2537     {\newpsstyle{mdfouterlinestyle}{%
2538       linecolor=\mdf@outerlinecolor,%
2539       linewidth=\dimexpr2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length\relax,
2540       dimen=middle,
2541       }}{}%
2542 %
2543   \newpsstyle{mdfinnerlinestyle}{linestyle=none}%
2544   \ifdimgreater{\mdf@innerlinewidth@length}{\z@}%
2545     {\newpsstyle{mdfinnerlinestyle}{%
2546       linecolor=\mdf@innerlinecolor,%
2547       linewidth=\dimexpr2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length\relax,
2548       dimen=middle,
2549       }}{}%
2550 %
2551   \newpsstyle{mdfmiddlelinestyle}{linestyle=none}%
2552   \newpsstyle{mdfshadow}{shadow=true,shadowcolor=\mdf@shadowcolor,shadowsize=\mdf@shadowsize@length}%
2553   \ifdimgreater{\mdf@middlelinewidth@length}{\z@}%
2554     {\newpsstyle{mdfmiddlelinestyle}{%
2555       linewidth=\mdf@middlelinewidth@length,%
2556       linecolor=\mdf@middlelinecolor,dimen=middle
2557       }}{}%
2558 \mdfpstricks@appendsettings
2559 }%
2560 %
2561 \newrobustcmd*\mdf@pstricksbox@fl[2]{%four lines
2562   \psframe[style=mdfouterlinestyle](#1)(#2)%aussen=3mm
2563   \psframe[style=mdfbackgroundstyle](#1)(#2)%Hintergrund
2564   \psclip{\psframe[style=mdfmiddlelinestyle](#1)(#2)}
2565    \psframe[style=mdfinnerlinestyle](#1)(#2)%innere=3mm
2566   \endpsclip
2567   \psframe[style=mdfmiddlelinestyle](#1)(#2)%mittlere=2mm
2568   }%
2569 \newrobustcmd*\mdf@pstricksbox@tl[1]{%three lines
2570   \psline[style=mdfouterlinestyle]#1%aussen=3mm
2571   \psline[style=mdfbackgroundstyle]#1%Hintergrund
2572   \psclip{\psline[style=mdfmiddlelinestyle]#1}
2573     \psline[style=mdfinnerlinestyle]#1%innere=3mm
2574   \endpsclip
2575   \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2576   }%
2577 \newrobustcmd*\mdf@pstricksbox@tcl[2]{%two combined lines
2578 %%#1 background comple
2579 %%#2 line path
2580   \psline[style=mdfouterlinestyle]#2%aussen=3mm
2581   \psline[style=mdfbackgroundstyle]#2%Hintergrund
2582   \psclip{\pscustom[linestyle=none]{
2583         \psline[style=mdfmiddlelinestyle]#2
2584         \psline[linestyle=none,linearc=0pt]#1}
2585         }
2586     \psframe[style=mdfbackgroundstyle,linearc=0pt](mdf@O)(mdf@P)%Hintergrund
2587     \psline[style=mdfinnerlinestyle]#2%innere=3mm
2588   \endpsclip
2589   \psline[style=mdfmiddlelinestyle]#2%mittlere=2mm
```

```
2590 }%
2591 \newrobustcmd*\mdf@pstricksbox@tncl[2]{%two not combined lines
2592  \begingroup
2593   \psset{linearc=0pt}
2594   \psline[style=mdfouterlinestyle](mdf@O)#1%aussen=3mm
2595   \psline[style=mdfouterlinestyle](mdf@P)#2%aussen=3mm
2596   \psclip{
2597     \pscustom[linestyle=none]{%
2598         \psline[style=mdfmiddlelinestyle](mdf@O)#1%mittlere=2mm
2599         \psline[linestyle=none](mdf@O)#2
2600         \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2601         \psline[linestyle=none](mdf@P)#1
2602      }%
2603     }%
2604     \psframe[style=mdfbackgroundstyle,linearc=0pt](mdf@O)(mdf@P)%Hintergrund
2605     \psline[style=mdfinnerlinestyle](mdf@O)#1%innere=3mm
2606     \psline[style=mdfinnerlinestyle](mdf@P)#2%innere=3mm
2607   \endpsclip
2608   \psline[style=mdfmiddlelinestyle](mdf@O)#1%mittlere=2mm
2609   \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2610  \endgroup
2611 }%
2612 \newrobustcmd*\mdf@pstricksbox@ol[1]{%one line
2613  \begingroup
2614   \psset{linearc=0pt}
2615   \psline[style=mdfouterlinestyle]#1%aussen=3mm
2616   \psline[style=mdfbackgroundstyle]#1%Hintergrund
2617   \psclip{\pscustom[linestyle=none]{
2618         \psline[style=mdfmiddlelinestyle]#1
2619         \psframe[linestyle=none,fillstyle=none,dimen=inner](mdf@O)(mdf@P)
2620         }}
2621     \psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)
2622     \psline[style=mdfinnerlinestyle]#1%innere=3mm
2623   \endpsclip
2624   \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2625  \endgroup%
2626 }%
2627
2628 %
2629 \newpsstyle{mdfframetitlerule}{%
2630    linecolor=\mdf@frametitlerulecolor,%
2631    fillcolor=\mdf@frametitlerulecolor,%
2632    fillstyle=solid,dimen=outer,%
2633 }
2634 %
```

\mdf@put@frametitlerule

---

frametitlerule with pstricks

```
2635 \def\mdf@@frametitlerule{%
2636   \ifbool{mdf@frametitlerule}{%
2637   \vbox{\hsize0pt
2638     \par\unskip\vskip\mdf@frametitlebelowskip@length
2639     \noindent\rlap{%
2640     \begingroup%
```

```
2641        \begin{pspicture}(0,0)(0,\mdf@frametitlerulewidth@length)
2642         \psframe[style=mdfframetitlerule](!\ptTpsL{innerleftmargin} neg 0)%
2643                                (! \ptTpsL{innerrightmargin}
2644                                      \ptTps{\mdfframetitleboxwidth} add \ptTpsL{frametitlerulewidth})
2645        \end{pspicture}
2646        \endgroup}
2647     }%
2648   }{}
2649   \par\unskip\vskip\mdf@innertopmargin@length%
2650 }%
2651 %
2652 % \begin{macro}{mdf@putbox@single}
2653 % Single output
2654 %      \begin{macrocode}
2655 % Info zu den verwendeten Punkten:
2656 % O ist die untere linke Ecke der Mitte der middleline
2657 % P ist die obere rechte Ecke der Mitte der middleline
2658 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
2659 \def\mdf@putbox@single{%
2660   \ifvoid\mdf@splitbox@one
2661   \else%
2662   \mdf@makebox@out{%
2663     \mdf@makeboxalign@left%
2664     \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2665     \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2666     \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2667     \ifbool{mdf@leftline}{%
2668       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2669       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2670       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2671     \ifbool{mdf@rightline}{%
2672       \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2673       \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2674       \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2675 %
2676     \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2677     \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2678     \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2679     \ifbool{mdf@topline}{%
2680       \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2681       \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2682       \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2683     \ifbool{mdf@bottomline}{%
2684       \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2685       \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2686       \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2687 %
2688     \setlength\mdftotallinewidth{\dimexpr\mdf@innerlinewidth@length%
2689                                    +\mdf@middlelinewidth@length
2690                                    +\mdf@outerlinewidth@length\relax}%
2691     \psset{unit=1truecm}%
2692     \mdf@makebox@in[\mdfboundingboxwidth]{%
2693       \null%
2694       \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
2695         \mdfpstricks@settings%
2696         \psset{linearc=\mdf@roundcorner@length,cornersize=absolut,}%
```

```
2697          \expandafter\psset\expandafter{\mdf@psset@local}%
2698          \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
2699          \pnode(0,0){mdf@O}
2700          \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2701          \ifbool{mdf@leftline}%
2702            {%
2703            \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
2704                         +(\mdf@middlelinewidth@length,0)
2705                         +(\mdf@innerlinewidth@length,0)}{mdf@A}%
2706            \nodexn{(mdf@O)+(\mdf@outerlinewidth@length,0)
2707                         +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
2708            }{}%
2709          \ifbool{mdf@rightline}%
2710            {%
2711            \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
2712                         -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2713            }{}%
2714          \ifbool{mdf@bottomline}%
2715            {%
2716            \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
2717                         +(0,\mdf@middlelinewidth@length)
2718                         +(0,\mdf@innerlinewidth@length)}{mdf@A}%
2719            \nodexn{(mdf@O)+(0,\mdf@outerlinewidth@length)
2720                         +0.5(0,\mdf@middlelinewidth@length)}{mdf@O}%
2721            }{}%
2722          \ifbool{mdf@topline}%
2723            {%
2724            \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
2725                         -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
2726            }{}%
2727          \ifbool{mdf@shadow}
2728              {\psframe[style=mdfshadow](mdf@O)(mdf@P)}{}
2729 %        \psclip{%
2730          %Four lines
2731          \mdf@test@ltrb{\mdf@pstricksbox@fl{mdf@O}{mdf@P}}{}
2732          %three lines
2733          \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
2734          \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@O)(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}}{}
2735          \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@O)(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}%
2736          \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}%
2737          %two lines combinded
2738          \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}%
2739                                             {(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)}}{}
2740          \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@O|mdf@P)(mdf@O)}%
2741                                             {(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}
2742          \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)}%
2743                                             {(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}
2744          \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@O)(mdf@P|mdf@O)(mdf@P)}%
2745                                             {(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
2746          %two lines not combinded combinded
2747          \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}
2748                      }{}
2749          \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@O)}{(mdf@O|mdf@P)}
2750                      }{}
2751          %single line
2752          \mdf@test@l{\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
```

```
2753          \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
2754          \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@O|mdf@P)}}{}
2755          \mdf@test@b{\mdf@pstricksbox@ol{(mdf@O)(mdf@P|mdf@O)}}{}
2756        %no line
2757          \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}
2758 %          }
2759        %Frametitlebackground
2760          \drawbrackgroundframetitle@single
2761        %output%
2762          \rput[bl](mdf@A){\box\mdf@splitbox@one}
2763 %          \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2764 %          \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2765 %          \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
2766 %
2767 %          \endpsclip
2768        \end{pspicture}%
2769      }%
2770    \mdf@makeboxalign@right%
2771  }%
2772 \fi
2773 }%
2774 \def\drawbrackgroundframetitle@single{%
2775  \ifdefempty{\mdf@frametitle}{}{%
2776    \drawbrackgroundframetitle@@single%
2777  }%
2778 }%
2779 \def\drawbrackgroundframetitle@@single{%
2780  \begingroup%
2781    \ifbool{mdf@leftline}{%
2782        \nodexn{(mdf@O)+(\mdf@innerlinewidth@length,0)
2783              +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
2784        }{}%
2785  \ifbool{mdf@rightline}{%
2786        \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
2787              -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2788        }{}%
2789  \ifbool{mdf@topline}{%
2790        \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
2791              -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}%
2792        }{}%
2793  \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
2794  \psline[style=mdfframetitlebackgroundstyle](mdf@O|mdf@F)(mdf@O|mdf@P)
2795                                              (mdf@P)(mdf@P|mdf@F)%
2796  \endgroup
2797 }
```

\mdf@putbox@first

First output

```
2798 \def\mdf@putbox@first{%
2799    \ifvoid\mdf@splitbox@two
2800    \else%
2801     \mdf@makebox@out{%
2802       \mdf@makeboxalign@left%
2803       %\ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
```

```
2804      \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2805      \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2806      \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2807      \ifbool{mdf@leftline}{%
2808        \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2809        \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2810        \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2811      \ifbool{mdf@rightline}{%
2812        \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2813        \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2814        \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2815      \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2816      \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2817      \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2818      \ifbool{mdf@topline}{%
2819        \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2820        \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2821        \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2822 %%%%%%%%%
2823      \ifbool{mdf@everyline}{%
2824        \ifbool{mdf@bottomline}{%
2825        \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2826        \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2827        \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2828      }{}%
2829 %%%%%%%%%%%%%%
2830      \psset{linearc=\mdf@roundcorner@length,cornersize=absolute}%
2831      \expandafter\psset\expandafter{\mdf@psset@local}%
2832      \mdf@makebox@in[\mdfboundingboxwidth]{%
2833       \null%
2834       \psset{unit=1truecm}%
2835       \ifdimgreater{\mdfboundingboxheight}{\vsize}
2836        {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
2837        {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
2838         \mdfpstricks@settings%
2839         \psset{linearc=\mdf@roundcorner@length,cornersize=absolut,}%
2840         \expandafter\psset\expandafter{\mdf@psset@local}%
2841         \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
2842         \pnode(0,0){mdf@O}
2843         \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2844         \ifbool{mdf@leftline}%
2845           {%
2846           \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
2847                          +(\mdf@middlelinewidth@length,0)
2848                          +(\mdf@innerlinewidth@length,0)}{mdf@A}
2849           \nodexn{(mdf@O)+(\mdf@outerlinewidth@length,0)
2850                          +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}
2851           }{}%
2852         \ifbool{mdf@rightline}%
2853           {%
2854            \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
2855                          -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
2856           }{}%
2857         \ifbool{mdf@topline}%
2858           {%
2859            \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
```

```
2860                            -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
2861          }{}%
2862 %%%%%%%%%%%
2863       \ifbool{mdf@everyline}{%
2864        \ifbool{mdf@bottomline}%
2865          {%
2866           \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
2867                            +(0,\mdf@middlelinewidth@length)
2868                            +(0,\mdf@innerlinewidth@length)}{mdf@A}%
2869           \nodexn{(mdf@O)+(0,\mdf@outerlinewidth@length)
2870                            +0.5(0,\mdf@middlelinewidth@length)}{mdf@O}%
2871          }{}%
2872        }{}%
2873 %%%%%%%%%%
2874       \ifbool{mdf@shadow}
2875           {\pscustom[style=mdfshadow,linestyle=none]{%
2876               \psline[linejoin=2,linecap=1,](mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)%
2877               \psline[linejoin=2,linecap=1,linearc=\z@](mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)
2878               \closedshadow
2879               }
2880           }{}
2881 %      \psclip{
2882 %%%%%%%%%%%%%
2883     \ifbool{mdf@everyline}{%
2884         %Four lines
2885         \mdf@test@ltrb{\mdf@pstricksbox@fl{mdf@O}{mdf@P}}{}
2886         %three lines
2887         \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
2888         \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@O)(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}}{}
2889         \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@O)(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}%
2890         \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}%
2891         %two lines combinded
2892         \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}%
2893                                          {(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)}}{}
2894         \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@O|mdf@P)(mdf@O)}%
2895                                          {(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}
2896         \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)}%
2897                                          {(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}
2898         \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@O)(mdf@P|mdf@O)(mdf@P)}%
2899                                          {(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
2900         %two lines not combinded combinded
2901         \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}
2902                     }{}
2903         \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@O)}{(mdf@O|mdf@P)}
2904                     }{}
2905       %single line
2906        \mdf@test@l{\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
2907        \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
2908        \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@O|mdf@P)}}{}
2909        \mdf@test@b{\mdf@pstricksbox@ol{(mdf@O)(mdf@P|mdf@O)}}{}
2910       %no line
2911        \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
2912     }{%
2913      %Four or Three lines
2914       \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@ltr}}%
2915       {\mdf@pstricksbox@tl{(mdf@O)(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}%
```

```
2916          {}%
2917        %two combinded lines
2918        \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}
2919                  {\mdf@pstricksbox@tcl{(mdf@O)(mdf@P|mdf@O)(mdf@P)}%
2920                                      {(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
2921        \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2922                  {\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)}%
2923                                      {(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}
2924        %two not combinded lines
2925        \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
2926                  {\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}}{}
2927        %single line
2928        \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
2929                  {\mdf@pstricksbox@ol{(mdf@P)(mdf@O|mdf@P)}}{}
2930        \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%
2931                  {\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
2932        \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}%
2933                  {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
2934        %no line
2935        \mdf@test@b{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
2936        \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
2937      }%
2938 %      }
2939      %Frametitlebackground
2940        \drawbrackgroundframetitle@first
2941       %output%
2942       \rput[bl](mdf@A){\box\mdf@splitbox@two}
2943 %       \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2944 %       \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2945 %       \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
2946 %     \endpsclip
2947      \end{pspicture}
2948    }%
2949   \mdf@makeboxalign@right%
2950  }%
2951 \fi
2952 }%
2953 \def\drawbrackgroundframetitle@first{%
2954 \ifdefempty{\mdf@frametitle}{}{%
2955   \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}%
2956   {%
2957   \drawbrackgroundframetitle@@first
2958   \global\mdfframetitleboxtotalheight=-\p@%
2959  }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
2960                  Currently this isn't well supported}%
2961    \drawbrackgroundframetitle@@first
2962    \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
2963                -\mdfboundingboxheight
2964                -\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
2965                +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length
2966                +\mdf@splittopskip@length
2967                +\dp\strutbox\relax%
2968   }%
2969  }%
2970 }%
2971 \def\drawbrackgroundframetitle@@first{%
```

```
2972  \begingroup%
2973  \ifbool{mdf@leftline}{%
2974      \nodexn{(mdf@O)+(\mdf@innerlinewidth@length,0)
2975            +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
2976      }{}%
2977  \ifbool{mdf@rightline}{%
2978      \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
2979            -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2980      }{}%
2981  \ifbool{mdf@topline}{%
2982      \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
2983            -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}%
2984      }{}%
2985  \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}
2986     {\nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}}%
2987     {\nodexn{(mdf@O)}{mdf@F}}%
2988  \psline[style=mdfframetitlebackgroundstyle](mdf@O|mdf@F)(mdf@O|mdf@P)
2989                                         (mdf@P)(mdf@P|mdf@F)%
2990  \endgroup
2991  }
```

\mdf@putbox@middle

Middle output

```
2992  \def\mdf@putbox@middle{%
2993    \ifvoid\mdf@splitbox@two
2994    \else%
2995     \mdf@makebox@out{%
2996      \mdf@makeboxalign@left%
2997 %     \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
2998      \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2999      \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3000      \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3001      \ifbool{mdf@leftline}{%
3002        \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3003        \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3004        \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
3005      \ifbool{mdf@rightline}{%
3006        \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3007        \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3008        \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
3009      \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
3010      \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
3011 %%%%%%%%
3012      \ifbool{mdf@everyline}{%
3013       \ifbool{mdf@topline}{%
3014        \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3015        \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3016        \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
3017       \ifbool{mdf@bottomline}{%
3018        \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3019        \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3020        \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
3021      }{}%
3022 %%%%%%%%%%%%
```

```
3023        \psset{unit=1truecm}%
3024        \mdf@makebox@in[\mdfboundingboxwidth]{%
3025         \null%
3026         \ifdimgreater{\mdfboundingboxheight}{\vsize}
3027          {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
3028          {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
3029          \mdfpstricks@settings%
3030          \psset{linearc=0pt,cornersize=absolut,}%
3031          \expandafter\psset\expandafter{\mdf@psset@local}%
3032          %%%%
3033          \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
3034          \pnode(0,0){mdf@O}
3035          \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3036          \ifbool{mdf@leftline}%
3037            {%
3038            \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3039                         +(\mdf@middlelinewidth@length,0)
3040                         +(\mdf@innerlinewidth@length,0)}{mdf@A}
3041            \nodexn{(mdf@O)+(\mdf@outerlinewidth@length,0)
3042                         +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}
3043            }{}%
3044          \ifbool{mdf@rightline}%
3045            {%
3046            \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
3047                         -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
3048            }{}%
3049         %%
3050 %%%%%%%%%%
3051        \ifbool{mdf@everyline}{%
3052         \ifbool{mdf@bottomline}%
3053            {%
3054            \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3055                         +(0,\mdf@middlelinewidth@length)
3056                         +(0,\mdf@innerlinewidth@length)}{mdf@A}%
3057            \nodexn{(mdf@O)+(0,\mdf@outerlinewidth@length)
3058                         +0.5(0,\mdf@middlelinewidth@length)}{mdf@O}%
3059            }{}%
3060         \ifbool{mdf@topline}%
3061            {%
3062            \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3063                         -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3064            }{}%
3065         }{}%
3066 %%%%%%%%%
3067          %%
3068        \ifbool{mdf@shadow}
3069            {\psframe[style=mdfshadow](mdf@O)(mdf@P)}{}
3070 %%%%%%%%%%%%
3071      \ifbool{mdf@everyline}{%
3072          %Four lines
3073          \mdf@test@ltrb{\mdf@pstricksbox@fl{mdf@O}{mdf@P}}{}
3074          %three lines
3075          \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
3076          \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@O)(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}}{}
3077          \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@O)(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}%
3078          \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}%
```

```
3079            %two lines combinded
3080             \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}%
3081                                        {(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)}}{}
3082            \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@O|mdf@P)(mdf@O)}%
3083                                        {(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}
3084            \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)}%
3085                                        {(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}
3086            \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@O)(mdf@P|mdf@O)(mdf@P)}%
3087                                        {(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
3088          %two lines not combinded combinded
3089            \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}
3090                          }{}
3091            \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@O)}{(mdf@O|mdf@P)}
3092                          }{}
3093        %single line
3094          \mdf@test@l{\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
3095          \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
3096          \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@O|mdf@P)}}{}
3097          \mdf@test@b{\mdf@pstricksbox@ol{(mdf@O)(mdf@P|mdf@O)}}{}
3098        %no line
3099          \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
3100      }{%
3101       \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
3102              {\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}}{}%
3103       \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
3104              {\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}%
3105       \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
3106              {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}%
3107       \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
3108              {\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
3109      }%
3110       %Frametitlebackground
3111         \drawbrackgroundframetitle@middle
3112        %output%
3113        \rput[bl](mdf@A){\box\mdf@splitbox@two}
3114 %       \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3115 %       \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3116 %       \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
3117      \end{pspicture}%
3118     }%
3119   \mdf@makeboxalign@right%
3120  }%
3121 \fi
3122 }%
3123 \def\drawbrackgroundframetitle@middle{%
3124 \ifdefempty{\mdf@frametitle}{}{%
3125   \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3126 {}{%
3127    \drawbrackgroundframetitle@@middle
3128    \global\mdfframetitleboxtotalheight=-\p@\relax%
3129  }%
3130 }%
3131 }%
3132 \def\drawbrackgroundframetitle@@middle{%
3133 \begingroup%
3134  \ifbool{mdf@leftline}{%
```

```
3135        \nodexn{(mdf@O)+(\mdf@innerlinewidth@length,0)
3136                +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
3137      }{}%
3138  \ifbool{mdf@rightline}{%
3139        \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3140                -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3141      }{}%
3142  \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3143  \psline[style=mdfframetitlebackgroundstyle,linearc=\z@](mdf@O|mdf@F)(mdf@O|mdf@P)
3144                                              (mdf@P)(mdf@P|mdf@F)%
3145  \endgroup
3146 }
```

\mdf@putbox@second

Last output

```
3147 \def\mdf@putbox@second{
3148  \ifvoid\mdf@splitbox@one
3149  \else%
3150   \mdf@makebox@out{%
3151     \mdf@makeboxalign@left%
3152 %    \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
3153    \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
3154    \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3155    \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3156    \ifbool{mdf@leftline}{%
3157      \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3158      \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3159      \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
3160    \ifbool{mdf@rightline}{%
3161      \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3162      \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3163      \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
3164    \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
3165    \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
3166    \ifbool{mdf@bottomline}{%
3167      \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3168      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3169      \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
3170 %%%%%%%%%
3171    \ifbool{mdf@everyline}{%
3172     \ifbool{mdf@topline}{%
3173      \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3174      \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3175      \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
3176     }{}%
3177 %%%%%%%%%%%%%
3178      \psset{unit=1truecm}%
3179   \mdf@makebox@in[\mdfboundingboxwidth]{%
3180      \null%
3181      \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
3182       \mdfpstricks@settings%
3183       \psset{linearc=\mdf@roundcorner@length,cornersize=absolut,}%
3184       \expandafter\psset\expandafter{\mdf@psset@local}%
3185       \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
```

```
3186          \pnode(0,0){mdf@O}
3187          \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3188          \ifbool{mdf@leftline}%
3189            {%
3190            \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3191                            +(\mdf@middlelinewidth@length,0)
3192                            +(\mdf@innerlinewidth@length,0)}{mdf@A}
3193            \nodexn{(mdf@O)+(\mdf@outerlinewidth@length,0)
3194                            +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}
3195          }{}%
3196        \ifbool{mdf@rightline}%
3197            {%
3198            \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)
3199                            -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
3200          }{}%
3201        \ifbool{mdf@bottomline}%
3202            {%
3203            \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3204                            +(0,\mdf@middlelinewidth@length)
3205                            +(0,\mdf@innerlinewidth@length)}{mdf@A}
3206            \nodexn{(mdf@O)+(0,\mdf@outerlinewidth@length)
3207                            +0.5(0,\mdf@middlelinewidth@length)}{mdf@O}
3208          }{}%
3209 %%%%%%%%%%
3210        \ifbool{mdf@everyline}{%
3211          \ifbool{mdf@topline}%
3212            {%
3213            \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3214                            -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3215          }{}%
3216        }{}%
3217 %%%%%%%%%%
3218        %%
3219        \ifbool{mdf@shadow}
3220          {\pscustom[style=mdfshadow,linestyle=none]{%
3221              \psline[linejoin=2,linecap=1,](mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)(mdf@P)%
3222              \psline[linejoin=2,linecap=1,linearc=\z@](mdf@O|mdf@P)(mdf@P)
3223              \closedshadow
3224              }
3225          }{}
3226 %%%%%%%%%%%%
3227      \ifbool{mdf@everyline}{%
3228        %Four lines
3229        \mdf@test@ltrb{\mdf@pstricksbox@fl{mdf@O}{mdf@P}}{}
3230        %three lines
3231        \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
3232        \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@O)(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}}{}
3233        \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@O)(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}%
3234        \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}%
3235        %two lines combinded
3236        \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}%
3237                                           {(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)}}{}
3238        \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@O|mdf@P)(mdf@O)}%
3239                                           {(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}
3240        \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@O)(mdf@O|mdf@P)}%
3241                                           {(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@O)}}{}
```

```
3242            \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@O)(mdf@P|mdf@O)(mdf@P)}%
3243                                        {(mdf@O)(mdf@O|mdf@P)(mdf@P)}}{}
3244          %two lines not combinded combinded
3245           \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}
3246                       }{}
3247           \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@O)}{(mdf@O|mdf@P)}
3248                       }{}
3249         %single line
3250           \mdf@test@l{\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
3251           \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
3252           \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@O|mdf@P)}}{}
3253           \mdf@test@b{\mdf@pstricksbox@ol{(mdf@O)(mdf@P|mdf@O)}}{}
3254         %no line
3255           \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
3256       }{%
3257        %Four + Three
3258        \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@lrb}}%
3259          {\mdf@pstricksbox@tl{(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}%
3260       %Two combinded
3261        \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
3262          {\mdf@pstricksbox@tcl{(mdf@P|mdf@O)(mdf@P)(mdf@O|mdf@P)}%
3263                                        {(mdf@O|mdf@P)(mdf@O)(mdf@P|mdf@O)}}{}
3264        \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
3265          {\mdf@pstricksbox@tcl{(mdf@P)(mdf@O|mdf@P)(mdf@O)}%
3266                                        {(mdf@O)(mdf@P|mdf@O)(mdf@P)}}{}
3267       %Two not combinded
3268        \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
3269          {\mdf@pstricksbox@tncl{(mdf@O|mdf@P)}{(mdf@P|mdf@O)}}{}%
3270       %one line
3271        \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}%
3272          {\mdf@pstricksbox@ol{(mdf@O)(mdf@P|mdf@O)}}{}
3273        \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}%
3274          {\mdf@pstricksbox@ol{(mdf@O)(mdf@O|mdf@P)}}{}
3275        \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}%
3276          {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@O)}}{}
3277       %no line
3278        \mdf@test@t{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
3279        \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@O)(mdf@P)}{}%
3280      }%
3281       %Frametitlebackground
3282         \drawbrackgroundframetitle@second
3283        %output%
3284        \rput[bl](mdf@A){\box\mdf@splitbox@one}
3285 %        \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3286 %        \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3287 %        \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
3288      \end{pspicture}%
3289     }%
3290    \mdf@makeboxalign@right%
3291  }%
3292 \fi
3293 }%
3294 \def\drawbrackgroundframetitle@second{%
3295 \ifdefempty{\mdf@frametitle}{}{%
3296   \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3297   {}{%
```

```
3298      \drawbrackgroundframetitle@@second
3299   }%
3300  }%
3301 }%
3302 \def\drawbrackgroundframetitle@@second{%
3303  \begingroup%
3304   \ifbool{mdf@leftline}{%
3305       \nodexn{(mdf@O)+(\mdf@innerlinewidth@length,0)
3306             +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
3307       }{}%
3308   \ifbool{mdf@rightline}{%
3309       \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3310             -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3311       }{}%
3312   \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3313   \psline[style=mdfframetitlebackgroundstyle,linearc=\z@](mdf@O|mdf@F)(mdf@O|mdf@P)
3314                                           (mdf@P)(mdf@P|mdf@F)%
3315  \endgroup
3316 }


3317  \endinput
3318 %eof
```

C. The file mdframed-example-default

```
3319 %Documenation of the package mdframed
3320 %%$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $
3321 \setcounter{errorcontextlines}{999}
3322 \documentclass[parskip=false,english,11pt]{ltxmdf}
3323 \ltxmdfsetifoot  $Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $
3324
3325 \usepackage{showexpl}
3326 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3327
3328 \newcommand\Loadedframemethod{default}
3329 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3330
3331 \title{The \Pack{mdframed} package}
3332 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3333 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3334 \date{\mdfdateID$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $}
3335 \version{\mdversion}
3336 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3337 Some presented examples are more or less exorbitant.}
3338
3339 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3340 \newrobustcmd\ExampleText{%
3341       An \textit{inhomogeneous linear} differential equation has the form
3342        \begin{align}
3343          L[v ] = f,
3344        \end{align}
3345      where $L$ is a linear differential operator, $v$ is
3346      the dependent variable, and $f$ is a given non-zero
3347      function of the independent variables alone.
3348 }
```

```
3349
3350 \newcounter{examplecount}
3351 \setcounter{examplecount}{0}
3352 \renewcommand\thesubsection{}
3353 \newcommand\Examplesec[1]{%
3354 \stepcounter{examplecount}%
3355 \subsection{Example~\arabic{examplecount}~--~#1\relax}%
3356 }
3357
3358 \begin{document}
3359 \maketitle
3360 \section{Loading}
3361 In the preamble only the package \Pack{mdframed} width the option \Opt{framemethod=\Loadedframemethod}
3362
3363 {\large\color{red!50!black}
3364 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3365
3366 \section{Examples}
3367 All examples have the following settings:
3368
3369 \begin{tltxmdfexample}
3370 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3371 \newrobustcmd\ExampleText{%
3372 An \textit{inhomogeneous linear} differential equation
3373 has the form
3374 \begin{align}
3375 L[v ] = f,
3376 \end{align}
3377 where $L$ is a linear differential operator, $v$ is
3378 the dependent variable, and $f$ is a given non-zero
3379 function of the independent variables alone.
3380 }
3381 \end{tltxmdfexample}
3382 \clearpage
3383 \Examplesec{very simple}
3384 \begin{LTXexample}
3385 \global\mdfdefinestyle{exampledefault}{%
3386      linecolor=red,linewidth=3pt,%
3387      leftmargin=1cm,rightmargin=1cm
3388 }
3389 \begin{mdframed}[style=exampledefault]
3390 \ExampleText
3391 \end{mdframed}
3392 \end{LTXexample}
3393
3394 \Examplesec{hidden line + frame title}
3395 \begin{LTXexample}
3396 \global\mdfapptodefinestyle{exampledefault}{%
3397  topline=false,rightline=true,bottomline=false}
3398 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3399 \ExampleText
3400 \end{mdframed}
3401 \end{LTXexample}
3402 \clearpage
3403
3404 \Examplesec{colored frame title}
```

```
3405 \begin{LTXexample}
3406
3407 \global\mdfapptodefinestyle{exampledefault}{%
3408     rightline=true,innerleftmargin=10,innerrightmargin=10,
3409     frametitlerule=true,frametitlerulecolor=green,
3410     frametitlebackgroundcolor=yellow,
3411     frametitlerulewidth=2pt}
3412 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3413 \ExampleText
3414 \end{mdframed}
3415 \end{LTXexample}
3416
3417 \Examplesec{framed picture which is centered}
3418 \begin{LTXexample}
3419 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3420                   linecolor=blue,linewidth=4pt]
3421 \includegraphics[width=\linewidth]{donald-duck}
3422 \end{mdframed}
3423 \end{LTXexample}
3424
3425 \clearpage
3426 \Examplesec{Theorem environments}
3427 \begin{LTXexample}
3428 \mdfdefinestyle{theoremstyle}{%
3429     linecolor=red,linewidth=2pt,%
3430     frametitlerule=true,%
3431     frametitlebackgroundcolor=gray!20,
3432     innertopmargin=\topskip,
3433     }
3434 \mdtheorem[style=theoremstyle]{definition}{Definition}
3435 \begin{definition}
3436 \ExampleText
3437 \end{definition}
3438 \begin{definition}[Inhomogeneous linear]
3439 \ExampleText
3440 \end{definition}
3441 \begin{definition*}[Inhomogeneous linear]
3442 \ExampleText
3443 \end{definition*}
3444 \end{LTXexample}
3445
3446
3447 \clearpage
3448 \Examplesec{theorem with separate header and the help of TikZ (complex)}
3449 \begin{LTXexample}
3450 \newcounter{theo}[section]
3451 \newenvironment{theo}[1][]{%
3452  \stepcounter{theo}%
3453   \ifstrempty{#1}%
3454   {\mdfsetup{%
3455     frametitle={%
3456       \tikz[baseline=(current bounding box.east),outer sep=0pt]
3457         \node[anchor=east,rectangle,fill=blue!20]
3458         {\strut Theorem~\thetheo};}}
3459  }%
3460   {\mdfsetup{%
```

```
3461       frametitle={%
3462         \tikz[baseline=(current bounding box.east),outer sep=0pt]
3463          \node[anchor=east,rectangle,fill=blue!20]
3464          {\strut Theorem~\thetheo:~#1};}}%
3465     }%
3466     \mdfsetup{innertopmargin=10pt,linecolor=blue!20,%
3467              linewidth=2pt,topline=true,
3468              frametitleaboveskip=\dimexpr-\ht\strutbox\relax,}
3469     \begin{mdframed}[]\relax%
3470     }{\end{mdframed}}
3471 \begin{theo}[Inhomogeneous Linear]
3472 \ExampleText
3473 \end{theo}
3474
3475 \begin{theo}
3476 \ExampleText
3477 \end{theo}
3478 \end{LTXexample}
3479
3480 \clearpage
3481 \Examplesec{hide only a part of a line}
3482 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com
3483 \begin{LTXexample}
3484 \makeatletter
3485 \newlength{\interruptlength}
3486 \setlength{\interruptlength}{2.5ex}
3487 \newrobustcmd\overlaplines{%
3488  \appto\mdf@frame@leftline@single{%
3489    \llap{\color{white}%
3490       \rule[\dimexpr-\mdfboundingboxdepth+\interruptlength\relax]%
3491             {\mdf@middlelinewidth@length}%
3492             {\dimexpr\mdfboundingboxtotalheight%
3493              \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}
3494              -2\interruptlength\relax}%
3495    }%
3496  }%
3497  \appto\mdf@frame@rightline@single{%
3498    \rlap{\color{white}%
3499       \hspace*{\mdfboundingboxwidth}%
3500       \hspace*{\mdf@innerrightmargin@length}%
3501       \rule[\dimexpr-\mdfboundingboxdepth%
3502             +\interruptlength\relax]%
3503             {\mdf@middlelinewidth@length}%
3504             {\dimexpr\mdfboundingboxtotalheight%
3505              +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}
3506              -2\interruptlength\relax}%
3507    }%
3508  }%
3509 }
3510 \makeatother
3511 \overlaplines
3512
3513 \begin{mdframed}[linecolor=blue,linewidth=8pt]
3514 \ExampleText
3515 \end{mdframed}
3516 \end{LTXexample}
```

```
3517 \end{document}
3518  \endinput
```

D. The file mdframed-example-tikz

```
3519 %Documenation of the package mdframed
3520 %%$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $
3521 \setcounter{errorcontextlines}{999}
3522 \documentclass[parskip=false,english,11pt]{ltxmdf}
3523 \ltxmdfsetifoot  $Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $
3524
3525
3526 \usepackage{showexpl}
3527 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3528
3529 \newcommand\Loadedframemethod{TikZ}
3530 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3531
3532 \title{The \Pack{mdframed} package}
3533 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3534 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3535 \date{\mdfdateID$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $}
3536 \version{\mdversion}
3537 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3538 Some presented examples are more or less exorbitant.}
3539
3540 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3541 \newrobustcmd\ExampleText{%
3542       An \textit{inhomogeneous linear} differential equation has the form
3543        \begin{align}
3544           L[v ] = f,
3545        \end{align}
3546       where $L$ is a linear differential operator, $v$ is
3547       the dependent variable, and $f$ is a given non-zero
3548       function of the independent variables alone.
3549 }
3550
3551 \newcounter{examplecount}
3552 \setcounter{examplecount}{0}
3553 \renewcommand\thesubsection{}
3554 \newcommand\Examplesec[1]{%
3555 \stepcounter{examplecount}%
3556 \subsection{Example~\arabic{examplecount}~--~#1\relax}%
3557 }
3558
3559 \begin{document}
3560 \maketitle
3561 \section{Loading}
3562 In the preamble only the package \Pack{mdframed} width the option \Opt{framemethod=\Loadedframemethod}
3563
3564 {\large\color{red!50!black}
3565 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3566
3567 \section{Examples}
3568 All examples have the following settings:
3569
```

```
3570 \begin{tltxmdfexample}
3571 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3572 \newrobustcmd\ExampleText{%
3573 An \textit{inhomogeneous linear} differential equation
3574 has the form
3575 \begin{align}
3576 L[v ] = f,
3577 \end{align}
3578 where $L$ is a linear differential operator, $v$ is
3579 the dependent variable, and $f$ is a given non-zero
3580 function of the independent variables alone.
3581 }
3582 \end{tltxmdfexample}
3583 \clearpage
3584 \ExampleText{round corner}
3585 \begin{LTXexample}
3586 \global\mdfdefinestyle{exampledefault}{%
3587     outerlinewidth=5pt,innerlinewidth=0pt,
3588     outerlinecolor=red,roundcorner=5pt
3589 }
3590 \begin{mdframed}[style=exampledefault]
3591 \ExampleText
3592 \end{mdframed}
3593 \end{LTXexample}
3594
3595 \Examplesec{hidden line + frame title}
3596 \begin{LTXexample}
3597 \global\mdfapptodefinestyle{exampledefault}{%
3598  topline=false,leftline=false,}
3599 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3600 \ExampleText
3601 \end{mdframed}
3602 \end{LTXexample}
3603 \clearpage
3604 \Examplesec{framed picture which is centered}
3605 \begin{LTXexample}
3606 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3607                 linecolor=blue,middlelinewidth=4pt,roundcorner=5pt]
3608 \includegraphics[width=\linewidth]{donald-duck}
3609 \end{mdframed}
3610 \end{LTXexample}
3611
3612 \Examplesec{Gimmick}
3613 \begin{LTXexample}
3614 \mdfsetup{splitbottomskip=0.8cm,splittopskip=0cm,
3615         innerrightmargin=2cm,innertopmargin=1cm,%
3616         innerlinewidth=2pt,outerlinewidth=2pt,
3617         middlelinewidth=10pt,backgroundcolor=red,
3618         linecolor=blue,middlelinecolor=gray,
3619         tikzsetting={draw=yellow,line width=3pt,%
3620                     dashed,%
3621                     dash pattern= on 10pt off 3pt},
3622         rightline=false,bottomline=false}
3623 \begin{mdframed}
3624 \ExampleText
3625 \end{mdframed}
```

```
3626 \end{LTXexample}
3627
3628 \Examplesec{complex example with TikZ}
3629
3630 \begin{tltxmdfexample}
3631 \tikzstyle{titregris} =
3632          [draw=gray, thick, fill=white, shading = exersicetitle, %
3633           text=gray, rectangle, rounded corners,
3634           right,minimum height=.7cm]
3635
3636 \pgfdeclarehorizontalshading{exersicebackground}{100bp}
3637 {color(0bp)=(green!40);
3638 color(100bp)=(black!5)}
3639
3640 \pgfdeclarehorizontalshading{exersicetitle}{100bp}
3641 {color(0bp)=(red!40);
3642 color(100bp)=(black!5)}
3643
3644 \newcounter{exercise}
3645 \renewcommand\theexercise{Exercise~n\arabic{exercise}}
3646 \makeatletter
3647 \def\mdf@@exercisepoints{}
3648 \define@key{mdf}{exercisepoints}{%
3649     \def\mdf@@exercisepoints{#1}
3650 }
3651 \renewrobustcmd\mdfcreateextratikz{%
3652        \node[titregris,xshift=1cm] at (P-|O) %
3653            {~\mdf@frametitlefont{\theexercise}~};
3654        \ifdefempty{\mdf@@exercisepoints}%
3655        {}%
3656        {\node[titregris,left,xshift=-1cm] at (P)%
3657          {~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
3658 }
3659 \makeatother
3660
3661 \mdfdefinestyle{exercisestyle}{%
3662   outerlinewidth=1pt,
3663   innerlinewidth=0pt,
3664   roundcorner=2pt,
3665   linecolor=gray,
3666   tikzsetting={shading = exersicebackground},
3667   innertopmargin=1.2\baselineskip,
3668   skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
3669   needspace=3\baselineskip,
3670   frametitlefont=\sffamily\bfseries,
3671   settings={\global\stepcounter{exercise}},
3672   }
3673
3674 \begin{mdframed}[style=exercisestyle,]
3675 \ExampleText
3676 \end{mdframed}
3677
3678 \begin{mdframed}[style=exercisestyle,exercisepoints=10]
3679 \ExampleText
3680 \end{mdframed}
3681 \end{tltxmdfexample}
```

```
3682
3683 \tikzstyle{titregris} =
3684         [draw=gray, thick, fill=white, shading = exersicetitle, %
3685          text=gray, rectangle, rounded corners,
3686          right,minimum height=.7cm]
3687
3688 \pgfdeclarehorizontalshading{exersicebackground}{100bp}
3689 {color(0bp)=(green!40);
3690 color(100bp)=(black!5)}
3691
3692 \pgfdeclarehorizontalshading{exersicetitle}{100bp}
3693 {color(0bp)=(red!40);
3694 color(100bp)=(black!5)}
3695
3696 \newcounter{exercise}
3697 \renewcommand\theexercise{Exercise~n\arabic{exercise}}
3698 \makeatletter
3699 \def\mdf@@exercisepoints{}
3700 \define@key{mdf}{exercisepoints}{%
3701     \def\mdf@@exercisepoints{#1}
3702 }
3703 \newrobustcmd\mdfcreateextratikzlocal{%
3704         \node[titregris,xshift=1cm] at (P-|O) {~\textbf{\theexercise}~};
3705         \ifdefempty{\mdf@@exercisepoints}%
3706         {}%
3707         {\node[titregris,left,xshift=-1cm] at (P)%
3708           {~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
3709 }
3710 \makeatother
3711
3712 \mdfdefinestyle{exercisestyle}{%
3713   outerlinewidth=1pt,
3714   innerlinewidth=0pt,
3715   roundcorner=2pt,
3716   linecolor=gray,
3717   tikzsetting={shading = exersicebackground},
3718   innertopmargin=1.2\baselineskip,
3719   skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
3720   needspace=3\baselineskip,
3721   frametitlefont=\sffamily\bfseries,
3722   settings={\global\stepcounter{exercise}\let\mdfcreateextratikz\mdfcreateextratikzlocal},
3723   }
3724
3725 \begin{mdframed}[style=exercisestyle,]
3726 \ExampleText
3727 \end{mdframed}
3728
3729 \begin{mdframed}[style=exercisestyle,exercisepoints=10]
3730 \ExampleText
3731 \end{mdframed}
3732
3733 \clearpage
3734 \Examplesec{Theorem environments}
3735 \begin{LTXexample}
3736 \mdfdefinestyle{theoremstyle}{%
3737         linecolor=red,linewidth=2pt,%
```

```
3738      frametitlerule=true,%
3739      apptotikzsetting={\tikzset{mdfframetitlebackground/.append style={%
3740                       shade,left color=white, right color=blue!20}}},
3741      frametitlerulecolor=green!60,
3742      frametitlerulewidth=1pt,
3743      innertopmargin=\topskip,
3744    }
3745 \mdtheorem[style=theoremstyle]{definition}{Definition}
3746 \begin{definition}[Inhomogeneous linear]
3747 \ExampleText
3748 \end{definition}
3749 \begin{definition*}[Inhomogeneous linear]
3750 \ExampleText
3751 \end{definition*}
3752 \end{LTXexample}
3753
3754 \end{document}
3755  \endinput
```

E. The file mdframed-example-pstricks

```
3756 %Documenation of the package mdframed
3757 %%$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $
3758 \setcounter{errorcontextlines}{999}
3759 \documentclass[parskip=false,english,11pt]{ltxmdf}
3760 \ltxmdfsetifoot$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $
3761
3762 \lstDeleteShortInline{|}
3763 \newcommand\Loadedframemethod{PSTricks}
3764 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3765
3766 \usepackage{showexpl}
3767 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3768
3769 \title{The \Pack{mdframed} package}
3770 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3771 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3772 \date{\mdfdateID$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $}
3773 \version{\mdversion}
3774 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3775 Some presented examples are more or less exorbitant.}
3776
3777 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3778 \newrobustcmd\ExampleText{%
3779      An \textit{inhomogeneous linear} differential equation has the form
3780       \begin{align}
3781          L[v ] = f,
3782       \end{align}
3783      where $L$ is a linear differential operator, $v$ is
3784      the dependent variable, and $f$ is a given non-zero
3785      function of the independent variables alone.
3786 }
3787
3788 \newcounter{examplecount}
3789 \setcounter{examplecount}{0}
3790 \renewcommand\thesubsection{}
```

```
3791 \newcommand\Examplesec[1]{%
3792 \stepcounter{examplecount}%
3793 \subsection{Example~\arabic{examplecount}~--~#1\relax}%
3794 }
3795
3796 \begin{document}
3797 \maketitle
3798 \section{Loading}
3799 In the preamble only the package \Pack{mdframed} width the option \Opt{framemethod=\Loadedframemethod}
3800
3801 {\large\color{red!50!black}
3802 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3803 X
3804 \section{Examples}
3805 All examples have the following settings:
3806
3807 \begin{tltxmdfexample}
3808 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3809 \newrobustcmd\ExampleText{%
3810 An \textit{inhomogeneous linear} differential equation
3811 has the form
3812 \begin{align}
3813 L[v ] = f,
3814 \end{align}
3815 where $L$ is a linear differential operator, $v$ is
3816 the dependent variable, and $f$ is a given non-zero
3817 function of the independent variables alone.
3818 }
3819 \end{tltxmdfexample}
3820 \clearpage
3821
3822 \Examplesec{very simple}
3823 \begin{LTXexample}
3824 \global\mdfdefinestyle{exampledefault}{%
3825     linecolor=red,middlelinewidth=3pt,%
3826     leftmargin=1cm,rightmargin=1cm
3827 }
3828 \begin{mdframed}[style=exampledefault,roundcorner=5]
3829 \ExampleText
3830 \end{mdframed}
3831 \end{LTXexample}
3832
3833 \Examplesec{hidden line + frame title}
3834 \begin{LTXexample}
3835 \global\mdfapptodefinestyle{exampledefault}{%
3836   topline=false,rightline=false,bottomline=false,
3837   frametitlerule=true,innertopmargin=6pt,
3838   outerlinewidth=6pt,outerlinecolor=blue,
3839   pstricksappsetting={\addtopsstyle{mdfouterlinestyle}{linestyle=dashed}},
3840   innerlinecolor=yellow,innerlinewidth=5pt}%
3841 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3842 \ExampleText
3843 \end{mdframed}
3844 \end{LTXexample}
3845
3846 \clearpage
```

```
3847
3848 \Examplesec{Dash Lines}
3849 \begin{LTXexample}
3850 \global\mdfdefinestyle{exampledefault}{%
3851    pstrickssetting={linestyle=dashed,},linecolor=red,linewidth=5pt}
3852 \begin{mdframed}[style=exampledefault,]
3853 \ExampleText
3854 \end{mdframed}
3855 \end{LTXexample}
3856
3857 \Examplesec{Double Lines}
3858 \begin{LTXexample}
3859 \global\mdfdefinestyle{exampledefault}{%
3860    pstrickssetting={doubleline=true,doublesep=6pt},
3861    linecolor=red,linewidth=5pt,middlelinewidth=4pt}
3862 \begin{mdframed}[style=exampledefault,]
3863 \ExampleText
3864 \end{mdframed}
3865 \end{LTXexample}
3866
3867 \Examplesec{Shadow frame}
3868 \begin{LTXexample}
3869 \newmdenv[shadow=true,
3870          shadowsize=11pt,
3871          linewidth=8pt,
3872          frametitlerule=true,
3873          roundcorner=10pt,
3874          ]{myshadowbox}
3875 \begin{myshadowbox}[frametitle={Inhomogeneous linear}]
3876 \ExampleText
3877 \end{myshadowbox}
3878 \end{LTXexample}
3879 \end{document}
3880  \endinput
```

F. The file mdframed-example-texsx

```
3881 %Documenation of the package mdframed
3882 %%$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $
3883 \setcounter{errorcontextlines}{999}
3884 \documentclass[parskip=false,english,11pt,ltxlipsum]{ltxmdf}
3885 \ltxmdfsetifoot  $Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $
3886
3887
3888 \usepackage{showexpl}
3889 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3890
3891 \newcommand\Loadedframemethod{default}
3892 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3893
3894 \title{The \Pack{mdframed} package}
3895 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3896 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3897 \date{\mdfdateID$Id: mdframed.dtx 362 2012-03-30 06:55:35Z marco $}
3898 \version{\mdversion}
3899 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
```

```
3900 Some presented examples are more or less exorbitant.}
3901
3902 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3903 \newrobustcmd\ExampleText{%
3904         An \textit{inhomogeneous linear} differential equation has the form
3905          \begin{align}
3906             L[v ] = f,
3907          \end{align}
3908         where $L$ is a linear differential operator, $v$ is
3909         the dependent variable, and $f$ is a given non-zero
3910         function of the independent variables alone.
3911 }
3912
3913 \newcounter{examplecount}
3914 \setcounter{examplecount}{0}
3915 \renewcommand\thesubsection{}
3916 \newcommand\Examplesec[1]{%
3917 \stepcounter{examplecount}%
3918 \subsection{Example~\arabic{examplecount}~--~#1\relax}%
3919 }
3920
3921 \begin{document}
3922 \maketitle
3923 \section{Loading}
3924 In the preamble only the package \Pack{mdframed} width the option \Opt{framemethod=\Loadedframemethod}
3925
3926 {\large\color{red!50!black}
3927 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3928
3929 \section{Examples}
3930 All examples have the following settings:
3931
3932 \begin{tltxmdfexample}
3933 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3934 \newrobustcmd\ExampleText{%
3935 An \textit{inhomogeneous linear} differential equation
3936 has the form
3937 \begin{align}
3938 L[v ] = f,
3939 \end{align}
3940 where $L$ is a linear differential operator, $v$ is
3941 the dependent variable, and $f$ is a given non-zero
3942 function of the independent variables alone.
3943 }
3944 \end{tltxmdfexample}
3945 \clearpage
3946 \Examplesec{Package listings}
3947 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com
3948
3949 Here the solution which can be decorate as usual.
3950
3951 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}
3952 \BeforeBeginEnvironment{lstlisting}{%
3953     \begin{mdframed}[<modification>]%
3954     \vspace{-0.7em}}
3955 \AfterEndEnvironment{lstlisting}{%
```

```
3956       \vspace{-0.5em}%
3957       \end{mdframed}}
3958 \end{tltxmdfexample}
3959
3960 With the new command \Cmd{surroundwithmdframed} you can use
3961 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}
3962 \surroundwithmdframed{listings}
3963 \end{tltxmdfexample}
3964
3965 \Examplesec{Package multicol}
3966 How I wrote in \enquote{Known Problems} you can't combine \Pack{multicol}  with \Pack{mdframed}. In a s
3967 \begin{LTXexample}
3968 \begin{multicols}{2}
3969 \lipsum[1]
3970 \begin{mdframed}
3971 \ExampleText
3972 \end{mdframed}
3973 \lipsum[2]
3974 \end{multicols}
3975 \end{LTXexample}
3976 \clearpage
3977 \twocolumn[\Examplesec{Working in twocolumn mode}]
3978 \begin{tltxmdfexample}
3979 \twocolumn[%
3980   \Examplesec{Working in
3981           twocolumn mode}]
3982 \lipsum[1]\lipsum[2]
3983 \begin{mdframed}[%
3984     leftmargin=10pt,%
3985     rightmargin=10pt,%
3986     linecolor=red,
3987     backgroundcolor=yellow]
3988 \ExampleText
3989 \end{mdframed}
3990 \lipsum[2]
3991 \end{tltxmdfexample}
3992 \lipsum[1]\lipsum[2]
3993 \begin{mdframed}[leftmargin=10pt,%
3994                  rightmargin=10pt,%
3995                  linecolor=red,
3996                  backgroundcolor=yellow]
3997 \ExampleText
3998 \end{mdframed}
3999 \lipsum[2]
4000 \clearpage
4001 \onecolumn
4002 \Examplesec{Working inside enumerate}
4003 \begin{LTXexample}
4004 Text Text Text Text Text Text Text Text
4005 \begin{enumerate}
4006 \item in the following \ldots
4007       \begin{mdframed}[linecolor=blue,linewidth=2]
4008         \ExampleText
4009       \end{mdframed}
4010 \item \lipsum[2]
4011 \end{enumerate}
```

```
4012 Text Text Text Text Text Text
4013 \end{LTXexample}
4014 \end{document}
4015  \endinput
```

G. Change History

H. Index

The index only collect package relevant words.