diagbox Package (v2.1)

⇒ 中文版

Making Table Heads with Diagonal Lines

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1 Introduction

diagbox is a replacement of old slashbox package[1]. I write this package simply because that slashbox is not available in TeX Live for licening problems. slashbox has no explicit license information available, but diagbox is under LPPL.

diagbox is a modern alternative of slashbox. I changed the user interface to use a key-value syntax, get rid of some restrictions of slashbox, use pict2e to draw diagonal lines. Especially, this package also provides ability to make a box with two diagonal lines in it. All these can be obtained by a `\diagbox` command.

As a replacement of slashbox, diagbox package also provides compatible macros of slashbox, but the result is a little different.

To use diagbox, ε-TeX is needed. And diagbox requires pict2e, keyval and fp packages.

2 Usage

2.1 Basic usage

To load the package, just put this in the preamble:

```
\usepackage{diagbox}
```

`\diagbox` `\diagbox` is the main command. It can take two arguments, to produce a box with a diagonal line from north west to south east.

For example:

[1] By Koichi Yasuoka and Toru Sato. Available on CTAN://macros/latex/contrib/slashbox/slashbox.sty

Time \ Day	Mon	Tue	Wed
Morning	used	used	
Afternoon		used	used

```
\begin{tabular}{|l|ccc|}
\hline
\diagbox{Time}{Day} & Mon & Tue & Wed \\
\hline
Morning   & used & used &      \\
Afternoon &      & used & used \\
\hline
\end{tabular}
```

`\diagbox` can also take three arguments, to draw a table head with two diagbox lines. For example,

```
\begin{tabular}{|l|ccc|}
\hline
\diagbox{Time}{Room}{Day} & Mon & Tue & Wed \\
\hline
Morning   & used & used &      \\
Afternoon &      & used & used \\
\hline
\end{tabular}
```

Time \ Room \ Day	Mon	Tue	Wed
Morning	used	used	
Afternoon		used	used

2.2 More options

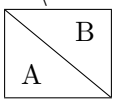
`\diagbox` can take a key-value list as an optional argument to specify the width and height of the box, the direction of the diagonal line, and the trimming margins:

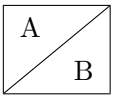
width Specify the width of the box explicitly. If it is omitted, diagbox will calculate the width automatically.

height Specify the height of the box explicitly. If it is omitted, diagbox will calculate the height automatically. In the argument, one can use `\line` as a line height.

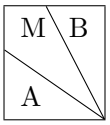
dir Specify the direction of the diagonal line. The value can be `NW`, `NE`, `SW` and `SE`. Default value is `NW`. The meaning of the values see below.

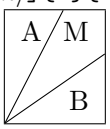
- `\diagbox[dir=`⟨*direction*⟩`]{A}{B}` in a table looks:

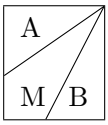
  `NW` or `SE`: 

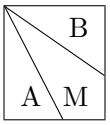
  `SW` or `NE`: 

- `\diagbox[dir=`⟨*direction*⟩`]{A}{M}{B}` in a table looks:

`NW` 

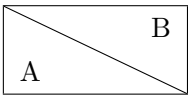
`NE` 

`SW` 

`SE` 

innerwidth Specify the width of the inner content box. `innerwidth` option is useful when specifying column width. For example:

```
\begin{tabular}{|p{2cm}|} \hline
\diagbox[innerwidth=2cm]{A}{B} \\ \hline
\end{tabular}
```

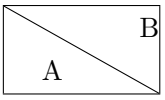


innerleftsep, innerrightsep Specify the distances between the border of the inner content box and the border of the diagonal box. We have:

$$\texttt{innerleftsep} + \texttt{innerwidth} + \texttt{innerrightsep} = \texttt{width}.$$

For example:

```
\begin{tabular}{|c|} \hline
\diagbox[innerleftsep=.5cm,innerrightsep=0pt]{A}{B} \\ \hline
\end{tabular}
```



outerleftsep, outerrightsep Specify the distances between the border of the diagonal box and the border of the tabular cell. Usually they are negative values, which satisfy

$$\texttt{outerleftsep} + \texttt{LEFTtabcolsep} = 0\,\text{pt},$$
$$\texttt{outerrightsep} + \texttt{RIGHTtabcolsep} = 0\,\text{pt}.$$

where `LEFTtabcolsep` and `RIGHTtabcolsep` are the distances between verticle lines and the tabular cell content (the diagonal box). For example:

```
\begin{tabular}{|r@{\hspace{20pt}}|l|} \hline
\diagbox[outerrightsep=-20pt]{A}{B} & C \\ \hline
AABB & CC \\ \hline
\end{tabular}
```

B / A	C
AABB	CC

leftsep, rightsep Specify the left and right distances, which are equivalent to:

`innerleftsep` := `leftsep`, `innerrightsep` := `rightsep`,

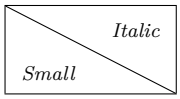
`outerleftsep` := −`leftsep`, `outerrightsep` := −`rightsep`.

trim Specify the margin to be trimmed. The value can be `l`, `r`, and `lr`, `rl`. This helps the slash line exceeds the boundary when `@{}` column specifier is used.

Note: `trim=l` has the same effect as `leftsep=0pt`, and `trim=r` has the same effect as `rightsep=0pt`.

font Specify the font of the cell.

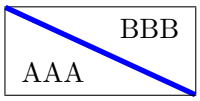
```
\diagbox[font=\footnotesize\itshape]{Small}{Italic}
```



linewidth Specify the line width of the diagonal lines.

linecolor Specify the line color of the diagonal lines. (color or xcolor is needed.)

```
\diagbox[linewidth=2pt,linecolor=blue]{AAA}{BBB}
```



Here is a more complex example to show the usage of the options:

```
\begin{tabular}{|@{}l|c|c|r@{}|}
\hline
\diagbox[width=5em,trim=l]{Time}{Day} & Mon & Tue & Wed\\
\hline
Morning   & used & used & used\\
\hline
Afternoon &      & used & \diagbox[dir=SW,height=2em,trim=r]{A}{B} \\
\hline
\end{tabular}
```

Time \ Day	Mon	Tue	Wed
Morning	used	used	used
Afternoon		used	A / B

What's more, you can use `\\` to break lines in `\diagbox`. Manual setting of the height of the head may be needed. For example,

```
\begin{tabular}{|c|}
\hline
\diagbox[height=3\line]{line\\heads}{column\\heads} \\
```

```
\hline
\end{tabular}
```

line heads \ column heads	

2.3 Compatibility with slashbox

diagbox package emulates slashbox and also prevents slashbox to be loaded.

diagbox package provides `\slashbox` and `\backslashbox` which syntax similar to slashbox package. However, the results of the two packages are a little different. These two commands are for compatibility only, it is better to use `\diagbox` instead for new documents.

`\backslashbox` `\backslashbox` works as `\diagbox`, but it takes two optional arguments to specify the `width` and `trim` options.

`\slashbox` `\slashbox` works as `\diagbox[dir=SW]`, and takes two optional arguments to specify the `width` and `trim` options.

For example,

num \ alpha	A	B
1	A1	B1
2	A2	B2

```
\begin{tabular}{|c|c|c|} \hline
\backslashbox[2cm]{num}{alpha}
  & A  & B  \\\hline
1 & A1 & B1 \\\hline
2 & A2 & B2 \\\hline
\end{tabular}
```

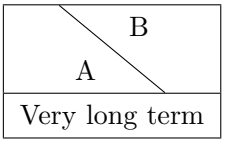
3 Known issues and TODO

Known issues:

- The result of `\slashbox` and `\backslashbox` is different with slashbox package. The algorithms to calculate the width and height are different; and the results of the second optional argument of `\slashbox` (i.e. `trim` key in `\diagbox`) in the two packages are differernt.

  This is not a bug. Usually the width calculated by diagbox is more safe than slashbox.

- The cell with `\diagbox` should be the widest one of the column. Otherwise the slash line cannot exceeds the boundary. For example,




```
\begin{tabular}{|c|}  \hline
  \diagbox{A}{B}    \\\hline
  Very long term    \\\hline
\end{tabular}
```

This can be solved by setting a wider `width` option of `\diagbox` manually.

TODO:

- Improve the document of the source code. The algorithm of `\diagbox@triple` should be explained in detail. However, the explanations would be only available in Chinese, I'm sorry.

diagbox 宏包（v2.1）
制做斜线表头

⇒ English Version

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4 简介

diagbox 设计用来代替旧的 slashbox 宏包[1]。编写这个宏包的缘起是 slashbox 因为缺少明确的自由许可信息，被 TEX Live 排除。这个宏包是在 LPPL 协议下发行的。

diagbox 是 slashbox 宏包的一个现代的版本。它采用了新的 key-value 式语法参数，去除了 slashbox 原有的一些长度限制，并调用 pict2e 宏包画斜线；特别还添加了绘制两条斜线的表头的新功能。

作为 slashbox 的代替，diagbox 除了提供自己的新命令，也提供了 slashbox 原有的两个命令，语法不变，编译结果略有区别。

diagbox 依赖 ε-TEX 扩展（这在目前总是可用的），依赖 pict2e, keyval 和 fp 宏包。

5 用法说明

5.1 基本用法

要使用本宏包，首先在导言区调用：

```
\usepackage{diagbox}
```

\diagbox

\diagbox 是宏包提供的主要命令。它可以带有两个必选参数，表示要生成斜线表头的两部分内容。默认斜线是从西北到东南方向的。

例如：

[1]作者 Koichi Yasuoka（安岡孝一）与 Sato Toru（佐藤徹）。宏包见 CTAN://macros/latex/contrib/slashbox/slashbox.sty。

Time \ Day	Mon	Tue	Wed
Morning	used	used	
Afternoon		used	used

```
\begin{tabular}{|l|ccc|}
\hline
\diagbox{Time}{Day} & Mon & Tue & Wed \\
\hline
Morning   & used & used &      \\
Afternoon &      & used & used \\
\hline
\end{tabular}
```

\diagbox 也可以接受三个参数，这样就会生成带有两条斜线的表头，例如：

```
\begin{tabular}{|l|ccc|}
\hline
\diagbox{Time}{Room}{Day} & Mon & Tue & Wed \\
\hline
Morning   & used & used &      \\
Afternoon &      & used & used \\
\hline
\end{tabular}
```

Room \ Day / Time	Mon	Tue	Wed
Morning	used	used	
Afternoon		used	used

5.2 更多参数设置

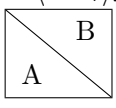
\diagbox 还可以在前面带一个可选参数，里面用 key-value 的语法设置宽度、方向等更多的选项：

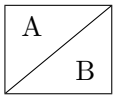
width 明确指定盒子的总宽度。如果省略，则会自动计算能够放下所有内容的宽度。

height 明确指定盒子的总高度。

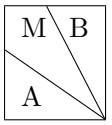
dir 指定斜线方向。可以取 NW（西北）、NE（东北）、SW（西南）、SE（东南）四种方向。在只有一条斜线的表头中，NE 与 SW、SE 与 NW 是等价的。斜线方向的默认值是 NW。

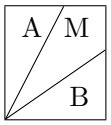
\diagbox[dir=⟨方向⟩]{A}{B} 在表格中的效果：

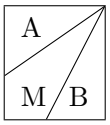
NW 或 SE: 

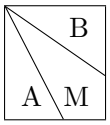
SW 或 NE: 

`\diagbox[dir=`⟨方向⟩`]{A}{M}{B}` 在表格中的效果：

NW 

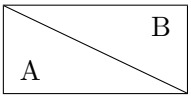
NE 

SW 

SE 

innerwidth 设置盒子中内容的宽度。`innerwidth` 选项可以与表格的列宽度一起设置并保持一致。如：

```
\begin{tabular}{|p{2cm}|} \hline
\diagbox[innerwidth=2cm]{A}{B} \\ \hline
\end{tabular}
```

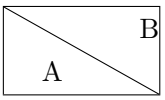


innerleftsep, innerrightsep 设置内间距，即内容盒子与斜线盒子边界之间的距离。我们有关系式：

$$\texttt{innerleftsep} + \texttt{innerwidth} + \texttt{innerrightsep} = \texttt{width}.$$

例如：

```
\begin{tabular}{|c|} \hline
\diagbox[innerleftsep=.5cm,innerrightsep=0pt]{A}{B} \\ \hline
\end{tabular}
```

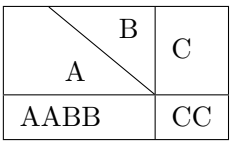


outerleftsep, outerrightsep 设置外间距，即斜线盒子边界到表格单元格边界的距离。由于斜线是沿单元格画出而非斜线盒子本身画出，斜线通常会伸出斜线盒子之外，此距离为负数，并满足如下关系式：

$$\begin{aligned}\texttt{outerleftsep} + \texttt{LEFTtabcolsep} &= 0\,\mathrm{pt},\\ \texttt{outerrightsep} + \texttt{RIGHTtabcolsep} &= 0\,\mathrm{pt}.\end{aligned}$$

其中 `LEFTtabcolsep` 与 `RIGHTtabcolsep` 是表格竖线与表格内容（斜线例子边界）之间的距离。例如：

```
\begin{tabular}{|r@{\hspace{20pt}}|l|} \hline
\diagbox[outerrightsep=-20pt]{A}{B} & C \\ \hline
AABB & CC \\ \hline
\end{tabular}
```



leftsep, rightsep 同时设置左右内外间距，满足关系式：

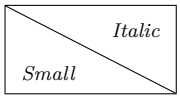
$$\texttt{innerleftsep} := \texttt{leftsep}, \qquad \texttt{innerrightsep} := \texttt{rightsep},$$
$$\texttt{outerleftsep} := -\texttt{leftsep}, \qquad \texttt{outerrightsep} := -\texttt{rightsep}.$$

trim 设置左边界或右边界不计算额外的空白，可以取值为 `l`, `r`, `lr` 或 `rl`。这个选项在列格式包含 `@{}` 时将会有用。

注：`trim=l` 与 `leftsep=0pt` 效果相同，而 `trim=r` 与 `rightsep=0pt` 效果相同。

font 设置单元格字体。

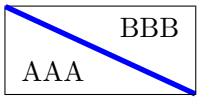
```
\diagbox[font=\footnotesize\itshape]{Small}{Italic}
```



linewidth 设置斜线宽度。

linecolor 设置斜线颜色。（需要自行载入 color 或 xcolor 宏包。）

```
\diagbox[linewidth=2pt,linecolor=blue]{AAA}{BBB}
```



一个更复杂的例子：

```
\begin{tabular}{|@{}l|c|c|r@{}|}
\hline
\diagbox[width=5em,trim=l]{Time}{Day} & Mon & Tue & Wed\\
\hline
Morning   & used & used & used\\
\hline
Afternoon &      & used & \diagbox[dir=SW,height=2em,trim=r]{A}{B} \\
\hline
\end{tabular}
```

Time \ Day	Mon	Tue	Wed
Morning	used	used	used
Afternoon		used	A / B

此外，`\diagbox` 的表头内容还可以用 `\\` 手工换行。此时通常需要对自动计算的表头高度进行手工调整。例如：

```
\begin{tabular}{|c|}
\hline
\diagbox[height=3\line]{line\\heads}{column\\heads} \\
\hline
\end{tabular}
```

line heads / column heads

5.3 对 slashbox 宏包的兼容性

在使用 diagbox 宏包时，会模拟 slashbox 宏包的功能，并禁止 slashbox 再被调用。

diagbox 宏包提供了与 slashbox 大致相同的 \slashbox 与 \backslashbox 两个命令。\slashbox 与 \backslashbox 的语法来自 slashbox 宏包，排版效果略有区别。这两个命令仅在旧文档中作为兼容命令使用。实际中使用 \diagbox 更为方便。

\backslashbox　\backslashbox 基本功能与 \diagbox 类似。它带有两个可选参数，分别表示 \diagbox 中的 width 与 trim 选项。

\slashbox　\slashbox 基本功能与 \diagbox[dir=SW] 类似。它也带有两个可选参数，表示 \diagbox 中的 width 和 tirm 选项。

例如：

num \ alpha	A	B
1	A1	B1
2	A2	B2

```
\begin{tabular}{|c|c|c|} \hline
\backslashbox[2cm]{num}{alpha}
  & A  & B  \\\hline
1 & A1 & B1 \\\hline
2 & A2 & B2 \\\hline
\end{tabular}
```

6 已知问题和未来版本

已知问题：

- \slashbox 与 \backslashbox 命令的效果与在 slashbox 宏包中不同。两个宏包在计算盒子宽度和高度时，使用了不同的算法；同时，在处理 \slashbox 第二个可选参数（即 \diagbox 的 trim 键）时，使用的方式也不一样。

  这不是 bug。通常 diagbox 计算出的宽度比 slashbox 的结果更安全一些。

- \diagbox 生成的单元格必须是表列中最宽的一个。如果不能达到最宽，则画出的斜线不能保证在正确的位置。例如：

A \ B
Very long term

```
\begin{tabular}{|c|}  \hline
  \diagbox{A}{B}    \\\hline
  Very long term    \\\hline
\end{tabular}
```

此时可以手工设置较宽的 \diagbox 的 width 选项，解决此问题。

未尽的工作：

- 源代码的文档需要改进。特别是在 `\diagbox@triple` 中的宽度和高度计算算法需要详细说明。

7 Implementation / 代码实现

7.1 实现依赖的工具包

使用 key-value 界面。

```
\RequirePackage{keyval}
```

绘图依赖 pict2e 宏包。

```
\RequirePackage{pict2e}
```

计算依赖 fp 宏包。

```
\PassOptionsToPackage{nomessages}{fp}
\RequirePackage{fp}
```

内部控制 array 宏包。

```
\RequirePackage{array}
```

7.2 资源分配

分配用到的盒子寄存器。它们分别对应于 \diagbox 三个必选参数的内容。

```
\newbox\diagbox@boxa
\newbox\diagbox@boxb
\newbox\diagbox@boxm
```

分配长度变量。

```
\newdimen\diagbox@wd
\newdimen\diagbox@ht
\newdimen\diagbox@insepl
\newdimen\diagbox@insepr
\newdimen\diagbox@outsepl
\newdimen\diagbox@outsepr
```

```
\def\diagbox@clear{%
  \diagbox@wd=\z@
  \diagbox@ht=\z@
  \diagbox@insepl=\tabcolsep
  \diagbox@insepr=\tabcolsep
  \diagbox@outsepl=-\tabcolsep
  \diagbox@outsepr=-\tabcolsep
}
```

7.3 命令选项定义

下面定义 \diagbox 的键值选项。

斜线盒子的总宽度。

```
\define@key{diagbox}{width}{%
  \unless\ifdim\diagbox@wd=\z@
    \PackageWarning{diagbox}%
```

```
      {You should not set width/innerwidth option more than once.}%
  \fi
  \setlength{\diagbox@wd}{\dimexpr#1\relax}}
```

斜线盒子的总高度，参数中可使用 `\line` 表示行高。

```
\define@key{diagbox}{height}{%
  \begingroup
    \def\line{\normalbaselineskip}%
    \edef\x{\noexpand\setlength{\diagbox@ht}{\the\dimexpr#1\relax}}%
  \expandafter\endgroup\x}
```

盒子内容与斜线框左右的距离。

```
\define@key{diagbox}{innerleftsep}{%
  \setlength{\diagbox@insepl}{\dimexpr#1\relax}}
\define@key{diagbox}{innerrightsep}{%
  \setlength{\diagbox@insepr}{\dimexpr#1\relax}}
```

设置盒子内容的宽度（与列格式 `p{宽度}` 对应）。盒子内容宽度加上盒子与斜线框左右距离之和应为斜线盒子总宽度，即有

$$\texttt{innerleftsep} + \texttt{innerwidth} + \texttt{innerrightsep} = \texttt{width}.$$

`innerwidth` 选项将通过设置盒子总宽度，维护上面的关系式。

```
\define@key{diagbox}{innerwidth}{%
  \unless\ifdim\diagbox@wd=\z@
    \PackageWarning{diagbox}%
      {You should not set width/innerwidth option more than once.}%
  \fi
  \setlength{\diagbox@wd}{\dimexpr#1+\diagbox@insepl+\diagbox@insepr\relax}}
```

斜线盒子与表格单元边框距离。该外部间距应为实际表列内容与列分隔线之间距离的相反数，以此保证斜线与表格竖线能相接，即应输入参数保证

$$\texttt{outerleftsep} + \texttt{LEFTtabcolsep} = 0\,\mathrm{pt},$$
$$\texttt{outerrightsep} + \texttt{RIGHTtabcolsep} = 0\,\mathrm{pt}.$$

```
\define@key{diagbox}{outerleftsep}{%
  \setlength{\diagbox@outsepl}{\dimexpr#1\relax}}
\define@key{diagbox}{outerrightsep}{%
  \setlength{\diagbox@outsepr}{\dimexpr#1\relax}}
```

设置左右边距，它将同时设置盒子内容与斜线框的内部间距，以及斜线盒子与表格单元边框的外部间距。并保持关系：

$$\texttt{innerleftsep} := \texttt{leftsep}, \qquad \texttt{innerrightsep} := \texttt{rightsep},$$
$$\texttt{outerleftsep} := -\texttt{leftsep}, \qquad \texttt{outerrightsep} := -\texttt{rightsep}.$$

```
\define@key{diagbox}{leftsep}{%
  \setlength{\diagbox@insepl}{\dimexpr#1\relax}%
```

```
  \setlength{\diagbox@outsepl}{-\dimexpr#1\relax}}
\define@key{diagbox}{rightsep}{%
  \setlength{\diagbox@insepr}{\dimexpr#1\relax}%
  \setlength{\diagbox@outsepr}{-\dimexpr#1\relax}}
```

盒子计算边界时是否忽略左右的空白。`trim=l` 效果等同于 `leftsep=0pt`；`trim=r` 效果等同于 `rightsep=0pt`。

```
\define@key{diagbox}{trim}{%
  \@tfor\@reserveda:=#1\do{%
    \ifcsname diagbox@insep\@reserveda\endcsname
      \setlength{\csname diagbox@insep\@reserveda\endcsname}{\z@}%
      \setlength{\csname diagbox@outsep\@reserveda\endcsname}{\z@}%
    \else
    \PackageError{diagbox}{Unknown trim option `#1'.}{l, r, lr and rl are supported.}%
    \fi}}
```

盒子的方向。

```
\define@key{diagbox}{dir}{%
  \def\diagbox@dir{#1}%
  \unless\ifcsname diagbox@dir@#1\endcsname
   \PackageError{diagbox}{Unknown direction `#1'.}{NW, NE, SW, SE are supported.}%
    \def\diagbox@dia{NW}%
  \fi}
\let\diagbox@dir@SE\relax
\let\diagbox@dir@SW\relax
\let\diagbox@dir@NE\relax
\let\diagbox@dir@NW\relax
```

斜线宽度与颜色。

```
\define@key{diagbox}{linewidth}{%
  \linethickness{\dimexpr#1\relax}}
\define@key{diagbox}{linecolor}{%
  \def\diagbox@setlinecolor{\color{#1}}}
\let\diagbox@setlinecolor\empty
```

设置内容字体。

```
\define@key{diagbox}{font}{%
  \def\diagbox@font{#1}}
\let\diagbox@font\empty
```

7.4 绘制斜线盒子

`\diagbox@pict` 这是带斜线的盒子本身。由一个 `picture` 环境实现。

```
\def\diagbox@pict{%
  \unitlength\p@
  \begin{picture}
   (\strip@pt\dimexpr\diagbox@wd+\diagbox@outsepl+\diagbox@outsepr\relax,\strip@pt\diagbox@ht)
```

```
    (\strip@pt\dimexpr-\diagbox@outsepl\relax,0)
      \@nameuse{diagbox@\diagbox@part @pict@\diagbox@dir}
  \end{picture}}
```

\diagbox@double@pict@SE 方向为 SE 的斜线盒子内容。

```
\def\diagbox@double@pict@SE{%
  \put(0,0) {\makebox(0,0)[bl]{\box\diagbox@boxa}}
 \put(\strip@pt\diagbox@wd,\strip@pt\diagbox@ht) {\makebox(0,0)[tr]{\box\diagbox@boxb}}
  \diagbox@setlinecolor
  \Line(0,\strip@pt\diagbox@ht)(\strip@pt\diagbox@wd,0)}
```

\diagbox@double@pict@NW 方向 NW 与 SE 相同。

```
\let\diagbox@double@pict@NW\diagbox@double@pict@SE
```

\diagbox@double@pict@NE 方向为 NE 的斜线盒子内容。

```
\def\diagbox@double@pict@NE{%
  \put(0,\strip@pt\diagbox@ht) {\makebox(0,0)[tl]{\box\diagbox@boxa}}
  \put(\strip@pt\diagbox@wd,0) {\makebox(0,0)[br]{\box\diagbox@boxb}}
  \diagbox@setlinecolor
  \Line(0,0)(\strip@pt\diagbox@wd,\strip@pt\diagbox@ht)}
```

\diagbox@double@pict@NE 方向 SW 与 NE 相同。

```
\let\diagbox@double@pict@SW\diagbox@double@pict@NE
```

\diagbox@double 分成两部分的盒子。三个参数，分别为 key-value 格式的可选项、左半边内容、右半边内容。这里的主要工作是读入参数并计算斜线盒子的大小。

```
\def\diagbox@double#1#2#3{%
  \begingroup
  \diagbox@clear
  \def\diagbox@part{double}%
  \setkeys{diagbox}{dir=NW,#1}%
  \setbox\diagbox@boxa=\hbox{%
    \begin{tabular}{@{\hspace{\diagbox@insepl}}>{\diagbox@font}l@{}}
      #2
    \end{tabular}}%
  \setbox\diagbox@boxb=\hbox{%
    \begin{tabular}{@{}>{\diagbox@font}r@{\hspace{\diagbox@insepr}}}
      #3
    \end{tabular}}%
  \ifdim\diagbox@wd=\z@
    \ifdim\wd\diagbox@boxa>\wd\diagbox@boxb
      \diagbox@wd=\dimexpr2\wd\diagbox@boxa+\diagbox@insepl+\diagbox@insepr\relax
    \else
      \diagbox@wd=\dimexpr2\wd\diagbox@boxb+\diagbox@insepl+\diagbox@insepr\relax
    \fi
  \fi
```

```
  \ifdim\diagbox@ht=\z@
   \diagbox@ht=\dimexpr\ht\diagbox@boxa+\dp\diagbox@boxa+\ht\diagbox@boxb+\dp\diagbox@boxb\relax
  \fi
  $\vcenter{\hbox{\diagbox@pict}}$%
  \endgroup}

diagbox@triple@setbox@NW

\def\diagbox@triple@setbox@NW#1#2#3{%
  \setbox\diagbox@boxa=\hbox{%
    \begin{tabular}{@{\hspace{\diagbox@insepl}}>{\diagbox@font}l@{}}
      #1
    \end{tabular}}%
  \setbox\diagbox@boxm=\hbox{%
    \begin{tabular}{@{\hspace{\diagbox@insepl}}>{\diagbox@font}l@{}}
      #2
    \end{tabular}}%
  \setbox\diagbox@boxb=\hbox{%
    \begin{tabular}{@{}>{\diagbox@font}r@{\hspace{\diagbox@insepr}}}
      #3
    \end{tabular}}}

diagbox@triple@setbox@SW

\let\diagbox@triple@setbox@SW\diagbox@triple@setbox@NW

diagbox@triple@setbox@NW

\def\diagbox@triple@setbox@SE#1#2#3{%
  \setbox\diagbox@boxa=\hbox{%
    \begin{tabular}{@{\hspace{\diagbox@insepl}}l@{}}#1\end{tabular}}%
  \setbox\diagbox@boxm=\hbox{%
    \begin{tabular}{@{}r@{\hspace{\diagbox@insepr}}}#2\end{tabular}}%
  \setbox\diagbox@boxb=\hbox{%
    \begin{tabular}{@{}r@{\hspace{\diagbox@insepr}}}#3\end{tabular}}}

diagbox@triple@setbox@NE

\let\diagbox@triple@setbox@NE\diagbox@triple@setbox@SE

 \diagbox@triple@pict@NW

\def\diagbox@triple@pict@NW{%
  \put(0,0)   {\makebox(0,0)[bl]{\box\diagbox@boxa}}
  \put(0,\y)  {\makebox(0,0)[tl]{\box\diagbox@boxm}}
  \put(\x,\y) {\makebox(0,0)[tr]{\box\diagbox@boxb}}
  \diagbox@setlinecolor
  \Line(0,\yym)(\x,0)
  \Line(\xm,\y)(\x,0)}

 \diagbox@triple@pict@NE
```

```
\def\diagbox@triple@pict@NE{%
  \put(0,\y)  {\makebox(0,0)[tl]{\box\diagbox@boxa}}
  \put(\x,\y) {\makebox(0,0)[tr]{\box\diagbox@boxm}}
  \put(\x,0)  {\makebox(0,0)[br]{\box\diagbox@boxb}}
  \diagbox@setlinecolor
  \Line(0,0)(\xxm,\y)
  \Line(0,0)(\x,\yym)}
```

\diagbox@triple@pict@SW

```
\def\diagbox@triple@pict@SW{%
  \put(0,\y) {\makebox(0,0)[tl]{\box\diagbox@boxa}}
  \put(0,0)  {\makebox(0,0)[bl]{\box\diagbox@boxm}}
  \put(\x,0) {\makebox(0,0)[br]{\box\diagbox@boxb}}
  \diagbox@setlinecolor
  \Line(0,\ym)(\x,\y)
  \Line(\xm,0)(\x,\y)}
```

\diagbox@triple@pict@SE

```
\def\diagbox@triple@pict@SE{%
  \put(0,0)   {\makebox(0,0)[bl]{\box\diagbox@boxa}}
  \put(\x,0)  {\makebox(0,0)[br]{\box\diagbox@boxm}}
  \put(\x,\y) {\makebox(0,0)[tr]{\box\diagbox@boxb}}
  \diagbox@setlinecolor
  \Line(0,\y)(\xxm,0)
  \Line(0,\y)(\x,\ym)}
```

\diagbox@triplebox 分成三部分的盒子。四个参数，分别为 key-value 格式的可选项、左半边内容、中间内容、右半边内容。

```
\def\diagbox@triple#1#2#3#4{%
  \begingroup
  \diagbox@clear
  \def\diagbox@part{triple}%
  \setkeys{diagbox}{dir=NW,#1}%
  \@nameuse{diagbox@triple@setbox@\diagbox@dir}{#2}{#3}{#4}%
```

取长宽

```
  \edef\xa{\strip@pt\wd\diagbox@boxa}%
  \edef\ya{\strip@pt\dimexpr\ht\diagbox@boxa+\dp\diagbox@boxa\relax}%
  \edef\xb{\strip@pt\wd\diagbox@boxb}%
  \edef\yb{\strip@pt\dimexpr\ht\diagbox@boxb+\dp\diagbox@boxb\relax}%
  \edef\xm{\strip@pt\wd\diagbox@boxm}%
  \edef\ym{\strip@pt\dimexpr\ht\diagbox@boxm+\dp\diagbox@boxm\relax}%
```

列方程，求方程系数

```
  \FPneg\bi\yb
  \FPadd\ci\xb\xm  \FPneg\ci\ci
  \FPmul\di\xm\yb
```

```
  \FPadd\bj\ya\ym  \FPneg\bj\bj
  \FPneg\cj\xa
  \FPmul\dj\xa\ym
```

解方程

```
  \FPsub\u\dj\di
  \FPupn{v}{bj ci * bi cj * -}%
  \FPupn{delta}{bi dj * bj di * - cj ci - * 4 * %
    v u + copy * %
    - 2 swap root}%
  \ifdim\diagbox@wd=\z@
    \FPupn{x}{2 bj bi - delta v u - + / /}%
    \diagbox@wd=\x\p@
  \else
    \edef\x{\strip@pt\diagbox@wd}%
  \fi
  \ifdim\diagbox@ht=\z@
    \FPupn{y}{2 cj ci - delta v u + - / /}%
    \diagbox@ht=\y\p@
  \else
    \edef\y{\strip@pt\diagbox@ht}%
  \fi
  \FPsub\xxm\x\xm
  \FPsub\yym\y\ym
```

画盒子

```
  $\vcenter{\hbox{\diagbox@pict}}$%
  \endgroup}
```

7.5 用户命令

\diagbox 主要的用户命令。判断使用两部分还是三部分的盒子。

```
\newcommand\diagbox[3][]{%
  \@ifnextchar\bgroup
    {\diagbox@triple{#1}{#2}{#3}}{\diagbox@double{#1}{#2}{#3}}}
```

以下代码用来模拟 slashbox 宏包的功能。

禁止读入 slashbox。

```
\expandafter\xdef\csname ver@slashbox.\@pkgextension\endcsname{9999/99/99}
```

\slashbox 模拟 \slashbox。

```
\def\slashbox{%
  \def\diagbox@slashbox@options{dir=SW,}%
  \slashbox@}
```

\backslashbox 模拟 \backslashbox。

```
\def\backslashbox{%
```

```
221   \def\diagbox@slashbox@options{dir=NW,}%
222   \slashbox@}
```

\slashbox@

```
223 \newcommand\slashbox@[1][]{%
224   \ifx\relax#1\relax\else
225     \edef\diagbox@slashbox@options{%
226       \unexpanded\expandafter{\diagbox@slashbox@options}%
227       \unexpanded{width=#1,}}%
228   \fi
229   \slashbox@@}
```

\slashbox@@

```
230 \newcommand\slashbox@@[3][]{%
231   \edef\diagbox@slashbox@options{%
232     \unexpanded\expandafter{\diagbox@slashbox@options}%
233     \unexpanded{trim=#1,}}%
234   \expandafter\diagbox\expandafter[\diagbox@slashbox@options]{#2}{#3}}
235 \endinput
```

8 版本历史

v1.0

General: 初始版本。 1

v2.0

General: 变更 trim 选项的行为，去掉了使用 trim 选项时内部的间距。这与 slashbox 行为不同。 10

增加有三部分、双斜线的表头格式。 . . . 8

\diagbox: 判断参数个数，选择两部分或三部分盒子。 19

\diagbox@double: 在使用 trim 选项时去掉内容与盒子边界的间距。这与 slashbox 的行为不同。 16

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斜线盒子与表格单元边框距离 outerleftsep, outerrightsep 命令选项。 14

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增加命令选项 linewidth, linecolor 设置斜线宽度与颜色。 15

左右边距 leftsep, rightsep 命令选项。 14

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