

The `mdframed` package ¹

auto-split frame environment

Marco Daniel Elke Schubert

v1.5a

2012/04/16

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

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

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

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

Contents

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

1. Motivation

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

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

¹Extending the package `framed.sty`

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

The frame was defined with the following settings.

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

2. Syntax

Loadings `mdframed`

The package itself loads the packages

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

Depending on the options `mdframed` will load

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

Load the package as usual:

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

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

Provided environment

The package defines only one environment with the following syntax:

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

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

Autodetecting floats

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

Twoside-mode

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

3. The frames

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

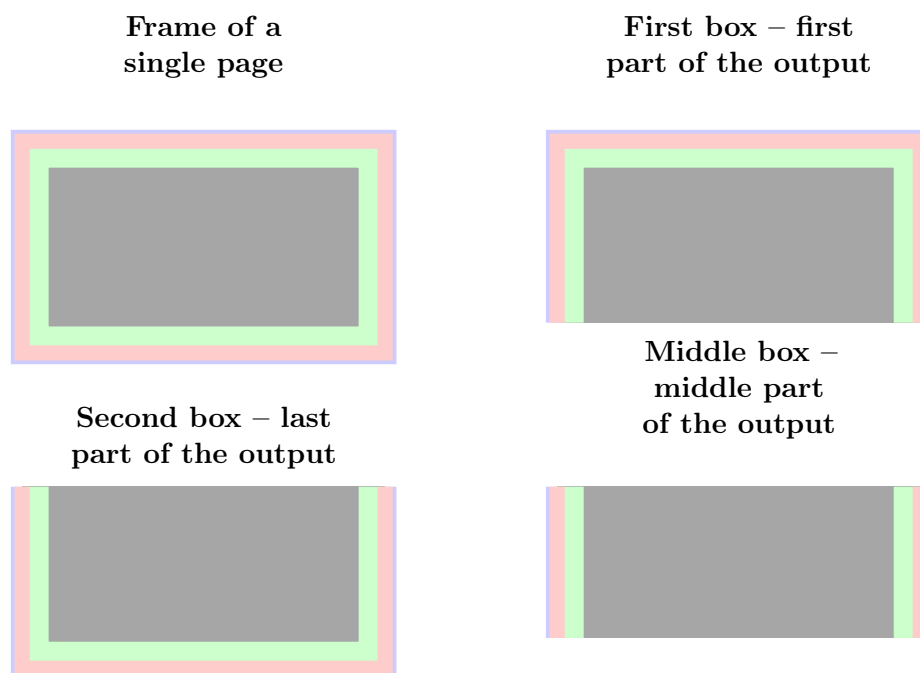


Figure 1: The basic frames

4. Commands

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

`\newmdenv`

The command has the following syntax:

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

In this way you can simply use:

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

`\renewmdenv`

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

`\surroundwithmdframed`

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

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

`\mdflength`

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

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

\the\mdflength{innerleftmargin}
```

`\mdfsetup`

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

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

`\mdfdefinestyle`

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

Here a small example:

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

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

`\mdfapptodefinestyle`

This commands allows to expand a defined style.³

5. Options

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

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

³Thanks to Martin Scharrer and Enrico Gregorio:

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

5.1. Global Options

The following options are only global options.

`xcolor` default=`none`

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

`framemethod` default=`default`

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

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

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

Table 1: Allowed keys for `framemethod`

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

FYI

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

Note

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

5.2. Global and Local Options

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

5.2.1. Options with lengths

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

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

`defaultunit` default=`pt`

see the sentence above.

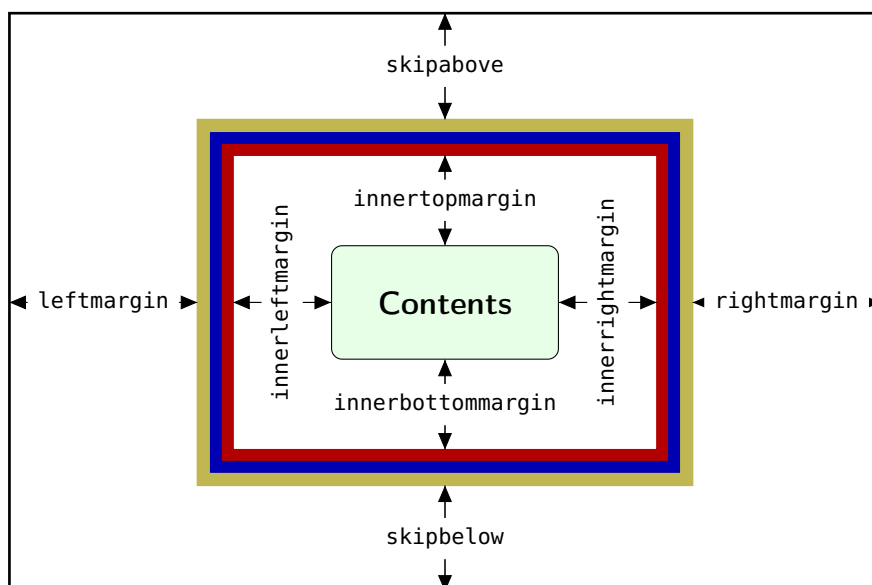


Figure 2: adjustable lengths of mdframed

`skipabove` default=0pt

Sets an additional skip above the frame.

`skipbelow` default=0pt

Sets an additional skip below the frame.

`margin`

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

`leftmargin` default=0pt

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

`rightmargin` default=0pt

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

`innerleftmargin` default=10pt

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

`innerrightmargin` default=10pt

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

`innertopmargin` default=.4\baselineskip

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

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

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

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

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

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

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

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

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

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

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

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

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

5.2.2. Colored Options

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

`backgroundcolor` default=white

Sets the color of the background of the environment.

`fontcolor` default=black

Sets the color of the contents of the environment.

`innerlinecolor` default=linecolor

Sets the color of the inner line around the environment.

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

`middlelinecolor` default=linecolor

Sets the color of the middle line around the environment.

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

`outerlinecolor` default=linecolor

Sets the color of the outer line around the environment.

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

5.2.3. General options

`everyline` default=false

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

`font` default={}

Sets the font of the environment.

`ntheorem` default=false

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

`nobreak` default=false

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

`usetwoside` default=true

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

`needspace` default=0pt

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

`style`

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

`settings` default=none

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

`align` default=`left`

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

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

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

`shadow` default=`false`

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

`shadowsize` default=`8pt`

Specify the size of the shadow.

`shadowcolor` default=`black!50`

Specify the color of the shadow.

`pstrickssetting` default=`none`

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

This works only with `framemethod=PSTricks`.

`pstricksappsetting` default=`none`

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

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

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

This works only with `framemethod=PSTricks`.

`tikzsetting` default=`none`

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

This works only with `framemethod=TikZ`.

`apptotikzsetting` default=`none`

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

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

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

`singleextra` default=`{}`

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

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

`firstextra` default=`{}`

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

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

`middleextra` default=`{}`

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

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

`secondextra` default=`{}`

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

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

5.3. Hidden Lines

`topline` default=`true`

Draws a line at the top.

`bottomline` default=`true`

Draws a line at the bottom.

`leftline` default=true

Draws a line on the left.

`rightline` default=true

Draws a line on the right.

`hidealllines` default=false

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

5.4. Frametitle

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

`frametitle` default=none

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

`frametitlefont` default=\normalfont\bfseries

Sets the format of the `frametitle`.

`frametitlealignment` default=\raggedleft

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

`frametitlerule` default=false

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

`frametitlerulewidth` default=.2pt

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

`frametitleaboveskip` default=5pt

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

`frametitlebelowskip` default=5pt

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

`frametitlebackgroundcolor` default=white

Sets the color of the background of the `frametitle`

FYI and Note

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

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

`repeatframetitle` default=false

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

5.5. Theorems

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

`\newmdtheoremenv`

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

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

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

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

...
\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.

⁴Thanks to Martin Scharrer and Enrico Gregorio:

[Own command to create new environment](#)

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

9. ToDo

It is important to update the documentation

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

10. Acknowledgements

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

Thanks for proofreading

Alan Munn and Nahid Shajari

I hope I forgot nobody.

A. More information

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

A.1. How does `mdframed` work?

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

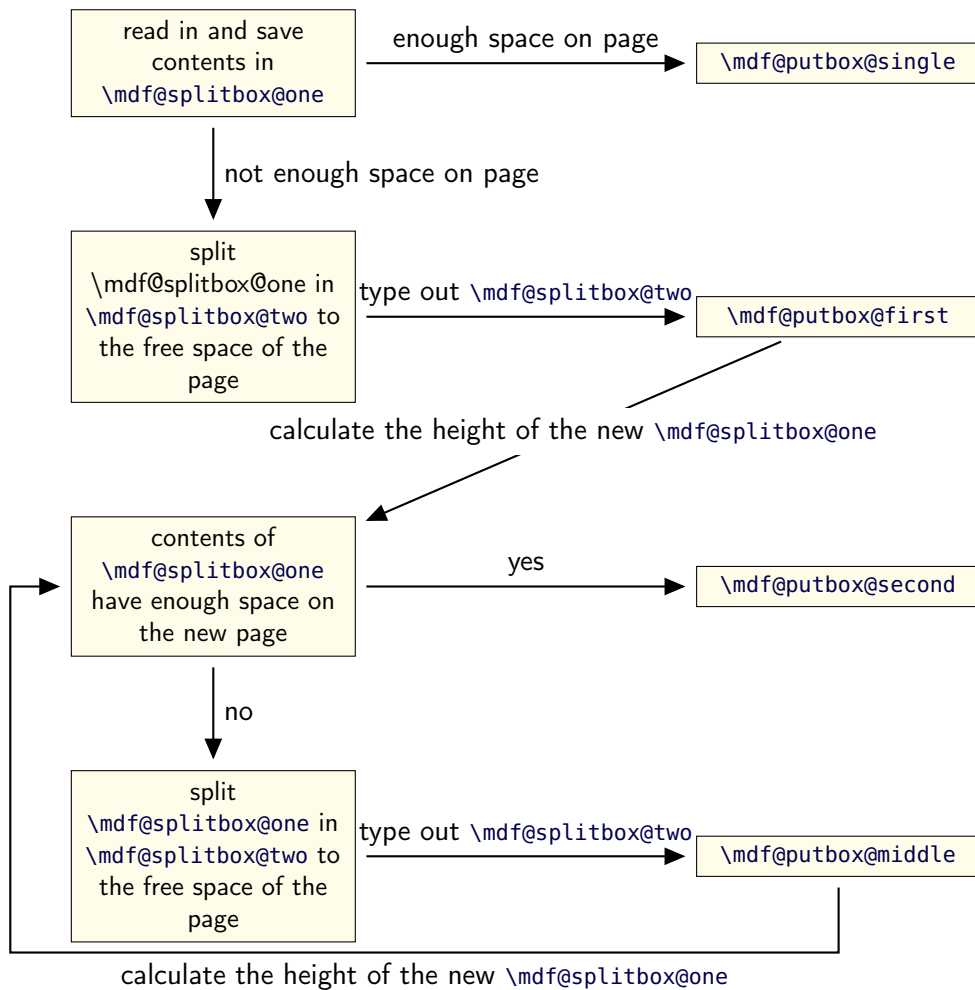


Figure 3: Setting the contents of `mdframed`

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

A.2. The Framecommands

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

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

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

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

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

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

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

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

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

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

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

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

For example the leftmargin is:

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

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

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

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

A.3. Revision history

Version 1.5a submitted DD MMM 2012

- 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 `\newsstyle`
- 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 `\newsstylemdfbackgroundstyle` and `mdflinestyle`
- This works only with `framemethod=PSTricks`. • created dtx-file (Thanks to Kevin Godby) • added `\@parboxrestore` to `\mdf@lrbbox`

Version 1.0 submitted 13 Nov 2011

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

Version 0.9g submitted 08 Oct 2011

- fixed documentation • added small footnote compatibility

Version 0.9f submitted 04 Oct 2011

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

Version 0.9e submitted 11 Sep 2011

- working with `twoside` modus

Version 0.9d submitted 10 Sep 2011

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

Version 0.9b submitted 7 Sep 2011

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

Version 0.9a submitted 5 Sep 2011

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

Version 0.9 submitted 4 Sep 2011

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

Version 0.8a

- fixes bugs • fixes documentation

Version 0.8 submitted 22 Aug 2011

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

Version 0.7a submitted 6 August 2011

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

Version 0.6a submitted 22 Dec 2010

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

B. Implementation

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

B.1. The Explanation of mdframed.sty

Id : mdframed.dtx3792012-04-16 10:52:55Zmarco Rev : 379 Author : marco

Date : 2012-04-16 10:52:55 +0200(Mo, 16.Apr2012)

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

Set package information

```
1 \def\mdversion{v1.5a}
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 379 2012-04-16 10:52:55Z marco $%
7     \mdversion: \mdframedpackagename]
```

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

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

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

Loading required packages

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

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

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

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

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

```

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

`\mdf@dolist`

Loop used by *mdframed*.

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

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

Command to define a new length with a default value.

```

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

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

```

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

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

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

```

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

```

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

```

```

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

```

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

```

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

```

```

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

```

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

```

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

```

```

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

```

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

```

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

```

Start declaration of options

```

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

```

Only provide to be backward compatible

```

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

```

```

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

```

`\mdf@framemethod`

```

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

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

```

`\mdf@do@lengthoption`

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

```

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

```

```

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

```

`\mdf@do@lengthoption`

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

```

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

```


`\mdf@do@booloption`

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

```

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

`\mdf@do@alignoption`

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

```

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

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

Set the alignment.

```

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

```

```

230     \letcs\mdf@makeboxalign@left{mdf@align@left@left}%
231     \letcs\mdf@makeboxalign@right{mdf@align@left@right}%
232   }{%
233     \def\mdf@makeboxalign@left{\csuse{mdf@align@#1@left}}%
234     \def\mdf@makeboxalign@right{\csuse{mdf@align@#1@right}}%
235   }%
236 }

```

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

Option to pass options to tikz or pstricks

```

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

```

`\mdf@xcolor`

Problem with xcolor. This part must be reworked!

```

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

```

`\mdf@needspace`

Defining the option needspace

```

265 \define@key{mdf}{needspace}[\z@]{%
266   \begingroup%
267     \setlength{\dimen@}{#1}%
268     \vskip\z@\@plus\dimen@%
269     \penalty -100\vskip\z@\@plus -\dimen@%
270     \vskip\dimen@%

```

```

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

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

```

\mdfsetup

Short form of `\setkeys{mdf}`

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

\mdf@style

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

```

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

```

\mdf@print@space

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

```

290 \let\mdf@PackageNoInfo\@gobble
291 \newrobustcmd*\mdf@ifstrequal@expand{%
292   \expandafter\ifstrequal\expandafter{\mdf@printheight}%
293 }
294 \newrobustcmd*\mdf@print@space{%
295   %case "none"
296   \mdf@ifstrequal@expand{none}{\def\mdf@tempa{NoInfo}}{%
297     %case "info"
298     \mdf@ifstrequal@expand{info}{\def\mdf@tempa{Info}}{%
299       %case "warning"
300       \mdf@ifstrequal@expand{warning}{\def\mdf@tempa{Warning}}{%
301         %case "unknown"
302         \mdf@PackageWarning{Unknown key for printheight=\mdf@printheight^^J
303           use none, info or warning}%
304         \def\mdf@tempa{none}%
305       }%
306     }%
307   }%
308   \def\mdf@PackageInfoSpace{\csname mdf@Package\mdf@tempa\endcsname}%
309 }

```

`\new...`

Initialize all commands and length which will we used later

```

310 \newsavebox\mdf@frametitlebox
311 \newsavebox\mdf@footnotebox
312 \newsavebox\mdf@splitbox@one
313 \newsavebox\mdf@splitbox@two
314 \newlength\mdfsplitboxwidth
315 \newlength\mdfsplitboxtotalwidth
316 \newlength\mdfsplitboxheight
317 \newlength\mdfsplitboxdepth
318 \newlength\mdfsplitboxtotalheight
319 \newlength\mdfframetitleboxwidth
320 \newlength\mdfframetitleboxtotalwidth
321 \newlength\mdfframetitleboxheight
322 \newlength\mdfframetitleboxdepth
323 \newlength\mdfframetitleboxtotalheight
324 \newlength\mdffootnoteboxwidth
325 \newlength\mdffootnoteboxtotalwidth
326 \newlength\mdffootnoteboxheight
327 \newlength\mdffootnoteboxdepth
328 \newlength\mdffootnoteboxtotalheight
329
330 \newlength\mdftotallinewidth
331
332 \newlength\mdfboundingboxwidth
333 \newlength\mdfboundingboxtotalwidth
334
335 \newlength\mdfboundingboxheight
336 \newlength\mdfboundingboxdepth
337 \newlength\mdfboundingboxtotalheight
338
339 \newlength\mdf@freevspace@length
340 \newlength\mdf@horizontalwidthofbox@length
341 \newlength\mdf@verticalmarginwhole@length
342
343 % Command to expand the tikz code. (see md-frame-1.mdf)
344 \newrobustcmd\mdfcreateextratikz{}
345

```

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

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

```

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

```

```

356 \columnwidth=\hsize%
357 \textwidth=\hsize%
358 \@parboxrestore%
359 \mdf@restoreparams%
360 %SETZE
361 \@afterindentfalse%
362 \@afterheading%
363 %STREICHE
364 %\@doendpe
365 }
366
367 \def\endmdf@lrbox{\color@endgroup\egroup}
368

```

```

\mdf@ignorevbadness
\mdf@restorevbadness

```

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

```

369 \newrobustcmd*\mdf@ignorevbadness{%
370 \edef\mdf@currentvbadness{\the\vbadness}%
371 \vbadness=\@M%
372 \afterassignment\mdf@restorevbadness}
373 \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`.

```

374 \ifpackageloaded{amsthm}{%
375 \newrobustcmd\mdf@patchamsth{%
376 \let\mdf@deferred@thm@head\deferred@thm@head
377 \patchcmd{\deferred@thm@head}{\indent}{}%
378 {\mdf@PackageInfo{mdframed detected package amsthm ^^J
379 changed the theoerem header of amsthm\MessageBreak}%
380 }{%
381 \mdf@PackageInfo{mdframed detected package amsthm ^^J
382 changed the theoerem header of amsthm failed\MessageBreak}%
383 }%
384 }%
385 }{\let\mdf@patchamsth\relax}%

```

```

\mdf@trivlist
\endmdf@trivlist

```

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

```

386 \def\mdf@trivlist#1{%
387 \setlength{\topsep}{#1}%
388 \partopsep\z@%
389 \parsep\z@%
390 \@nmbulistfalse%
391 \@trivlist%
392 \labelwidth\z@%

```

```

393 \leftmargin\z@%
394 \itemindent\z@%
395 \let\@itemlabel\@empty%
396 \def\makelabel##1{##1}%
397 %% \item\leavevmode\hrule \@height\z@ \@width\linewidth\relax%
398 %% \item\mbox{}\relax% second version
399 \item\relax% first Version
400 }
401 \let\endmdf@trivlist\endtrivlist
402 \patchcmd\endmdf@trivlist\@endparenv\mdf@endparenv{}{}
403 \def\mdf@endparenv{%
404 \addpenalty\@endparpenalty\addvspace\mdf@skipbelow@length\@endpetrue}
405

```

```

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

```

```

406 \newrobustcmd*\mdf@makebox@out[2][\linewidth]{%
407 \noindent\hb@xt@\z@{%
408 \noindent\makebox[\dimexpr #1\relax][l]{#2}%
409 \hss}%
410 }%
411 \newrobustcmd*\mdf@makebox@in[2][\mdf@userdefinedwidth@length]{%
412 \noindent\makebox[\dimexpr #1\relax][l]{#2}%
413 }

```

```

\mdfdefinestyle
\mdfapptodefinestyle

```

See explanation of this commands above.

```

414 \newrobustcmd*\mdfdefinestyle[2]{%
415 \csdef{mdf@definestyle@#1}{#2}%
416 }
417 \newrobustcmd*\mdfapptodefinestyle[2]{%
418 \ifcsundef{mdf@definestyle@#1}%
419 {\mdf@PackageWarning{Unknown style #1}}%
420 {\csappto{mdf@definestyle@#1}{, #2}}%
421 }

```

```

\mdflength
\surroundwithmdframed

```

Helper macros to work with *mdframed*

```

422 \newrobustcmd*\mdflength[1]{\csuse{mdf@#1@length}}
423
424 \newrobustcmd*\surroundwithmdframed[2][\relax]{%
425 \BeforeBeginEnvironment{#2}{\begin{mdframed}[#1]}%
426 \AfterEndEnvironment{#2}{\end{mdframed}}%
427 }

```

```

\newmdenv
\renewmdenv
\newmdtheoremenv
\mdtheorem

```

Defining of the new environment defintions.

```

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

```

```

478             \mdf@theoremspace%
479             \mdf@theoremtitlefont%
480             ##1}%
481         \mdf@thm@caption{#2}{{#4}{\csname the#2\endcsname}{##1}}%
482     }
483     \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}]]%
484     {\end{mdframed}}%
485 \newenvironment{#2*}[1][1]{%
486     \ifstrempy{##1}{\let\@temptitle\relax}{\def\@temptitle{: \ ##1}}
487     \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]]%
488     {\end{mdframed}}%
489 }%
490 {%#5 given -- reset counter
491 \definecounter{#2}\@newctr{#2}[#5]%
492 \expandafter\xdef\csname the#2\endcsname{\@thmcounter{#2}}
493 \expandafter\xdef\csname the#2\endcsname{%
494     \expandafter\noexpand\csname the#5\endcsname \@thmcountersep
495     \@thmcounter{#2}}}%
496 \newenvironment{#2}[1][1]{%
497     \refstepcounter{#2}
498     \ifstrempy{##1}%
499     {\let\@temptitle\relax}%
500     {%
501         \def\@temptitle{\mdf@theoremseparator%
502             \mdf@theoremspace%
503             \mdf@theoremtitlefont%
504             ##1}%
505         \mdf@thm@caption{#2}{{#4}{\csname the#2\endcsname}{##1}}%
506     }
507     \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}]]%
508     {\end{mdframed}}%
509 \newenvironment{#2*}[1][1]{%
510     \ifstrempy{##1}%
511     {\let\@temptitle\relax}%
512     {%
513         \def\@temptitle{\mdf@theoremseparator%
514             \mdf@theoremspace%
515             \mdf@theoremtitlefont%
516             ##1}%
517         \mdf@thm@caption{#2}{{#4}{\csname the#2\endcsname}{##1}}%
518     }
519     \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]]%
520     {\end{mdframed}}%
521 }%
522 }%
523 {%#3 given -- number relationship
524 \global\@namedef{the#2}{\@nameuse{the#3}}%
525 \newenvironment{#2}[1][1]{%
526     \refstepcounter{#3}
527     \ifstrempy{##1}%
528     {\let\@temptitle\relax}%
529     {%
530         \def\@temptitle{\mdf@theoremseparator%
531             \mdf@theoremspace%
532             \mdf@theoremtitlefont%
533             ##1}%

```



```

534         \mdf@thm@caption{#2}{#{#4}{\csname the#2\endcsname}{##1}}%
535     }
536     \begin{mdframed}[#1,frametitle={\strut#4\ \csname the#2\endcsname\@temptitle}]]%
537     {\end{mdframed}}}%
538     \newenvironment{#2*}[1][{}]{%
539         \ifstrempy{##1}{\let\@temptitle\relax}{\def\@temptitle{:\ #1}}
540         \begin{mdframed}[#1,frametitle={\strut#4\@temptitle}]]%
541         {\end{mdframed}}}%
542     }%
543 }%
544 }
545

```

```

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

```

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

```

546 %TESTVERSION
547 % \newrobustcmd*\mdf@setopt@title{%
548 %   \ifbool{mdf@frametitulerule}{\booltrue{mdf@bottomline}}{\boolfalse{mdf@bottomline}}%
549 %   \let\ifmdf@leftline\ifmdf@frametitleleftline%
550 %   \let\ifmdf@topline\ifmdf@frametitletopline%
551 %   \let\ifmdf@rightline\ifmdf@frametitlerightline%
552 %   \let\ifmdf@bottomline\ifmdf@frametitlebottomline%
553 %   \mdfsetup{innerbottommargin=\mdf@titlebelowskip@length,%
554 %             innertopmargin=\mdf@titleaboveskip@length,%
555 %             middlelinecolor=\mdf@frametitulerulecolor,%
556 %             backgroundcolor=\mdf@frametitlebackgroundcolor,%
557 %             middlelinewidth=\mdf@frametitulerulewidth@length,%
558 %             innerleftmargin=\mdf@frametitleleftmargin@length,%
559 %             innerrightmargin=\mdf@frametitlerightmargin@length,%
560 %             alignment=\mdf@frametitlealignment,%
561 %             skipbelow=\z@}%
562 %   \def\mdf@linecolor@bottom{\color{\mdf@frametitlebottomrulecolor}}%
563 %   \mdf@frametitlesettings%
564 % }
565 %
566 % \newrobustcmd*\mdf@setopt@body{%
567 %   \mdfsetup{topline=false,skipabove=\z@}%
568 %   \unskip\nointerlineskip%
569 % }
570 %
571 % \newrobustcmd\mdfframedtitleenv[1]{%
572 %   \begingroup
573 %     \mdf@setopt@title
574 %     \color@setgroup
575 %     \mdf@frametitlefont
576 %     \mdf@lrbox{\mdf@splitbox@one}%
577 %     \mdf@frametitlealignment
578 %     #1\par\unskip
579 %   \endmdf@lrbox
580 %   \mdf@ignorevbadness

```

```

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

```

`\mdf@checknththeorem`

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

```

626
627 \newrobustcmd*\mdf@checknththeorem{%
628 \ifbool{mdf@nththeorem}%
629 {\ifundef{\theorempreskipamount}%
630 {\mdf@PackageWarning{You have not loaded ntheorem yet}}%
631 {\setlength{\theorempreskipamount}{\z@}%

```

```

632         \setlength{\theorempostskipamount}{\z@}%
633     }%
634 }{}%
635 }

```

```

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

```

Support for footnotes.

```

636 \newrobustcmd*\mdf@footnoterule{%
637     \kern0\p@%
638     \hrule \@width 1in \kern 2.6\p@}
639 \newrobustcmd*\mdf@footnoteoutput{%
640     \ifvoid\@mpfootins\else
641         \nobreak%
642         \vskip\mdf@footnotedistance@length%
643         \normalcolor%
644         \mdf@footnoterule
645         \unvbox\@mpfootins
646     \fi%
647 }
648 \newrobustcmd*\mdf@footnoteinput{%
649     \def\@mpfn{mpfootnote}%
650     \def\thempfn{\thempfootnote}%
651     \c@mpfootnote\z@%
652     \let\@footnotetext\@mpfootnotetext%
653 }

```

```

\mdf@load@style
\mdf@styledefinition

```

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

```

654 \newrobustcmd*\mdf@load@style{%
655     \ifcase\value{mdf@globalstyle@cnt}\relax%
656         \input{md-frame-0.mdf}%
657     \or\input{md-frame-1.mdf}%
658     \or\input{md-frame-2.mdf}%
659     \or\input{md-frame-3.mdf}%
660     \else%
661         \IfFileExists{md-frame-\value{mdf@globalstyle@cnt}.mdf}%
662         {\input{md-frame-\value{mdf@globalstyle@cnt}.mdf}}%
663         {%
664             \input{md-frame-0.mdf}%
665             \mdf@PackageWarning{The style number \value{mdf@globalstyle@cnt} does not exist^^J
666                                 mdframed ues instead style=0 \mdframedpackagename}%
667         }%
668     \fi%
669 }%
670 \mdf@load@style
671
672 \newrobustcmd*\mdf@styledefinition{%AVOID!!!
673     \ifnumequal{\value{mdf@globalstyle@cnt}}{0}%
674     {\deflength{\mdf@innerlinewidth@length}{\z@}%
675     \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%

```

```

676 \deflength{\mdf@outerlinewidth@length}{\z@}%
677 \let\mdf@innerlinecolor\mdf@linecolor%
678 \let\mdf@middlelinecolor\mdf@linecolor%
679 \let\mdf@outerlinecolor\mdf@linecolor%
680 }{}%
681 % \ifnumequal{\value{mdf@globalstyle@cnt}}{2}%
682 % {\deflength{\mdf@innerlinewidth@length}{\z@}%
683 % \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%
684 % \deflength{\mdf@outerlinewidth@length}{\z@}%
685 % \let\mdf@innerlinecolor\mdf@linecolor%
686 % }{}%
687 % \ifnumequal{\value{mdf@globalstyle@cnt}}{3}%
688 % {\deflength{\mdf@innerlinewidth@length}{\z@}%
689 % \deflength{\mdf@middlelinewidth@length}{\mdf@linewidth@length}%
690 % \deflength{\mdf@outerlinewidth@length}{\z@}%
691 % \let\mdf@innerlinecolor\mdf@linecolor%
692 % }{}%
693 }

```

\detected@mdf@put@frame

Detect whether inside a non breakable environment.

```

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

```

```

726     \fi%
727     \ifinner%
728         \mdf@PackageInfo{mdframed inside a box ^^J
729             mdframed uses option nobreak \mdframedpackagename}%
730         \def\mdf@reserved@a{\mdf@put@frame@standalone}%
731     \fi%
732 \fi%
733 \mdf@reserved@a%
734 }

```

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

```

735 \newrobustcmd*\mdf@hidealllines@check{%
736 \ifbool{mdf@hidealllines}{%
737     \boolfalse{mdf@leftline}\boolfalse{mdf@rightline}%
738     \boolfalse{mdf@topline}\boolfalse{mdf@bottomline}%
739     \boolfalse{mdf@frametitleleftline}\boolfalse{mdf@frametitlerightline}%
740     \boolfalse{mdf@frametitletopline}\boolfalse{mdf@frametitlebottomline}%
741 }{}%
742 }

```

```

\mdframed
\mdframed@ii
\mdframed@i

```

That the user environment.

```

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

```

```

770      \endmdf@lrbbox%
771      \ifdefempty{\mdf@frametitle}{\mdf@@@frametitle@use}
772      \detected@mdf@put@frame%
773      \mdf@footnoteoutput%
774      }%
775  \fi%
776  \mdf@reserveda%
777  \endmdf@trivlist%
778 \color@endgroup\@doendpe%
779 }
780
781

```

```

\mdf@twoside@checklength
\mdf@zref@label
\if@mdf@pageodd
\mdf@pageisodd
\mdf@pageiseven
\mdf@@@setzref

```

The whole bunch is used to work with twoside mode and uses the correct margins.

```

782 \newtoggle{md:checktwoside}
783 \settoggle{md:checktwoside}{false}
784 \newrobustcmd*\mdf@twoside@checklength{%
785   \if@twoside
786     \ifbool{mdf@usetwoside}%
787       {\mdf@PackageInfo{mdframed works in twoside mode}%
788        \settoggle{md:checktwoside}{true}%
789        \setlength\mdf@rightmargin@length{\mdf@outermargin@length}%
790        \setlength\mdf@leftmargin@length{\mdf@innermargin@length}%
791        }%
792       {\mdf@PackageInfo{mdframed inside twoside mode but\MessageBreak
793        works with oneside mode}%
794        \settoggle{md:checktwoside}{false}%
795        }%
796   \fi%
797 }
798
799 \newcounter{mdf@zref@counter}%keine doppelten laebes
800 \zref@newprop*\mdf@pagevalue}[0]{\number\value{page}}
801 \zref@addprop{\ZREF@mainlist}{mdf@pagevalue}
802 \newrobustcmd*\mdf@zref@label{%
803   \stepcounter{mdf@zref@counter}
804   \zref@label{mdf@pagelabel-\number\value{mdf@zref@counter}}%
805 }
806 \newrobustcmd*\if@mdf@pageodd{%
807   \zref@refused{mdf@pagelabel-\the\value{mdf@zref@counter}}%
808   \ifodd\zref@extract{mdf@pagelabel-\the\value{mdf@zref@counter}}{mdf@pagevalue}%
809     \setlength\mdf@rightmargin@length{\mdf@outermargin@length}%
810     \setlength\mdf@leftmargin@length{\mdf@innermargin@length}%
811   \else
812     \setlength\mdf@rightmargin@length{\mdf@innermargin@length}%
813     \setlength\mdf@leftmargin@length{\mdf@outermargin@length}%
814   \fi%
815 }
816 \newrobustcmd*\mdf@@@setzref{%

```

```

817 \iftoggle{md:checktwoside}{\mdf@zref@label\if@mdf@pageodd}{}%
818 }

```

`\mdf@freepagevspace`

```

819 \newrobustcmd*\mdf@freepagevspace{%
820     \penalty\@M \vskip 2\baselineskip
821     \penalty9999 \vskip -2\baselineskip
822     \penalty9999
823     \ifdimequal{\pagegoal}{\maxdimen}%
824         {\mdf@freevspace@length\vsize}%
825         {\mdf@freevspace@length=\pagegoal\relax%
826         \advance\mdf@freevspace@length by -\pagetotal\relax%
827         \addtolength\mdf@freevspace@length{\dimexpr-\parskip\relax}\relax%
828         }%
829 }

```

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

Width of the box

```

830 \newrobustcmd*\mdf@advancelength@horizontalmargin@sub[1]{%
831     \advance\mdf@horizontalsofbox by -\csname mdf@#1@length\endcsname\relax%
832 }
833 \newlength\mdf@horizontalsofbox
834 \newrobustcmd*\mdf@horizontalmargin@equation{%
835     \setlength{\mdf@horizontalsofbox}{\mdf@userdefinedwidth@length}%
836     \mdf@dolist{\mdf@advancelength@horizontalmargin@sub}{%
837         leftmargin,outerlinewidth,middlelinewidth,%
838         innerlinewidth,innerleftmargin,innerlinewidth,%
839         innerlinewidth,middlelinewidth,outerlinewidth,%
840         rightmargin}%
841     \notbool{mdf@leftline}{%
842         \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
843         \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
844         \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
845     }{}%
846     \notbool{mdf@rightline}{%
847         \advance\mdf@horizontalsofbox by \mdf@innerlinewidth@length\relax%
848         \advance\mdf@horizontalsofbox by \mdf@middlelinewidth@length\relax%
849         \advance\mdf@horizontalsofbox by \mdf@outerlinewidth@length\relax%
850     }{}%
851     \ifdimless{\mdf@horizontalsofbox}{3cm}%
852         {\mdf@PackageWarning{You have only a width of 3cm}}{}
853     \hsize=\mdf@horizontalsofbox%
854 }

```

`\mdf@keeplines@single`

horizontal space in relation of the lines.

```

855 \newrobustcmd*\mdf@keeplines@single{%
856   \notbool{mdf@topline}{%
857     \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
858     \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
859     \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
860   }{}%
861   \notbool{mdf@bottomline}{%
862     \advance\mdf@verticalmarginwhole@length by -\mdf@innerlinewidth@length%
863     \advance\mdf@verticalmarginwhole@length by -\mdf@middlelinewidth@length%
864     \advance\mdf@verticalmarginwhole@length by -\mdf@outerlinewidth@length%
865   }{}%
866 }

```

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

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

```

867 \newrobustcmd*\mdf@advancelength@verticalmarginwhole[1]{%
868   \advance\mdf@verticalmarginwhole@length by \csname mdf@#1@length\endcsname\relax%
869 }
870 \newrobustcmd*\mdf@advancelength@freevspace@sub[1]{%
871   \advance\dimen@ by -\csname mdf@#1@length\endcsname\relax%
872 }
873 \newrobustcmd*\mdf@advancelength@freevspace@add[1]{%
874   \advance\dimen@ by \csname mdf@#1@length\endcsname\relax%
875 }

```

`\mdf@reset`

Reset changes

```

876 \protected@edef\mdf@reset{\boxmaxdepth\the\boxmaxdepth
877   \splittopskip\the\splittopskip}%

```

`\mdf@put@frame@standalone`

Output of `mdframed` inside a non breakable environment.

```

878 \newrobustcmd*\mdf@put@frame@standalone{\relax%
879   \ifvoid\mdf@splitbox@one\relax
880     \mdf@PackageWarning{The environment is empty\MessageBreak}%
881     \let\mdf@reserved@a\relax%
882   \else
883     %Hier berechnung Box-Inhalt+Rahmen oben und unten
884     \setlength{\mdf@verticalmarginwhole@length}{%
885       {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
886     \mdf@dolist{\mdf@advancelength@verticalmarginwhole}{%
887       outerlinewidth,middlelinewidth,innerlinewidth,innertopmargin,
888       innerbottommargin,innerlinewidth,middlelinewidth,outerlinewidth}%
889     \mdf@keeplines@single%
890     \def\mdf@reserved@a{\mdf@putbox@single}%
891   \fi
892   \mdf@reserved@a%
893 }

```


\mdf@put@frame

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

```

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

\mdf@put@frame@i

Output of the first splitted box.

```

928 \def\mdf@put@frame@i{%Box muss gesplittet werden -- Ausgabe der ersten Teilbox
929 %Berechnung der Splittgroesse -- Linien und Abstand oben
930 %\vbox to 0pt{}%
931 %\rlap{\smash{\the\mdf@freevspace@length}}%\hrule \@height\z@ \@width\hsize
932 \mdf@freepagevspace@gives \mdf@freevspace@length
933 %Berechnung ob nur oberen Linien nur auf die Seite passe
934 \dimen@=\the\mdf@freevspace@length%
935 \dimen@i=\mdf@innertopmargin@length%
936 \advance\dimen@i by \mdf@innerlinewidth@length%
937 \advance\dimen@i by \mdf@middlelinewidth@length%
938 \advance\dimen@i by \mdf@outerlinewidth@length%
939 \advance\dimen@i by 2\baselineskip%
```

```

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

```

```

996             %benoetigt um Tiefe zu haben
997             \hrule \@height\dp\strutbox \@width\z@
998             \unvbox\mdf@splitbox@one}
999     \splittopskip\mdf@splittopskip@length%
1000     \mdf@ignorevbadness%
1001     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \dimen@i
1002     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%
1003     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
1004     \ifdimgreater{\ht\mdf@splitbox@two+\dp\mdf@splitbox@two}{\dimen@}%
1005         {%
1006             \splittopskip\z@\mdf@ignorevbadness%%
1007             \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two}
1008                 %benoetigt um Tiefe zu haben
1009                 \hrule \@height\dp\strutbox \@width\z@
1010                 \unvbox\mdf@splitbox@one}%
1011             \mdf@ignorevbadness%
1012             \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
1013             }{}%
1014     \ifbool{mdf@repeatframetitle}{%
1015         \setbox\mdf@splitbox@one\vbox{%
1016             \vbox to \mdf@splittopskip@length{\hsize\z@}
1017             %\par\unskip\nointerlineskip
1018             \unvcopy\mdf@frametitlebox%
1019             \mdf@@frametitlerule%
1020             \vbox to\dimexpr
1021                 -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox
1022                 +\mdf@innertopmargin@length\relax{\hsize\z@}%
1023             \unvbox\mdf@splitbox@one}%
1024         }{}%
1025     }{}%
1026     \ifvoid\mdf@splitbox@one
1027         \mdf@PackageWarning{You got a bad break\MessageBreak
1028             because the splittet box is empty\MessageBreak
1029             You have to change the page settings\MessageBreak
1030             like enlargethispage or something else}%
1031         \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two}%
1032         \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%
1033         \enlargethispage{\baselineskip}%
1034         \def\mdf@reserved@a{\mdf@put@frame}%
1035     \fi
1036     \ifvoid\mdf@splitbox@two%pruefe, ob erste Box leer ist
1037         {\hrule \@height\f@size pt \@width\z@%
1038         \hrule \@height\z@ \@width\hsize}%
1039     % \vfill\ject%
1040     % \vskip\baselineskip
1041     % {\hrule \@height\z@ \@width\hsize}
1042     %
1043     \def\mdf@reserved@a{\mdf@put@frame}%
1044     \else
1045         \ifdimequal{\ht\mdf@splitbox@two}{0pt}%
1046             {\hrule \@height\z@ \@width\hsize%
1047             \vfill\ject%
1048             \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@two\unvbox\mdf@splitbox@one}
1049             \def\mdf@reserved@a{\mdf@put@frame}%
1050             }%
1051         {%

```

```

1052      \begingroup%
1053      \mdf@setzref
1054      \mdf@putbox@first%%Groesse des Splittens passt
1055      \endgroup%
1056      \hrule \@height\z@ \@width\hsize%
1057      \vfill\ject%
1058      \def\mdf@reserved@a{\mdf@put@frame@ii}%
1059      }%
1060      \fi%
1061      }%
1062 \mdf@reserved@a%
1063 }

```

`\mdf@put@frame@ii`

Output of the middle and last box.

```

1064 \def\mdf@put@frame@ii{%Ausgabe der mittleren Box(en) wenn vorhanden
1065   \setlength{\mdf@freevspace@length}{\vsize}%
1066   \setlength{\mdimen@}{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1067   \mdf@dolist{\mdf@advance@length@freevspace@add}{%used \mdimen@
1068     outerlinewidth,middlelinewidth,innerlinewidth,%
1069     innerbottommargin}%%Addition der Linien unten
1070   \ifbool{mdf@everyline}{%
1071     \ifbool{mdf@topline}{%
1072       \advance\mdimen@ by \mdf@innerlinewidth@length%
1073       \advance\mdimen@ by \mdf@middlelinewidth@length%
1074       \advance\mdimen@ by \mdf@outerlinewidth@length%
1075     }{}%
1076   }{}%
1077   \ifbool{mdf@bottomline}{%
1078     \advance\mdimen@ by -\mdf@innerlinewidth@length%
1079     \advance\mdimen@ by -\mdf@middlelinewidth@length%
1080     \advance\mdimen@ by -\mdf@outerlinewidth@length%
1081     \relax}%
1082   \ifdimgreater{\mdimen@}{\mdf@freevspace@length}%
1083   {%
1084     \advance\mdf@freevspace@length by -\mdf@splitbottomskip@length\relax%
1085     \advance\mdf@freevspace@length by .5\ht\strutbox\relax%
1086     \ifbool{mdf@everyline}{%
1087       \ifbool{mdf@topline}{%
1088         \advance\mdf@freevspace@length by -\mdf@innerlinewidth@length%
1089         \advance\mdf@freevspace@length by -\mdf@middlelinewidth@length%
1090         \advance\mdf@freevspace@length by -\mdf@outerlinewidth@length%
1091       }{}%
1092       \ifbool{mdf@bottomline}{%
1093         \advance\mdf@freevspace@length by -\mdf@innerlinewidth@length%
1094         \advance\mdf@freevspace@length by -\mdf@middlelinewidth@length%
1095         \advance\mdf@freevspace@length by -\mdf@outerlinewidth@length%
1096       }{}%
1097     }{}%
1098     \splitmaxdepth\z@ \splittopskip\mdf@splittopskip@length%
1099     \mdf@ignorevbadness%
1100     \setbox\mdf@splitbox@two\vsplit\mdf@splitbox@one to \mdf@freevspace@length%
1101     \setbox\mdf@splitbox@two\vbox{\unvbox\mdf@splitbox@two}%PRUEFEN!!!
1102     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one}%PRUEFEN!!!

```

```

1103 \ifbool{mdf@repeatframetitle}{%
1104     \setbox\mdf@splitbox@one\vbox{%
1105         \vbox to \mdf@splittopskip@length{\hsize\z@}
1106         %\par\unskip\nointerlineskip
1107         \unvcopy\mdf@frametitlebox%
1108         \mdf@@frametitlerule%
1109         \vbox to\dimexpr
1110             -\mdf@splittopskip@length+\ht\strutbox+\dp\strutbox
1111             +\mdf@innertopmargin@length\relax{\hsize\z@}%
1112         \unvbox\mdf@splitbox@one}%
1113     }{}%
1114 \ifvoid\mdf@splitbox@one\relax%
1115     \mdf@PackageWarning{You got a bad break\MessageBreak
1116         because the split box is empty\MessageBreak
1117         You have to change the settings}%
1118     \setbox\mdf@splitbox@one{\unvbox\mdf@splitbox@two}%
1119     \def\mdf@reserved@a{\enlargethispage{\baselineskip}\mdf@put@frame@ii}%
1120 \else
1121     \begingroup
1122     \mdf@@setzref
1123     \mdf@putbox@middle%
1124     \endgroup
1125     \hrule \@height\z@ \@width\hsize
1126     \vfill\ject
1127     \def\mdf@reserved@a{\mdf@put@frame@ii}%
1128 \fi
1129 }%Hier die Ausgabe der mittleren Box
1130 {\ifvoid\mdf@splitbox@one
1131     \mdf@PackageWarning{You got a bad break\MessageBreak
1132         because the last split box is empty\MessageBreak
1133         You have to change the settings}%
1134     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one\hrule \@height\z@ \@width\mdfbounding
1135 \fi%
1136 \ifdimless{\ht\mdf@splitbox@one}{1sp}}{%
1137     \mdf@PackageWarning{You got a bad break\MessageBreak
1138         because the last split box is empty\MessageBreak
1139         You have to change the settings}%
1140     %\hb@xt@\z@{\box\mdf@splitbox@one}%
1141     \let\mdf@reserved@a\relax%
1142     \setbox\mdf@splitbox@one\vbox{\unvbox\mdf@splitbox@one\hrule \@height\z@ \@width\mdfboundin
1143 }{}%
1144 \begingroup%
1145     \mdf@@setzref
1146     \mdf@putbox@second%
1147     \hrule \@height\z@ \@width\hsize%
1148     \endgroup%
1149     \let\mdf@reserved@a\relax%
1150 }%Hier kommt die Ausgabe der letzten Box
1151 \mdf@reserved@a%
1152 }
1153

```

```

\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.

```

1154 %%% -----t-----
1155 %%% |               |
1156 %%% |               |
1157 %%% |               |
1158 %%% l|               |r
1159 %%% |               |
1160 %%% |               |
1161 %%% |-----|
1162 %%% b
1163 %%Zusammenhaenge abfragen:
1164 \newrobustcmd*\mdf@test@lrb{%
1165   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1166               and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1167 %3-set
1168 \newrobustcmd*\mdf@test@ltr{%
1169   \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1170               and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1171 \newrobustcmd*\mdf@test@ltb{%
1172   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1173               and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1174 \newrobustcmd*\mdf@test@trb{%
1175   \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1176               and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1177 \newrobustcmd*\mdf@test@lrb{%
1178   \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1179               and (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1180 %2-set
1181 \newrobustcmd*\mdf@test@lb{%
1182   \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1183               and (bool {mdf@leftline}) and not (bool {mdf@rightline})}}
1184 \newrobustcmd*\mdf@test@rb{%
1185   \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1186               and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1187 \newrobustcmd*\mdf@test@tr{%
1188   \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1189               and not (bool {mdf@leftline}) and (bool {mdf@rightline})}}
1190 \newrobustcmd*\mdf@test@lt{%
1191   \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})

```

```

1192             and (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1193 \newrobustcmd*{\mdf@test@lr{%
1194     \ifboolexpr{not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1195         and (bool {mdf@leftline}) and (bool {mdf@rightline}}})
1196 \newrobustcmd*{\mdf@test@tb{%
1197     \ifboolexpr{ (bool {mdf@topline}) and (bool {mdf@bottomline})
1198         and not (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1199 %Einzellinien
1200 \newrobustcmd*{\mdf@test@l{%
1201     \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1202         and (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1203 \newrobustcmd*{\mdf@test@r{%
1204     \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1205         and not (bool {mdf@leftline}) and (bool {mdf@rightline}}})
1206 \newrobustcmd*{\mdf@test@t{%
1207     \ifboolexpr{ (bool {mdf@topline}) and not (bool {mdf@bottomline})
1208         and not (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1209 \newrobustcmd*{\mdf@test@b{%
1210     \ifboolexpr{ not (bool {mdf@topline}) and (bool {mdf@bottomline})
1211         and not (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1212 %keine Linien
1213 \newrobustcmd*{\mdf@test@noline{%
1214     \ifboolexpr{ not (bool {mdf@topline}) and not (bool {mdf@bottomline})
1215         and not (bool {mdf@leftline}) and not (bool {mdf@rightline}}})
1216 \newrobustcmd*{\mdf@test@single{%
1217     \ifboolexpr{ not (test {\mdf@test@ltrb} or test {\mdf@test@ltr} or
1218         test {\mdf@test@ltb} or test {\mdf@test@trb} or
1219         test {\mdf@test@lrb} or test {\mdf@test@lb} or
1220         test {\mdf@test@rb} or test {\mdf@test@tr} or
1221         test {\mdf@test@lt} ) }}
1222 %
1223 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{framemethod}%
1224 \DisableKeyvalOption[action=warning,package=mdframed]{mdf}{xcolor}%
1225
1226 \endinput

```

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

```

1227 %% Style file for mdframed for package option 'framemethod=default'
1228 %%
1229 %% This package may be distributed under the terms of the LaTeX Project
1230 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1231 %% Either version 1.0 or, at your option, any later version.
1232 %%
1233 %%
1234 %%$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $
1235 %

```

```

\mdframed0packagename
\mdf@frame0date@svn

```

local settings

```

1236 \def\mdframed0packagename{md-frame-0}
1237 \def\mdf@frame0date@svn$#1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1238 \ProvidesFile{md-frame-0.mdf}%

```

```

1239      [\mdf@frame0date@svn$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $%
1240      \mdversion: \mdframed0packagename]

```

```

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

```

short command

```

1241 \def\mdf@background@default{\color{\mdf@backgroundcolor}}
1242 \def\mdf@frametitlebackground@default{\color{\mdf@frametitlebackgroundcolor}}
1243 \def\mdf@shadow@default{\color{\mdf@shadowcolor}}
1244 \def\mdf@innerlinecolor@default{\color{\mdf@innerlinecolor}}
1245 \def\mdf@middlelinecolor@default{\color{\mdf@middlelinecolor}}
1246 \def\mdf@outerlinecolor@default{\color{\mdf@outerlinecolor}}
1247 \def\mdf@frametitlerulecolor@default{\color{\mdf@frametitlerulecolor}}
1248 \let\mdf@linecolor@default\mdf@middlelinecolor@default
1249 \def\mdf@@frametitlerule{%
1250   \ifbool{mdf@frametitlerule}{%
1251     \vbox to \mdf@frametitlerulewidth@length {\hsize\mdf@frametitleboxwidth%
1252       \par\unskip\vskip\mdf@frametitlebelowskip@length%
1253       \rlap{\noindent\hspace*{-\mdf@innerleftmargin@length}%
1254         \mdf@frametitlerulecolor@default%
1255         \rule{\dimexpr\mdf@frametitleboxwidth%
1256           +\mdf@innerleftmargin@length
1257           +\mdf@innerrightmargin@length\relax
1258           }{\mdf@frametitlerulewidth@length}%
1259         }}%
1260   }{}
1261   \par\unskip\vskip\mdf@innertopmargin@length%
1262 }%
1263

```

```

\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

```

1264 \def\mdf@frame@background@single{%
1265   \ifbool{mdf@shadow}{%
1266     \rlap{\smash{\mdf@shadow@default%
1267       \rule{\dimexpr-\mdf@boundingboxdepth
1268         -\mdf@shadowsize@length
1269         \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}{\relax}%
1270       }\dimexpr\mdf@boundingboxtotalwidth
1271       +\mdf@shadowsize@length
1272       \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{\relax}%
1273       }\dimexpr\mdf@boundingboxtotalheight
1274       +\mdf@shadowsize@length
1275       \ifbool{mdf@bottomline}{+\mdf@middlelinewidth@length}{\relax}%
1276     }}%
1277   }{}%
1278   \rlap{\mdf@background@default%

```



```

1279     \rule[-\mdfboundingboxdepth]%
1280         {\mdfboundingboxtotalwidth}%
1281         {\mdfboundingboxtotalheight}%
1282     }%
1283 }%
1284 \def\mdf@frame@frametitlebackground@single{%
1285     \rlap{\mdf@frametitlebackground@default%
1286         \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1287             {\mdfboundingboxtotalwidth}%
1288             {\mdfframetitleboxtotalheight}%
1289         }%
1290     }%
1291
1292 \def\mdf@frame@topline@single{%
1293     \rlap{\mdf@linecolor@default%
1294         \ifbool{mdf@topline}{%
1295             \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth%
1296                 +\mdf@innerbottommargin@length+\mdf@innertopmargin@length\relax]%
1297                 {\mdfboundingboxtotalwidth}%
1298                 {\mdf@middlelinewidth@length}}%
1299         }%
1300     }%
1301 }%
1302 \def\mdf@frame@bottomline@single{%
1303     \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1304         \ifbool{mdf@bottomline}{%
1305             \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1306                 {\dimexpr\mdfboundingboxtotalwidth%
1307                     \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}%
1308                     \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}}{\relax}%
1309                 {\mdf@middlelinewidth@length}}%
1310         }%
1311     }%
1312 }%
1313 \def\mdf@frame@leftline@single{%
1314     \llap{\mdf@linecolor@default%
1315         \rule[-\mdfboundingboxdepth]%
1316             {\mdf@middlelinewidth@length}%
1317             {\dimexpr\mdfboundingboxtotalheight%
1318                 \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}}{\relax}%
1319     }%
1320 }%
1321 \def\mdf@frame@rightline@single{%
1322     \rlap{\mdf@linecolor@default%
1323         \hspace*{\mdfboundingboxwidth}%
1324         \hspace*{\mdf@innerrightmargin@length}%
1325         \rule[\dimexpr-\mdfboundingboxdepth%
1326             \relax]%
1327             {\mdf@middlelinewidth@length}%
1328             {\dimexpr\mdfboundingboxtotalheight%
1329                 +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1330     }%
1331 }%
1332 \def\mdf@putbox@single{%%%% Ausgabe der ungesplitteten Gesamtbox
1333     \ifvoid\mdf@splitbox@one
1334     \else%

```

```

1335 \mdf@makebox@out{%
1336 \mdf@makeboxalign@left%
1337 \setlength{\mdfboundingboxwidth}%
1338 {\wd\mdf@splitbox@one}%
1339 \setlength{\mdfboundingboxtotalwidth}%
1340 {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1341 +\mdf@innerrightmargin@length\relax}%
1342 \setlength{\mdfboundingboxheight}%
1343 {\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1344 \setlength{\mdfboundingboxdepth}%
1345 {\dimexpr\dp\mdf@splitbox@one+\mdf@innerbottommargin@length\relax}%
1346 \setlength{\mdfboundingboxtotalheight}%
1347 {\dimexpr\mdfboundingboxheight+\mdf@innertopmargin@length%
1348 +\mdf@innerbottommargin@length\relax}%
1349 \setlength{\mdftotallinewidth}{%
1350 \dimexpr\mdf@innerlinewidth@length+\mdf@middlelinewidth@length%
1351 +\mdf@outerlinewidth@length}%
1352 \noindent%
1353 \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1354 +\ifbool{mdf@leftline}%
1355 {\mdf@middlelinewidth@length}{\z@}%
1356 +\ifbool{mdf@rightline}%
1357 {\mdf@middlelinewidth@length}{\z@}\relax}%
1358 \mdf@makebox@in[\@tempdima]{%
1359 \null%
1360 \ifbool{mdf@leftline}{%
1361 \hspace*{\mdftotallinewidth}%
1362 \mdf@frame@leftline@single%
1363 }{}%
1364 \mdf@frame@topline@single%
1365 \mdf@frame@background@single%
1366 \mdf@frame@bottomline@single%
1367 \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@single}%
1368 \hspace*{\mdf@innerleftmargin@length}%
1369 \ifbool{mdf@rightline}{%
1370 \mdf@frame@rightline@single%
1371 }{}%
1372 {\box\mdf@splitbox@one}%
1373 }%
1374 \mdf@makeboxalign@right%
1375 }%
1376 \fi%
1377 }

```

```

\mdf@putbox@first
\mdf@frame@background@first
\mdf@frame@leftline@first
\mdf@frame@topline@first
\mdf@frame@rightline@first

```

The first frame of a splitted contents of mdframed

```

1378 \def\mdf@frame@background@first{%
1379 \ifbool{mdf@shadow}{%
1380 \rlap{\smash{\mdf@shadow@default%
1381 \rule[\dimexpr-\mdfboundingboxdepth

```

```

1382             -\mdf@shadowsize@length\relax}%
1383         {\dimexpr\mdfboundingboxtotalwidth
1384             +\mdf@shadowsize@length
1385             \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}\relax}%
1386         {\dimexpr\mdfboundingboxtotalheight
1387             +\mdf@shadowsize@length\relax}%
1388     }%
1389 }}{}%
1390 \rlap{\mdf@background@default%
1391     \rule[-\mdfboundingboxdepth]%
1392         {\mdfboundingboxtotalwidth}%
1393         {\mdfboundingboxtotalheight}%
1394 }%
1395 }%
1396 \def\mdf@frame@frametitlebackground@first{%
1397 \ifdimless{\mdfframetitleboxtotalheight}{\mdfboundingboxtotalheight}%
1398 {%
1399     \rlap{\mdf@frametitlebackground@default%
1400         \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1401             {\mdfboundingboxtotalwidth}%
1402             {\mdfframetitleboxtotalheight}%
1403         }%
1404     \global\mdfframetitleboxtotalheight=-\p@\relax%
1405 }{\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
1406     Current this isn't well supported}%
1407     \rlap{\mdf@frametitlebackground@default%
1408         \rule[-\mdfboundingboxdepth]%
1409             {\mdfboundingboxtotalwidth}%
1410             {\mdfboundingboxtotalheight}%
1411         }%
1412     \global\mdfframetitleboxtotalheight=\dimexpr\mdfframetitleboxtotalheight
1413         -\mdfboundingboxheight
1414         +\mdf@frametitlebelowskip@length
1415         +.5\baselineskip-1pt
1416 %         +\dp\strutbox
1417         \relax%
1418 }%
1419 }%
1420 \def\mdf@frame@leftline@first{%
1421     \llap{\mdf@linecolor@default%
1422         \rule[-\mdfboundingboxdepth]%
1423             {\mdf@middlelinewidth@length}%
1424             {\dimexpr\mdfboundingboxtotalheight%
1425                 +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1426         }%
1427 }%
1428 \def\mdf@frame@topline@first{%
1429     \rlap{\mdf@linecolor@default%
1430         \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth+
1431             \mdf@splitbottomskip@length+\mdf@innertopmargin@length\relax]%
1432             {\mdfboundingboxtotalwidth}%
1433             {\mdf@middlelinewidth@length}%
1434         }%
1435 }
1436 \def\mdf@frame@rightline@first{%
1437     \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%

```

```

1438 \hspace*{\mdf@innerrightmargin@length}%
1439 \rule[-\mdfboundingboxdepth]%
1440     {\mdf@middlelinewidth@length}%
1441     {\dimexpr\mdfboundingboxtotalheight%
1442      +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}\relax}%
1443 }%
1444 }%
1445 \def\mdf@frame@bottomline@first{%
1446 \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1447 \ifbool{mdf@bottomline}{%
1448 \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1449     {\dimexpr\mdfboundingboxtotalwidth
1450      \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1451      \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{\relax}%
1452      {\mdf@middlelinewidth@length}}}%
1453     {}}%
1454 }%
1455 }%
1456 \def\mdf@putbox@first{%%%% Ausgabe der Teilbox 1
1457 \ifvoid\mdf@splitbox@two
1458 \else%
1459 \mdf@makebox@out[\linewidth]{%
1460 \mdf@makeboxalign@left%
1461 \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@two}%
1462 \setlength{\mdfboundingboxtotalwidth}%
1463     {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1464      +\mdf@innerrightmargin@length\relax}%
1465 \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
1466 \setlength{\mdfboundingboxdepth}%
1467     {\dimexpr\dp\mdf@splitbox@two+\mdf@splitbottomskip@length\relax}%
1468 \setlength{\mdfboundingboxtotalheight}%
1469     {\dimexpr\mdfboundingboxheight+\mdf@innertopmargin@length%
1470      +\mdf@splitbottomskip@length\relax}%
1471 \setlength{\@tempdima}%
1472     {\dimexpr\mdfboundingboxtotalwidth%
1473      +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1474      +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1475      \relax}%
1476 \mdf@makebox@in[\@tempdima]{%
1477 \null%
1478 \ifbool{mdf@leftline}{%
1479 \hspace*{\mdf@middlelinewidth@length}%
1480 \mdf@frame@leftline@first}{}%
1481 \ifbool{mdf@everyline}%
1482     {\mdf@frame@bottomline@first}{}%
1483 \ifbool{mdf@topline}{%
1484 \mdf@frame@topline@first}{}%
1485 \mdf@frame@background@first%
1486 \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@first}%
1487 \hspace*{\mdf@innerleftmargin@length}%
1488 \ifbool{mdf@rightline}{%
1489 \mdf@frame@rightline@first}{}%
1490 {\box\mdf@splitbox@two}%
1491 }%
1492 \mdf@makeboxalign@right%
1493 }%

```

```
1494 \fi%
1495 }
```

```
\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

```
1496 \def\mdf@frame@background@second{%
1497   \ifbool{mdf@shadow}{%
1498     \rlap{\smash{\mdf@shadow@default%
1499       \rule[\dimexpr-\mdfboundingboxdepth
1500         -\mdf@shadowsize@length
1501           \ifbool{mdf@bottomline}{-\mdf@middlelinewidth@length}}{\relax}%
1502         {\dimexpr\mdfboundingboxtotalwidth
1503           +\mdf@shadowsize@length
1504             \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}{\relax}%
1505         {\dimexpr\mdfboundingboxtotalheight
1506           +\mdf@shadowsize@length\relax}%
1507     }}%
1508   }{}%
1509   \rlap{\mdf@background@default%
1510     \rule[-\mdfboundingboxdepth]%
1511       {\mdfboundingboxtotalwidth}%
1512       {\mdfboundingboxtotalheight}%
1513   }%
1514 }%
1515 \def\mdf@frame@frametitlebackground@second{%
1516   \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1517   {%
1518     \rlap{\mdf@frametitlebackground@default%
1519       \rule[\dimexpr-\mdfboundingboxdepth+\mdfboundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1520         {\mdfboundingboxtotalwidth}%
1521         {\mdfframetitleboxtotalheight}%
1522     }%
1523   }%
1524 }%
1525 \def\mdf@frame@leftline@second{%
1526   \llap{\mdf@linecolor@default%
1527     \rule[-\mdfboundingboxdepth]%
1528       {\mdf@middlelinewidth@length}%
1529       {\dimexpr\mdfboundingboxtotalheight}%
1530   }%
1531 }%
1532 \def\mdf@frame@bottomline@second{%
1533   \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1534     \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]%
1535       {\dimexpr\mdfboundingboxtotalwidth
1536         \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}{\relax}%
1537       \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}}{\relax}%
1538     {\mdf@middlelinewidth@length}%
1539   }%
1540 }%
```

```

1541 \def\mdf@frame@rightline@second{%
1542   \rlap{\mdf@linecolor@default\hspace*{\mdfboundingboxwidth}%
1543     \hspace*{\mdf@innerrightmargin@length}%
1544     \rule[-\mdfboundingboxdepth]{\mdf@middlelinewidth@length}%
1545       {\mdfboundingboxtotalheight}%
1546     }%
1547 }%
1548 }%
1549 \def\mdf@frame@topline@second{%
1550   \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1551     \ifbool{mdf@topline}{%
1552       \rule[\dimexpr\mdfboundingboxheight-\mdfboundingboxdepth%
1553         +\mdf@innerbottommargin@length\relax]{\dimexpr\mdfboundingboxtotalwidth%
1554           \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}{}%
1555           \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}{}\relax
1556         }%
1557       {\mdf@middlelinewidth@length}}%
1558     }%
1559   }%
1560 }%
1561 }%
1562
1563 \def\mdf@putbox@second{%
1564   \ifvoid\mdf@splitbox@one%
1565   \else
1566     \mdf@makebox@out{%
1567       \mdf@makeboxalign@left%
1568       \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@one}%
1569       \setlength{\mdfboundingboxtotalwidth}%
1570         {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1571           +\mdf@innerrightmargin@length\relax}%
1572       \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1573       \setlength{\mdfboundingboxdepth}%
1574         {\dimexpr\dp\mdf@splitbox@one+\mdf@innerbottommargin@length\relax}%
1575       \setlength{\mdfboundingboxtotalheight}%
1576         {\dimexpr\mdfboundingboxheight+\mdf@innerbottommargin@length\relax}%
1577       \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1578         +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1579         +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1580         \relax}%
1581       \mdf@makebox@in[\@tempdima]{%
1582         \null%
1583         \ifbool{mdf@leftline}{%
1584           \hspace*{\mdf@middlelinewidth@length}%
1585           \mdf@frame@leftline@second}{}%
1586         \ifbool{mdf@everyline}%
1587           {\mdf@frame@topline@second}{}%
1588         \mdf@frame@background@second%
1589         \ifbool{mdf@bottomline}{%
1590           \mdf@frame@bottomline@second}{}%
1591         \ifdefempty{\mdf@frametitle}{\mdf@frame@frametitlebackground@second}%
1592         \hspace*{\mdf@innerleftmargin@length}%
1593         \ifbool{mdf@rightline}{%
1594           \mdf@frame@rightline@second}{}%
1595         {\box\mdf@splitbox@one}%
1596       }%

```

```

1597 \mdf@makeboxalign@right%
1598 }%
1599 \fi%
1600 }%

```

```

\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`

```

1601 \def\mdf@frame@leftline@middle{%
1602 \llap{\mdf@linecolor@default%
1603 \rule[-\mdf@boundingboxdepth]%
1604 {\mdf@middlelinewidth@length}%
1605 {\mdf@boundingboxtotalheight}%
1606 }%
1607 }%
1608 \def\mdf@frame@background@middle{%
1609 \ifbool{mdf@shadow}{%
1610 \rlap{\smash{\mdf@shadow@default%
1611 \rule[\dimexpr-\mdf@boundingboxdepth
1612 -\mdf@shadowsize@length\relax]%
1613 {\dimexpr\mdf@boundingboxtotalwidth
1614 +\mdf@shadowsize@length
1615 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}\relax}%
1616 {\dimexpr\mdf@boundingboxtotalheight\relax}%
1617 }%
1618 }}}%
1619 \rlap{\mdf@background@default%
1620 \rule[-\mdf@boundingboxdepth]%
1621 {\mdf@boundingboxtotalwidth}%
1622 {\mdf@boundingboxtotalheight}%
1623 }%
1624 }%
1625 \def\mdf@frame@frametitlebackground@middle{%
1626 \ifdimless{\mdfframetitleboxtotalheight}{\z@}%
1627 {}%
1628 {\rlap{\mdf@frametitlebackground@default%
1629 \rule[\dimexpr-\mdf@boundingboxdepth+\mdf@boundingboxtotalheight-\mdfframetitleboxtotalheight\relax]
1630 {\mdf@boundingboxtotalwidth}%
1631 {\mdfframetitleboxtotalheight}%
1632 }%
1633 \global\mdfframetitleboxtotalheight=-\p@ \relax%
1634 }%
1635 }%
1636 \def\mdf@frame@rightline@middle{%
1637 \rlap{\mdf@linecolor@default\hspace*{\mdf@boundingboxwidth}%
1638 \hspace*{\mdf@innerrightmargin@length}%
1639 \rule[-\mdf@boundingboxdepth]%
1640 {\mdf@middlelinewidth@length}%
1641 {\mdf@boundingboxtotalheight}%
1642 }%
1643 }%
1644 \def\mdf@frame@topline@middle{%

```

```

1645 \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1646 \ifbool{mdf@topline}{%
1647 \rule[\dimexpr\mdfboundingboxtotalheight-\mdfboundingboxdepth\relax]{%
1648 {\dimexpr\mdfboundingboxtotalwidth
1649 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}}%
1650 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}}{\relax
1651 }%
1652 {\mdf@middlelinewidth@length}}}%
1653 {}%
1654 }%
1655 }%
1656 \def\mdf@frame@bottomline@middle{%
1657 \rlap{\ifbool{mdf@leftline}{\hspace*{-\mdf@middlelinewidth@length}}{\mdf@linecolor@default%
1658 \ifbool{mdf@bottomline}{%
1659 \rule[\dimexpr-\mdfboundingboxdepth-\mdf@middlelinewidth@length\relax]{%
1660 {\dimexpr\mdfboundingboxtotalwidth
1661 \ifbool{mdf@rightline}{+\mdf@middlelinewidth@length}}}%
1662 \ifbool{mdf@leftline}{+\mdf@middlelinewidth@length}}{\relax}%
1663 {\mdf@middlelinewidth@length}}}%
1664 {}%
1665 }%
1666 }%
1667
1668 \def\mdf@putbox@middle{%
1669 \ifvoid\mdf@splitbox@two%
1670 \else
1671 \mdf@makebox@out{%
1672 \mdf@makeboxalign@left%
1673 \setlength{\mdfboundingboxwidth}{\wd\mdf@splitbox@two}%
1674 \setlength{\mdfboundingboxtotalwidth}%
1675 {\dimexpr\mdfboundingboxwidth+\mdf@innerleftmargin@length%
1676 +\mdf@innerrightmargin@length\relax}%
1677 \setlength{\mdfboundingboxheight}{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
1678 \setlength{\mdfboundingboxdepth}%
1679 {\dimexpr\dp\mdf@splitbox@two+\mdf@splitbottomskip@length\relax}%
1680 \setlength{\mdfboundingboxtotalheight}%
1681 {\dimexpr\mdfboundingboxheight+\mdf@splitbottomskip@length\relax}%
1682 \setlength{\@tempdima}{\dimexpr\mdfboundingboxtotalwidth%
1683 +\ifbool{mdf@leftline}{\mdf@middlelinewidth@length}{\z@}%
1684 +\ifbool{mdf@rightline}{\mdf@middlelinewidth@length}{\z@}%
1685 \relax}%
1686 \mdf@makebox@in[\@tempdima]{%
1687 \null%
1688 \ifbool{mdf@leftline}{%
1689 \hspace*{\mdf@middlelinewidth@length}%
1690 \mdf@frame@leftline@middle}}}%
1691 \mdf@frame@background@middle%
1692 \ifbool{mdf@everyline}%
1693 {\mdf@frame@topline@middle}}}%
1694 \ifdefempty{\mdf@frametitle}}{\mdf@frame@frametitlebackground@middle}%
1695 \ifbool{mdf@everyline}%
1696 {\mdf@frame@bottomline@middle}}}%
1697 \hspace*{\mdf@innerleftmargin@length}%
1698 \ifbool{mdf@rightline}{%
1699 \mdf@frame@rightline@middle}}}%
1700 {\box\mdf@splitbox@two}%

```



```

1701     }%
1702     \mdf@makeboxalign@right%
1703   }
1704   \fi%
1705 }

```

```

1706 \endinput

```

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

```

1707 %% Style file for mdframed for package option 'framemethod=default'
1708 %%
1709 %% This package may be distributed under the terms of the LaTeX Project
1710 %% Public License, as described in lppl.txt in the base LaTeX distribution.
1711 %% Either version 1.0 or, at your option, any later version.
1712 %%
1713 %%
1714 %%$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $
1715 %

```

```

\mdframedIpackagename
\mdf@frameIdate@svn

```

local settings

```

1716 \def\mdframedIpackagename{md-frame-1}
1717 \def\mdf@frameIdate@svn$1: #2 #3 #4-#5-#6 #7 #8${#4/#5/#6\space }
1718 \ProvidesFile{md-frame-1.mdf}%
1719     [\mdf@frameIdate@svn$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $ %
1720     \mdversion: \mdframedIpackagename]
1721 %

```

```

\mdf@tikz@settings

```

Define settings for tikz

```

1722 %Allgemeine Einstellungen fuer tikz
1723 \def\mdf@tikz@settings{%
1724 %
1725   \tikzset{mdfbox/.style={anchor=south west,%
1726                           inner sep=0pt,%
1727                           outer sep=0pt,%
1728                           \mdf@fontcolor,}}% anchor der Ausgabebox ist unten links
1729   \tikzset{mdfcorners/.style={rounded corners=\mdf@roundcorner@length}}%
1730   \tikzset{mdfbackground/.style={fill=\mdf@backgroundcolor,%
1731                                   draw=\mdf@backgroundcolor}}%
1732   \tikzset{mdfframetitlebackground/.style={fill=\mdf@frametitlebackgroundcolor,%
1733                                               draw=none,%
1734                                               rounded corners={max(\mdf@roundcorner@length%
1735                               -\mdf@innerlinewidth@length%
1736                               -.5\mdf@middlelinewidth@length,0)}}}%
1737 %
1738   \tikzset{mdfouterline/.style={}}%
1739 % nur wenn outerlinewidth>0 wird aussere Linie gezeichnet
1740   \ifdimgreater{\mdf@outerlinewidth@length}{\z@}
1741     {\tikzset{mdfouterline/.append style={%
1742         draw=\mdf@outerlinecolor,%

```

```

1743     line width=2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length}}{}%
1744 %
1745 \tikzset{mdfinnerline/.style={}}%
1746 % nur wenn innerlinewidth>0 wird innere Linie gezeichnet
1747 \ifdimgreater{\mdf@innerlinewidth@length}{\z@}
1748     {\tikzset{mdfinnerline/.append style={%
1749         draw=\mdf@innerlinecolor,%
1750         line width=2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length}}{}%
1751 %
1752 \tikzset{mdfshadow/.style={drop shadow={%
1753     shadow xshift=\mdf@shadowsize@length-2pt,
1754     shadow yshift=-\mdf@shadowsize@length+2pt,
1755     fill=\mdf@shadowcolor,
1756     every shadow }}}%
1757 %
1758 \mdf@tikzset@local
1759 \tikzset{mdfmiddleline/.style={}}%
1760 % nur wenn middlelinewidth>0 wird mittlere Linie gezeichnet
1761 \ifdimgreater{\mdf@middlelinewidth@length}{\z@}
1762     {\tikzset{mdfmiddleline/.append style={%
1763         preaction={draw=\mdf@middlelinecolor,%
1764             line width=\mdf@middlelinewidth@length},%
1765         line width=\mdf@middlelinewidth@length,%
1766         tikzsetting}}%
1767     }{}%
1768 }%

```

```

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

```

Befehle fuer Ausgabe von Rahmen und Hintergrund

```

1769 \newrobustcmd*\mdf@tikzbox@tfl[1]{%three or four borders
1770     \clip(0,0)rectangle(\mdf@boundingboxwidth,\mdf@boundingboxheight);%
1771     \begin{scope}[mdfcorners]%
1772         \clip[preaction=mdfouterline]%
1773             [postaction=mdfbackground]%
1774             [postaction=mdfinnerline]#1;%
1775     \end{scope}%
1776     \path[mdfmiddleline,mdfcorners]#1;
1777 }%
1778
1779
1780
1781 \newrobustcmd*\mdf@tikzbox@otl[2]{%one or two borders
1782     \clip(0,0)rectangle(\mdf@boundingboxwidth,\mdf@boundingboxheight);%
1783     \begin{scope}
1784         \path[mdfouterline,mdfcorners]#1;%
1785         \clip[postaction=mdfbackground]#2;%
1786         \path[mdfinnerline,mdfcorners]#1;%
1787     \end{scope}%
1788     \path[mdfmiddleline,mdfcorners]#1;%

```

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

frametitlerule with tikz

```

1789 \tikzset{mdfframetitrerule/.style={%
1790     draw=none,
1791     fill=\mdf@frametitrerulecolor,
1792 }%
1793 }
1794 \def\mdf@@frametitrerule{%
1795     \ifbool{mdf@frametitrerule}{%
1796         \vbox{\hsize0pt
1797             \par\unskip\vskip\mdf@frametitlebelowskip@length
1798             \noindent\rlap{\hspace*{-\mdf@innerleftmargin@length}%
1799             \begingroup%
1800             \pgfmathsetlength{\dimen@}{\mdfframetitleboxwidth+\mdf@innerleftmargin@length+\mdf@innerrightmargin@length}%
1801             \tikz\draw[mdfframetitrerule] (0,0)%
1802                 rectangle (\dimen@,\mdf@frametitrerulewidth@length);
1803             \endgroup}
1804         }%
1805     }{}
1806     \par\unskip\vskip\mdf@innertopmargin@length%
1807 }%
1808

```

\mdf@putbox@single

Output of the non breakable contents.

```

1809 % Info zu den verwendeten Punkten:
1810 % O ist die untere linke Ecke der Mitte der middleline
1811 % P ist die obere rechte Ecke der Mitte der middleline
1812 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
1813 %
1814 \def\mdf@putbox@single{%
1815     \ifvoid\mdf@splitbox@one
1816     \else%
1817         \mdf@makebox@out{%
1818             \mdf@makeboxalign@left%
1819             \mdf@tikz@settings%
1820 %
1821             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
1822             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
1823             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
1824             \ifbool{mdf@leftline}{%
1825                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1826                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1827                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
1828             \ifbool{mdf@rightline}{%
1829                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
1830                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
1831                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}%{}%
1832 %
1833             \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
1834             \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
1835             \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
1836             \ifbool{mdf@topline}{%
1837                 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1838                 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1839                 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}%{}%

```

```

1840 \ifbool{mdf@bottomline}{%
1841   \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
1842   \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
1843   \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{%
1844 \mdf@makebox@in[\mdfboundingboxwidth]{%
1845 \null%
1846 \begin{tikzpicture}[remember picture]%
1847   \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
1848   \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
1849   \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
1850   \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
1851   \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
1852   \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
1853   \ifbool{mdf@leftline}{%
1854     {%
1855       \pgfmathsetlengthmacro\mdf@Ax%
1856         {\mdf@Ax+\mdf@outerlinewidth@length+
1857          \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
1858       \pgfmathsetlengthmacro\mdf@Ox%
1859         {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1860     }{%
1861   \ifbool{mdf@rightline}{%
1862     {%
1863       \pgfmathsetlengthmacro\mdf@Px%
1864         {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1865     }{%
1866   \ifbool{mdf@bottomline}{%
1867     {%
1868       \pgfmathsetlengthmacro\mdf@Ay%
1869         {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
1870          +\mdf@innerlinewidth@length}%
1871       \pgfmathsetlengthmacro\mdf@Oy%
1872         {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
1873     }{%
1874   \ifbool{mdf@topline}{%
1875     {%
1876       \pgfmathsetlengthmacro\mdf@Py%
1877         {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
1878     }{%
1879 %
1880 \coordinate(0)at(\mdf@Ox,\mdf@Oy);%
1881 \coordinate(P)at(\mdf@Px,\mdf@Py);%
1882 %
1883 \ifbool{mdf@shadow}
1884   {\path[mdfshadow,mdfcorners](0) rectangle (P);}%
1885 %
1886 \begin{scope}[use as bounding box]
1887   \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{%
1888 %
1889   \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{%
1890   \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{%
1891   \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{%
1892   \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{%
1893 %
1894   \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}%
1895               {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%

```

```

1896         }{}%
1897     \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}%
1898                 {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
1899         }{}%
1900     \mdf@test@tr{\mdf@tikzbox@otl{(0|P)--(P)--(P|-0)}%
1901                 {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
1902         }{}%
1903     \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}%
1904                 {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
1905         }{}%
1906     \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}%
1907                 {(0)rectangle(P)}%
1908         }{}%
1909     \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|P)(0|-P)--(P)}%
1910                 {(0)rectangle(P)}%
1911         }{}%
1912 %
1913     \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}%
1914                 {(0)rectangle(P)}%
1915         }{}%
1916     \mdf@test@r{\mdf@tikzbox@otl{(0|P)--(P)}%
1917                 {(0)rectangle(P)}%
1918         }{}%
1919     \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}%
1920                 {(0)rectangle(P)}%
1921         }{}%
1922     \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|P)}%
1923                 {(0)rectangle(P)}%
1924         }{}%
1925 %
1926     \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
1927 %
1928     %Frametitlebackground
1929     \drawbackgroundframetitle@single
1930 %
1931     \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};% Ausgabebox einfüegen
1932 \end{scope}
1933 %HIER KOMMT EIN WEITERES MAKRO
1934 \mdf@singleextra
1935 \mdfcreateextratikz
1936 \end{tikzpicture}%
1937 }%
1938 \mdf@makeboxalign@right%
1939 }%
1940 \fi
1941 }%
1942 \def\drawbackgroundframetitle@single{%
1943 \ifdefempty{\mdf@frametitle}{}{}%
1944 \drawbackgroundframetitle@@single%
1945 }%
1946 }%
1947 \def\drawbackgroundframetitle@@single{%
1948 \begin{scope}%background frame title
1949 \ifbool{mdf@leftline}{
1950 \pgfmathsetlengthmacro\mdf@0x%
1951 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}

```

```

1952     }{}%
1953     \ifbool{mdf@rightline}{%
1954         \pgfmathsetlengthmacro\mdf@Px%
1955             {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1956     }{}%
1957     \ifbool{mdf@topline}{%
1958         \pgfmathsetlengthmacro\mdf@Py%
1959             {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1960     }{}%
1961     \pgfmathsetlengthmacro\mdf@Fy
1962         {\mdf@Py-\mdfframetitleboxtotalheight}
1963     \path[mdfframetitlebackground]
1964         (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
1965         -- (\mdf@Px,\mdf@Py) -- (\mdf@Px,\mdf@Fy);
1966 \end{scope}
1967 }

```

`\mdf@putbox@first`

Output of the first breakable contents.

```

1968 \def\drawbrackgroundframetitle@first{%
1969     \ifdefempty{\mdf@frametitle}{}{}%
1970     \ifdimgreater{\mdfboundingboxheight}{\mdfframetitleboxtotalheight}%
1971     {%
1972         \drawbrackgroundframetitle@@first
1973         \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
1974     }\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
1975         Currently this isn't well supported}%
1976     \drawbrackgroundframetitle@@first
1977     \pgfmathsetlength{\global\mdfframetitleboxtotalheight}%
1978         {\mdfframetitleboxtotalheight-\mdfboundingboxheight-
1979             \mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
1980             +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length+\mdf@splittopskip@length%
1981             +\dp\strutbox%
1982         }%
1983     }%
1984 }%
1985 }%
1986 %
1987 \def\drawbrackgroundframetitle@@first{%
1988     \begin{scope}%background frame title
1989         \ifbool{mdf@leftline}{%
1990             \pgfmathsetlengthmacro\mdf@0x%
1991                 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
1992             }{}%
1993         \ifbool{mdf@rightline}{%
1994             \pgfmathsetlengthmacro\mdf@Px%
1995                 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
1996             }{}%
1997         \ifbool{mdf@topline}{%
1998             \pgfmathsetlengthmacro\mdf@Py%
1999                 {\mdf@Py-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2000             }{}%
2001         \pgfmathsetlengthmacro\mdf@Fy
2002             {\max(0,\mdf@Py-\mdfframetitleboxtotalheight)}

```

```

2003      \path[mdfframetitlebackground]
2004          (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2005          -- (\mdf@Px,\mdf@Py) -- (\mdf@Px,\mdf@Fy);
2006      \end{scope}%
2007 }%
2008 %
2009 \def\mdf@putbox@first{%
2010     \ifvoid\mdf@splitbox@two
2011     \else%
2012         \mdf@makebox@out{%
2013             \mdf@makeboxalign@left%
2014             \mdf@tikz@settings%
2015             \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2016             \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2017             \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2018             \ifbool{mdf@leftline}{%
2019                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2020                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2021                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
2022             \ifbool{mdf@rightline}{%
2023                 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2024                 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2025                 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2026             \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2027             \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2028             \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2029             \ifbool{mdf@topline}{%
2030                 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2031                 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2032                 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2033 %%%%%%%%%%
2034     \ifbool{mdf@everyline}{%
2035         \ifbool{mdf@bottomline}{%
2036             \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2037             \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2038             \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2039     }{}%
2040 %%%%%%%%%%
2041     %\ifdimequal{\pagegoal}{\maxdimen}{\enlargethispage{\baselineskip}}{} ???
2042     \ifdimgreater{\pagegoal-\maxdimen}{0pt}{\enlargethispage{\baselineskip}}%
2043     \mdf@makebox@in[\mdfboundingboxwidth]{%
2044         \null%
2045         \begin{tikzpicture}[remember picture]
2046             \pgfmithsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2047             \pgfmithsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2048             \pgfmithsetlengthmacro\mdf@0x{+0pt}%
2049             \pgfmithsetlengthmacro\mdf@0y{+0pt}%
2050             \pgfmithsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2051             \pgfmithsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2052             \ifbool{mdf@leftline}
2053             {%
2054                 \pgfmithsetlengthmacro\mdf@Ax%
2055                     {\mdf@Ax+\mdf@outerlinewidth@length+
2056                     \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2057                 \pgfmithsetlengthmacro\mdf@0x%
2058                     {\mdf@0x+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%

```

```

2059     }{}%
2060     \ifbool{mdf@rightline}{%
2061         \pgfmathsetlengthmacro\mdf@Px%
2062             {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2063     }{}%
2064     \ifbool{mdf@topline}{%
2065         \pgfmathsetlengthmacro\mdf@Py%
2066             {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2067     }{}%
2068 %%
2069     \ifbool{mdf@everyline}{%
2070         \ifbool{mdf@bottomline}{%
2071             {%
2072                 \pgfmathsetlengthmacro\mdf@Ay%
2073                     {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length%
2074                         +\mdf@innerlinewidth@length}%
2075                 \pgfmathsetlengthmacro\mdf@Oy%
2076                     {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2077             }{}%
2078         \ifbool{mdf@topline}{%
2079             {%
2080                 \pgfmathsetlengthmacro\mdf@Py%
2081                     {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2082             }{}%
2083         }{}%
2084 %%
2085         \coordinate(0)at(\mdf@0x,\mdf@0y);%
2086         \coordinate(P)at(\mdf@Px,\mdf@Py);%
2087         \ifbool{mdf@shadow}
2088             {\path[mdfshadow] (0) -- (0|-P) to[mdfcorners] (P) -- (P|-0) -- (0);}{}%
2089         \begin{scope}[use as bounding box]
2090 %%%%%%%%%%%
2091         \ifbool{mdf@everyline}{%
2092             \mdf@test@lrb{\mdf@tikzbox@tfl{(0) -- (0|-P) -- (P) -- (P|-0) -- cycle}}{}%
2093             \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0) -- (0) -- (0|-P) -- (P)}}{}%
2094             \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P) -- (P) -- (P|-0) -- (0)}}{}%
2095             \mdf@test@ltr{\mdf@tikzbox@tfl{(0) -- (0|-P) -- (P) -- (P|-0)}}{}%
2096             \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0) -- (0) -- (0|-P) -- (P)}}{}%
2097             \mdf@test@lb{\mdf@tikzbox@otl{(P|-0) -- (0) -- (0|-P)}}%
2098                 {(P) -- (P|-0)[mdfcorners] -- (0) -- (0|-P)}%
2099             }{}%
2100             \mdf@test@rb{\mdf@tikzbox@otl{(P) -- (P|-0) -- (0)}}%
2101                 {(0|-P) -- (P)[mdfcorners] -- (P|-0) -- (0)}%
2102             }{}%
2103             \mdf@test@tr{\mdf@tikzbox@otl{(0|-P) -- (P) -- (P|-0)}}%
2104                 {(0) -- (0|-P)[mdfcorners] -- (P) -- (P|-0)}%
2105             }{}%
2106             \mdf@test@lt{\mdf@tikzbox@otl{(0) -- (0|-P) -- (P)}}%
2107                 {(P|-0) -- (0)[mdfcorners] -- (0|-P) -- (P)}%
2108             }{}%
2109             \mdf@test@lr{\mdf@tikzbox@otl{(0) -- (0|-P)(P) -- (P|-0)}}%
2110                 {(0)rectangle(P)}%
2111             }{}%
2112             \mdf@test@tb{\mdf@tikzbox@otl{(0) -- (0|-P)(0|-P) -- (P)}}%
2113                 {(0)rectangle(P)}%
2114             }{}%

```



```

2115 \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2116 {(0)rectangle(P)}%
2117 }{}%
2118 \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2119 {(0)rectangle(P)}%
2120 }{}%
2121 \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2122 {(0)rectangle(P)}%
2123 }{}%
2124 \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2125 {(0)rectangle(P)}%
2126 }{}%
2127 \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}{}%
2128 }{
2129 \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@ltr}}%
2130 {\mdf@tikzbox@otl{(0)--(0|-P)--(P)--(P|-0)}}%
2131 {}%
2132 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}%
2133 {\mdf@tikzbox@otl{(0)--(0|-P)--(P)}{(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}}%
2134 {}%
2135 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2136 {\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}{(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}}%
2137 {}%
2138 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
2139 {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}}%
2140 {}%
2141 \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
2142 {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}}%
2143 {}%
2144 \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%
2145 {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}}%
2146 {}%
2147 \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}%
2148 {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}}%
2149 {}%
2150 \mdf@test@b{\path[mdfbackground](0)rectangle(P);}{}%
2151 \mdf@test@noline{\path[mdfbackground,mdfcorners](0)--(0|-P)--(P)--(P|-0);}{}%
2152 }
2153 %%%%%%%%%%
2154 \drawbackgroundframetitle@first
2155 \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};% Ausgabebox einfuegen
2156 \end{scope}
2157 %HIER KOMMT EIN WEITERES MAKRO
2158 \mdf@firstextra
2159 \mdfcreateextratikz%
2160 \end{tikzpicture}%
2161 }%
2162 \mdf@makeboxalign@right%
2163 }%
2164 \fi
2165 }%

```

\mdf@putbox@middle

Output of the middle breakable contents.

```

2166 \def\drawbackgroundframetitle@middle{%
2167 \ifdefempty{\mdf@frametitle}{\}%
2168 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2169 {\}%
2170 \drawbackgroundframetitle@@middle%
2171 \pgfmathsetlength{\global\mdfframetitleboxtotalheight}{-\p@}%
2172 }%
2173 }%
2174 }%
2175 %
2176 \def\drawbackgroundframetitle@@middle{%
2177 \begin{scope}%background frame title
2178 \ifbool{mdf@leftline}{
2179 \pgfmathsetlengthmacro\mdf@0x%
2180 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2181 }{\}%
2182 \ifbool{mdf@rightline}{%
2183 \pgfmathsetlengthmacro\mdf@Px%
2184 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2185 }{\}%
2186 \pgfmathsetlengthmacro\mdf@Fy
2187 {\mdf@Py-\mdfframetitleboxtotalheight}
2188 \path[mdfframetitlebackground,rounded corners=\z@]
2189 (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2190 --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2191 \end{scope}
2192 }%
2193 %
2194 \def\drawbackgroundframetitle@@middle{%
2195 \begin{scope}%background frame title
2196 \ifbool{mdf@leftline}{
2197 \pgfmathsetlengthmacro\mdf@0x%
2198 {\mdf@0x+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2199 }{\}%
2200 \ifbool{mdf@rightline}{%
2201 \pgfmathsetlengthmacro\mdf@Px%
2202 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2203 }{\}%
2204 \pgfmathsetlengthmacro\mdf@Fy
2205 {\mdf@Py-\mdfframetitleboxtotalheight}
2206 \path[mdfframetitlebackground,rounded corners=\z@]
2207 (\mdf@0x,\mdf@Fy) -- (\mdf@0x,\mdf@Py)%
2208 --(\mdf@Px,\mdf@Py) --(\mdf@Px,\mdf@Fy);
2209 \end{scope}
2210 }%
2211 \def\mdf@putbox@middle{%
2212 \ifvoid\mdf@splitbox@two
2213 \else%
2214 \mdf@makebox@out{%
2215 \mdf@makeboxalign@left%
2216 \mdf@tikz@settings%
2217 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2218 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2219 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2220 \ifbool{mdf@leftline}{%
2221 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%

```

```

2222 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2223 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2224 \ifbool{mdf@rightline}{%
2225 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2226 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2227 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}}%
2228 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2229 \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2230 %%%%%%%%%%
2231 \ifbool{mdf@everyline}{%
2232 \ifbool{mdf@topline}{%
2233 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2234 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2235 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2236 \ifbool{mdf@bottomline}{%
2237 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2238 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2239 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}}%
2240 }{}%
2241 %%%%%%%%%%
2242 \mdf@makebox@in[\mdfboundingboxwidth]{%
2243 \null%
2244 \begin{tikzpicture}[remember picture]
2245 \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2246 \pgfmathsetlengthmacro\mdf@Ay{+\mdf@splitbottomskip@length}%
2247 \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2248 \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2249 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2250 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2251 \ifbool{mdf@leftline}{%
2252 {%
2253 \pgfmathsetlengthmacro\mdf@Ax%
2254 {\mdf@Ax+\mdf@outerlinewidth@length+
2255 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2256 \pgfmathsetlengthmacro\mdf@Ox%
2257 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2258 }{}%
2259 \ifbool{mdf@rightline}{%
2260 {%
2261 \pgfmathsetlengthmacro\mdf@Px%
2262 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2263 }{}%
2264 %%
2265 \ifbool{mdf@everyline}{%
2266 \ifbool{mdf@bottomline}{%
2267 {%
2268 \pgfmathsetlengthmacro\mdf@Ay%
2269 {\mdf@Ay+\mdf@outerlinewidth@length+\mdf@middlelinewidth@length
2270 +\mdf@innerlinewidth@length}%
2271 \pgfmathsetlengthmacro\mdf@Oy%
2272 {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2273 }{}%
2274 \ifbool{mdf@topline}{%
2275 {%
2276 \pgfmathsetlengthmacro\mdf@Py%
2277 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%

```

```

2278     }{}%
2279   }{}%
2280 %%
2281   \coordinate(0)at(\mdf@0x,\mdf@0y);%
2282   \coordinate(P)at(\mdf@Px,\mdf@Py);%
2283   \ifbool{mdf@shadow}
2284     {\path[mdfshadow](0) rectangle (P);}%
2285   \begin{scope}[use as bounding box]
2286   %%%%%%%%%%
2287   \ifbool{mdf@everyline}{%
2288     \mdf@test@lrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2289     \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2290     \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
2291     \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
2292     \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2293     \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
2294       {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2295     }{}%
2296     \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
2297       {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2298     }{}%
2299     \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
2300       {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2301     }{}%
2302     \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
2303       {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2304     }{}%
2305     \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
2306       {(0)rectangle(P)}%
2307     }{}%
2308     \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
2309       {(0)rectangle(P)}%
2310     }{}%
2311     \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2312       {(0)rectangle(P)}%
2313     }{}%
2314     \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2315       {(0)rectangle(P)}%
2316     }{}%
2317     \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2318       {(0)rectangle(P)}%
2319     }{}%
2320     \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2321       {(0)rectangle(P)}%
2322     }{}%
2323     \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}%
2324   }{
2325     \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
2326       {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}}{}%
2327     \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
2328       {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}}{}%
2329     \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
2330       {\mdf@tikzbox@otl{(P)--(P|-0)}{(0)rectangle(P)}}{}%
2331     \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
2332       {\path[mdfbackground](0)rectangle(P);}%
2333   }

```

```

2334 %%%%%%%%%%
2335     \drawbackgroundframetitle@middle
2336     \node[mdfbox]at(\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@two};% Ausgabebox einfuegen
2337     \end{scope}
2338     \mdf@middleextra
2339     %HIER KOMMT EIN WEITERES MAKRO
2340     \mdfcreateextratikz
2341     \end{tikzpicture}%
2342 }%
2343 \mdf@makeboxalign@right%
2344 }%
2345 \fi
2346 }%

```

\mdf@putbox@second

Output of the last breakable contents.

```

2347 \def\drawbackgroundframetitle@second{%
2348 \ifdefempty{\mdf@frametitle}{\}%
2349 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
2350 {\}%
2351 \drawbackgroundframetitle@@second%
2352 }%
2353 }%
2354 }%
2355 %
2356 \def\drawbackgroundframetitle@@second{%
2357 \begin{scope}%background frame title
2358 \ifbool{mdf@leftline}{
2359 \pgfmathsetlengthmacro\mdf@Ox%
2360 {\mdf@Ox+\mdf@innerlinewidth@length+0.5\mdf@middlelinewidth@length}
2361 }{\}%
2362 \ifbool{mdf@rightline}{%
2363 \pgfmathsetlengthmacro\mdf@Px%
2364 {\mdf@Px-\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length}
2365 }{\}%
2366 \pgfmathsetlengthmacro\mdf@Fy
2367 {\mdf@Py-\mdfframetitleboxtotalheight}
2368 \path[mdfframetitlebackground,rounded corners=\z@]
2369 (\mdf@Ox,\mdf@Fy) -- (\mdf@Ox,\mdf@Py)%
2370 -- (\mdf@Px,\mdf@Py) -- (\mdf@Px,\mdf@Fy);
2371 \end{scope}
2372 }%
2373 \def\mdf@putbox@second{%
2374 \ifvoid\mdf@splitbox@one
2375 \else%
2376 \mdf@makebox@out{%
2377 \mdf@makeboxalign@left%
2378 \mdf@tikz@settings%
2379 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
2380 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2381 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2382 \ifbool{mdf@leftline}{%
2383 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2384 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%

```

```

2385 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}%
2386 \ifbool{mdf@rightline}{%
2387 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2388 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2389 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}%
2390 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2391 \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2392 \ifbool{mdf@bottomline}{%
2393 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2394 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2395 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}%
2396 %%%%%%%%%
2397 \ifbool{mdf@everyline}{%
2398 \ifbool{mdf@topline}{%
2399 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2400 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2401 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}%
2402 }{}%
2403 %%%%%%%%%
2404 \mdf@makebox@in[\mdfboundingboxwidth]{%
2405 \null%
2406 \begin{tikzpicture}[remember picture]
2407 \pgfmathsetlengthmacro\mdf@Ax{+\mdf@innerleftmargin@length}%
2408 \pgfmathsetlengthmacro\mdf@Ay{+\mdf@innerbottommargin@length}%
2409 \pgfmathsetlengthmacro\mdf@Ox{+0pt}%
2410 \pgfmathsetlengthmacro\mdf@Oy{+0pt}%
2411 \pgfmathsetlengthmacro\mdf@Px{+\mdfboundingboxwidth}%
2412 \pgfmathsetlengthmacro\mdf@Py{+\mdfboundingboxheight}%
2413 \ifbool{mdf@leftline}{%
2414 {%
2415 \pgfmathsetlengthmacro\mdf@Ax%
2416 {\mdf@Ax+\mdf@outerlinewidth@length+
2417 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2418 \pgfmathsetlengthmacro\mdf@Ox%
2419 {\mdf@Ox+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2420 }{}%
2421 \ifbool{mdf@rightline}{%
2422 {%
2423 \pgfmathsetlengthmacro\mdf@Px%
2424 {\mdf@Px-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2425 }{}%
2426 \ifbool{mdf@bottomline}{%
2427 {%
2428 \pgfmathsetlengthmacro\mdf@Ay%
2429 {\mdf@Ay+\mdf@outerlinewidth@length+
2430 \mdf@middlelinewidth@length+\mdf@innerlinewidth@length}%
2431 \pgfmathsetlengthmacro\mdf@Oy%
2432 {\mdf@Oy+\mdf@outerlinewidth@length+0.5\mdf@middlelinewidth@length}%
2433 }{}%
2434 %%
2435 \ifbool{mdf@everyline}{%
2436 \ifbool{mdf@topline}{%
2437 {%
2438 \pgfmathsetlengthmacro\mdf@Py%
2439 {\mdf@Py-\mdf@outerlinewidth@length-0.5\mdf@middlelinewidth@length}%
2440 }{}%

```

```

2441     }{}%
2442 %%
2443     \coordinate(0)at(\mdf@0x,\mdf@0y);%
2444     \coordinate(P)at(\mdf@Px,\mdf@Py);%
2445     \ifbool{mdf@shadow}
2446         {\path[mdfshadow] (0|-P) to[mdfcorners] (0) to[mdfcorners] (P|-0) -- (P) -- (0|-P);}{}%
2447     \begin{scope}[use as bounding box]
2448     %%%%%%%%%%
2449     \ifbool{mdf@everyline}{%
2450         \mdf@test@ltrb{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)--cycle)}}{}%
2451         \mdf@test@ltb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2452         \mdf@test@trb{\mdf@tikzbox@tfl{(0|-P)--(P)--(P|-0)--(0)}}{}%
2453         \mdf@test@ltr{\mdf@tikzbox@tfl{(0)--(0|-P)--(P)--(P|-0)}}{}%
2454         \mdf@test@lrb{\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}{}%
2455         \mdf@test@lb{\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}}%
2456             {(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}%
2457         }{}%
2458         \mdf@test@rb{\mdf@tikzbox@otl{(P)--(P|-0)--(0)}}%
2459             {(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}%
2460         }{}%
2461         \mdf@test@tr{\mdf@tikzbox@otl{(0|-P)--(P)--(P|-0)}}%
2462             {(0)--(0|-P)[mdfcorners]--(P)--(P|-0)}%
2463         }{}%
2464         \mdf@test@lt{\mdf@tikzbox@otl{(0)--(0|-P)--(P)}}%
2465             {(P|-0)--(0)[mdfcorners]--(0|-P)--(P)}%
2466         }{}%
2467         \mdf@test@lr{\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}}%
2468             {(0)rectangle(P)}%
2469         }{}%
2470         \mdf@test@tb{\mdf@tikzbox@otl{(0)--(0|-P)(0|-P)--(P)}}%
2471             {(0)rectangle(P)}%
2472         }{}%
2473         \mdf@test@l{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2474             {(0)rectangle(P)}%
2475         }{}%
2476         \mdf@test@r{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2477             {(0)rectangle(P)}%
2478         }{}%
2479         \mdf@test@t{\mdf@tikzbox@otl{(0|-P)--(P)}}%
2480             {(0)rectangle(P)}%
2481         }{}%
2482         \mdf@test@b{\mdf@tikzbox@otl{(0)--(0|-P)}}%
2483             {(0)rectangle(P)}%
2484         }{}%
2485         \mdf@test@noline{\path[mdfbackground,mdfcorners](0)rectangle(P);}{}%
2486     }{}%
2487     \ifboolexpr{test {\mdf@test@ltrb} or test {\mdf@test@lrb}}%
2488         {\mdf@tikzbox@tfl{(P|-0)--(0)--(0|-P)--(P)}}%
2489         {}%
2490     \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
2491         {\mdf@tikzbox@otl{(P|-0)--(0)--(0|-P)}{(P)--(P|-0)[mdfcorners]--(0)--(0|-P)}}%
2492         {}%
2493     \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%
2494         {\mdf@tikzbox@otl{(P)--(P|-0)--(0)}{(0|-P)--(P)[mdfcorners]--(P|-0)--(0)}}%
2495         {}%
2496     \ifboolexpr{test {\mdf@test@ltr} or test {\mdf@test@lr}}%

```



```

2497      {\mdf@tikzbox@otl{(0)--(0|-P)(P)--(P|-0)}{(0)rectangle(P)}}%
2498      }%
2499      \ifbool{test {\mdf@test@tb} or test {\mdf@test@b}}%
2500      {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}}%
2501      }%
2502      \ifbool{test {\mdf@test@lt} or test {\mdf@test@l}}%
2503      {\mdf@tikzbox@otl{(0)--(0|-P)}{(0)rectangle(P)}}%
2504      }%
2505      \ifbool{test {\mdf@test@tr} or test {\mdf@test@r}}%
2506      {\mdf@tikzbox@otl{(0|-P)--(P)}{(0)rectangle(P)}}%
2507      }%
2508      \mdf@test@t{\path[mdfbackground,mdfcorners](0|-P)--(0)--(0|-P)--(P);}%
2509      \mdf@test@noline{\path[mdfbackground,mdfcorners](0|-P)--(0)--(0|-P)--(P);}%
2510      }%
2511      \drawbackgroundframetitle@second
2512      \node[mdfbox] at (\mdf@Ax,\mdf@Ay){\box\mdf@splitbox@one};% Ausgabebox einfuegen
2513      \end{scope}
2514      \mdf@secondextra
2515      %HIER KOMMT EIN WEITERES MAKRO
2516      \mdfcreateextratikz
2517      \end{tikzpicture}%
2518      }%
2519      \mdf@makeboxalign@right%
2520      }%
2521      \fi
2522      }%

2523      \endinput

```

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

```

2524 %% Style file for mdframed for package option 'framemethod=default'
2525 %%
2526 %% This package may be distributed under the terms of the LaTeX Project
2527 %% Public License, as described in lppl.txt in the base LaTeX distribution.
2528 %% Either version 1.0 or, at your option, any later version.
2529 %%
2530 %%
2531 %%$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $
2532 %

```

```

\mdframedIIPackagename
\mdf@frameIIDate@svn

```

local settings

```

2533 \def\mdframedIIPackagename{md-frame-2}
2534 \def\mdf@frameIIDate@svn$#1: #2 #3 #4-#5-#6 #7 #8$#{#4/#5/#6\space }
2535 \ProvidesFile{md-frame-2.mdf}%
2536      [\mdf@frameIIDate@svn$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $ %
2537      \mdversion: \mdframedIIPackagename]

```

```

\mdf@ptlength@to@pscode
\ptTps

```

Command to calculate a latex length to postscript


```

2538 \def\mdf@ptlength@to@pscode#1{\pst@number{#1} \pst@number\psxunit div }
2539 \def\mdf@ptlength@to@pscode@length#1{\pst@number{\csname mdf@#1@length\endcsname} \pst@number\psxunit div }
2540 \let\ptTps\mdf@ptlength@to@pscode\relax
2541 \let\ptTpsL\mdf@ptlength@to@pscode@length\relax

```

```

\mdfbackgroundstyle
\mdflinestyle
\mdfframetitlestyle
\mdfframetitlebackground

```

background and line settings for pstricks

```

2542 \def\mdfpstricks@settings{%expand by \addtopsstyle
2543   \newpsstyle{mdfbackgroundstyle}%
2544     {linecolor=\mdf@backgroundcolor,fillstyle=solid,%
2545      fillcolor=\mdf@backgroundcolor,linestyle=none,%
2546      ,dimen=middle,%
2547     }%
2548 %
2549   \newpsstyle{mdfframetitlebackgroundstyle}{%
2550     linecolor=\mdf@frametitlebackgroundcolor,
2551     fillcolor=\mdf@frametitlebackgroundcolor,
2552     fillstyle=solid,linestyle=none,
2553     linearc=\ifdimgreater{\mdf@roundcorner@length%
2554                  -\mdf@innerlinewidth@length%
2555                  -.5\mdf@middlelinewidth@length}%
2556     {\z@}{\dimexpr\mdf@roundcorner@length%
2557              -\mdf@innerlinewidth@length%
2558              -.5\mdf@middlelinewidth@length}{\z@},
2559   }
2560 %
2561   \newpsstyle{mdfouterlinestyle}{linestyle=none}%
2562   \ifdimgreater{\mdf@outerlinewidth@length}{\z@}%
2563     {\newpsstyle{mdfouterlinestyle}{%
2564       linecolor=\mdf@outerlinecolor,%
2565       linewidth=\dimexpr2\mdf@outerlinewidth@length+\mdf@middlelinewidth@length\relax,
2566       dimen=middle,
2567     }}}%
2568 %
2569   \newpsstyle{mdfinnerlinestyle}{linestyle=none}%
2570   \ifdimgreater{\mdf@innerlinewidth@length}{\z@}%
2571     {\newpsstyle{mdfinnerlinestyle}{%
2572       linecolor=\mdf@innerlinecolor,%
2573       linewidth=\dimexpr2\mdf@innerlinewidth@length+\mdf@middlelinewidth@length\relax,
2574       dimen=middle,
2575     }}}%
2576 %
2577   \newpsstyle{mdfmiddlelinestyle}{linestyle=none}%
2578   \newpsstyle{mdfshadow}{shadow=true,shadowcolor=\mdf@shadowcolor,shadowsize=\mdf@shadowsize@length}%
2579   \ifdimgreater{\mdf@middlelinewidth@length}{\z@}%
2580     {\newpsstyle{mdfmiddlelinestyle}{%
2581       linewidth=\mdf@middlelinewidth@length,%
2582       linecolor=\mdf@middlelinecolor,dimen=middle
2583     }}}%
2584 \mdfpstricks@appendsettings
2585 }%

```

```

2586 %
2587 \newrobustcmd*\mdf@pstricksbox@fl[2]{%four lines
2588   \psframe[style=mdfouterlinestyle](#1)(#2)%aussen=3mm
2589   \psframe[style=mdfbackgroundstyle](#1)(#2)%Hintergrund
2590   \psclip{\psframe[style=mdfmiddlelinestyle](#1)(#2)}
2591   \psframe[style=mdfinnerlinestyle](#1)(#2)%innere=3mm
2592   \endpsclip
2593   \psframe[style=mdfmiddlelinestyle](#1)(#2)%mittlere=2mm
2594 }%
2595 \newrobustcmd*\mdf@pstricksbox@tl[1]{%three lines
2596   \psline[style=mdfouterlinestyle]#1%aussen=3mm
2597   \psline[style=mdfbackgroundstyle]#1%Hintergrund
2598   \psclip{\psline[style=mdfmiddlelinestyle]#1}
2599   \psline[style=mdfinnerlinestyle]#1%innere=3mm
2600   \endpsclip
2601   \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2602 }%
2603 \newrobustcmd*\mdf@pstricksbox@tcl[2]{%two combined lines
2604 %%#1 background comple
2605 %%#2 line path
2606   \psline[style=mdfouterlinestyle]#2%aussen=3mm
2607   \psline[style=mdfbackgroundstyle]#2%Hintergrund
2608   \psclip{\pscustom[linestyle=none]{
2609     \psline[style=mdfmiddlelinestyle]#2
2610     \psline[linestyle=none,lineararc=0pt]#1}
2611   }
2612   \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2613   \psline[style=mdfinnerlinestyle]#2%innere=3mm
2614   \endpsclip
2615   \psline[style=mdfmiddlelinestyle]#2%mittlere=2mm
2616 }%
2617 \newrobustcmd*\mdf@pstricksbox@tncl[2]{%two not combined lines
2618 \begingroup
2619   \psset{lineararc=0pt}
2620   \psline[style=mdfouterlinestyle](mdf@0)#1%aussen=3mm
2621   \psline[style=mdfouterlinestyle](mdf@P)#2%aussen=3mm
2622   \psclip{
2623     \pscustom[linestyle=none]{%
2624       \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2625       \psline[linestyle=none](mdf@0)#2
2626       \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2627       \psline[linestyle=none](mdf@P)#1
2628     }%
2629   }%
2630   \psframe[style=mdfbackgroundstyle,lineararc=0pt](mdf@0)(mdf@P)%Hintergrund
2631   \psline[style=mdfinnerlinestyle](mdf@0)#1%innere=3mm
2632   \psline[style=mdfinnerlinestyle](mdf@P)#2%innere=3mm
2633   \endpsclip
2634   \psline[style=mdfmiddlelinestyle](mdf@0)#1%mittlere=2mm
2635   \psline[style=mdfmiddlelinestyle](mdf@P)#2%mittlere=2mm
2636 \endgroup
2637 }%
2638 \newrobustcmd*\mdf@pstricksbox@ol[1]{%one line
2639 \begingroup
2640   \psset{lineararc=0pt}
2641   \psline[style=mdfouterlinestyle]#1%aussen=3mm

```

```

2642 \psline[style=mdfbackgroundstyle]#1%Hintergrund
2643 \psclip{\pscustom[linestyle=none]{
2644     \psline[style=mdfmiddlelinestyle]#1
2645     \psframe[linestyle=none,fillstyle=none,dimen=inner](mdf@0)(mdf@P)
2646 }}
2647 \psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)
2648 \psline[style=mdfinnerlinestyle]#1%innere=3mm
2649 \endpsclip
2650 \psline[style=mdfmiddlelinestyle]#1%mittlere=2mm
2651 \endgroup%
2652 }%
2653
2654 %
2655 \newsstyle{mdfframetitrerule}{%
2656     linecolor=\mdf@frametitrerulecolor,%
2657     fillcolor=\mdf@frametitrerulecolor,%
2658     fillstyle=solid,dimen=outer,%
2659 }
2660 %

```

\mdf@put@frametitrerule

frametitrerule with pstricks

```

2661 \def\mdf@@frametitrerule{%
2662     \ifbool{mdf@frametitrerule}{%
2663         \vbox{\hsize0pt
2664             \par\unskip\vskip\mdf@frametitlebelowskip@length
2665             \noindent\rlap{%
2666                 \begin{group}%
2667                 \begin{pspicture}(0,0)(0,\mdf@frametitrerulewidth@length)
2668                     \psframe[style=mdfframetitrerule](!\ptTpsL{innerleftmargin} neg 0)%
2669                                     (! \ptTpsL{innerrightmargin}
2670                                     \ptTps{\mdfframetitleboxwidth} add \ptTpsL{frametitrerulewidth})
2671                 \end{pspicture}
2672                 \end{group}}
2673             }%
2674         }{}
2675         \par\unskip\vskip\mdf@innertopmargin@length%
2676     }%
2677 %
2678 % \begin{macro}{mdf@putbox@single}
2679 % Single output
2680 %     \begin{macrocode}
2681 % Info zu den verwendeten Punkten:
2682 % 0 ist die untere linke Ecke der Mitte der middleline
2683 % P ist die obere rechte Ecke der Mitte der middleline
2684 % A ist der Punkt fuer den anchor (d.h. die untere linke Ecke) der Ausgabebox
2685 \def\mdf@putbox@single{%
2686     \ifvoid\mdf@splitbox@one
2687     \else%
2688         \mdf@makebox@out{%
2689             \mdf@makeboxalign@left%
2690             \setlength\mdf@boundingboxwidth{\wd\mdf@splitbox@one}%
2691             \advance\mdf@boundingboxwidth by \mdf@innerleftmargin@length\relax%
2692             \advance\mdf@boundingboxwidth by \mdf@innerrightmargin@length\relax%

```

```

2693 \ifbool{mdf@leftline}{%
2694   \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2695   \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2696   \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
2697 \ifbool{mdf@rightline}{%
2698   \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2699   \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2700   \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{%
2701 %
2702 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
2703 \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
2704 \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2705 \ifbool{mdf@topline}{%
2706   \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2707   \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2708   \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{%
2709 \ifbool{mdf@bottomline}{%
2710   \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2711   \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2712   \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{%
2713 %
2714 \setlength\mdftotallinewidth{\dimexpr\mdf@innerlinewidth@length%
2715                                     +\mdf@middlelinewidth@length
2716                                     +\mdf@outerlinewidth@length\relax}%
2717 \psset{unit=1truecm}%
2718 \mdf@makebox@in[\mdfboundingboxwidth]{%
2719   \null%
2720   \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
2721     \mdfpstricks@settings%
2722     \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
2723     \expandafter\psset\expandafter{\mdf@psset@local}%
2724     \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
2725     \pnode(0,0){mdf@0}
2726     \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
2727     \ifbool{mdf@leftline}{%
2728       {%
2729         \nodexn{(\mdf@A)+(\mdf@outerlinewidth@length,0)
2730               +(\mdf@middlelinewidth@length,0)
2731               +(\mdf@innerlinewidth@length,0)}}{mdf@A}%
2732         \nodexn{(\mdf@0)+(\mdf@outerlinewidth@length,0)
2733               +0.5(\mdf@middlelinewidth@length,0)}}{mdf@0}%
2734       }{}%
2735     \ifbool{mdf@rightline}{%
2736       {%
2737         \nodexn{(\mdf@P)-(\mdf@outerlinewidth@length,0)
2738               -0.5(\mdf@middlelinewidth@length,0)}}{mdf@P}%
2739       }{}%
2740     \ifbool{mdf@bottomline}{%
2741       {%
2742         \nodexn{(\mdf@A)+(0,\mdf@outerlinewidth@length)
2743               +(0,\mdf@middlelinewidth@length)
2744               +(0,\mdf@innerlinewidth@length)}}{mdf@A}%
2745         \nodexn{(\mdf@0)+(0,\mdf@outerlinewidth@length)
2746               +0.5(0,\mdf@middlelinewidth@length)}}{mdf@0}%
2747       }{}%
2748     \ifbool{mdf@topline}{%

```

```

2749 {%
2750 \nodexn{(mdf@P) - (0,\mdf@outerlinewidth@length)
2751 -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
2752 }{}%
2753 \ifbool{mdf@shadow}
2754 {\psframe[style=mdfshadow](mdf@0)(mdf@P)}{}
2755 % \psclip{%
2756 %Four lines
2757 \mdf@test@ltrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
2758 %three lines
2759 \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2760 \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
2761 \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
2762 \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
2763 %two lines combined
2764 \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
2765 {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
2766 \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
2767 {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
2768 \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2769 {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
2770 \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2771 {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2772 %two lines not combined combined
2773 \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
2774 {}{}
2775 \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
2776 {}{}
2777 %single line
2778 \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
2779 \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
2780 \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
2781 \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
2782 %no line
2783 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}
2784 % }
2785 %Frametitlebackground
2786 \drawbackgroundframetitle@single
2787 %output%
2788 \rput[bl](mdf@A){\box\mdf@splitbox@one}
2789 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2790 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2791 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
2792 %
2793 % \endpsclip
2794 \mdf@singleextra
2795 \end{pspicture}%
2796 }%
2797 \mdf@makeboxalign@right%
2798 }%
2799 \fi
2800 }%
2801 \def\drawbackgroundframetitle@single{%
2802 \ifdefempty{\mdf@frametitle}}{}{%
2803 \drawbackgroundframetitle@single%
2804 }%

```

```

2805 }%
2806 \def\drawbackgroundframetitle@@single{%
2807 \begingroup%
2808 \ifbool{mdf@leftline}{%
2809 \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
2810 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
2811 }{}%
2812 \ifbool{mdf@rightline}{%
2813 \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
2814 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
2815 }{}%
2816 \ifbool{mdf@topline}{%
2817 \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
2818 -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}%
2819 }{}%
2820 \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
2821 \psline[style=mdfframetitlebackgroundstyle](mdf@0|mdf@F)(mdf@0|mdf@P)
2822 (mdf@P)(mdf@P|mdf@F)%
2823 \endgroup
2824 }

```

\mdf@putbox@first

First output

```

2825 \def\mdf@putbox@first{%
2826 \ifvoid\mdf@splitbox@two
2827 \else%
2828 \mdf@makebox@out{%
2829 \mdf@makeboxalign@left%
2830 %\ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
2831 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
2832 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
2833 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
2834 \ifbool{mdf@leftline}{%
2835 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2836 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2837 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
2838 \ifbool{mdf@rightline}{%
2839 \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
2840 \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
2841 \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
2842 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
2843 \advance\mdfboundingboxheight by \mdf@innertopmargin@length\relax%
2844 \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
2845 \ifbool{mdf@topline}{%
2846 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2847 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2848 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{}%
2849 %%%%%%%%%%
2850 \ifbool{mdf@everyline}{%
2851 \ifbool{mdf@bottomline}{%
2852 \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
2853 \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
2854 \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{}%
2855 }{}%

```

```

2856 %%%%%%%%%%
2857 \psset{lineararc=\mdf@roundcorner@length, cornersize=absolute}%
2858 \expandafter\psset\expandafter{\mdf@psset@local}%
2859 \mdf@makebox@in[\mdf@boundingboxwidth]{%
2860 \null%
2861 \psset{unit=1truecm}%
2862 \ifdimgreater{\mdf@boundingboxheight}{\vsize}
2863 {\begin{pspicture}(0,0)(\mdf@boundingboxwidth,\vsize)}
2864 {\begin{pspicture}(0,0)(\mdf@boundingboxwidth,\mdf@boundingboxheight)}
2865 \mdfpstricks@settings%
2866 \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,%}
2867 \expandafter\psset\expandafter{\mdf@psset@local}%
2868 \pnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
2869 \pnode(0,0){mdf@0}
2870 \pnode(\mdf@boundingboxwidth,\mdf@boundingboxheight){mdf@P}
2871 \ifbool{mdf@leftline}%
2872 {%
2873 \nodexn{(\mdf@A)+(\mdf@outerlinewidth@length,0)
2874 +(\mdf@middlelinewidth@length,0)
2875 +(\mdf@innerlinewidth@length,0)}{mdf@A}
2876 \nodexn{(\mdf@0)+(\mdf@outerlinewidth@length,0)
2877 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
2878 }{}%
2879 \ifbool{mdf@rightline}%
2880 {%
2881 \nodexn{(\mdf@P)-(\mdf@outerlinewidth@length,0)
2882 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
2883 }{}%
2884 \ifbool{mdf@topline}%
2885 {%
2886 \nodexn{(\mdf@P)-(0,\mdf@outerlinewidth@length)
2887 -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
2888 }{}%
2889 %%%%%%%%%%
2890 \ifbool{mdf@everyline}{%
2891 \ifbool{mdf@bottomline}%
2892 {%
2893 \nodexn{(\mdf@A)+(0,\mdf@outerlinewidth@length)
2894 +(0,\mdf@middlelinewidth@length)
2895 +(0,\mdf@innerlinewidth@length)}{mdf@A}%
2896 \nodexn{(\mdf@0)+(0,\mdf@outerlinewidth@length)
2897 +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
2898 }{}%
2899 }{}%
2900 %%%%%%%%%%
2901 \ifbool{mdf@shadow}
2902 {\pscustom[style=mdfshadow, linestyle=none]{%
2903 \psline[linejoin=2, linecap=1,](mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)%
2904 \psline[linejoin=2, linecap=1, lineararc=\z@](mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)
2905 \closedshadow
2906 }
2907 }{}
2908 % \psclip{
2909 %%%%%%%%%%
2910 \ifbool{mdf@everyline}{%
2911 %Four lines

```



```

2912 \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
2913 %three lines
2914 \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2915 \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
2916 \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
2917 \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
2918 %two lines combined
2919 \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
2920 { (mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
2921 \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
2922 { (mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
2923 \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2924 { (mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
2925 \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2926 { (mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2927 %two lines not combined combined
2928 \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
2929 {}
2930 \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
2931 {}
2932 %single line
2933 \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
2934 \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
2935 \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
2936 \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
2937 %no line
2938 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
2939 }%
2940 %Four or Three lines
2941 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@ltr}}%
2942 {\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}%
2943 {}%
2944 %two combined lines
2945 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lt}}%
2946 {\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
2947 { (mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
2948 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@tr}}%
2949 {\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
2950 { (mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
2951 %two not combined lines
2952 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lr}}%
2953 {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}
2954 %single line
2955 \ifboolexpr{test {\mdf@test@tb} or test {\mdf@test@t}}%
2956 {\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
2957 \ifboolexpr{test {\mdf@test@lb} or test {\mdf@test@l}}%
2958 {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
2959 \ifboolexpr{test {\mdf@test@rb} or test {\mdf@test@r}}%
2960 {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
2961 %no line
2962 \mdf@test@b{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
2963 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
2964 }%
2965 %
2966 %Frametitlebackground
2967 \drawbackgroundframetitle@first

```



```

2968      %output%
2969      \rput[bl](mdf@A){\box\mdf@splitbox@two}
2970 %      \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
2971 %      \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
2972 %      \psdot(mdf@O)\uput[90](mdf@O){mdf at O}
2973 %      \endpsclip
2974      \mdf@firstextra
2975      \end{pspicture}
2976  }%
2977      \mdf@makeboxalign@right%
2978  }%
2979 \fi
2980 }%
2981 \def\drawbackgroundframetitle@first{%
2982 \ifdefempty{\mdf@frametitle}{\}%
2983   \ifdimgreater{\mdf@boundingboxheight}{\mdf@frametitleboxtotalheight}%
2984   {%
2985     \drawbackgroundframetitle@@first
2986     \global\mdf@frametitleboxtotalheight=-\p@%
2987   }\mdf@PackageWarning{You got a page break inside the frame title\MessageBreak
2988     Currently this isn't well supported}%
2989   \drawbackgroundframetitle@@first
2990   \global\mdf@frametitleboxtotalheight=\dimexpr\mdf@frametitleboxtotalheight
2991     -\mdf@boundingboxheight
2992     -\mdf@innerlinewidth@length-0.5\mdf@middlelinewidth@length%
2993     +\mdf@frametitlebelowskip@length+\mdf@splitbottomskip@length
2994     +\mdf@splittopskip@length
2995     +\dp\strutbox\relax%
2996   }%
2997 }%
2998 }%
2999 \def\drawbackgroundframetitle@@first{%
3000 \begingroup%
3001   \ifbool{mdf@leftline}{%
3002     \nodexn{(mdf@O)+(\mdf@innerlinewidth@length,0)
3003       +0.5(\mdf@middlelinewidth@length,0)}{mdf@O}%
3004     }{}%
3005   \ifbool{mdf@rightline}{%
3006     \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3007       -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3008     }{}%
3009   \ifbool{mdf@topline}{%
3010     \nodexn{(mdf@P)-(0,\mdf@innerlinewidth@length)
3011       -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}%
3012     }{}%
3013   \ifdimgreater{\mdf@boundingboxheight}{\mdf@frametitleboxtotalheight}
3014     {\nodexn{(mdf@P)-(0,\mdf@frametitleboxtotalheight)}{mdf@F}}%
3015     {\nodexn{(mdf@O)}{mdf@F}}%
3016     \psline[style=mdf@frametitlebackgroundstyle](mdf@O|mdf@F)(mdf@O|mdf@P)
3017       (mdf@P)(mdf@P|mdf@F)%
3018 \endgroup
3019 }

```

\mdf@putbox@middle

Middle output

```

3020 \def\mdf@putbox@middle{%
3021   \ifvoid\mdf@splitbox@two
3022   \else%
3023     \mdf@makebox@out{%
3024       \mdf@makeboxalign@left%
3025       % \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}{}%
3026       \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@two}%
3027       \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3028       \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3029       \ifbool{mdf@leftline}{%
3030         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3031         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3032         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
3033       \ifbool{mdf@rightline}{%
3034         \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3035         \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3036         \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}}{}%
3037       \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@two+\dp\mdf@splitbox@two\relax}%
3038       \advance\mdfboundingboxheight by \mdf@splitbottomskip@length\relax%
3039       %%%%%%%%%%
3040       \ifbool{mdf@everyline}{%
3041         \ifbool{mdf@topline}{%
3042           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3043           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3044           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{}%
3045         \ifbool{mdf@bottomline}{%
3046           \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3047           \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3048           \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}}{}%
3049       }{}%
3050       %%%%%%%%%%
3051       \psset{unit=1truecm}%
3052       \mdf@makebox@in[\mdfboundingboxwidth]{%
3053         \null%
3054         \ifdimgreater{\mdfboundingboxheight}{\vsize}
3055           {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\vsize)}
3056           {\begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)}
3057             \mdfpstricks@settings%
3058             \psset{lineararc=0pt, cornersize=absolut,}%
3059             \expandafter\psset\expandafter{\mdf@psset@local}%
3060             %%%%
3061             \nnode(\mdf@innerleftmargin@length,\mdf@splitbottomskip@length){mdf@A}
3062             \nnode(0,0){mdf@0}
3063             \nnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3064             \ifbool{mdf@leftline}%
3065               {%
3066                 \nodexn{(mdf@A)+(\mdf@outerlinewidth@length,0)
3067                   +(\mdf@middlelinewidth@length,0)
3068                   +(\mdf@innerlinewidth@length,0)}{mdf@A}
3069                 \nodexn{(mdf@0)+(\mdf@outerlinewidth@length,0)
3070                   +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
3071               }{}%
3072             \ifbool{mdf@rightline}%
3073               {%
3074                 \nodexn{(mdf@P)-(\mdf@outerlinewidth@length,0)

```

```

3075             -0.5(\mdf@middlelinewidth@length,0)){mdf@P}
3076         }{}%
3077     %%
3078     %%%%%%%%%%
3079     \ifbool{mdf@everyline}{%
3080     \ifbool{mdf@bottomline}%
3081     {%
3082         \nodexn{(mdf@A)+(0,\mdf@outerlinewidth@length)
3083             +(0,\mdf@middlelinewidth@length)
3084             +(0,\mdf@innerlinewidth@length)}{mdf@A}%
3085         \nodexn{(mdf@0)+(0,\mdf@outerlinewidth@length)
3086             +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}%
3087     }{}%
3088     \ifbool{mdf@topline}%
3089     {%
3090         \nodexn{(mdf@P)-(0,\mdf@outerlinewidth@length)
3091             -0.5(0,\mdf@middlelinewidth@length)}{mdf@P}
3092     }{}%
3093     }{}%
3094     %%%%%%%%%%
3095     %%
3096     \ifbool{mdf@shadow}
3097     {\psframe[style=mdfshadow](mdf@0)(mdf@P)}{}
3098     %%%%%%%%%%
3099     \ifbool{mdf@everyline}{%
3100         %Four lines
3101         \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3102         %three lines
3103         \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3104         \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
3105         \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
3106         \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
3107         %two lines combined
3108         \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3109             {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3110         \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3111             {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3112         \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3113             {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3114         \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3115             {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3116         %two lines not combined combined
3117         \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
3118             {}}
3119         \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
3120             {}}
3121         %single line
3122         \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3123         \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3124         \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3125         \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3126         %no line
3127         \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}{}%
3128     }{}
3129     \ifboolexpr{bool {mdf@leftline} and bool {mdf@rightline}}%
3130     {\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}{}%

```

```

3131 \ifboolexpr{bool {mdf@leftline} and not (bool {mdf@rightline})}%
3132 {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}}%
3133 \ifboolexpr{not (bool {mdf@leftline}) and bool {mdf@rightline}}%
3134 {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}}%
3135 \ifboolexpr{not (bool {mdf@leftline}) and not (bool {mdf@rightline})}%
3136 {\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}}%
3137 }%
3138 %Frametitlebackground
3139 \drawbackgroundframetitle@middle
3140 %output%
3141 \rput[bl](mdf@A){\box\mdf@splitbox@two}
3142 % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3143 % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3144 % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
3145 \mdf@middleextra
3146 \end{pspicture}%
3147 }%
3148 \mdf@makeboxalign@right%
3149 }%
3150 \fi
3151 }%
3152 \def\drawbackgroundframetitle@middle{%
3153 \ifdefempty{\mdf@frametitle}}}%
3154 \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3155 {}}%
3156 \drawbackgroundframetitle@@middle
3157 \global\mdfframetitleboxtotalheight=-\p@ \relax%
3158 }%
3159 }%
3160 }%
3161 \def\drawbackgroundframetitle@@middle{%
3162 \begingroup%
3163 \ifbool{mdf@leftline}%
3164 \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
3165 +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
3166 }}%
3167 \ifbool{mdf@rightline}%
3168 \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3169 -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3170 }}%
3171 \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3172 \psline[style=mdfframetitlebackgroundstyle,lineararc=\z@](mdf@0|mdf@F)(mdf@0|mdf@P)
3173 (mdf@P)(mdf@P|mdf@F)%
3174 \endgroup
3175 }

```

\mdf@putbox@second

Last output

```

3176 \def\mdf@putbox@second{
3177 \ifvoid\mdf@splitbox@one
3178 \else%
3179 \mdf@makebox@out{%
3180 \mdf@makeboxalign@left%
3181 % \ifbool{mdf@leftline}{\hspace*{\mdf@middlelinewidth@length}}}%

```

```

3182 \setlength\mdfboundingboxwidth{\wd\mdf@splitbox@one}%
3183 \advance\mdfboundingboxwidth by \mdf@innerleftmargin@length\relax%
3184 \advance\mdfboundingboxwidth by \mdf@innerrightmargin@length\relax%
3185 \ifbool{mdf@leftline}{%
3186   \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3187   \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3188   \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
3189 \ifbool{mdf@rightline}{%
3190   \advance\mdfboundingboxwidth by \mdf@innerlinewidth@length\relax%
3191   \advance\mdfboundingboxwidth by \mdf@middlelinewidth@length\relax%
3192   \advance\mdfboundingboxwidth by \mdf@outerlinewidth@length\relax}{}%
3193 \setlength\mdfboundingboxheight{\dimexpr\ht\mdf@splitbox@one+\dp\mdf@splitbox@one\relax}%
3194 \advance\mdfboundingboxheight by \mdf@innerbottommargin@length\relax%
3195 \ifbool{mdf@bottomline}{%
3196   \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3197   \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3198   \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
3199 %%%%%%%%%%
3200 \ifbool{mdf@everyline}{%
3201   \ifbool{mdf@topline}{%
3202     \advance\mdfboundingboxheight by \mdf@innerlinewidth@length\relax%
3203     \advance\mdfboundingboxheight by \mdf@middlelinewidth@length\relax%
3204     \advance\mdfboundingboxheight by \mdf@outerlinewidth@length\relax}{}%
3205   }{}%
3206 %%%%%%%%%%
3207 \psset{unit=1truecm}%
3208 \mdf@makebox@in[\mdfboundingboxwidth]{%
3209   \null%
3210   \begin{pspicture}(0,0)(\mdfboundingboxwidth,\mdfboundingboxheight)
3211     \mdfpstricks@settings%
3212     \psset{lineararc=\mdf@roundcorner@length, cornersize=absolut,}%
3213     \expandafter\psset\expandafter{\mdf@psset@local}%
3214     \pnode(\mdf@innerleftmargin@length,\mdf@innerbottommargin@length){mdf@A}
3215     \pnode(0,0){mdf@0}
3216     \pnode(\mdfboundingboxwidth,\mdfboundingboxheight){mdf@P}
3217     \ifbool{mdf@leftline}{%
3218       {%
3219         \nodexn{(\mdf@A)+(\mdf@outerlinewidth@length,0)
3220               +(\mdf@middlelinewidth@length,0)
3221               +(\mdf@innerlinewidth@length,0)}{mdf@A}
3222         \nodexn{(\mdf@0)+(\mdf@outerlinewidth@length,0)
3223               +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}
3224       }{}%
3225     \ifbool{mdf@rightline}{%
3226       {%
3227         \nodexn{(\mdf@P)-(\mdf@outerlinewidth@length,0)
3228               -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}
3229       }{}%
3230     \ifbool{mdf@bottomline}{%
3231       {%
3232         \nodexn{(\mdf@A)+(0,\mdf@outerlinewidth@length)
3233               +(0,\mdf@middlelinewidth@length)
3234               +(0,\mdf@innerlinewidth@length)}{mdf@A}
3235         \nodexn{(\mdf@0)+(0,\mdf@outerlinewidth@length)
3236               +0.5(0,\mdf@middlelinewidth@length)}{mdf@0}
3237       }{}%

```

```

3238 %%%%%%%%%%
3239 \ifbool{mdf@everyline}{%
3240 \ifbool{mdf@topline}%
3241 {%
3242 \nodexn{(mdf@P) - (0,\mdf@outerlinewidth@length)
3243 -0.5(0,\mdf@middlelinewidth@length)}}{mdf@P}
3244 }{}%
3245 }{}%
3246 %%%%%%%%%%
3247 %%
3248 \ifbool{mdf@shadow}
3249 {\pscustom[style=mdfshadow,linestyle=none]{%
3250 \psline[linejoin=2,linecap=1,](mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)%
3251 \psline[linejoin=2,linecap=1,lineararc=\z@](mdf@0|mdf@P)(mdf@P)
3252 \closedshadow
3253 }
3254 }}
3255 %%%%%%%%%%
3256 \ifbool{mdf@everyline}{%
3257 %Four lines
3258 \mdf@test@lrb{\mdf@pstricksbox@fl{mdf@0}{mdf@P}}{}
3259 %three lines
3260 \mdf@test@ltb{\mdf@pstricksbox@tl{(mdf@P|mdf@0)(mdf@0)(mdf@P|mdf@P)(mdf@P)}}{}
3261 \mdf@test@trb{\mdf@pstricksbox@tl{(mdf@0)(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}}{}
3262 \mdf@test@ltr{\mdf@pstricksbox@tl{(mdf@0)(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}%
3263 \mdf@test@lrb{\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
3264 %two lines combined
3265 \mdf@test@lb{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3266 {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3267 \mdf@test@rb{\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3268 {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}
3269 \mdf@test@tr{\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@0)(mdf@0|mdf@P)}%
3270 {(mdf@0|mdf@P)(mdf@P)(mdf@P|mdf@0)}}{}
3271 \mdf@test@lt{\mdf@pstricksbox@tcl{(mdf@0)(mdf@P|mdf@0)(mdf@P)}%
3272 {(mdf@0)(mdf@0|mdf@P)(mdf@P)}}{}
3273 %two lines not combined combined
3274 \mdf@test@lr{\mdf@pstricksbox@tncl{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}
3275 {}
3276 \mdf@test@tb{\mdf@pstricksbox@tncl{(mdf@P|mdf@0)}{(mdf@0|mdf@P)}
3277 {}
3278 %single line
3279 \mdf@test@l{\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}{}
3280 \mdf@test@r{\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}{}
3281 \mdf@test@t{\mdf@pstricksbox@ol{(mdf@P)(mdf@0|mdf@P)}}{}
3282 \mdf@test@b{\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}{}
3283 %no line
3284 \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}}{}%
3285 }{}
3286 %Four + Three
3287 \ifboolexpr{test {\mdf@test@lrb} or test {\mdf@test@lrb}}%
3288 {\mdf@pstricksbox@tl{(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)(mdf@P)}}{}%
3289 %Two combined
3290 \ifboolexpr{test {\mdf@test@ltb} or test {\mdf@test@lb}}%
3291 {\mdf@pstricksbox@tcl{(mdf@P|mdf@0)(mdf@P)(mdf@0|mdf@P)}%
3292 {(mdf@0|mdf@P)(mdf@0)(mdf@P|mdf@0)}}{}
3293 \ifboolexpr{test {\mdf@test@trb} or test {\mdf@test@rb}}%

```

```

3294      {\mdf@pstricksbox@tcl{(mdf@P)(mdf@0|mdf@P)(mdf@0)}%
3295                               {(mdf@0)(mdf@P|mdf@0)(mdf@P)}}}%
3296      %Two not combined
3297      \ifbool{test {\mdf@test@ltr} or test {\mdf@test@lr}}%
3298      {\mdf@pstricksbox@tnc1{(mdf@0|mdf@P)}{(mdf@P|mdf@0)}}}%
3299      %one line
3300      \ifbool{test {\mdf@test@tb} or test {\mdf@test@b}}%
3301      {\mdf@pstricksbox@ol{(mdf@0)(mdf@P|mdf@0)}}}%
3302      \ifbool{test {\mdf@test@lt} or test {\mdf@test@l}}%
3303      {\mdf@pstricksbox@ol{(mdf@0)(mdf@0|mdf@P)}}}%
3304      \ifbool{test {\mdf@test@tr} or test {\mdf@test@r}}%
3305      {\mdf@pstricksbox@ol{(mdf@P)(mdf@P|mdf@0)}}}%
3306      %no line
3307      \mdf@test@t{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}%
3308      \mdf@test@noline{\psframe[style=mdfbackgroundstyle](mdf@0)(mdf@P)}%
3309      }%
3310      %Frametitlebackground
3311      \drawbackgroundframetitle@second
3312      %output%
3313      \rput[bl](mdf@A){\box\mdf@splitbox@one}
3314      \mdf@seconddextra
3315      % \psdot(mdf@A)\uput[90](mdf@A){mdf at A}
3316      % \psdot(mdf@P)\uput[90](mdf@P){mdf at P}
3317      % \psdot(mdf@0)\uput[90](mdf@0){mdf at 0}
3318      \end{pspicture}%
3319      }%
3320      \mdf@makeboxalign@right%
3321      }%
3322      \fi
3323      }%
3324      \def\drawbackgroundframetitle@second{%
3325      \ifdefempty{\mdf@frametitle}}{%
3326      \ifdimless{\mdfframetitleboxtotalheight}{\z@}
3327      }{%
3328      \drawbackgroundframetitle@@second
3329      }%
3330      }%
3331      }%
3332      \def\drawbackgroundframetitle@@second{%
3333      \begin{group}%
3334      \ifbool{mdf@leftline}%
3335      \nodexn{(mdf@0)+(\mdf@innerlinewidth@length,0)
3336              +0.5(\mdf@middlelinewidth@length,0)}{mdf@0}%
3337      }{%
3338      \ifbool{mdf@rightline}%
3339      \nodexn{(mdf@P)-(\mdf@innerlinewidth@length,0)
3340              -0.5(\mdf@middlelinewidth@length,0)}{mdf@P}%
3341      }{%
3342      \nodexn{(mdf@P)-(0,\mdfframetitleboxtotalheight)}{mdf@F}%
3343      \psline[style=mdfframetitlebackgroundstyle,linear=\z@](mdf@0|mdf@F)(mdf@0|mdf@P)
3344              (mdf@P)(mdf@P|mdf@F)%
3345      \end{group}
3346      }

3347      \endinput
3348      %eof

```


C. The file mdfamed-example-default

```

3349 %Documentation of the package mdfamed
3350 %$Id: mdfamed.dtx 379 2012-04-16 10:52:55Z marco $
3351 \setcounter{errorcontextlines}{999}
3352 \documentclass[parskip=false,english,11pt]{ltxmdf}
3353 \ltxmdfsetifoot $Id: mdfamed.dtx 379 2012-04-16 10:52:55Z marco $
3354
3355 \usepackage{showexpl}
3356 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3357
3358 \newcommand\Loadedframemethod{default}
3359 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3360
3361 \title{The \Pack{mdframed} package}
3362 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3363 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3364 \date{\mdfdateID$Id: mdfamed.dtx 379 2012-04-16 10:52:55Z marco $}
3365 \version{\mdversion}
3366 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3367 Some presented examples are more or less exorbitant.}
3368
3369 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3370 \newrobustcmd\ExampleText{%
3371     An \textit{inhomogeneous linear} differential equation has the form
3372     \begin{align}
3373         L[v] &= f,
3374     \end{align}
3375     where  $L$  is a linear differential operator,  $v$  is
3376     the dependent variable, and  $f$  is a given non-zero
3377     function of the independent variables alone.
3378 }
3379
3380 \newcounter{examplecount}
3381 \setcounter{examplecount}{0}
3382 \renewcommand\thesubsection{}
3383 \newcommand\Examplesec[1]{%
3384 \stepcounter{examplecount}%
3385 \subsection{Example~\arabic{examplecount}~---~\relax}%
3386 }
3387
3388 \begin{document}
3389 \maketitle
3390 \section{Loading}
3391 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3392
3393 {\large\color{red!50!black}
3394 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3395
3396 \section{Examples}
3397 All examples have the following settings:
3398
3399 \begin{tltxmdfexample}
3400 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3401 \newrobustcmd\ExampleText{%
3402 An \textit{inhomogeneous linear} differential equation

```



```

3403 has the form
3404 \begin{align}
3405 L[v] = f,
3406 \end{align}
3407 where  $L$  is a linear differential operator,  $v$  is
3408 the dependent variable, and  $f$  is a given non-zero
3409 function of the independent variables alone.
3410 }
3411 \end{tltxmdfexample}
3412 \clearpage
3413 \Examplesec{very simple}
3414 \begin{LTXexample}
3415 \global\mdfdefinestyle{exampledefault}{%
3416     linecolor=red,linewidth=3pt,%
3417     leftmargin=1cm,rightmargin=1cm
3418 }
3419 \begin{mdframed}[style=exampledefault]
3420 \ExampleText
3421 \end{mdframed}
3422 \end{LTXexample}
3423
3424 \Examplesec{hidden line + frame title}
3425 \begin{LTXexample}
3426 \global\mdfapptodefinestyle{exampledefault}{%
3427     topline=false,rightline=true,bottomline=false}
3428 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3429 \ExampleText
3430 \end{mdframed}
3431 \end{LTXexample}
3432 \clearpage
3433
3434 \Examplesec{colored frame title}
3435 \begin{LTXexample}
3436
3437 \global\mdfapptodefinestyle{exampledefault}{%
3438     rightline=true,innerleftmargin=10,innerrightmargin=10,
3439     frametitlerule=true,frametitlerulecolor=green,
3440     frametitlebackgroundcolor=yellow,
3441     frametitlerulewidth=2pt}
3442 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3443 \ExampleText
3444 \end{mdframed}
3445 \end{LTXexample}
3446
3447 \Examplesec{framed picture which is centered}
3448 \begin{LTXexample}
3449 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3450     linecolor=blue,linewidth=4pt]
3451 \includegraphics[width=\linewidth]{donald-duck}
3452 \end{mdframed}
3453 \end{LTXexample}
3454
3455 \clearpage
3456 \Examplesec{Theorem environments}
3457 \begin{LTXexample}
3458 \mdfdefinestyle{theoremstyle}{%

```

```

3459     linecolor=red,linewidth=2pt,%
3460     frametitle=rule=true,%
3461     frametitlebackgroundcolor=gray!20,
3462     innertopmargin=\topskip,
3463   }
3464 \mdtheorem[style=theoremstyle]{definition}{Definition}
3465 \begin{definition}
3466 \ExampleText
3467 \end{definition}
3468 \begin{definition}[Inhomogeneous linear]
3469 \ExampleText
3470 \end{definition}
3471 \begin{definition*}[Inhomogeneous linear]
3472 \ExampleText
3473 \end{definition*}
3474 \end{LTXexample}
3475
3476
3477 \clearpage
3478 \Examplesec{theorem with separate header and the help of TikZ (complex)}
3479 \begin{LTXexample}
3480 \newcounter{theo}[section]
3481 \newenvironment{theo}[1][]{%
3482   \stepcounter{theo}%
3483   \ifstrempy{#1}%
3484   {\mdfsetup{%
3485     frametitle={%
3486       \tikz[baseline=(current bounding box.east),outer sep=0pt]
3487       \node[anchor=east,rectangle,fill=blue!20]
3488       {\strut Theorem~\thetheo};}}
3489   }%
3490   {\mdfsetup{%
3491     frametitle={%
3492       \tikz[baseline=(current bounding box.east),outer sep=0pt]
3493       \node[anchor=east,rectangle,fill=blue!20]
3494       {\strut Theorem~\thetheo:~#1};}}%
3495   }%
3496   \mdfsetup{innertopmargin=10pt,linecolor=blue!20,%
3497     linewidth=2pt,topline=true,
3498     frametitleaboveskip=\dimexpr-\ht\strutbox\relax,}
3499   \begin{mdframed}[]\relax%
3500   }\end{mdframed}}
3501 \begin{theo}[Inhomogeneous Linear]
3502 \ExampleText
3503 \end{theo}
3504
3505 \begin{theo}
3506 \ExampleText
3507 \end{theo}
3508 \end{LTXexample}
3509
3510 \clearpage
3511 \Examplesec{hide only a part of a line}
3512 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com}
3513 \begin{LTXexample}
3514 \makeatletter

```

```

3515 \newlength{\interruptlength}
3516 \setlength{\interruptlength}{2.5ex}
3517 \newrobustcmd\overlaplines{%
3518 \appto\mdf@frame@leftline@single{%
3519 \llap{\color{white}%
3520 \rule[\dimexpr-\mdfboundingboxdepth+\interruptlength\relax]%
3521 {\mdf@middlelinewidth@length}%
3522 {\dimexpr\mdfboundingboxtotalheight%
3523 \ifbool{mdf@topline}{+\mdf@middlelinewidth@length}{}}
3524 -2\interruptlength\relax}%
3525 }%
3526 }%
3527 \appto\mdf@frame@rightline@single{%
3528 \rlap{\color{white}%
3529 \hspace*{\mdfboundingboxwidth}%
3530 \hspace*{\mdf@innerrightmargin@length}%
3531 \rule[\dimexpr-\mdfboundingboxdepth%
3532 +\interruptlength\relax]%
3533 {\mdf@middlelinewidth@length}%
3534 {\dimexpr\mdfboundingboxtotalheight%
3535 +\ifbool{mdf@topline}{\mdf@middlelinewidth@length}{0pt}}
3536 -2\interruptlength\relax}%
3537 }%
3538 }%
3539 }
3540 \makeatother
3541 \overlaplines
3542
3543 \begin{mdframed}[linecolor=blue,linewidth=8pt]
3544 \ExampleText
3545 \end{mdframed}
3546 \end{LTXexample}
3547 \end{document}
3548 \endinput

```

D. The file mdframed-example-tikz

```

3549 %Documenation of the package mdframed
3550 %$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $
3551 \setcounter{errorcontextlines}{999}
3552 \documentclass[parskip=false,english,11pt]{ltxmdf}
3553 \ltxmdfsetifoot $Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $
3554
3555
3556 \usepackage{showexpl}
3557 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3558
3559 \newcommand\Loadedframemethod{TikZ}
3560 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3561
3562 \title{The \Pack{mdframed} package}
3563 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3564 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3565 \date{\mdfdateID$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $}
3566 \version{\mdversion}
3567 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.

```

```

3568 Some presented examples are more or less exorbitant.}
3569
3570 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3571 \newrobustcmd\ExampleText{%
3572     An \textit{inhomogeneous linear} differential equation has the form
3573     \begin{align}
3574         L[v] = f,
3575     \end{align}
3576     where  $L$  is a linear differential operator,  $v$  is
3577     the dependent variable, and  $f$  is a given non-zero
3578     function of the independent variables alone.
3579 }
3580
3581 \newcounter{examplecount}
3582 \setcounter{examplecount}{0}
3583 \renewcommand\thesubsection{}
3584 \newcommand\Examplesec[1]{%
3585 \stepcounter{examplecount}%
3586 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3587 }
3588
3589 \begin{document}
3590 \maketitle
3591 \section{Loading}
3592 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=Loadedframemethod}
3593
3594 {\large\color{red!50!black}
3595 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3596
3597 \section{Examples}
3598 All examples have the following settings:
3599
3600 \begin{tltxmdfexample}
3601 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3602 \newrobustcmd\ExampleText{%
3603 An \textit{inhomogeneous linear} differential equation
3604 has the form
3605 \begin{align}
3606 L[v] = f,
3607 \end{align}
3608 where  $L$  is a linear differential operator,  $v$  is
3609 the dependent variable, and  $f$  is a given non-zero
3610 function of the independent variables alone.
3611 }
3612 \end{tltxmdfexample}
3613 \clearpage
3614 \ExampleText{round corner}
3615 \begin{LTExample}
3616 \global\mdfdefinestyle{exampledefault}{%
3617     outerlinewidth=5pt,innerlinewidth=0pt,
3618     outerlinecolor=red,roundcorner=5pt
3619 }
3620 \begin{mdframed}[style=exampledefault]
3621 \ExampleText
3622 \end{mdframed}
3623 \end{LTExample}

```

```

3624
3625 \Examplesec{hidden line + frame title}
3626 \begin{LTExample}
3627 \global\mdfapptodefinesstyle{exampledefault}{%
3628   topline=false,leftline=false,}
3629 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3630 \ExampleText
3631 \end{mdframed}
3632 \end{LTExample}
3633 \clearpage
3634 \Examplesec{framed picture which is centered}
3635 \begin{LTExample}
3636 \begin{mdframed}[userdefinedwidth=6cm,align=center,
3637   linecolor=blue,middlelinewidth=4pt,roundcorner=5pt]
3638 \includegraphics[width=\linewidth]{donald-duck}
3639 \end{mdframed}
3640 \end{LTExample}
3641
3642 \Examplesec{Gimmick}
3643 \begin{LTExample}
3644 \mdfsetup{splitbottomskip=0.8cm,splittopskip=0cm,
3645   innerrightmargin=2cm,innertopmargin=1cm,%
3646   innerlinewidth=2pt,outerlinewidth=2pt,
3647   middlelinewidth=10pt,backgroundcolor=red,
3648   linecolor=blue,middlelinecolor=gray,
3649   tikzsetting={draw=yellow,line width=3pt,%
3650     dashed,%
3651     dash pattern= on 10pt off 3pt},
3652   rightline=false,bottomline=false}
3653 \begin{mdframed}
3654 \ExampleText
3655 \end{mdframed}
3656 \end{LTExample}
3657
3658 \Examplesec{complex example with TikZ}
3659
3660 \begin{tltxmdfexample}
3661 \tikzstyle{titregris} =
3662   [draw=gray, thick, fill=white, shading = exersicetitle, %
3663   text=gray, rectangle, rounded corners, right,minimum height=.7cm]
3664
3665 \pgfdeclarehorizontalshading{exersicebackground}{100bp}
3666   {color(0bp)=(green!40); color(100bp)=(black!5)}
3667
3668 \pgfdeclarehorizontalshading{exersicetitle}{100bp}
3669   {color(0bp)=(red!40);color(100bp)=(black!5)}
3670
3671 \newcounter{exercise}
3672 \renewcommand*\theexercise{Exercise~n\arabic{exercise}}
3673 \makeatletter
3674 \def\mdf@@exercisepoints{}%new mdframed key:
3675 \define@key{mdf}{exercisepoints}{%
3676   \def\mdf@@exercisepoints{#1}
3677 }
3678 \makeatother
3679

```

```

3680 \mdfdefinestyle{exercisestyle}{%
3681   outerlinewidth=1pt,innerlinewidth=0pt,
3682   roundcorner=2pt,linecolor=gray,
3683   tikzsetting={shading = exersicebackground},
3684   innertopmargin=1.2\baselineskip,
3685   skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
3686   needspace=3\baselineskip,
3687   frametitlefont=\sffamily\bfseries,
3688   settings={\global\stepcounter{exercise}},
3689   singleextra={%
3690     \node[titregris,xshift=1cm] at (P-|0) %
3691       {\~\mdf@frametitlefont{\theexercise}~};
3692     \ifdefempty{\mdf@@exercisepoints}%
3693       {}%
3694     {\node[titregris,left,xshift=-1cm] at (P)%
3695       {\~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
3696   },
3697   firstextra={%
3698     \node[titregris,xshift=1cm] at (P-|0) %
3699       {\~\mdf@frametitlefont{\theexercise}~};
3700     \ifdefempty{\mdf@@exercisepoints}%
3701       {}%
3702     {\node[titregris,left,xshift=-1cm] at (P)%
3703       {\~\mdf@frametitlefont{\mdf@@exercisepoints points}~};}%
3704   },
3705 }
3706 \begin{mdframed}[style=exercisestyle,]
3707 \ExampleText
3708 \end{mdframed}
3709
3710 \begin{mdframed}[style=exercisestyle,exercisepoints=10]
3711 \ExampleText
3712 \end{mdframed}
3713 \end{tltxmdfexample}
3714 \clearpage
3715 \Examplesec{Theorem environments}
3716 \begin{LTExample}
3717 \mdfdefinestyle{theoremstyle}{%
3718   linecolor=red,linewidth=2pt,%
3719   frametitlerule=true,%
3720   apptotikzsetting={\tikzset{mdfframetitlebackground/.append style={%
3721     shade,left color=white, right color=blue!20}}},
3722   frametitlerulecolor=green!60,
3723   frametitlerulewidth=1pt,
3724   innertopmargin=\topskip,
3725 }
3726 \mdtheorem[style=theoremstyle]{definition}{Definition}
3727 \begin{definition}[Inhomogeneous linear]
3728 \ExampleText
3729 \end{definition}
3730 \begin{definition*}[Inhomogeneous linear]
3731 \ExampleText
3732 \end{definition*}
3733 \end{LTExample}
3734
3735 \end{document}

```

```
3736 \endinput
```

E. The file *mdframed-example-pstricks*

```
3737 %Documenation of the package mdframed
3738 %$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $
3739 \setcounter{errorcontextlines}{999}
3740 \documentclass[parskip=false,english,11pt]{ltxmdf}
3741 \ltxmdfsetifoot$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $
3742
3743 \lstDeleteShortInline{}}
3744 \newcommand\Loadedframemethod{PSTricks}
3745 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3746
3747 \usepackage{showexpl}
3748 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3749
3750 \title{The \Pack{mdframed} package}
3751 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3752 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3753 \date{\mdfdateID$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $}
3754 \version{\mdversion}
3755 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3756 Some presented examples are more or less exorbitant.}
3757
3758 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3759 \newrobustcmd\ExampleText{%
3760     An \textit{inhomogeneous linear} differential equation has the form
3761     \begin{align}
3762         L[v] &= f,
3763     \end{align}
3764     where  $L$  is a linear differential operator,  $v$  is
3765     the dependent variable, and  $f$  is a given non-zero
3766     function of the independent variables alone.
3767 }
3768
3769 \newcounter{examplecount}
3770 \setcounter{examplecount}{0}
3771 \renewcommand\thesubsection{}
3772 \newcommand\Examplesec[1]{%
3773 \stepcounter{examplecount}%
3774 \subsection{Example~\arabic{examplecount}~---~\relax}%
3775 }
3776
3777 \begin{document}
3778 \maketitle
3779 \section{Loading}
3780 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3781
3782 {\large\color{red!50!black}
3783 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3784 X
3785 \section{Examples}
3786 All examples have the following settings:
3787
3788 \begin{tltxmdfexample}
```

```

3789 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3790 \newrobustcmd\ExampleText{%
3791 An \textit{inhomogeneous linear} differential equation
3792 has the form
3793 \begin{align}
3794 L[v] = f,
3795 \end{align}
3796 where  $L$  is a linear differential operator,  $v$  is
3797 the dependent variable, and  $f$  is a given non-zero
3798 function of the independent variables alone.
3799 }
3800 \end{tltxmdfexample}
3801 \clearpage
3802
3803 \Examplesec{very simple}
3804 \begin{LTXexample}
3805 \global\mdfdefinestyle{exampledefault}{%
3806     linecolor=red,middlelinewidth=3pt,%
3807     leftmargin=1cm,rightmargin=1cm
3808 }
3809 \begin{mdframed}[style=exampledefault,roundcorner=5]
3810 \ExampleText
3811 \end{mdframed}
3812 \end{LTXexample}
3813
3814 \Examplesec{hidden line + frame title}
3815 \begin{LTXexample}
3816 \global\mdfapptodefinestyle{exampledefault}{%
3817     topline=false,rightline=false,bottomline=false,
3818     frametitlerule=true,innertopmargin=6pt,
3819     outerlinewidth=6pt,outerlinecolor=blue,
3820     pstricksappsetting={\addtopstyle{mdfouterlinestyle}{linestyle=dashed}},
3821     innerlinecolor=yellow,innerlinewidth=5pt}%
3822 \begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
3823 \ExampleText
3824 \end{mdframed}
3825 \end{LTXexample}
3826
3827 \clearpage
3828
3829 \Examplesec{Dash Lines}
3830 \begin{LTXexample}
3831 \global\mdfdefinestyle{exampledefault}{%
3832     pstrickssetting={linestyle=dashed,},linecolor=red,linewidth=5pt}
3833 \begin{mdframed}[style=exampledefault,]
3834 \ExampleText
3835 \end{mdframed}
3836 \end{LTXexample}
3837
3838 \Examplesec{Double Lines}
3839 \begin{LTXexample}
3840 \global\mdfdefinestyle{exampledefault}{%
3841     pstrickssetting={doubleline=true,doublesep=6pt},
3842     linecolor=red,linewidth=5pt,middlelinewidth=4pt}
3843 \begin{mdframed}[style=exampledefault,]
3844 \ExampleText

```



```

3845 \end{mdframed}
3846 \end{LTXexample}
3847
3848 \Examplesec{Shadow frame}
3849 \begin{LTXexample}
3850 \newmdenv[shadow=true,
3851           shadowsize=11pt,
3852           linewidth=8pt,
3853           frametitlerule=true,
3854           roundcorner=10pt,
3855           ]{myshadowbox}
3856 \begin{myshadowbox}[frametitle={Inhomogeneous linear}]
3857 \ExampleText
3858 \end{myshadowbox}
3859 \end{LTXexample}
3860 \end{document}
3861 \endinput

```

F. The file *mdframed-example-texsx*

```

3862 %Documenation of the package mdframed
3863 %$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $
3864 \setcounter{errorcontextlines}{999}
3865 \documentclass[parskip=false,english,11pt,ltxlipsum]{ltxmdf}
3866 \ltxmdfsetifoot $Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $
3867
3868
3869 \usepackage{showexpl}
3870 \lstset{style=lstltxmdf,explpreset={pos=b,rframe={}},}
3871 \usepackage{tikz}
3872 \usetikzlibrary{calc,arrows}
3873 \newcommand\Loadedframemethod{tikz}
3874 \usepackage[framemethod=\Loadedframemethod]{mdframed}
3875
3876 \title{The \Pack{mdframed} package}
3877 \subtitle{Examples for \Opt{framemethod=\Loadedframemethod}}
3878 \author{\href{mailto:marco.daniel@mada-nada.de}{Marco Daniel}}
3879 \date{\mdfdateID$Id: mdframed.dtx 379 2012-04-16 10:52:55Z marco $}
3880 \version{\mdversion}
3881 \introduction{In this document I collect various examples for \Opt{framemethod=\Loadedframemethod}.
3882 Some presented examples are more or less exorbitant.}
3883
3884 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3885 \newrobustcmd\ExampleText{%
3886   An \textit{inhomogeneous linear} differential equation has the form
3887   \begin{align}
3888     L[v] &= f,
3889   \end{align}
3890   where  $L$  is a linear differential operator,  $v$  is
3891   the dependent variable, and  $f$  is a given non-zero
3892   function of the independent variables alone.
3893 }
3894
3895 \newcounter{examplecount}
3896 \setcounter{examplecount}{0}
3897 \renewcommand\thesubsection{}

```

```

3898 \newcommand\Examplesec[1]{%
3899 \stepcounter{examplecount}%
3900 \subsection{Example~\arabic{examplecount}~---~#1\relax}%
3901 }
3902
3903 \begin{document}
3904 \maketitle
3905 \section{Loading}
3906 In the preamble only the package \Pack{mdframed} with the option \Opt{framemethod=\Loadedframemethod}
3907
3908 {\large\color{red!50!black}
3909 \NOTE Every \Cmd{global} inside the examples is necessary to work with the package \Pack{showexpl}.}
3910
3911 \section{Examples}
3912 All examples have the following settings:
3913
3914 \begin{tltxmdfexample}
3915 \mdfsetup{skipabove=\topskip,skipbelow=\topskip}
3916 \newrobustcmd\ExampleText{%
3917 An \textit{inhomogeneous linear} differential equation
3918 has the form
3919 \begin{align}
3920 L[v] = f,
3921 \end{align}
3922 where  $L$  is a linear differential operator,  $v$  is
3923 the dependent variable, and  $f$  is a given non-zero
3924 function of the independent variables alone.
3925 }
3926 \end{tltxmdfexample}
3927 \clearpage
3928 \Examplesec{Package listings}
3929 The example below is inspired by the following post on StackExchange \href{http://tex.stackexchange.com}
3930
3931 Here the solution which can be decorate as usual.
3932
3933 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}]
3934 \BeforeBeginEnvironment{lstlisting}{%
3935 \begin{mdframed}[<modification>%
3936 \vspace{-0.7em}}
3937 \AfterEndEnvironment{lstlisting}{%
3938 \vspace{-0.5em}%
3939 \end{mdframed}}
3940 \end{tltxmdfexample}
3941
3942 With the new command \Cmd{surroundwithmdframed} you can use
3943 \begin{tltxmdfexample}[moretexcs={BeforeBeginEnvironment,AfterEndEnvironment},morekeywords={lstlisting}]
3944 \surroundwithmdframed{listings}
3945 \end{tltxmdfexample}
3946
3947 \Examplesec{Package multicol}
3948 How I wrote in \enquote{Known Problems} you can't combine \Pack{multicol} with \Pack{mdframed}. In a s
3949 \begin{LTXexample}
3950 \begin{multicols}{2}
3951 \lipsum[1]
3952 \begin{mdframed}
3953 \ExampleText

```

```

3954 \end{mdframed}
3955 \lipsum[2]
3956 \end{multicols}
3957 \end{LTXexample}
3958 \clearpage
3959 \twocolumn[\Examplesec{Working in twocolumn mode}]
3960 \begin{tltxmdfexample}
3961 \twocolumn[%
3962   \Examplesec{Working in
3963     twocolumn mode}]
3964 \lipsum[1]\lipsum[2]
3965 \begin{mdframed}[%
3966   leftmargin=10pt,%
3967   rightmargin=10pt,%
3968   linecolor=red,
3969   backgroundcolor=yellow]
3970 \ExampleText
3971 \end{mdframed}
3972 \lipsum[2]
3973 \end{tltxmdfexample}
3974 \lipsum[1]\lipsum[2]
3975 \begin{mdframed}[leftmargin=10pt,%
3976   rightmargin=10pt,%
3977   linecolor=red,
3978   backgroundcolor=yellow]
3979 \ExampleText
3980 \end{mdframed}
3981 \lipsum[2]
3982 \clearpage
3983 \onecolumn
3984 \Examplesec{Working inside enumerate}
3985 \begin{LTXexample}
3986 Text Text Text Text Text Text Text Text
3987 \begin{enumerate}
3988 \item in the following \ldots
3989   \begin{mdframed}[linecolor=blue,linewidth=2]
3990     \ExampleText
3991   \end{mdframed}
3992 \item \lipsum[2]
3993 \end{enumerate}
3994 Text Text Text Text Text Text
3995 \end{LTXexample}
3996 \clearpage
3997 \Examplesec{Position a specific symbol at a line}
3998 \begin{LTXexample}
3999 \tikzset{
4000   warningsymbol/.style={
4001     rectangle,draw=red,
4002     fill=white,scale=1,
4003     overlay}}
4004 \mdfdefinestyle{warning}{%
4005   hidealllines=true,leftline=true,
4006   skipabove=12,skipbelow=12pt,
4007   innertopmargin=0.4em,%
4008   innerbottommargin=0.4em,%
4009   innerrightmargin=0.7em,%

```

```

4010 rightmargin=0.7em,%
4011 innerleftmargin=1.7em,%
4012 leftmargin=0.7em,%
4013 middlelinewidth=.2em,%
4014 linecolor=red,%
4015 fontcolor=red,%
4016 firstextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4017             node[warningsymbol] {\$};},%
4018 secondextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4019             node[warningsymbol] {\$};},%
4020 middleextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4021             node[warningsymbol] {\$};},%
4022 singleextra={\path let \p1=(P), \p2=(0) in ($(\x2,0)+0.5*(0,\y1)$)
4023             node[warningsymbol] {\$};},%
4024 }
4025 \begin{mdframed}[style=warning]
4026 \ExampleText
4027 \end{mdframed}
4028 \end{LTXexample}
4029
4030 \clearpage
4031 \Examplesec{digression-environement inspired by Tobias Weh}
4032 \begin{lstlisting}
4033 \usetikzlibrary{calc,arrows}
4034 \tikzset{
4035   excursus arrow/.style={%
4036     line width=2pt,
4037     draw=gray!40,
4038     rounded corners=2ex,
4039   },
4040   excursus head/.style={
4041     fill=white,
4042     font=\bfseries\sffamily,
4043     text=gray!80,
4044     anchor=base west,
4045   },
4046 }
4047 \mdfdefinestyle{digressionarrows}{%
4048   singleextra={%
4049     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4050     \path let \p1=(Q), \p2=(0) in (\x1,{(\y1-\y2)/2}) coordinate (M);
4051     \path [excursus arrow, round cap-to]
4052       ($ (0)+(5em,0ex)$) -| (M) |- %
4053       ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4054       ++(23em,2ex);
4055     \node [excursus head] at ($ (Q)+(2.5em,-0.75pt)$) {Digression};},
4056   firstextra={%
4057     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4058     \path [excursus arrow,-to]
4059       (0) |- %
4060       ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4061       ++(23em,2ex);
4062     \node [excursus head] at ($ (Q)+(2.5em,-2pt)$) {Digression};},
4063   secondextra={%
4064     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4065     \path [excursus arrow,round cap-]

```

```

4066      ($ (0)+(5em,0ex)$) -| (Q);},
4067 middleextra={%
4068   \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4069   \path [excursus arrow]
4070     (0) -- (Q);},
4071 middlelinewidth=2.5em,middlelinecolor=white,
4072 hidealllines=true,topline=true,
4073 innertopmargin=0.5ex,
4074 innerbottommargin=2.5ex,
4075 innerrightmargin=2pt,
4076 innerleftmargin=2ex,
4077 skipabove=0.87\baselineskip,
4078 skipbelow=0.62\baselineskip,
4079 }
4080
4081 \begin{mdframed}[style=digressionarrows]
4082   \ExampleText
4083 \end{mdframed}
4084 \end{lstlisting}
4085
4086 \tikzset{
4087   excursus arrow/.style={%
4088     line width=2pt,
4089     draw=gray!40,
4090     rounded corners=2ex,
4091   },
4092   excursus head/.style={
4093     fill=white,
4094     font=\bfseries\sffamily,
4095     text=gray!80,
4096     anchor=base west,
4097   },
4098 }
4099 \mdfdefinestyle{digressionarrows}{%
4100   singleextra={%
4101     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4102     \path let \p1=(Q), \p2=(0) in (\x1,{(\y1-\y2)/2}) coordinate (M);
4103     \path [excursus arrow, round cap-to]
4104       ($ (0)+(5em,0ex)$) -| (M) |- %
4105       ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4106       ++(23em,2ex);
4107     \node [excursus head] at ($ (Q)+(2.5em,-0.75pt)$) {Digression};},
4108   firstextra={%
4109     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4110     \path [excursus arrow,-to]
4111       (0) |- %
4112       ($ (Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
4113       ++(23em,2ex);
4114     \node [excursus head] at ($ (Q)+(2.5em,-2pt)$) {Digression};},
4115   secondextra={%
4116     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4117     \path [excursus arrow,round cap-]
4118       ($ (0)+(5em,0ex)$) -| (Q);},
4119   middleextra={%
4120     \path let \p1=(P), \p2=(0) in (\x2,\y1) coordinate (Q);
4121     \path [excursus arrow]

```

```

4122         (0) -- (Q);},
4123     middlelinewidth=2.5em,middlelinecolor=white,
4124     hidealllines=true,topline=true,
4125     innertopmargin=0.5ex,
4126     innerbottommargin=2.5ex,
4127     innerrightmargin=2pt,
4128     innerleftmargin=2ex,
4129     skipabove=0.87\baselineskip,
4130     skipbelow=0.62\baselineskip,
4131 }
4132
4133 \begin{mdframed}[style=digressionarrows]
4134     \ExampleText
4135 \end{mdframed}
4136 \end{document}
4137 \endinput

```

G. Change History

v1.0a		<code>\item\mbox\relax</code> – Need for amsthm	29
General: Created dtx and fixes bugs	1	changed definition of <code>\mdf@lrbox</code> (Thanks Lars Madsen)	28
v1.0b		Changed the enddefinition of <code>mdframed</code> . Uses now <code>\@doendpe</code> instead of <code>\endparenv</code>	37
General: added command <code>\@parboxrestore</code> to <code>\mdf@lrbox</code>	28	Edit algorithm to combine the saveboxes <code>\mdf@frametitlebox</code> and <code>\mdf@splitboxone</code> by the predefined settings: <code>\parskip\z@</code> , <code>\parindent\z@</code> and <code>\offinterlineskip</code>	33
removed <code>\setbox\mdf@splitbox@two</code> <code>\vbox\unvbox\mdf@splitbox@two</code>	41	v1.2a	
v1.1beta		General: take account of <code>\parskip</code> for the vertical calculation	39
General: added command to avoid overfull box warning by <code>vsplit</code>	29	v1.3	
Added frametitle detection to <code>\detected@mdf@put@frame</code>	36	General: Added option <code>shadow</code>	25
added lost semicolons	57	Use now <code>\item\mbox\relax</code>	29
Added method frame title via <code>\savebox</code>	33	v1.3a	
Added option <code>frametitlerulecolor</code> , <code>frametitlebackgroundcolor</code> , <code>font</code>	24	General: fixes bug with <code>\@doendpe</code> (Thanks Dietrich Grau)	28
Added option <code>titleaboveskip</code> , <code>titlebelowskip</code> , <code>frametitlerulewidth</code>	23	v1.4	
Added option <code>usetwoside</code>	25	General: Changed the detecting of float environments. Now <code>mdframed</code> uses only <code>\@capttype</code> instead of <code>\@floatpenalty</code>	36
Changed the definition of <code>\mdf@trivlist</code>	37	Changed the enddefinition of <code>mdframed</code> . Uses now a line to provide the defined width	37
Create new <code>\savebox</code> and renamed <code>\@tempboxa</code>	27	v1.4a	
Defining <code>mdframed</code> with <code>\newenvironment</code>	37	General: added extra test for a wrong splitted box	41
Joining all new definitions	27		
Redefinition of <code>\newmdtheoremenv</code> . – Now check of theorem definition.	30		
Removing <code>\@arrayparboxrestore</code>	39		
Renamed some commands so that every command have the same prefix <code>\mdf@</code>	1		
v1.1release			
General: Added <code>\mbox</code> to the definition.			

H. Index

The index only collect package relevant words.

Symbols	
<code>\\$</code>	4017, 4019, 4021, 4023
<code>\@definecounter</code>	470, 491
<code>\@doendpe</code>	364, 778
<code>\@itemlabel</code>	395
<code>\@namedef</code>	524
<code>\@nameuse</code>	524
<code>\@newctr</code>	491
<code>\@nmbolistfalse</code>	390
<code>\@parboxrestore</code>	358
<code>\@temptitle</code>	475, 477, 483, 486, 487, 499, 501, 507, 511, 513, 519, 528, 530, 536, 539, 540
<code>\@thmcounter</code>	471, 492, 495
<code>\@thmcountersep</code>	494
<code>\@trivlist</code>	391
<code>_</code>	483, 486, 507, 536, 539
A	
<code>\addtolength</code>	827
<code>\addtopsstyle</code>	2542, 3820
<code>align (option)</code>	8
<code>apptotikzsetting (option)</code>	9
<code>\arabic</code>	3385, 3586, 3672, 3774, 3900
<code>\AtBeginDocument</code>	457
<code>\author</code>	3363, 3564, 3752, 3878
B	
<code>backgroundcolor (option)</code>	7
<code>\booltrue</code>	548
<code>bottomline (option)</code>	10
C	
<code>\clearpage</code>	3412, 3432, 3455, 3477, 3510, 3613, 3633, 3714, 3801, 3827, 3927, 3958, 3982, 3996, 4030
<code>\closedshadow</code>	2905, 3252
<code>\Cmd</code>	3391, 3394, 3592, 3595, 3780, 3783, 3906, 3909, 3942
<code>\csappto</code>	420
<code>\CurrentOption</code>	277
D	
<code>\date</code>	3364, 3565, 3753, 3879
<code>\DeclareDocumentCommand</code>	443, 462
<code>defaultunit (option)</code>	5
<code>\deferred@thm@head</code>	376, 377
<code>\detected@mdf@put@frame</code>	584, 694, 695, 767, 772
<code>\DisableKeyvalOption</code>	1223, 1224
<code>\documentclass</code>	3352, 3552, 3740, 3865
<code>\draw</code>	1801
<code>\drawbrackgroundframetitle@@first</code>	1972, 1976, 1987, 2985, 2989, 2999
<code>\drawbrackgroundframetitle@@middle</code>	2170, 2176, 2194, 3156, 3161
<code>\drawbrackgroundframetitle@@second</code>	2351, 2356, 3328, 3332
<code>\drawbrackgroundframetitle@@single</code>	1944, 1947, 2803, 2806
<code>\drawbrackgroundframetitle@first</code>	1968, 2154, 2967, 2981
<code>\drawbrackgroundframetitle@middle</code>	2166, 2335, 3139, 3152
<code>\drawbrackgroundframetitle@second</code>	2347, 2511, 3311, 3324
<code>\drawbrackgroundframetitle@single</code>	1929, 1942, 2786, 2801
E	
<code>\endgroup</code>	30, 274, 586, 623, 921, 1055, 1124, 1148, 1803, 2636, 2651, 2672, 2823, 3018, 3174, 3345
<code>\endmdf@lrbox</code>	346, 367, 579, 594, 765, 770
<code>\endmdf@trivlist</code>	386, 401, 402, 777
<code>\endpsclip</code>	2592, 2600, 2614, 2633, 2649, 2793, 2973
<code>\enquote</code>	3948
<code>everyline (option)</code>	8
<code>\Examplesec</code>	3383, 3413, 3424, 3434, 3447, 3456, 3478, 3511, 3584, 3625, 3634, 3642, 3658, 3715, 3772, 3803, 3814, 3829, 3838, 3848, 3898, 3928, 3947, 3959, 3962, 3984, 3997, 4031
<code>\ExampleText</code>	3370, 3401, 3420, 3429, 3443, 3466, 3469, 3472, 3502, 3506, 3544, 3571, 3602, 3614, 3621, 3630, 3654, 3707, 3711, 3728, 3731, 3759, 3790, 3810, 3823, 3834, 3844, 3857, 3885, 3916, 3953, 3970, 3979, 3990, 4026, 4082, 4134
F	
<code>\f@size</code>	1037
<code>firstextra (option)</code>	10
<code>font (option)</code>	8
<code>fontcolor (option)</code>	7
<code>footnotedistance (option)</code>	12
<code>footnoteinside (option)</code>	13
<code>framemethod (option)</code>	4
<code>frametitle (option)</code>	10
<code>frametitleaboveskip (option)</code>	11
<code>frametitlealignment (option)</code>	11
<code>frametitlebackgroundcolor (option)</code>	11
<code>frametitlebelowskip (option)</code>	11
<code>frametitlefont (option)</code>	11
<code>frametitlerule (option)</code>	11

frametitlerulewidth (option) 11

G

\global 524, 581, 583, 596, 597, 598, 599, 600,
615, 621, 1404, 1412, 1633, 1973, 1977,
2171, 2986, 2990, 3157, 3415, 3426, 3437,
3616, 3627, 3688, 3805, 3816, 3831, 3840

H

hidealllines (option) 10
\href 3363, 3512, 3564, 3752, 3878, 3929

I

\if@mdf@pageodd 782, 806, 817
\ifcsdef 463
\ifdefempty 757, 766, 771,
1367, 1486, 1591, 1694, 1943, 1969, 2167,
2348, 2802, 2982, 3153, 3325, 3692, 3700
\ifmdf@bottomline 552
\ifmdf@footnoteinside 762
\ifmdf@frametitlebottomline 552
\ifmdf@frametitleleftline 549
\ifmdf@frametitlerightline 551
\ifmdf@frametitletopline 550
\ifmdf@leftline 549
\ifmdf@nobreak 696
\ifmdf@rightline 551
\ifmdf@topline 550
\IfNoValueTF 444, 466, 468
\ifstrempty .. 474, 486, 498, 510, 527, 539, 3483
\IfValueTF 446, 447
\ifvmode 755, 761
\includegraphics 3451, 3638
\indent 377
innerbottommargin (option) 6
innerleftmargin (option) 6
innerlinecolor (option) 7
innerlinewidth (option) 7
innermargin (option) 6
innerrightmargin (option) 6
innertopmargin (option) 6
\interruptlength
..... 3515, 3516, 3520, 3524, 3532, 3536
\introduction 3366, 3567, 3755, 3881
\itemindent 394

L

\labelwidth 392
\ldots 3988
\leavevmode 397
leftline (option) 10
\leftmargin 393
leftmargin (option) 6
linecolor (option) 7
linewidth (option) 7
\lipsum 3951, 3955, 3964, 3972, 3974, 3981, 3992

\Loadedframemethod
... 3358, 3359, 3362, 3366, 3391, 3559,
3560, 3563, 3567, 3592, 3744, 3745, 3751,
3755, 3780, 3873, 3874, 3877, 3881, 3906
\lstDeleteShortInline 3743
\lstset 3356, 3557, 3748, 3870
\ltxmdfsetifoot 3353, 3553, 3741, 3866

M

\makeatletter 3514, 3673
\makeatother 3540, 3678
\makelabel 396
\maketitle 3389, 3590, 3778, 3904
margin (option) 6
\mbox 398
\mdf@@exercisepoints
..... 3674, 3676, 3692, 3695, 3700, 3703
\mdf@@framemethod 116, 118, 120
\mdf@@frametitle 546, 605, 757
\mdf@@frametitle@use 609, 766, 771
\mdf@@frametitlerule
... 617, 981, 1019, 1108, 1249, 1794, 2661
\mdf@@setzref .. 782, 816, 919, 1053, 1122, 1145
\mdf@advancelength@freevspace@add
..... 867, 873, 1067
\mdf@advancelength@freevspace@sub 867, 870, 947
\mdf@advancelength@horizontalmargin@add . 830
\mdf@advancelength@horizontalmargin@sub .
..... 830, 836
\mdf@advancelength@verticalmargin@whole ..
..... 867, 867, 886, 912
\mdf@align 224, 224
\mdf@alignoption@triple do 81, 82, 84
\mdf@Ax 1847, 1855,
1856, 1931, 2046, 2054, 2055, 2155, 2245,
2253, 2254, 2336, 2407, 2415, 2416, 2512
\mdf@Ay 1848, 1868,
1869, 1931, 2047, 2072, 2073, 2155, 2246,
2268, 2269, 2336, 2408, 2428, 2429, 2512
\mdf@background@default
..... 1241, 1241, 1278, 1390, 1509, 1619
\mdf@backgroundcolor
... 170, 172, 1241, 1730, 1731, 2544, 2545
\mdf@booloption@doubledo 72, 73, 75
\mdf@checknththeorem 626, 627, 750
\mdf@currentvbadness 370, 373
\mdf@defaultunit 29
\mdf@deferred@thm@head 376
\mdf@define@key@length 43, 47, 61
\mdf@do@alignoption 81, 81, 217, 217
\mdf@do@booloption 72, 72, 190, 190
\mdf@do@lengthoption 56, 56, 133, 133, 160
\mdf@do@stringoption 63, 63, 160
\mdf@dolist 42, 42,
133, 160, 190, 217, 836, 886, 912, 947, 1067
\mdf@endparenv 402, 403

\mdf@firstextra	2158, 2974	\mdf@frametitlebelowskip@length .....	...
\mdf@font	754	..	601, 1252, 1414, 1797, 1980, 2664, 2993
\mdf@fontcolor	753, 1728	\mdf@frametitlebottomrulecolor	562
\mdf@footnotedistance@length	642	\mdf@frametitlebox	310, 581, 583, 590,
\mdf@footnotebox	311	596, 597, 598, 599, 600, 616, 980, 1018, 1107	
\mdf@footnoteinput	636, 648, 752	\mdf@frametitlefont .....	...
\mdf@footnoteoutput	636, 639, 764, 773	.....	575, 593, 3691, 3695, 3699, 3703
\mdf@footnoterule	636, 636, 644	\mdf@frametitlefontcolor	592
\mdf@frame@background@first ..	1378, 1378, 1485	\mdf@frametitleleftmargin@length	558
\mdf@frame@background@middle ..	1601, 1608, 1691	\mdf@frametitlerightmargin@length	559
\mdf@frame@background@second ..	1496, 1496, 1588	\mdf@frametitlerulecolor .....	...
\mdf@frame@background@single ..	1264, 1264, 1365	.....	555, 1247, 1791, 2656, 2657
\mdf@frame@bottomline@first	1445, 1482	\mdf@frametitlerulecolor@default ..	1247, 1254
\mdf@frame@bottomline@middle	1656, 1696	\mdf@frametitlerulewidth@length .....	...
\mdf@frame@bottomline@second ..	1496, 1532, 1590	.....	557, 1251, 1258, 1802, 2667
\mdf@frame@bottomline@single	1302, 1366	\mdf@frametitlesettings	563
\mdf@frame@frametitlebackground@first ..	...	\mdf@freepagevspace ...	819, 819, 901, 932, 945
.....	1396, 1486	\mdf@freevspace@length	339, 824,
\mdf@frame@frametitlebackground@middle ..	...	825, 826, 827, 901, 902, 904, 916, 931,	
.....	1625, 1694	932, 934, 946, 1065, 1082, 1084, 1085,	
\mdf@frame@frametitlebackground@second ..	...	1088, 1089, 1090, 1093, 1094, 1095, 1100	
.....	1515, 1591	\mdf@Fy	1961,
\mdf@frame@frametitlebackground@single ..	...	1964, 1965, 2001, 2004, 2005, 2186, 2189,	
.....	1284, 1367	2190, 2204, 2207, 2208, 2366, 2369, 2370	
\mdf@frame@leftline@first ..	1378, 1420, 1480	\mdf@hidealllines@check	735, 735, 746
\mdf@frame@leftline@middle ..	1601, 1601, 1690	\mdf@horizontalmargin@equation ..	355, 830, 834
\mdf@frame@leftline@second ..	1496, 1525, 1585	\mdf@horizontalsofbox ..	830, 831, 833,
\mdf@frame@leftline@single .....	...	835, 842, 843, 844, 847, 848, 849, 851, 853	
.....	1264, 1313, 1362, 3518	\mdf@horizontalwidthofbox@length	340
\mdf@frame@rightline@first ..	1378, 1436, 1489	\mdf@iflength	26, 27, 50
\mdf@frame@rightline@middle ..	1601, 1636, 1699	\mdf@iflength@check	26, 28, 32
\mdf@frame@rightline@second ..	1496, 1541, 1594	\mdf@iflength@cleanup	38, 41
\mdf@frame@rightline@single .....	...	\mdf@ifstrequal@expand	291, 296, 298, 300
.....	1264, 1321, 1370, 3527	\mdf@ignorevbadness ...	369, 369, 580, 582,
\mdf@frame@topandbottomline@single	1264	595, 614, 620, 972, 1000, 1006, 1011, 1099	
\mdf@frame@topline@first ...	1378, 1428, 1484	\mdf@innerbottommargin@length .....	...
\mdf@frame@topline@middle	1644, 1693	...	1296, 1345, 1348, 1553, 1574, 1576,
\mdf@frame@topline@second	1549, 1587	1835, 1848, 2391, 2408, 2703, 2724, 3194, 3214	
\mdf@frame@topline@single	1292, 1364	\mdf@innerleftmargin@length .....	...
\mdf@frameIdate@svn	1716, 1717, 1719	1253, 1256, 1340, 1368, 1463, 1487, 1570,	
\mdf@frameIIdate@svn	2533, 2534, 2536	1592, 1675, 1697, 1798, 1800, 1822, 1847,	
\mdf@framemethod	106, 106	2016, 2046, 2218, 2245, 2380, 2407, 2691,	
\mdf@framemethod@i	107, 112, 115	2724, 2832, 2868, 3027, 3061, 3183, 3214	
\mdf@framemethod@ii	108, 113, 117	\mdf@innerlinecolor .....	...
\mdf@framemethod@iii	109, 114, 119	.....	677, 685, 691, 1244, 1749, 2572
\mdf@frameOdate@svn	1236, 1237, 1239	\mdf@innerlinecolor@default	1244
\mdf@frametitle	606, 757,	\mdf@innerlinewidth@length ..	674, 682, 688,
766, 771, 1367, 1486, 1591, 1694, 1943,		842, 847, 857, 862, 936, 952, 958, 1072,	
1969, 2167, 2348, 2802, 2982, 3153, 3325		1078, 1088, 1093, 1350, 1735, 1747, 1750,	
\mdf@frametitleaboveskip@length	601, 624	1825, 1829, 1837, 1841, 1857, 1870, 1951,	
\mdf@frametitlealignment	560, 577, 591	1955, 1959, 1979, 1991, 1995, 1999, 2019,	
\mdf@frametitlebackground@default .....	...	2023, 2030, 2036, 2056, 2074, 2180, 2184,	
.....	1242, 1285, 1399, 1407, 1518, 1628	2198, 2202, 2221, 2225, 2233, 2237, 2255,	
\mdf@frametitlebackgroundcolor .....	...	2270, 2360, 2364, 2383, 2387, 2393, 2399,	
.....	556, 1242, 1732, 2550, 2551	2417, 2430, 2554, 2557, 2570, 2573, 2694,	
		2698, 2706, 2710, 2714, 2731, 2744, 2809,	

2813, 2817, 2835, 2839, 2846, 2852, 2875, 2895, 2992, 3002, 3006, 3010, 3030, 3034, 3042, 3046, 3068, 3084, 3164, 3168, 3186, 3190, 3196, 3202, 3221, 3234, 3335, 3339	1869, 1872, 1877, 1951, 1955, 1959, 1979, 1991, 1995, 1999, 2020, 2024, 2031, 2037, 2056, 2058, 2062, 2066, 2073, 2076, 2081, 2180, 2184, 2198, 2202, 2222, 2226, 2234, 2238, 2255, 2257, 2262, 2269, 2272, 2277, 2360, 2364, 2384, 2388, 2394, 2400, 2417, 2419, 2424, 2430, 2432, 2439, 2555, 2558, 2565, 2573, 2579, 2581, 2695, 2699, 2707, 2711, 2715, 2730, 2733, 2738, 2743, 2746, 2751, 2810, 2814, 2818, 2830, 2836, 2840, 2847, 2853, 2874, 2877, 2882, 2887, 2894, 2897, 2992, 3003, 3007, 3011, 3025, 3031, 3035, 3043, 3047, 3067, 3070, 3075, 3083, 3086, 3091, 3165, 3169, 3181, 3187, 3191, 3197, 3203, 3220, 3223, 3228, 3233, 3236, 3243, 3336, 3340, 3521, 3523, 3533, 3535
\mdf@innermargin@length 790, 810, 812	\mdf@needspace 265
\mdf@innerrightmargin@length 1257, 1324, 1341, 1438, 1464, 1543, 1571, 1638, 1676, 1800, 1823, 2017, 2219, 2381, 2692, 2833, 3028, 3184, 3530	\mdf@option@length 43, 43, 60
\mdf@innertopmargin@length 935, 984, 1022, 1111, 1261, 1296, 1347, 1431, 1469, 1806, 1834, 2027, 2675, 2704, 2843	\mdf@outerlinecolor 679, 1246, 1742, 2564
\mdf@keep@lines@single 855, 855, 889, 915	\mdf@outerlinecolor@default 1246
\mdf@leftmargin@length 218, 222, 225, 790, 810, 813	\mdf@outerlinewidth@length 676, 684, 690, 844, 849, 859, 864, 938, 954, 960, 1074, 1080, 1090, 1095, 1351, 1740, 1743, 1827, 1831, 1839, 1843, 1856, 1859, 1864, 1869, 1872, 1877, 2021, 2025, 2032, 2038, 2055, 2058, 2062, 2066, 2073, 2076, 2081, 2223, 2227, 2235, 2239, 2254, 2257, 2262, 2269, 2272, 2277, 2385, 2389, 2395, 2401, 2416, 2419, 2424, 2429, 2432, 2439, 2562, 2565, 2696, 2700, 2708, 2712, 2716, 2729, 2732, 2737, 2742, 2745, 2750, 2837, 2841, 2848, 2854, 2873, 2876, 2881, 2886, 2893, 2896, 3032, 3036, 3044, 3048, 3066, 3069, 3074, 3082, 3085, 3090, 3188, 3192, 3198, 3204, 3219, 3222, 3227, 3232, 3235, 3242
\mdf@lengthoption@doubled 56, 57, 59	\mdf@outermargin@length 789, 809, 813
\mdf@linecolor 167, 168, 169, 171, 677, 678, 679, 685, 691	\mdf@0x 1849, 1858, 1859, 1880, 1950, 1951, 1964, 1990, 1991, 2004, 2048, 2057, 2058, 2085, 2179, 2180, 2189, 2197, 2198, 2207, 2247, 2256, 2257, 2281, 2359, 2360, 2369, 2409, 2418, 2419, 2443
\mdf@linecolor@bottom 562, 1241	\mdf@0y 1850, 1871, 1872, 1880, 2049, 2075, 2076, 2085, 2248, 2271, 2272, 2281, 2410, 2431, 2432, 2443
\mdf@linecolor@default .. 1241, 1248, 1293, 1303, 1314, 1322, 1421, 1429, 1437, 1446, 1526, 1533, 1542, 1550, 1602, 1637, 1645, 1657	\mdf@PackageInfo 8, 9, 378, 381, 703, 712, 717, 723, 728, 787, 792, 905, 989
\mdf@linewidth@length 148, 675, 683, 689	\mdf@PackageInfoSpace 308, 902
\mdf@load@style 654, 654, 670	\mdf@PackageNoInfo 290
\mdf@LoadFile@IfExist 8, 10, 98, 99, 101, 102, 122, 128, 129, 130	\mdf@PackageWarning 8, 8, 14, 92, 103, 229, 277, 282, 302, 419, 464, 630, 665, 852, 880, 896, 964, 1027, 1115, 1131, 1137, 1405, 1974, 2987
\mdf@lrbbox 346, 347, 576, 590, 759	\mdf@pageiseven 782
\mdf@maindate@svn 1, 3, 6	\mdf@pageisodd 782
\mdf@makebox@in 406, 411, 1358, 1476, 1581, 1686, 1844, 2043, 2242, 2404, 2718, 2859, 3052, 3208	\mdf@patchamsth 374
\mdf@makebox@out 406, 406, 1335, 1459, 1566, 1671, 1817, 2012, 2214, 2376, 2688, 2828, 3023, 3179	\mdf@patchamsthm 349, 375, 385
\mdf@makeboxalign@left 224, 225, 230, 233, 1336, 1460, 1567, 1672, 1818, 2013, 2215, 2377, 2689, 2829, 3024, 3180	\mdf@print@space 290, 294, 900
\mdf@makeboxalign@right 224, 226, 231, 234, 1374, 1492, 1597, 1702, 1938, 2162, 2343, 2519, 2797, 2977, 3148, 3320	
\mdf@middleextra 2338, 3145	
\mdf@middlelinecolor 678, 1245, 1763, 2582	
\mdf@middlelinecolor@default 1245, 1248	
\mdf@middlelinewidth@length . 675, 683, 689, 843, 848, 858, 863, 937, 953, 959, 1073, 1079, 1089, 1094, 1269, 1272, 1275, 1298, 1303, 1305, 1307, 1308, 1309, 1316, 1318, 1327, 1329, 1350, 1355, 1357, 1385, 1423, 1425, 1433, 1440, 1442, 1446, 1448, 1450, 1451, 1452, 1473, 1474, 1479, 1501, 1504, 1528, 1533, 1534, 1536, 1537, 1538, 1545, 1550, 1555, 1556, 1558, 1578, 1579, 1584, 1604, 1615, 1640, 1645, 1649, 1650, 1652, 1657, 1659, 1661, 1662, 1663, 1683, 1684, 1689, 1736, 1743, 1750, 1761, 1764, 1765, 1826, 1830, 1838, 1842, 1857, 1859, 1864,	

\mdf@printheight	292, 302	\mdf@roundcorner@length	1729, 1734, 2553, 2556, 2722, 2857, 2866, 3212
\mdf@psset@local	237, 244, 246, 2723, 2858, 2867, 3059, 3213	\mdf@seconddextra	2514, 3314
\mdf@pstricksbox@fl	2587, 2757, 2912, 3101, 3258	\mdf@setopt@body	546, 566
\mdf@pstricksbox@ol	2638, 2778, 2779, 2780, 2781, 2933, 2934, 2935, 2936, 2956, 2958, 2960, 3122, 3123, 3124, 3125, 3132, 3134, 3279, 3280, 3281, 3282, 3301, 3303, 3305	\mdf@setopt@title	546, 547, 573
\mdf@pstricksbox@tcl	2603, 2764, 2766, 2768, 2770, 2919, 2921, 2923, 2925, 2946, 2949, 3108, 3110, 3112, 3114, 3265, 3267, 3269, 3271, 3291, 3294	\mdf@settings	758
\mdf@pstricksbox@tl	2595, 2759, 2760, 2761, 2762, 2914, 2915, 2916, 2917, 2942, 3103, 3104, 3105, 3106, 3260, 3261, 3262, 3263, 3288	\mdf@shadow@default	1243, 1266, 1380, 1498, 1610
\mdf@pstricksbox@tncl	2617, 2773, 2775, 2928, 2930, 2953, 3117, 3119, 3130, 3274, 3276, 3298	\mdf@shadowcolor	1243, 1755, 2578
\mdf@ptlength@to@pscode	2538, 2538, 2540	\mdf@shadowsize@length	1268, 1271, 1274, 1382, 1384, 1387, 1500, 1503, 1506, 1612, 1614, 1753, 1754, 2578
\mdf@ptlength@to@pscode@length	2539, 2541	\mdf@singleextra	1934, 2794
\mdf@put@frame	699, 701, 710, 894, 894, 907, 943, 1034, 1043, 1049	\mdf@skipabove@length	756
\mdf@put@frame@i	923, 928, 928	\mdf@skipbelow@length	404
\mdf@put@frame@ii	1058, 1064, 1064, 1119, 1127	\mdf@splitbottomskip@length	1084, 1431, 1467, 1470, 1679, 1681, 1980, 2028, 2047, 2229, 2246, 2844, 2868, 2993, 3038, 3061
\mdf@put@frame@standalone	697, 705, 714, 719, 725, 730, 878, 878	\mdf@splitbox@one	312, 576, 581, 583, 615, 618, 621, 622, 759, 879, 885, 895, 899, 911, 963, 973, 975, 977, 985, 995, 998, 1001, 1003, 1007, 1010, 1012, 1015, 1023, 1026, 1031, 1032, 1048, 1066, 1100, 1102, 1104, 1112, 1114, 1118, 1130, 1134, 1136, 1140, 1142, 1333, 1338, 1343, 1345, 1372, 1564, 1568, 1572, 1574, 1595, 1815, 1821, 1833, 1931, 2374, 2379, 2390, 2512, 2686, 2690, 2702, 2788, 3177, 3182, 3193, 3313
\mdf@put@frametitulerule	1789, 2661	\mdf@splitbox@two	313, 973, 974, 987, 991, 992, 995, 1001, 1002, 1004, 1007, 1031, 1036, 1045, 1048, 1100, 1101, 1118, 1457, 1461, 1465, 1467, 1490, 1669, 1673, 1677, 1679, 1700, 2010, 2015, 2026, 2155, 2212, 2217, 2228, 2336, 2826, 2831, 2842, 2969, 3021, 3026, 3037, 3141
\mdf@putbox@first	1054, 1378, 1456, 1968, 2009, 2825, 2825	\mdf@splittopskip@length	971, 978, 983, 999, 1016, 1021, 1098, 1105, 1110, 1980, 2994
\mdf@putbox@middle	1123, 1601, 1668, 2166, 2211, 3020, 3020	\mdf@stringoption@doubled	63, 64, 66
\mdf@putbox@second	1146, 1496, 1563, 2347, 2373, 3176, 3176	\mdf@style	280
\mdf@putbox@single	890, 920, 1264, 1332, 1809, 1814, 2685	\mdf@styledefinition	654, 672, 751
\mdf@Px	1851, 1863, 1864, 1881, 1954, 1955, 1965, 1994, 1995, 2005, 2050, 2061, 2062, 2086, 2183, 2184, 2190, 2201, 2202, 2208, 2249, 2261, 2262, 2282, 2363, 2364, 2370, 2411, 2423, 2424, 2444	\mdf@tempa	111, 115, 117, 119, 296, 298, 300, 304, 308
\mdf@Py	1852, 1876, 1877, 1881, 1958, 1959, 1962, 1964, 1965, 1998, 1999, 2002, 2004, 2005, 2051, 2065, 2066, 2080, 2081, 2086, 2187, 2189, 2190, 2205, 2207, 2208, 2250, 2276, 2277, 2282, 2367, 2369, 2370, 2412, 2438, 2439, 2444	\mdf@templength	26, 29, 51, 52
\mdf@reserved@a	694, 697, 699, 701, 705, 710, 714, 719, 725, 730, 733, 881, 890, 892, 897, 907, 922, 923, 926, 943, 1034, 1043, 1049, 1058, 1062, 1119, 1127, 1141, 1149, 1151	\mdf@test@b	1154, 1209, 1922, 2124, 2150, 2320, 2482, 2499, 2781, 2936, 2962, 3125, 3282, 3300
\mdf@reserved@a	763, 769, 776	\mdf@test@l	1154, 1200, 1913, 2115, 2144, 2311, 2473, 2502, 2778, 2933, 2957, 3122, 3279, 3302
\mdf@reset	876, 876	\mdf@test@lb	1154, 1181, 1219, 1894, 2097, 2144, 2293, 2455, 2490, 2764, 2919, 2957, 3108, 3265, 3290
\mdf@restoreparams	351, 359	\mdf@test@lr	1154, 1193, 1906, 2109, 2138, 2305, 2467, 2496, 2773, 2928, 2952, 3117, 3274, 3297
\mdf@restorevbadness	369, 372, 373	\mdf@test@lrb	1154, 1177, 1219, 1892, 2096, 2138, 2292, 2454,
\mdf@rightmargin@length	220, 221, 789, 809, 812		

2487, 2762, 2917, 2952, 3106, 3263, 3287	\mdf@titlebelowskip@length 553
\mdf@test@lt 1154,	\mdf@trivlist 386, 386, 756
1190, 1221, 1903, 2106, 2132, 2302, 2464,	\mdf@twoside@checklength 747, 782, 784
2502, 2770, 2925, 2945, 3114, 3271, 3302	\mdf@userdefinedwidth@length 411, 835
\mdf@test@ltb 1154,	\mdf@verticalmarginwhole@length . 341, 857,
1171, 1218, 1889, 2093, 2132, 2289, 2451,	858, 859, 862, 863, 864, 868, 884, 910, 916
2490, 2759, 2914, 2945, 3103, 3260, 3290	\mdf@xcolor 253, 253, 257, 261
\mdf@test@ltr 1154,	\mdf@zref@label 782, 802, 817
1168, 1217, 1891, 2095, 2129, 2291, 2453,	\mdfapptodefinestyle
2496, 2761, 2916, 2941, 3105, 3262, 3297	. . . . . 4, 414, 417, 3426, 3437, 3627, 3816
\mdf@test@ltrb 1154,	\mdfbackgroundstyle 2542
1164, 1217, 1887, 2092, 2129, 2288, 2450,	\mdfboundingboxdepth 336,
2487, 2757, 2912, 2941, 3101, 3258, 3287	1267, 1279, 1286, 1295, 1305, 1315, 1325,
\mdf@test@noline	1344, 1381, 1391, 1400, 1408, 1422, 1430,
1154, 1213, 1926, 2127, 2151, 2323, 2485,	1439, 1448, 1466, 1499, 1510, 1519, 1527,
2509, 2783, 2938, 2963, 3127, 3284, 3308	1534, 1544, 1552, 1573, 1603, 1611, 1620,
\mdf@test@r	1629, 1639, 1647, 1659, 1678, 3520, 3531
1154, 1203, 1916, 2118, 2147, 2314, 2476,	\mdfboundingboxheight 335, 1295, 1342, 1347,
2505, 2779, 2934, 2959, 3123, 3280, 3304	1413, 1430, 1465, 1469, 1552, 1572, 1576,
\mdf@test@rb 1154,	1677, 1681, 1770, 1782, 1833, 1834, 1835,
1184, 1220, 1897, 2100, 2147, 2296, 2458,	1837, 1838, 1839, 1841, 1842, 1843, 1852,
2493, 2766, 2921, 2959, 3110, 3267, 3293	1970, 1978, 2026, 2027, 2028, 2030, 2031,
\mdf@test@single 1216	2032, 2036, 2037, 2038, 2051, 2228, 2229,
\mdf@test@t	2233, 2234, 2235, 2237, 2238, 2239, 2250,
1154, 1206, 1919, 2121, 2141, 2317, 2479,	2390, 2391, 2393, 2394, 2395, 2399, 2400,
2508, 2780, 2935, 2955, 3124, 3281, 3307	2401, 2412, 2702, 2703, 2704, 2706, 2707,
\mdf@test@tb	2708, 2710, 2711, 2712, 2720, 2726, 2842,
1154, 1196, 1909, 2112, 2141, 2308, 2470,	2843, 2844, 2846, 2847, 2848, 2852, 2853,
2499, 2775, 2930, 2955, 3119, 3276, 3300	2854, 2862, 2864, 2870, 2983, 2991, 3013,
\mdf@test@tr 1154,	3037, 3038, 3042, 3043, 3044, 3046, 3047,
1187, 1220, 1900, 2103, 2135, 2299, 2461,	3048, 3054, 3056, 3063, 3193, 3194, 3196,
2505, 2768, 2923, 2948, 3112, 3269, 3304	3197, 3198, 3202, 3203, 3204, 3210, 3216
\mdf@test@trb 1154,	\mdfboundingboxtotalheight 337,
1174, 1218, 1890, 2094, 2135, 2290, 2452,	1273, 1281, 1286, 1317, 1328, 1346, 1386,
2493, 2760, 2915, 2948, 3104, 3261, 3293	1393, 1397, 1400, 1410, 1424, 1441, 1468,
\mdf@theoremseparator 477, 501, 513, 530	1505, 1512, 1519, 1529, 1546, 1575, 1605,
\mdf@theoremspace 478, 502, 514, 531	1616, 1622, 1629, 1641, 1647, 1680, 3522, 3534
\mdf@theoremtitlefont 479, 503, 515, 532	\mdfboundingboxtotalwidth 333,
\mdf@thm@caption . . 456, 459, 481, 505, 517, 534	1270, 1280, 1287, 1297, 1306, 1339, 1353,
\mdf@tikz@settings	1383, 1392, 1401, 1409, 1432, 1449, 1462,
. 1722, 1723, 1819, 2014, 2216, 2378	1472, 1502, 1511, 1520, 1535, 1554, 1569,
\mdf@tikzbox@otl 1769,	1577, 1613, 1621, 1630, 1648, 1660, 1674, 1682
1781, 1894, 1897, 1900, 1903, 1906, 1909,	\mdfboundingboxwidth 332,
1913, 1916, 1919, 1922, 2097, 2100, 2103,	899, 1134, 1142, 1323, 1337, 1340, 1437,
2106, 2109, 2112, 2115, 2118, 2121, 2124,	1461, 1463, 1542, 1568, 1570, 1637, 1673,
2133, 2136, 2139, 2142, 2145, 2148, 2293,	1675, 1770, 1782, 1821, 1822, 1823, 1825,
2296, 2299, 2302, 2305, 2308, 2311, 2314,	1826, 1827, 1829, 1830, 1831, 1844, 1851,
2317, 2320, 2326, 2328, 2330, 2455, 2458,	2015, 2016, 2017, 2019, 2020, 2021, 2023,
2461, 2464, 2467, 2470, 2473, 2476, 2479,	2024, 2025, 2043, 2050, 2217, 2218, 2219,
2482, 2491, 2494, 2497, 2500, 2503, 2506	2221, 2222, 2223, 2225, 2226, 2227, 2242,
\mdf@tikzbox@tfl 1769, 1769, 1887,	2249, 2379, 2380, 2381, 2383, 2384, 2385,
1889, 1890, 1891, 1892, 2092, 2093, 2094,	2387, 2388, 2389, 2404, 2411, 2690, 2691,
2095, 2096, 2130, 2288, 2289, 2290, 2291,	2692, 2694, 2695, 2696, 2698, 2699, 2700,
2292, 2450, 2451, 2452, 2453, 2454, 2488	2718, 2720, 2726, 2831, 2832, 2833, 2835,
\mdf@tikzset@local . . 237, 237, 239, 242, 1758	2836, 2837, 2839, 2840, 2841, 2859, 2863,
\mdf@titleaboveskip@length 554	2864, 2870, 3026, 3027, 3028, 3030, 3031,

3032, 3034, 3035, 3036, 3052, 3055, 3056,
3063, 3182, 3183, 3184, 3186, 3187, 3188,
3190, 3191, 3192, 3208, 3210, 3216, 3529
`\mdfcreateextratikz` 344, 1935, 2159, 2340, 2516
`\mdfdateID` 3364, 3565, 3753, 3879
`\mdfdefinedstyle` 284
`\mdfdefinestyle`
 ... 4, 414, 414, 3415, 3458, 3616, 3680,
 3717, 3805, 3831, 3840, 4004, 4047, 4099
`\mdffootnoteboxdepth` 327
`\mdffootnoteboxheight` 326
`\mdffootnoteboxtotalheight` 328
`\mdffootnoteboxtotalwidth` 325
`\mdffootnoteboxwidth` 324
`\mdfframedtitleenv` 546, 571, 588, 606
`\mdfframetitlebackground` 2542
`\mdfframetitleboxdepth` 322, 599
`\mdfframetitleboxheight` 321, 598
`\mdfframetitleboxtotalheight`
 323, 600, 1286, 1288,
 1397, 1400, 1402, 1404, 1412, 1516, 1519,
 1521, 1626, 1629, 1631, 1633, 1962, 1970,
 1973, 1977, 1978, 2002, 2168, 2171, 2187,
 2205, 2349, 2367, 2820, 2983, 2986, 2990,
 3013, 3014, 3154, 3157, 3171, 3326, 3342
`\mdfframetitleboxtotalwidth` 320
`\mdfframetitleboxwidth`
 319, 597, 1251, 1255, 1800, 2670
`\mdfframetitlerule` 2542
`\mdfglobal@style` 90, 94
`\mdflength` 3, 422, 422
`\mdflinestyle` 2542
`\mdfpstricks@appendsettings` ... 248, 250, 2584
`\mdfpstricks@settings`
 2542, 2721, 2865, 3057, 3211
`\mdframed` 743
`\mdframed@i` 743
`\mdframed@ii` 743
`\mdframedIIpackagename` 2533, 2533, 2537
`\mdframedIpackagename` 1716, 1716, 1720
`\mdframedOpackagename` 1236, 1236, 1240
`\mdframedpackagename` 1,
 2, 7, 8, 9, 15, 666, 704, 713, 718, 724, 729
`\mdfsetup` ... 3, 279, 279, 287, 430, 553, 567,
 624, 745, 3369, 3400, 3484, 3490, 3496,
 3570, 3601, 3644, 3758, 3789, 3884, 3915
`\mdfsplitboxdepth` 317
`\mdfsplitboxheight` 316
`\mdfsplitboxtotalheight` 318
`\mdfsplitboxtotalwidth` 315
`\mdfsplitboxwidth` 314
`\mdftotalllinewidth` 330, 1349, 1361, 2714
`\mdtheorem` 12, 428, 462, 3464, 3726
`\mdversion` 1, 1,
 7, 1240, 1720, 2537, 3365, 3566, 3754, 3880
`middleextra` (option) 10

`middlelinecolor` (option) 7
`middlelinewidth` (option) 7

N

`needspace` (option) 8
`\new\protect_.\kern_.\fontdimen_3\font_.\kern_.\fontdimen_3\font_.`
 310
`\newmdenv` 3, 428, 428, 439, 3850
`\newmdtheoremenv` 11, 428, 443
`\newsavebox` 310, 311, 312, 313
`nobreak` (option) 8
`\nodexn` 2729, 2732, 2737, 2742,
 2745, 2750, 2809, 2813, 2817, 2820, 2873,
 2876, 2881, 2886, 2893, 2896, 3002, 3006,
 3010, 3014, 3015, 3066, 3069, 3074, 3082,
 3085, 3090, 3164, 3168, 3171, 3219, 3222,
 3227, 3232, 3235, 3242, 3335, 3339, 3342
`\noexpand` 494
`\nointerlineskip` 568, 755, 761, 979, 1017, 1106
`\normalfont` 177, 593
`\NOTE` 3394, 3595, 3783, 3909
`ntheorem` (option) 8

O

`\offinterlineskip` 613
`\onecolumn` 3983
`\Opt` 3362, 3366, 3391, 3563, 3567,
 3592, 3751, 3755, 3780, 3877, 3881, 3906
options:
 `align` 8
 `apptotikzsetting` 9
 `backgroundcolor` 7
 `bottomline` 10
 `defaultunit` 5
 `everyline` 8
 `firstextra` 10
 `font` 8
 `fontcolor` 7
 `footnotedistance` 12
 `footnoteinside` 13
 `framemethod` 4
 `frametitle` 10
 `frametitleaboveskip` 11
 `frametitlealignment` 11
 `frametitlebackgroundcolor` 11
 `frametitlebelowskip` 11
 `frametitlefont` 11
 `frametitlerule` 11
 `frametitlerulewidth` 11
 `hidealllines` 10
 `innerbottommargin` 6
 `innerleftmargin` 6
 `innerlinecolor` 7
 `innerlinewidth` 7
 `innermargin` 6
 `innerrightmargin` 6

innertopmargin	6	\pnode	2724, 2725, 2726, 2868, 2869, 2870, 3061, 3062, 3063, 3214, 3215, 3216
leftline	10	\psclip	2590, 2598, 2608, 2622, 2643, 2755, 2908
leftmargin	6	\pscustom	2608, 2623, 2643, 2902, 3249
linecolor	7	\psdot	2789, 2790, 2791, 2970, 2971, 2972, 3142, 3143, 3144, 3315, 3316, 3317
linewidth	7	psricksappsetting (option)	9
margin	6	psrickssetting (option)	9
middleextra	10	\ptTps	2538, 2540, 2670
middlelinecolor	7	\ptTpsL	2541, 2668, 2669, 2670
middlelinewidth	7		
needspace	8	R	
nobreak	8	\refstepcounter	473, 497, 526
ntheorem	8	\renewmdenv	3, 428, 436
outerlinecolor	7	\renewrobustcmd	459
outerlinewidth	7	repeatframetitle (option)	11
outermargin	6	rightline (option)	10
psricksappsetting	9	rightmargin (option)	6
psrickssetting	9	roundcorner (option)	7
repeatframetitle	11		
rightline	10	S	
rightmargin	6	secondextra (option)	10
roundcorner	7	\section	3390, 3396, 3591, 3597, 3779, 3785, 3905, 3911
secondextra	10	\setcounter	3351, 3381, 3551, 3582, 3739, 3770, 3864, 3896
settings	8	settings (option)	8
shadow	8	\sffamily	3687, 4042, 4094
shadowcolor	9	shadow (option)	8
shadowsize	8	shadowcolor (option)	9
singleextra	10	shadowsize (option)	8
skipabove	6	singleextra (option)	10
skipbelow	6	skipabove (option)	6
splitbottomskip	6	skipbelow (option)	6
splittopskip	6	\smash	931, 1266, 1380, 1498, 1610
style	8	splitbottomskip (option)	6
theoremseparator	12	splittopskip (option)	6
theoremspace	12	\strut	483, 487, 507, 519, 536, 540, 3488, 3494
theoremtitlefont	12	style (option)	8
tikzsetting	9	\subsection	3385, 3586, 3774, 3900
topline	10	\subtitle	3362, 3563, 3751, 3877
userdefinedwidth	6	\surroundwithmdframed	3, 422, 424, 3944
usetwoside	8		
xcolor	4	T	
outerlinecolor (option)	7	\textit	3371, 3402, 3572, 3603, 3760, 3791, 3886, 3917
outerlinewidth (option)	7	\theexercise	3672, 3691, 3699
outermargin (option)	6	\theorempostskipamount	632
\overlaplines	3517, 3541	\theoremprskipamount	629, 631
		theoremseparator (option)	12
P		theoremspace (option)	12
\p	4016, 4018, 4020, 4022, 4049, 4050, 4057, 4064, 4068, 4101, 4102, 4109, 4116, 4120	theoremtitlefont (option)	12
\Pack	3361, 3391, 3394, 3562, 3592, 3595, 3750, 3780, 3783, 3876, 3906, 3909, 3948	\thesubsection	3382, 3583, 3771, 3897
\pageshrink	962	\thetheo	3488, 3494
\parsep	389	\thm@thmcaption	459
\parskip	352, 611, 827	\tikz	1801, 3486, 3492
\pgfdeclarehorizontalshading	3665, 3668		
\pgfmathsetlength	1800, 1973, 1977, 2171		

<code>tikzsetting</code> (option)	9	<code>usetwoside</code> (option)	8
<code>\tikzstyle</code>	3661		
<code>\title</code>	3361, 3562, 3750, 3876		
<code>topline</code> (option)	10		
<code>\topskip</code>	3369, 3400, 3462, 3570, 3601, 3685, 3724, 3758, 3789, 3884, 3915		
<code>\twocolumn</code>	3959, 3961		
	U		V
<code>\unvcopy</code>	583, 616, 980, 1018, 1107	<code>\vbadness</code>	370, 371, 373
<code>\uput</code>	2789, 2790, 2791, 2970, 2971, 2972, 3142, 3143, 3144, 3315, 3316, 3317	<code>\version</code>	3365, 3566, 3754, 3880
<code>\usepackage</code>	3355, 3359, 3556, 3560, 3745, 3747, 3869, 3871, 3874	<code>\vspace</code>	3936, 3938
<code>userdefinedwidth</code> (option)	6		
<code>\usetikzlibrary</code>	3872, 4033		
			X
		<code>\x</code>	4016, 4018, 4020, 4022, 4049, 4050, 4057, 4064, 4068, 4101, 4102, 4109, 4116, 4120
		<code>xcolor</code> (option)	4
		<code>\xdef</code>	471, 492, 493
			Y
		<code>\y</code>	4016, 4018, 4020, 4022, 4049, 4050, 4057, 4064, 4068, 4101, 4102, 4109, 4116, 4120