

The `mdframed` package ¹

auto-split frame environment

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

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

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

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

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1. Motivation

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

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

¹Extending the package `framed.sty`

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

The frame was defined with the following settings.

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

2. Syntax

Loadings `mdframed`

The package itself loads the packages

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

Depending on the options `mdframed` will load

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

Load the package as usual:

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

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

Provided environment

The package defines only one environment with the following syntax:

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

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

Autodetecting floats

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

Twoside-mode

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

3. The frames

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

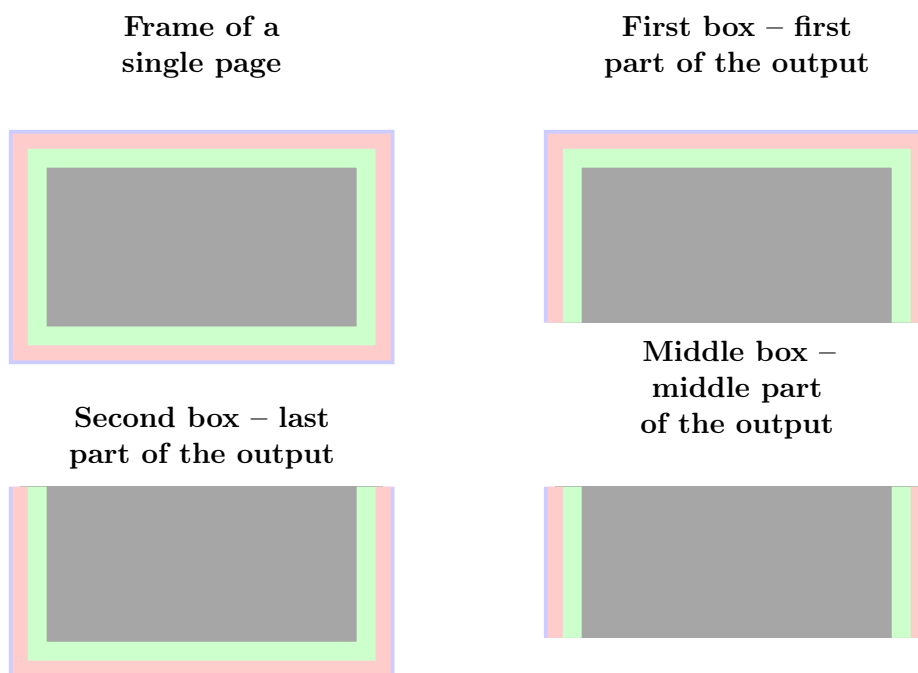


Figure 1: The basic frames

4. Commands

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

`\newmdenv`

The command has the following syntax:

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

In this way you can simply use:

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

`\renewmdenv`

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

`\surroundwithmdframed`

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

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

`\mdflength`

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

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

\the\mdflength{innerleftmargin}
```

`\mdfsetup`

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

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

`\mdfdefinestyle`

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

Here a small example:

```
\mdfdefinestyle{mystyle}{leftmargin=0pt,%
                        linecolor=blue}

....
\begin{mdframed}[style=mystyle]
foo
\end{mdframed}
```

`\mdfapptodefinestyle`

This commands allows to expand a defined style.³

5. Options

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

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

³Thanks to Martin Scharrer and Enrico Gregorio:

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

5.1. Global Options

The following options are only global options.

`xcolor` default=`none`

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

`framemethod` default=`default`

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

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

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

Table 1: Allowed keys for `framemethod`

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

FYI

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

Note

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

5.2. Global and Local Options

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

5.2.1. Options with lengths

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

`defaultunit` default=`pt`

see the sentence above.

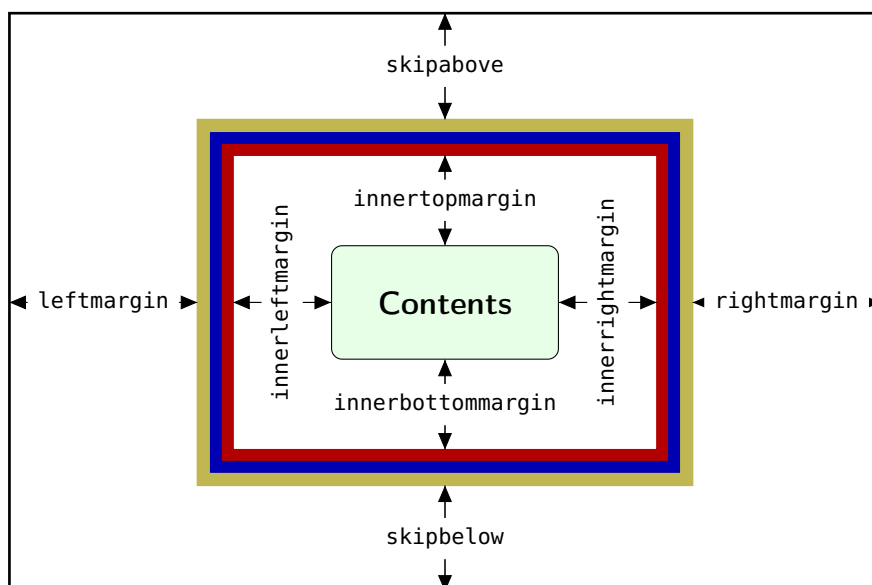


Figure 2: adjustable lengths of mdframed

`skipabove` default=0pt

Sets an additional skip above the frame.

`skipbelow` default=0pt

Sets an additional skip below the frame.

`margin`

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

`leftmargin` default=0pt

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

`rightmargin` default=0pt

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

`innerleftmargin` default=10pt

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

`innerrightmargin` default=10pt

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

`innertopmargin` default=.4\baselineskip

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

`innerbottommargin` default=.4\baselineskip

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

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

`userdefinedwidth` default=0pt

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

`outermargin`

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

`innermargin`

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

`splittopskip` default=0pt

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

`splitbottomskip` default=0pt

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

`linewidth` default=0.4pt

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

`roundcorner` default=0pt

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

`innerlinewidth` default=0pt

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

`outerlinewidth` default=0pt

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

`middlelinewidth` default=linewidth

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

5.2.2. Colored Options

`linecolor` default=black

Sets the color of the line around the environment.

`backgroundcolor` default=white

Sets the color of the background of the environment.

`fontcolor` default=black

Sets the color of the contents of the environment.

`innerlinecolor` default=linecolor

Sets the color of the inner line around the environment.

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

`middlelinecolor` default=linecolor

Sets the color of the middle line around the environment.

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

`outerlinecolor` default=linecolor

Sets the color of the outer line around the environment.

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

5.2.3. General options

`everyline` default=false

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

`font` default={}

Sets the font of the environment.

`ntheorem` default=false

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

`nobreak` default=false

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

`usetwoside` default=true

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

`needspace` default=0pt

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

`style`

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

`settings` default=none

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

`align` default=`left`

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

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

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

`shadow` default=`false`

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

`shadowsize` default=`8pt`

Specify the size of the shadow.

`shadowcolor` default=`black!50`

Specify the color of the shadow.

`pstrickssetting` default=`none`

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

This works only with `framemethod=PSTricks`.

`pstricksappsetting` default=`none`

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

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

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

This works only with `framemethod=PSTricks`.

`tikzsetting` default=`none`

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

This works only with `framemethod=TikZ`.

`apptotikzsetting` default=`none`

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

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

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

`singleextra` default=`{}`

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

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

`firstextra` default=`{}`

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

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

`middleextra` default=`{}`

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

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

`secondextra` default=`{}`

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

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

5.3. Hidden Lines

`topline` default=`true`

Draws a line at the top.

`bottomline` default=`true`

Draws a line at the bottom.

`leftline` default=true

Draws a line on the left.

`rightline` default=true

Draws a line on the right.

`hidealllines` default=false

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

5.4. Frametitle

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

`frametitle` default=none

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

`frametitlefont` default=\normalfont\bfseries

Sets the format of the `frametitle`.

`frametitlealignment` default=\raggedleft

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

`frametitlerule` default=false

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

`frametitlerulewidth` default=.2pt

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

`frametitleaboveskip` default=5pt

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

`frametitlebelowskip` default=5pt

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

`frametitlebackgroundcolor` default=white

Sets the color of the background of the `frametitle`

FYI and Note

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

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

`repeatframetitle` default=false

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

5.5. Theorems

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

`\newmdtheoremenv`

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

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

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

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

So far there is no `\renewmdtheoremenv`!

`\mdtheorem`

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

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

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

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

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

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

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

`theoremseparator`

default={:}

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

`theoremtitlefont`

default={}

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

`theoremspace`

`\space`

Sets the space after `theoremseparator`.

Examples can be found in the attached files.

5.6. Footnotes

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

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

`footnotedistance`

default= `\bigskipamount`

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

`footnoteinside`

default=`true`

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

Note

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

6. Examples

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

mdframed-example-default

Demonstration of examples created with `framemethod=default`.

mdframed-example-tikz

Demonstration of examples created with `framemethod=TikZ`.

mdframed-example-pstricks

Demonstration of examples created with `framemethod=pstricks`.

mdframed-example-texsx

Demonstration of examples like interaction with `listings`

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

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

7. Errors, Warnings and Messages

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

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

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

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

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

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

Unknown `framemethod` `mdframed`

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

You have not loaded `ntheorem` yet

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

You have only a width of 3cm

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

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

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

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

See the explanation above.

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

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

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

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

8. Known Problems

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

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

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

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

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I hope I forgot nobody.

A. More information

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

A.1. How does `mdframed` work?

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

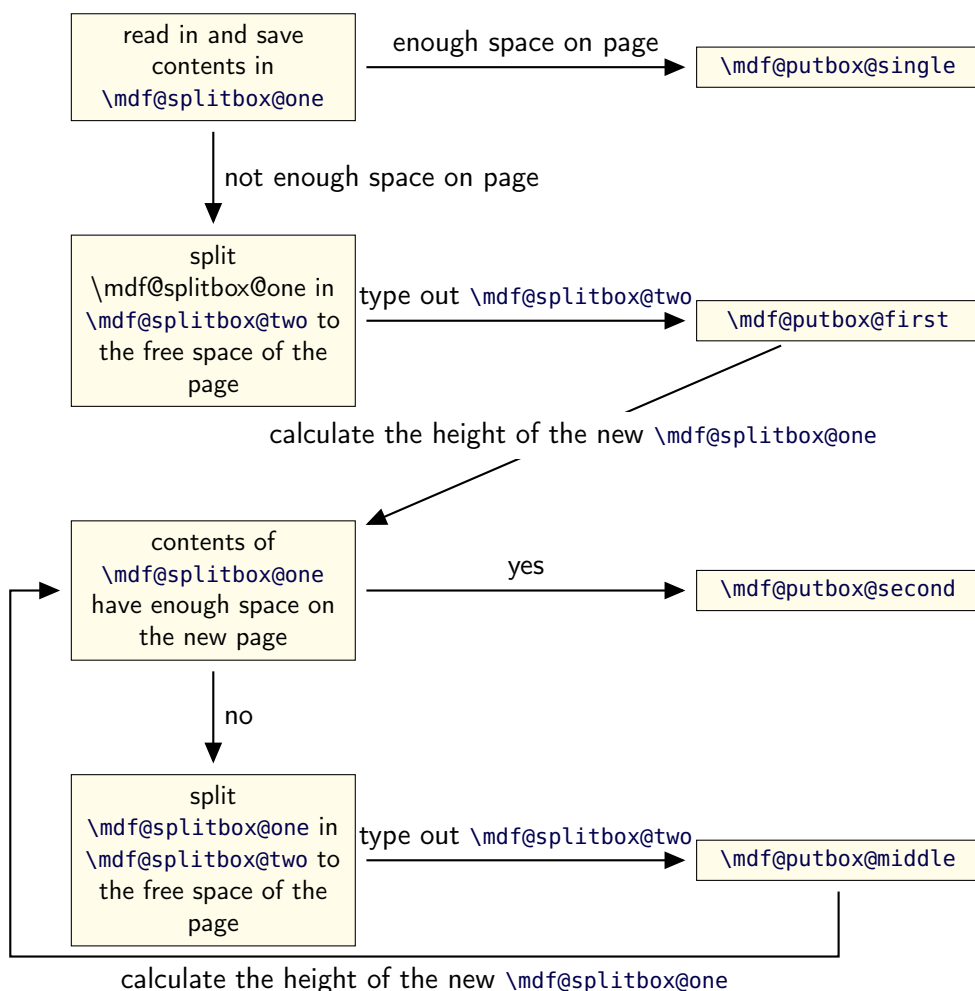


Figure 3: Setting the contents of `mdframed`

The width of the contents is the result of the settings of `leftmargin`, `rightmargin`, `linewidth`, `innerleftmargin` and `innerrightmargin` (see figure (2)).

A.2. The Framecommands

The package `mdframed` knows four kinds of “Framecommand”. These commands tell `LATEX` how to set the contents of `mdframed`.

`\mdf@putbox@single` This command sets the contents of a single unsplit frame.

`\mdf@putbox@first` This command sets the contents of the first frame of a split frame.

`\mdf@putbox@middle` This command sets the contents of the middle frame of a split frame.

`\mdf@putbox@second` This command sets the contents of the last frame of a split frame.

Using the explained commands we give an example. The command `\box` uses the contents of the savebox and types them out.

First we want to type out the single box without any settings (but with the calculated width).

```
\makeatletter
\def\mdf@putbox@single{\box\mdf@splitbox@one}
\makeatother
```

I am using the command `\leftline` to start the “Framecommands” at the left.

```
\makeatletter
\def\mdf@putbox@single{\leftline{\box\mdf@splitbox@one}}
\makeatother
```

Now you have to know how the lengths are named. Every length which can be modified by the options has the following syntax:

```
\mdf@<Name of the Length>@length
```

For example the leftmargin is:

```
\mdf@leftmargin@length
```

To create only a line at the left with the correct `leftmargin` you can set `\mdf@putboxsingle` as follows

```
\makeatletter
\def\mdf@putbox@single{ %
    \leftline{ %
        \hspace*{\mdf@leftmargin@length} %
        \rule[-\dp\mdf@splitbox@one]{\mdf@linewidth} %
        {\ht\mdf@splitbox@one+\dp\mdf@splitbox@one} %
        \box\mdf@splitbox@one
    } %
}
\makeatother
```

In this way you can do what you want. If you create your own style you can save the file as `md-frame-X.mdf`. `X` must be an integer. In this way you can use the option `framemethod` to load the file by setting `framemethod=X`.

A.3. Revision history

Version 1.5a submitted DD MMM 2012

- improved formatting of the file `mdframed.dtx`

Version 1.5a submitted DD MMM 2012

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

Version 1.5 submitted 10 Mar 2012

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

Version 1.4d submitted 30 Mar 2012

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

Version 1.4 submitted 4 Mar 2012

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

Version 1.3a submitted 5 Feb 2012

- fixed bug (Thanks to Dietrich Grau)

Version 1.3 submitted 4 Feb 2012

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

Version 1.2 submitted 8 Jan 2012

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

Version 0.9g submitted 08 Oct 2011

- fixed documentation
- added small footnote compatibility

Version 0.9f submitted 04 Oct 2011

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

Version 0.9e submitted 11 Sep 2011

- working with `twoside` modus

Version 0.9d submitted 10 Sep 2011

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

Version 0.9b submitted 7 Sep 2011

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

Version 0.9a submitted 5 Sep 2011

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

Version 0.9 submitted 4 Sep 2011

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

Version 0.8a

- fixes bugs • fixes documentation

Version 0.8 submitted 22 Aug 2011

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

Version 0.7a submitted 6 August 2011

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

Version 0.6a submitted 22 Dec 2010

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

B. Implementation

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

B.1. The Explanation of mdframed.sty

Id : mdframed.dtx4032012-05-17:17:09Zmarco Rev : 403 Author : marco

Date : 2012-05-17:17:09+0200(Do,17Mai2012)

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

Set package information

```
1 \def\mdversion{v1.6a}
2 \def\mdframedpackagename{mdframed}
3 \def\mdf@maindate@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }

4 \NeedsTeXFormat{LaTeX2e}
5 \ProvidesPackage{mdframed}%
6     [\mdf@maindate@svn$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $%
7     \mdversion: \mdframedpackagename]
```

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

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

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

Loading required packages

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

Set the family and the prefix of all options.

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

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

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

```

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

```

`\mdf@dolist`

Loop used by *mdframed*.

```

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

```

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

Command to define a new length width a default value.

```

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

```

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

```

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

```

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

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

```

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

```

```

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

```

```

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

```

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

```

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

```

```

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

```

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

```

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

```

```

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

```

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

```

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

```

Start declaration of options

```

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

```

Only provide to be backward compatible

```

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

```

```

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

```

\mdf@framemethod

Defining the global option `framemethod`.

```

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

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

```

\mdf@do@lengthoption

Here the declaration of all length options.

```

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

```

```

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

```

\mdf@do@lengthoption

Here the declaration of the string options.

```

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

```

\mdf@do@booloption

Here the declaration of all bool options.


```

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

```

`\mdf@do@alignoption`

Here the declaration of all align options.

```

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

```

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

Set the alignment.

```

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

```

```

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

```

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

Option to pass options to tikz or pstricks

```

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

```

`\mdf@xcolor`

Problem with xcolor. This part must be reworked!

```

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

```

`\mdf@needspace`

Defining the option needspace

```

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

```

```

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

```

\mdfsetup

Short form of `\setkeys{mdf}`

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

\mdf@style

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

```

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

```

\mdf@print@space

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

```

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

```

\new...

Initialize all commands and length which will we used later

```

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

```

```

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

```

\mdf@lrbox \endmdf@lrbox

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

```

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

```

```

361 \parindent\z@ \parskip\z@skip%
362 \linewidth\hsize%
363 \@totalleftmargin\z@%
364 \leftskip\z@skip \rightskip\z@skip \@rightskip\z@skip%
365 \parfillskip\@flushglue \lineskip\normallineskip%
366 \baselineskip\normalbaselineskip%
367 %% \sloppy%
368 \let\\\@normalcr%
369 \hrule \@height\z@ \@width\hsize%
370 \mdf@restoreparams%
371 \@afterindentfalse%
372 \@afterheading%
373 }
374
375 \def\endmdf@lrbx{\color@endgroup\egroup}
376

```

```

\mdf@ignorevbadness
\mdf@restorevbadness

```

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

```

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

```

```
\mdf@patchamsth
```

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

```

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

```

```

\mdf@trivlist
\endmdf@trivlist

```

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

```

395 \def\mdf@trivlist#1{%
396 \setlength{\topsep}{#1}%
397 \partopsep\z@%
398 \parsep\z@%
399 \@nmbolistfalse%

```

```

400 \@trivlist%
401 \labelwidth\z@%
402 \leftmargin\z@%
403 \itemindent\z@%
404 \let\@itemlabel\@empty%
405 \def\makeLabel##1{##1}%
406 %% \item\leavevmode\hrule \@height\z@ \@width\linewidth\relax%
407 %% \item\mbox{}\relax% second version
408 \item\relax% first Version
409 }
410 \let\endmdf@trivlist\endtrivlist
411 \patchcmd\endmdf@trivlist\@endparenv\mdf@endparenv{%
412 \immediate\typeout{^^J***** mdframed patching \string\endmdf@trivlist}%
413 \immediate\typeout{^^J***** -- success*****^^J}%
414 }{%
415 \immediate\typeout{^^J***** mdframed patching \string\endmdf@trivlist}%
416 \immediate\typeout{^^J***** -- failed*****^^J}%
417 }
418 \def\mdf@endparenv{%
419 \addpenalty\@endparpenalty\addvspace\mdf@skipbelow@length\@endpetrue}
420

```

```

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

```

```

421 \newrobustcmd*\mdf@makebox@out[2][\linewidth]{%
422 \noindent\hb@xt@\z@{%
423 \noindent\makebox[\dimexpr #1\relax][l]{#2}%
424 \hss}%
425 }%
426 \newrobustcmd*\mdf@makebox@in[2][\mdf@userdefinedwidth@length]{%
427 \noindent\makebox[\dimexpr #1\relax][l]{#2}%
428 }

```

```

\mdfdefinestyle
\mdfapptodefinestyle

```

See explanation of this commands in the main documentation.

```

429 \newrobustcmd*\mdfdefinestyle[2]{%
430 \csdef{mdf@definestyle@#1}{#2}%
431 }
432 \newrobustcmd*\mdfapptodefinestyle[2]{%
433 \ifcsundef{mdf@definestyle@#1}%
434 {\mdf@PackageWarning{Unknown style #1}}%
435 {\csappto{mdf@definestyle@#1}{, #2}}%
436 }

```

```

\mdflength
\surroundwithmdframed

```

Helper macros to work with *mdframed*

```

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

```

```

440 \BeforeBeginEnvironment{#2}{\begin{mdframed}[#1]}%
441 \AfterEndEnvironment{#2}{\end{mdframed}}%
442 }

```

```

\newmdenv
\renewmdenv
\newmdtheoremenv
\mdtheorem

```

Defining of the new environment definitions.

```

443 \newrobustcmd*\newmdenv[2][]{%
444   \newenvironment{#2}{%
445     \mdfsetup{#1}%
446     \begin{mdframed}%
447   }{%
448     \end{mdframed}%
449   }%
450 }
451 \newrobustcmd*\renewmdenv[2][]{%
452   \expandafter\let\csname #2\endcsname\relax%
453   \expandafter\let\csname end#2\endcsname\relax%
454   \newmdenv[#1]{#2}%
455 }%

```

Definitions of the standard Theorems surrounded by *mdframed*.

```

456 \DeclareDocumentCommand\newmdtheoremenv{0}{ m o m o }{%
457   \ifboolexpr{ test {\IfNoValueTF {#3}} and test {\IfNoValueTF {#5}} }{%
458     {\newtheorem{#2}{#4}}{%
459       \IfValueTF{#3}{\newtheorem{#2}[#3]{#4}}{%
460         \IfValueTF{#5}{\newtheorem{#2}{#4}[#5]}{%
461           }%
462       }%
463     }%
464     \BeforeBeginEnvironment{#2}{%
465       \begin{mdframed}[#1]}%
466     \AfterEndEnvironment{#2}{%
467       \end{mdframed}}%
468   }%
469 }

```

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

```

467 \newrobustcmd*\mdf@thm@caption[2]{%
468 \AtBeginDocument{%
469   \@ifpackageloaded{ntheorem}%
470   {\renewrobustcmd*\mdf@thm@caption{\thm@thmcaption}}{%
471   }

```

Defining a complete new theorem set by *mdframed*

```

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

```

```

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

```



```

540         \def\@temptitle{\mdf@theoremseparator%
541                     \mdf@theoremspace%
542                     \mdf@theoremtitlefont%
543                     ##1}%
544         \mdf@thm@caption{#2}{#{#4}{\csname the#2\endcsname}{##1}}%
545     }
546     \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}]]%
547     {\end{mdframed}}}%
548     \newenvironment{#2*}[1][1]{%
549         \ifstrepty{##1}{\let\@temptitle\relax}{\def\@temptitle{: \ ##1}}%
550         \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]]%
551         {\end{mdframed}}}%
552     }%
553 }%
554 }
555

```

```

\mdfframetitleenv
\mdf@@frametitle
\mdf@setopt@body
\mdf@setopt@title

```

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

```

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

```

```

588      \unvbox\mdf@splitbox@one\relax%
589    }%
590    \mdf@ignorevbadness%
591    \setbox\mdf@splitbox@one=\vbox{\unvbox\mdf@splitbox@one}%
592    \mdfsetup{innertopmargin=\mdf@frametitleaboveskip@length}%
593  }

```

`\mdf@checkntheorem`

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

```

594 \newrobustcmd*\mdf@checkntheorem{%
595   \ifbool{mdf@ntheorem}%
596     {\ifundef{\theorempreskipamount}%
597       {\mdf@PackageWarning{You have not loaded ntheorem yet}}%
598       {\setlength{\theorempreskipamount}{\z@}%
599        \setlength{\theorempostskipamount}{\z@}%
600       }%
601     }{}%
602 }

```

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

Support for footnotes. See source2e.

```

603 \newrobustcmd*\mdf@footnoterule{%
604   \kern0\p@%
605   \hrule \@width 1in \kern 2.6\p@}
606 \newrobustcmd*\mdf@footnoteoutput{%
607   \ifvoid\@mpfootins\else%
608     \nobreak%
609     \vskip\mdf@footnotedistance@length%
610     \normalcolor%
611     \mdf@footnoterule%
612     \unvbox\@mpfootins%
613   \fi%
614 }
615 \newrobustcmd*\mdf@footnoteinput{%
616   \def\@mpfn{mpfootnote}%
617   \def\thempfn{\thempfootnote}%
618   \c@mpfootnote\z@%
619   \let\@footnotetext\@mpfootnotetext%
620 }

```

`\mdf@load@style`

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

```

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

```

```

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

```

\mdf@styledefinition

The default frame method needs special handling.

```

639 \newrobustcmd*\mdf@styledefinition{%AVOID!!!Needed for framemethod=default
640 \ifnumequal{\value{mdf@globalstyle@cnt}}{0}%
641 {\deflength{\mdf@innerlinewidth@length}{\z@}%
642 \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%
643 \deflength{\mdf@outerlinewidth@length}{\z@}%
644 \let\mdf@innerlinecolor\mdf@linecolor%
645 \let\mdf@middlelinecolor\mdf@linecolor%
646 \let\mdf@outerlinecolor\mdf@linecolor%
647 }{}%
648 }

```

\detected@mdf@put@frame

Detect whether inside a non breakable environment.

```

649 \let\mdf@reserved@a\@empty
650 \newrobustcmd*\detected@mdf@put@frame{%
651 \ifmdf@nobreak%Option nobreak=true?
652 \def\mdf@reserved@a{\mdf@put@frame@standalone}%
653 \else
654 \def\mdf@reserved@a{\mdf@put@frame}%
655 \ifx\@capttype\@undefined
656 \def\mdf@reserved@a{\mdf@put@frame}%
657 \else
658 \mdf@PackageInfo{mdframed inside float ^^J
659 mdframed uses option nobreak \mdframedpackagename}%
660 \def\mdf@reserved@a{\mdf@put@frame@standalone}%
661 \fi
662 \if@minipage%
663 \mdf@PackageInfo{mdframed inside minipage ^^J
664 mdframed uses option nobreak \mdframedpackagename}%
665 \def\mdf@reserved@a{\mdf@put@frame@standalone}%
666 \fi%
667 \ifinner%
668 \mdf@PackageInfo{mdframed inside a box ^^J
669 mdframed uses option nobreak \mdframedpackagename}%
670 \def\mdf@reserved@a{\mdf@put@frame@standalone}%
671 \fi%
672 \fi%
673 \mdf@reserved@a%
674 }

```

`\mdframed`

The user environment.

```

675 \newenvironment{mdframed}[1][{}]{%
676 \color@begingroup%
677 \mdfsetup{userdefinedwidth=\linewidth,#1}%
678 \mdf@twoside@checklength%
679 \let\width\z@%
680 \let\height\z@%
681 \mdf@checktheorem%
682 \mdf@styledefinition%
683 \mdf@footnoteinput%
684 \color{\mdf@fontcolor}%
685 \mdf@font%
686 \ifvmode\nointerlineskip\fi%
687 \mdf@trivlist{\mdf@skipabove@length}%
688 \ifdefempty{\mdf@frametitle}{\mdf@@frametitle}%
689 \mdf@settings%
690 \mdf@lrbox{\mdf@splitbox@one}%
691 }%
692 {\par\unskip\ifvmode\nointerlineskip\hrule \@height\z@ \@width\hsize\fi%
693 \ifmdf@footnoteinside%
694 \def\mdf@reserveda{%
695 \mdf@footnoteoutput%
696 \endmdf@lrbox%
697 \ifdefempty{\mdf@frametitle}{\mdf@@frametitle@use}%
698 \detected@mdf@put@frame}%
699 \else%
700 \def\mdf@reserveda{%
701 \endmdf@lrbox%
702 \ifdefempty{\mdf@frametitle}{\mdf@@frametitle@use}%
703 \detected@mdf@put@frame%
704 \mdf@footnoteoutput%
705 }%
706 \fi%
707 \mdf@reserveda%
708 \endmdf@trivlist%
709 \color@endgroup\@doendpe%
710 }
711
```

`\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.

```

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

```

```

719      \setlength\mdf@rightmargin@length{\mdf@outermargin@length}%
720      \setlength\mdf@leftmargin@length{\mdf@innermargin@length}%
721      }%
722      {\mdf@PackageInfo{mdframed inside twoside mode but\MessageBreak
723        works with oneside mode}%
724      \settoggl{md:checktwoside}{false}%
725      }%
726 \fi%
727 }
728
729 \newcounter{mdf@zref@counter}%keine doppelten laebes
730 \zref@newprop*{mdf@pagevalue}[0]{\number\value{page}}
731 \zref@addprop{\ZREF@mainlist}{mdf@pagevalue}
732 \newrobustcmd*{\mdf@zref@label{%
733   \stepcounter{mdf@zref@counter}
734   \zref@label{mdf@pagelabel-\number\value{mdf@zref@counter}}}%
735 }
736 \newrobustcmd*{if@mdf@pageodd{%
737   \zref@refused{mdf@pagelabel-\the\value{mdf@zref@counter}}}%
738   \ifodd\zref@extract{mdf@pagelabel-\the\value{mdf@zref@counter}}{mdf@pagevalue}%
739   \setlength\mdf@rightmargin@length{\mdf@outermargin@length}%
740   \setlength\mdf@leftmargin@length{\mdf@innermargin@length}%
741 \else
742   \setlength\mdf@rightmargin@length{\mdf@innermargin@length}%
743   \setlength\mdf@leftmargin@length{\mdf@outermargin@length}%
744 \fi%
745 }
746 \newrobustcmd*{\mdf@@setzref{%
747   \iftoggle{md:checktwoside}{\mdf@zref@label\if@mdf@pageodd}{}}%
748 }

```

`\mdf@freepagevspace`

```

749 \newrobustcmd*{\mdf@freepagevspace{%
750   \penalty\M\relax\vskip 2\baselineskip\relax%
751   \penalty9999\relax\vskip -2\baselineskip\relax%
752   \penalty9999%
753   \ifdimequal{\pagegoal}{\maxdimen}%
754     {\mdf@freespace@length\vsize}%
755     {\mdf@freespace@length=\pagegoal\relax%
756       \advance\mdf@freespace@length by -\pagetotal\relax%
757       \addtolength\mdf@freespace@length{\dimexpr-\parskip\relax}\relax%
758     }%
759 }

```

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

Command used for loop

```

760 \newrobustcmd*{\mdf@advancelength@horizontalmargin@sub[1]{%
761   \advance\mdf@horizontalsofbox by -\csname mdf@#1@length\endcsname\relax%
762 }

```

Compute the width of the box

```

763 \newlength\mdf@horizontalsofbox
764 \newrobustcmd*\mdf@horizontalmargin@equation{%
765   \setlength{\mdf@horizontalsofbox}{\mdf@userdefinedwidth@length}%
766   \mdf@dolist{\mdf@advancelength@horizontalmargin@sub}{%
767     leftmargin,outerlinewidth,middlelinewidth,%
768     innerlinewidth,innerleftmargin,innerrightmargin,%
769     innerlinewidth,middlelinewidth,outerlinewidth,%
770     rightmargin}%
771   \notbool{mdf@leftline}{%
772     \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
773     \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
774     \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
775   }{}%
776   \notbool{mdf@rightline}{%
777     \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
778     \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
779     \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
780   }{}%
781   \ifdimless{\mdf@horizontalsofbox}{3cm}%
782     {\mdf@PackageWarning{You have only a width of 3cm}}{}
783   \hsize=\mdf@horizontalsofbox%
784 }

```

`\mdf@keeplines@single`

Space in relation of horizontal lines.

```

785 \newrobustcmd*\mdf@keeplines@single{%
786   \notbool{mdf@topline}{%
787     \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
788     \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
789     \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
790   }{}%
791   \notbool{mdf@bottomline}{%
792     \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
793     \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
794     \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
795   }{}%
796 }

```

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

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

```

797 \newrobustcmd*\mdf@advancelength@verticalmarginwhole[1]{%
798   \advance\mdf@verticalmarginwhole@length by \csname mdf@#1@length\endcsname\relax%
799 }
800 \newrobustcmd*\mdf@advancelength@freevspace@sub[1]{%
801   \advance\dimen@ by -\csname mdf@#1@length\endcsname\relax%
802 }
803 \newrobustcmd*\mdf@advancelength@freevspace@add[1]{%
804   \advance\dimen@ by \csname mdf@#1@length\endcsname\relax%
805 }

```

`\mdf@reset`

Reset changes

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

`\mdf@put@frame@standalone`

Output of `mdframed` inside a non breakable environment.

```
808 \newrobustcmd*\mdf@put@frame@standalone{\relax%
809 \ifvoid\mdf@splitbox@one\relax
810 \mdf@PackageWarning{The environment is empty\MessageBreak}%
811 \let\mdf@reserved@a\relax%
812 \else
813 %Hier berechnung Box-Inhalt+Rahmen oben und unten
814 \setlength{\mdf@verticalmarginwhole@length}%
815 {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
816 \mdf@dolist{\mdf@advancelength@verticalmarginwhole}{%
817 outerlinewidth,middlelinewidth,innerlinewidth,innertopmargin,
818 innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth}%
819 \mdf@keep@lines@single%
820 \def\mdf@reserved@a{\mdf@put@frame@single}%
821 \fi
822 \mdf@reserved@a%
823 }
```

`\mdf@put@frame`

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

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

```

851      {%passt auf Seite%
852      \begingroup\mdf@setzref\mdf@putbox@single\endgroup%Output no break
853      \let\mdf@reserved@a\relax%
854      }%
855      {%
856      \def\mdf@reserved@a{\mdf@put@frame@i}%passt nicht auf Seite
857      }
858  }%
859 \fi
860 \mdf@reserved@a%
861 }

```

`\mdf@put@frame@i`

Output of the first splitted box.

```
862 \def\mdf@put@frame@i{%Box must be splitted
```

Compute the vertical free space of the current page

```
863 \mdf@freepagevspace%gives \mdf@freevspace@length
```

Compute whether the width of the lines plus 2 `\baselineskip` can only be set on the current page.

```

864 \dimen@=\the\mdf@freevspace@length\relax%
865 \dimen@i=\mdf@innertopmargin@length\relax%
866 \advance\dimen@i by \mdf@innerlinewidth@length\relax%
867 \advance\dimen@i by \mdf@middlelinewidth@length\relax%
868 \advance\dimen@i by \mdf@outerlinewidth@length\relax%
869 \advance\dimen@i by 2\baselineskip\relax%
870 \ifdimless{\dimen@}{\dimen@i}%

```

force a page / column break and restart printing of the environment

```

871 {\hrule \@height\z@ \@width\hsize%
872 \vfill\@eject%
873 \def\mdf@reserved@a{\mdf@put@frame}%
874 }%

```

The page has enough space.

```
875 {%
```

compute the needed vertical space of the first frame. Subtract the dimension of the bottom frame

```

876 \mdf@dolist{\mdf@advancelength@freevspace@sub}{%calculate with \dimen@
877             outerlinewidth,middlelinewidth,innerlinewidth,%
878             innertopmargin,splitbottomskip}%

```

Reduce vertical space if option `everyline` is set to `true`

```

879 \ifbool{mdf@everyline}%
880 {%
881     \ifbool{mdf@bottomline}%
882     {%
883         \advance\dimen@ by -\mdf@innerlinewidth@length%
884         \advance\dimen@ by -\mdf@middlelinewidth@length%
885         \advance\dimen@ by -\mdf@outerlinewidth@length%
886     }{}%
887 }{}%

```

Add vertical space if option `topline` is set to `false`

```

888 \notbool{mdf@topline}%
889 {%
890     \advance\dimen@ by \mdf@innerlinewidth@length%
891     \advance\dimen@ by \mdf@middlelinewidth@length%
892     \advance\dimen@ by \mdf@outerlinewidth@length%

```



```

893     }{}%
Add a length of 0.8\pageshrink. I don't know whether it's needed! ;-)
894     \advance\dimen@.8\pageshrink
Test whether the contents has enough space and the last frame will be empty
895     \ifdimless{\ht\mdf@splitbox@one+\dp\mdf@splitbox@one}{\dimen@}%
896     {\mdf@PackageWarning{You got a bad break\MessageBreak
897         because the last box will be empty\MessageBreak
898         you have to change it manually\MessageBreak
899         by changing the text, the space\MessageBreak
900         or something else}%
901     \advance\dimen@ by -1.8\baselineskip\relax%needed????????????????????
902     }{}%

```

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

```

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

```

repeating frame title must be improved

```

909     \ifbool{mdf@repeatframetitle}%
910     {%
911         \setbox\mdf@splitbox@one\vbox{%
912             \vbox to \mdf@splitttopskip@length{\hsize\z@}
913             %\par\unskip\nointerlineskip
914             \unvcopy\mdf@frametitlebox%
915             \mdf@@frametitlerule%
916             \vbox to\dimexpr
917                 -\mdf@splitttopskip@length+\ht\strutbox+\dp\strutbox
918                 +\mdf@innertopmargin@length\relax{\hsize\z@}%
919             \unvbox\mdf@splitbox@one}%
920     }{}%

```

Test whether the splitted box fits the required dimension

```

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

```

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

```

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

```

Start loop until splitting fits – break after 100 attempts

```

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

```

```

936             contents\MessageBreak}
937         \fi
938         \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%
939         \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
940         \mdf@ignorevbadness%
941         \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@i
942         \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
943         \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
944     \repeat
945     }{}%
Test if the last frame is empty
946     \ifvoid\mdf@splitbox@one\relax%
947         \mdf@PackageWarning{You got a bad break because the splittet box is empty^^M
948             You have to change the page settings^^M
949             like enlargethispage or something else^^M
950             the package increases do \enlargethispage{\baselineskip}\MessageBreak}%
951         \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%
952         \enlargethispage{\baselineskip}%
953         \def\mdf@reserved@a{\mdf@put@frame}%
954     \fi%
Test if the first frame is empty
955     \ifvoid\mdf@splitbox@two\relax%
956         {\hrule \@height\@size pt \@width\z@%
957         \hrule \@height\z@ \@width\hsize}%
958         \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%
959         \def\mdf@reserved@a{\mdf@put@frame}%
960     \else%
961         \ifdimequal{\ht\mdf@splitbox@two}{0pt}%
962             {\hrule \@height\z@ \@width\hsize%
963             \vfill\eject%
964             \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%
965             \def\mdf@reserved@a{\mdf@put@frame}%
966             }%
967             {%
Output of the first frame
968             \begingroup\mdf@@setzref\mdf@putbox@first\endgroup%
969             \hrule \@height\z@ \@width\hsize%
970             \vfill\eject%
971             \def\mdf@reserved@a{\mdf@put@frame@ii}%
972             }%
973         \fi%
974     }%
975 \mdf@reserved@a%
976 }

```

`\mdf@put@frame@ii`

Output of the middle and last box.

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

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

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

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

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

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

```

980 \mdf@dolist{\mdf@advancelength@freevspace@add}%
981     {%used \dimen@
982         innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth,%
983     }

```

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

```

984 \ifbool{mdf@everyline}%
985     {%
986         \ifbool{mdf@topline}%
987             {%
988                 \advance\dimen@ by \mdf@innerlinewidth@length%
989                 \advance\dimen@ by \mdf@middlelinewidth@length%
990                 \advance\dimen@ by \mdf@outerlinewidth@length%
991             }{}%
992     }{}%

```

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

```

993 \notbool{mdf@bottomline}%
994     {%
995         \advance\dimen@ by -\mdf@innerlinewidth@length%
996         \advance\dimen@ by -\mdf@middlelinewidth@length%
997         \advance\dimen@ by -\mdf@outerlinewidth@length%
998         \relax%
999     }{}%

```

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

```

1000 \ifdimgreater{\dimen@}{\mdf@freevspace@length}%
1001     {%have a middle box

```

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

```

1002 \advance\mdf@freevspace@length by -\mdf@splitbottomskip@length\relax%
1003 \ifbool{mdf@everyline}%
1004     {%
1005         \ifbool{mdf@topline}%
1006             {%
1007                 \advance\mdf@freevspace@length by -\mdf@innerlinewidth@length%
1008                 \advance\mdf@freevspace@length by -\mdf@middlelinewidth@length%
1009                 \advance\mdf@freevspace@length by -\mdf@outerlinewidth@length%
1010             }{}%
1011         \ifbool{mdf@bottomline}%
1012             {%
1013                 \advance\mdf@freevspace@length by -\mdf@innerlinewidth@length%
1014                 \advance\mdf@freevspace@length by -\mdf@middlelinewidth@length%
1015                 \advance\mdf@freevspace@length by -\mdf@outerlinewidth@length%
1016                 \relax}{}%
1017             }{}%

```

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

```

1018 \setbox\mdf@splitbox@save=\vbox{\unvcopy\mdf@splitbox@one}%
1019 \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
1020 \mdf@ignorevbadness%
1021 \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \mdf@freevspace@length%
1022 \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}
1023 \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}

```

Test whether the splitted box fits the required dimension

```

1024   \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
1025   {%splitted wrong
1026   \mdf@PackageInfo{Box was splittet wrong^^M starting loop to iterate
1027   the splitting point\MessageBreak}%
Start loop until splitting fits – break after 100 attempts
1028   \dimen@i=\mdf@freevspace@length%\relax
1029   \@tempcnta=\z@\relax
1030   \loop
1031   \ifdim\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax>\mdf@freevspace@length
1032   \advance\dimen@i by -\p@\relax
1033   \advance\@tempcnta by \@ne\relax
1034   \ifnum\@tempcnta>100
1035   \let\iterate\relax
1036   \mdf@PackageWarning{correct box splittet fails^^M
1037   It seems you are using a non splittable
1038   contents\MessageBreak}
1039   \fi
1040   \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%
1041   \splittmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
1042   \mdf@ignorevbadness%
1043   \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@i
1044   \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
1045   \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
1046   \repeat%
1047   }{}%
```

repeating frame title must be improved

```

1048   \ifbool{mdf@repeatframetitle}{%
1049   \setbox\mdf@splitbox@one\vbox{%
1050   \vbox to \mdf@splittopskip@length{\hsize\z@}
1051   %\par\unskip\nointerlineskip
1052   \unvcopy\mdf@frametitlebox%
1053   \mdf@@frametitlerule%
1054   \vbox to%
1055   \dimexpr%
1056   -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox%
1057   +\mdf@innertopmargin@length%
1058   \relax{\hsize\z@}%
1059   \unvbox\mdf@splitbox@one}%
1060   }{}%
```

Test whether last frame is empty

```

1061   \ifvoid\mdf@splitbox@one\relax%
1062   \mdf@PackageWarning{You got a bad break because the splittet box is
1063   empty^^M
1064   You have to change the page settings^^M
1065   like enlargethispage or something else^^M
1066   the package increases do
1067   \enlargethispage{\baselineskip}\MessageBreak}%
1068   \setbox\mdf@splitbox@one=\vbox{\unvcopy\mdf@splitbox@save}%
1069   \enlargethispage{\baselineskip}%
1070   \def\mdf@reserved@a{\mdf@put@frame@ii}%
```

Output of the middle frame

```

1071   \else
1072   \begingroup\mdf@@setzref\mdf@putbox@middle\endgroup%
```

```

1073      \hrule \@height\z@ \@width\hsize%
1074      \vfill\ject%
1075      \def\mdf@reserved@a{\mdf@put@frame@ii}%
1076      \fi
1077      }%End middle box case
Starting output of last frame
1078      {%start last box case
1079      \ifvoid\mdf@splitbox@one
1080          \mdf@PackageWarning{You got a bad break\MessageBreak
1081                          because the last split box is empty\MessageBreak
1082                          You have to change the settings}%%
1083          \setbox\mdf@splitbox@one=\vbox%
1084              {%
1085                  \unvbox\mdf@splitbox@one%
1086                  \hrule \@height\z@ \@width\mdfboundingboxwidth
1087              }%
1088      \fi%
\ifvoid isn't enough – need to test the height
1089      \ifdimless{\ht\mdf@splitbox@one}{1sp}%
1090      {%
1091          \mdf@PackageWarning{You got a bad break\MessageBreak
1092                          because the last split box is empty\MessageBreak
1093                          You have to change the settings}%
1094
1095          \let\mdf@reserved@a\relax%
1096          \setbox\mdf@splitbox@one=\vbox%
1097              {%
1098                  \unvbox\mdf@splitbox@one%
1099                  \hrule \@height\z@ \@width\mdfboundingboxwidth
1100              }%
1101      }{%}%
Output of the last frame
1102      \begingroup\mdf@@setzref\mdf@putbox@second\endgroup%
1103      \hrule \@height\z@ \@width\hsize%
1104      \let\mdf@reserved@a\relax%
1105      }%
1106      \mdf@reserved@a%
1107      }
1108

```

```

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

```

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

```

1109 %%%      -----t-----
1110 %%%      |                   |
1111 %%%      |                   |
1112 %%%      |                   |
1113 %%%      l|                   |r
1114 %%%      |                   |
1115 %%%      |                   |
1116 %%%      |-----b-----
1117 %%%      b
1118 %%Zusammenhaenge abfragen:
1119 \newrobustcmd*{\mdf@test@ltrb}%
1120   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1121               and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1122 %3-set
1123 \newrobustcmd*{\mdf@test@ltr}%
1124   \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1125               and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1126 \newrobustcmd*{\mdf@test@ltb}%
1127   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1128               and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1129 \newrobustcmd*{\mdf@test@trb}%
1130   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1131               and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1132 \newrobustcmd*{\mdf@test@lrb}%
1133   \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1134               and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1135 %2-set
1136 \newrobustcmd*{\mdf@test@lb}%
1137   \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1138               and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1139 \newrobustcmd*{\mdf@test@rb}%
1140   \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1141               and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1142 \newrobustcmd*{\mdf@test@tr}%
1143   \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1144               and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1145 \newrobustcmd*{\mdf@test@lt}%
1146   \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1147               and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1148 \newrobustcmd*{\mdf@test@lr}%
1149   \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1150               and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1151 \newrobustcmd*{\mdf@test@tb}%
1152   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1153               and not (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1154 %Einzellinien
1155 \newrobustcmd*{\mdf@test@l}%
1156   \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1157               and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1158 \newrobustcmd*{\mdf@test@r}%
1159   \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1160               and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1161 \newrobustcmd*{\mdf@test@t}%
1162   \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1163               and not (bool {mdf@leftline}) and not (bool {mdf@rightline})}}

```

```

1164 \newrobustcmd*\mdf@test@b{%
1165     \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1166               and not (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1167 %keine Linien
1168 \newrobustcmd*\mdf@test@noline{%
1169     \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1170               and not (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1171 \newrobustcmd*\mdf@test@single{%
1172     \ifboolexpr{ not (test {\mdf@test@ltrb} or test {\mdf@test@ltr} or
1173                       test {\mdf@test@ltb} or test {\mdf@test@trb} or
1174                       test {\mdf@test@lrb} or test {\mdf@test@lb} or
1175                       test {\mdf@test@rb} or test {\mdf@test@tr} or
1176                       test {\mdf@test@lt} ) }}
1177 %

1178 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{framemethod}%
1179 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{xcolor}%
1180
1181 \endinput

```

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

```

1182 %% Style file for mdframed for package option 'framemethod=default'
1183 %%
1184 %% This package may be distributed under the terms of the LaTeX Project
1185 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1186 %% Either version 1.0 or, at your option, any later version.
1187 %%
1188 %%
1189 %%$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $
1190 %

```

```

\mdframed0packagename
\mdf@frame0date@svn

```

local settings

```

1191 \def\mdframed0packagename{md-frame-0}
1192 \def\mdf@frame0date@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1193 \ProvidesFile{md-frame-0.mdf}%
1194     [\mdf@frame0date@svn$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $]
1195     \mdversion: \mdframed0packagename]

```

```

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

```

short command

```

1196 \def\mdf@background@default{\color{\mdf@backgroundcolor}}
1197 \def\mdf@frametitlebackground@default{\color{\mdf@frametitlebackgroundcolor}}
1198 \def\mdf@shadow@default{\color{\mdf@shadowcolor}}
1199 \def\mdf@innerlinecolor@default{\color{\mdf@innerlinecolor}}
1200 \def\mdf@middlelinecolor@default{\color{\mdf@middlelinecolor}}
1201 \def\mdf@outerlinecolor@default{\color{\mdf@outerlinecolor}}
1202 \def\mdf@frametitlerulecolor@default{\color{\mdf@frametitlerulecolor}}
1203 \let\mdf@linecolor@default\mdf@middlelinecolor@default

```

```

1204 \def\mdf@@frametitlerule{%
1205   \ifbool{mdf@frametitlerule}{%
1206     \vbox{\hsize\mdfframetitleboxwidth%
1207       \par\unskip\vskip\mdf@frametitlebelowskip@length%
1208       \rlap{\noindent\hspace*{-\mdf@innerleftmargin@length}%
1209         \mdf@frametitlerulecolor@default%
1210         \rule{\dimexpr\mdfframetitleboxwidth%
1211           +\mdf@innerleftmargin@length
1212           +\mdf@innerrightmargin@length\relax
1213           }\mdf@frametitlerulewidth@length}%
1214       }\hrule \@height\z@ \@width\hsize}%
1215   }{}%
1216   \par\unskip\vskip\mdf@innertopmargin@length%
1217 }%
1218

```

```

\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

```

1219 \def\mdf@frame@background@single{%
1220   \ifbool{mdf@shadow}%
1221   {%
1222     \rlap%
1223     {%
1224       \smash%
1225       {%
1226         \mdf@shadow@default%
1227         \rule[\dimexpr
1228           -\mdfboundingboxdepth
1229           -\mdf@shadowsize@length
1230           \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{}
1231           \relax]%
1232         {\dimexpr
1233           \mdfboundingboxtotalwidth
1234           +\mdf@shadowsize@length
1235           \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}
1236           \relax}%
1237         {\dimexpr
1238           \mdfboundingboxtotalheight
1239           +\mdf@shadowsize@length
1240           \ifbool{mdf@bottomline}{+\mdf@middlelinewidth@length}{}
1241           \relax}%
1242       }%
1243     }%
1244   }{}%
1245   \rlap%
1246   {%
1247     \mdf@background@default%
1248     \rule[-\mdfboundingboxdepth]%
1249     {\mdfboundingboxtotalwidth}%
1250     {\mdfboundingboxtotalheight}%

```



```

1251 }%
1252 }%
1253 \def\mdf@frame@frametitlebackground@single{%
1254 \rlap%
1255 {%
1256 \mdf@frametitlebackground@default%
1257 \rule[\dimexpr
1258 -\mdfboundingboxdepth
1259 +\mdfboundingboxtotalheight
1260 -\mdfframetitleboxtotalheight
1261 \relax]%
1262 {\mdfboundingboxtotalwidth}%
1263 {\mdfframetitleboxtotalheight}%
1264 }%
1265 }%
1266 \def\mdf@frame@topline@single{%
1267 \rlap%
1268 {%
1269 \mdf@linecolor@default%
1270 \ifbool{mdf@topline}%
1271 {%
1272 \rule[\dimexpr
1273 \mdfboundingboxheight
1274 -\mdfboundingboxdepth%
1275 +\mdf@innerbottommargin@length
1276 +\mdf@innertopmargin@length
1277 \relax]%
1278 {\mdfboundingboxtotalwidth}%
1279 {\mdf@middlelinewidth@length}%
1280 }{}%
1281 }%
1282 }%
1283 \def\mdf@frame@bottomline@single{%
1284 \rlap%
1285 {%
1286 \ifbool{mdf@leftline}%
1287 {%
1288 \hspace*{-\mdf@middlelinewidth@length}%
1289 }{}%
1290 \mdf@linecolor@default%
1291 \ifbool{mdf@bottomline}%
1292 {%
1293 \rule[\dimexpr
1294 -\mdfboundingboxdepth
1295 -\mdf@middlelinewidth@length
1296 \relax]%
1297 {\dimexpr
1298 \mdfboundingboxtotalwidth
1299 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1300 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}%
1301 \relax}%
1302 {\mdf@middlelinewidth@length}%
1303 }{}%
1304 }%
1305 }%
1306 \def\mdf@frame@leftline@single{%

```

```

1307 \llap%
1308 {%
1309   \mdf@linecolor@default%
1310   \rule[-\mdfboundingboxdepth]%
1311     {\mdf@middlelinewidth@length}%
1312     {\dimexpr
1313       \mdfboundingboxtotalheight%
1314       \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}%
1315       \relax}%
1316   }%
1317 }%
1318 \def\mdf@frame@rightline@single{%
1319   \rlap%
1320   {%
1321     \mdf@linecolor@default%
1322     \hspace*{\mdfboundingboxwidth}%
1323     \hspace*{\mdf@innerrightmargin@length}%
1324     \rule[\dimexpr
1325       -\mdfboundingboxdepth%
1326       \relax]%
1327       {\mdf@middlelinewidth@length}%
1328       {\dimexpr
1329         \mdfboundingboxtotalheight%
1330         \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}%
1331         \relax}%
1332     }%
1333   }%
1334 \def\mdf@putbox@single{%
1335   \ifvoid\mdf@splitbox@one\relax
1336   \else%
1337     \mdf@makebox@out%
1338     {%
1339       \mdf@makeboxalign@left%
1340       \setlength{\mdfboundingboxwidth}%
1341         {\wd\mdf@splitbox@one}%
1342       \setlength{\mdfboundingboxtotalwidth}%
1343         {\dimexpr
1344           \mdfboundingboxwidth
1345           +\mdf@innerleftmargin@length%
1346           +\mdf@innerrightmargin@length
1347           \relax}%
1348       \setlength{\mdfboundingboxheight}%
1349         {\dimexpr
1350           \ht\mdf@splitbox@one
1351           +\dp\mdf@splitbox@one
1352           \relax}%
1353       \setlength{\mdfboundingboxdepth}%
1354         {\dimexpr
1355           \dp\mdf@splitbox@one
1356           +\mdf@innerbottommargin@length
1357           \relax}%
1358       \setlength{\mdfboundingboxtotalheight}%
1359         {\dimexpr
1360           \mdfboundingboxheight
1361           +\mdf@innertopmargin@length%
1362           +\mdf@innerbottommargin@length

```

```

1363         \relax}%
1364     \setlength{\mdftotallinewidth}%
1365         {\dimexpr
1366             \mdf@innerlinewidth@length
1367             +\mdf@middlelinewidth@length%
1368             +\mdf@outerlinewidth@length
1369         \relax}%
1370     \noindent%
1371     \setlength{\@tempdima}%
1372         {\dimexpr
1373             \mdfboundingboxtotalwidth%
1374             \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}%
1375             \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}
1376         \relax}%
1377     \mdf@makebox@in[\@tempdima]%
1378     {%
1379         \null%
1380         \ifbool{mdf@leftline}%
1381         {%
1382             \hspace*{\mdftotallinewidth}%
1383             \mdf@frame@leftline@single%
1384         }{}%
1385         \mdf@frame@topline@single%
1386         \mdf@frame@background@single%
1387         \mdf@frame@bottomline@single%
1388         \ifdefempty{\mdf@frametitle}{}{\mdf@frame@frametitlebackground@single}%
1389         \hspace*{\mdf@innerleftmargin@length}%
1390         \ifbool{mdf@rightline}%
1391         {%
1392             \mdf@frame@rightline@single%
1393         }{}%
1394         {\box\mdf@splitbox@one}%
1395     }%
1396     \mdf@makeboxalign@right%
1397 }%
1398 \fi%
1399 }

```

```

\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`

```

1400 \def\mdf@frame@background@first{%
1401     \ifbool{mdf@shadow}%
1402     {%
1403         \rlap%
1404         {%
1405             \smash%
1406             {%
1407                 \mdf@shadow@default%
1408                 \rule[\dimexpr
1409                     -\mdfboundingboxdepth
1410                     -\mdf@shadowsize@length

```

```

1411         \relax]%
1412     {\dimexpr
1413         \mdfboundingboxtotalwidth
1414         +\mdf@shadowsize@length
1415         \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}
1416         \relax}%
1417     {\dimexpr
1418         \mdfboundingboxtotalheight
1419         +\mdf@shadowsize@length
1420         \relax}%
1421     }%
1422 }%
1423 }{}%
1424 \rlap%
1425 {%
1426     \mdf@background@default%
1427     \rule[-\mdfboundingboxdepth]%
1428         {\mdfboundingboxtotalwidth}%
1429         {\mdfboundingboxtotalheight}%
1430 }%
1431 }%
1432 \def\mdf@frame@frametitlebackground@first{%
1433 \ifdimless{\mdfframetitleboxtotalheight}{\mdfboundingboxtotalheight}%
1434 {%
1435     \rlap%
1436     {%
1437         \mdf@frametitlebackground@default%
1438         \rule[\dimexpr
1439             -\mdfboundingboxdepth
1440             +\mdfboundingboxtotalheight
1441             -\mdfframetitleboxtotalheight
1442             \relax]%
1443             {\mdfboundingboxtotalwidth}%
1444             {\mdfframetitleboxtotalheight}%
1445         }%
1446         \global\mdfframetitleboxtotalheight=-\p@\relax%
1447     }%
1448 {%
1449     \mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
1450         Current this isn't well supported}%
1451     \rlap%
1452     {%
1453         \mdf@frametitlebackground@default%
1454         \rule[-\mdfboundingboxdepth]%
1455             {\mdfboundingboxtotalwidth}%
1456             {\mdfboundingboxtotalheight}%
1457         }%
1458     \global\mdfframetitleboxtotalheight=%
1459         \dimexpr%
1460             \mdfframetitleboxtotalheight
1461             -\mdfboundingboxheight
1462             +\mdf@frametitlebelowskip@length
1463             +.5\baselineskip-1pt
1464 %         +\dp\strutbox
1465         \relax%
1466     }%

```

```

1467 }%
1468 \def\mdf@frame@leftline@first{%
1469   \llap%
1470   {%
1471     \mdf@linecolor@default%
1472     \rule[-\mdfboundingboxdepth]%
1473       {\mdf@middlelinewidth@length}%
1474       {\dimexpr
1475         \mdfboundingboxtotalheight%
1476         \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}}
1477       \relax}%
1478   }%
1479 }%
1480 \def\mdf@frame@topline@first{%
1481   \rlap%
1482   {%
1483     \mdf@linecolor@default%
1484     \rule[\dimexpr
1485       \mdfboundingboxheight
1486       -\mdfboundingboxdepth
1487       +\mdf@splitbottomskip@length
1488       +\mdf@innertopmargin@length
1489       \relax]%
1490       {\mdfboundingboxtotalwidth}%
1491       {\mdf@middlelinewidth@length}%
1492     }%
1493   }
1494 \def\mdf@frame@rightline@first{%
1495   \rlap%
1496   {%
1497     \mdf@linecolor@default%
1498     \hspace*{\mdfboundingboxwidth}%
1499     \hspace*{\mdf@innerrightmargin@length}%
1500     \rule[-\mdfboundingboxdepth]%
1501       {\mdf@middlelinewidth@length}%
1502       {\dimexpr
1503         \mdfboundingboxtotalheight%
1504         \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}}
1505       \relax}%
1506   }%
1507 }%
1508 \def\mdf@frame@bottomline@first{%
1509   \rlap%
1510   {%
1511     \ifbool{mdf@leftline}%
1512       {%
1513         \hspace*{-\mdf@middlelinewidth@length}%
1514       }{}%
1515     \mdf@linecolor@default%
1516     \ifbool{mdf@bottomline}%
1517       {%
1518         \rule[\dimexpr
1519           -\mdfboundingboxdepth
1520           -\mdf@middlelinewidth@length
1521           \relax]%
1522         {\dimexpr

```

```

1523         \mdfboundingboxtotalwidth
1524         \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1525         \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}
1526         \relax}%
1527     {\mdf@middlelinewidth@length}%
1528 }{}%
1529 }%
1530 }%
1531 \def\mdf@putbox@first{%
1532     \ifvoid\mdf@splitbox@two\relax
1533     \else%
1534         \mdf@makebox@out[\linewidth]%
1535         {%
1536             \mdf@makeboxalign@left%
1537             \setlength{\mdfboundingboxwidth}%
1538                 {\wd\mdf@splitbox@two}%
1539             \setlength{\mdfboundingboxtotalwidth}%
1540                 {\dimexpr
1541                     \mdfboundingboxwidth
1542                     +\mdf@innerleftmargin@length%
1543                     +\mdf@innerrightmargin@length
1544                     \relax}%
1545             \setlength{\mdfboundingboxheight}%
1546                 {\dimexpr
1547                     \ht\mdf@splitbox@two
1548                     +\dp\mdf@splitbox@two
1549                     \relax}%
1550             \setlength{\mdfboundingboxdepth}%
1551                 {\dimexpr
1552                     \dp\mdf@splitbox@two
1553                     +\mdf@splitbottomskip@length
1554                     \relax}%
1555             \setlength{\mdfboundingboxtotalheight}%
1556                 {\dimexpr
1557                     \mdfboundingboxheight
1558                     +\mdf@innertopmargin@length%
1559                     +\mdf@splitbottomskip@length
1560                     \relax}%
1561             \setlength{\@tempdima}%
1562                 {\dimexpr
1563                     \mdfboundingboxtotalwidth%
1564                     \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}%
1565                     \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1566                     \relax}%
1567             \mdf@makebox@in[\@tempdima]%
1568             {%
1569                 \null%
1570                 \ifbool{mdf@leftline}%
1571                 {%
1572                     \hspace*{\mdf@middlelinewidth@length}%
1573                     \mdf@frame@leftline@first%
1574                 }{}%
1575                 \ifbool{mdf@everyline}%
1576                 {%
1577                     \mdf@frame@bottomline@first%
1578                 }{}%

```

```

1579     \ifbool{mdf@topline}%
1580     {%
1581         \mdf@frame@topline@first%
1582     }{}%
1583     \mdf@frame@background@first%
1584     \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@first}%
1585     \hspace*{\mdf@innerleftmargin@length}%
1586     \ifbool{mdf@rightline}%
1587     {%
1588         \mdf@frame@rightline@first%
1589     }{}%
1590     {\box\mdf@splitbox@two}%
1591 }%
1592 \mdf@makeboxalign@right%
1593 }%
1594 \fi%
1595 }

```

```

\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

```

1596 \def\mdf@frame@background@second{%
1597     \ifbool{mdf@shadow}%
1598     {%
1599         \rlap%
1600         {%
1601             \smash%
1602             {%
1603                 \mdf@shadow@default%
1604                 \rule[\dimexpr
1605                     -\mdfboundingboxdepth
1606                     -\mdf@shadowsize@length
1607                     \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{}
1608                 \relax]%
1609                 {\dimexpr
1610                     \mdfboundingboxtotalwidth
1611                     +\mdf@shadowsize@length
1612                     \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}
1613                 \relax}%
1614                 {\dimexpr
1615                     \mdfboundingboxtotalheight
1616                     +\mdf@shadowsize@length
1617                 \relax}%
1618             }%
1619         }%
1620     }{}%
1621     \rlap%
1622     {%
1623         \mdf@background@default%
1624         \rule[-\mdfboundingboxdepth]%
1625         {\mdfboundingboxtotalwidth}%
1626         {\mdfboundingboxtotalheight}%

```

```

1627 }%
1628 }%
1629 \def\mdf@frame@frametitlebackground@second{%
1630 \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1631 {}%
1632 {%
1633 \rlap%
1634 {%
1635 \mdf@frametitlebackground@default%
1636 \rule[\dimexpr
1637 -\mdfboundingboxdepth
1638 +\mdfboundingboxtotalheight
1639 -\mdfframetitleboxtotalheight
1640 \relax]%
1641 {\mdfboundingboxtotalwidth}%
1642 {\mdfframetitleboxtotalheight}%
1643 }%
1644 }%
1645 }%
1646 \def\mdf@frame@leftline@second{%
1647 \llap%
1648 {%
1649 \mdf@linecolor@default%
1650 \rule[-\mdfboundingboxdepth]%
1651 {\mdf@middlelinewidth@length}%
1652 {\dimexpr\mdfboundingboxtotalheight}%
1653 }%
1654 }%
1655 \def\mdf@frame@bottomline@second{%
1656 \rlap%
1657 {%
1658 \ifbool{mdf@leftline}%
1659 {%
1660 \hspace*{-\mdf@middlelinewidth@length}%
1661 }{}%
1662 \mdf@linecolor@default%
1663 \rule[\dimexpr
1664 -\mdfboundingboxdepth
1665 -\mdf@middlelinewidth@length
1666 \relax]%
1667 {\dimexpr
1668 \mdfboundingboxtotalwidth
1669 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}
1670 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}
1671 \relax}%
1672 {\mdf@middlelinewidth@length}%
1673 }%
1674 }%
1675 \def\mdf@frame@rightline@second{%
1676 \rlap%
1677 {%
1678 \mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1679 \hspace*{\mdf@innerrightmargin@length}%
1680 \rule[-\mdfboundingboxdepth]%
1681 {\mdf@middlelinewidth@length}%
1682 {\mdfboundingboxtotalheight}%

```



```

1683 }%
1684 }%
1685 \def\mdf@frame@topline@second{%
1686 \rlap%
1687 {%
1688 \ifbool{mdf@leftline}%
1689 {%
1690 \hspace*{-\mdf@middlelinewidth@length}%
1691 }{}%
1692 \mdf@linecolor@default%
1693 \ifbool{mdf@topline}%
1694 {%
1695 \rule[\dimexpr
1696 \mdfboundingboxheight
1697 -\mdfboundingboxdepth%
1698 +\mdf@innerbottommargin@length
1699 \relax]%
1700 {\dimexpr
1701 \mdfboundingboxtotalwidth
1702 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1703 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}
1704 \relax}%
1705 {\mdf@middlelinewidth@length}%
1706 }{}%
1707 }%
1708 }%
1709
1710 \def\mdf@putbox@second{%
1711 \ifvoid\mdf@splitbox@one\relax%
1712 \else
1713 \mdf@makebox@out%
1714 {%
1715 \mdf@makeboxalign@left%
1716 \setlength{\mdfboundingboxwidth}%
1717 {\wd\mdf@splitbox@one}%
1718 \setlength{\mdfboundingboxtotalwidth}%
1719 {\dimexpr
1720 \mdfboundingboxwidth
1721 +\mdf@innerleftmargin@length%
1722 +\mdf@innerrightmargin@length
1723 \relax}%
1724 \setlength{\mdfboundingboxheight}%
1725 {\dimexpr
1726 \ht\mdf@splitbox@one
1727 +\dp\mdf@splitbox@one
1728 \relax}%
1729 \setlength{\mdfboundingboxdepth}%
1730 {\dimexpr
1731 \dp\mdf@splitbox@one
1732 +\mdf@innerbottommargin@length
1733 \relax}%
1734 \setlength{\mdfboundingboxtotalheight}%
1735 {\dimexpr
1736 \mdfboundingboxheight
1737 +\mdf@innerbottommargin@length
1738 \relax}%

```

```

1739     \setlength{\@tempdima}%
1740         {\dimexpr
1741             \mdfboundingboxtotalwidth%
1742             \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}%
1743             \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1744             \relax}%
1745     \mdf@makebox@in[\@tempdima]%
1746     {%
1747         \null%
1748         \ifbool{mdf@leftline}%
1749             {%
1750                 \hspace*{\mdf@middlelinewidth@length}%
1751                 \mdf@frame@leftline@second%
1752             }{}%
1753         \ifbool{mdf@everyline}%
1754             {%
1755                 \mdf@frame@topline@second
1756             }{}%
1757         \mdf@frame@background@second%
1758         \ifbool{mdf@bottomline}%
1759             {%
1760                 \mdf@frame@bottomline@second%
1761             }{}%
1762         \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@second}%
1763         \hspace*{\mdf@innerleftmargin@length}%
1764         \ifbool{mdf@rightline}%
1765             {%
1766                 \mdf@frame@rightline@second%
1767             }{}%
1768         {\box\mdf@splitbox@one}%
1769     }%
1770     \mdf@makebox@align@right%
1771 }%
1772 \fi%
1773 }%

```

```

\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*

```

1774 \def\mdf@frame@leftline@middle{%
1775     \llap%
1776     {%
1777         \mdf@linecolor@default%
1778         \rule[-\mdfboundingboxdepth]%
1779             {\mdf@middlelinewidth@length}%
1780             {\mdfboundingboxtotalheight}%
1781     }%
1782 }%
1783 \def\mdf@frame@background@middle{%
1784     \ifbool{mdf@shadow}%
1785         {%
1786             \rlap%
1787             {%

```

```

1788     \smash%
1789     {%
1790         \mdf@shadow@default%
1791         \rule[\dimexpr
1792             -\mdfboundingboxdepth
1793             -\mdf@shadowsize@length
1794             \relax]%
1795         {\dimexpr
1796             \mdfboundingboxtotalwidth
1797             +\mdf@shadowsize@length
1798             \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}}
1799         \relax}%
1800     {\mdfboundingboxtotalheight}%
1801 }%
1802 }%
1803 }{}%
1804 \rlap%
1805 {%
1806     \mdf@background@default%
1807     \rule[-\mdfboundingboxdepth]%
1808         {\mdfboundingboxtotalwidth}%
1809         {\mdfboundingboxtotalheight}%
1810 }%
1811 }%
1812 \def\mdf@frame@frametitlebackground@middle{%
1813 \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1814 {}%
1815 {%
1816     \rlap%
1817     {%
1818         \mdf@frametitlebackground@default%
1819         \rule[\dimexpr
1820             -\mdfboundingboxdepth
1821             +\mdfboundingboxtotalheight
1822             -\mdfframetitleboxtotalheight
1823             \relax]%
1824             {\mdfboundingboxtotalwidth}%
1825             {\mdfframetitleboxtotalheight}%
1826         }%
1827         \global\mdfframetitleboxtotalheight=-\p@ \relax%
1828     }%
1829 }%
1830 \def\mdf@frame@rightline@middle{%
1831 \rlap%
1832 {%
1833     \mdf@linecolor@default%
1834     \hspace*{\mdfboundingboxwidth}%
1835     \hspace*{\mdf@innerrightmargin@length}%
1836     \rule[-\mdfboundingboxdepth]%
1837         {\mdf@middlelinewidth@length}%
1838         {\mdfboundingboxtotalheight}%
1839 }%
1840 }%
1841 \def\mdf@frame@topline@middle{%
1842 \rlap%
1843 {%

```

```

1844 \ifbool{mdf@leftline}%
1845 {%
1846 \hspace*{-\mdf@middlelinewidth@length}%
1847 }{}%
1848 \mdf@linecolor@default%
1849 \ifbool{mdf@topline}%
1850 {%
1851 \rule[\dimexpr
1852 \mdfboundingboxtotalheight
1853 -\mdfboundingboxdepth
1854 \relax]%
1855 {\dimexpr
1856 \mdfboundingboxtotalwidth
1857 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1858 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}
1859 \relax}%
1860 {\mdf@middlelinewidth@length}%
1861 }{}%
1862 }%
1863 }%
1864 \def\mdf@frame@bottomline@middle{%
1865 \rlap%
1866 {%
1867 \ifbool{mdf@leftline}%
1868 {%
1869 \hspace*{-\mdf@middlelinewidth@length}%
1870 }{}%
1871 \mdf@linecolor@default%
1872 \ifbool{mdf@bottomline}%
1873 {%
1874 \rule[\dimexpr
1875 -\mdfboundingboxdepth
1876 -\mdf@middlelinewidth@length
1877 \relax]%
1878 {\dimexpr
1879 \mdfboundingboxtotalwidth
1880 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1881 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}
1882 \relax}%
1883 {\mdf@middlelinewidth@length}%
1884 }{}%
1885 }%
1886 }%
1887
1888 \def\mdf@putbox@middle{%
1889 \ifvoid\mdf@splitbox@two\relax%
1890 \else
1891 \mdf@makebox@out%
1892 {%
1893 \mdf@makeboxalign@left%
1894 \setlength{\mdfboundingboxwidth}%
1895 {\wd\mdf@splitbox@two}%
1896 \setlength{\mdfboundingboxtotalwidth}%
1897 {\dimexpr
1898 \mdfboundingboxwidth
1899 +\mdf@innerleftmargin@length%

```

```

1900         +\mdf@innerrightmargin@length
1901         \relax}%
1902     \setlength{\mdfboundingboxheight}
1903         {\dimexpr
1904             \ht\mdf@splitbox@two
1905             +\dp\mdf@splitbox@two
1906             \relax}%
1907     \setlength{\mdfboundingboxdepth}%
1908         {\dimexpr
1909             \dp\mdf@splitbox@two
1910             +\mdf@splitbottomskip@length
1911             \relax}%
1912     \setlength{\mdfboundingboxtotalheight}%
1913         {\dimexpr
1914             \mdfboundingboxheight
1915             +\mdf@splitbottomskip@length
1916             \relax}%
1917     \setlength{\@tempdima}
1918         {\dimexpr
1919             \mdfboundingboxtotalwidth%
1920             \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}%
1921             \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1922             \relax}%
1923     \mdf@makebox@in[\@tempdima]%
1924     {%
1925         \null%
1926         \ifbool{mdf@leftline}%
1927             {%
1928                 \hspace*{\mdf@middlelinewidth@length}%
1929                 \mdf@frame@leftline@middle%
1930             }{}%
1931         \mdf@frame@background@middle%
1932         \ifbool{mdf@everyline}%
1933             {%
1934                 \mdf@frame@topline@middle
1935             }{}%
1936         \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@middle}%
1937         \ifbool{mdf@everyline}%
1938             {%
1939                 \mdf@frame@bottomline@middle%
1940             }{}%
1941         \hspace*{\mdf@innerleftmargin@length}%
1942         \ifbool{mdf@rightline}%
1943             {%
1944                 \mdf@frame@rightline@middle%
1945             }{}%
1946         {\box\mdf@splitbox@two}%
1947     }%
1948     \mdf@makeboxalign@right%
1949 }%
1950 \fi%
1951 }

1952 \endinput

```

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

```

1953 %% Style file for mdframed for package option 'framemethod=default'
1954 %%
1955 %% This package may be distributed under the terms of the LaTeX Project
1956 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1957 %% Either version 1.0 or, at your option, any later version.
1958 %%
1959 %%
1960 %%$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $
1961 %

```

```

\mdframedIpackagename
\mdf@frameIdate@svn

```

local settings

```

1962 \def\mdframedIpackagename{md-frame-1}
1963 \def\mdf@frameIdate@svn$1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1964 \ProvidesFile{md-frame-1.mdf}%
1965      [\mdf@frameIdate@svn$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $ %
1966      \mdversion: \mdframedIpackagename]
1967 %

```

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

Define settings for tikz

```

1968 %Allgemeine Einstellungen fuer tikz
1969 \def\mdf@tikz@settings{%
1970 %
1971   \tikzset{mdfbox/.style={anchor=south west,%
1972                           inner sep=0pt,%
1973                           outer sep=0pt,%
1974                           \mdf@fontcolor,%
1975                           }%
1976           }% anchor der Ausgabebox ist unten links
1977   \tikzset{mdfcorners/.style={rounded corners=\mdf@roundcorner@length}}%
1978   \tikzset{mdfbackground/.style={fill=\mdf@backgroundcolor,%
1979                                   draw=\mdf@backgroundcolor%
1980                                   }%
1981           }%
1982   \tikzset{mdfframetitlebackground/.style=%
1983           {%
1984             fill=\mdf@frametitlebackgroundcolor,%
1985             draw=none,%
1986             rounded corners={max(\mdf@roundcorner@length%
1987                                 -\mdf@innerlinewidth@length%
1988                                 -.5\mdf@middlelinewidth@length,0)%
1989                               }%
1990           }%
1991           }%
1992 %
1993   \tikzset{mdfouterline/.style={}}%
1994 % nur wenn outerlinewidth>0 wird aussere Linie gezeichnet
1995   \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
1996     {\tikzset{mdfouterline/.append style={%
1997       draw=\mdf@outerlinecolor,%

```

```

1998     line width=2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length}}{}%
1999 %
2000   \tikzset{mdfinnerline/.style={}}%
2001 % nur wenn innerlinewidth>0 wird innere Linie gezeichnet
2002   \ifdimgreater{\mdf@innerlinewidth@length}{\z@}
2003     {\tikzset{mdfinnerline/.append style={%
2004       draw=\mdf@innerlinecolor,%
2005       line width=2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length}}{}%
2006 %
2007   \tikzset{mdfshadow/.style={drop shadow={%
2008     shadow xshift=\mdf@shadowsize@length-2pt,
2009     shadow yshift=-\mdf@shadowsize@length+2pt,
2010     fill=\mdf@shadowcolor,
2011     every shadow }}}%
2012 %
2013   \mdf@tikzset@local
2014   \tikzset{mdfmiddleline/.style={}}%
2015 % nur wenn middlelinewidth>0 wird mittlere Linie gezeichnet
2016   \ifdimgreater{\mdf@middlelinewidth@length}{\z@}
2017     {\tikzset{mdfmiddleline/.append style={%
2018       preaction={draw=\mdf@middlelinecolor,%
2019         line width=\mdf@middlelinewidth@length},%
2020       line width=\mdf@middlelinewidth@length,%
2021       tikzsetting}}%
2022     }{}%
2023 }%

```

```

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

```

Befehle fuer Ausgabe von Rahmen und Hintergrund

```

2024 \newrobustcmd*\mdf@tikzbox@tfl[1]{%three or four borders
2025   \clip(0,0)rectangle(\mdf@boundingboxwidth,\mdf@boundingboxheight);%
2026   \begin{scope}[mdfcorners]%
2027     \clip[preaction=mdfouterline]%
2028       [postaction=mdfbackground]%
2029       [postaction=mdfinnerline]#1;%
2030   \end{scope}%
2031   \path[mdfmiddleline,mdfcorners]#1;
2032 }%
2033
2034
2035
2036 \newrobustcmd*\mdf@tikzbox@otl[2]{%one or two borders
2037   \clip(0,0)rectangle(\mdf@boundingboxwidth,\mdf@boundingboxheight);%
2038   \begin{scope}
2039     \path[mdfouterline,mdfcorners]#1;%
2040     \clip[postaction=mdfbackground]#2;%
2041     \path[mdfinnerline,mdfcorners]#1;%
2042   \end{scope}%
2043   \path[mdfmiddleline,mdfcorners]#1;%

```

```
\mdf@put@frametitlerule
```

frametitlerule with tikz

```

2044 \tikzset{mdfframetitrerule/.style={%
2045     draw=none,
2046     fill=\mdf@frametitrerulecolor,
2047 }%
2048 }
2049 \def\mdf@@frametitrerule{%
2050     \ifbool{mdf@frametitrerule}{%
2051         \vbox{\hsize0pt
2052             \par\unskip\vskip\mdf@frametitlebelowskip@length
2053             \noindent\rlap{\hspace*{-\mdf@innerleftmargin@length}%
2054             \begingroup%
2055             \pgfmathsetlength{\dimen@}{\mdfframetitleboxwidth
2056                                     +\mdf@innerleftmargin@length
2057                                     +\mdf@innerrightmargin@length}%
2058             \tikz\draw[mdfframetitrerule] (0,0)%
2059                 rectangle (\dimen@,\mdf@frametitrerulewidth@length);
2060             \endgroup}
2061         }%
2062     }{}
2063     \par\unskip\vskip\mdf@innertopmargin@length%
2064 }%
2065

```

\mdf@putbox@single

Output of the non breakable contents.

```

2066 % Info zu den verwendeten Punkten:
2067 % O ist die untere linke Ecke der Mitte der middleline
2068 % P ist die obere rechte Ecke der Mitte der middleline
2069 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
2070 %
2071 \def\mdf@putbox@single{%
2072     \ifvoid\mdf@splitbox@one
2073     \else%
2074         \mdf@makebox@out{%
2075             \mdf@makeboxalign@left%
2076             \mdf@tikz@settings%
2077 %
2078             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2079             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2080             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2081             \ifbool{mdf@leftline}{%
2082                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2083                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2084                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
2085             \ifbool{mdf@rightline}{%
2086                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2087                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2088                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2089 %
2090             \setlength\mdfboundingboxheight%
2091                 {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2092             \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2093             \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2094             \ifbool{mdf@topline}{%

```



```

2095 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2096 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2097 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2098 \ifbool{mdf@bottomline}{%
2099 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2100 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2101 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2102 \mdf@makebox@in[\mdfboundingboxwidth]{%
2103 \null%
2104 \begin{tikzpicture}[remember picture]%
2105 \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2106 \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
2107 \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2108 \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2109 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2110 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2111 \ifbool{mdf@leftline}{%
2112 {%
2113 \pgfmathsetlengthmacro\mdf@Ax%
2114 {\mdf@Ax+\mdf@outerlinewidth@length+
2115 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2116 \pgfmathsetlengthmacro\mdf@Ox%
2117 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2118 }}}%
2119 \ifbool{mdf@rightline}{%
2120 {%
2121 \pgfmathsetlengthmacro\mdf@Px%
2122 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2123 }}}%
2124 \ifbool{mdf@bottomline}{%
2125 {%
2126 \pgfmathsetlengthmacro\mdf@Ay%
2127 {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length
2128 +\mdf@innerlinewidth@length}%
2129 \pgfmathsetlengthmacro\mdf@Oy%
2130 {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2131 }}}%
2132 \ifbool{mdf@topline}{%
2133 {%
2134 \pgfmathsetlengthmacro\mdf@Py%
2135 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2136 }}}%
2137 %
2138 \coordinate(0)at(\mdf@Ox,\mdf@Oy);%
2139 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2140 %
2141 \ifbool{mdf@shadow}
2142 {\path[mdfshadow,mdfcorners](0) rectangle (P);}%
2143 %
2144 \begin{scope}[use as bounding box]
2145 \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}}%
2146 %
2147 \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}}%
2148 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}}%
2149 \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}}%
2150 \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}}%

```

```

2151 %
2152 \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
2153 {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2154 {}%
2155 \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
2156 {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2157 {}%
2158 \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
2159 {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2160 {}%
2161 \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
2162 {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2163 {}%
2164 \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
2165 {(0)rectangle(P)}%
2166 {}%
2167 \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
2168 {(0)rectangle(P)}%
2169 {}%
2170 %
2171 \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2172 {(0)rectangle(P)}%
2173 {}%
2174 \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2175 {(0)rectangle(P)}%
2176 {}%
2177 \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2178 {(0)rectangle(P)}%
2179 {}%
2180 \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2181 {(0)rectangle(P)}%
2182 {}%
2183 %
2184 \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
2185 %
2186 %Frametitlebackground
2187 \drawbackgroundframetitle@single
2188 %
2189 \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};%output
2190 \end{scope}
2191 %HIER KOMMT EIN WEITERES MAKRO
2192 \mdf@singleextra
2193 \mdfcreateextratikz
2194 \end{tikzpicture}%
2195 }%
2196 \mdf@makeboxalign@right%
2197 }%
2198 \fi
2199 }%
2200 \def\drawbackgroundframetitle@single{%
2201 \ifdefempty{\mdf@frametitle}{}%
2202 \drawbackgroundframetitle@single%
2203 }%
2204 }%
2205 \def\drawbackgroundframetitle@@single{%
2206 \begin{scope}%background frame title

```

```

2207 \ifbool{mdf@leftline}{
2208 \pgfmathsetlengthmacro\mdf@0x%
2209 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2210 }{}%
2211 \ifbool{mdf@rightline}{%
2212 \pgfmathsetlengthmacro\mdf@Px%
2213 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2214 }{}%
2215 \ifbool{mdf@topline}{%
2216 \pgfmathsetlengthmacro\mdf@Py%
2217 {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2218 }{}%
2219 \pgfmathsetlengthmacro\mdf@Fy
2220 {\mdf@Py-\mdfframetitleboxtotalheight}
2221 \path[mdfframetitlebackground]
2222 (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2223 -- (\mdf@Px,\mdf@Py) -- (\mdf@Px,\mdf@Fy);
2224 \end{scope}
2225 }

```

`\mdf@putbox@first`

Output of the first breakable contents.

```

2226 \def\drawbrackgroundframetitle@first{%
2227 \ifdefempty{\mdf@frametitle}{}%
2228 {%
2229 \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}%
2230 {%
2231 \drawbrackgroundframetitle@@first
2232 \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
2233 }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
2234 Currently this isn't well supported}%
2235 \drawbrackgroundframetitle@@first
2236 \pgfmathsetlength{\global\mdfframetitleboxtotalheight}%
2237 {\mdfframetitleboxtotalheight
2238 -\mdfboundingboxheight
2239 -\mdf@innerlinewidth@length
2240 -0.5\mdf@middlelinewidth@length%
2241 +\mdf@frametitlebelowskip@length
2242 +\mdf@splitbottomskip@length
2243 +\mdf@splittopskip@length
2244 +\dp\strutbox%
2245 }%
2246 }%
2247 }%
2248 }%
2249 %
2250 \def\drawbrackgroundframetitle@@first{%
2251 \begin{scope}%background frame title
2252 \ifbool{mdf@leftline}{%
2253 \pgfmathsetlengthmacro\mdf@0x%
2254 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2255 }{}%
2256 \ifbool{mdf@rightline}{%
2257 \pgfmathsetlengthmacro\mdf@Px%

```

```

2258         {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2259     }{}%
2260 \ifbool{mdf@topline}{%
2261     \pgfmathsetlengthmacro\mdf@Py%
2262         {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2263     }{}%
2264     \pgfmathsetlengthmacro\mdf@Fy
2265         {max(0,\mdf@Py-\mdfframetitleboxtotalheight)}
2266     \path[mdfframetitlebackground]
2267         (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2268         --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2269 \end{scope}%
2270 }%
2271 %
2272 \def\mdf@putbox@first{%
2273     \ifvoid\mdf@splitbox@two
2274     \else%
2275         \mdf@makebox@out{%
2276             \mdf@makeboxalign@left%
2277             \mdf@tikz@settings%
2278             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2279             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2280             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2281             \ifbool{mdf@leftline}{%
2282                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2283                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2284                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2285             \ifbool{mdf@rightline}{%
2286                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2287                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2288                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
2289             \setlength\mdfboundingboxheight%
2290                 {\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2291             \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2292             \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2293             \ifbool{mdf@topline}{%
2294                 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2295                 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2296                 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2297             %%%%%%%%%
2298             \ifbool{mdf@everyline}{%
2299                 \ifbool{mdf@bottomline}{%
2300                     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2301                     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2302                     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
2303                 }{}%
2304             %%%%%%%%%
2305             %\ifdimequal{\pagegoal}{\maxdimen}{\enlargethispage{\baselineskip}}{}% ???
2306             %\ifdimgreater{\pagegoal-\maxdimen}{0pt}{}{\enlargethispage{\baselineskip}}%
2307             \mdf@makebox@in[\mdfboundingboxwidth]{%
2308                 \null%
2309                 \begin{tikzpicture}[remember picture]
2310                     \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2311                     \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2312                     \pgfmathsetlengthmacro\mdf@0x{+0pt}%
2313                     \pgfmathsetlengthmacro\mdf@0y{+0pt}%

```

```

2314 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2315 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2316 \ifbool{mdf@leftline}
2317 {%
2318 \pgfmathsetlengthmacro\mdf@Ax%
2319 {\mdf@Ax+\mdf@outerlinewidth@length+
2320 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2321 \pgfmathsetlengthmacro\mdf@0x%
2322 {\mdf@0x+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2323 }{}%
2324 \ifbool{mdf@rightline}{%
2325 \pgfmathsetlengthmacro\mdf@Px%
2326 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2327 }{}%
2328 \ifbool{mdf@topline}{%
2329 \pgfmathsetlengthmacro\mdf@Py%
2330 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2331 }{}%
2332 %%
2333 \ifbool{mdf@everyline}{%
2334 \ifbool{mdf@bottomline}%
2335 {%
2336 \pgfmathsetlengthmacro\mdf@Ay%
2337 {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
2338 +\mdf@innerlinewidth@length}%
2339 \pgfmathsetlengthmacro\mdf@0y%
2340 {\mdf@0y+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2341 }{}%
2342 \ifbool{mdf@topline}%
2343 {%
2344 \pgfmathsetlengthmacro\mdf@Py%
2345 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2346 }{}%
2347 }{}%
2348 %%
2349 \coordinate(0)at(\mdf@0x,\mdf@0y);%
2350 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2351 \ifbool{mdf@shadow}
2352 {\path[mdfshadow] (0) -- (0|-P) to[mdfcorners] (P) -- (P|-0) -- (0);}%
2353 \begin{scope}[use as bounding box]
2354 %%%%%%%%%%
2355 \ifbool{mdf@everyline}{%
2356 \mdf@test@lrb{\mdf@tikzbox@tfl{(0) -- (0|-P) -- (P) -- (P|-0) -- cycle}}{}%
2357 \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0) -- (0) -- (0|-P) -- (P)}}{}%
2358 \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P) -- (P) -- (P|-0) -- (0)}}{}%
2359 \mdf@test@ltr{\mdf@tikzbox@tfl{(0) -- (0|-P) -- (P) -- (P|-0)}}{}%
2360 \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0) -- (0) -- (0|-P) -- (P)}}{}%
2361 \mdf@test@lb{\mdf@tikzbox@otl{(P|-0) -- (0) -- (0|-P)}}%
2362 {(P) -- (P|-0)[mdfcorners] -- (0) -- (0|-P)}%
2363 }{}%
2364 \mdf@test@rb{\mdf@tikzbox@otl{(P) -- (P|-0) -- (0)}}%
2365 {(0|-P) -- (P)[mdfcorners] -- (P|-0) -- (0)}%
2366 }{}%
2367 \mdf@test@tr{\mdf@tikzbox@otl{(0|-P) -- (P) -- (P|-0)}}%
2368 {(0) -- (0|-P)[mdfcorners] -- (P) -- (P|-0)}%
2369 }{}%

```

```

2370 \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P))}%
2371             {(P|-0)--(0)[mdfcorners]--(0|-P)--(P))}%
2372         }{}%
2373 \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0))}%
2374             {(0)rectangle(P))}%
2375         }{}%
2376 \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P))}%
2377             {(0)rectangle(P))}%
2378         }{}%
2379 \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P))}%
2380             {(0)rectangle(P))}%
2381         }{}%
2382 \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P))}%
2383             {(0)rectangle(P))}%
2384         }{}%
2385 \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P))}%
2386             {(0)rectangle(P))}%
2387         }{}%
2388 \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P))}%
2389             {(0)rectangle(P))}%
2390         }{}%
2391 \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
2392 }{
2393 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@ltr}}%
2394     {\mdf@tikzbox@otl{(0)--(0|-P)--(P)--(P|-0))}%
2395     }{}%
2396 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}%
2397     {%
2398         \mdf@tikzbox@otl{(0)--(0|-P)--(P))}
2399         {(P|-0)--(0)[mdfcorners]--(0|-P)--(P))}
2400     }%
2401     {}%
2402 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2403     {%
2404         \mdf@tikzbox@otl{(0|-P)--(P)--(P|-0))}%
2405         {(0)--(0|-P)[mdfcorners]--(P)--(P|-0))}%
2406     }{}%
2407 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
2408     {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0))}{(0)rectangle(P))}%
2409     {}%
2410 \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
2411     {\mdf@tikzbox@otl{(0|-P)--(P))}{(0)rectangle(P))}%
2412     {}%
2413 \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%
2414     {\mdf@tikzbox@otl{(0)--(0|-P))}{(0)rectangle(P))}%
2415     {}%
2416 \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}%
2417     {\mdf@tikzbox@otl{(0|-P)--(P))}{(0)rectangle(P))}%
2418     {}%
2419 \mdf@test@b{\path[mdfbackground](0)rectangle(P);}%
2420 \mdf@test@noline{\path[mdfbackground,mdfcorners](0)--(0|-P)--(P)--(P|-0);}%
2421     }{}%
2422 }
2423 %%%%%%%%%%
2424 \drawbackgroundframetitle@first
2425 \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};%

```

```

2426 \end{scope}
2427 %HIER KOMMT EIN WEITERES MAKRO
2428 \mdf@firstextra
2429 \mdfcreateextratikz%
2430 \end{tikzpicture}%
2431 }%
2432 \mdf@makeboxalign@right%
2433 }%
2434 \fi
2435 }%

```

\mdf@putbox@middle

Output of the middle breakable contents.

```

2436 \def\drawbackgroundframetitle@middle{%
2437 \ifdefempty{\mdf@frametitle}{\z@}%
2438 \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
2439 {}{%
2440 \drawbackgroundframetitle@@middle%
2441 \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
2442 }%
2443 }%
2444 }%
2445 %
2446 \def\drawbackgroundframetitle@@middle{%
2447 \begin{scope}%background frame title
2448 \ifbool{mdf@leftline}{
2449 \pgfmathsetlengthmacro\mdf@0x%
2450 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2451 }{%
2452 \ifbool{mdf@rightline}{%
2453 \pgfmathsetlengthmacro\mdf@Px%
2454 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2455 }{%
2456 \pgfmathsetlengthmacro\mdf@Fy
2457 {\mdf@Py-\mdfframetitleboxtotalheight}
2458 \path[mdfframetitlebackground,rounded corners=\z@]
2459 (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2460 -- (\mdf@Px,\mdf@Py) -- (\mdf@Px,\mdf@Fy);
2461 \end{scope}
2462 }%
2463 %
2464 \def\drawbackgroundframetitle@@middle{%
2465 \begin{scope}%background frame title
2466 \ifbool{mdf@leftline}{
2467 \pgfmathsetlengthmacro\mdf@0x%
2468 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2469 }{%
2470 \ifbool{mdf@rightline}{%
2471 \pgfmathsetlengthmacro\mdf@Px%
2472 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2473 }{%
2474 \pgfmathsetlengthmacro\mdf@Fy
2475 {\mdf@Py-\mdfframetitleboxtotalheight}
2476 \path[mdfframetitlebackground,rounded corners=\z@]

```



```

2477         (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2478         -- (\mdf@Px,\mdf@Py) -- (\mdf@Px,\mdf@Fy);
2479     \end{scope}
2480 }%
2481 \def\mdf@putbox@middle{%
2482   \ifvoid\mdf@splitbox@two
2483   \else%
2484     \mdf@makebox@out{%
2485       \mdf@makeboxalign@left%
2486       \mdf@tikz@settings%
2487       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2488       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2489       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2490       \ifbool{mdf@leftline}{%
2491         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2492         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2493         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
2494       \ifbool{mdf@rightline}{%
2495         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2496         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2497         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2498       \setlength\mdfboundingboxheight%
2499         {\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2500       \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2501 %%%%%%%%%%
2502       \ifbool{mdf@everyline}{%
2503         \ifbool{mdf@topline}{%
2504           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2505           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2506           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{%
2507         \ifbool{mdf@bottomline}{%
2508           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2509           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2510           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2511       }{}%
2512 %%%%%%%%%%
2513       \mdf@makebox@in[\mdfboundingboxwidth]{%
2514         \null%
2515         \begin{tikzpicture}[remember picture]
2516           \pgfmithsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2517           \pgfmithsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2518           \pgfmithsetlengthmacro\mdf@0x{+0pt}%
2519           \pgfmithsetlengthmacro\mdf@0y{+0pt}%
2520           \pgfmithsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2521           \pgfmithsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2522           \ifbool{mdf@leftline}%
2523             {%
2524               \pgfmithsetlengthmacro\mdf@Ax%
2525                 {\mdf@Ax+\mdf@outerlinewidth@length+
2526                  \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2527               \pgfmithsetlengthmacro\mdf@0x%
2528                 {\mdf@0x+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2529             }{}%
2530           \ifbool{mdf@rightline}%
2531             {%
2532               \pgfmithsetlengthmacro\mdf@Px%

```



```

2533         {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2534     }{}%
2535 %%
2536 \ifbool{mdf@everyline}{%
2537     \ifbool{mdf@bottomline}%
2538     {%
2539         \pgfmathsetlengthmacro\mdf@Ay%
2540             {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
2541             +\mdf@innerlinewidth@length}%
2542         \pgfmathsetlengthmacro\mdf@Oy%
2543             {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2544     }{}%
2545 \ifbool{mdf@topline}%
2546     {%
2547         \pgfmathsetlengthmacro\mdf@Py%
2548             {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2549     }{}%
2550 }{}%
2551 %%
2552 \coordinate(0)at(\mdf@0x,\mdf@0y);%
2553 \coordinate(P)at(\mdf@Px,\mdf@Py);%
2554 \ifbool{mdf@shadow}
2555     {\path[mdfshadow](0) rectangle (P);}%
2556 \begin{scope}[use as bounding box]
2557 %%%%%%%%%%%
2558 \ifbool{mdf@everyline}{%
2559     \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2560     \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2561     \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
2562     \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
2563     \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2564     \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
2565         {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2566     }{}%
2567     \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
2568         {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2569     }{}%
2570     \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
2571         {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2572     }{}%
2573     \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
2574         {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2575     }{}%
2576     \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
2577         {(0)rectangle(P)}%
2578     }{}%
2579     \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
2580         {(0)rectangle(P)}%
2581     }{}%
2582     \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2583         {(0)rectangle(P)}%
2584     }{}%
2585     \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2586         {(0)rectangle(P)}%
2587     }{}%
2588     \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%

```

```

2589             {(0)rectangle(P)}%
2590         }{}%
2591     \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}%
2592             {(0)rectangle(P)}%
2593         }{}%
2594     \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}{}%
2595 }{
2596     \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
2597         {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}}{}%
2598     \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
2599         {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}}{}%
2600     \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
2601         {\mdf@tikzbox@otl{(P)--(P|-0)}{(0)rectangle(P)}}{}%
2602     \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
2603         {\path[mdfbackground](0)rectangle(P);}{}%
2604 }
2605 %%%%%%%%%%
2606     \drawbackgroundframetitle@middle
2607     \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};%
2608 \end{scope}
2609 \mdf@middleextra
2610 %HIER KOMMT EIN WEITERES MAKRO
2611 \mdfcreateextratikz
2612 \end{tikzpicture}%
2613 }%
2614 \mdf@makeboxalign@right%
2615 }%
2616 \fi
2617 }%

```

\mdf@putbox@second

Output of the last breakable contents.

```

2618 \def\drawbackgroundframetitle@second{%
2619     \ifdefempty{\mdf@frametitle}{}{}%
2620     \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2621     {}{}%
2622     \drawbackgroundframetitle@@second%
2623 }%
2624 }%
2625 }%
2626 %
2627 \def\drawbackgroundframetitle@@second{%
2628     \begin{scope}%background frame title
2629     \ifbool{mdf@leftline}{
2630         \pgfmathsetlengthmacro\mdf@0x%
2631             {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2632         }{}%
2633     \ifbool{mdf@rightline}{%
2634         \pgfmathsetlengthmacro\mdf@Px%
2635             {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2636         }{}%
2637     \pgfmathsetlengthmacro\mdf@Fy
2638         {\mdf@Py-\mdfframetitleboxtotalheight}
2639     \path[mdfframetitlebackground,rounded corners=\z@]

```

```

2640      (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2641      -- (\mdf@Px,\mdf@Py) -- (\mdf@Px,\mdf@Fy);
2642      \end{scope}
2643 }%
2644 \def\mdf@putbox@second{%
2645   \ifvoid\mdf@splitbox@one
2646   \else%
2647     \mdf@makebox@out{%
2648       \mdf@makeboxalign@left%
2649       \mdf@tikz@settings%
2650       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2651       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2652       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2653       \ifbool{mdf@leftline}{%
2654         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2655         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2656         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
2657       \ifbool{mdf@rightline}{%
2658         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2659         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2660         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2661       \setlength\mdfboundingboxheight%
2662         {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2663       \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2664       \ifbool{mdf@bottomline}{%
2665         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2666         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2667         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2668 %%%%%%%%%
2669       \ifbool{mdf@everyline}{%
2670       \ifbool{mdf@topline}{%
2671         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2672         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2673         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2674     }{}%
2675 %%%%%%%%%
2676     \mdf@makebox@in[\mdfboundingboxwidth]{%
2677     \null%
2678     \begin{tikzpicture}[remember picture]
2679       \pgfmithsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2680       \pgfmithsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
2681       \pgfmithsetlengthmacro\mdf@0x{+0pt}%
2682       \pgfmithsetlengthmacro\mdf@0y{+0pt}%
2683       \pgfmithsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2684       \pgfmithsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2685       \ifbool{mdf@leftline}%
2686       {%
2687         \pgfmithsetlengthmacro\mdf@Ax%
2688           {\mdf@Ax+\mdf@outerlinewidth@length+%
2689             \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2690         \pgfmithsetlengthmacro\mdf@0x%
2691           {\mdf@0x+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2692       }{}%
2693       \ifbool{mdf@rightline}%
2694       {%
2695         \pgfmithsetlengthmacro\mdf@Px%

```

```

2696         {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2697     }{}%
2698     \ifbool{mdf@bottomline}%
2699     {%
2700         \pgfmathsetlengthmacro\mdf@Ay%
2701             {\mdf@Ay+\mdf@outerlinewidth@length+
2702              \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2703         \pgfmathsetlengthmacro\mdf@Oy%
2704             {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2705     }{}%
2706 %%
2707     \ifbool{mdf@everyline}{%
2708         \ifbool{mdf@topline}%
2709         {%
2710             \pgfmathsetlengthmacro\mdf@Py%
2711                 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2712             }{}%
2713         }{}%
2714 %%
2715         \coordinate(0)at(\mdf@0x,\mdf@0y);%
2716         \coordinate(P)at(\mdf@Px,\mdf@Py);%
2717         \ifbool{mdf@shadow}
2718         {%
2719             \path[mdfshadow] (0|-P) to[mdfcorners] (0)
2720                             to[mdfcorners] (P|-0) -- (P) -- (0|-P);%
2721         }{}%
2722     \begin{scope}[use as bounding box]
2723 %%%%%%%%%%%
2724     \ifbool{mdf@everyline}{%
2725         \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2726         \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P))}}{}%
2727         \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0))}}{}%
2728         \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0))}}{}%
2729         \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P))}}{}%
2730         \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P))}%
2731                     {(P)--(P|-0)[mdfcorners]--(0)--(0|-P))}%
2732     }{}%
2733     \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0))}%
2734                 {(0|-P)--(P)[mdfcorners]--(P|-0)--(0))}%
2735     }{}%
2736     \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0))}%
2737                 {(0)--(0|-P)[mdfcorners]--(P)--(P|-0))}%
2738     }{}%
2739     \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P))}%
2740                 {(P|-0)--(0)[mdfcorners]--(0|-P)--(P))}%
2741     }{}%
2742     \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0))}%
2743                 {(0)rectangle(P)}%
2744     }{}%
2745     \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P))}%
2746                 {(0)rectangle(P)}%
2747     }{}%
2748     \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P))}%
2749                 {(0)rectangle(P)}%
2750     }{}%
2751     \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P))}%

```

```

2752             {(0)rectangle(P)}%
2753         }{}%
2754     \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}%
2755             {(0)rectangle(P)}%
2756         }{}%
2757     \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|P)}%
2758             {(0)rectangle(P)}%
2759         }{}%
2760     \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}{}%
2761 }{%
2762     \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@lr}}%
2763         {\mdf@tikzbox@otl{(P|0)--(0)--(0|P)--(P)}%
2764         }{}%
2765     \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
2766         {%
2767         \mdf@tikzbox@otl{(P|0)--(0)--(0|P)}%
2768             {(P)--(P|0)[mdfcorners]--(0)--(0|P)}%
2769         }%
2770         }{}%
2771     \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
2772         {%
2773         \mdf@tikzbox@otl{(P)--(P|0)--(0)}%
2774             {(0|P)--(P)[mdfcorners]--(P|0)--(0)}%
2775         }%
2776         }{}%
2777     \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
2778         {\mdf@tikzbox@otl{(0)--(0|P)(P)--(P|0)}{(0)rectangle(P)}%
2779         }{}%
2780     \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@b}}%
2781         {\mdf@tikzbox@otl{(0)--(0|P)}{(0)rectangle(P)}%
2782         }{}%
2783     \ifboolexpr{test {\mdf@test@lt} or test {\mdf@test@l}}%
2784         {\mdf@tikzbox@otl{(0)--(0|P)}{(0)rectangle(P)}%
2785         }{}%
2786     \ifboolexpr{test {\mdf@test@tr} or test {\mdf@test@r}}%
2787         {\mdf@tikzbox@otl{(0|P)--(P)}{(0)rectangle(P)}%
2788         }{}%
2789     \mdf@test@t{\path[mdfbackground,mdfcorners](0|P)--(0)--(0|P)--(P);}{}%
2790     \mdf@test@noline{\path[mdfbackground,mdfcorners](0|P)--(0)--(0|P)--(P);}%
2791         }{}%
2792 }%
2793     \drawbackgroundframetitle@second
2794     \node[mdfbox] at (\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};%
2795 \end{scope}
2796     \mdf@secondextra
2797     %HIER KOMMT EIN WEITERES MAKRO
2798     \mdfcreateextratikz
2799 \end{tikzpicture}%
2800 }%
2801 \mdf@makeboxalign@right%
2802 }%
2803 \fi
2804 }%

2805 \endinput

```

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

```

2806 %% Style file for mdframed for package option 'framemethod=default'
2807 %%
2808 %% This package may be distributed under the terms of the LaTeX Project
2809 %% Public License, as described in lppl.txt in the base LaTeX distribution.
2810 %% Either version 1.0 or, at your option, any later version.
2811 %%
2812 %%
2813 %%$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $
2814 %

```

```

\mdframedIIPackagename
\mdf@frameIIDate@svn

```

local settings

```

2815 \def\mdframedIIPackagename{md-frame-2}
2816 \def\mdf@frameIIDate@svn$#1: #2 #3 #4-#5-#6 #7 #8$#{#4/#5/#6\space }
2817 \ProvidesFile{md-frame-2.mdf}%
2818      [\mdf@frameIIDate@svn$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $ %
2819      \mdversion: \mdframedIIPackagename]

```

```

\mdf@ptlength@to@pscode
\ptTps

```

Command to calculate a latex length to postscript

```

2820 \def\mdf@ptlength@to@pscode#1{\pst@number{#1} \pst@number\psxunit div }
2821 \def\mdf@ptlength@to@pscode@length#1{%
2822   \pst@number{\csname mdf@#1@length\endcsname}
2823   \pst@number\psxunit div\space}
2824 \let\ptTps\mdf@ptlength@to@pscode\relax
2825 \let\ptTpsL\mdf@ptlength@to@pscode@length\relax

```

```

\mdfbackgroundstyle
\mdflinestyle
\mdfframetitlerule
\mdfframetitlebackground

```

background and line settings for pstricks

```

2826 \def\mdfpstricks@settings{%expand by \addtopsstyle
2827   \newpsstyle{mdfbackgroundstyle}%
2828   {linecolor=\mdf@backgroundcolor,fillstyle=solid,%
2829     fillcolor=\mdf@backgroundcolor,linestyle=none,%
2830     ,dimen=middle,%
2831     }%
2832 %
2833   \newpsstyle{mdfframetitlebackgroundstyle}{%
2834     linecolor=\mdf@frametitlebackgroundcolor,
2835     fillcolor=\mdf@frametitlebackgroundcolor,
2836     fillstyle=solid,linestyle=none,
2837     linearc=\ifdimgreater{\mdf@roundcorner@length%
2838       -\mdf@innerlinewidth@length%
2839       -.5\mdf@middlelinewidth@length}
2840     {\z@}{\dimexpr\mdf@roundcorner@length%
2841       -\mdf@innerlinewidth@length%
2842       -.5\mdf@middlelinewidth@length}{\z@},

```

```

2843 }
2844 %
2845 \newsstyle{mdfouterlinestyle}{linestyle=none}%
2846 \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
2847   {\newsstyle{mdfouterlinestyle}{%
2848     linecolor=\mdf@outerlinecolor,%
2849     linewidth=\dimexpr2\mdf@outerlinewidth@length
2850               +\mdf@middlelinewidth@length\relax,
2851     dimen=middle,
2852   }}}%
2853 %
2854 \newsstyle{mdfinnerlinestyle}{linestyle=none}%
2855 \ifdimgreater{\mdf@innerlinewidth@length}{\z@}%
2856   {\newsstyle{mdfinnerlinestyle}{%
2857     linecolor=\mdf@innerlinecolor,%
2858     linewidth=\dimexpr2\mdf@innerlinewidth@length
2859               +\mdf@middlelinewidth@length\relax,
2860     dimen=middle,
2861   }}}%
2862 %
2863 \newsstyle{mdfmiddlelinestyle}{linestyle=none}%
2864 \newsstyle{mdfshadow}{shadow=true,shadowcolor=\mdf@shadowcolor,
2865               shadowsize=\mdf@shadowsize@length}%
2866 \ifdimgreater{\mdf@middlelinewidth@length}{\z@}%
2867   {\newsstyle{mdfmiddlelinestyle}{%
2868     linewidth=\mdf@middlelinewidth@length,%
2869     linecolor=\mdf@middlelinecolor,dimen=middle
2870   }}}%
2871 \mdfpstricks@appendsettings
2872 }%
2873 %
2874 \newrobustcmd*\mdf@pstricksbox@fl[2]{%four lines
2875   \psframe[style=mdfouterlinestyle](#1)(#2)%aussen=3mm
2876   \psframe[style=mdfbackgroundstyle](#1)(#2)%Hintergrund
2877   \psclip{\psframe[style=mdfmiddlelinestyle](#1)(#2)}
2878   \psframe[style=mdfinnerlinestyle](#1)(#2)%innere=3mm
2879   \endpsclip
2880   \psframe[style=mdfmiddlelinestyle](#1)(#2)%mittlere=2mm
2881 }%
2882 \newrobustcmd*\mdf@pstricksbox@tl[1]{%three lines
2883   \psline[style=mdfouterlinestyle]#1%aussen=3mm
2884   \psline[style=mdfbackgroundstyle]#1%Hintergrund
2885   \psclip{\psline[style=mdfmiddlelinestyle]#1}
2886   \psline[style=mdfinnerlinestyle]#1%innere=3mm
2887   \endpsclip
2888   \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2889 }%
2890 \newrobustcmd*\mdf@pstricksbox@tcl[2]{%two combined lines
2891   %%#1 background comple
2892   %%#2 line path
2893   \psline[style=mdfouterlinestyle]#2%aussen=3mm
2894   \psline[style=mdfbackgroundstyle]#2%Hintergrund
2895   \psclip{\pscustom[linestyle=none]{
2896     \psline[style=mdfmiddlelinestyle]#2
2897     \psline[linestyle=none,lineararc=0pt]#1}
2898   }

```

```

2899 \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2900 \psline[style=mdfinnerlinestyle]#2%innere=3mm
2901 \endpsclip
2902 \psline[style=mdfmiddlelinestyle]#2%mittlere=2mm
2903 }%
2904 \newrobustcmd*\mdf@pstricksbox@tncl[2]{%two not combined lines
2905 \beginngroup
2906 \psset{lineararc=0pt}
2907 \psline[style=mdfouterlinestyle](mdf@0)#1%ausсен=3mm
2908 \psline[style=mdfouterlinestyle](mdf@P)#2%ausсен=3mm
2909 \psclip{
2910 \pscustom[linestyle=none]{%
2911 \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2912 \psline[linestyle=none](mdf@0)#2
2913 \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2914 \psline[linestyle=none](mdf@P)#1
2915 }%
2916 }%
2917 \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2918 \psline[style=mdfinnerlinestyle](mdf@0)#1%innere=3mm
2919 \psline[style=mdfinnerlinestyle](mdf@P)#2%innere=3mm
2920 \endpsclip
2921 \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2922 \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2923 \endgroup
2924 }%
2925 \newrobustcmd*\mdf@pstricksbox@ol[1]{%one line
2926 \beginngroup
2927 \psset{lineararc=0pt}
2928 \psline[style=mdfouterlinestyle]#1%ausсен=3mm
2929 \psline[style=mdfbackgroundstyle]#1%Hintergrund
2930 \psclip{\pscustom[linestyle=none]{
2931 \psline[style=mdfmiddlelinestyle]#1
2932 \psframe[linestyle=none,fillstyle=none,dimen=inner](mdf@0)(mdf@P)
2933 }}
2934 \psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)
2935 \psline[style=mdfinnerlinestyle]#1%innere=3mm
2936 \endpsclip
2937 \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2938 \endgroup%
2939 }%
2940
2941 %
2942 \newpsstyle{mdfframetitlerule}{%
2943 linecolor=\mdf@frametitlerulecolor,%
2944 fillcolor=\mdf@frametitlerulecolor,%
2945 fillstyle=solid,dimen=outer,%
2946 }
2947 %

```

\mdf@put@frametitlerule

frametitlerule with pstricks

```

2948 \def\mdf@@frametitlerule{%
2949 \ifbool{mdf@frametitlerule}{%

```



```

2950 \vbox{\hsize0pt
2951 \par\unskip\vskip\mdf@frametitlebelowskip@length
2952 \noindent\rlap{%
2953 \begingroup%
2954 \begin{pspicture}(0,0)(0,\mdf@frametitlerulewidth@length)
2955 \psframe[style=mdfframetitlerule]%
2956 (!\ptTpsL{innerleftmargin} neg 0)%
2957 (!\ptTpsL{innerrightmargin}%
2958 \ptTpsL{\mdfframetitleboxwidth} add \ptTpsL{frametitlerulewidth})
2959 \end{pspicture}
2960 \endgroup}
2961 }%
2962 }{}
2963 \par\unskip\vskip\mdf@innertopmargin@length%
2964 }%
2965 %
2966 % \begin{macro}{mdf@putbox@single}
2967 % Single output
2968 % \begin{macrocode}
2969 % Info zu den verwendeten Punkten:
2970 % 0 ist die untere linke Ecke der Mitte der middleline
2971 % P ist die obere rechte Ecke der Mitte der middleline
2972 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
2973 \def\mdf@putbox@single{%
2974 \ifvoid\mdf@splitbox@one\relax
2975 \else%
2976 \mdf@makebox@out{%
2977 \mdf@makeboxalign@left%
2978 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2979 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2980 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2981 \ifbool{mdf@leftline}{%
2982 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2983 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2984 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
2985 \ifbool{mdf@rightline}{%
2986 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2987 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2988 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2989 %
2990 \setlength\mdfboundingboxheight%
2991 {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2992 \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2993 \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2994 \ifbool{mdf@topline}{%
2995 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2996 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2997 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{%
2998 \ifbool{mdf@bottomline}{%
2999 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3000 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3001 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
3002 %
3003 \setlength\mdftotalllinewidth{\dimexpr\mdf@innerlinewidth@length%
3004 +\mdf@middlelinewidth@length
3005 +\mdf@outerlinewidth@length\relax}%

```

```

3006 \psset{unit=1truecm}%
3007 \mdf@makebox@in[\mdf@boundingboxwidth]{%
3008 \null%
3009 \begin{pspicture}(0,0)(\mdf@boundingboxwidth,\mdf@boundingboxheight)
3010 \mdfpstricks@settings%
3011 \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
3012 \expandafter\psset\expandafter{\mdf@psset@local}%
3013 \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
3014 \pnode(0,0){mdf@0}
3015 \pnode(\mdf@boundingboxwidth,\mdf@boundingboxheight){mdf@P}
3016 \ifbool{mdf@leftline}%
3017 {%
3018 \nodexn{(\mdf@A)+(\mdf@outerlinewidth@length,0)
3019 +(\mdf@middlelinewidth@length,0)
3020 +(\mdf@innerlinewidth@length,0)}{mdf@A}%
3021 \nodexn{(\mdf@0)+(\mdf@outerlinewidth@length,0)
3022 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
3023 }{}%
3024 \ifbool{mdf@rightline}%
3025 {%
3026 \nodexn{(\mdf@P)-(\mdf@outerlinewidth@length,0)
3027 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3028 }{}%
3029 \ifbool{mdf@bottomline}%
3030 {%
3031 \nodexn{(\mdf@A)+(0,\mdf@outerlinewidth@length)
3032 +(0,\mdf@middlelinewidth@length)
3033 +(0,\mdf@innerlinewidth@length)}{mdf@A}%
3034 \nodexn{(\mdf@0)+(0,\mdf@outerlinewidth@length)
3035 +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
3036 }{}%
3037 \ifbool{mdf@topline}%
3038 {%
3039 \nodexn{(\mdf@P)-(0,\mdf@outerlinewidth@length)
3040 -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3041 }{}%
3042 \ifbool{mdf@shadow}
3043 {\psframe[style=mdfshadow](mdf@0)(mdf@P)}{}
3044 %
3045 %Four lines
3046 \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3047 %three lines
3048 \mdf@test@ltb{%
3049 \mdf@pstricksbox@tl{(\mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}{}
3050 \mdf@test@trb{%
3051 \mdf@pstricksbox@tl{(\mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}{}
3052 \mdf@test@ltr{%
3053 \mdf@pstricksbox@tl{(\mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}{}
3054 \mdf@test@lrb{%
3055 \mdf@pstricksbox@tl{(\mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}{}
3056 %two lines combined
3057 \mdf@test@lb{\mdf@pstricksbox@tcl{(\mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3058 {(\mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}{}
3059 \mdf@test@rb{\mdf@pstricksbox@tcl{(\mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3060 {(\mdf@0)(mdf@P|mdf@0)(mdf@P)}{}
3061 \mdf@test@tr{\mdf@pstricksbox@tcl{(\mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%

```

```

3062                                     {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3063 \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3064                                     {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3065 %two lines not combinded combinded
3066 \mdf@test@lr{\mdf@pstricksbox@tnc{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
3067              }{}
3068 \mdf@test@tb{\mdf@pstricksbox@tnc{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
3069              }{}
3070 %single line
3071 \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3072 \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3073 \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3074 \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3075 %no line
3076 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}
3077 %
3078 %Frametitlebackground
3079 \drawbackgroundframetitle@single
3080 %output%
3081 \rput[bl](mdf@A){\box\mdf@splitbox@one}
3082 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3083 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3084 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
3085 %
3086 % \endpsclip
3087 \mdf@singleextra
3088 \end{pspicture}%
3089 }%
3090 \mdf@makeboxalign@right%
3091 }%
3092 \fi
3093 }%
3094 \def\drawbackgroundframetitle@single{%
3095 \ifdefempty{\mdf@frametitle}}{}{}%
3096 \drawbackgroundframetitle@@single%
3097 }%
3098 }%
3099 \def\drawbackgroundframetitle@@single{%
3100 \begingroup%
3101 \ifbool{mdf@leftline}{%
3102 \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
3103          +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
3104 }{}%
3105 \ifbool{mdf@rightline}{%
3106 \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3107          -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3108 }{}%
3109 \ifbool{mdf@topline}{%
3110 \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
3111          -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}%
3112 }{}%
3113 \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3114 \psline[style=mdfframetitlebackgroundstyle](mdf@0|mdf@F)(mdf@0|mdf@P)
3115          (mdf@P)(mdf@P|mdf@F)%
3116 \endgroup
3117 }

```

\mdf@putbox@first

First output

```

3118 \def\mdf@putbox@first{%
3119   \ifvoid\mdf@splitbox@two
3120   \else%
3121     \mdf@makebox@out{%
3122       \mdf@makeboxalign@left%
3123       %\ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{%
3124       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
3125       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3126       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3127       \ifbool{mdf@leftline}{%
3128         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3129         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3130         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
3131       \ifbool{mdf@rightline}{%
3132         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3133         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3134         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
3135       \setlength\mdfboundingboxheight%
3136         {\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
3137       \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
3138       \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
3139       \ifbool{mdf@topline}{%
3140         \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3141         \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3142         \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
3143       %%%%%%%%%
3144       \ifbool{mdf@everyline}{%
3145         \ifbool{mdf@bottomline}{%
3146           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3147           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3148           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
3149         }{}%
3150       %%%%%%%%%
3151       \psset{lineararc=\mdf@roundcorner@length, cornersize=absolute}%
3152       \expandafter\psset\expandafter{\mdf@psset@local}%
3153       \mdf@makebox@in[\mdfboundingboxwidth]{%
3154         \null%
3155         \psset{unit=1truecm}%
3156         \ifdimgreater{\mdfboundingboxheight}{\vsize}
3157           {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
3158           {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
3159             \mdfpstricks@settings%
3160             \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,%
3161             \expandafter\psset\expandafter{\mdf@psset@local}%
3162             \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
3163             \pnode(0,0){mdf@0}
3164             \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3165             \ifbool{mdf@leftline}%
3166               {%
3167                 \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3168                 +(\mdf@middlelinewidth@length,0)
3169                 +(\mdf@innerlinewidth@length,0)}{mdf@A}
3170             \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)

```

```

3171             +0.5(\mdf@middlelinewidth@length,0)){mdf@0}
3172     }{}%
3173     \ifbool{mdf@rightline}%
3174     {%
3175         \nodexn{(mdf@P) - (\mdf@outerlinewidth@length,0)
3176             -0.5(\mdf@middlelinewidth@length,0)){mdf@P}
3177     }{}%
3178     \ifbool{mdf@topline}%
3179     {%
3180         \nodexn{(mdf@P) - (0,\mdf@outerlinewidth@length)
3181             -0.5(0,\mdf@middlelinewidth@length)){mdf@P}
3182     }{}%
3183     %%%%%%%%%%
3184     \ifbool{mdf@everyline}{%
3185     \ifbool{mdf@bottomline}%
3186     {%
3187         \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3188             +(0,\mdf@middlelinewidth@length)
3189             +(0,\mdf@innerlinewidth@length)){mdf@A}%
3190         \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
3191             +0.5(0,\mdf@middlelinewidth@length)){mdf@0}%
3192     }{}%
3193     }{}%
3194     %%%%%%%%%%
3195     \ifbool{mdf@shadow}
3196     {\pscustom[style=mdfshadow,linestyle=none]{%
3197         \psline[linejoin=2,linecap=1,]%
3198             (mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)%
3199         \psline[linejoin=2,linecap=1,lineararc=\z@]%
3200             (mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)
3201         \closedshadow
3202     }
3203     }{}
3204     % \psclip{
3205     %%%%%%%%%%
3206     \ifbool{mdf@everyline}{%
3207         %Four lines
3208         \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3209         %three lines
3210         \mdf@test@ltb{%
3211             \mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3212         \mdf@test@trb{%
3213             \mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
3214         \mdf@test@ltr{%
3215             \mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3216         \mdf@test@lrb{%
3217             \mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3218         %two lines combined
3219         \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3220             {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3221         \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3222             {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3223         \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3224             {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3225         \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3226             {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}

```

```

3227      %two lines not combined combined
3228      \mdf@test@lr{\mdf@pstricksbox@tnc{\mdf@0\mdf@P}}{\mdf@P\mdf@0}}
3229      {}
3230      \mdf@test@tb{\mdf@pstricksbox@tnc{\mdf@P\mdf@0}}{\mdf@0\mdf@P}}
3231      {}
3232      %single line
3233      \mdf@test@l{\mdf@pstricksbox@ol{\mdf@0\mdf@0\mdf@P}}{}
3234      \mdf@test@r{\mdf@pstricksbox@ol{\mdf@P\mdf@P\mdf@0}}{}
3235      \mdf@test@t{\mdf@pstricksbox@ol{\mdf@P\mdf@0\mdf@P}}{}
3236      \mdf@test@b{\mdf@pstricksbox@ol{\mdf@0\mdf@P\mdf@0}}{}
3237      %no line
3238      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3239  }%
3240  %Four or Three lines
3241  \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@ltr}}%
3242  {\mdf@pstricksbox@tl{\mdf@0\mdf@0\mdf@P\mdf@P\mdf@0}}%
3243  {}%
3244  %two combined lines
3245  \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}%
3246  {\mdf@pstricksbox@tcl{\mdf@0\mdf@P\mdf@0\mdf@P}}%
3247  {\mdf@0\mdf@0\mdf@P\mdf@P}}%
3248  \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
3249  {\mdf@pstricksbox@tcl{\mdf@P\mdf@0\mdf@0\mdf@0\mdf@P}}%
3250  {\mdf@0\mdf@P\mdf@P\mdf@P\mdf@0}}%
3251  %two not combined lines
3252  \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
3253  {\mdf@pstricksbox@tnc{\mdf@0\mdf@P}}{\mdf@P\mdf@0}}{}
3254  %single line
3255  \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
3256  {\mdf@pstricksbox@ol{\mdf@P\mdf@0\mdf@P}}{}
3257  \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%
3258  {\mdf@pstricksbox@ol{\mdf@0\mdf@0\mdf@P}}{}
3259  \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}%
3260  {\mdf@pstricksbox@ol{\mdf@P\mdf@P\mdf@0}}{}
3261  %no line
3262  \mdf@test@b{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3263  \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3264  }%
3265  %
3266  %Frametitlebackground
3267  \drawbackgroundframetitle@first
3268  %output%
3269  \rput[bl](mdf@A){\box\mdf@splitbox@two}
3270  % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3271  % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3272  % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
3273  % \endpsclip
3274  \mdf@firstextra
3275  \end{pspicture}
3276  }%
3277  \mdf@makeboxalign@right%
3278  }%
3279  \fi
3280  }%
3281  \def\drawbackgroundframetitle@first{%
3282  \ifdefempty{\mdf@frametitle}}{}%

```

```

3283 \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}%
3284 {%
3285 \drawbrackgroundframetitle@@first
3286 \global\mdfframetitleboxtotalheight=-\p@%
3287 }\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
3288 Currently this isn't well supported}%
3289 \drawbrackgroundframetitle@@first
3290 \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
3291 -\mdfboundingboxheight
3292 -\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
3293 +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length
3294 +\mdf@splittopskip@length
3295 +\dp\strutbox\relax%
3296 }%
3297 }%
3298 }%
3299 \def\drawbrackgroundframetitle@@first{%
3300 \begingroup%
3301 \ifbool{mdf@leftline}{%
3302 \nodexn{(\mdf@0)+(\mdf@innerlinewidth@length,0)
3303 +0.5(\mdf@middlelinewidth@length,0)}{\mdf@0}%
3304 }{}%
3305 \ifbool{mdf@rightline}{%
3306 \nodexn{(\mdf@P)-(\mdf@innerlinewidth@length,0)
3307 -0.5(\mdf@middlelinewidth@length,0)}{\mdf@P}%
3308 }{}%
3309 \ifbool{mdf@topline}{%
3310 \nodexn{(\mdf@P)-(0,\mdf@innerlinewidth@length)
3311 -0.5(0,\mdf@middlelinewidth@length)}{\mdf@P}%
3312 }{}%
3313 \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}
3314 {\nodexn{(\mdf@P)-(0,\mdfframetitleboxtotalheight)}{\mdf@F}}%
3315 {\nodexn{(\mdf@0)}{\mdf@F}}%
3316 \psline[style=mdfframetitlebackgroundstyle](mdf@0|mdf@F)(mdf@0|mdf@P)
3317 (mdf@P)(mdf@P|mdf@F)%
3318 \endgroup
3319 }

```

\mdf@putbox@middle

Middle output

```

3320 \def\mdf@putbox@middle{%
3321 \ifvoid\mdf@splitbox@two
3322 \else%
3323 \mdf@makebox@out{%
3324 \mdf@makeboxalign@left%
3325 % \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
3326 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
3327 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3328 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3329 \ifbool{mdf@leftline}{%
3330 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3331 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3332 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
3333 \ifbool{mdf@rightline}{%

```



```

3334 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3335 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3336 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
3337 \setlength\mdfboundingboxheight%
3338 {\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
3339 \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
3340 %%%%%%%%%%
3341 \ifbool{mdf@everyline}{%
3342 \ifbool{mdf@topline}{%
3343 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3344 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3345 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
3346 \ifbool{mdf@bottomline}{%
3347 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3348 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3349 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
3350 }{}%
3351 %%%%%%%%%%
3352 \psset{unit=1truecm}%
3353 \mdf@makebox@in[\mdfboundingboxwidth]{%
3354 \null%
3355 \ifdimgreater{\mdfboundingboxheight}{\vsize}
3356 {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
3357 {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
3358 \mdfpstricks@settings%
3359 \psset{lineararc=0pt, cornersize=absolut,}%
3360 \expandafter\psset\expandafter{\mdf@psset@local}%
3361 %%%
3362 \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
3363 \pnode(0,0){mdf@0}
3364 \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3365 \ifbool{mdf@leftline}{%
3366 {%
3367 \nodexn{(\mdf@A)+(\mdf@outerlinewidth@length,0)
3368 +(\mdf@middlelinewidth@length,0)
3369 +(\mdf@innerlinewidth@length,0)}}{mdf@A}
3370 \nodexn{(\mdf@0)+(\mdf@outerlinewidth@length,0)
3371 +0.5(\mdf@middlelinewidth@length,0)}}{mdf@0}
3372 }{}%
3373 \ifbool{mdf@rightline}{%
3374 {%
3375 \nodexn{(\mdf@P)-(\mdf@outerlinewidth@length,0)
3376 -0.5(\mdf@middlelinewidth@length,0)}}{mdf@P}
3377 }{}%
3378 %%
3379 %%%%%%%%%%
3380 \ifbool{mdf@everyline}{%
3381 \ifbool{mdf@bottomline}{%
3382 {%
3383 \nodexn{(\mdf@A)+(0,\mdf@outerlinewidth@length)
3384 +(0,\mdf@middlelinewidth@length)
3385 +(0,\mdf@innerlinewidth@length)}}{mdf@A}%
3386 \nodexn{(\mdf@0)+(0,\mdf@outerlinewidth@length)
3387 +0.5(0,\mdf@middlelinewidth@length)}}{mdf@0}%
3388 }{}%
3389 \ifbool{mdf@topline}{%

```



```

3390      {%
3391        \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3392              -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3393      }{}%
3394    }{}%
3395    %%%%%%%%%%
3396    %%
3397    \ifbool{mdf@shadow}
3398      {\psframe[style=mdfshadow](mdf@0)(mdf@P)}{}
3399    %%%%%%%%%%
3400    \ifbool{mdf@everyline}{%
3401      %Four lines
3402      \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3403      %three lines
3404      \mdf@test@ltb{%
3405        \mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}{}
3406        \mdf@test@trb{%
3407          \mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}{}
3408          \mdf@test@ltr{%
3409            \mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}{}
3410            \mdf@test@lrb{%
3411              \mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}{}
3412            %two lines combined
3413            \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3414                          {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}{}
3415            \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3416                          {(mdf@0)(mdf@P|mdf@0)(mdf@P)}{}
3417            \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3418                          {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}{}
3419            \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3420                          {(mdf@0)(mdf@0|mdf@P)(mdf@P)}{}
3421            %two lines not combined combined
3422            \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
3423                       }{}
3424            \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
3425                       }{}
3426            %single line
3427            \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}{}
3428            \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}{}
3429            \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}{}
3430            \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}{}
3431            %no line
3432            \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3433          }{}
3434          \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
3435            {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}{}%
3436          \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline}}%
3437            {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}{}%
3438          \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
3439            {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}{}%
3440          \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline}}%
3441            {\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3442        }%
3443        %Frametitlebackground
3444        \drawbackgroundframetitle@middle
3445        %output%

```

```

3446      \rput[bl](mdf@A){\box\mdf@splitbox@two}
3447 %      \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3448 %      \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3449 %      \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
3450      \mdf@middleextra
3451      \end{pspicture}%
3452  }%
3453  \mdf@makeboxalign@right%
3454  }%
3455  \fi
3456 }%
3457 \def\drawbackgroundframetitle@middle{%
3458 \ifdefempty{\mdf@frametitle}{}%
3459 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3460 {}{%
3461 \drawbackgroundframetitle@@middle
3462 \global\mdfframetitleboxtotalheight=-\p@relax%
3463 }%
3464 }%
3465 }%
3466 \def\drawbackgroundframetitle@@middle{%
3467 \begingroup%
3468 \ifbool{mdf@leftline}{%
3469 \nodexn{(\mdf@O)+(\mdf@innerlinewidth@length,0)
3470 +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
3471 }{%
3472 \ifbool{mdf@rightline}{%
3473 \nodexn{(\mdf@P)-(\mdf@innerlinewidth@length,0)
3474 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3475 }{%
3476 \nodexn{(\mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3477 \psline[style=mdfframetitlebackgroundstyle,lineararc=\z@]%
3478 (\mdf@O|mdf@F)(mdf@O|mdf@P)(mdf@P)(mdf@P|mdf@F)%
3479 \endgroup
3480 }

```

\mdf@putbox@second

Last output

```

3481 \def\mdf@putbox@second{
3482 \ifvoid\mdf@splitbox@one
3483 \else%
3484 \mdf@makebox@out{%
3485 \mdf@makeboxalign@left%
3486 % \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{%
3487 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
3488 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3489 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3490 \ifbool{mdf@leftline}{%
3491 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3492 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3493 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
3494 \ifbool{mdf@rightline}{%
3495 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3496 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%

```

```

3497 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
3498 \setlength\mdfboundingboxheight%
3499 {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
3500 \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
3501 \ifbool{mdf@bottomline}}{%
3502 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3503 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3504 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
3505 %%%%%%%%%
3506 \ifbool{mdf@everyline}}{%
3507 \ifbool{mdf@topline}}{%
3508 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3509 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3510 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
3511 }}}%
3512 %%%%%%%%%
3513 \psset{unit=1truecm}%
3514 \mdf@makebox@in[\mdfboundingboxwidth]{%
3515 \null%
3516 \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
3517 \mdfpstricks@settings%
3518 \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
3519 \expandafter\psset\expandafter{\mdf@psset@local}%
3520 \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
3521 \pnode(0,0){mdf@0}
3522 \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3523 \ifbool{mdf@leftline}%
3524 {%
3525 \nodexn{(\mdf@A)+(\mdf@outerlinewidth@length,0)
3526 +(\mdf@middlelinewidth@length,0)
3527 +(\mdf@innerlinewidth@length,0)}}{mdf@A}
3528 \nodexn{(\mdf@0)+(\mdf@outerlinewidth@length,0)
3529 +0.5(\mdf@middlelinewidth@length,0)}}{mdf@0}
3530 }}}%
3531 \ifbool{mdf@rightline}%
3532 {%
3533 \nodexn{(\mdf@P)-(\mdf@outerlinewidth@length,0)
3534 -0.5(\mdf@middlelinewidth@length,0)}}{mdf@P}
3535 }}}%
3536 \ifbool{mdf@bottomline}%
3537 {%
3538 \nodexn{(\mdf@A)+(0,\mdf@outerlinewidth@length)
3539 +(0,\mdf@middlelinewidth@length)
3540 +(0,\mdf@innerlinewidth@length)}}{mdf@A}
3541 \nodexn{(\mdf@0)+(0,\mdf@outerlinewidth@length)
3542 +0.5(0,\mdf@middlelinewidth@length)}}{mdf@0}
3543 }}}%
3544 %%%%%%%%%
3545 \ifbool{mdf@everyline}}{%
3546 \ifbool{mdf@topline}}{%
3547 {%
3548 \nodexn{(\mdf@P)-(0,\mdf@outerlinewidth@length)
3549 -0.5(0,\mdf@middlelinewidth@length)}}{mdf@P}
3550 }}}%
3551 }}}%
3552 %%%%%%%%%

```

```

3553 %%
3554 \ifbool{mdf@shadow}
3555   {\pscustom[style=mdfshadow,linestyle=none]{%
3556     \psline[linejoin=2,linecap=1,](mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)%
3557     \psline[linejoin=2,linecap=1,lineararc=\z@](mdf@0|mdf@P)(mdf@P)
3558     \closedshadow
3559   }
3560 }{}
3561 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
3562 \ifbool{mdf@everyline}{%
3563   %Four lines
3564   \mdf@test@ltrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3565   %three lines
3566   \mdf@test@ltb{%
3567     \mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3568   \mdf@test@trb{%
3569     \mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
3570   \mdf@test@ltr{%
3571     \mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3572   \mdf@test@lrb{%
3573     \mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3574   %two lines combined
3575   \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3576     {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3577   \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3578     {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3579   \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3580     {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3581   \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3582     {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3583   %two lines not combined combined
3584   \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
3585     {}}
3586   \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
3587     {}}
3588   %single line
3589   \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3590   \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3591   \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3592   \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3593   %no line
3594   \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}{}
3595 }{}
3596 %Four + Three
3597 \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@lrb}}%
3598   {\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3599 %Two combined
3600 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
3601   {\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3602     {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3603 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
3604   {\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3605     {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3606 %Two not combined
3607 \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
3608   {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}

```

```

3609 %one line
3610 \ifbool{test {\mdf@test@tb} or test {\mdf@test@b}}%
3611 {\mdf@pstricksbox@ol{\mdf@0}(\mdf@P|\mdf@0)}{}
3612 \ifbool{test {\mdf@test@lt} or test {\mdf@test@l}}%
3613 {\mdf@pstricksbox@ol{\mdf@0}(\mdf@0|\mdf@P)}{}
3614 \ifbool{test {\mdf@test@tr} or test {\mdf@test@r}}%
3615 {\mdf@pstricksbox@ol{\mdf@P}(\mdf@P|\mdf@0)}{}
3616 %no line
3617 \mdf@test@t{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3618 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3619 }%
3620 %Frametitlebackground
3621 \drawbackgroundframetitle@second
3622 %output%
3623 \rput[bl](mdf@A){\box\mdf@splitbox@one}
3624 \mdf@secondextra
3625 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3626 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3627 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
3628 \end{pspicture}%
3629 }%
3630 \mdf@makeboxalign@right%
3631 }%
3632 \fi
3633 }%
3634 \def\drawbackgroundframetitle@second{%
3635 \ifdefempty{\mdf@frametitle}{}{}%
3636 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3637 {}{}%
3638 \drawbackgroundframetitle@@second
3639 }%
3640 }%
3641 }%
3642 \def\drawbackgroundframetitle@@second{%
3643 \begingroup%
3644 \ifbool{mdf@leftline}{%
3645 \nodexn{(\mdf@0)+(\mdf@innerlinewidth@length,0)
3646 +0.5(\mdf@middlelinewidth@length,0)}{\mdf@0}%
3647 }{}%
3648 \ifbool{mdf@rightline}{%
3649 \nodexn{(\mdf@P)-(\mdf@innerlinewidth@length,0)
3650 -0.5(\mdf@middlelinewidth@length,0)}{\mdf@P}%
3651 }{}%
3652 \nodexn{(\mdf@P)-(0,\mdfframetitleboxtotalheight)}{\mdf@F}%
3653 \psline[style=mdfframetitlebackgroundstyle,linear=\z@]%
3654 (\mdf@0|\mdf@F)(\mdf@0|\mdf@P)(\mdf@P)(\mdf@P|\mdf@F)%
3655 \endgroup
3656 }

3657 \endinput
3658 %eof

```

C. The file *mdframed-example-default*

```
3659 %Documentation of the package mdframed
```

```

3660 %$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $
3661 \setcounter{errorcontextlines}{999}
3662 \documentclass[parskip=false,english,11pt]{ltxmdf}
3663 \ltxmdfsetifoot $Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $
3664
3665 \usepackage{showexpl}
3666 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}}},}
3667
3668 \newcommand\Loadedframemethod{default}
3669 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3670
3671 \title{The \Pack{mdframed} package}
3672 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3673 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3674 \date{\mdfdateID$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $}
3675 \version{\mdversion}
3676 \introduction{In this document I collect various examples for
3677               \Opt{framemethod=\Loadedframemethod}.
3678               Some presented examples are more or less exorbitant.}
3679
3680 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3681 \newrobustcmd\ExampleText{%
3682     An \textit{inhomogeneous linear} differential equation has the form
3683     \begin{align}
3684         L[v] = f,
3685     \end{align}
3686     where  $L$  is a linear differential operator,  $v$  is
3687     the dependent variable, and  $f$  is a given non-zero
3688     function of the independent variables alone.
3689 }
3690
3691 \newcounter{examplecount}
3692 \setcounter{examplecount}{0}
3693 \renewcommand\thesubsection{}
3694 \newcommand\Examplesec[1]{%
3695 \stepcounter{examplecount}%
3696 \subsection{Example~\arabic{examplecount}~---~\relax}%
3697 }
3698
3699 \begin{document}
3700 \maketitle
3701 \section{Loading}
3702 In the preamble only the package \Pack{mdframed} with the option
3703 \Opt{framemethod=\Loadedframemethod} is loaded. All other modifications will be
3704 done by \Cmd{mdfdefinestyle} or \Cmd{mdfsetup}.
3705
3706 {\large\color{red!50!black}
3707 \NOTE Every \Cmd{global} inside the examples is necessary to work with the
3708 package \Pack{showexpl}.}
3709
3710 \section{Examples}
3711 All examples have the following settings:
3712
3713 \begin{tltxmdfexample}
3714 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3715 \newrobustcmd\ExampleText{%

```

```

3716 An \textit{inhomogeneous linear} differential equation
3717 has the form
3718 \begin{align}
3719 L[v] = f,
3720 \end{align}
3721 where  $L$  is a linear differential operator,  $v$  is
3722 the dependent variable, and  $f$  is a given non-zero
3723 function of the independent variables alone.
3724 }
3725 \end{tltxmdfexample}
3726 \clearpage
3727 \Examplesec{very simple}
3728 \begin{LTXexample}
3729 \global\mdfdefinestyle{exampledefault}{%
3730     linecolor=red,linewidth=3pt,%
3731     leftmargin=1cm,rightmargin=1cm
3732 }
3733 \begin{mdframed}[style=exampledefault]
3734 \ExampleText
3735 \end{mdframed}
3736 \end{LTXexample}
3737
3738 \Examplesec{hidden line + frame title}
3739 \begin{LTXexample}
3740 \global\mdfapptodefinestyle{exampledefault}{%
3741     topline=false,rightline=true,bottomline=false}
3742 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3743 \ExampleText
3744 \end{mdframed}
3745 \end{LTXexample}
3746 \clearpage
3747
3748 \Examplesec{colored frame title}
3749 \begin{LTXexample}
3750
3751 \global\mdfapptodefinestyle{exampledefault}{%
3752     rightline=true,innerleftmargin=10,innerrightmargin=10,
3753     frametitlerule=true,frametitlerulecolor=green,
3754     frametitlebackgroundcolor=yellow,
3755     frametitlerulewidth=2pt}
3756 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3757 \ExampleText
3758 \end{mdframed}
3759 \end{LTXexample}
3760
3761 \Examplesec{framed picture which is centered}
3762 \begin{LTXexample}
3763 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3764     linecolor=blue,linewidth=4pt]
3765 \includegraphics[width=\linewidth]{donald-duck}
3766 \end{mdframed}
3767 \end{LTXexample}
3768
3769 \clearpage
3770 \Examplesec{Theorem environments}
3771 \begin{LTXexample}

```

```

3772 \mdfdefinestyle{theoremstyle}{%
3773     linecolor=red,linewidth=2pt,%
3774     frametitle=rule=true,%
3775     frametitlebackgroundcolor=gray!20,
3776     innertopmargin=\topskip,
3777 }
3778 \mdtheorem[style=theoremstyle]{definition}{Definition}
3779 \begin{definition}
3780 \ExampleText
3781 \end{definition}
3782 \begin{definition}[Inhomogeneous linear]
3783 \ExampleText
3784 \end{definition}
3785 \begin{definition*}[Inhomogeneous linear]
3786 \ExampleText
3787 \end{definition*}
3788 \end{LTXexample}
3789
3790
3791 \clearpage
3792 \Examplesec{theorem with separate header and the help of TikZ (complex)}
3793 \begin{LTXexample}
3794 \newcounter{theo}[section]
3795 \newenvironment{theo}[1][]{%
3796     \stepcounter{theo}%
3797     \ifstrempy{#1}%
3798     {\mdfsetup{%
3799         frametitle={%
3800             \tikz[baseline=(current bounding box.east),outer sep=0pt]
3801             \node[anchor=east,rectangle,fill=blue!20]
3802             {\strut Theorem~\thetheo};}}
3803     }%
3804     {\mdfsetup{%
3805         frametitle={%
3806             \tikz[baseline=(current bounding box.east),outer sep=0pt]
3807             \node[anchor=east,rectangle,fill=blue!20]
3808             {\strut Theorem~\thetheo:~#1};}}%
3809     }%
3810     \mdfsetup{innertopmargin=10pt,linecolor=blue!20,%
3811         linewidth=2pt,topline=true,
3812         frametitleaboveskip=\dimexpr-\ht\strutbox\relax,}
3813     \begin{mdframed}[]\relax%
3814     }\end{mdframed}}
3815 \begin{theo}[Inhomogeneous Linear]
3816 \ExampleText
3817 \end{theo}
3818
3819 \begin{theo}
3820 \ExampleText
3821 \end{theo}
3822 \end{LTXexample}
3823
3824 \clearpage
3825 \Examplesec{hide only a part of a line}
3826 The example below is inspired by the following post on StackExchange
3827 \href{http://tex.stackexchange.com/questions/24101/theorem-decorations-that-stay-with-theorem-environme

```



```

3828 {Theorem decorations that stay with theorem environment}
3829 \begin{LTXexample}
3830 \makeatletter
3831 \newlength{\interruptlength}
3832 \setlength{\interruptlength}{2.5ex}
3833 \newrobustcmd\overlaplines{%
3834   \appto\mdf@frame@leftline@single{%
3835     \llap{\color{white}%
3836       \rule[\dimexpr-\mdfboundingboxdepth+\interruptlength\relax]{%
3837         {\mdf@middlelinewidth@length}%
3838         {\dimexpr\mdfboundingboxtotalheight%
3839           \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}}
3840         -2\interruptlength\relax}%
3841     }%
3842   }%
3843   \appto\mdf@frame@rightline@single{%
3844     \rlap{\color{white}%
3845       \hspace*{\mdfboundingboxwidth}%
3846       \hspace*{\mdf@innerrightmargin@length}%
3847       \rule[\dimexpr-\mdfboundingboxdepth%
3848         +\interruptlength\relax]{%
3849         {\mdf@middlelinewidth@length}%
3850         {\dimexpr\mdfboundingboxtotalheight%
3851           +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}}
3852         -2\interruptlength\relax}%
3853     }%
3854   }%
3855 }
3856 \makeatother
3857 \overlaplines
3858
3859 \begin{mdframed}[linecolor=blue,linewidth=8pt]
3860 \ExampleText
3861 \end{mdframed}
3862 \end{LTXexample}
3863 \end{document}
3864 \endinput

```

D. The file mdframed-example-tikz

```

3865 %Documenation of the package mdframed
3866 %$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $
3867 \setcounter{errorcontextlines}{999}
3868 \documentclass[parskip=false,english,11pt]{ltxmdf}
3869 \ltxmdfsetifoot $Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $
3870
3871
3872 \usepackage{showexpl}
3873 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3874
3875 \newcommand\Loadedframemethod{TikZ}
3876 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3877
3878 \title{The \Pack{mdframed} package}
3879 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3880 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}

```

```

3881 \date{\mdfdateID$Id: mdfamed.dtx 403 2012-05-17 19:17:09Z marco $}
3882 \version{\mdversion}
3883 \introduction{In this document I collect various examples for
3884             \Opt{framemethod=\Loadedframemethod}.
3885             Some presented examples are more or less exorbitant.}
3886
3887 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3888 \newrobustcmd\ExampleText{%
3889     An \textit{inhomogeneous linear} differential equation has the form
3890     \begin{align}
3891         L[v] = f,
3892     \end{align}
3893     where  $L$  is a linear differential operator,  $v$  is
3894     the dependent variable, and  $f$  is a given non-zero
3895     function of the independent variables alone.
3896 }
3897
3898 \newcounter{examplecount}
3899 \setcounter{examplecount}{0}
3900 \renewcommand\thesubsection{}
3901 \newcommand\Examplesec[1]{%
3902 \stepcounter{examplecount}%
3903 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3904 }
3905
3906 \begin{document}
3907 \maketitle
3908 \section{Loading}
3909 In the preamble only the package \Pack{mdfamed} with the option
3910 \Opt{framemethod=\Loadedframemethod} is loaded. All other modifications will be
3911 done by \Cmd{mdfdefinestyle} or \Cmd{mdfsetup}.
3912
3913 {\large\color{red!50!black}
3914 \NOTE Every \Cmd{global} inside the examples is necessary to work with the
3915 package \Pack{showexpl}.}
3916
3917 \section{Examples}
3918 All examples have the following settings:
3919
3920 \begin{tltxmdfexample}
3921 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3922 \newrobustcmd\ExampleText{%
3923 An \textit{inhomogeneous linear} differential equation
3924 has the form
3925 \begin{align}
3926 L[v] = f,
3927 \end{align}
3928 where  $L$  is a linear differential operator,  $v$  is
3929 the dependent variable, and  $f$  is a given non-zero
3930 function of the independent variables alone.
3931 }
3932 \end{tltxmdfexample}
3933 \clearpage
3934 \ExampleText{round corner}
3935 \begin{LTXexample}
3936 \global\mdfdefinestyle{exampledefault}{%

```

```

3937     outerlinewidth=5pt,innerlinewidth=0pt,
3938     outerlinecolor=red,roundcorner=5pt
3939 }
3940 \begin{mdframed}[style=exampledefault]
3941 \ExampleText
3942 \end{mdframed}
3943 \end{LTXexample}
3944
3945 \Examplesec{hidden line + frame title}
3946 \begin{LTXexample}
3947 \global\mdfapptodefinestyle{exampledefault}{%
3948   topline=false,leftline=false,}
3949 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3950 \ExampleText
3951 \end{mdframed}
3952 \end{LTXexample}
3953 \clearpage
3954 \Examplesec{framed picture which is centered}
3955 \begin{LTXexample}
3956 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3957   linecolor=blue,middlelinewidth=4pt,roundcorner=5pt]
3958 \includegraphics[width=\linewidth]{donald-duck}
3959 \end{mdframed}
3960 \end{LTXexample}
3961
3962 \Examplesec{Gimmick}
3963 \begin{LTXexample}
3964 \mdfsetup{splitbottomskip=0.8cm,splittopskip=0cm,
3965   innerrightmargin=2cm,innertopmargin=1cm,%
3966   innerlinewidth=2pt,outerlinewidth=2pt,
3967   middlelinewidth=10pt,backgroundcolor=red,
3968   linecolor=blue,middlelinecolor=gray,
3969   tikzsetting={draw=yellow,line width=3pt,%
3970     dashed,%
3971     dash pattern= on 10pt off 3pt},
3972   rightline=false,bottomline=false}
3973 \begin{mdframed}
3974 \ExampleText
3975 \end{mdframed}
3976 \end{LTXexample}
3977
3978 \Examplesec{complex example with TikZ}
3979
3980 \begin{tltxmdfexample}
3981 \tikzstyle{titregris} =
3982   [draw=gray, thick, fill=white, shading = exersicetitle, %
3983   text=gray, rectangle, rounded corners, right,minimum height=.7cm]
3984
3985 \pgfdeclarehorizontalshading{exersicebackground}{100bp}
3986   {color(0bp)=(green!40); color(100bp)=(black!5)}
3987
3988 \pgfdeclarehorizontalshading{exersicetitle}{100bp}
3989   {color(0bp)=(red!40);color(100bp)=(black!5)}
3990
3991 \newcounter{exercise}
3992 \renewcommand*{\theexercise}{Exercise~n\arabic{exercise}}

```

```

3993 \makeatletter
3994 \def\mdf@@exercisepoints{%new mdframed key:
3995 \define@key{mdf}{exercisepoints}{%
3996     \def\mdf@@exercisepoints{#1}
3997 }
3998 \makeatother
3999
4000 \mdfdefinestyle{exercisestyle}{%
4001     outerlinewidth=1pt,innerlinewidth=0pt,
4002     roundcorner=2pt,linecolor=gray,
4003     tikzsetting={shading = exersicebackground},
4004     innertopmargin=1.2\baselineskip,
4005     skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
4006     needspace=3\baselineskip,
4007     frametitlefont=\sffamily\bfseries,
4008     settings={\global\stepcounter{exercise}},
4009     singleextra={%
4010         \node[titregris,xshift=1cm] at (P-|0) %
4011             {\~\mdf@frametitlefont{\theexercise}~};
4012         \ifdefempty{\mdf@@exercisepoints}%
4013             {}%
4014             {\node[titregris,left,xshift=-1cm] at (P)%
4015                 {\~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
4016     },
4017     firstextra={%
4018         \node[titregris,xshift=1cm] at (P-|0) %
4019             {\~\mdf@frametitlefont{\theexercise}~};
4020         \ifdefempty{\mdf@@exercisepoints}%
4021             {}%
4022             {\node[titregris,left,xshift=-1cm] at (P)%
4023                 {\~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
4024     },
4025 }
4026 \begin{mdframed}[style=exercisestyle,]
4027 \ExampleText
4028 \end{mdframed}
4029
4030 \begin{mdframed}[style=exercisestyle,exercisepoints=10]
4031 \ExampleText
4032 \end{mdframed}
4033 \end{tltxmdfexample}
4034 \clearpage
4035 \Examplesec{Theorem environments}
4036 \begin{LTXexample}
4037 \mdfdefinestyle{theoremstyle}{%
4038     linecolor=red,linewidth=2pt,%
4039     frametitlerule=true,%
4040     apptotikzsetting={\tikzset{mdfframetitlebackground/.append style={%
4041         shade,left color=white, right color=blue!20}}},
4042     frametitlerulecolor=green!60,
4043     frametitlerulewidth=1pt,
4044     innertopmargin=\topskip,
4045 }
4046 \mdtheorem[style=theoremstyle]{definition}{Definition}
4047 \begin{definition}[Inhomogeneous linear]
4048 \ExampleText

```

```

4049 \end{definition}
4050 \begin{definition*}[Inhomogeneous linear]
4051 \ExampleText
4052 \end{definition*}
4053 \end{LTXexample}
4054
4055 \end{document}
4056 \endinput

```

E. The file *mdframed-example-pstricks*

```

4057 %Documenation of the package mdframed
4058 %$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $
4059 \setcounter{errorcontextlines}{999}
4060 \documentclass[parskip=false,english,11pt]{ltxmdf}
4061 \ltxmdfsetifoot$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $
4062
4063 \lstDeleteShortInline{||}
4064 \newcommand\Loadedframemethod{PSTricks}
4065 \usepackage[framemethod=\Loadedframemethod]{mdframed}
4066
4067 \usepackage{showexpl}
4068 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
4069
4070 \title{The \Pack{mdframed} package}
4071 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
4072 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
4073 \date{\mdfdateID$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $}
4074 \version{\mdversion}
4075 \introduction{In this document I collect various examples for
4076               \Opt{framemethod=\Loadedframemethod}.
4077               Some presented examples are more or less exorbitant.}
4078
4079 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
4080 \newrobustcmd\ExampleText{%
4081     An \textit{inhomogeneous linear} differential equation has the form
4082     \begin{align}
4083         L[v] &= f,
4084     \end{align}
4085     where  $L$  is a linear differential operator,  $v$  is
4086     the dependent variable, and  $f$  is a given non-zero
4087     function of the independent variables alone.
4088 }
4089
4090 \newcounter{examplecount}
4091 \setcounter{examplecount}{0}
4092 \renewcommand\thesubsection{}
4093 \newcommand\Examplesec[1]{%
4094     \stepcounter{examplecount}%
4095     \subsection{Example~\arabic{examplecount}~---~\#1\relax}%
4096 }
4097
4098 \begin{document}
4099 \maketitle
4100 \section{Loading}
4101 In the preamble only the package \Pack{mdframed} width the option

```

```

4102 \Opt{framemethod=\Loadedframemethod} is loaded. All other modifications will be
4103 done by \Cmd{mdfdefinestyle} or \Cmd{mdfsetup}.
4104
4105 {\large\color{red!50!black}
4106 \NOTE Every \Cmd{global} inside the examples is necessary to work with the
4107 package \Pack{showexpl}.}
4108 X
4109 \section{Examples}
4110 All examples have the following settings:
4111
4112 \begin{tltxmdfexample}
4113 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
4114 \newrobustcmd\ExampleText{%
4115 An \textit{inhomogeneous linear} differential equation
4116 has the form
4117 \begin{align}
4118 L[v] = f,
4119 \end{align}
4120 where  $L$  is a linear differential operator,  $v$  is
4121 the dependent variable, and  $f$  is a given non-zero
4122 function of the independent variables alone.
4123 }
4124 \end{tltxmdfexample}
4125 \clearpage
4126
4127 \Examplesec{very simple}
4128 \begin{LTExample}
4129 \global\mdfdefinestyle{exampledefault}{%
4130     linecolor=red,middlelinewidth=3pt,%
4131     leftmargin=1cm,rightmargin=1cm
4132 }
4133 \begin{mdframed}[style=exampledefault,roundcorner=5]
4134 \ExampleText
4135 \end{mdframed}
4136 \end{LTExample}
4137
4138 \Examplesec{hidden line + frame title}
4139 \begin{LTExample}
4140 \global\mdfapptodefinestyle{exampledefault}{%
4141     topline=false,rightline=false,bottomline=false,
4142     frametitlerule=true,innertopmargin=6pt,
4143     outerlinewidth=6pt,outerlinecolor=blue,
4144     pstricksappsetting={\addtopsstyle{mdfouterlinestyle}{linestyle=dashed}},
4145     innerlinecolor=yellow,innerlinewidth=5pt}%
4146 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
4147 \ExampleText
4148 \end{mdframed}
4149 \end{LTExample}
4150
4151 \clearpage
4152
4153 \Examplesec{Dash Lines}
4154 \begin{LTExample}
4155 \global\mdfdefinestyle{exampledefault}{%
4156     pstrickssetting={linestyle=dashed,},linecolor=red,linewidth=5pt}
4157 \begin{mdframed}[style=exampledefault,]

```

```

4158 \ExampleText
4159 \end{mdframed}
4160 \end{LTXexample}
4161
4162 \Examplesec{Double Lines}
4163 \begin{LTXexample}
4164 \global\mdfdefinestyle{exampledefault}{%
4165     pstrickssetting={doubleline=true,doublesep=6pt},
4166     linecolor=red,linewidth=5pt,middlelinewidth=4pt}
4167 \begin{mdframed}[style=exampledefault,]
4168 \ExampleText
4169 \end{mdframed}
4170 \end{LTXexample}
4171
4172 \Examplesec{Shadow frame}
4173 \begin{LTXexample}
4174 \newmdenv[shadow=true,
4175     shadowsize=11pt,
4176     linewidth=8pt,
4177     frametitlerule=true,
4178     roundcorner=10pt,
4179     ]{myshadowbox}
4180 \begin{myshadowbox}[frametitle={Inhomogeneous linear}]
4181 \ExampleText
4182 \end{myshadowbox}
4183 \end{LTXexample}
4184 \end{document}
4185 \endinput

```

F. The file *mdframed-example-texsx*

```

4186 %Documenation of the package mdframed
4187 %$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $
4188 \setcounter{errorcontextlines}{999}
4189 \documentclass[parskip=false,english,11pt,ltxlipsum]{ltxmdf}
4190 \ltxmdfsetifoot $Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $
4191
4192
4193 \usepackage{showexpl}
4194 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}}},}
4195 \usepackage{tikz}
4196 \usetikzlibrary{calc,arrows,shadings,shadows}
4197 \newcommand\Loadedframemethod{tikz}
4198 \usepackage[framemethod=\Loadedframemethod]{mdframed}
4199
4200 \title{The \Pack{mdframed} package}
4201 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
4202 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
4203 \date{\mdfdateID$Id: mdframed.dtx 403 2012-05-17 19:17:09Z marco $}
4204 \version{\mdversion}
4205 \introduction{In this document I collect various examples for
4206     \Opt{framemethod=\Loadedframemethod}.
4207     Some presented examples are more or less exorbitant.}
4208
4209 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
4210 \newrobustcmd\ExampleText{%

```

```

4211      An \textit{inhomogeneous linear} differential equation has the form
4212      \begin{align}
4213          L[v] = f,
4214      \end{align}
4215      where  $L$  is a linear differential operator,  $v$  is
4216      the dependent variable, and  $f$  is a given non-zero
4217      function of the independent variables alone.
4218 }
4219
4220 \newcounter{examplecount}
4221 \setcounter{examplecount}{0}
4222 \renewcommand\thesubsection{}
4223 \newcommand\Examplesec[1]{%
4224 \stepcounter{examplecount}%
4225 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
4226 }
4227
4228 \begin{document}
4229 \maketitle
4230 \section{Loading}
4231 In the preamble only the package \Pack{mdframed} with the option
4232 \Opt{framemethod=\Loadedframemethod} is loaded. All other modifications will be
4233 done by \Cmd{mdfdefinestyle} or \Cmd{mdfsetup}.
4234
4235 {\large\color{red!50!black}
4236 \NOTE Every \Cmd{global} inside the examples is necessary to work with the
4237 package \Pack{showexpl}.}
4238
4239 \section{Examples}
4240 All examples have the following settings:
4241
4242 \begin{tltxmdfexample}
4243 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
4244 \newrobustcmd\ExampleText{%
4245 An \textit{inhomogeneous linear} differential equation
4246 has the form
4247 \begin{align}
4248 L[v] = f,
4249 \end{align}
4250 where  $L$  is a linear differential operator,  $v$  is
4251 the dependent variable, and  $f$  is a given non-zero
4252 function of the independent variables alone.
4253 }
4254 \end{tltxmdfexample}
4255 \clearpage
4256 \Examplesec{Package listings}
4257 The example below is inspired by the following post on StackExchange
4258 \href{http://tex.stackexchange.com/questions/27673/background-overflows-when-using-rounded-corners-for-}
4259 {Background overflows when using rounded corners for listings (package: 'listings')}
4260
4261 Here the solution which can be decorate as usual.
4262
4263 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},
4264                        morekeywords={lstlisting}]
4265 \BeforeBeginEnvironment{lstlisting}{%
4266     \begin{mdframed}[<modification>]%

```



```

4267     \vspace{-0.7em}}
4268 \AfterEndEnvironment{\lstlisting}{%
4269     \vspace{-0.5em}%
4270     \end{mdframed}}
4271 \end{tltxmdfexample}
4272
4273 With the new command \Cmd{surroundwithmdframed} you can use
4274 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},
4275     morekeywords={\lstlisting}]
4276 \surroundwithmdframed{listings}
4277 \end{tltxmdfexample}
4278
4279 \Examplesec{Package multicol}
4280 How I wrote in \enquote{Known Problems} you can't combine \Pack{multicol} with
4281 \Pack{mdframed}. In a simple way without any breaks you can use:
4282 \begin{LTXexample}
4283 \begin{multicols}{2}
4284 \lipsum[1]
4285 \begin{mdframed}
4286 \ExampleText
4287 \end{mdframed}
4288 \lipsum[2]
4289 \end{multicols}
4290 \end{LTXexample}
4291 \clearpage
4292 \twocolumn[\Examplesec{Working in twocolumn mode}]
4293 \begin{tltxmdfexample}
4294 \twocolumn[%
4295     \Examplesec{Working in
4296         twocolumn mode}]
4297 \lipsum[1]\lipsum[2]
4298 \begin{mdframed}[%
4299     leftmargin=10pt,%
4300     rightmargin=10pt,%
4301     linecolor=red,
4302     backgroundcolor=yellow]
4303 \ExampleText
4304 \end{mdframed}
4305 \lipsum[2]
4306 \end{tltxmdfexample}
4307 \lipsum[1]\lipsum[2]
4308 \begin{mdframed}[leftmargin=10pt,%
4309     rightmargin=10pt,%
4310     linecolor=red,
4311     backgroundcolor=yellow]
4312 \ExampleText
4313 \end{mdframed}
4314 \lipsum[2]
4315 \clearpage
4316 \onecolumn
4317 \Examplesec{Working inside enumerate}
4318 \begin{LTXexample}
4319 Text Text Text Text Text Text Text Text
4320 \begin{enumerate}
4321 \item in the following \ldots
4322     \begin{mdframed}[linecolor=blue,linewidth=2]

```

```

4323     \ExampleText
4324     \end{mdframed}
4325 \item \lipsum[2]
4326 \end{enumerate}
4327 Text Text Text Text Text Text
4328 \end{LTXexample}
4329 \clearpage
4330 \Examplesec{Position a specific symbol at a line}
4331 \begin{LTXexample}
4332 \tikzset{
4333     warningsymbol/.style={
4334         rectangle,draw=red,
4335         fill=white,scale=1,
4336         overlay}}
4337 \mdfdefinestyle{warning}{%
4338     hidealllines=true,leftline=true,
4339     skipabove=12,skipbelow=12pt,
4340     innertopmargin=0.4em,%
4341     innerbottommargin=0.4em,%
4342     innerrightmargin=0.7em,%
4343     rightmargin=0.7em,%
4344     innerleftmargin=1.7em,%
4345     leftmargin=0.7em,%
4346     middlelinewidth=.2em,%
4347     linecolor=red,%
4348     fontcolor=red,%
4349     firstextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4350                 node[warningsymbol] {\$}};,%
4351     secondextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4352                 node[warningsymbol] {\$}};,%
4353     middleextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4354                 node[warningsymbol] {\$}};,%
4355     singleextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4356                 node[warningsymbol] {\$}};,%
4357 }
4358 \begin{mdframed}[style=warning]
4359 \ExampleText
4360 \end{mdframed}
4361 \end{LTXexample}
4362
4363 \clearpage
4364 \Examplesec{digression-environement inspired by Tobias Weh}
4365 \begin{lstlisting}
4366 \usetikzlibrary{calc,arrows}
4367 \tikzset{
4368     excursus arrow/.style={%
4369         line width=2pt,
4370         draw=gray!40,
4371         rounded corners=2ex,
4372     },
4373     excursus head/.style={
4374         fill=white,
4375         font=\bfseries\sffamily,
4376         text=gray!80,
4377         anchor=base west,
4378     },

```

```

4379 }
4380 \mdfdefinestyle{digressionarrows}{%
4381   singleextra={%
4382     \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4383     \path let \p1=(Q), \p2=(O) in (\x1,{(\y1-\y2)/2}) coordinate (M);
4384     \path [excursus arrow, round cap-to]
4385       ($ (O)+(5em,0ex)$) -| (M) |- %
4386       ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4387       ++(23em,2ex);
4388     \node [excursus head] at ($ (Q)+(2.5em,-0.75pt)$) {Digression};},
4389   firstextra={%
4390     \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4391     \path [excursus arrow,-to]
4392       (O) |- %
4393       ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4394       ++(23em,2ex);
4395     \node [excursus head] at ($ (Q)+(2.5em,-2pt)$) {Digression};},
4396   secondextra={%
4397     \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4398     \path [excursus arrow,round cap-]
4399       ($ (O)+(5em,0ex)$) -| (Q);},
4400   middleextra={%
4401     \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
4402     \path [excursus arrow]
4403       (O) -- (Q);},
4404   middlelinewidth=2.5em,middlelinecolor=white,
4405   hidealllines=true,topline=true,
4406   innertopmargin=0.5ex,
4407   innerbottommargin=2.5ex,
4408   innerrightmargin=2pt,
4409   innerleftmargin=2ex,
4410   skipabove=0.87\baselineskip,
4411   skipbelow=0.62\baselineskip,
4412 }
4413
4414 \begin{mdframed}[style=digressionarrows]
4415   \ExampleText
4416 \end{mdframed}
4417 \end{lstlisting}
4418
4419 \tikzset{
4420   excursus arrow/.style={%
4421     line width=2pt,
4422     draw=gray!40,
4423     rounded corners=2ex,
4424   },
4425   excursus head/.style={
4426     fill=white,
4427     font=\bfseries\sffamily,
4428     text=gray!80,
4429     anchor=base west,
4430   },
4431 }
4432 \mdfdefinestyle{digressionarrows}{%
4433   singleextra={%
4434     \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);

```

```

4435 \path let \p1=(Q), \p2=(0) in (\x1,{(\y1-\y2)/2}) coordinate (M);
4436 \path [excursus arrow, round cap-to]
4437   ($ (Q)+(5em,0ex)$) -| (M) |- %
4438   ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4439   ++(23em,2ex);
4440 \node [excursus head] at ($ (Q)+(2.5em,-0.75pt)$) {Digression}};
4441 firstextra={%
4442   \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4443   \path [excursus arrow,-to]
4444     (0) |- %
4445     ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4446     ++(23em,2ex);
4447   \node [excursus head] at ($ (Q)+(2.5em,-2pt)$) {Digression}};
4448 secondextra={%
4449   \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4450   \path [excursus arrow,round cap-]
4451     ($ (Q)+(5em,0ex)$) -| (Q)};
4452 middleextra={%
4453   \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4454   \path [excursus arrow]
4455     (0) -- (Q)};
4456 middlelinewidth=2.5em,middlelinecolor=white,
4457 hidealllines=true,topline=true,
4458 innertopmargin=0.5ex,
4459 innerbottommargin=2.5ex,
4460 innerrightmargin=2pt,
4461 innerleftmargin=2ex,
4462 skipabove=0.87\baselineskip,
4463 skipbelow=0.62\baselineskip,
4464 }
4465
4466 \begin{mdframed}[style=digressionarrows]
4467   \ExampleText
4468 \end{mdframed}
4469
4470 \Examplesec{Theorem style shading background}
4471 \begin{LTXexample}
4472 %\usetikzlibrary{shadings,shadows}% loaded in the header
4473 \mdtheorem[%
4474   apptotikzsetting={\tikzset{mdfbackground/.append style =%
4475     {top color=yellow!40!white,
4476     bottom color=yellow!80!black},
4477   mdfframetitlebackground/.append style =%
4478     {top color=purple!40!white,
4479     bottom color=purple!80!black}
4480   }
4481   },
4482   ,roundcorner=10pt,middlelinewidth=2pt,
4483   shadow=true,frametitrerule=true,frametitrerulewidth=4pt,
4484   innertopmargin=10pt,%
4485   ]{alternativtheorem}{Theorem}
4486 \begin{alternativtheorem}[Inhomogeneous linear]
4487   \ExampleText
4488 \end{alternativtheorem}
4489 \end{LTXexample}
4490 \end{document}

```

4491 `\endinput`

G. Change History

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

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