

jiazhu 宏包

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第 1 节 简介

`jiazhu` 是一个 \LaTeX 宏包, 用于支持夹注 (夹注 (简体中文)、夹注 (繁體中文), 指夹在正文中间的注) 或割注 (割注 (日本語), 本文中での) 排版。夹注一般只出现在直排 (竖排) 的文档中, 常见于古籍, 横排文档则几乎不用、也不适用夹注。

第 2 节 基本用法

`\jiazhu` `\jiazhu` [`<键值选项>`] {`<夹注内容>`}

主要用户函数, 提供全部功能。

`\jiazhuset` `\jiazhuset` {`<键值选项>`}

用于统一设置 `jiazhu` 的选项, 选项将在下面说明。

`format` `format` = {`<格式命令>`}

指定夹注的样式, 比如 `<行距更改>`、`<字体切换>` 等命令。如果样式为空值, 那么夹注与前后正文的字体保持一致。如果夹注两端有括弧, 那么指定的样式也会作用在这对括弧上。例如,

正文 夹注现在是宋体字 正文

正文 夹注行距被扩大了 正文

正文 夹注现在是黑体字 正文

```
1 正文\jiazhu{夹注现在是宋体字}正文\[5pt]
2 正文\jiazhu[format=\linespread{1.5}]{夹注行距被扩大了}正文\[5pt]
3 正文\jiazhu[format=\sffamily]{夹注现在是黑体字}正文
```

`lines` `lines` = {`<正整数>`}

指定夹注的行数, 必须是正整数。默认值是 2。例如,

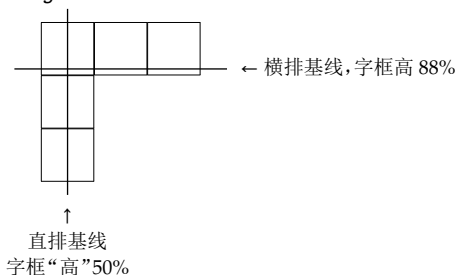
正文 夹注现在变成三行 正文

```
1 正文\jiazhu[lines=3]{夹注现在变成三行}正文
```

*[ctex-kit rev. edbccc0](#).

`ideohtratio` `ideohtratio = {(数字)}`

指定汉字的字框高与其字号的比值,是实数(也接受 `ideohtratio=8/10` 这种分数写法)。默认值是 0.5。这篇用户手册在导言区通过 `\jiazhuset` 声明了 `ideohtratio=0.8`。



如果你在横排文档中未经设置就直接输入 `\jiazhu{惊讶【形容词】}`,那么你会惊讶感到意外、奇怪地发现夹注的位置偏下。这是因为 `ideohtratio=0.5` 的默认值是根据直排文档设定的值。在横排文档中,`ideohtratio` 的值视具体的字体而定,一般在 0.8 至 0.88 之间。例如,

正文 默认的参数设定是以直排优先的 正文 1 `正文\jiazhu{默认的参数设定是以直排优先的}正文\[5pt]`
正文 调整参数来对齐横排夹注与正文 正文 2 `正文\jiazhu[ideohtratio=0.8]{调整参数来对齐横排夹注与正文}正文`

这里列出几类常见字体对应的 `ideohtratio` 值:

字体厂商	直排	横排	备注
中易	0.5	0.859375 (220/256)	Windows 系统字体
华文	0.5	0.8 (800/1000)	macOS 系统字体
Adobe	0.5	0.88 (880/1000)	思源系列字体

该值影响夹注的对齐算法。

`jzideohtratio` `jzideohtratio = {(数字)}`

额外指定夹注汉字的字框高与其字号的比值,是实数(也接受 `jzideohtratio=8/10` 这种分数写法)。如果该值被设为 0,则认为夹注字框高的百分比与正文字框高的百分比相等(即无需另设)。如果正文、夹注分别用了来自不同厂商的字体,横排时字框高的百分比就可能不一样,此时可以通过 `jzideohtratio` 另设夹注字体字框高的百分比。可以理解 ideohtratio 对应正文用的字体,而 jzideohtratio 则对应夹注(以及夹注括弧)用的字体。两者一般是相等的,所以只需指定 ideohtratio。如果两者不相等就需要分别设置。默认值是 0。

`ratio` `ratio = {(数字)}`

指定夹注字号与正文字号的比值,是实数(也接受 `ratio=1/2` 这种分数写法)。默认值是 2/3。例如,

正文 夹注字号是正文字号的 50% 正文 1 `正文\jiazhu[ratio=0.5]{夹注字号是正文字号的 50\%}正文\[`
正文 夹注字号是正文字号的 50% 正文 2 `正文\jiazhu[ratio=1/2]{夹注字号是正文字号的 50\%}正文`

`beforeskip` `beforeskip = {(弹性间距)}`

经文多在夹注两端插入少许空白,以此隔开正文与夹注。`beforeskip` 指定前置于夹注的空白。默认值是 `\smallskipamount`。例如,

正文 夹注前端紧贴正文 正文 1 `正文\jiazhu[beforeskip=0pt plus 1pt]{夹注前端紧贴正文}正文`

`afterskip` `afterskip = {(弹性间距)}`

指定后置于夹注的空白。默认值是 `\smallskipamount`。例如,

正文 夹注后端紧贴正文 正文 1 `正文\jiazhu[afterskip=0pt plus 1pt]{夹注后端紧贴正文}正文`

`opening` `opening = {(前置内容)}`

指定前置于夹注的括弧。默认不添加。例如，

正文 $\left[\begin{array}{l} \text{夹注前置了} \\ \text{左空心括号} \end{array} \right]$ 正文 `1` `正文\jiazhu[opening= \left[]{夹注前置了左空心括号}正文`

`closing` `closing = {(后置内容)}`

指定后置于夹注的括弧。默认不添加。例如，

正文 $\left. \begin{array}{l} \text{夹注后置了} \\ \text{右实心括号} \end{array} \right]$ 正文 `1` `正文\jiazhu[closing= \right.]{夹注后置了右实心括号}正文`

`bracketratio` `bracketratio = {(数字)}`

指定括弧字号与夹注字号的比值，是实数（也接受 `bracketratio=5/2` 这种分数写法）。默认值是 2。例如，

正文 $\left(\begin{array}{l} \text{括弧字号等} \\ \text{于夹注字号} \end{array} \right)$ 正文 `1` `正文\jiazhu[opening= (,bracketratio=1]{括弧字号等于夹注字号}正文`

`baselineshift` `baselineshift = {(尺寸)}`

正常情况下，不需要设定此值！

如果夹注本身（或者紧随其后的正文）有超常的高度，那么夹注前后的正文可能会错位。例如，

正文 $\left[\begin{array}{l} \text{特殊} \\ \text{效果} \end{array} \right]$ 正文错位 `1` `\newcommand\ideobaseline{\llap{\rule[-2.1bp]{76.2625pt}{0.2pt}}}`
`2` `正文\jiazhu[lines=4]{特殊效果}正文错位\ideobaseline`

让我们设这个“特殊”夹注所处那一行的行距（`\lineskip`）为 b plus y_b minus z_b ，又设该夹注与其后同一行正文的最大高度（西文基线以上的部分）为 h ，则一旦 $h > b - \lineskiplimit$ ，就会出现正文错位的情况。此时，你可以指定 `baselineshift` 将这个夹注连同后方的正文一起竖直平移（直排时则水平平移）。正值表示向上平移（直排时向右），负值表示向下平移（直排时向左）。设 `\lineskip` 为 l plus y_l minus z_l ，当 $h > b - \lineskiplimit$ 时，可以声明 `baselineshift=(h - b + l)`。在上一例中， $h = (0.8 - 0.5) \times 10.5\text{bp} + 2 \times 7\text{bp}$ ， $b = 1.2 \times 1.2 \times 10.5\text{bp}$ ，`\lineskiplimit = 0pt`， $l = 1\text{pt}$ 。因此，

正文 $\left[\begin{array}{l} \text{特殊} \\ \text{效果} \end{array} \right]$ 正文对齐 `1` `\newcommand\ideobaseline{\llap{\rule[-2.1bp]{76.2625pt}{0.2pt}}}`
`2` `正文\jiazhu[lines=4,baselineshift=3.0376125pt]\%`
`3` `{特殊效果}正文对齐\ideobaseline`

`halign` `halign = {justified|left|right|centered|distributed}`

指定夹注内容的横向对齐样式。默认值是 `justified`。其中，`left`、`right`、`centered` 分别为“左对齐”、“右对齐”、“居中对齐”。例如，

正文 $\left[\begin{array}{l} \text{This is a} \\ \text{three-line} \\ \text{example} \end{array} \right]$ 正文 `1` `\jiazhuset{lines=3,ratio=0.5}`
正文 $\left[\begin{array}{l} \text{This is a} \\ \text{three-line} \\ \text{example} \end{array} \right]$ 正文 `2` `正文\jiazhu[halign=left]{This is a three-line example}正文\ [5pt]`
正文 $\left[\begin{array}{l} \text{This is a} \\ \text{three-line} \\ \text{example} \end{array} \right]$ 正文 `3` `正文\jiazhu[halign=right]{This is a three-line example}正文\ [5pt]`
正文 $\left[\begin{array}{l} \text{This is a} \\ \text{three-line} \\ \text{example} \end{array} \right]$ 正文 `4` `正文\jiazhu[halign=centered]{This is a three-line example}正文`

另外，`justified`、`distributed` 都是“两端对齐”，它们的区别是：在 `justified` 样式下，末行左对齐；在 `distributed` 样式下，末行仍然两端对齐。例如，

正文 $\left(\begin{array}{l} \text{(-)(=)(四)(五)} \\ \text{(3)(4)(6)} \end{array} \right)$ 正文 `1` `正文\jiazhu[halign=justified]{(-)(=)(四)(五)(六)(七)(八)(九)}正文\ [`
正文 $\left(\begin{array}{l} \text{(-)(=)(四)(五)} \\ \text{(3)(4)(6)} \end{array} \right)$ 正文 `2` `正文\jiazhu[halign=distributed]{(-)(=)(四)(五)(六)(七)(八)(九)}正文`

传统排印一般只使用 `justified`，不使用 `left`、`right`、`centered` 或 `distributed`。

`valign` `valign = (middle|bottom|top)`

与 `halign` 类似, `valign` 指定夹注内容的纵向对齐样式。默认值是 `middle`, 即中线对齐。其中, `bottom`、`top` 分别为“底线对齐”、“顶线对齐”。例如,

正文	夹注现在底线对齐	正文	1	<code>\jiazhuset{lines=1,ratio=0.5}</code>
正文	夹注现在顶线对齐	正文	2	<code>正文\jiazhu[valign=bottom]{夹注现在底线对齐}正文\</code>
正文		正文	3	<code>正文\jiazhu[valign=top]{夹注现在顶线对齐}正文</code>

`shortcut` `shortcut = {<字符>}`
`shortcut = {<开始字符><结束字符>}`
`shortcut- = {<字符列表>}`

设置 `\jiazhu` 命令的快捷输入方式。可以设置为一个字符, 它将被设置成活动字符, 定义与 `\jiazhu` 相同。也可以设置为一对字符, 表示夹注的开始与结束字符。例如,

正文	单字符夹注快捷方式	正文	1	<code>\jiazhuset{shortcut= ,shortcut=【】}</code>
正文	字符对夹注快捷方式	正文	2	<code>正文 {单字符夹注快捷方式}正文\</code>
正文		正文	3	<code>正文【字符对夹注快捷方式】正文</code>

`shortcut-` 用于取消对这些快捷方式的定义。

第3节 代码实现

```

1 <*package>
2 <@@=jiazhu>

3 \msg_new:nnn { jiazhu } { l3-too-old }
4 {
5   Support~package~'expl3'~too~old. \\\
6   Please~update~an~up~to~date~version~of~the~bundles\\\
7   'l3kernel'~and~'l3packages'\\\
8   using~your~TeX~package~manager~or~from~CTAN.
9 }
10 \ifpackagelater { expl3 } { 2019/03/05 } { }
11 { \msg_error:nn { jiazhu } { l3-too-old } }

12 \cs_if_exist:NF \NewDocumentCommand
13 { \RequirePackage { xparse } }

```

`\jiazhu:nn` 主要函数。

```

14 \cs_new_protected:Npn \jiazhu:nn #1
15 {
16   \group_begin:

```

水平模式下需要用到 `\l__jiazhu_shift_dim`, 所以必须在这里提前处理键值选项。

```

17   \tl_if_novalue:nF {#1}
18   { \keys_set:nn { jiazhu } {#1} }
19   \mode_if_vertical:TF
20   { \__jiazhu_vertical_mode:n }
21   {
22     \mode_if_horizontal:TF
23     {
24       \mode_if_inner:TF
25       { \__jiazhu_inner_mode:n }
26       { \__jiazhu_horizontal_mode:n }
27     }
28     { \__jiazhu_inner_mode:n }
29   }
30 }

```

`__jiazhu_vertical_mode:n` 竖直模式下不用计算上一段最后一行的宽度, 但要注意处理 `\parindent`。

```

31 \cs_new_protected:Npn \__jiazhu_vertical_mode:n
32 {

```

```

33 \mode_leave_vertical:
34 \__jiazhu_set_line_width:
35 \bool_set_true:N \l__jiazhu_full_line_bool
36 \bool_set_false:N \l__jiazhu_before_skip_bool
37 \dim_set:Nn \l__jiazhu_remaining_width_dim
38   {
39     \int_compare:nNnTF \tex_lastnodetype:D = \c_one_int
40       { \l__jiazhu_line_width_dim - \tex_parindent:D }
41       { \l__jiazhu_line_width_dim }
42   }
43 \__jiazhu_boot:n
44 }
45 \bool_new:N \l__jiazhu_full_line_bool
46 \dim_new:N \l__jiazhu_remaining_width_dim

```

`__jiazhu_horizontal_mode:n` 水平模式下需要获取最后一行的宽度,以便将夹注放到段落的后面。

```

47 \cs_new_protected:Npn \__jiazhu_horizontal_mode:n
48   {
49     \__jiazhu_extract_previous_line_width:
50     \__jiazhu_set_line_width:
51     \dim_set_eq:NN \l__jiazhu_remaining_width_dim \l__jiazhu_line_width_dim
52     \int_compare:nNnTF \tex_lastnodetype:D = { 12 }
53       {
54         \bool_set_false:N \l__jiazhu_full_line_bool
55         \bool_set_true:N \l__jiazhu_before_skip_bool
56         \dim_sub:Nn \l__jiazhu_remaining_width_dim
57           { \g__jiazhu_previous_line_width_dim }
58       }
59       {
60         \bool_set_true:N \l__jiazhu_full_line_bool
61         \bool_set_false:N \l__jiazhu_before_skip_bool
62       }
63     \__jiazhu_boot:n
64   }

```

`__jiazhu_inner_mode:n` 在内部水平或数学模式下,直接将夹注分行输出。

```

65 \cs_new_protected:Npn \__jiazhu_inner_mode:n
66   {
67     \bool_set_false:N \l__jiazhu_full_line_bool
68     \int_compare:nNnTF \tex_lastnodetype:D = { -1 }
69       { \bool_set_false:N \l__jiazhu_before_skip_bool }
70       { \bool_set_true:N \l__jiazhu_before_skip_bool }
71     \dim_set_eq:NN \l__jiazhu_remaining_width_dim \c_max_dim
72     \__jiazhu_boot:n
73   }

```

`__jiazhu_set_line_width:` 当前行的宽度,`\hsize`与`\linewidth`可能不一致,我们取其较小值。

```

74 \cs_new_protected:Npn \__jiazhu_set_line_width:
75   {
76     \dim_set:Nn \l__jiazhu_line_width_dim
77       {
78         \dim_min:nn { \tex_hsize:D } { \linewidth }
79         - \tex_leftskip:D
80         - \tex_rightskip:D
81       }
82   }
83 \dim_new:N \l__jiazhu_line_width_dim

```

`__jiazhu_extract_previous_line_width:` 我们通过在行间数学模式中的`\predisplaysize`来获取上一行的宽度。目前的`\parshape`仅考虑 \LaTeX 的列表环境。

```

84 \cs_new_protected:Npn \__jiazhu_extract_previous_line_width:
85   {
86     \group_begin:
87     \skip_set_eq:NN \tex_parfillskip:D \c__jiazhu_fil_skip

```

```

88     \c_math_toggle_token \c_math_toggle_token
89     \dim_gset_eq:NN \g__jiazhu_previous_line_width_dim \tex_predisplaysize:D
90     \int_set_eq:NN \tex_predisdisplaypenalty:D \c__jiazhu_nobreak_int
91     \int_set_eq:NN \tex_postdisplaypenalty:D \c__jiazhu_nobreak_int
92     \skip_set:Nn \tex_abovedisplayskip:D
93     {
94         \dim_compare:nNnTF
95         { \dim_abs:n { \g__jiazhu_previous_line_width_dim } } < \c_max_dim
96         { - \l__jiazhu_shift_dim - \tex_baselineskip:D }
97         { - \l__jiazhu_shift_dim }
98     }
99     \skip_set:Nn \tex_belowdisplayskip:D { - \tex_baselineskip:D }
100    \skip_set_eq:NN \tex_abovedisplayshortskip:D \tex_abovedisplayskip:D
101    \skip_set_eq:NN \tex_belowdisplayshortskip:D \tex_belowdisplayskip:D
102    \c_math_toggle_token \c_math_toggle_token
103    \group_end:
104    \int_set:Nn \tex_prevgraf:D { \tex_prevgraf:D - 3 }
105    \dim_compare:nNnTF
106    { \dim_abs:n { \g__jiazhu_previous_line_width_dim } } < \c_max_dim
107    {
108        \dim_gsub:Nn \g__jiazhu_previous_line_width_dim
109        {
110            \int_compare:nNnTF \tex_parshape:D = \c_one_int
111            { \tex_leftskip:D + 2em + \tex_parshapeindent:D \c_one_int }
112            { \tex_leftskip:D + 2em }
113        }
114        \tex_kern:D \g__jiazhu_previous_line_width_dim
115    }
116    { \dim_gzero:N \g__jiazhu_previous_line_width_dim }
117 }
118 \dim_new:N \g__jiazhu_previous_line_width_dim

```

`\c__jiazhu_break_int` 强制换行/页和禁止换行/页的 `penalty` 值。

```

119 \int_const:Nn \c__jiazhu_break_int { -10000 }
120 \int_const:Nn \c__jiazhu_nobreak_int { 10000 }

```

`__jiazhu_boot:n` 准备工作。

```

121 \cs_new_protected:Npn \__jiazhu_boot:n #1
122 {
123     \__jiazhu_tex_parameter:
124     \dim_set:Nn \l__jiazhu_outer_unit_dim { \f@size pt }

```

初始化设置：夹注的字号设为 $\l__jiazhu_ratio_fp \times \f@size pt$ ，默认的行距取相同值（即设置行间距为零）。

```

125     \fp_set:Nn \l__jiazhu_tmp_fp { \l__jiazhu_ratio_fp * \f@size }
126     \fontsize
127     { \fp_use:N \l__jiazhu_tmp_fp }
128     { \fp_use:N \l__jiazhu_tmp_fp }

```

更新当前的 `\baselinestretch` 为 1。

```

129     \linespread { 1 }

```

思源宋体/思源黑体的简体中文版对标点符号的设计有些独特，横排用的全角逗号的底部低于汉字字框的底端，全角引号的顶部又高于字框的顶端，这会导致 $\text{T}_{\text{E}}\text{X}$ 往行间插入 `\lineskip`。我们局部把 `\lineskiplimit` 设成最小的 `dimen`，相当于局部禁用 `\lineskip` 机制，结果是夹注可能会部分重叠（横排就不应该有夹注嘛！希望这个默认的设置能够“防止”横排夹注的滥用）。

```

130     \dim_set:Nn \tex_lineskiplimit:D { - \c_max_dim }

```

接下来是用户自定义的 `format`，并用 `\selectfont` 使字体变更生效。

```

131     \tl_use:N \l__jiazhu_format_tl
132     \selectfont

```

```

133 \dim_set:Nn \l__jiazhu_unit_dim { \f@size pt }
134 \hbox_set:Nn \l__jiazhu_text_box
135 { \tex_ignorespaces:D #1 \tex_unskip:D }

```

往夹注首行开头插入支架。

```

136 \__jiazhu_make_jzideoht_strut:
137 \hbox_set:Nn \l__jiazhu_text_box
138 {
139 \__jiazhu_insert_jzideoht_strut:
140 \hbox_unpack:N \l__jiazhu_text_box
141 }
142 \__jiazhu_make_opening_closing_box:

```

`\strutbox` 默认有 $0.3 \times \text{\baselineskip}$ 的深度(横排), 除 XeLaTeX 外的直排模式下, 则有 $0.5 \times \text{\baselineskip}$ 的“深度”。应该足够分割夹注用了。

```

143 \dim_set:Nn \tex_splitmaxdepth:D { \box_dp:N \strutbox }
144 \skip_set:Nn \l__jiazhu_good_break_skip
145 { \c_zero_dim plus 0.5\l__jiazhu_outer_unit_dim }
146 \skip_set:Nn \l__jiazhu_unit_stretch_skip
147 { \c_zero_dim plus \l__jiazhu_unit_dim }
148 \__jiazhu_set_valign:
149 \__jiazhu_set_before_skip:
150 \__jiazhu_processing:
151 }
152 \fp_new:N \l__jiazhu_tmp_fp
153 \box_new:N \l__jiazhu_text_box
154 \dim_new:N \l__jiazhu_unit_dim
155 \dim_new:N \l__jiazhu_outer_unit_dim
156 \skip_new:N \l__jiazhu_unit_stretch_skip

```

`__jiazhu_tex_parameter:` 为避免警告设置的一些 TeX 参数。

```

157 \cs_new_protected:Npn \__jiazhu_tex_parameter:
158 {
159 \@parboxrestore
160 \tex_everypar:D { { \box_set_to_last:N \c_zero_int } }
161 \dim_zero:N \tex_emergencystretch:D
162 \dim_set_eq:NN \tex_hfuzz:D \c_max_dim
163 \dim_set_eq:NN \tex_vfuzz:D \c_max_dim
164 \int_set_eq:NN \tex_hbadness:D \c_max_int
165 \int_set_eq:NN \tex_vbadness:D \c_max_int
166 \int_set:Nn \tex_tolerance:D { 1000 }
167 \skip_zero:N \tex_splittopskip:D
168 \int_zero:N \tex_linepenalty:D
169 \int_zero:N \tex_clubpenalty:D
170 \int_zero:N \tex_widowpenalty:D
171 \int_zero:N \tex_interlinepenalty:D
172 \int_zero:N \tex_clubpenalties:D
173 \int_zero:N \tex_widowpenalties:D
174 }

```

`__jiazhu_make_jzideoht_strut:` 往每个夹注的首行开头插入一个“支架”。

`__jiazhu_insert_jzideoht_strut:`

```

175 \cs_new_protected:Npn \__jiazhu_make_jzideoht_strut:
176 {
177 \hbox_set:Nn \l__jiazhu_strut_box
178 {
179 \tex_vrule:D

```

支架的高度等于夹注汉字的字框高, 这能给 `baselineshift` 提供更可靠的参考。

```

180 height
181 \fp_compare:nNnTF \l__jiazhu_jzideoht_fp = \c_zero_fp
182 { \fp_use:N \l__jiazhu_ideoht_fp }
183 { \fp_use:N \l__jiazhu_jzideoht_fp }
184 \l__jiazhu_unit_dim

```

在夹注里 `\lineskiplimit` 已经最小了, 支架的深度不会起任何作用, 我们设成零即可。

```
185         depth \c_zero_dim
```

支架的宽度当然是零。

```
186         width \c_zero_dim
```

```
187         \scan_stop:
```

```
188     }
```

```
189 }
```

```
190 \cs_new_protected:Npn \__jiazhu_insert_jzideoht_strut:
```

```
191 { \hbox_unpack:N \l__jiazhu_strut_box }
```

```
192 \box_new:N \l__jiazhu_strut_box
```

```
\__jiazhu_make_opening_closing_box: 193 \cs_new_protected:Npn \__jiazhu_make_opening_closing_box:
```

```
194 {
```

```
195   \tl_if_empty:NTF \l__jiazhu_opening_tl
```

```
196   { \box_clear:N \l__jiazhu_opening_box }
```

```
197   {
```

```
198     \hbox_set:Nn \l__jiazhu_opening_box
```

```
199     {
```

```
200       \fontsize
```

```
201       { \fp_use:N \l__jiazhu_bracket_ratio_fp \l__jiazhu_unit_dim }
```

```
202       { \c_zero_skip }
```

```
203       \selectfont \l__jiazhu_opening_tl
```

```
204     }
```

```
205     \dim_sub:Nn \l__jiazhu_remaining_width_dim
```

```
206     { \box_wd:N \l__jiazhu_opening_box }
```

```
207   }
```

```
208   \tl_if_empty:NTF \l__jiazhu_closing_tl
```

```
209   { \box_clear:N \l__jiazhu_closing_box }
```

```
210   {
```

```
211     \hbox_set:Nn \l__jiazhu_closing_box
```

```
212     {
```

```
213       \fontsize
```

```
214       { \fp_use:N \l__jiazhu_bracket_ratio_fp \l__jiazhu_unit_dim }
```

```
215       { \c_zero_skip }
```

```
216       \selectfont \l__jiazhu_closing_tl \tex_unskip:D
```

```
217     }
```

```
218   }
```

```
219 }
```

```
220 \cs_new_protected:Npn \__jiazhu_put_opening_box:
```

```
221 {
```

```
222   \bool_if:NT \l__jiazhu_before_skip_bool
```

```
223   { \skip_horizontal:N \l__jiazhu_before_skip }
```

```
224   \box_if_empty:NF \l__jiazhu_opening_box
```

```
225   { \__jiazhu_put_mark_box:N \l__jiazhu_opening_box }
```

```
226   \cs_set_eq:NN \__jiazhu_put_opening_box: \prg_do_nothing:
```

```
227 }
```

```
228 \cs_new_protected:Npn \__jiazhu_put_closing_box:
```

```
229 {
```

```
230   \box_if_empty:NF \l__jiazhu_closing_box
```

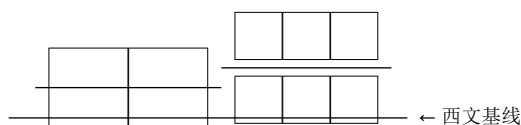
```
231   { \__jiazhu_put_mark_box:N \l__jiazhu_closing_box }
```

```
232 }
```

```
233 \box_new:N \l__jiazhu_opening_box
```

```
234 \box_new:N \l__jiazhu_closing_box
```

`__jiazhu_set_valign:` \TeX 排放夹注的位置, 是以西文基线为准的:



设 r 为汉字字框高与字号的比值 (例如横排时 $r = 0.88$, 而直排时 $r = 0.5$), 其中正文为 r_{outer} 、夹注为 r_{inner} ; 又设 s_{outer} 与 s_{inner} 分别为正文字号与夹注字号; 记夹注的行距为 b (夹注的行间距即为 $b - s_{\text{inner}}$); 最后设夹注有 n 行。

为了实现在正文汉字的各处对齐, 夹注需要向下平移, 平移量各不相同。

- 底线对齐时,不需要考虑多行情况,平移量计算公式为

$$s_{\text{outer}} \cdot (1 - r_{\text{outer}}) - s_{\text{inner}} \cdot (1 - r_{\text{inner}}).$$

- 中线对齐时,平移量的计算公式为

$$(r_{\text{inner}} - 0.5) \cdot s_{\text{inner}} + \frac{(n-1) \cdot b}{2} - (r_{\text{outer}} - 0.5) \cdot s_{\text{outer}}, \quad n \geq 1.$$

- 顶线对齐时,平移量的计算公式为

$$r_{\text{inner}} \cdot s_{\text{inner}} + (n-1) \cdot b - r_{\text{outer}} \cdot s_{\text{outer}}, \quad n \geq 1.$$

```

235 \cs_new_protected:Npn \__jiazhu_set_valign:n #1
236 { \cs_set_eq:Nc \__jiazhu_set_valign: { __jiazhu_set_valign_ #1 : } }
237 \cs_new_protected:Npn \__jiazhu_set_valign_middle:
238 {

```

中线对齐时,提前展开 $r - 0.5$ 的计算结果,避免后续的重复计算。

```

239 \exp_args:Nee \__jiazhu_set_valign_middle_aux:nn

```

首先是 $r_{\text{inner}} - 0.5$ 的计算结果。

```

240 {
241   \fp_compare:nNnTF \l__jiazhu_jzideht_fp = \c_zero_fp
242     { \fp_eval:n { \l__jiazhu_ideht_fp - 0.5 } }
243     { \fp_eval:n { \l__jiazhu_jzideht_fp - 0.5 } }
244 }

```

其次是 $r_{\text{outer}} - 0.5$ 的计算结果。

```

245   { \fp_eval:n { \l__jiazhu_ideht_fp - 0.5 } }
246 }
247 \cs_new_protected:Npn \__jiazhu_set_valign_middle_aux:nn #1#2
248 {

```

对于夹注内容盒子的下移量,我们直接套用公式。

```

249 \dim_set:Nn \l__jiazhu_box_offset_dim
250 {
251   #1 \l__jiazhu_unit_dim
252   + \int_eval:n { \l__jiazhu_lines_int - 1 } \tex_baselineskip:D / 2
253   - #2 \l__jiazhu_outer_unit_dim
254 }

```

对于夹注两端括弧盒子的下移量,我们修改 s_{inner} 为括弧字号,并取 $n = 1$ 即可。

```

255 \dim_set:Nn \l__jiazhu_mark_offset_dim
256 {
257   \fp_eval:n { #1 * \l__jiazhu_bracket_ratio_fp } \l__jiazhu_unit_dim
258   - #2 \l__jiazhu_outer_unit_dim
259 }
260 }
261 \cs_new_protected:Npn \__jiazhu_set_valign_bottom:
262 {

```

底线对齐时,则展开 $1 - r_{\text{outer}}$ 的计算结果。

```

263 \exp_args:Nee \__jiazhu_set_valign_bottom_aux:nn
264 {
265   \fp_compare:nNnTF \l__jiazhu_jzideht_fp = \c_zero_fp
266     { \fp_eval:n { 1 - \l__jiazhu_ideht_fp } }
267     { \fp_eval:n { 1 - \l__jiazhu_jzideht_fp } }
268 }
269 { \fp_eval:n { 1 - \l__jiazhu_ideht_fp } }
270 }
271 \cs_new_protected:Npn \__jiazhu_set_valign_bottom_aux:nn #1#2
272 {

```

夹注内容盒子的下移量

```

273 \dim_set:Nn \l__jiazhu_box_offset_dim
274 {
275     #2 \l__jiazhu_outer_unit_dim - #1 \l__jiazhu_unit_dim
276 }
277 \dim_set:Nn \l__jiazhu_mark_offset_dim
278 {
279     #2 \l__jiazhu_outer_unit_dim
280     - \fp_eval:n { #1 * \l__jiazhu_bracket_ratio_fp } \l__jiazhu_unit_dim
281 }
282 }

```

顶线对齐时

```

283 \cs_new_protected:Npn \__jiazhu_set_valign_top:
284 {
285     \exp_args:Nee \__jiazhu_set_valign_top_aux:nn
286     {
287         \fp_compare:nNnTF \l__jiazhu_jzideoht_fp = \c_zero_fp
288         { \fp_eval:n { \l__jiazhu_ideoht_fp } }
289         { \fp_eval:n { \l__jiazhu_jzideoht_fp } }
290     }
291     { \fp_eval:n { \l__jiazhu_ideoht_fp } }
292 }
293 \cs_new_protected:Npn \__jiazhu_set_valign_top_aux:nn #1#2
294 {
295     \dim_set:Nn \l__jiazhu_box_offset_dim
296     {
297         #1 \l__jiazhu_unit_dim
298         + \int_eval:n { \l__jiazhu_lines_int - 1 } \tex_baselineskip:D
299         - #2 \l__jiazhu_outer_unit_dim
300     }
301     \dim_set:Nn \l__jiazhu_mark_offset_dim
302     {
303         \fp_eval:n { #1 * \l__jiazhu_bracket_ratio_fp } \l__jiazhu_unit_dim
304         - #2 \l__jiazhu_outer_unit_dim
305     }
306 }
307 \cs_new_eq:NN \__jiazhu_set_valign: \__jiazhu_set_valign_middle:
308 \dim_new:N \l__jiazhu_box_offset_dim
309 \dim_new:N \l__jiazhu_mark_offset_dim

```

`__jiazhu_put_box:N` 输出夹注盒子，并适当下移保证对齐。

`__jiazhu_put_mark_box:N`

```

310 \cs_new_protected:Npn \__jiazhu_put_box:N #1
311 {
312     \box_move_down:nn
313     { \l__jiazhu_box_offset_dim }
314     { \box_use_drop:N #1 }
315 }
316 \cs_new_protected:Npn \__jiazhu_put_mark_box:N #1
317 {
318     \box_move_down:nn
319     { \l__jiazhu_mark_offset_dim }
320     { \box_use_drop:N #1 }
321 }

```

`__jiazhu_set_before_skip:`

```

322 \cs_new_protected:Npn \__jiazhu_set_before_skip:
323 {
324     \tl_if_empty:NTF \l__jiazhu_before_skip_tl
325     { \bool_set_false:N \l__jiazhu_before_skip_bool }
326     {
327         \bool_if:NT \l__jiazhu_before_skip_bool
328         {
329             \skip_set:Nn \l__jiazhu_before_skip
330             { \l__jiazhu_before_skip_tl }
331             \dim_compare:nNnF \l__jiazhu_remaining_width_dim = \c_max_dim
332             {

```

```

333         \dim_sub:Nn \l__jiazhu_remaining_width_dim
334         {
335             \l__jiazhu_before_skip
336         - \tex_glueshrink:D \l__jiazhu_before_skip
337         }
338     }
339 }
340 }
341 }
342 \bool_new:N \l__jiazhu_before_skip_bool
343 \skip_new:N \l__jiazhu_before_skip

\__jiazhu_set_lines:n 344 \cs_new_protected:Npn \__jiazhu_set_lines:n #1
345 {
346     \int_compare:nNnTF {#1} > \c_zero_int
347     {
348         \int_set:Nn \l__jiazhu_lines_int {#1}
349         \__jiazhu_make_parshape:n { \l__jiazhu_lines_int }
350     }
351     { \msg_error:nn { jiazhu } { invalid-number } }
352 }
353 \cs_new_protected:Npn \__jiazhu_make_parshape:n #1
354 {
355     \cs_set_protected:Npx \__jiazhu_parshape:
356     {
357         \tex_parshape:D
358         \int_eval:n { #1 + 1 } ~
359         \prg_replicate:nn
360         {#1}
361         { \c_zero_dim \l__jiazhu_remaining_width_dim }
362         \c_zero_dim \c_max_dim
363         \tex_interlinepenalties:D
364         \int_eval:n {#1} ~
365         \prg_replicate:nn
366         { #1 - 1 }
367         { \c__jiazhu_nobreak_int }
368         \c__jiazhu_break_int
369     }
370 }
371 \int_new:N \l__jiazhu_lines_int
372 \cs_new_eq:NN \__jiazhu_parshape: \prg_do_nothing:
373 \msg_new:nnn { jiazhu } { invalid-number }
374 { Please~specify~a~positive~integer. }

\__jiazhu_set_halign:n 375 \cs_new_protected:Npn \__jiazhu_set_halign:n #1
    \__jiazhu_halign: 376 { \cs_set_eq:Nc \__jiazhu_halign: { __jiazhu_halign_ #1 : } }
377 \cs_new_protected:Npn \__jiazhu_halign_justified:
378 {
379     \skip_zero:N \tex_leftskip:D
380     \skip_zero:N \tex_rightskip:D
381     \skip_set_eq:NN \tex_parfillskip:D \c__jiazhu_fil_skip
382 }
383 \cs_new_protected:Npn \__jiazhu_halign_left:
384 {
385     \skip_zero:N \tex_leftskip:D
386     \skip_set_eq:NN \tex_rightskip:D \l__jiazhu_halign_skip
387     \skip_set_eq:NN \tex_parfillskip:D \c__jiazhu_fil_skip
388 }
389 \cs_new_protected:Npn \__jiazhu_halign_right:
390 {
391     \skip_set_eq:NN \tex_leftskip:D \l__jiazhu_halign_skip
392     \skip_zero:N \tex_rightskip:D
393     \skip_zero:N \tex_parfillskip:D
394 }
395 \cs_new_protected:Npn \__jiazhu_halign_centered:
396 {
397     \skip_set_eq:NN \tex_leftskip:D \l__jiazhu_halign_skip
398     \skip_set_eq:NN \tex_rightskip:D \l__jiazhu_halign_skip

```

```

399     \skip_zero:N \tex_parfillskip:D
400   }
401 \cs_new_protected:Npn \__jiazhu_halign_distributed:
402   {
403     \skip_zero:N \tex_leftskip:D
404     \skip_zero:N \tex_rightskip:D
405     \skip_zero:N \tex_parfillskip:D
406     \int_set_eq:NN \tex_tolerance:D \c_max_int
407   }
408 \skip_new:N \l__jiazhu_halign_skip
409 \cs_new_eq:NN \__jiazhu_halign: \__jiazhu_halign_justified:
410 \skip_const:Nn \c__jiazhu_fil_skip { \c_zero_dim plus 1fil }
411 \skip_set_eq:NN \l__jiazhu_halign_skip \c__jiazhu_fil_skip

\__jiazhu_processing: 412 \cs_new_protected:Npn \__jiazhu_processing:
413   {
414     \__jiazhu_split_lines:
415     \__jiazhu_put_closing_box:
416     \__jiazhu_good_break:
417     \__jiazhu_hskip:N \l__jiazhu_after_skip_tl
418     \group_end:
419     \tex_ignorespaces:D
420   }

\__jiazhu_good_break: 421 \cs_new_protected:Npn \__jiazhu_good_break:
422   {
423     \skip_horizontal:N \l__jiazhu_good_break_skip
424     \tex_penalty:D -100 ~
425     \skip_horizontal:n { -\l__jiazhu_good_break_skip }
426   }
427 \skip_new:N \l__jiazhu_good_break_skip

\__jiazhu_hskip:N 428 \cs_new_protected:Npn \__jiazhu_hskip:N #1
429   { \tl_if_empty:NF #1 { \skip_horizontal:n {#1} } }

\__jiazhu_split_lines: 430 \cs_new_protected:Npn \__jiazhu_split_lines:
431   {
432     \dim_set:Nn \l__jiazhu_width_dim
433     {
434       \dim_max:nn
435       { \l__jiazhu_unit_dim }
436       { \box_wd:N \l__jiazhu_text_box / \l__jiazhu_lines_int }
437     }
438     \dim_compare:nNnTF \l__jiazhu_width_dim > \l__jiazhu_remaining_width_dim
439     { \__jiazhu_split_parshape_lines: }
440     { \__jiazhu_typeset_remaining: }
441   }
442 \dim_new:N \l__jiazhu_width_dim

\__jiazhu_split_parshape_lines: 443 \cs_new_protected:Npn \__jiazhu_split_parshape_lines:
444   {
445     \dim_compare:nNnTF \l__jiazhu_remaining_width_dim < \l__jiazhu_unit_dim
446     { \__jiazhu_split_parshape_lines_auxi: }
447     { \__jiazhu_split_parshape_lines_auxii: }
448   }
449 \cs_new_protected:Npn \__jiazhu_split_parshape_lines_auxi:
450   {
451     \__jiazhu_fill_newline:
452     \dim_set:Nn \l__jiazhu_remaining_width_dim
453     { \l__jiazhu_line_width_dim - \box_wd:N \l__jiazhu_opening_box }
454     \bool_set_true:N \l__jiazhu_full_line_bool
455     \__jiazhu_split_lines:
456   }
457 \cs_new_protected:Npn \__jiazhu_split_parshape_lines_auxii:
458   {
459     \vbox_set:Nn \l__jiazhu_text_box
460     {
461       \bool_if:NTF \l__jiazhu_full_line_bool
462       { \int_set:Nn \tex_looseness:D { -1 } }

```

```

463     { \_jiazhu_dim_normalize:N \l__jiazhu_remaining_width_dim }
464     \_jiazhu_parshape:
465     \hbox_unpack_drop:N \l__jiazhu_text_box
466     \para_raw_end:
467   }
468   \vbox_set_split_to_ht:NNn \l__jiazhu_typeset_box
469   \l__jiazhu_text_box { \l__jiazhu_lines_int \tex_baselineskip:D }
470   \vbox_set:Nn \l__jiazhu_typeset_box
471     { \vbox_unpack:N \l__jiazhu_typeset_box }
472   \bool_if:NF \l__jiazhu_full_line_bool
473     { \skip_horizontal:N \l__jiazhu_unit_stretch_skip }
474   \_jiazhu_typeset:
475   \box_if_empty:NF \l__jiazhu_text_box
476     { \_jiazhu_split_remaining_lines: }
477 }
478 \cs_new_protected:Npn \_jiazhu_fill_newline:
479 {
480   \tex_penalty:D \c__jiazhu_nobreak_int
481   \tex_hfil:D \_jiazhu_newline:
482 }
483 \cs_new_protected:Npn \_jiazhu_newline:
484 { \tex_penalty:D \c__jiazhu_break_int }
485 \box_new:N \l__jiazhu_typeset_box

```

```

\_jiazhu_split_remaining_lines: 486 \cs_new_protected:Npn \_jiazhu_split_remaining_lines:
487 {
488   \_jiazhu_newline:
489   \dim_set_eq:NN \l__jiazhu_remaining_width_dim \l__jiazhu_line_width_dim
490   \bool_set_true:N \l__jiazhu_full_line_bool
491   \_jiazhu_extract_hbox:Nn \l__jiazhu_text_box
492     { \tex_unskip:D \tex_unskip:D \tex_unpenalty:D }
493   \_jiazhu_split_lines:
494 }

```

_jiazhu_extract_hbox:Nn 从 \vbox 中取出 \hbox。

```

495 \cs_new_protected:Npn \_jiazhu_extract_hbox:Nn #1#2
496 {
497   \vbox_set:Nn #1
498     {
499       \vbox_unpack_drop:N #1
500       \box_gset_to_last:N \g__jiazhu_last_box
501     }
502   \hbox_set:Nn #1
503     {

```

往继续的夹注首行开头插入支架。

```

504     \_jiazhu_insert_jzideoht_strut:
505     \hbox_unpack_drop:N \g__jiazhu_last_box #2
506   }
507 }
508 \box_new:N \g__jiazhu_last_box

```

```

\_jiazhu_dim_normalize:N 509 \cs_new_protected:Npn \_jiazhu_dim_normalize:N #1
510 {
511   \dim_set:Nn #1
512     {
513       \int_div_truncate:nn {#1} { \l__jiazhu_unit_dim }
514       \l__jiazhu_unit_dim
515     }
516 }

```

```

\_jiazhu_typeset: 517 \cs_new_protected:Npn \_jiazhu_typeset:
\_jiazhu_typeset_remaining: 518 {
519   \_jiazhu_put_opening_box:
520   \_jiazhu_put_box:N \l__jiazhu_typeset_box
521 }
522 \cs_new_protected:Npn \_jiazhu_typeset_remaining:

```

```

523 {
524   \__jiazhu_dim_normalize:N \l__jiazhu_width_dim
525   \dim_set:Nn \l__jiazhu_step_dim
526     { \l__jiazhu_unit_dim / \l__jiazhu_lines_int }
527   \skip_set_eq:NN \l__jiazhu_halign_skip \l__jiazhu_unit_stretch_skip
528   \__jiazhu_typeset_remaining_auxi:
529 }
530 \cs_new_protected:Npn \__jiazhu_typeset_remaining_auxi:
531 {
532   \vbox_set:Nn \l__jiazhu_typeset_box
533     {
534       \__jiazhu_halign:
535       \dim_set_eq:NN \tex_hsize:D \l__jiazhu_width_dim
536       \hbox_unpack:N \l__jiazhu_text_box
537       \para_raw_end:
538       \int_gset_eq:NN \g__jiazhu_lines_int \tex_prevgraf:D
539     }
540   \int_compare:nNnTF \g__jiazhu_lines_int > \l__jiazhu_lines_int
541     { \__jiazhu_typeset_remaining_auxii: }
542     { \__jiazhu_typeset_remaining_auxiii: }
543 }
544 \cs_new_protected:Npn \__jiazhu_typeset_remaining_auxii:
545 {
546   \dim_add:Nn \l__jiazhu_width_dim { \l__jiazhu_step_dim }
547   \__jiazhu_typeset_remaining_auxi:
548 }
549 \cs_new_protected:Npn \__jiazhu_typeset_remaining_auxiii:
550 {
551   \__jiazhu_extract_max_width:N \l__jiazhu_typeset_box
552   \box_set_wd:Nn \l__jiazhu_typeset_box
553     { \dim_min:nn { \l__jiazhu_max_dim } { \l__jiazhu_width_dim } }
554   \int_compare:nNnF \g__jiazhu_lines_int = \l__jiazhu_lines_int
555     {
556       \box_set_ht:Nn \l__jiazhu_typeset_box
557         {
558           \int_eval:n { \l__jiazhu_lines_int - \g__jiazhu_lines_int }
559           \tex_baselineskip:D + \box_ht:N \l__jiazhu_typeset_box
560         }
561     }
562   \__jiazhu_typeset:
563 }
564 \dim_new:N \l__jiazhu_step_dim
565 \int_new:N \g__jiazhu_lines_int

```

__jiazhu_extract_max_width:N 获取盒子中的实际最大行宽。

```

566 \cs_new_protected:Npn \__jiazhu_extract_max_width:N #1
567 {
568   \dim_zero:N \l__jiazhu_max_dim
569   \box_if_empty:NF #1
570   {
571     \dim_set:Nn \l__jiazhu_width_dim { \box_wd:N #1 }
572     \__jiazhu_extract_max_width_aux:N #1
573   }
574 }
575 \cs_new_protected:Npn \__jiazhu_extract_max_width_aux:N #1
576 {
577   \vbox_set:Nw \l__jiazhu_tmpa_box
578   \vbox_unpack:N #1
579   \int_while_do:nNnn \tex_lastnodetype:D = \c_one_int
580     { \__jiazhu_extract_max_width_auxi: }
581   \exp_last_unbraced:Ne \vbox_set_end:
582   {
583     \dim_set:Nn \l__jiazhu_max_dim { \dim_use:N \l__jiazhu_max_dim }
584     \dim_set:Nn \l__jiazhu_width_dim { \dim_use:N \l__jiazhu_width_dim }
585   }
586 }
587 \cs_new_protected:Npn \__jiazhu_extract_max_width_auxi:

```

```

588 {
589   \box_set_to_last:N \l__jiazhu_tmpb_box
590   \tex_unskip:D
591   \hbox_set:Nn \l__jiazhu_tmpb_box
592   {
593     \hbox_unpack_drop:N \l__jiazhu_tmpb_box
594     \tex_unskip:D \tex_unskip:D \tex_unpenalty:D
595   }
596   \dim_set:Nn \l__jiazhu_max_dim
597   {
598     \dim_max:nn
599     { \l__jiazhu_max_dim }
600     { \box_wd:N \l__jiazhu_tmpb_box }
601   }
602   \dim_compare:nNnT
603   { \box_wd:N \l__jiazhu_tmpb_box } > \l__jiazhu_width_dim
604   { \__jiazhu_extract_max_width_auxii: }
605 }
606 \cs_new_protected:Npn \__jiazhu_extract_max_width_auxii:
607 {
608   \hbox_set_to_wd:Nnn \l__jiazhu_tmpb_box
609   { \l__jiazhu_width_dim }
610   { \hbox_unpack_drop:N \l__jiazhu_tmpb_box }

```

\badness 等于 1 000 000 表示盒子宽度溢出了。

```

611   \int_compare:nNnF \tex_badness:D < { 1 000 000 }
612   {
613     \dim_add:Nn \l__jiazhu_width_dim { \l__jiazhu_step_dim }
614     \__jiazhu_extract_max_width_auxii:
615   }
616 }
617 \dim_new:N \l__jiazhu_max_dim

```

__jiazhu_add_shortcut:n 设置和删除快捷命令。保险起见,我们只在文档开始时才实际设置快捷命令。

__jiazhu_remove_shortcuts:n

```

618 \AtBeginDocument { \__jiazhu_activate_shortcut: }
619 \cs_new_protected:Npn \__jiazhu_activate_shortcut:
620 {
621   \seq_if_empty:NF \l__jiazhu_shortcut_seq
622   {
623     \seq_map_function:NN
624     \l__jiazhu_shortcut_seq \__jiazhu_add_shortcut_document:n
625   }
626   \cs_set_eq:NN \__jiazhu_add_shortcut_aux:n \__jiazhu_add_shortcut_document:n
627   \cs_set_eq:NN \__jiazhu_remove_shortcut:n \__jiazhu_remove_shortcut_document:n
628 }
629 \cs_new_protected:Npn \__jiazhu_add_shortcut:n #1
630 {
631   \tl_if_blank:nF {#1}
632   { \__jiazhu_add_shortcut_aux:n {#1} }
633 }
634 \cs_new_protected:Npn \__jiazhu_add_shortcut_aux:n
635 { \seq_put_right:Nn \l__jiazhu_shortcut_seq }
636 \cs_new_protected:Npn \__jiazhu_remove_shortcuts:n #1
637 {
638   \tl_map_inline:nn {#1}
639   { \exp_args:Nf \__jiazhu_remove_shortcut:n { \int_to_arabic:n { `##1 } } }
640 }
641 \cs_new_protected:Npn \__jiazhu_add_shortcut_document:n #1
642 {
643   \tl_if_single_token:nTF {#1}
644   { \__jiazhu_set_shortcut_group:N #1 }
645   { \__jiazhu_set_shortcut_delimiter:NNw #1 \q_stop }
646 }
647 \cs_new_protected:Npn \__jiazhu_set_shortcut_group:N #1
648 { \exp_args:Nf \__jiazhu_set_shortcut_group:n { \int_to_arabic:n { `##1 } } }
649 \cs_new_protected:Npn \__jiazhu_set_shortcut_group:n #1

```

```

650 {
651   \__jiazhu_save_shortcut:n {#1}
652   \char_set_active_eq:nN {#1} \jiazhu
653 }
654 \cs_new_protected:Npn \__jiazhu_set_shortcut_delimiter:NNw #1#2#3 \q_stop
655 {
656   \__jiazhu_set_shortcut_delimiter:NNf #1#2
657   { \int_to_arabic:n {`#1} }
658 }
659 \cs_new_protected:Npn \__jiazhu_set_shortcut_delimiter:NNn #1#2
660 {
661   \str_if_eq:nnTF {#1} {#2}
662   { \__jiazhu_set_shortcut_delimiter:n }
663   { \__jiazhu_set_shortcut_delimiter:Nn #2 }
664 }
665 \cs_generate_variant:Nn \__jiazhu_set_shortcut_delimiter:NNn { NNf }
666 \cs_new_protected:Npn \__jiazhu_set_shortcut_delimiter:n #1
667 {
668   \__jiazhu_active_char:nn
669   { \__jiazhu_set_shortcut_delimiter:Nn } {#1} {#1}
670 }
671 \cs_new_protected:Npn \__jiazhu_set_shortcut_delimiter:Nn #1#2
672 {
673   \exp_args:Ncc \__jiazhu_set_shortcut_delimiter_aux:NNNn
674   { __jiazhu_shortcut_ #2 :w }
675   { __jiazhu_shortcut_ #2 _aux:w }
676   #1 {#2}
677 }
678 \cs_new_protected:Npn \__jiazhu_set_shortcut_delimiter_aux:NNNn #1#2#3#4
679 {
680   \__jiazhu_save_shortcut:n {#4}
681   \cs_set_protected:Npn #1
682   { \jiazhuoptiongrabber #2 }
683   \cs_set_protected:Npn #2 ##1##2 #3
684   { \jiazhu:nn { ##1 } { ##2 } }
685   \char_set_active_eq:nN {#4} #1
686 }
687 \NewDocumentCommand \jiazhuoptiongrabber { +m +o }
688 { #1 {#2} }
689 \cs_new_protected:Npn \__jiazhu_save_shortcut:n #1
690 {
691   \prop_get:NnNF \l__jiazhu_shortcut_prop {#1} \l__jiazhu_catcode_tl
692   {
693     \__jiazhu_save_active_char:n {#1}
694     \prop_put:Nnx \l__jiazhu_shortcut_prop
695     {#1} { \char_value_catcode:n {#1} }
696     \char_set_catcode_active:n {#1}
697   }
698 }
699 \cs_new_protected:Npn \__jiazhu_remove_shortcut:n
700 { \seq_remove_all:Nn \l__jiazhu_shortcut_seq }
701 \cs_new_protected:Npn \__jiazhu_remove_shortcut_document:n #1
702 {
703   \prop_pop:NnNT \l__jiazhu_shortcut_prop {#1} \l__jiazhu_catcode_tl
704   {
705     \char_set_catcode:nn {#1} { \l__jiazhu_catcode_tl }
706     \__jiazhu_restore_active_char:n {#1}
707   }
708 }
709 \cs_new_protected:Npn \__jiazhu_save_active_char:n
710 { \__jiazhu_active_char_aux:Nn \__jiazhu_save_active_char:Nn }
711 \cs_new_protected:Npn \__jiazhu_restore_active_char:n
712 { \__jiazhu_active_char_aux:Nn \__jiazhu_restore_active_char:Nn }
713 \cs_new_protected:Npn \__jiazhu_active_char_aux:Nn #1#2
714 {
715   \group_begin: \exp_args:NNc \group_end:
716   #1 { __jiazhu_save_active_ #2 :w } {#2}

```



```

717 }
718 \cs_new_protected:Npn \__jiazhu_save_active_char:Nn #1
719 { \__jiazhu_active_char:nn { \cs_set_eq:NN #1 } }
720 \cs_new_protected:Npn \__jiazhu_restore_active_char:Nn #1#2
721 {
722   \char_set_active_eq:nN {#2} #1
723   \cs_set_eq:NN #1 \tex_undefined:D
724 }
725 \group_begin:
726   \char_set_catcode_active:n { 0 }
727   \cs_new_protected:Npn \__jiazhu_active_char:nn #1#2
728   {
729     \group_begin:
730     \char_set_lccode:nn { 0 } {#2}
731     \tex_lowercase:D { \group_end: #1 ^^@ }
732   }
733 \group_end:
734 \tl_new:N \l__jiazhu_catcode_tl
735 \seq_new:N \l__jiazhu_shortcut_seq
736 \prop_new:N \l__jiazhu_shortcut_prop

```

format 定义键值选项。

```

737 \keys_define:nn { jiazhu }
738 {
739   format .tl_set:N = \l__jiazhu_format_tl ,
740   beforeskip .tl_set:N = \l__jiazhu_before_skip_tl ,
741   afterskip .tl_set:N = \l__jiazhu_after_skip_tl ,
742   opening .tl_set:N = \l__jiazhu_opening_tl ,
743   closing .tl_set:N = \l__jiazhu_closing_tl ,
744   ideohtratio .fp_set:N = \l__jiazhu_ideohft_fp ,
745   jzideohtratio .fp_set:N = \l__jiazhu_jzideohft_fp ,
746   ratio .fp_set:N = \l__jiazhu_ratio_fp ,
747   bracketratio .fp_set:N = \l__jiazhu_bracket_ratio_fp ,
748   baselineshift .dim_set:N = \l__jiazhu_shift_dim ,
749   lines .code:n = \__jiazhu_set_lines:n {#1} ,
750   shortcut .code:n = \__jiazhu_add_shortcut:n {#1} ,
751   shortcut- .code:n = \__jiazhu_remove_shortcuts:n {#1} ,
752   halign .choices:nn =
753     { justified , left , right , centered , distributed }
754     { \__jiazhu_set_halign:n { \l_keys_choice_tl } } ,
755   valign .choices:nn =
756     { middle , top , bottom }
757     { \__jiazhu_set_valign:n { \l_keys_choice_tl } } ,
758   lines .value_required:n = true ,
759   halign .value_required:n = true ,
760   valign .value_required:n = true ,
761   shortcut .value_required:n = true ,
762   shortcut- .value_required:n = true ,
763   beforeskip .initial:n = \smallskipamount ,
764   afterskip .initial:n = \smallskipamount ,

```

我们参考 https://www.w3.org/TR/jlreq/#inline_cutting_note 来设定下面这些数值选项的默认值。

```

765   ideohtratio .initial:n = 0.5 ,
766   jzideohtratio .initial:n = 0 ,
767   ratio .initial:n = 2 / 3 ,
768   bracketratio .initial:n = 2 ,
769   lines .initial:n = 2 ,
770   halign .initial:n = justified ,
771   valign .initial:n = middle
772 }

```

\jiazhu 用户命令。
\jiazhuset

```

773 \NewDocumentCommand \jiazhu { +o +m }
774 { \jiazhu:nn {#1} {#2} }

```

```

775 \NewDocumentCommand \jiazhuset { }
776 { \keys_set:nn { jiazhu } }

```

LuaTeX 单独处理。

```

777 \sys_if_engine luatex:F
778 {
779   \box_new:N \l__jiazhu_tmpa_box
780   \box_new:N \l__jiazhu_tmpb_box
781   \file_input_stop:
782 }

\__jiazhu_extract_max_width:N 783 \cs_gset_protected:Npn \__jiazhu_extract_max_width:N #1
784 {
785   \box_if_empty:NTF #1
786     { \dim_zero:N \l__jiazhu_max_dim }
787     {
788       \__jiazhu_extract_max_width_lua:N #1
789       \dim_set_eq:NN \l__jiazhu_width_dim \l__jiazhu_max_dim
790     }
791 }

792 \cs_undefine:N \__jiazhu_extract_max_width_aux:N
793 \cs_undefine:N \__jiazhu_extract_max_width_auxi:
794 \cs_undefine:N \__jiazhu_extract_max_width_auxii:

\__jiazhu_extract_max_width_lua:N 795 \group_begin:
796 \char_set_catcode_space:n { 32 }
797 \lua_now:n
798 {
799   jiazhu                = jiazhu or { }
800   local jiazhu          = jiazhu
801   local getbox          = tex.getbox
802   local getcount        = tex.getcount
803   local setdimen        = tex.setdimen
804   local scan_int        = token.scan_int
805   local id_hlist        = node.id("hlist")
806   local dnode           = node.direct
807   local getlist         = dnode.getlist
808   local todirect        = dnode.todirect
809   local traverse_id     = dnode.traverse_id
810   local rangedimensions = dnode.rangedimensions
811
812   function jiazhu.extract_max_width ()
813     local box = getbox(scan_int())
814     local width = 0
815     for hlist in traverse_id(id_hlist, getlist(todirect(box))) do
816       local w = rangedimensions(hlist, getlist(hlist))
817       if w > width then width = w end
818     end
819     setdimen("l__jiazhu_max_dim", width)
820   end
821
822   local id = luatexbase.new_luafunction("jiazhu")
823   local t = lua.get_functions_table()
824   t[id] = jiazhu.extract_max_width
825
826   token.set_lua("__jiazhu_extract_max_width_lua:N", id, "global", "protected")
827 }
828 \group_end:

829 </package>

```

代码索引

意大利体的数字表示描述对应索引项的页码;带下划线的数字表示定义对应索引项的代码行号;罗马字体的数字表示使用对应索引项的代码行号。

Symbols	
\\	5, 6, 7
A	
afterskip	2
\AtBeginDocument	618
B	
baselineshift	3
beforeskip	2
bool commands:	
\bool_if:NTF	222, 327, 461, 472
\bool_new:N	45, 342
\bool_set_false:N	36, 54, 61, 67, 69, 325
\bool_set_true:N	35, 55, 60, 70, 454, 490
box commands:	
\box_clear:N	196, 209
\box_dp:N	143
\box_gset_to_last:N	500
\box_ht:N	559
\box_if_empty:NTF	224, 230, 475, 569, 785
\box_move_down:nn	312, 318
\box_new:N	153, 192, 233, 234, 485, 508, 779, 780
\box_set_ht:Nn	556
\box_set_to_last:N	160, 589
\box_set_wd:Nn	552
\box_use_drop:N	314, 320
\box_wd:N	206, 436, 453, 571, 600, 603
bracketratio	3
C	
char commands:	
\char_set_active_eq:nN	652, 685, 722
\char_set_catcode:n	705
\char_set_catcode_active:n	696, 726
\char_set_catcode_space:n	796
\char_set_lccode:nn	730
\char_value_catcode:n	695
closing	3
cs commands:	
\cs_generate_variant:Nn	665
\cs_gset_protected:Npn	783
\cs_if_exist:NTF	12
\cs_new_eq:NN	307, 372, 409
\cs_new_protected:Npn	14, 31, 47, 65, 74, 84, 121, 157, 175, 190, 193, 220, 228, 235, 237, 247, 261, 271, 283, 293, 310, 316, 322, 344, 353, 375, 377, 383, 389, 395, 401, 412, 421, 428, 430, 443, 449, 457, 478, 483, 486, 495, 509, 517, 522, 530, 544, 549, 566, 575, 587, 606, 619, 629, 634, 636, 641, 647, 649, 654, 659, 666, 671, 678, 689, 699, 701, 709, 711, 713, 718, 720, 727
\cs_set_eq:NN	226, 236, 376, 626, 627, 719, 723
\cs_set_protected:Npn	681, 683
\cs_set_protected:Npx	355
\cs_undefine:N	792, 793, 794
D	
dim commands:	
\dim_abs:n	95, 106
\dim_add:Nn	546, 613
\dim_compare:nNnTF	94, 105, 331, 438, 445, 602
\dim_gset_eq:NN	89
\dim_gsub:Nn	108
\dim_gzero:N	116
\dim_max:nn	434, 598
\dim_min:nn	78, 553
\dim_new:N	46, 83, 118, 154, 155, 308, 309, 442, 564, 617
\dim_set:Nn	37, 76, 124, 130, 133, 143, 249, 255, 273, 277, 295, 301, 432, 452, 511, 525, 571, 583, 584, 596
\dim_set_eq:NN	51, 71, 162, 163, 489, 535, 789
\dim_sub:Nn	56, 205, 333
\dim_use:N	583, 584
\dim_zero:N	161, 568, 786
\c_max_dim	71, 95, 106, 130, 162, 163, 331, 362
\c_zero_dim	145, 147, 185, 186, 361, 362, 410
E	
exp commands:	
\exp_args:Ncc	673
\exp_args:Nee	239, 263, 285
\exp_args:Nf	639, 648
\exp_args:NNc	715
\exp_last_unbraced:Ne	581
F	
file commands:	
\file_input_stop:	781
\fontsize	126, 200, 213
format	1, 737
fp commands:	
\fp_compare:nNnTF	181, 241, 265, 287
\fp_eval:n	242, 243, 245, 257, 266, 267, 269, 280, 288, 289, 291, 303
\fp_new:N	152
\fp_set:Nn	125
\fp_use:N	127, 128, 182, 183, 201, 214
\c_zero_fp	181, 241, 265, 287
G	
group commands:	
\group_begin:	16, 86, 715, 725, 729, 795
\group_end:	103, 418, 715, 731, 733, 828

H

halign 3
hbox commands:
 \hbox_set:Nn 134, 137, 177, 198, 211, 502, 591
 \hbox_set_to_wd:Nnn 608
 \hbox_unpack:N 140, 191, 536
 \hbox_unpack_drop:N 465, 505, 593, 610

I

ideohratio 2
int commands:
 \int_compare:nNnTF ... 39, 52, 68, 110, 346, 540, 554, 611
 \int_const:Nn 119, 120
 \int_div_truncate:nn 513
 \int_eval:n 252, 298, 358, 364, 558
 \int_gset_eq:NN 538
 \int_new:N 371, 565
 \int_set:Nn 104, 166, 348, 462
 \int_set_eq:NN 90, 91, 164, 165, 406
 \int_to_arabic:n 639, 648, 657
 \int_while_do:nNnn 579
 \int_zero:N 168, 169, 170, 171, 172, 173
 \c_max_int 164, 165, 406
 \c_one_int 39, 110, 111, 579
 \c_zero_int 160, 346

J

\jiazhu 1, 2, 652, 773
jiazhu commands:
 \jiazhu:nn 14, 14, 684, 774
jiazhu internal commands:
 __jiazhu_activate_shortcut: 618, 619
 __jiazhu_active_char:nn 668, 719, 727
 __jiazhu_active_char_aux:Nn 710, 712, 713
 __jiazhu_add_shortcut:n 618, 629, 750
 __jiazhu_add_shortcut_aux:n 626, 632, 634
 __jiazhu_add_shortcut_document:n ... 624, 626, 641
 \l_jiazhu_after_skip_tl 417, 741
 \l_jiazhu_before_skip 223, 329, 335, 336, 343
 \l_jiazhu_before_skip_bool
 36, 55, 61, 69, 70, 222, 325, 327, 342
 \l_jiazhu_before_skip_tl 324, 330, 740
 __jiazhu_boot:n 43, 63, 72, 121, 121
 \l_jiazhu_box_offset_dim 249, 273, 295, 308, 313
 \l_jiazhu_bracket_ratio_fp 201, 214, 257, 280, 303, 747
 \c_jiazhu_break_int 119, 368, 484
 \l_jiazhu_catcode_tl 691, 703, 705, 734
 \l_jiazhu_closing_box 209, 211, 230, 231, 234
 \l_jiazhu_closing_tl 208, 216, 743
 __jiazhu_dim_normalize:N 463, 509, 509, 524
 __jiazhu_extract_hbox:Nn 491, 495, 495
 __jiazhu_extract_max_width:N . 551, 566, 566, 783, 783
 __jiazhu_extract_max_width_aux:N ... 572, 575, 792
 __jiazhu_extract_max_width_auxi: ... 580, 587, 793
 __jiazhu_extract_max_width_auxii: 604, 606, 614, 794
 __jiazhu_extract_max_width_lua:N 788, 795
 __jiazhu_extract_previous_line_width: .. 49, 84, 84

\c_jiazhu_fil_skip 87, 381, 387, 410, 411
 __jiazhu_fill_newline: 451, 478
 \l_jiazhu_format_tl 131, 739
 \l_jiazhu_full_line_bool
 35, 45, 54, 60, 67, 454, 461, 472, 490
 __jiazhu_good_break: 416, 421, 421
 \l_jiazhu_good_break_skip 144, 423, 425, 427
 __jiazhu_halign: 375, 376, 409, 534
 __jiazhu_halign_centered: 395
 __jiazhu_halign_distributed: 401
 __jiazhu_halign_justified: 377, 409
 __jiazhu_halign_left: 383
 __jiazhu_halign_right: 389
 \l_jiazhu_halign_skip 386, 391, 397, 398, 408, 411, 527
 __jiazhu_horizontal_mode:n 26, 47, 47
 __jiazhu_hskip:N 417, 428, 428
 \l_jiazhu_ideoh_tfp 182, 242, 245, 266, 269, 288, 291, 744
 __jiazhu_inner_mode:n 25, 28, 65, 65
 __jiazhu_insert_jzideoht_strut: . 139, 175, 190, 504
 \l_jiazhu_jzideoht_fp
 181, 183, 241, 243, 265, 267, 287, 289, 745
 \g_jiazhu_last_box 500, 505, 508
 \l_jiazhu_line_width_dim . 40, 41, 51, 76, 83, 453, 489
 \g_jiazhu_lines_int 538, 540, 554, 558, 565
 \l_jiazhu_lines_int
 252, 298, 348, 349, 371, 436, 469, 526, 540, 554, 558
 __jiazhu_make_jzideoht_strut: 136, 175, 175
 __jiazhu_make_opening_closing_box: .. 142, 193, 193
 __jiazhu_make_parshape:n 349, 353
 \l_jiazhu_mark_offset_dim 255, 277, 301, 309, 319
 \l_jiazhu_max_dim . 553, 568, 583, 596, 599, 617, 786, 789
 __jiazhu_newline: 481, 483, 488
 \c_jiazhu_nobreak_int 90, 91, 119, 367, 480
 \l_jiazhu_opening_box 196, 198, 206, 224, 225, 233, 453
 \l_jiazhu_opening_tl 195, 203, 742
 \l_jiazhu_outer_unit_dim
 124, 145, 155, 253, 258, 275, 279, 299, 304
 __jiazhu_parshape: 355, 372, 464
 \g_jiazhu_previous_line_width_dim
 57, 89, 95, 106, 108, 114, 116, 118
 __jiazhu_processing: 150, 412, 412
 __jiazhu_put_box:N 310, 310, 520
 __jiazhu_put_closing_box: 228, 415
 __jiazhu_put_mark_box:N 225, 231, 310, 316
 __jiazhu_put_opening_box: 220, 226, 519
 \l_jiazhu_ratio_fp 6, 125, 746
 \l_jiazhu_remaining_width_dim 37,
 46, 51, 56, 71, 205, 331, 333, 361, 438, 445, 452, 463, 489
 __jiazhu_remove_shortcut:n 627, 639, 699
 __jiazhu_remove_shortcut_document:n 627, 701
 __jiazhu_remove_shortcuts:n 618, 636, 751
 __jiazhu_restore_active_char:n 706, 711
 __jiazhu_restore_active_char:Nn 712, 720
 __jiazhu_save_active_char:n 693, 709
 __jiazhu_save_active_char:Nn 710, 718
 __jiazhu_save_shortcut:n 651, 680, 689

<p> <code>__jiazhu_set_before_skip:</code> 149, 322, 322 <code>__jiazhu_set_halign:n</code> 375, 375, 754 <code>__jiazhu_set_line_width:</code> 34, 50, 74, 74 <code>__jiazhu_set_lines:n</code> 344, 344, 749 <code>__jiazhu_set_shortcut_delimiter:n</code> 662, 666 <code>__jiazhu_set_shortcut_delimiter:Nn</code> .. 663, 669, 671 <code>__jiazhu_set_shortcut_delimiter:NNn</code> . 656, 659, 665 <code>__jiazhu_set_shortcut_delimiter:NNw</code> 645, 654 <code>__jiazhu_set_shortcut_delimiter_aux:NNNn</code> 673, 678 <code>__jiazhu_set_shortcut_group:N</code> 644, 647 <code>__jiazhu_set_shortcut_group:n</code> 648, 649 <code>__jiazhu_set_valign:</code> 148, 235, 236, 307 <code>__jiazhu_set_valign:n</code> 235, 757 <code>__jiazhu_set_valign_bottom:</code> 261 <code>__jiazhu_set_valign_bottom_aux:nn</code> 263, 271 <code>__jiazhu_set_valign_middle:</code> 237, 307 <code>__jiazhu_set_valign_middle_aux:nn</code> 239, 247 <code>__jiazhu_set_valign_top:</code> 283 <code>__jiazhu_set_valign_top_aux:nn</code> 285, 293 <code>\l__jiazhu_shift_dim</code> 4, 96, 97, 748 <code>\l__jiazhu_shortcut_prop</code> 691, 694, 703, 736 <code>\l__jiazhu_shortcut_seq</code> 621, 624, 635, 700, 735 <code>__jiazhu_split_lines:</code> 414, 430, 430, 455, 493 <code>__jiazhu_split_parshape_lines:</code> 439, 443, 443 <code>__jiazhu_split_parshape_lines_auxi:</code> 446, 449 <code>__jiazhu_split_parshape_lines_auxii:</code> ... 447, 457 <code>__jiazhu_split_remaining_lines:</code> 476, 486, 486 <code>\l__jiazhu_step_dim</code> 525, 546, 564, 613 <code>\l__jiazhu_strut_box</code> 177, 191, 192 <code>__jiazhu_tex_parameter:</code> 123, 157, 157 <code>\l__jiazhu_text_box</code> 134, 137, 140, 153, 436, 459, 465, 469, 475, 491, 536 <code>\l__jiazhu_tmp_fp</code> 125, 127, 128, 152 <code>\l__jiazhu_tmpa_box</code> 577, 779 <code>\l__jiazhu_tmpb_box</code> 589, 591, 593, 600, 603, 608, 610, 780 <code>__jiazhu_typeset:</code> 474, 517, 517, 562 <code>\l__jiazhu_typeset_box</code> 468, 470, 471, 485, 520, 532, 551, 552, 556, 559 <code>__jiazhu_typeset_remaining:</code> 440, 517, 522 <code>__jiazhu_typeset_remaining_auxi:</code> ... 528, 530, 547 <code>__jiazhu_typeset_remaining_auxii:</code> 541, 544 <code>__jiazhu_typeset_remaining_auxiii:</code> 542, 549 <code>\l__jiazhu_unit_dim</code> 133, 147, 154, 184, 201, 214, 251, 257, 275, 280, 297, 303, 435, 445, 513, 514, 526 <code>\l__jiazhu_unit_stretch_skip</code> 146, 156, 473, 527 <code>__jiazhu_vertical_mode:n</code> 20, 31, 31 <code>\l__jiazhu_width_dim</code> 432, 438, 442, 524, 535, 546, 553, 571, 584, 603, 609, 613, 789 <code>\jiazhuoptiongrabber</code> 682, 687 <code>\jiazhuset</code> 1, 2, 773 <code>jzideohratio</code> 2 </p>	<p> <code>\keys_set:nn</code> 18, 776 </p>
L	
<p> <code>lines</code> 1 <code>\linespread</code> 129 <code>\linewidth</code> 78 lua commands: <code>\lua_now:n</code> 797 </p>	
M	
<p> mode commands: <code>\mode_if_horizontal:TF</code> 22 <code>\mode_if_inner:TF</code> 24 <code>\mode_if_vertical:TF</code> 19 <code>\mode_leave_vertical:</code> 33 msg commands: <code>\msg_error:nn</code> 11, 351 <code>\msg_new:nnn</code> 3, 373 </p>	
N	
<p> <code>\NewDocumentCommand</code> 12, 687, 773, 775 </p>	
O	
<p> <code>opening</code> 3 </p>	
P	
<p> para commands: <code>\para_raw_end:</code> 466, 537 prg commands: <code>\prg_do_nothing:</code> 226, 372 <code>\prg_replicate:nn</code> 359, 365 prop commands: <code>\prop_get:NnNTF</code> 691 <code>\prop_new:N</code> 736 <code>\prop_pop:NnNTF</code> 703 <code>\prop_put:Nnn</code> 694 </p>	
Q	
<p> quark commands: <code>\q_stop</code> 645, 654 </p>	
R	
<p> <code>ratio</code> 2 <code>\RequirePackage</code> 13 </p>	
S	
<p> scan commands: <code>\scan_stop:</code> 187 <code>\selectfont</code> 132, 203, 216 seq commands: <code>\seq_if_empty:NTF</code> 621 <code>\seq_map_function:NN</code> 623 <code>\seq_new:N</code> 735 <code>\seq_put_right:Nn</code> 635 <code>\seq_remove_all:Nn</code> 700 <code>shortcut</code> 4 skip commands: <code>\skip_const:Nn</code> 410 </p>	
K	
<p> keys commands: <code>\l_keys_choice_tl</code> 754, 757 <code>\keys_define:nn</code> 737 </p>	

`\skip_horizontal:N` 223, 423, 473
`\skip_horizontal:n` 425, 429
`\skip_new:N` 156, 343, 408, 427
`\skip_set:Nn` 92, 99, 144, 146, 329
`\skip_set_eq:NN`
 87, 100, 101, 381, 386, 387, 391, 397, 398, 411, 527
`\skip_zero:N` 167, 379, 380, 385, 392, 393, 399, 403, 404, 405
`\c_zero_skip` 202, 215
`\smallskipamount` 763, 764

str commands:

`\str_if_eq:nnTF` 661
`\strutbox` 143

sys commands:

`\sys_if_engine_luatex:TF` 777

T

\TeX and $\LaTeX_{2\epsilon}$ commands:

`\@ifpackagelater` 10
`\@parboxrestore` 159
`\badness` 15
`\baselineskip` 3, 7
`\baselinestretch` 6
`\f@size` 6, 124, 125, 133
`\hbox` 13
`\hsize` 5
`\jiazhu` 4
`\lineskip` 3, 6
`\lineskiplimit` 3, 6, 8
`\linewidth` 5
`\parindent` 4
`\parshape` 5
`\predisplaysize` 5
`\selectfont` 6
`\smallskipamount` 2
`\strutbox` 7
`\vbox` 13

tex commands:

`\tex_abovedisplayshortskip:D` 100
`\tex_abovedisplayskip:D` 92, 100
`\tex_badness:D` 611
`\tex_baselineskip:D` 96, 99, 252, 298, 469, 559
`\tex_belowdisplayshortskip:D` 101
`\tex_belowdisplayskip:D` 99, 101
`\tex_clubpenalties:D` 172
`\tex_clubpenalty:D` 169
`\tex_emergencystretch:D` 161
`\tex_everypar:D` 160
`\tex_glueshrink:D` 336
`\tex_hbadness:D` 164
`\tex_hfil:D` 481
`\tex_hfuzz:D` 162
`\tex_hsize:D` 78, 535

`\tex_ignorespaces:D` 135, 419
`\tex_interlinepenalties:D` 363
`\tex_interlinepenalty:D` 171
`\tex_kern:D` 114
`\tex_lastnodetype:D` 39, 52, 68, 579
`\tex_leftskip:D` ... 79, 111, 112, 379, 385, 391, 397, 403
`\tex_linepenalty:D` 168
`\tex_lineskiplimit:D` 130
`\tex_looseness:D` 462
`\tex_lowercase:D` 731
`\tex_parfillskip:D` 87, 381, 387, 393, 399, 405
`\tex_parindent:D` 40
`\tex_parshape:D` 110, 357
`\tex_parshapeindent:D` 111
`\tex_penalty:D` 424, 480, 484
`\tex_postdisplaypenalty:D` 91
`\tex_predisplaypenalty:D` 90
`\tex_predisplaysize:D` 89
`\tex_prevgraf:D` 104, 538
`\tex_rightskip:D` 80, 380, 386, 392, 398, 404
`\tex_splitmaxdepth:D` 143
`\tex_splittopskip:D` 167
`\tex_tolerance:D` 166, 406
`\tex_undefined:D` 723
`\tex_unpenalty:D` 492, 594
`\tex_unskip:D` 135, 216, 492, 590, 594
`\tex_vbadness:D` 165
`\tex_vfuzz:D` 163
`\tex_vrule:D` 179
`\tex_widowpenalties:D` 173
`\tex_widowpenalty:D` 170

tl commands:

`\tl_if_blank:nTF` 631
`\tl_if_empty:NTF` 195, 208, 324, 429
`\tl_if_novalue:nTF` 17
`\tl_if_single_token:nTF` 643
`\tl_map_inline:nn` 638
`\tl_new:N` 734
`\tl_use:N` 131

token commands:

`\c_math_toggle_token` 88, 102

V

`valign` 4

vbox commands:

`\vbox_set:Nn` 459, 470, 497, 532
`\vbox_set:Nw` 577
`\vbox_set_end:` 581
`\vbox_set_split_to_ht:NNn` 468
`\vbox_unpack:N` 471, 578
`\vbox_unpack_drop:N` 499