

Creating diagrams for chess problems

Version v1.23

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Abstract

It has been more than ten years now, since we last published a documented version of the `diagram.sty`, which is mainly intended to be used for typesetting chess problems. Since 1994 I (Stefan Höning) made a couple of enhancements to the sourcecode of the style, without publishing and putting this into the documentation. We also needed to upgrade to $\text{\LaTeX} 2\epsilon$. The major change is the documentation language, which is english now.

The style itself tries to collect very detailed information about a chess problem by providing a lot of commands, which you may use to specify the necessary information. There are different reasons for this. One idea was to enable people to read \LaTeX -diagrams into databases with information as detailed as possible. Otherwise it should be easy to change the layout of a diagram by applying a changed style - not by changing the source.

Contents

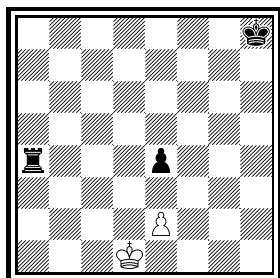
1	Creating diagrams	3
1.1	An introductory example	3
1.2	Elements of a diagram	4
1.2.1	Collecting the problem information	4
1.2.2	Modifying the layout of the diagram (and the solution)	7
1.2.3	Other commands	8
1.3	Special boards	8
1.3.1	Changing the boardsize	8
1.3.2	Stereo- and Space-Chess-Diagrams	9
1.3.3	Cylindric boards / suppressing frames	11
1.4	Change the coloring of the fields	11
1.4.1	figurine Notation	12
1.4.2	Changes within the board	12
1.5	Misc	13
1.5.1	Chess pieces within normal text	13
1.5.2	Other often used symbols	14
1.5.3	Internationalization	14
1.5.4	When writing books	15
1.5.5	Other useful stuff	15
2	The documentation driver	16
3	The implementation of the style	16
4	The implementation of cpdparse.sty	60

1 Creating diagrams

1.1 An introductory example

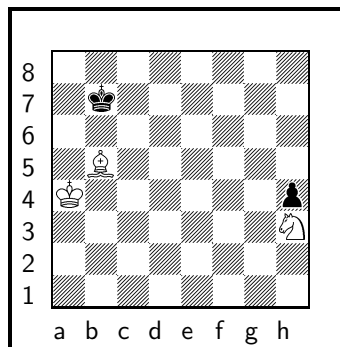
Let us first take a look at a simple example which should only show what you have to type into your L^AT_EX-code to get nice looking diagrams.

1
Thomas Brand
Problemkiste 1992
Elmar Bartel gew.



h#7 C- (2+3)

2
Thomas Brand
Problemkiste 1992



h#5 C- (3+2)

1) Thomas Brand:

1.Ta3 Kc2!, 2.Tf3 e×f3, 3.e3 f4, 4.e2 f5, 5.e1T f6, 6.Th1! (Te7?) f7, 7.Th7 f8D#

2) Thomas Brand:

1.Ka8 Sg1, 2.h3 Ka5, 3.h2 Kb6, 4.h×g1L+ Kc7, 5.La7 Lc6#

To use the package you have to make it available to L^AT_EX using `\usepackage{diagram}` inside the preamble of your document.

Then you may use the `diagram` environment to create the diagrams. For the above example I had to type the following:

```
\begin{diagram}
  \author{Brand, Thomas}
  \source{Problemkiste} \year{1992}
  \dedic{Elmar Bartel gew.}
  \pieces[2+3]{wKd1, wBe2, sKh8, sBe4, sTa4}
  \stip[h#7]
  \sol{1.Ta3 Kc2!, 2.Tf3 e\x f3, 3.e3 f4, 4.e2 f5, 5.e1T f6,
        6.Th1! (Te7?) f7, 7.Th7 f8D\#}
\end{diagram}
%
\hfill
%
\begin{diagram}
  \setboolean{legend}{true}
  \author{Brand, Thomas}
  \source{Problemkiste} \year{1992}
  \pieces[3+2]{wKa4, wLb5, wSh3, sKb7, sBh4}
  \stip[h#5]
  \sol{1.Ka8 Sg1, 2.h3 Ka5, 3.h2 Kb6, 4.h\x g1L+ Kc7, 5.La7 Lc6\#}
\end{diagram}
```

`\putsol`

`diagram` Any information which belongs to a problem should be put between `\begin{diagram}` and `\end{diagram}`. The above examples contains information for *authors*, *source*, *year of publication*, *stipulation*, *solution* and (in diagram 1) a *dedication*.

This information is shown around a chessboard except the solution, which is collected and put into the output using the `\putsol` command.

1.2 Elements of a diagram

This section describes the elements which may be used inside a `diagram` environment. For most of these elements there is no sense using them between `\begin{diagram}` and `\end{diagram}`. Some of them will not work outside of the environment (like `—`). In case you use these switches anywhere outside you will specify the information for all problems in your surrounding environment (which may be the complete document).



1.2.1 Collecting the problem information

The following information is typically given with a problem:

- `\author`
- With the `\author` tag you specify one author or a list of authors. If you specify more than one author, you must separate them with “;”. Normally an author is given as “*sirname, givenname*”. You may change the way, how the name is interpreted by L^AT_EX using `\normalnames` and `\reversednames`. This `\author` command does only overwrite the default behaviour when used inside a diagram environment.
- `\Dr`
`\Prof`
`\ProfDr`
- Within the Authors command you should use the commands `\Dr`, `\Prof` and `\ProfDr` to specify these academic titles. So one may switch off the display of these titles — like it is generally done inside *Die Schwalbe*.
- `\pieces`
- With `\pieces` you specify the position to be displayed on the board. For each kind of piece you may specify a list of fields. Different lists of fields are separated by “;”. So the general syntax for specifying the position of a specific piece is:
`[color][piece]{rotation of piece}[list of squares];`
e. g. `wTa1h1` should be clear, `nKa4` is a neutral king on a4
`w s n` may be used to specify the color of the piece.
K D T L S B C E X may be used to specify the piece. A **C** is used for an imitator, **E** for an equihopper and **X** for a rotated equihopper. You may *not* use an optional rotation with **C**, **E** and **X**.
R U L may be used to specify an optional rotation: right, upside-down, left. So you may use `sDUc7` for a grasshopper on `c7` — displayed as an upsidedown queen.
The characters used to specify color, piece and rotation may be changed using the `\DefinePieces` command.
- You may also optionally specify the number of pieces in your diagram, which then will be used to control your input automatically.

There is also support for an imitator, which is typically displayed as a black filled circle. So `sCf4` will produce the symbol of an imitator. This is shown in diagram 3.

<code>\fen</code>	<ul style="list-style-type: none"> As an alternative notation it is possible to enter the position in <i>Forsyth-Edwards-Notation</i>. This is possible for 8×8 boards only. <p>As an example: The position in diagram 2 was created via <code>\fen{8/1k6/8/1B6/K6p/7N/8/8}</code>.</p> <p>As with the <code>\pieces</code> command, you may provide the number of white and black pieces as an optional parameter.</p>
<code>\stipulation</code> <code>\stip</code>	<ul style="list-style-type: none"> is used to specify the stipulation of the problem, e.g. <code>\stipulation{\#2}</code> may be used to specify <i>a mate in two</i>. There is also an abbreviation <code>\stip</code> for this macro.
<code>\city</code>	<ul style="list-style-type: none"> may be used to specify the city and country, where the author or the authors live. I use this inside the original section of <i>Die Schwalbe</i>. You should separate multiple cities (for multiple authors) with “;”. There is also a boolean switch <code>showcity</code>, which controls, whether this information is displayed.
<code>\specialdiagram</code>	<ul style="list-style-type: none"> May be used to suppress the default diagram numbering (which uses a counter) and instead directly providing a diagram “number” which may be an arbitrary text. This may also be used to suppress displaying a diagram number by providing an empty argument <code>{}</code>.
<code>\sourcennr</code>	<ul style="list-style-type: none"> May be used to specify the number which was used for the problem inside an originals section.
<code>\source</code>	<ul style="list-style-type: none"> May be used to specify the book or magazine where the problem was issued first.
<code>\issue</code>	<ul style="list-style-type: none"> May be used to specify e.g. the issue of a magazine where the problem was issued.
<code>\pages</code>	<ul style="list-style-type: none"> May be used to specify the page (or pages) where the problem was issued.
<code>\day</code> <code>\month</code> <code>\months</code> <code>\year</code>	<ul style="list-style-type: none"> May be used to specify the different parts of the date of publication of the problem. (E.g. for problems issued in the german magazine <i>Die Schwalbe</i> you will typically only specify the <code>\month</code> and the <code>\year</code>. For problems issued in <i>feenschach</i> you may specify a period of months like <code>\months{7-10}</code>.)
<code>\tournament</code> <code>\award</code>	<ul style="list-style-type: none"> May be used to specify an award and a tournament for the problem.
<code>\dedication</code> <code>\dedic</code>	<ul style="list-style-type: none"> May be used to specify a dedication which was given by the author of the problem.
<code>\condition</code> <code>\cond</code>	<ul style="list-style-type: none"> May be used to specify the fairy conditions of a problem. Different conditions should be separated with “;”.
<code>\twins</code>	<ul style="list-style-type: none"> May be used to specify the different twins of a problem. Different twins should be separated with “;”.

- `\remark`
 - May be used to specify remarks to the problem. I typically use this to explain fairy pieces on the board. You may also use the abbreviation `\rem`.
- `\rem`
- `\piecedefs`
 - May be used to explain rotated pieces. An example:
`\piecedefs{{ws}{TL}{Turm-L\"aufer-J\"ager}; {wn}{SU}{Nachtreiter}}`
will create
 = Turm-Läufer-Jäger
 = Nachtreiter
under the diagram.
- `\solution`
 - `\solution` may be used to specify the solution of the problem. Normally this information is not used while displaying the board but it is only collected and may be put into your text using `\putsol`. There is also an abbreviation `\sol`.
- `\sol`
- `\judgement`
 - May be used to describe the judgement given for a problem, e.g. when you are working on an award or when you are selecting problems for a “best of ...” book.
- `\comment`
 - May be used to specify some comment on the problem (e.g. the authors original comment.)
- `\themes`
 - May be used to specify themes displayed in the problem. Different themes should be separated with “, ”. When creating a theme index, the themes will automatically be used to create the register.
- `\genre`
 - May be used to specify genre of the problem. Different genres should be separated with “, ”. The values are intended to using `\LaTeXimport` within the PDB.

When providing an empty argument to commands `\award`, `\after`, `\dedic`, `\correction` and `\version` only a warning is issued to the logfile. In previous versions of `diagram.sty` using empty arguments with the mentioned commands produced empty lines above the diagram.

There are some commands which not only collect information but normally direct result in a change of the diagram. These are:

- `\verticalcylinder`
 - does not display the outer vertical lines to symbolize a verticalcylindric board.
- `\horizontalcylinder`
 - does not display the outer horizontal lines to symbolize a horizontalcylindric board.
- `\noframe`
 - does completely suppress the outer frame e.g. to symbolize a torus board.
- `\noinnerframe`
 - sometimes you need to suppress the inner frame instead of the outer frame which is achieved by using `\noinnerframe`. You may not use this together with `\noframe`.
- `\gridchess`
 - displays lines to separates fieldsections for gridchess.

1.2.2 Modifying the layout of the diagram (and the solution)

There are a couple of switches which control the layout of the diagrams. These are typically used more generally, so you may specify these switches outside the `diagram` environment or use them in your own style, which depends on `cpd.sty`.

There are some switches which control the layout of the information which is displayed above a diagram:

- `\diagleft` • displays the information left aligned
 - `\diagcenter` • displays the information centered
 - `\diagright` • displays the information right aligned
 - `\widedias` • is like `\diagcenter` but the information shown above the diagram may span the whole width of the page. So \LaTeX will not wrap long author names.
- `\dianamestyle` Using `\dianamestyle` (or `\solnamestyle`) you may specify how author names are written above the boards (or before the solutions). You may use this only if you use `\reversednames` (which is the default). Otherwise it is not possible to distinguish between first name and surname. You must specify one of the following options as parameter to `\dianamestyle` (or `\solnamestyle`):
- fullname** Writes the author name as *firstname surname*. This is the default.
 - surname** Writes the *surname* only.
 - short** Writes an abbreviation of the *firstname* and the *surname*. The abbreviation is calculated as follows:
 - The first letter of the *firstname* will be used.
`\author{Brand, Thomas}` will be displayed as **T. Brand**
 - When there is a combined *firstname* separated with a hyphen, each first letter will be used. (see below)
`\author{Reich, Hans-Peter}` will be displayed as **H.-P. Reich**
 - When specifying the author name, you may provide the abbreviation for the first name using the form *surname, firstname/abbreviation*.
`\author{Brand, Thomas/Th.}` will be displayed as **Th. Brand**
 - noname** displays nothing
- `\diagnumbering` The same way you may specify `\pagenumbering` you may specify the format the diagrams are numbered using `\diagnumbering` and `\pagenumbering` you may specify `arabic`, `Roman`, `roman`, `Alph` or `alph`. The default used is `arabic`. This command also switches the display for diagram numbers on.
- `\setmonthstyle` You may also specify the way a month is displayed using `\setmonthstyle`. There are some boolean switches, which control whether a specific information is displayed. These are as follows:
- `piececounter` • This is a \LaTeX boolean, which is used to specify whether the number of pieces is displayed below the board. So you may change its value using `\setboolean{piececounter}{true}` or `\setboolean{piececounter}{false}`.

- `showcomputer`
`\nocomputer`
`\showcomputer`
 - There is a boolean value `computer`, which controls whether the information about a computer proof is displayed or not. This value may be changed using `\setboolean{showcomputer}{true}` or `\setboolean{showcomputer}{false}`. For backwards compatibility we support the macros `\nocomputer` and `\showcomputer`.
- `showcity`
 - This is a boolean switch, which controls whether the information gathered using the `\city` command is displayed. The default of this value is `false`.
- `showacademictitle`
 - This is a boolean switch, which controls whether academic titles `\Dr`, `\Prof` or `\ProfDr` — typically used within the `\author` command — are displayed. The default is `true`.
- `legend`
 - This boolean controls whether a legend is displayed. The default value of this value is `false`. When legends are displayed the distance between inner and outer frame is automatically adjusted.

`\notcomputerproofedsymbol` You may specify the text, which is used to indicate, whether a problem is
`\computerproofedsymbol` proofed by a computer. To specify the symbol for a problem, which is proofed,
is created by `\computerproofedsymbol`. To specify the symbol for a problem,
which is not computer proofed, is created by `\notcomputerproofedsymbol`.
You may redefine these commands by standard L^AT_EX means (`\renewcommand`).

`\selectelchfont` You may specify which font is used for the chesspieces. There are two possible fonts:

pk for the font which was originally used in the german magazine *Problemkiste* ♔♚♛♜♝♞♟♠♡♢♣♤♥♦♧♨♩

fs for the font which was first used (and was created for) the magazine *feenschach* ♔♚♛♜♝♞♟♠♡♢♣♤♥♦♧♨♩

`\diagramx`
`\diagramxi`
`\diagramxii` In analogy to the defaults for font sizes of a document you may specify sizes of the fonts used in a diagram. The default will be set according to the font size specified as the `\documentclass` option.

1.2.3 Other commands

- `\label`
 - This overrides the normal `\label` definition such that the diagram number is displayed when using `\ref` instead of the page number.
- `\diagramnum`
 - This macro expects a number as a parameter. The number will be used to (re-)initialize the diagram number counter. With this command the output of diagram numbers also is switched on. It must be used outside the `diagram` environment. As an optional parameter you may specify something, which will be used as prefix before the automatically updated diagram numbers. E. g. the command `\diagramnum[T-]{4}` will produce the following diagram numbers for the following diagrams: **T-4**, **T-5**, **T-6**, ...

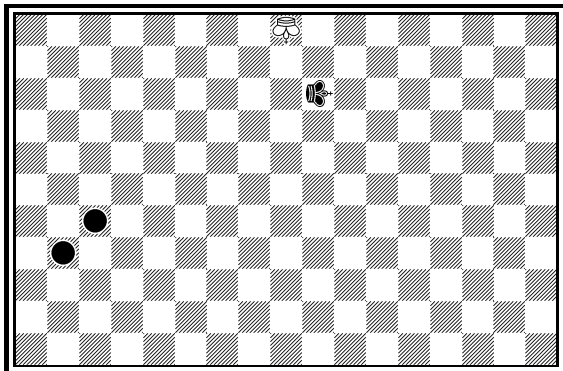
1.3 Special boards

1.3.1 Changing the boardsize

`diagram[]` Instead of using a boardsize of 8×8 some fairy problems need smaller or larger

boards. This can be achieved by specifying the rows and columns as an optional parameter to the `\begin{diagram}` environment. You first have to specify the columns and then the rows as the following examples shows.

3



is created by

```
\begin{diagram}[17x11]
\label{bigdia}
\pieces{wKUi{11}, sKRj9, sCc5b4}
\end{diagram}
```

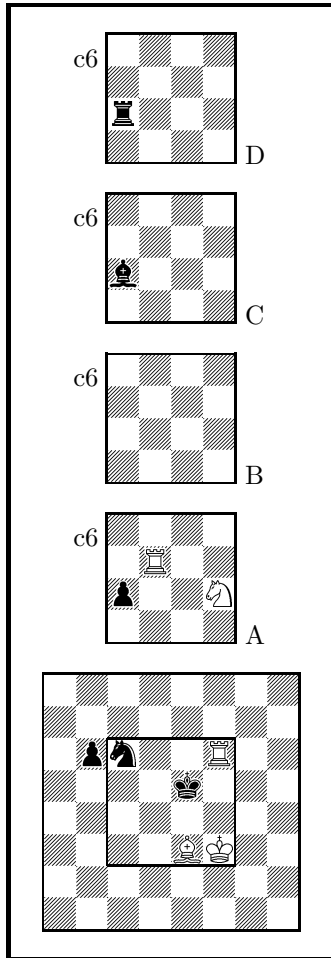
As you can see in the example, pieces are set using the `\pieces` macro. When using boards with more than 8 lines you have to continue with characters **i**, **j**, **k**, ... In a board with more than 9 rows you have to specify the rows in curly braces `{ }` as shown in the example.

1.3.2 Stereo- and Space-Chess-Diagrams

`stereodiagram`
`spacediagram[]`

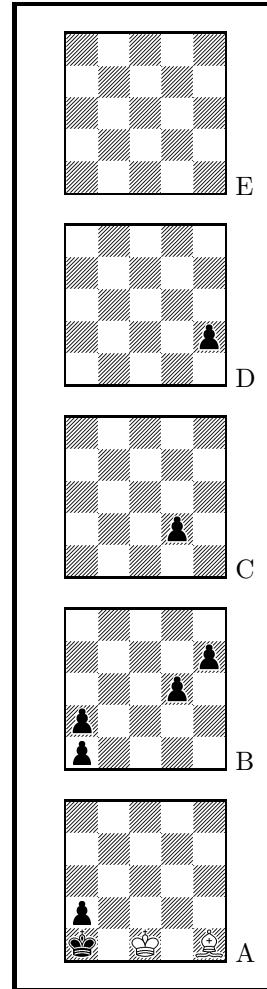
Other boards which are used from time to time are stereo chess or space chess boards (although there are quite few people which really have such boards!). To create these boards you just have to use either the `stereodiagram` or `spacediagram` environment instead of the normal `diagram` environment. Here is an example:

4
 Gerhard W. Jensch
 3104. *feenschach* 1980
 Preis



#9 C- (5+6)

5
 T. R. Dawson
 6595. *Fairy Chess*
 Review 12/1945



#2 C- (2+8)

These diagrams have been produced by the following code:

```

\begin{stereodiagram}
\author{Jensch, Gerhard W.}
\sourcenr{3104.}
\source{feenschach}
\year{1980}
\award{Preis}
\pieces{wKf3, wTf6d5A, wLe3, wSf4A, sKe5, sTc4D, sLc4C, sSc6, sBb6c4A}
\stip{\#9}
\end{stereodiagram}
\hfill
\begin{spacediagram}
\author{Dawson, T. R.}
\sourcenr{6595}.

```

```

\source{Fairy Chess Review}
\month{12}
\year{1945}
\pieces{wKc1A, wLe1A, sKa1A, sBa2Aa1Ba2Bd3Be4Bd2Ce2D}
\stip{\#2}
\end{spacediagram}

```

The main change is within the notation of the pieces, but people knowing space- or stereo-chess problems see that the notation is just one would expect.

`\spacelayout` Sometimes one would like show the different planes of a space diagram from left to right. This may be switched using the `\spacelayout` command, which takes one parameter:

vertical for planes organized bottom up

horizontal for planes organized left to right

Is produced by

6

```

\begin{spacediagram}[4x2x3]
\spacelayout{horizontal}
\end{spacediagram}

```

C- (0+0)

1.3.3 Cylindric boards / suppressing frames

`\horizontalcylinder` To stylize a cylindric board one typically does not show parts of the frame. When using `\verticalcylinder` the horizontal lines of the outer frame will not be drawn. `\horizontalcylinder` suppresses the drawing of the vertical lines of the outer frame. Using `\noframe` completely suppresses the outer frame. `\noinnerframe` suppresses the innerframe. In case of stereo- or space-chess-diagrams `\verticalcylinder`, `\horizontalcylinder` and `\noframe` suppresses the inner frame.

1.4 Change the coloring of the fields

`\allwhite` The `allwhite` boolean can be used to have all white squares. Therefore dotted lines are produced to separate the squares. For convenience we provide a command `allwhite` which switches the value of the `allwhite` boolean to true.

7

C- (8+8)

This was produced by:

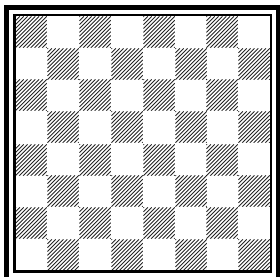
```

\begin{diagram}
\allwhite
\pieces{wKe1, wDd1, wTah1, wLf1c1, wSb1g1, %
sKe8, sDd8, sTa8h8, sLf8c8, sSb8g8}
\end{diagram}

```

`\switchcolors` The boolean `switchcolors` may be used to switch the coloring of white and black fields. For convenience we provide a command `switchcolors` which switches the value of the `switchcolors` boolean to true.

8



C- (0+0)

1.4.1 figurine Notation

`figurine` Instead of using the `diagram`, `stereodiagram` or `spacediagram` environment one may use the `figurine` environment. This suppresses the diagram output and produces a figurine notation inside the current text.

1.4.2 Changes within the board

`\nofields` You may remove single fields by using the `\nofields` or `\nosquares` command.
`\nosquares` Using this command does make sense for empty black fields only. This command expects a list of squares separated by “;”. You may also use this command within a stereo- or space-diagram. In this case you must specify the fields the same way you do it inside the `\pieces` command.

`\fieldframe` You may specify single fields, which should be surrounded by a frame. This is possible using the `\fieldframe` command. You must specify the list of fields which should have frames the same way you specify fields within the `\nofields` command.

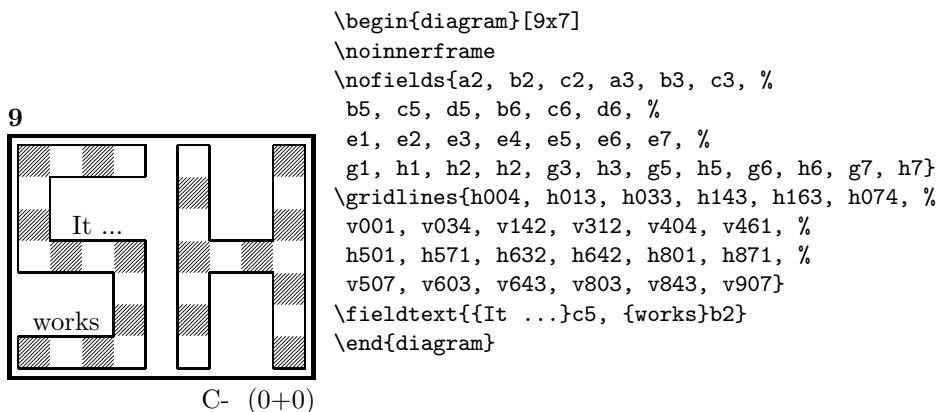
`\gridlines` A more general form of lines within diagrams is possible by using the `\gridlines` command. You may specify a list of horizontal or vertical lines within the diagram. Different lines should be separated by “;”. A single line must be specified as:

[plane](v or h)(x-coordinate)(y-coordinate)(length in squares)

You must specify a plane in case of stereo- or space-chess only. For a vertical line starting at the lower left corner of “c2” ending at the upper left corner of “c8” the command to use is: `\gridlines{v217}`. Concerning the coordinates and length specifications you should pay attention to put values greater 9 in curly braces { }.

`\fieldtext` Sometimes you need to show text on some squares. This is done using the `\fieldtext` command. The syntax for a single text is: `{Text}(x-coordinate)(y-coordinate)`

Now an example how to use `\gridlines`, `\nofields` and `\fieldtext` to create some “*Letter-Board*” with text inside.



1.5 Misc

1.5.1 Chess pieces within normal text

Sometimes you may need symbols of chess pieces within your normal text, e. g. to show the *Viele-Väter-Stellung* ♔c8, ♙b6, ♘a8, ♚a7. This is possible by `{\wK}c8`, `{\wB}b6`, `{\sK}a8`, `{\sB}a7`. Additionally you may use some of these symbols:

- `\swL` ♗ a white bishop on a black square
- `\ssL` ♝ a black bishop on a black square
- `\wNr` ♞ a white nightrider
- `\nNr` ♞ a neutral nightrider
- `\sNr` ♞ a black nightrider
- `\wGh` ♟ a white grashopper
- `\nGh` ♟ a neutral grashopper
- `\sGh` ♟ a black grashopper
- `\Imi` ● an imitator, you may also use the **Circle** notation:
- `\wC` ○ a white circle
- `\nC` ◐ a neutral circle
- `\sC` ● a black circle
- `\wE` ♞ a white equihopper
- `\sE` ♞ a black equihopper
- `\nE` ♞ a neutral equihopper
- `\wX` ♞ a white rotated equihopper
- `\sX` ♞ a black rotated equihopper
- `\nX` ♞ a neutral rotated equihopper

1.5.2 Other often used symbols

The style also defines commands for other symbols, which are often used within the declaration of twins or when writing a solution:

<code>\set</code>	<code>*</code> setplay
<code>\ra</code>	\rightarrow a left to right arrow
<code>\lra</code>	\leftrightarrow a double ended arrow
<code>\00</code>	0-0 king side castling
<code>\000</code>	0-0-0 queen side castling
<code>\x</code>	\times for “takes”
<code>\any</code>	\sim for an arbitrary move (you must not simply use a \sim within your text because T _E X handles this as a protected space)
<code>arrowskip</code>	It is possible, to define a prefix and/or a suffix to use before and after arrows - typically a common separating space. Per default there is no such space. You may use the <code>arrowskip</code> environment have a common prefix and suffix before and after arrows: <pre>\begin{arrowskip}{a\,}{\,b} ... \end{arrowskip}</pre>


... will prefix arrows produced with `\ra` or `\lra` with `a\`, and suffix with `\,b`.

1.5.3 Internationalization

`\DefinePieces` This part is relevant for people who do not like the german notation for pieces and therefore want to change this within their sources. Using the german notation, you specify the color of a piece as **w**, **s** or **n**, the type of a piece as **K**, **D**, **T**, **L**, **S**, **B** and a possible rotation of a piece as **L**, **R** or **U**. To use another notation you may use the `\DefinePieces` command which takes 3 parameters.

1. the letters used to specify the colors of the pieces using the order white, black, neutral
2. the letters used to specify the type of a piece using the order king, queen, rook, bishop, knight, pawn. You may not use the characters **C**, **E** and **X**, because these are used for Circle, Equihopper and rotated Equihopper.
3. the letters used to specify an optional rotation using the order left-turned, right-turned, upside-down. You must use capital letters for this.

When using a `\DefinePieces` command, the commands are changed to its next usage (or to the end of the document). The command not only changes the pieces you may use within the `\pieces` command but also defines commands to be used within normal text, as the following example shows:

```
\DefinePieces{wbn}{KQREBNP}{LRU}  
\wDU\bKR\bwB  
creates 
```

1.5.4 When writing books

`\develop` To simplify your writings you may use the macro `\develop`. This will create the following additional information during development:

- when you use `\label` in your diagrams the label will be shown at the left upper corner of the diagram.
- The given label will also be shown inside the solution and also in any register entry.
- when you have specified a `\judgement` this information will be put into the solution.

Most books on chessproblems contain registers for authors, sometimes also on themes and sources. As you already collect all these information very detailed within the `diagram` environment the generation of registers is very simple.

`\makeaindex` To create a registers of authors you need to put the `\makeaindex` command
`\authorindex` inside the preamble of your document. This instructs latex to write an intermediate file containing information about authors and the numbers of the diagrams.¹ After a first L^AT_EX run on your document, you need to convert the intermediate file. This may be done with the `makeindex` program, which will typically called like

```
makeindex -o <filename>.and <filename>.adx
```

The resulting register may be put into your document using the `\authorindex` command.

`\makesindex` Like an index for authors you may also create indices for sources and/or
`\sourceindex` themes. For an source register you need to put `\makesindex` into your document
`\maketindex` preamble; for a theme register the command is `\maketindex`. The conversion
`\themeindex` commands for the intermediate files are

```
makeindex -o <filename>.snd <filename>.sdx
```

for the source register and

```
makeindex -o <filename>.tnd <filename>.tdx
```

for the theme register.

The source register is inserted into the text using `\sourceindex` and the theme register using `\themeindex`.

1.5.5 Other useful stuff

`\solpar` In some environments — like `window` — the use of `\par` leads to unwanted effects. Therefore we use the command `\solpar` inside the definition of `\@dia@solution`, which is used to display a single solution when using `\putsol`. You may use `\renewcommand{\solpar}` to provide another definition of `\solpar` in such situations.

`\insidediagram` The problem information collected by some commands may be used in different places (author names will be shown above the diagram and at the beginning of solutions when output using `\putsol`). Therefore we need some special handling of e.g. footnotes, to avoid creating the footnotemarks multiple times. Such

¹Normally registers contain page numbers but with chess problems normally people refer to the diagram numbers.

commands should be used within `\insidediagram` as shown by the following example:

```
\begin{diagram}
\author{Else\insidediagram{\footnotemark}, Someone}
\end{diagram}
```

2 The documentation driver

The following code will generate the documentation. Since it is the first piece of code in the file, the documentation can be obtained by simply processing the file with $\text{\LaTeX} 2_{\epsilon}$.

```
1 <*driver>
2 \documentclass[a4paper]{article}
3 \usepackage{doc}
4 \usepackage{diagram}
5 \EnableCrossrefs
6 \CodelineIndex
7 \RecordChanges
8 \begin{document}
9 \DocInput{diagram.dtx}
10 \end{document}
11 </driver>
```

3 The implementation of the style

Specifies the preamble of our style file.

```
12 <*style>
13 \ProvidesPackage{diagram}[2025/02/21-tikz]
```

`\DefaultDiagramSize` The `\DefaultDiagramSize` may be used in code to switch to the default diagram size. As this depends on the documents default font size we use the same option and execute `10pt` as default.

```
14 \newcommand*\DefaultDiagramSize{}
15 \DeclareOption{10pt}{\renewcommand*\DefaultDiagramSize{\diagramx}}
16 \DeclareOption{11pt}{\renewcommand*\DefaultDiagramSize{\diagramxi}}
17 \DeclareOption{12pt}{\renewcommand*\DefaultDiagramSize{\diagramxii}}
18 \ExecuteOptions{10pt}

19 \ProcessOptions
20 \AtBeginDocument{\DefaultDiagramSize}

21 \RequirePackage{ifthen}
22 \RequirePackage{calc}
23 \RequirePackage{tikz}
24 \RequirePackage{xstring}
```

Now we declare some constants to unify its usage within the style file.

```
25 \chardef\four=4
26 \chardef\eight=8
27 \newcount\elchfont
```



```

28
29 \chardef\@pkelch=0
30 \chardef\@fselch=1
31
32 \newcount\dia@type
33
34 \newboolean{@textproblem}
35 \setboolean{@textproblem}{false}
36 \def\textproblem{\setboolean{@textproblem}{true}}\let\@dia@stipulation=\relax}
37
38 \newboolean{@solafterdiagram}
39 \setboolean{@solafterdiagram}{false}
40 \def\solafterdiagram{\setboolean{@solafterdiagram}{true}}\ignorespaces}
41
42 \newif\if@vframe\@vframetrue
43 \newif\if@hframe\@hframetrue
44 \newif\if@leaveOuter\@leaveOutertrue
45
46 \newif\if@shortform
47
48 \newif\ifspace@vertical
49 \def\spacehorizontal{\space@verticalfalse}
50
51 % \newif\ifdi@no
52 \newboolean{cpd@numbering@global}
53 \newboolean{cpd@numbering@local}
54 \newcounter{board@nr}
55 \renewcommand{\theboard@nr}{\thediag}
56 % \newif\iffgcnt
57 \newboolean{piececounter}
58
59 \newcounter{cpd@piece@index}
60
61 \newboolean{showcity}
62 \setboolean{showcity}{false}
63 \newboolean{showacademictitle}
64 \setboolean{showacademictitle}{true}
65 \newboolean{legend}
66 \setboolean{legend}{false}
67
68 \newcount\@blackfield
69 \newboolean{allwhite}
70 \setboolean{allwhite}{false}
71 \newcommand{\allwhite}{\setboolean{allwhite}{true}}
72 \newcounter{field@border}
73 \newcount\@whitefield
74 \newboolean{switchcolors}
75 \setboolean{switchcolors}{false}
76 \newcommand{\switchcolors}{\setboolean{switchcolors}{true}}

```

We have counters for each color to count the pieces on the board.

```

77 \newboolean{cpd@checkPieceCounts}
78 \newcounter{cpd@defWhitePieces}
79 \newcounter{cpd@defBlackPieces}
80 \newcounter{cpd@defNeutralPieces}

```

```

81
82 \newcounter{cpd@whitePieces}
83 \newcounter{cpd@blackPieces}
84 \newcounter{cpd@neutralPieces}
85
86 \newcommand{\cpd@stepcounterWhite}{\stepcounter{cpd@whitePieces}}
87 \newcommand{\cpd@stepcounterBlack}{\stepcounter{cpd@blackPieces}}
88 \newcommand{\cpd@stepcounterNeutral}{\stepcounter{cpd@neutralPieces}}
89 \global\let\cpd@stepcounterPieces\relax
90
91 \newcount\help@a
92
93 \newbox\dia@box
94 \newbox\@cnt@box
95 \newdimen\@cnt@wd
96 \newbox\@stip@box
97
98 \newdimen\topdist\topdist\z@
99 \newbox\@test@box
100 \newdimen\@test@dimen
101 \newif\if@left
102
103 \newdimen\dia@lineskip
104
105 \newdimen\board@width
106 \newdimen\bd@width
107 \newdimen\head@width
108 \newdimen\sq@width
109
110 \newdimen\grid@width
111 \newdimen\inner@frame
112 \newdimen\outer@frame
113 \newdimen\space@frame
114 \newdimen\v@frame@dist
115 \newdimen\h@frame@dist
116 \newdimen\space@frame@dist
117 \newdimen\v@space@dist
118 \newdimen\h@space@dist
119
120 \newbox\sq@box
121 \newbox\plane@box

```

We need a lot of token registers to register the information from within the `diagram` environment. These token registers are defined here. Initially each token register is defined to contain `\relax`, which serves as an *end-marker* when parsing lists.

```

122 \newtoks\typis@tk\typis@tk={\relax}
123 \newtoks\label@tk\label@tk={\relax}
124 \newtoks\sol@tk\sol@tk={\relax}
125 \newtoks\number@tk\number@tk={\relax}
126 \newtoks\aut@tk\aut@tk={\relax}
127 \newtoks\city@tk\city@tk={\relax}
128 \newtoks\sourcenr@tk\sourcenr@tk={\relax}
129 \newtoks\source@tk\source@tk={\relax}

```

```

130 \newtoks\day@tk\day@tk={\relax}
131 \newcount\from@month\from@month=\z@
132 \newcount\to@month\to@month=\z@
133 \newtoks\year@tk\year@tk={\relax}
134 \newtoks\issue@tk\issue@tk={\relax}
135 \newtoks\pages@tk\pages@tk={\relax}
136 \newtoks\tournament@tk\tournament@tk={\relax}
137 \newtoks\award@tk\award@tk={\relax}
138 \newtoks\after@tk\after@tk={\relax}
139 \newtoks\version@tk\version@tk={\relax}
140 \newtoks\correction@tk\correction@tk={\relax}
141 \newtoks\dedic@tk\dedic@tk={\relax}
142 \newtoks\fidealalbum@tk\fidealalbum@tk={\relax}
143 \newtoks\theme@tk\theme@tk={\relax}
144 \newtoks\twins@tk\twins@tk={\relax}
145 \newtoks\judgement@tk\judgement@tk={\relax}
146 \newtoks\comment@tk\comment@tk={\relax}
147 \newtoks\computer@tk\computer@tk={-}
148 \newtoks\nofields@tk\nofields@tk={\relax}
149 \newtoks\fieldframe@tk\fieldframe@tk={\relax}
150 \newtoks\gridlines@tk\gridlines@tk={\relax}
151 \newtoks\pieces@tk\pieces@tk={\relax}
152 \newtoks\fen@tk\fen@tk={\relax}
153 \newtoks\fieldtext@tk\fieldtext@tk={\relax}
154 \newtoks\text@tk\text@tk={\relax}
155 \newtoks\stipulation@tk\stipulation@tk={\relax}
156 \newtoks\condition@tk\condition@tk={\relax}
157 \newtoks\remark@tk\remark@tk={\relax}
158 \newtoks\piecedefs@tk\piecedefs@tk={\relax}
159 \newtoks\@cpd@emptytest

```

To remember, which information has been specified, we define T_EX-boolean
for each command.

```

160 \newif\if@label\@labelfalse
161 \newif\if@number\@numberfalse
162 \newif\if@special\@specialfalse
163 \newif\if@auth@r\auth@rfalse
164 \newif\if@city\@cityfalse
165 \newif\if@sourcenr\@sourcenrfalse
166 \newif\if@source\@sourcefalse
167 \newif\if@date\@datefalse
168 \newif\if@day\@dayfalse
169 \newif\if@year\@yearfalse
170 \newif\if@issue\@issuefalse
171 \newif\if@pages\@pagesfalse
172 \newif\if@tournament\@tournamentfalse
173 \newif\if@award\@awardfalse
174 \newif\if@after\@afterfalse
175 \newif\if@version\@versionfalse
176 \newif\if@correction\@correctionfalse
177 \newif\if@dedication\@dedicationfalse
178 \newif\if@fidealalbum\@fidealalbumfalse
179 \newif\if@twins\@twinsfalse
180 \newif\if@theme\@themefalse

```

```

181 \newif\if@computer\@computerfalse
182 \newif\if@judgement\@judgementfalse
183 \newif\if@comment\@commentfalse
184 \newif\if@pieces\@piecesfalse
185 \newboolean{cpd@fen}\setboolean{cpd@fen}{false}%
186 \newif\if@fieldtext\@fieldtextfalse
187 \newif\if@nofields\@nofieldsfalse
188 \newif\if@gridlines\@gridlinesfalse
189 \newif\if@fieldframe\@fieldframefalse
190 \newif\if@stdgrid\@stdgridfalse
191 \newboolean{showcomputer}\setboolean{showcomputer}{true}%
192 \newcommand*{\computerproofedsymbol}{C+}
193 \newcommand*{\notcomputerproofedsymbol}{C-}
194 % \newif\if@show@computer\@show@computertrue
195 \newif\if@stipulation\@stipulationfalse
196 \newif\if@condition\@conditionfalse
197 \newif\if@remark\@remarkfalse
198 \newif\if@piecedefs\@piecedefsfalse
199 \newif\if@typis\@typisfalse
200 \newif\if@widedias\@widediasfalse
201 \newif\ifx@twins\x@twinsfalse
202 \newif\ifx@cond\x@condfalse
203 \newif\ifimitator\imitatorfalse
204 \newif\ifnormal@names\normal@namesfalse
205 \newif\ifs@lu
206 \newif\if@develop\@developfalse
207 \newif\if@notfirst
208 \newif\if@first

209 \newwrite\s@lfd
210 \let\below@newline=\relax
211 % These are used by the ‘old’ board creating mechanism

```

The following counters are used when creating the diagram itself.

```

212 \newcounter{cpd@planes}
213 \newcounter{cpd@rows}
214 \newcounter{cpd@lines}
215 \newcounter{cpd@plane}
216 \newcounter{cpd@current@plane}
217 \newcounter{cpd@current@plane@display}
218 \newcounter{cpd@row}
219 \newcounter{cpd@line}
220 \newcounter{cpd@row@display}
221 \newcounter{cpd@line@display}
222 \newcounter{cpd@maxsquare}
223 \newcounter{cpd@helper}
224 \newcounter{cpd@current@square@index}
225 \newcounter{cpd@current@square@value}

```

Some boolean \TeX -switches used within stereo- or spacechess diagrams.

```

226 \newif\if@stereo\@stereofalse
227 \newif\if@space\@spacefalse

```

These boolean switches are used to control the output of registers.

```

228 \newif\if@aindex\@aindexfalse
229 \newif\if@sindex\@sindexfalse

```

```

230 \newif\if@tindex\@tindexfalse
231 \newif\ifds@label

```

`\cpd@begindiagram@hook` We define hooks to be executed in `\begin{diagram}` and `\end{diagram}`.

```

\cpd@enddiagram@hook 232 \newcommand{\cpd@begindiagram@hook}{}
233 \newcommand{\cpd@enddiagram@hook}{}

```

`\diagram` Defines the code executed in `\begin{diagram}`. In case no optional size is given, `\@diagram` a normal 8×8 board is generated.

```

234 \def\diagram{%
235   \begingroup%
236   \@ifnextchar [{\@diagram}{\@diagram[\@ight x\@ight]}%
237 }
238
239 \def\@cpd@initsize#1#2{%
240   \setcounter{cpd@lines}{#1}%
241   \setcounter{cpd@rows}{#2}%
242   \setcounter{cpd@maxsquare}{\value{cpd@rows}*\value{cpd@lines}}%
243 }
244
245 \def\@diagram[#1x#2]{%
246   \@cpd@initsize{#1}{#2}%
247   \setcounter{cpd@plane}{0}%
248   \setcounter{cpd@current@plane}{0}%
249   \let\put@sqs=\put@sqs@normal%
250   \let\read@plane=\read@plane@normal%
251   \@start@diagram%
252 }
253 \def\stereodiagram{%
254   \begingroup%
255   \inner@frame=0.6pt%
256   \@stereotrue%
257   \@cpd@initsize{8}{8}%
258   \let\put@sqs=\put@sqs@stereoc%
259   \let\read@plane=\read@plane@stereo%
260   \@start@diagram%
261 }
262 \def\spacediagram{%
263   \begingroup%
264   \inner@frame=0.6pt%
265   \@spacetrue%
266   \@ifnextchar [{\@spacediagram}{\@spacediagram[5x5x5]}%
267 }
268
269 \def\@spacediagram[#1x#2x#3]{%
270   \setcounter{cpd@planes}{#3}%
271   \@cpd@initsize{#1}{#2}%
272   \let\put@sqs=\put@sqs@space%
273   \let\read@plane=\read@plane@space%
274   \@start@diagram%
275 }
276 \def\@start@diagram{%
277   \init@vars%

```

```

278 \let\author=\ds@author%
279 \let\day=\ds@day%
280 \let\month=\ds@month%
281 \let\year=\ds@year%
282 \let\label=\ds@label%
283 \cpd@begindiagram@hook%
284 \ignorespaces%
285 }
286
287 \def\showtypis#1{%
288 \@typistrue%
289 \typis@tk={#1}%
290 \ignorespaces%
291 }
292
293
294 \newboolean{@cpd@inside@diagram}
295 \setboolean{@cpd@inside@diagram}{false}
296 \newcommand{\insidediagram}[1]{%
297 \ifthenelse{\boolean{@cpd@inside@diagram}}{#1}{}%
298 }
299 \def\enddiagram{%
300 \let\author=\orig@author%
301 \let\day=\orig@day%
302 \let\month=\orig@month%
303 \let\year=\orig@year%
304 \let\label=\orig@label%
305 \if@number%
306 \else%
307 \refstepcounter{board@nr}% so \label and \ref work properly
308 \fi%
309 %
310 % Now \label@tk should be set, if wanted, so
311 % we can generate the index entries
312 %
313 \@aindex%
314 \@sindex%
315 \@tindex%
316 %
317 % Now \@currentlabel will be set right, so we can use
318 % the original label
319 \if@label%
320 \expandafter\set@label\the\label@tk;%
321 \fi%
322 %
323 % Now we know, if we have frames so we can setup our dimensions
324 %
325 \global\squarewidth=\fontdimen\tw@\chessfont%
326 \if@stereo%
327 \bd@width=\@ight\squarewidth%
328 \board@width=\@ight\squarewidth%
329 \ifdim\h@frame@dist<\squarewidth%
330 \h@frame@dist=\squarewidth%
331 \fi%

```

```

332 % We do already skip with \v@space@dist
333 % So we use the additional skip \space@frame@dist here
334 \v@frame@dist=\space@frame@dist%
335 \ifdim\space@frame>\outer@frame%
336 \outer@frame=\space@frame%
337 \fi%
338 \advance\bd@width\tw@\inner@frame%
339 \advance\board@width\tw@\inner@frame%
340 \advance\board@width\tw@\h@frame@dist%
341 \advance\board@width\tw@\outer@frame%
342 \else\if@space%
343 \ifdim\h@frame@dist<1.5\sq@width%
344 \h@frame@dist=1.5\sq@width%
345 \fi%
346 % We do already skip with \v@space@dist
347 % So we use the additional skip \space@frame@dist here
348 \v@frame@dist=\space@frame@dist%
349 \ifdim\space@frame>\outer@frame%
350 \outer@frame=\space@frame%
351 \fi%
352 \ifspace@vertical%
353 \bd@width=\value{cpd@lines}\sq@width%
354 \board@width\bd@width%
355 \advance\bd@width\tw@\inner@frame%
356 \advance\board@width\tw@\inner@frame%
357 \advance\board@width\tw@\h@frame@dist%
358 \advance\board@width\tw@\outer@frame%
359 \else%
360 \bd@width=\value{cpd@lines}\sq@width%
361 \advance\bd@width\tw@\inner@frame%
362 \ifdim\h@space@dist<1.5\sq@width%
363 \h@space@dist=1.5\sq@width%
364 \fi%
365 %\h@space@dist=0.7\sq@width%
366 % Now we can compute the width of the complete board
367 \board@width\bd@width%
368 \advance\board@width\h@space@dist%
369 \multiply\board@width\value{cpd@planes}%
370 \advance\board@width\h@space@dist%
371 \advance\board@width\tw@\outer@frame%
372 \fi%
373 \else%
374 \ifthenelse{\boolean{legend}}{\v@frame@dist=1.5em\h@frame@dist=1.5em}{}%
375 \bd@width=\value{cpd@lines}\sq@width%
376 \ifthenelse{\value{cpd@lines} > 8}{%
377 % Make the board wider
378 \board@width=\value{cpd@lines}\sq@width%
379 }{%
380 % Make a normal width
381 \board@width=\@ight\sq@width%
382 }%
383 \advance\bd@width\tw@\inner@frame%
384 \advance\board@width\tw@\inner@frame%
385 \advance\board@width\tw@\h@frame@dist%

```

```

386     \advance\board@width\tw@\outer@frame%
387     \fi\fi%
388     \if@widedias%
389         \head@width=\textwidth%
390     \else%
391         \head@width=\board@width%
392     \fi%
393     %
394     % Now we should build the diagram itself
395     %
396     \ifthenelse{\boolean{@textproblem}}{%
397         % Put the stipulation into the \sq@box
398         \setbox\sq@box=\hbox{\vbox to \board@width{\hsize\board@width%
399             \stipfont%
400             \raggedright%
401             \sloppy%
402             \the\stipulation@tk%
403             \vfil%
404         }}%
405     }{%
406         \put@sq% This builds up the \sq@box
407         % Check, if the given number of pieces is reached
408         \ifthenelse{\boolean{cpd@checkPieceCounts}}{%
409             \ifthenelse{\value{cpd@defWhitePieces}=\value{cpd@whitePieces}}{%
410                 {\errmessage{Wrong number of white pieces}}%
411             \ifthenelse{\value{cpd@defBlackPieces}=\value{cpd@blackPieces}}{%
412                 {\errmessage{Wrong number of black pieces}}%
413             \ifthenelse{\value{cpd@defNeutralPieces}=\value{cpd@neutralPieces}}{%
414                 {\errmessage{Wrong number of neutral pieces}}%
415             }{}%
416         }%
417         %
418         \global\setbox\dia@box=\hbox{\vbox{%
419             \setboolean{@cpd@inside@diagram}{true}%
420             \parindent\z@%
421             \parskip\z@%
422             \baselineskip11p@\advance\baselineskip\dia@lineskip%
423             \hsize\head@width%
424             \centering%
425             % diagram header
426             \vskip\topdist%
427             \vbox{\hsize\board@width\hbox{%
428                 \if@develop\if@label%
429                     \noindent\raggedright\llap{\labelfont\the\label@tk\ }%
430                 \fi\fi%
431                 \vbox{%
432                     \he@dpos\dia@above%
433                 }%
434             }}%
435             \vskip\tw@p@%
436             % diagram itself
437             \vtop{\hsize\board@width%
438                 \hbox to \head@width{\hss\vbox{%
439                     \hsize\board@width%

```



```

440         \ifthenelse{\boolean{@textproblem}}{%
441             \box\square@box%
442         }{%
443             \outer@hbox{\box\square@box}%
444         }%
445     }\hss}%
446     % diagram trailer
447     \hbox to \head@width{\hss\vtop{%
448         \hsize\board@width%
449         \parskip\z@%
450         \raggedright%
451         \put@count%
452         \dia@below%
453     }}\hss}%
454     }%
455     \setboolean{@cpd@inside@diagram}{false}%
456 }}% End of \dia@box
457 \do@dia@job%
458 \cpd@enddiagram@hook%
459 \endgroup%
460 }
461
462 \def\do@put@count{%
463     \ \ (\arabic{cpd@whitePieces}+\arabic{cpd@blackPieces}%
464     \ifthenelse{\value{cpd@neutralPieces}>0}{+\arabic{cpd@neutralPieces}}{ })%
465 }
466
467 \def\put@count{%
468     % First we build the box with the figure count
469     \ifthenelse{\boolean{showcomputer}\OR\boolean{piececounter}}{%
470         \global\setbox\@cnt@box=\hbox{%
471             \stipfont%
472             \ifthenelse{\boolean{showcomputer}}{%
473                 \ \ \if@computer\computerproofedsymbol\else\notcomputerproofedsymbol\fi%
474             }{%
475                 \ifthenelse{\boolean{piececounter}}{%
476                     \do@put@count%
477                 }{%
478                 }%
479                 \@cnt@wd=\wd\@cnt@box%
480                 \hangindent-\@cnt@wd%
481                 \hangafter\m@ne%
482                 \noindent%
483                 \hbox to \z@{%
484                     \hbox to \board@width{\hfil\unhbox\@cnt@box}\hskip -\board@width%
485                 }%
486             }{%
487             }
488
489 \let\endstereodiagram=\enddiagram
490 \let\endspacediagram=\enddiagram
491 \def\figurine{%
492     \begingroup%
493     \init@vars%

```

```

494 \let\author=\ds@author%
495 \let\day=\ds@day%
496 \let\month=\ds@month%
497 \let\year=\ds@year%
498 \let\label=\ds@label%
499 \cpd@begindiagram@hook%
500 }
501
502 \def\endfigurine{%
503 \let\author=\orig@author%
504 \let\day=\orig@day%
505 \let\month=\orig@month%
506 \let\year=\orig@year%
507 \let\label=\orig@label%
508 \if@number%
509 \else%
510 \refstepcounter{board@nr}% so \label and \ref work properly
511 \fi%
512 %
513 % Now \label@tk should be set, if wanted, so
514 % we can generate the index entries
515 %
516 \@aindex%
517 \@sindex%
518 \@tindex%
519 %
520 % Now \@currentlabel will be set right, so we can use
521 % the original label
522 %
523 \if@label%
524 \expandafter\set@label\the\label@tk;%
525 \fi%
526 %
527 \@show@figurine%
528 \cpd@enddiagram@hook%
529 \endgroup%
530 }
531 %
532 \gdef\selectelchfont#1{%
533 \global\elchfont\csname @#1elch\endcsname\defaultelchfont%
534 }

```

Here we define commands to change fonts used for text above and below the diagram. You may redefine to adjust the fonts to your needs.

```

\authorfont
\cityfont 535 \newcommand*{\authorfont}{\bfseries}
\sourcefont 536 \newcommand*{\cityfont}{\slshape}
\awardfont 537 \newcommand*{\sourcefont}{\bfseries\itshape}
\dedicfont 538 \newcommand*{\awardfont}{\itshape}
\stipfont 539 \newcommand*{\dedicfont}{\itshape}
\remfont 540 \newcommand*{\stipfont}{\rmfamily}
\labelfont 541 \newcommand*{\remfont}{\rmfamily}
\cpd@boardfont 542 \newcommand*{\labelfont}{\rmfamily}
\legendfont 543 \newcommand*{\cpd@boardfont}{\rmfamily}

```

544 `\newcommand*{\legendfont}{\sffamily}`

We have three different default sizes for diagrams. The following commands switch font sizes used for the chess fonts to typeset the diagrams.

```

\diagramx
\diagramxi 545 \newcounter{cpd@chessfontsize}
\diagramxii 546 \newcommand*{\diagramx}{
547   \ifcase\elchfont\relax%
548     \font\chessfont=pkelch12
549     \font\chtextfont=pkelch10
550   \else%
551     \font\chessfont=fselch12
552     \font\chtextfont=fselch10
553   \fi%
554   \dia@lineskip\z@
555   \dia@type\z@
556   \setcounter{cpd@chessfontsize}{12}%
557 }
558
559 \newcommand*{\diagramxi}{
560   \ifcase\elchfont\relax%
561     \font\chessfont=pkelch14
562     \font\chtextfont=pkelch11
563   \else%
564     \font\chessfont=fselch14
565     \font\chtextfont=fselch11
566   \fi%
567   \dia@lineskip\@ne\p@
568   \dia@type\@ne
569   \setcounter{cpd@chessfontsize}{14}%
570 }
571
572 \newcommand*{\diagramxii}{
573   \ifcase\elchfont\relax%
574     \font\chessfont=pkelch16
575     \font\chtextfont=pkelch12
576   \else%
577     \font\chessfont=fselch16
578     \font\chtextfont=fselch12
579   \fi%
580   \dia@lineskip\tw@\p@
581   \dia@type\tw@
582   \setcounter{cpd@chessfontsize}{16}%
583 }

```

`\defaultelchfont` `\defaultelchfont` is used to define the font size used to typeset the diagrams depending on the document size.

```

584 \def\defaultelchfont{%
585   \ifcase\@ptsize\relax%
586     \diagramx\or%
587     \diagramxi\or%
588     \diagramxii%
589   \fi%
590 }

```

```

591 \def\dianamestyle#1{\def@dianame{\csname @#1\endcsname}}
592 \def\solnamestyle#1{\def@solname{\csname @#1\endcsname}}
593 \newcommand*\diagnum}[2] [] {%
594   \renewcommand*\@dianumber@prefix}{#1}%
595   \setcounter{board@nr}{#2}%
596   \addtocounter{board@nr}{\m@ne}}

```

Now we define a couple of abbreviations and special symbols often used when setting problem chess documents.

```

\ra Arrows and specification of space (or something different) before and after ar-
\lra rows.
\rla 597 \newcommand{\@cpd@pre@arrow}{\}
arrowskip 598 \newcommand{\@cpd@post@arrow}{\}
599 \newcommand{\ra}{\@cpd@pre@arrow\mbox{\$}\rightarrow$}\@cpd@post@arrow}
600 \newcommand{\lra}{\@cpd@pre@arrow\mbox{\$}\leftrightarrows$}\@cpd@post@arrow}
601 \let\rla=\lra
602 \newcommand*\@cpd@prepost@arrow}[2] {%
603   \renewcommand*\@cpd@pre@arrow}{#1}
604   \renewcommand*\@cpd@post@arrow}{#2}
605 }
606 \newenvironment{arrowskip}{\%
607   \@cpd@prepost@arrow%
608 }{\%
609 }

\x
\set 610 \newcommand{\x}{\mbox{\ifmmode\times\else$\times$\fi}}
\OO 611 \def\set{\kern -.05em\raise .1ex\hbox{*}}
\OOO 612 \def\OO{\raise.25ex\hbox{-}\kern -.1em\relax}
\any 613 \def\OO{\@OO}
\further 614 \def\OOO{\@OO\@OO}
615 \def\any{\ifmmode\sim\else$\sim$\fi}
616 \def\further{\ifmmode\rightarrow\else$\rightarrow$\fi \ignorespaces}

617 \def\spacelayout#1{\csname space@#1\endcsname}
618 \def\nodiagnumbering{%
619   % \global\di@nofalse
620   \setboolean{@cpd@numbering@global}{false}
621 }
622 \newcommand*\@dianumber@prefix}{\}
623 \def\diagnumbering#1{%
624   \setboolean{@cpd@numbering@global}{true}%
625   % \global\di@notrue%
626   \diagnum{\@ne}%
627   \gdef\thediag{\@dianumber@prefix\csname @#1\endcsname\c@board@nr}%
628 }

\diagcenter The macros \diagcenter, \diagleft and \diagright simply define the macro
\diagleft \he@dpos to the corresponding paragraph alignment.
\diagright 629 \def\diagcenter{\def\he@dpos{\centering}}
630 \def\diagleft{\def\he@dpos{\raggedright}}
631 \def\diagright{\def\he@dpos{\raggedleft}}

```

`\setmonthstyle` The implementation of `\setmonthstyle` does `\diagnumbering` define a command which uses the given parameter as a part of the command name.

```
632 \def\setmonthstyle#1{\def\write@month{\csname @#1\endcsname}}

633 \def\specialdiagnum#1{%
634   \ifthenelse{\equal{#1}}{%
635     % We disable displaying the diagram number
636     \setboolean{@cpd@numbering@local}{false}%
637   }{%
638     \setboolean{@cpd@numbering@local}{true}%
639     \@specialtrue%
640   }
641   \number@tk={#1}\@numbertrue%
642   \def\thediag{#1}\def\@currentlabel{#1}%
643   \ignorespaces%
644 }
```

`\ds@label` The macros `\ds@label` and `\ds@author` are defined internally and are made public within `\begin{diagram}`. This is because the macros `\label` and `\author` are normal L^AT_EX-macros and I want to avoid to redefine these globally.

```
645 \def\ds@label{%
646   \@ifstar{\ds@labelfalse\ds@xlabel}{\ds@labeltrue\ds@xlabel}%
647 }
648 \def\ds@author#1{%
649   \aut@tk={#1}\auth@rtrue%
650   \ignorespaces%
651 }
```

`\ds@academictitle`

```
\Dr 652 \def\ds@academictitle#1{\ifthenelse{\boolean{showacademictitle}}{#1~}{\ignorespaces}
\Prof 653 \newcommand{\Dr}{\ds@academictitle{Dr.}}
\ProfDr 654 \newcommand{\Prof}{\ds@academictitle{Prof.}}
655 \newcommand{\ProfDr}{\ds@academictitle{Prof. \,Dr.}}

656 \def\@cpd@warnIfEmpty#1#2{%
657   \begingroup%
658     \@cpd@emptytest={#1}%
659     \edef\@cpd@param{\the\@cpd@emptytest}%
660     \expandafter\endgroup%
661     \ifx\@cpd@param@empty\relax%
662       \message{^^JWARNING: empty '#2' argument.^^J}%
663     \fi
664 }
665 \def\city#1{%
666   \city@tk={#1}\@citytrue%
667   \ignorespaces%
668 }
669 \def\sourcenr#1{%
670   \sourcenr@tk={#1}\@sourcenrtrue%
671   \ignorespaces%
672 }
673 \def\source#1{%
674   \source@tk={#1}\@sourcetrue%
675   \ignorespaces%
```

```

676 }
677 \def\ds@day#1{%
678   \day@tk={#1}\@daytrue\@datetrue%
679   \ignorespaces%
680 }
681 \def\ds@month#1{%
682   \from@month=#1\@datetrue%
683   \ignorespaces%
684 }
685 \def\months#1{%
686   \@months#1;%
687   \ignorespaces%
688 }
689 \def\ds@year#1{%
690   \year@tk={#1}\@yeartrue\@datetrue%
691   \ignorespaces%
692 }
693 \def\issue#1{%
694   \issue@tk={#1}\@issuetrue%
695   \ignorespaces%
696 }
697 \def\pages#1{%
698   \pages@tk={#1}\@pagetrue%
699   \ignorespaces%
700 }
701 \def\tournament#1{%
702   \tournament@tk={#1}\@tournamenttrue%
703   \ignorespaces%
704 }
705 \def\award#1{%
706   \@cpd@warnIfEmpty{#1}{award}%
707   \award@tk={#1}\@awardtrue%
708   \ignorespaces%
709 }
710 \def\version#1{%
711   \@cpd@warnIfEmpty{#1}{version}%
712   \version@tk={#1}\@versiontrue%
713   \ignorespaces%
714 }
715 \def\after#1{%
716   \@cpd@warnIfEmpty{#1}{after}%
717   \after@tk={#1}\@aftertrue%
718   \ignorespaces%
719 }
720 \def\correction#1{%
721   \@cpd@warnIfEmpty{#1}{correction}%
722   \correction@tk={#1}\@correctiontrue%
723   \ignorespaces%
724 }
725 \def\dedication#1{%
726   \@cpd@warnIfEmpty{#1}{dedication}%
727   \dedic@tk={#1}\@dedicationtrue%
728   \ignorespaces%
729 }

```

```

730 \def\fidealalbum#1{%
731   \fidealalbum@tk={#1}\@fidealalbumtrue%
732   \ignorespaces%
733 }
734 \def\pieces{%
735   \@ifnextchar[%
736   {\x@pieces}%
737   {\@pieces}%
738 }
739 \def\x@pieces[#1]{%
740   % We should parse the given piececounts
741   \setboolean{cpd@checkPieceCounts}{true}%
742   \@parseWhiteAndBlackCount#1+\e@list
743   \@pieces%
744 }
745 \def\@parseWhiteAndBlackCount#1+#2+{%
746   \setcounter{cpd@defWhitePieces}{#1}%
747   \setcounter{cpd@defBlackPieces}{#2}%
748   \futurelet\n@xt\cpd@checkNeutral%
749 }
750 \let\cpd@nextproc=\relax%
751 \def\cpd@checkNeutral{%
752   \if\n@xt\relax%
753     \let\cpd@nextproc=\relax%
754   \else%
755     \let\cpd@nextproc=\@parseNeutralCount%
756   \fi%
757   \cpd@nextproc%
758 }
759 \def\@parseNeutralCount#1+{%
760   \setcounter{cpd@defNeutralPieces}{#1}%
761 }
762 \def\@pieces#1{%
763   \pieces@tk={#1}\@piecestrue%
764   \ignorespaces%
765 }
766 \newcommand{\fen}[2][ ]{%
767   \ifthenelse{\equal{#1}{}}{%
768     }{% Do nothing
769     }%
770     \setboolean{cpd@checkPieceCounts}{true}%
771     \@parseWhiteAndBlackCount#1+\e@list%
772   }%
773   \fen@tk={#2}\setboolean{@cpd@fen}{true}%
774   \ignorespaces%
775 }
776 \def\fieldtext#1{%
777   \fieldtext@tk={#1}\@fieldtexttrue%
778   \ignorespaces%
779 }
780 \def\nofields#1{%
781   \nofields@tk={#1}\@nofieldstrue%
782   \ignorespaces%
783 }

```

```

784 \let\nosquares\nofields
785 \def\gridlines#1{%
786   \gridlines@tk={#1}\@gridlinestrue%
787   \ignorespaces%
788 }
789 \def\fieldframe#1{%
790   \fieldframe@tk={#1}\@fieldframetrue%
791   \ignorespaces%
792 }
793 \def\stipulation#1{%
794   \stipulation@tk={#1}\@stipulationtrue%
795   \ignorespaces%
796 }
797 \def\condition{%
798   \@ifstar{\x@condtrue\@condition}{\@condition}%
799 }
800 \def\@condition#1{%
801   \condition@tk={#1}\@conditiontrue%
802   \ignorespaces%
803 }
804 \def\twins{%
805   \@ifstar{\x@twinstrue\@twins}{\@twins}%
806 }
807 \def\@twins#1{%
808   \twins@tk={#1}\@twinstrue%
809   \ignorespaces%
810 }
811 \def\remark#1{%
812   \remark@tk={#1}\@remarktrue%
813   \ignorespaces%
814 }
815 \def\piecedefs#1{%
816   \piecedefs@tk={#1}\@piecedefstrue%
817   \ignorespaces%
818 }
819 % \def\@piecedef#1{\csname#1\x@piecedef\endcsname\l@klist}
820 % \newcommand{\piecedef}[3][ws]{%
821 %   \def\x@piecedef{#2}%
822 %   \let\@action=\@piecedef%
823 %   \hbox{\l@klist#1\@list%
824 %     \ = #3}%
825 % }
826 \def\Co#1{%
827   \ifx#1+\@computertrue\computer@tk={+}\fi%
828   \ignorespaces%
829 }
830 \long\def\solution#1{%
831   \sol@tk={#1}\global\s@luttrue%
832   \ignorespaces%
833 }
834 \def\themes#1{%
835   \theme@tk={#1}\@themetrue%
836   \ignorespaces%
837 }

```



```

838 \def\genre#1{%
839   \relax% Currently not used within diagram.sty
840 }
841 \long\def\comment#1{%
842   \comment@tk={#1}\@commenttrue%
843   \ignorespaces%
844 }
845 \long\def\judgement#1{%
846   \judgement@tk={#1}\@judgementtrue%
847   \ignorespaces%
848 }
849 \def\noframe{%
850   \@vframefalse\@hframefalse%
851   \ignorespaces%
852 }
853 \def\noinnerframe{%
854   \@leaveOuterfalse\@vframefalse\@hframefalse%
855   \ignorespaces%
856 }
857 \def\verticalcylinder{%
858   \@vframefalse%
859   \ignorespaces%
860 }
861 \def\horizontalcylinder{%
862   \@hframefalse%
863   \ignorespaces%
864 }
865 \def\stdgrid{%
866   \@stdgridtrue%
867   \ignorespaces%
868 }

```

`\gridchess` Here we define some abbreviations and synonyms for other macros.

```

\magic 869 \let\gridchess=\stdgrid
\tourn 870 \let\magic=\fieldframe
\dedic 871 \let\tourn=\tournament
\stip 872 \let\dedic=\dedication
\cond 873 \let\stip=\stipulation
\rem 874 \let\cond=\condition
\sol 875 \let\rem=\remark
876 \let\sol=\solution

877 \def\develop{%
878   \@developtrue%
879   \ignorespaces%
880 }
881 \def\showcomputer{%
882   \setboolean{showcomputer}{true}%
883   \ignorespaces%
884 }
885 \def\nocomputer{%
886   \setboolean{showcomputer}{false}%
887   \ignorespaces%
888 }

```

```

889 \def\putsol{\immediate\closeout\s@lfd\input\jobname.sol\cl@arsol}
890 \def\widedias{\@widediastrue\diagcenter}
891 \def\nowidedias{\@widediasfalse}
892 \def\normalnames{\normal@namestrue}
893 \def\reversednames{\normal@namesfalse}
894 \def\makeaindex{%
895   \@dia@index%
896   \newindex[thediag]{author}{adx}{and}{Autorenverzeichnis}%
897   \@aindextrue\reversednames%
898 }
899
900 \def\makesindex{%
901   \@dia@index%
902   \newindex[thediag]{source}{sdx}{snd}{Quellenregister}%
903   \@sindextrue%
904 }
905
906 \def\maketindex{%
907   \@dia@index%
908   \newindex[thediag]{theme}{tdx}{tnd}{Themenregister}%
909   \@tindextrue%
910 }
911
912 \def\authorindex{\let\@idxitem\@aidxitem\printindex[author]}
913 \def\sourceindex{\printindex[source]}
914 \def\themeindex{\printindex[theme]}
915 \def\DefinePieces#1#2#3{%
916   \@setPieceColor#1\@setPieceSpec#2\@setPieceRotation#3%
917   \cpd@piecedef@rotations%
918   \expandafter\xdef\csname\ds@black\ds@white\ds@bishop\endcsname{%
919     \noexpand\ch@fig{20}}%
920   }%
921   \expandafter\xdef\csname\ds@black\ds@black\ds@bishop\endcsname{%
922     \noexpand\ch@fig{32}}%
923   }%
924   \expandafter\xdef\csname\ds@white F\endcsname{\chessfont\ }
925   \expandafter\xdef\csname\ds@black F\endcsname{\chessfont\char144}
926   \expandafter\xdef\csname\ds@white Nr\endcsname{%
927     \noexpand\ch@fig{109}}%
928   }%
929   \expandafter\xdef\csname\ds@neutral Nr\endcsname{%
930     \noexpand\ch@fig{115}}%
931   }%
932   \expandafter\xdef\csname\ds@black Nr\endcsname{%
933     \noexpand\ch@fig{121}}%
934   }%
935   \expandafter\xdef\csname\ds@white Gh\endcsname{%
936     \noexpand\ch@fig{112}}%
937   }%
938   \expandafter\xdef\csname\ds@neutral Gh\endcsname{%
939     \noexpand\ch@fig{118}}%
940   }%
941   \expandafter\xdef\csname\ds@black Gh\endcsname{%
942     \noexpand\ch@fig{124}}%

```

```

943 }%
944 \expandafter\xdef\csname\ds@white C\endcsname{%
945     \noexpand\ch@fig{145}}%
946 }%
947 \expandafter\xdef\csname\ds@neutral C\endcsname{%
948     \noexpand\ch@fig{151}}%
949 }%
950 \expandafter\xdef\csname\ds@black C\endcsname{%
951     \noexpand\ch@fig{157}}%
952 }%
953 }
954 \def\Imi{\ch@fig{157}}
955 \def\wE{\ch@fig{216}}
956 \def\nE{\ch@fig{222}}
957 \def\SE{\ch@fig{228}}
958 \def\wX{\ch@fig{180}}
959 \def\NX{\ch@fig{186}}
960 \def\SX{\ch@fig{192}}
961 \def\cpd@whiteField{\chessfont\ }
962 \def\cpd@blackField{\chessfont\char144}
963

```

`\dia@above` The content of the box above a diagram is controlled by the macro `\dia@above`. It just delegates the information to a couple of other macros, which then generate the displayed information above the diagram.

```

964 \newboolean{above@newline}
965 \newcommand{\above@newline}{\ifthenelse{\boolean{above@newline}}{\linebreak}{\setboolean{above@new
966 \def\dia@above{%
967     \setboolean{above@newline}{false}%
968     \@dia@number%
969     \@dia@authors%
970     \@dia@city%
971     \@dia@after%
972     \@dia@version%
973     \@dia@source%
974     \@dia@correction%
975     \@dia@tournament%
976     \@dia@award%
977     \@dia@dedic%
978     \@dia@fidealbum%
979 }

```

`\dia@below` As before, the macro `\dia@below` creates the displayed information below the chessboard - forwarding to a couple of other macros.

```

980 \def\dia@below{%
981     \bgroup%
982     \if@stipulation%
983         \@dia@stipulation%
984     \fi%
985     \ifx@cond\else%
986         \@dia@condition%
987     \fi%
988     \ifx@twins\else%
989         \@dia@twins%

```

```

990 \fi%
991 \@dia@piecedefs%
992 \@dia@remark%
993 \ifthenelse{\boolean{@solafterdiagram}}{%
994     \below@newline%
995     \the\sol@tk%
996 }{%
997 \noindent\hbox{ }\newline\hbox{ }%
998 \egroup%
999 }

```

`\@dia@number` The `\@dia@number` macro simply creates the diagram number in a single paragraph.

```

1000 \def\@dia@number{%
1001     %\ifdi@no\above@newline{\authorfont\thediag}\fi%
1002     \ifthenelse{\boolean{@cpd@numbering@local}}{%
1003         \above@newline{\authorfont\thediag}%
1004     }{%
1005 }

```

`\@dia@authors` This macro is used to create the list of authors specified within the `\author` macro inside the `diagram` environment. Depending on the `TEX`-boolean `normal@names` we either simply display the registered author or parse the list of authors by using the generic `\@parseTokenList` macro.

```

1006 \def\@dia@authors{%
1007     \ifauth@r%
1008         \ifnormal@names%
1009             \above@newline
1010             {\authorfont\the\aut@tk}%
1011         \else%
1012             \let\@action=\@dia@writename% Parse the list of authors
1013             \@parseTokenlist\aut@tk;
1014         \fi%
1015     \fi%
1016 }

1017 \def\@show@city#1;{\if@notfirst\ \slash\ \else\@notfirsttrue\fi#1}
1018
1019 \def\p@rsecity#1; {\@show@city#1;\l@klist}
1020
1021 \def\@dia@city{%
1022     \ifthenelse{\boolean{showcity}}{%
1023         \if@city%
1024             \above@newline%
1025             \bgroup%
1026             \cityfont\@notfirstfalse%
1027             \let\@action=\p@rsecity\@parseTokenlist\city@tk;%
1028             \egroup%
1029         \fi%
1030     }{%
1031 }
1032
1033 \def\@dia@after{%
1034     \if@after%

```

```

1035     \bgroup%
1036     \above@newline%
1037     \dedicfont\the\after@tk%
1038     \egroup%
1039     \fi%
1040 }
1041
1042 \def\@dia@version{%
1043     \if@version%
1044         \above@newline%
1045         \bgroup%
1046         \dedicfont\the\version@tk%
1047         \egroup%
1048     \fi%
1049 }
1050
1051 \def\@dia@date{%
1052     \ifnum\from@month>\z@%
1053         \if@day%
1054             \the\day@tk.\write@month\from@month%
1055         \else%
1056             \write@month\from@month%
1057         \fi%
1058     \ifnum\to@month>\z@--\write@month\to@month\fi%
1059     \if@day.\else/\fi%
1060 \fi%
1061 \if@year\the\year@tk\fi%
1062 }
1063
1064 \def\@dia@source{%
1065     \if@source%
1066         \above@newline%
1067         \bgroup%
1068         \sourcefont%
1069         \if@sourcenr\the\sourcenr@tk\ \fi
1070         \the\source@tk%
1071         \if@date\ \fi\@dia@date%
1072         \if@issue\ \the\issue@tk\fi%
1073         \if@pages ,\ \the\pages@tk\fi%
1074     \egroup%
1075 \else%
1076     \if@tournament\else\if@date%
1077         \above@newline%
1078         \bgroup%
1079         \sourcefont%
1080         \@dia@date%
1081     \egroup%
1082     \fi\fi%
1083 \fi%
1084 }
1085
1086 \def\@dia@correction{%
1087     \if@correction%
1088         \above@newline%

```

```

1089     \bgroup%
1090     \dedicfont\the\correction@tk%
1091     \egroup%
1092     \fi%
1093 }
1094
1095 \def\@dia@tournament{%
1096     \if@tournament
1097         \above@newline%
1098         \bgroup%
1099         \awardfont%
1100         \the\tournament@tk
1101         \if@source\else\if@date%
1102             \ \ @dia@date%
1103         \fi\fi%
1104         \egroup%
1105     \fi%
1106 }
1107
1108 \def\@dia@award{%
1109     \if@award%
1110         \above@newline%
1111         \bgroup%
1112         \awardfont\the\award@tk%
1113         \egroup%
1114     \fi%
1115 }
1116
1117 \def\@dia@dedic{%
1118     \if@dedication%
1119         \above@newline%
1120         \bgroup%
1121         \dedicfont\the\dedic@tk%
1122         \egroup%
1123     \fi%
1124 }
1125
1126 \def\@show@album#1/#2;{#1 FIDE-Album #2}
1127
1128 \def\@dia@fidealalbum{%
1129     \if@fidealalbum%
1130         \above@newline%
1131         {\expandafter\@show@album\the\fidealalbum@tk;}%
1132     \fi%
1133 }
1134
1135 \def\@twinskip{\ \ }
1136
1137 \def\@dia@stipulation{%
1138     \if@stipulation%
1139         \bgroup%
1140         \stipfont%
1141         \the\stipulation@tk%
1142         \ifx@twins%

```

```

1143         \let\below@newline\@twinskip%
1144         \@dia@twins%
1145     \else\ifx@cond%
1146         \let\below@newline\@twinskip%
1147         \@dia@condition%
1148     \fi\fi%
1149     \egroup%
1150     \let\below@newline\newline%
1151 \else%
1152     \x@twinsfalse%
1153     \x@condfalse%
1154     \let\below@newline\relax%
1155 \fi%
1156 }
1157
1158 \def\x@write@twin#1; {%
1159     \hskip1em#1%
1160     \@lefttrue\let\below@newline\newline%
1161     \let\@action\write@twins%
1162     \l@@klist%
1163 }
1164
1165 \def\write@twins#1; {%
1166     \setbox\@test@box=\hbox{#1\if@left~~\fi}%
1167     \ifdim\wd\@test@box>4\sq@width%
1168         \below@newline%
1169         \@lefttrue%
1170         #1%
1171     \else%
1172         \if@left%
1173             \below@newline%
1174         \fi%
1175         \noindent\hbox to 4\sq@width{#1\hfil}%
1176         \if@left%
1177             \@leftfalse%
1178         \else%
1179             \@lefttrue%
1180         \fi%
1181     \fi%
1182     \let\below@newline\newline%
1183     \l@@klist%
1184 }
1185
1186 \def\@dia@twins{%
1187     \if@twins%
1188         \bgroup%
1189         \@lefttrue%
1190         \remfont%
1191         \ifx@twins%
1192             \let\@action=\x@write@twin%
1193         \else%
1194             \let\@action=\write@twins%
1195         \fi%
1196         \@parseTokenlist\twins@tk;%

```

```

1197     \egroup%
1198     \let\below@newline\newline%
1199     \fi%
1200 }
1201
1202 \def\@dia@condition{%
1203     \if@condition%
1204         \bgroup%
1205         \@lefttrue%
1206         \remfont%
1207         \ifx@cond%
1208             \let\@action=\x@write@twin%
1209         \else%
1210             \let\@action=\write@twins%
1211         \fi%
1212         \@parseTokenlist\condition@tk;%
1213     \egroup%
1214     \let\below@newline\newline%
1215     \fi%
1216 }
1217
1218 \def\check@piecedef{%
1219     \ifx\next@piecedef\relax%
1220         \let\col@action=\relax%
1221     \else%
1222         \let\col@action=\@@piecedef%
1223     \fi%
1224     \col@action%
1225 }
1226 \def\@@piecedef#1{\csname#1\x@piecedef\endcsname\parse@piecedef}
1227
1228 \def\parse@piecedef{\futurelet\next@piecedef\check@piecedef}
1229
1230 \def\@piecedef#1#2#3{%
1231     \def\x@piecedef{#2}%
1232     \below@newline%
1233     \hbox{%
1234         \parse@piecedef#1\relax%
1235         \ = #3}%
1236 }
1237
1238 \def\write@piecedefs#1; {%
1239     \@piecedef#1%
1240     \l@klist%
1241 }
1242
1243 \def\@dia@piecedefs{%
1244     \if@piecedefs%
1245         \bgroup%
1246         \@lefttrue%
1247         \let\below@newline\newline%
1248         \remfont\let\@action=\write@piecedefs%
1249         \@parseTokenlist\piecedefs@tk;%
1250     \egroup%

```



```

1251 \fi%
1252 }
1253
1254 \def\@dia@remark{%
1255 \if@remark%
1256 \bgroup%
1257 \@lefttrue%
1258 \remfont\let\@action=\write@twins%
1259 \@parseTokenlist\remark@tk;%
1260 \egroup%
1261 \let\below@newline\newline%
1262 \fi%
1263 }
1264
1265 \def\parse@params#1{%
1266 \ifcase\help@a\relax
1267 \label@tk={#1}\ifx\relax#1\else\@labeltrue\fi\or%
1268 \number@tk={#1}\ifx\relax#1\else\@numbertrue\fi\or%
1269 \aut@tk={#1}\ifx\relax#1\else\@auth@rtrue\fi\or%
1270 \city@tk={#1}\ifx\relax#1\else\@citytrue\fi\or%
1271 \sourcenr@tk={#1}\ifx\relax#1\else\@sourcenrtrue\fi\or%
1272 \source@tk={#1}\ifx\relax#1\else\@sourcetrue\fi\or%
1273 \day@tk={#1}\ifx\relax#1\else\@daytrue\fi\or%
1274 \from@month=#1\or%
1275 \to@month=#1\or%
1276 \year@tk={#1}\ifx\relax#1\else\@yeartrue\fi\or%
1277 \issue@tk={#1}\ifx\relax#1\else\@issuetrue\fi\or%
1278 \pages@tk={#1}\ifx\relax#1\else\@pagetrue\fi\or%
1279 \tournament@tk={#1}\ifx\relax#1\else\@tournamenttrue\fi\or%
1280 \award@tk={#1}\ifx\relax#1\else\@awardtrue\fi\or%
1281 \after@tk={#1}\ifx\relax#1\else\@aftertrue\fi\or%
1282 \version@tk={#1}\ifx\relax#1\else\@versiontrue\fi\or%
1283 \correction@tk={#1}\ifx\relax#1\else\@correctiontrue\fi\or%
1284 \dedic@tk={#1}\ifx\relax#1\else\@dedicationtrue\fi\or%
1285 \theme@tk={#1}\ifx\relax#1\else\@themetrue\fi\or%
1286 \twins@tk={#1}\ifx\relax#1\else\@twinstrue\fi\or%
1287 \computer@tk={#1}\or%
1288 \comment@tk={#1}\ifx\relax#1\else\@commenttrue\fi\or%
1289 \judgement@tk={#1}\ifx\relax#1\else\@judgementtrue\fi\or%
1290 \sol@tk={#1}%
1291 \fi%
1292 \advance\help@a \one%
1293 \l@klist%
1294 }
1295
1296 \def\split@param#1{%
1297 \@labelfalse\@numberfalse\@auth@rfalse\@cityfalse%
1298 \@sourcenrfalse\@sourcefalse\@dayfalse\@yearfalse%
1299 \@issuefalse\@pagesfalse\@tournamentfalse\@awardfalse%
1300 \@afterfalse\@versionfalse\@correctionfalse\@dedicationfalse%
1301 \@themefalse\@twinsfalse\@commentfalse\@judgementfalse%
1302 \help@a=\z@%
1303 \let\@action=\parse@params\l@klist#1\@list%
1304 }

```

```

1305 \newcommand{\solpar}{\par}
1306 \def\@dia@solution{%
1307   \bgroup%
1308   \parindent\z@%
1309   \parskip\tw@\p@%
1310   {\bfseries%
1311     \noindent\if@label\showlabel{\the\label@tk}\fi%
1312     \if@number\the\number@tk) \fi%
1313     \ifauth@r%
1314     \ifnormal@names%
1315     \the\aut@tk%
1316     \else%
1317       {\@notfirstfalse% We are the first one
1318         \def\name@sep{, }%
1319         \let\@action=\@sol@writename%
1320         \@parseTokenlist\aut@tk;}:%
1321         \fi%
1322         \newline%
1323         \fi%
1324       }%
1325     \if@develop\if@judgement\the\judgement@tk\solpar\fi\fi%
1326     \the\sol@tk\solpar%
1327     \if@comment\the\comment@tk\solpar\fi%
1328     \egroup%
1329 }
1330 \grid@width=0.6\p@
1331 \inner@frame=0.6\p@
1332 \outer@frame=1.2\p@
1333 \space@frame=\outer@frame
1334 \v@frame@dist=\tw@\p@%
1335 \h@frame@dist=\tw@\p@%
1336 \space@frame@dist=\z@
1337 \v@space@dist=1em
1338 \def\@show@figurine{%
1339   \noindent%
1340   \@figurine@number%
1341   \@figurine@author%
1342   \@figurine@city%
1343   \@figurine@after%
1344   \@figurine@correction%
1345   \@figurine@version%
1346   \@figurine@source%
1347   \@figurine@tournament%
1348   \@figurine@award%
1349   \@figurine@dedic%
1350   \@figurine@pieces%
1351   \@figurine@stip%
1352   \@figurine@twins%
1353   \@figurine@conditions%
1354   \@figurine@remarks%
1355   \@figurine@computer%
1356 }
1357 \def\@figurine@number{{\authorfont\thediag}}
1358

```

```

1359 \def\p@rseauthor@figurine#1,#2; {%
1360   \if@notfirst, \else\@notfirsttrue\fi#2 #1%
1361   \l@klist%
1362 }
1363
1364 \def\@figurine@author{%
1365   {\ifauth@r%
1366     \authorfont\@notfirstfalse%
1367     \let\@action=\p@rseauthor@figurine%
1368     \@parseTokenlist\aut@tk;%
1369     \ \ %
1370   \fi}%
1371 }
1372
1373 \def\@figurine@city{%
1374   {\if@city%
1375     \cityfont\@notfirstfalse%
1376     \let\@action=\p@rsecity\@parseTokenlist\city@tk;%
1377     \ \ \ %
1378   \fi}%
1379 }
1380
1381 \def\@figurine@after{\if@after{\dedicfont\ \ \the\after@tk}\fi}
1382
1383 \def\@figurine@correction{%
1384   \if@correction{\dedicfont\ \ \the\correction@tk}\fi%
1385 }
1386
1387 \def\@figurine@version{%
1388   \if@version{\dedicfont\ \ \the\version@tk}\fi%
1389 }
1390
1391 \def\@figurine@source{%
1392   {\if@source%
1393     \sourcefont%
1394     \if@sourcenr\the\sourcenr@tk\ \fi%
1395     \the\source@tk%
1396     \if@date\ \ \fi\@dia@date%
1397     \if@issue , \the\issue@tk\fi%
1398     \if@pages , \the\pages@tk\fi%
1399   \fi}%
1400 }
1401
1402 \def\@figurine@tournament{%
1403   \if@tournament{\awardfont\ \ \the\tournament@tk}\fi%
1404 }
1405
1406 \def\@figurine@award{%
1407   \if@award{\awardfont\ \ \the\award@tk}\fi%
1408 }
1409
1410 \def\@figurine@dedic{%
1411   \if@dedication{\awardfont\ \ \the\dedic@tk}\fi%
1412 }

```

```

1413 \def\show@squares#1\@list{\ch@fig{\the\help@a}#1, }
1414
1415 \def\@figurine@pieces{%
1416   {\if@pieces%
1417     \let\@action=\p@rsepieces%
1418     \let\piece@job\show@squares%
1419     \@parseTokenlist\pieces@tk,%
1420     \fi}%
1421 }
1422 \def\@figurine@stip{%
1423   \if@stipulation{\stipfont\ \ \the\stipulation@tk}\fi%
1424 }
1425
1426 \def\@figurine@conditions{%
1427   \if@condition{\remfont\ \ \the\condition@tk}\fi%
1428 }
1429
1430 \def\@figurine@twins{%
1431   \if@twins{\remfont\ \ \the\twins@tk}\fi%
1432 }
1433
1434 \def\@figurine@computer{%
1435   \ifthenelse{\boolean{showcomputer}}{%
1436     \if@computer\ \computerproofedsymbol\fi%
1437   }{}%
1438 }
1439
1440 \def\@figurine@remarks{%
1441   \if@remark{\stipfont\ \ \the\remark@tk}\fi%
1442 }
1443 \def\do@dia@job{\@write@sol@ifvmode\noindent\fi\unhbox\dia@box}
1444 \def\solhead#1{\split@param{#1}\@dia@solution}
1445 \def\@write@sol{%
1446   \ifs@lu%
1447     \immediate\write\s@lfd{%
1448       \noexpand\solhead{%
1449         {\the\label@tk}%
1450         {\thediag}%
1451         {\the\aut@tk}%
1452         {\the\city@tk}%
1453         {\the\sourcenr@tk}%
1454         {\the\source@tk}%
1455         {\the\day@tk}%
1456         {\the\from@month}%
1457         {\the\to@month}%
1458         {\the\year@tk}%
1459         {\the\issue@tk}%
1460         {\the\pages@tk}%
1461         {\the\tournament@tk}%
1462         {\the\award@tk}%
1463         {\the\after@tk}%
1464         {\the\version@tk}%
1465         {\the\correction@tk}%
1466         {\the\dedic@tk}%

```

```

1467         {\the\theme@tk}%
1468         {\the\twins@tk}%
1469         {\the\computer@tk}%
1470         {\the\comment@tk}%
1471         {\the\judgement@tk}%
1472         {\the\sol@tk}%
1473     } %end of \solhead
1474 }%
1475 \fi
1476 }
1477 \def\@months#1-#2;{\from@month=#1\to@month=#2\@datetrue}
1478 \def\@dia@writename#1; {\above@newline{\authorfont\@dianame#1; }\l@klist}
1479 \def\@sol@writename#1; {\sep@names\@solname#1; \l@klist}
1480 \def\name@sep{, \ }
1481 \def\sep@names{\ifnotfirst\name@sep\else\@notfirsttrue\fi}
1482 \def\@checkshort#1/#2#3;{%
1483     \@shortformtrue%
1484     \ifx#2\e@list\relax%
1485         \@shortformfalse%
1486     \fi%
1487 }
1488 \def\short@christian#1#2-{%
1489     \ifnotfirst -\else\@notfirsttrue\fi%
1490     #1.%
1491     \l@klist%
1492 }
1493
1494 \def\@write@christian#1/#2;{#1}
1495
1496 \def\write@christian#1;{%
1497     \@checkshort#1/\e@list;%
1498     \if@shortform\@write@christian#1;\else#1\fi%
1499 }
1500
1501 \def\@write@short#1/#2;{#2}
1502
1503 \def\write@short#1;{%
1504     \@checkshort#1/\e@list;%
1505     \if@shortform%
1506         \@write@short#1;%
1507     \else%
1508         {\@notfirstfalse\let\@action\short@christian\l@klist#1-\e@list}%
1509     \fi%
1510 }
1511 \def\@fullname#1, #2; {\write@christian#2; #1}
1512 \def\@surname#1, #2; {#1}
1513 \def\@short#1, #2; {\write@short#2;\ #1}
1514 \def\@noname#1, #2; {}
1515 \def\@normalname#1; {#1}
1516 \def\space@vertical{\space@verticaltrue}
1517 \def\space@horizontal{\space@verticalfalse}
1518 \def\cl@arsol{\immediate\openout\s@lfd=\jobname.sol\relax}
1519 \def\getc@lor#1{%
1520     \if#1\ds@white%

```

```

1521     \help@a\z@\global%
1522     \let\cpd@stepcounterPieces\cpd@stepcounterWhite%
1523 \else\if#1\ds@neutral%
1524     \help@a=6\global%
1525     \let\cpd@stepcounterPieces\cpd@stepcounterNeutral%
1526 \else\if#1\ds@black%
1527     \help@a=12\global%
1528     \let\cpd@stepcounterPieces\cpd@stepcounterBlack%
1529 \else\errmessage{invalid color!}%
1530 \fi\fi\fi%
1531 \getpi@ce%
1532 }
1533
1534 \def\get@text#1{\text@tk={#1}\read@square}
1535
1536 \def\getpi@ce#1{%
1537     \IfStrEqCase{#1}{%
1538         {\ds@pawm}{}%
1539         {\ds@knight}{\advance\help@a@ne}%
1540         {\ds@bishop}{\advance\help@a@tw}%
1541         {\ds@rook}{\advance\help@a@thr@}%
1542         {\ds@queen}{\advance\help@a@four}%
1543         {\ds@king}{\advance\help@a 5}%
1544         {C}{%
1545             \let\cpd@stepcounterPieces\relax
1546             \advance\help@a 145%
1547         }%
1548         {E}{\advance\help@a 216}%
1549         {X}{\advance\help@a 180}%
1550     }[\errmessage{invalid piece!}]%
1551     \futurelet\r@tate\chkr@tate%
1552 }
1553
1554 \def\chkr@tate{%
1555 %     \IfStrEqCase{\r@tate}{%
1556 %         {\ds@rotation@upside@down}{%
1557 %             \advance\help@a 108%
1558 %             \let\nextpr@c=\skipr@t%
1559 %         }%
1560 %         {\ds@rotation@left}{%
1561 %             \advance\help@a 36%
1562 %             \let\nextpr@c=\skipr@t%
1563 %         }%
1564 %         {\ds@rotation@right}{%
1565 %             \advance\help@a 72%
1566 %             \let\nextpr@c=\skipr@t%
1567 %         }%
1568 %     }[\let\nextpr@c\piece@job]%
1569 \if\r@tate \ds@rotation@upside@down\advance\help@a 108\let\nextpr@c=\skipr@t\else%
1570 \if\r@tate \ds@rotation@left\advance\help@a 36\let\nextpr@c=\skipr@t\else%
1571 \if\r@tate \ds@rotation@right\advance\help@a 72\let\nextpr@c=\skipr@t\else%
1572 \let\nextpr@c\piece@job\fi\fi\fi%
1573 \nextpr@c%
1574 }

```

```

1575 \def\skipr@t#1{\piece@job}
1576 \def\l@k{\futurelet\whatsnext\parsefi@lds}
1577 \def\parsefi@lds{%
1578   \if\whatsnext\@list%
1579     \let\nextpr@c\relax%
1580   \else
1581     \let\nextpr@c\read@square%
1582   \fi%
1583   \nextpr@c%
1584 }
1585
1586 \def\set@current@square@index#1#2{%
1587   \setcounter{cpd@current@square@index}{#1+\value{cpd@lines}#2}%
1588 }
1589 \def\set@current@square@value#1{%
1590   \expandafter%
1591   \xdef\csname cpd@square@\roman{cpd@current@square@index}\endcsname{#1}%
1592 }
1593 \def\get@current@square@value{%
1594   \setcounter{cpd@current@square@value}%
1595   {\csname cpd@square@\roman{cpd@current@square@index}\endcsname}%
1596 }
1597 \def\@cpd@setpiece{%
1598   \ifthenelse{\value{cpd@plane}=\value{cpd@current@plane}}{%
1599     \cpd@stepcounterPieces%
1600     \set@current@square@index{\value{cpd@line}}{\value{cpd@row}}%
1601     \get@current@square@value%
1602     \ifthenelse{\value{cpd@current@square@value}=\m@ne}%
1603       {\set@current@square@value{\the\help@a}}%
1604       {\ifthenelse{\value{cpd@current@square@value}=144}%
1605         {\set@current@square@value{\the\help@a+18}}%
1606         {\errmessage{Trying to set a piece to an occupied square.}}}%
1607   }{}%
1608 }
1609 \def\set@piece{%
1610   \@cpd@setpiece%
1611   \l@k%
1612 }
1613 \def\set@nofield, {%
1614   \ifthenelse{\value{cpd@plane}=\value{cpd@current@plane}}{%
1615     \set@current@square@index{\value{cpd@line}}{\value{cpd@row}}%
1616     \get@current@square@value%
1617     \ifthenelse{\value{cpd@current@square@value}=\m@ne}%
1618       {}% This is an empty white square, nothing to do
1619       {\ifthenelse{\value{cpd@current@square@value}=144}%
1620         {\set@current@square@value{\m@ne}}%
1621         {\errmessage{Trying to set a piece to an occupied square}}}%
1622   }{}%
1623   \l@klist%
1624 }
1625 \def\set@frame, {%
1626   \ifthenelse{\value{cpd@plane}=\value{cpd@current@plane}}{%
1627     \vGrid{\value{cpd@line}}{\value{cpd@row}}\@ne%
1628     \hGrid{\value{cpd@line}}{\value{cpd@row}}\@ne%

```

```

1629     \addtocounter{cpd@line}{1}%
1630     \vGrid{\value{cpd@line}}{\value{cpd@row}}\@ne%
1631     \addtocounter{cpd@line}{-1}%
1632     \addtocounter{cpd@row}{1}%
1633     \hGrid{\value{cpd@line}}{\value{cpd@row}}\@ne%
1634   }{}%
1635   \l@@klist%
1636 }
1637 \def\@elist{\relax}
1638 \def\l@@klist{\futurelet\nextlist\ch@cklst}
1639 \def\ch@cklst{%
1640   \ifx\nextlist\@elist%
1641     \let\nextpr@c=\relax%
1642   \else%
1643     \let\nextpr@c=\@action%
1644   \fi%
1645   \nextpr@c%
1646 }
1647 \def\@cpd@handle@fen#1{%
1648   \ifx#1/\relax%
1649     \ifthenelse{\value{cpd@line}=8}%
1650     {%
1651       \setcounter{cpd@line}{0}%
1652       \addtocounter{cpd@row}{\m@ne}%
1653     }%
1654     {%
1655       \errmessage{FEN: there is now row to end here.}%
1656     }%
1657   \fi% FEN space issue
1658   \IfSubStr{12345678}{#1}{%
1659     \addtocounter{cpd@line}{#1}%
1660   }{}%
1661   \IfSubStr{KQREBNP}{#1}{%
1662     \let\cpd@stepcounterPieces\cpd@stepcounterWhite%
1663     \IfStrEqCase{#1}{%
1664       {K}{\help@a=5}%
1665       {Q}{\help@a=4}%
1666       {R}{\help@a=3}%
1667       {B}{\help@a=2}%
1668       {N}{\help@a=1}%
1669       {P}{\help@a=0}%
1670     }
1671     \@cpd@setpiece%
1672     \addtocounter{cpd@line}{\@ne}%
1673   }{}%
1674   \IfSubStr{kqrbnp}{#1}{%
1675     \let\cpd@stepcounterPieces\cpd@stepcounterBlack%
1676     \IfStrEqCase{#1}{%
1677       {k}{\help@a=17}%
1678       {q}{\help@a=16}%
1679       {r}{\help@a=15}%
1680       {b}{\help@a=14}%
1681       {n}{\help@a=13}%
1682       {p}{\help@a=12}%

```



```

1683     }
1684     \@cpd@setpiece%
1685     \addtocounter{cpd@line}{\@ne}%
1686   }{}%
1687 }
1688 \def\@cpd@parse@fen#1{\@cpd@handle@fen#1\l@@klist}
1689 \def\@p@rsepieces#1, {\getcolor#1\@list\l@@klist}
1690 \def\@p@rsetext#1, {\get@text#1\@list\l@@klist}
1691 \def\set@text{%
1692   \ifthenelse{\value{cpd@plane}=\value{cpd@current@plane}}{%
1693     \raise\value{cpd@row}\sq@width\hbox to \z@{%
1694       \hskip\value{cpd@line}\sq@width%
1695       \vbox to \sq@width{\vss%
1696         \hbox to \sq@width{%
1697           \hss%
1698           {\the\text@tk}%
1699           \hss%
1700         }\vss}%
1701       \hss%
1702     }%
1703   }{}%
1704   \l@@klist%
1705 }
1706 \def\@p@rseauthor#1; {\sh@wauthor#1;\l@@klist}
1707 \def\read@square#1#2{%
1708   \setcounter{cpd@line}{#1-'a}%
1709   \setcounter{cpd@row}{#2-1}%
1710   \read@plane%
1711 }
1712 \def\read@plane@normal{\plane@job}
1713
1714 \def\read@plane@stereo{\futurelet\plane@char\get@plane@stereo}
1715
1716 \def\get@plane@stereo{%
1717   \if\plane@char A%
1718     \setcounter{cpd@plane}{1}%
1719     \addtocounter{cpd@row}{-2}%
1720     \addtocounter{cpd@line}{-2}%
1721     \let\@plane@job=\skip@plane%
1722   \else\if\plane@char B%
1723     \setcounter{cpd@plane}{2}%
1724     \addtocounter{cpd@row}{-2}%
1725     \addtocounter{cpd@line}{-2}%
1726     \let\@plane@job=\skip@plane%
1727   \else\if\plane@char C%
1728     \setcounter{cpd@plane}{3}%
1729     \addtocounter{cpd@row}{-2}%
1730     \addtocounter{cpd@line}{-2}%
1731     \let\@plane@job=\skip@plane%
1732   \else\if\plane@char D%
1733     \setcounter{cpd@plane}{4}%
1734     \addtocounter{cpd@row}{-2}%
1735     \addtocounter{cpd@line}{-2}%
1736     \let\@plane@job=\skip@plane%

```

```

1737 \else%
1738 \setcounter{cpd@plane}{0}%
1739 \let\@plane@job=\plane@job%
1740 \fi\fi\fi\fi%
1741 \@plane@job%
1742 }
1743
1744 \def\skip@plane#1{\plane@job}
1745
1746 \def\read@plane@space#1{%
1747 \setcounter{cpd@plane}{#1-'A}%
1748 \plane@job%
1749 }
1750 \def\@vGrid#1#2#3{%
1751 \raise#2\sq@width\hbox to \z@{%
1752 \hskip#1\sq@width\hskip-.5\grid@width%
1753 \vrule height#3\sq@width width\grid@width\hss%
1754 }%
1755 }
1756
1757 \def\@hGrid#1#2#3{%
1758 \raise#2\sq@width\hbox to \z@{%
1759 \hskip#1\sq@width%
1760 \vrule width#3\sq@width height .5\grid@width depth%
1761 .5\grid@width\hss%
1762 }%
1763 }
1764 \def\@selGrid#1#2, {%
1765 \ifthenelse{\value{cpd@plane}=\value{cpd@current@plane}}{%
1766 \if#1h%
1767 \@hGrid#2%
1768 \else\if#1v%
1769 \@vGrid#2%
1770 \else%
1771 \errmessage{Wrong GridSelector #1}%
1772 \fi\fi%
1773 }{}%
1774 \l@klist%
1775 }
1776 \def\@stdgrid{%
1777 \setbox\plane@box=\vbox{\hbox{%
1778 \help@a=\tw@%
1779 \whiledo{\help@a<\value{cpd@lines}}{%
1780 \@vGrid{\the\help@a}{\value{cpd@rows}}%
1781 \advance\help@a\tw@%
1782 }%
1783 \help@a=\tw@%
1784 \whiledo{\help@a<\value{cpd@rows}}{%
1785 \@hGrid{0}{\the\help@a}{\value{cpd@lines}}%
1786 \advance\help@a\tw@%
1787 }%
1788 \box\plane@box
1789 }}%
1790 }

```

```

1791 \def\ds@xlabel#1{%
1792   \label@tk={#1}\@labeltrue%
1793 }
1794
1795 \def\@set@label#1;{\ifds@label\label{#1}\fi}
1796 \def\init@vars{%
1797   \global\s@lufalse
1798   \ifthenelse{\boolean{cpd@numbering@global}}{%
1799     \setboolean{cpd@numbering@local}{true}%
1800   }{%
1801     \setboolean{cpd@numbering@local}{false}%
1802   }%
1803   \setboolean{cpd@checkPieceCounts}{false}%
1804   \setcounter{cpd@defWhitePieces}{\z@}%
1805   \setcounter{cpd@defBlackPieces}{\z@}%
1806   \setcounter{cpd@defNeutralPieces}{\z@}%
1807   \setcounter{cpd@whitePieces}{\z@}%
1808   \setcounter{cpd@blackPieces}{\z@}%
1809   \setcounter{cpd@neutralPieces}{\z@}%
1810   \setcounter{cpd@line}{0}%
1811 }
1812
1813 \def\clear@board{%
1814   \ifthenelse{\boolean{allwhite}\and\boolean{switchcolors}}{
1815     {\errmessage{'allwhite' and 'switchcolors' do not make sense used together.}}%
1816     {\@whitefield=\m@ne\@blackfield=144}%
1817   \ifthenelse{\boolean{allwhite}}{\@blackfield=\m@ne}{%
1818     \ifthenelse{\boolean{switchcolors}}{\@whitefield=144\@blackfield=\m@ne}{%
1819       \setcounter{cpd@row}{0}%
1820       \whiledo{\value{cpd@row}<\value{cpd@rows}}{%
1821         \setcounter{cpd@line}{0}%
1822         \whiledo{\value{cpd@line}<\value{cpd@lines}}{%
1823           \set@current@square@index{\value{cpd@line}}{\value{cpd@row}}%
1824           \setcounter{cpd@helper}{%
1825             \value{cpd@current@plane}%
1826             +\value{cpd@line}%
1827             +\value{cpd@row}}%
1828           \ifthenelse{\isodd{\value{cpd@helper}}}{%
1829             {\set@current@square@value{\@whitefield}}%
1830             {\set@current@square@value{\@blackfield}}%
1831           \addtocounter{cpd@line}{\@ne}%
1832         }%
1833       \addtocounter{cpd@row}{\@ne}%
1834     }%
1835 }
1836
1837
1838 \def\put@row#1{%
1839   \setcounter{cpd@row}{#1}%
1840   \setcounter{cpd@row@display}{#1 + 1}%
1841   \setcounter{cpd@line}{0}%
1842   \hbox{%
1843     \ifthenelse{\boolean{legend}}{
1844       \llap{\raise .1\sq@width\hbox{\legendfont\arabic{cpd@row@display}\ }}%

```

```

1845     }}{}%
1846     \if@stereo%
1847         \ifthenelse{\value{cpd@current@plane}>0}{%
1848             \ifthenelse{\value{cpd@row} = 3}{%
1849                 \llap{\cpd@boardfont c6\ }%
1850             }{}%
1851             % \fi%
1852         }{}%
1853         % \fi%
1854     \fi%
1855     % \hbox to \z@\vbox to \sq@width{}%
1856     \set@current@square@index{\value{cpd@line}}{#1}%
1857     \begin{tikzpicture}[x=\sq@width,y=\sq@width]%
1858         \useasboundingbox (0, 0) rectangle (\value{cpd@lines}, 1);%
1859         \whiledo{\value{cpd@line} < \value{cpd@lines}}{%
1860             \get@current@square@value%
1861             \ifthenelse{\value{cpd@current@square@value}=\m@ne}%
1862             {}%
1863             {%
1864                 \draw (\value{cpd@line}+.5, .5)%
1865                     node {{\chessfont\char\value{cpd@current@square@value}}};%
1866             }%
1867             \addtocounter{cpd@line}{1}%
1868             \addtocounter{cpd@current@square@index}{1}%
1869         }%
1870     \end{tikzpicture}%
1871 }%
1872 }
1873 \def\cpd@fen@parseTokenlist#1{\expandafter\l@klist\the#1\@e@list}
1874 \def\@parseTokenlist#1#2{\expandafter\l@klist\the#1#2 \@e@list}
1875 \def\@addToPlane#1{%
1876     \setbox\plane@box=\vbox{\hbox{%
1877         \@parseTokenlist#1,%
1878         \box\plane@box%
1879     }}%
1880 }
1881 \def\put@plane{%
1882     % We might want gridchess
1883     \if@stdgrid%
1884         \@stdgrid%
1885     \fi%
1886     % Let us first set the fieldframes
1887     \if@fieldframe%
1888         \let\@action\read@square%
1889         \let\plane@job\set@frame%
1890         \@addToPlane\fieldframe@tk%
1891     \fi%
1892     % Now we set text to all squares which are given using \fieldtext
1893     \if@fieldtext%
1894         \let\@action\p@rsettext%
1895         \let\plane@job\set@text%
1896         \@addToPlane\fieldtext@tk%
1897     \fi%
1898     % Then we should add the gridlines

```

```

1899 \if@gridlines%
1900 \let\@action\read@plane%
1901 \let\plane@job\@selGrid%
1902 \@addToPlane\gridlines@tk%
1903 \else%
1904 \if@stereo%
1905 \stereo@center%
1906 \fi%
1907 \fi%
1908 % In an 'allwhite' diagram we display dotted lines
1909 \ifthenelse{\boolean{allwhite}}{%
1910 \setbox\plane@box=\vbox{\hbox{%
1911 \begin{tikzpicture}[x=\sq@width,y=\sq@width]%
1912 \useasboundingbox
1913 (0,0) rectangle (\value{cpd@lines}, \value{cpd@rows});
1914 \setcounter{field@border}{1}%
1915 \whiledo{\value{field@border}<\value{cpd@lines}}{%
1916 \draw[densely dotted]
1917 (\value{field@border},0)
1918 --
1919 (\value{field@border},\value{cpd@rows});
1920 \addtocounter{field@border}{\@ne}%
1921 }%
1922 \setcounter{field@border}{1}%
1923 \whiledo{\value{field@border}<\value{cpd@rows}}{%
1924 \draw[densely dotted]
1925 (0, \value{field@border})
1926 --
1927 (\value{cpd@lines}, \value{field@border});
1928 \addtocounter{field@border}{\@ne}%
1929 }%
1930 \end{tikzpicture}%
1931 \box\plane@box%
1932 }}%
1933 }{%
1934 % Now we should clear the board
1935 \clear@board%
1936 % Let us now parse the list of pieces
1937 \ifthenelse{\boolean{@cpd@fen}}{%
1938 \ifthenelse{\value{cpd@rows}=8}{\errmessage{FEN is only allowed for 8x8 boards.}}% FEN s
1939 \ifthenelse{\value{cpd@lines}=8}{\errmessage{FEN is only allowed for 8x8 boards.}}% FEN
1940 \setcounter{cpd@row}{7}%
1941 \setcounter{cpd@line}{0}%
1942 \let\@action\@cpd@parse@fen%
1943 \cpd@fen@parseTokenlist\fen@tk\@e@list% FEN space issue
1944 }{%
1945 \if@pieces%
1946 \let\@action\p@rsepieces%
1947 \let\piece@job\l@tk\let\plane@job\set@piece%
1948 \@parseTokenlist\pieces@tk,%
1949 \fi%
1950 % Now we clear all fields, which are given using \nofields
1951 \if@nofields%
1952 \let\@action\read@square%

```

```

1953     \let\plane@job\set@nofield%
1954     \@parseTokenlist\nofields@tk,%
1955 \fi%
1956 % Now we can put the pieces to the board
1957 \global\setbox\plane@box=\hbox{%
1958     \vbox{\rlap{\box\plane@box}}%
1959     \vbox{%
1960         \chessfont%
1961         \baselineskip=\z@\lineskip=\z@%
1962         \setcounter{cpd@row}{\value{cpd@rows} - 1}%
1963         \whiledo{\value{cpd@row} > -1}{%
1964             \put@row{\value{cpd@row}}%
1965             \addtocounter{cpd@row}{-1}%
1966         }%
1967     }%
1968 % Put a legend if wanted
1969 \ifthenelse{\boolean{legend}}{%
1970     \vbox to \z@{%
1971         \vbox to \z@{\vss}%
1972         \llap{\hbox{\hspace*{\inner@frame}%
1973             \setcounter{cpd@line}{0}%
1974             \setcounter{cpd@line@display}{'a}%
1975             \whiledo{\value{cpd@line}<\value{cpd@lines}}{%
1976                 \hbox to \sq@width{\hfill%
1977                     {\legendfont\char\value{cpd@line@display}}%
1978                 \hfill}%
1979                 \addtocounter{cpd@line}{1}%
1980                 \addtocounter{cpd@line@display}{1}%
1981             }
1982         }}%
1983     \vss}%
1984 }{}%
1985 }%
1986 }
1987 \def\put@sq@normal{%
1988     \put@plane%
1989     \setbox\sq@box=\hbox{%
1990         \inner@hbox{\box\plane@box}%
1991     }%
1992 }
1993 \def\put@sq@stereo{%
1994     \setbox\sq@box=\hbox{\hfil\vbox{%
1995         \vskip\v@space@dist%
1996         \setcounter{cpd@current@plane}{4}%
1997         \whiledo{\value{cpd@current@plane}>-1}{%
1998             \ifthenelse{\value{cpd@current@plane}=0}{%
1999                 \setcounter{cpd@lines}{8}%
2000                 \setcounter{cpd@rows}{8}%
2001             }{%
2002                 \setcounter{cpd@lines}{4}%
2003                 \setcounter{cpd@rows}{4}%
2004             }%
2005             % Now we should clear the board
2006             \begin@group% We need this for inner loops!

```

```

2007         \clear@board%
2008         \put@plane%
2009     \endgroup%
2010     \hbox to \bd@width{%
2011         \hfil%
2012         \inner@henbox{\box\plane@box}%
2013         \ifcase\value{cpd@current@plane}\or%
2014             \rlap{\cpd@boardfont\ A}\or%
2015             \rlap{\cpd@boardfont\ B}\or%
2016             \rlap{\cpd@boardfont\ C}\or%
2017             \rlap{\cpd@boardfont\ D}\}%
2018         \fi%
2019         \hfil%
2020     }%
2021     \vskip\v@space@dist%
2022     \addtocounter{cpd@current@plane}{-1}%
2023 }%
2024 }\hfil}%
2025 }
2026
2027 \def\stereo@center{%
2028     \ifthenelse{\value{cpd@current@plane}=0}{%
2029         \setbox\plane@box=\vbox{\hbox{%
2030             \@hGrid\tw@tw@f@ur\@hGrid\tw@ 6f@ur%
2031             \@vGrid\tw@tw@f@ur\@vGrid6\tw@f@ur%
2032             \box\plane@box%
2033         }}%
2034     }{}%
2035 }
2036 \def\put@sq@space@vertical{%
2037     \setbox\sq@box=\hbox{\hfil\vbox{%
2038         \setcounter{cpd@current@plane}{\value{cpd@planes}-1}%
2039         \vskip\v@space@dist%
2040         \whiledo{\value{cpd@current@plane}>-1}{%
2041             \begin@group% We use inner loops!
2042             \clear@board%
2043             \put@plane%
2044             \hbox to \bd@width{%
2045                 \inner@henbox{\box\plane@box}%
2046                 \setcounter{cpd@current@plane@display}{A+\value{cpd@current@plane}}%
2047                 \rlap{\cpd@boardfont\ \char\value{cpd@current@plane@display}}}%
2048             }%
2049             \end@group%
2050             \vskip\v@space@dist%
2051             \addtocounter{cpd@current@plane}{-1}%
2052         }%
2053     }\hfil}%
2054 }
2055
2056 \def\put@sq@space@horizontal{%
2057     \setbox\sq@box=\hbox{%
2058         \setcounter{cpd@current@plane}{0}%
2059         \hskip\h@space@dist%
2060         \whiledo{\value{cpd@current@plane}<\value{cpd@planes}}{%

```

```

2061         % Now we should clear the board
2062         \begin@group% We use inner loops!
2063         \clear@board%
2064         \put@plane%
2065         \hbox to \bd@width{%
2066             \inner@h@box{\box\plane@box}%
2067             \setcounter{cpd@current@plane@display}{‘A+\value{cpd@current@plane}}%
2068             \rlap{{\cpd@boardfont\ \char\value{cpd@current@plane@display}}}%
2069         }%
2070         \end@group%
2071         \hskip\h@space@dist%
2072         \addtocounter{cpd@current@plane}{1}%
2073     }%
2074 }%
2075 }
2076
2077 \def\put@sqs@space{%
2078     \ifspace@vertical%
2079         \put@sqs@space@vertical%
2080     \else%
2081         \put@sqs@space@horizontal%
2082     \fi%
2083 }
2084 \def\@inner@vframe{%
2085     \if@vframe%
2086         \vrule width \inner@frame%
2087     \else%
2088         \hskip\inner@frame%
2089     \fi%
2090 }
2091
2092 \def\@inner@hframe{%
2093     \if@hframe%
2094         \hrule height \inner@frame%
2095     \else%
2096         \vskip\inner@frame%
2097     \fi%
2098 }
2099 \def\inner@v@frame@rule{%
2100     \if@stereo%
2101         \@inner@vframe%
2102     \else\if@space%
2103         \@inner@vframe%
2104     \else\if@leave@outer%
2105         \vrule width \inner@frame%
2106     \else%
2107         \@inner@vframe%
2108     \fi\fi\fi%
2109 }
2110
2111 \def\inner@h@frame@rule{%
2112     \if@stereo%
2113         \@inner@hframe%
2114     \else\if@space%

```



```

2115     \@inner@hframe%
2116 \else\if@leaveOuter%
2117     \hrule height \inner@frame%
2118 \else%
2119     \@inner@hframe%
2120 \fi\fi\fi%
2121 }
2122
2123 \def\inner@henbox#1{%
2124     \hbox{%
2125         \inner@v@frame@rule%
2126         \vbox{\inner@h@frame@rule#1\inner@h@frame@rule}%
2127         \inner@v@frame@rule%
2128     }%
2129 }
2130 \def\@outer@vrule{\vrule width \outer@frame}
2131
2132 \def\@outer@hrule{\hrule height \outer@frame}
2133 \def\outer@v@frame@rule{%
2134     \if@stereo%
2135         \@outer@vrule%
2136     \else\if@space%
2137         \@outer@vrule%
2138     \else\if@leaveOuter%
2139         \if@vframe\@outer@vrule\else\hskip\outer@frame\fi%
2140     \else%
2141         \@outer@vrule%
2142     \fi\fi\fi%
2143 }
2144
2145 \def\outer@h@frame@rule{%
2146     \if@stereo%
2147         \@outer@hrule%
2148     \else\if@space%
2149         \@outer@hrule%
2150     \else\if@leaveOuter%
2151         \if@hframe\@outer@hrule\else\vskip\outer@frame\fi%
2152     \else%
2153         \@outer@hrule%
2154     \fi\fi\fi%
2155 }
2156
2157 \def\outer@henbox#1{%
2158     \outer@h@frame@rule%
2159     \hbox{%
2160         \outer@v@frame@rule%
2161         \ifspace@vertical%
2162             \hskip\h@frame@dist%
2163         \fi%
2164         \vbox{%
2165             \ifspace@vertical%
2166                 \vskip\v@frame@dist%
2167             \else%
2168                 \vskip\v@space@dist%

```

```

2169     \fi%
2170     #1%
2171     \ifspace@vertical%
2172         \vskip\v@frame@dist%
2173     \else%
2174         \vskip\v@space@dist%
2175     \fi%
2176 }%
2177 \ifspace@vertical%
2178     \hskip\h@frame@dist%
2179 \fi%
2180 \outer@v@frame@rule%
2181 }%
2182 \outer@h@frame@rule%
2183 }
2184 \def\ch@fig#1{%
2185     \ifvmode\noindent\fi%
2186     \hbox{\chtextfont\lower.1\fontdimen\tw@\chtextfont\hbox{\char#1}}}%
2187 }
2188 \def@dia@index{%
2189     \@ifundefined{newindex}%
2190     {\errmessage{You should add documentstyle-option 'index'}}{}%
2191 }
2192
2193 \def\showlabel#1{%
2194     \if@develop%
2195         \raise1ex\hbox{\labelfont#1}\penalty\exhyphenpenalty%
2196     \fi%
2197 }
2198
2199 \def@aidxitem#1, #2, #3{%
2200     \par\medskip#1, \write@christian#2; \dotfill #3%
2201 }
2202
2203 \def\dia@index#1\@sep2[#3]{\index[#3]{#2/showlabel{#1}}}
2204
2205 \def\parse@aindex#1; {%
2206     \expandafter\dia@index\the\label@tk\@sep#1[author]\l@klist%
2207 }
2208
2209 \def@aindex{%
2210     \if@aindex%
2211         \ifnormal@names%
2212             \errmessage{Cannot create index entries with normalnames}%
2213         \else\ifauth@r%
2214             \let\@action=\parse@aindex\@parseTokenlist\aut@tk;%
2215         \fi\fi%
2216     \fi%
2217 }
2218
2219 \def\x@sindex#1\@sep{\expandafter\dia@index\the\label@tk\@sep#1[source]}
2220
2221 \def@sindex{%
2222     \if@sindex\if@source%

```

```

2223     \expandafter\x@sindex\the\source@tk\@sep%
2224     \fi\fi%
2225 }
2226
2227 \def\parse@tindex#1, {%
2228     \expandafter\dia@index\the\label@tk\@sep#1[theme]\l@klist%
2229 }
2230
2231 \def\@tindex{%
2232     \if@tindex\if@theme%
2233         \let\@action=\parse@tindex\@parseTokenlist\theme@tk,%
2234         \fi\fi%
2235 }
2236 \def\@setPieceColor#1#2#3{%
2237     \gdef\ds@white{#1}\gdef\ds@black{#2}\gdef\ds@neutral{#3}%
2238 }
2239
2240 \def\@setPieceSpec#1#2#3#4#5#6{%
2241     \gdef\ds@king{#1}\gdef\ds@queen{#2}\gdef\ds@rook{#3}%
2242     \gdef\ds@bishop{#4}\gdef\ds@knight{#5}\gdef\ds@pawn{#6}%
2243 }
2244
2245 \def\@setPieceRotation#1#2#3{%
2246     \gdef\ds@rotation@left{#1}\gdef\ds@rotation@right{#2}\gdef\ds@rotation@upsideup{#3}%
2247 }
2248 \newcommand{\cpd@piecedef@rotations}{%
2249     \def\@theRotation{\cpd@piecedef@colors{0}}%
2250     \def\@theRotation{\ds@rotation@left}\cpd@piecedef@colors{36}%
2251     \def\@theRotation{\ds@rotation@right}\cpd@piecedef@colors{72}%
2252     \def\@theRotation{\ds@rotation@upsideup}\cpd@piecedef@colors{108}%
2253 }
2254 \newcommand{\cpd@piecedef@colors}[1]{%
2255     \def\@theColor{\ds@white}\cpd@piecedef@types{#1}{0}%
2256     \def\@theColor{\ds@neutral}\cpd@piecedef@types{#1}{6}%
2257     \def\@theColor{\ds@black}\cpd@piecedef@types{#1}{12}%
2258 }
2259 \newcommand{\cpd@piecedef@types}[2]{%
2260     \def\@thePiece{\ds@pawn}\cpd@piecedef{#1}{#2}{0}%
2261     \def\@thePiece{\ds@knight}\cpd@piecedef{#1}{#2}{1}%
2262     \def\@thePiece{\ds@bishop}\cpd@piecedef{#1}{#2}{2}%
2263     \def\@thePiece{\ds@rook}\cpd@piecedef{#1}{#2}{3}%
2264     \def\@thePiece{\ds@queen}\cpd@piecedef{#1}{#2}{4}%
2265     \def\@thePiece{\ds@king}\cpd@piecedef{#1}{#2}{5}%
2266 }
2267 \newcommand{\cpd@piecedef}[3]{%
2268     \setcounter{cpd@piece@index}{#1+#2+#3}%
2269     \edef\cpd@piecedef@index{\arabic{cpd@piece@index}}%
2270     \expandafter\xdef%
2271     \csname\@theColor\@thePiece\@theRotation\endcsname{%
2272         \ch@fig{\cpd@piecedef@index}%
2273     }
2274 }
2275
2276 \elchfont\@fselch

```

```

2277
2278 \defaultelchfont%
2279 \diagnum{\@ne}
2280 %% \figcnttrue
2281 \setboolean{piececounter}{true}
2282 \def\@dianame{\@fullname}
2283 \def\@solname{\@fullname}
2284 \space@verticaltrue
2285 \diagnumbering{arabic}
2286 \def\write@month{\@arabic}%
2287 \diagleft
2288 \cl@arsol
2289 \let\orig@author=\author
2290 \let\orig@day=\day
2291 \let\orig@month=\month
2292 \let\orig@year=\year
2293 \let\orig@label=\label
2294 \DefinePieces{wsn}{KDTLSB}{LRU}
2295 \newdimen\normalboardwidth
2296 \def\setboardwidth{%
2297   \normalboardwidth=\@ight\fontdimen\tw@\chessfont%
2298   \advance\normalboardwidth\tw@\inner@frame%
2299   \advance\normalboardwidth\tw@\h@frame@dist%
2300   \advance\normalboardwidth\tw@\outer@frame%
2301 }
2302
2303 \setboardwidth
2304
2305 </style>

```

4 The implementation of cpdparse.sty

The following contains the style file *cpdparse.sty*, which implements generic parsing of lists.

```

2306 (*cpdparse)
2307 \ProvidesPackage{cpdparse}[2020/12/27]
2308 \def\cpd@parse@list{\futurelet\cpd@parse@lookahead\cpd@parse@check}
2309 \def\cpd@parse@check{%
2310   \ifx\cpd@parse@lookahead\relax\relax%
2311     \let\cpd@parse@next=\relax%
2312   \else%
2313     \let\cpd@parse@next=\cpd@parse@action%
2314   \fi%
2315   \cpd@parse@next%
2316 }

```

;cpdparse;

Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.

Symbols	<code>\cpd@handle@fen</code> .	<code>\dia@piecedefs</code> ..
<code>\,</code> 655	..... 1647, 1688	..... 991, 1243
<code>\@piecedef</code> . 1222, 1226	<code>\cpd@initsize</code> ...	<code>\dia@remark</code> . 992, 1254
<code>\@0</code> 612–614	239, 246, 257, 271	<code>\dia@solution</code> ...
<code>\@action</code> 822, 1012,	<code>\cpd@param</code> .. 659, 661	..... 1306, 1444
1027, 1161,	<code>\cpd@parse@fen</code> ..	<code>\dia@source</code> . 973, 1064
1192, 1194,	..... 1688, 1942	<code>\dia@stipulation</code>
1208, 1210,	<code>\cpd@post@arrow</code> .	.... 36, 983, 1137
1248, 1258,	.... 598–600, 604	<code>\dia@tournament</code> .
1303, 1319,	<code>\cpd@pre@arrow</code> ..	..... 975, 1095
1367, 1376,	597, 599, 600, 603	<code>\dia@twins</code>
1417, 1508,	<code>\cpd@prepost@arrow</code>	.. 989, 1144, 1186
1643, 1888,	..... 602, 607	<code>\dia@version</code> 972, 1042
1894, 1900,	<code>\cpd@setpiece</code> 1597,	<code>\dia@writename</code> ..
1942, 1946,	1610, 1671, 1684	..... 1012, 1478
1952, 2214, 2233	<code>\cpd@warnIfEmpty</code>	<code>\@diagram</code> <u>234</u>
<code>\@addToPlane</code> . 1875,	.... 656, 706,	<code>\@dianame</code> 591, 1478, 2282
1890, 1896, 1902	711, 716, 721, 726	<code>\@dianumber@prefix</code>
<code>\@afterfalse</code> . 174, 1300	<code>\@currentlabel</code> ...	.... 594, 622, 627
<code>\@aftertrue</code> .. 717, 1281	.... 317, 520, 642	<code>\@empty</code> 661
<code>\@aidxitem</code> .. 912, 2199	<code>\@datefalse</code> 167	<code>\@fidealbumfalse</code> . 178
<code>\@aindex</code> 313, 516, 2209	<code>\@datetrue</code>	<code>\@fidealbumtrue</code> .. 731
<code>\@aindexfalse</code> 228	678, 682, 690, 1477	<code>\@fieldframefalse</code> 189
<code>\@aindextrue</code> 897	<code>\@dayfalse</code> .. 168, 1298	<code>\@fieldframetrue</code> . 790
<code>\@awardfalse</code> . 173, 1299	<code>\@daytrue</code> ... 678, 1273	<code>\@fieldtextfalse</code> . 186
<code>\@awardtrue</code> .. 707, 1280	<code>\@dedicationfalse</code>	<code>\@fieldtexttrue</code> .. 777
<code>\@blackfield</code> ... 68,	..... 177, 1300	<code>\@figurine@after</code> .
1816–1818, 1830	<code>\@dedicationtrue</code> .	..... 1343, 1381
<code>\@checkshort</code> .....	..... 727, 1284	<code>\@figurine@author</code>
. 1482, 1497, 1504	<code>\@developfalse</code> ... 206	..... 1341, 1364
<code>\@cityfalse</code> .. 164, 1297	<code>\@developtrue</code> 878	<code>\@figurine@award</code> .
<code>\@citytrue</code> .. 666, 1270	<code>\@dia@after</code> .. 971, 1033	..... 1348, 1406
<code>\@cnt@box</code>	<code>\@dia@authors</code> 969, <u>1006</u>	<code>\@figurine@city</code> ..
. 94, 470, 479, 484	<code>\@dia@award</code> .. 976, 1108	..... 1342, 1373
<code>\@cnt@wd</code> .. 95, 479, 480	<code>\@dia@city</code> .. 970, 1021	<code>\@figurine@computer</code>
<code>\@commentfalse</code> 183, 1301	<code>\@dia@condition</code> ..	..... 1355, 1434
<code>\@commenttrue</code> 842, 1288	.. 986, 1147, 1202	<code>\@figurine@conditions</code>
<code>\@computerfalse</code> .. 181	<code>\@dia@correction</code> .	..... 1353, 1426
<code>\@computertrue</code> ... 827	..... 974, 1086	<code>\@figurine@correction</code>
<code>\@condition</code> .. 798, 800	<code>\@dia@date</code> .....	..... 1344, 1383
<code>\@conditionfalse</code> . 196	.. 1051, 1071,	<code>\@figurine@dedic</code> .
<code>\@conditiontrue</code> .. 801	1080, 1102, 1396	..... 1349, 1410
<code>\@correctionfalse</code>	<code>\@dia@dedic</code> .. 977, 1117	<code>\@figurine@number</code>
..... 176, 1300	<code>\@dia@fidealbum</code> ..	..... 1340, 1357
<code>\@correctiontrue</code> .	..... 978, 1128	<code>\@figurine@pieces</code>
..... 722, 1283	<code>\@dia@index</code> .....	..... 1350, 1415
<code>\@cpd@emptytest</code> ..	895, 901, 907, 2188	<code>\@figurine@remarks</code>
.... 159, 658, 659	<code>\@dia@number</code> . 968, <u>1000</u>	..... 1354, 1440

\@figurine@source	\@numbertrue . 641, 1268	\@sindexfalse 229
. 1346, 1391	\@outer@hrule	\@sindextrue 903
\@figurine@stip . .	. . 2132, 2147,	\@sirname 1512
. 1351, 1422	2149, 2151, 2153	\@sol@writename . .
\@figurine@tournament	\@outer@vrule . . . .	. . . . . 1319, 1479
. 1347, 1402	. . 2130, 2135,	\@solname 592, 1479, 2283
\@figurine@twins .	2137, 2139, 2141	\@sourcefalse 166, 1298
. 1352, 1430	\@pagesfalse . 171, 1299	\@sourcenrfalse . .
\@figurine@version	\@pagetrue . . 698, 1278	. . . . . 165, 1298
. 1345, 1387	\@parseNeutralCount	\@sourcenrtrue 670, 1271
\@fselch 30, 2276	. . . . . 755, 759	\@sourcetrue . 674, 1272
\@fullname	\@parseTokenlist .	\@spacediagram 266, 269
. 1511, 2282, 2283	. . . . . 1013,	\@spacefalse 227
\@gridlinesfalse . 188	1027, 1196,	\@spacetrue 265
\@gridlinestrue . . 786	1212, 1249,	\@specialfalse . . . 162
\@hGrid 1628,	1259, 1320,	\@specialtrue 639
1633, 1757,	1368, 1376,	\@start@diagram . .
1767, 1785, 2030	1419, 1874,	251, 260, 274, 276
\@hframefalse	1877, 1948,	\@stdgrid . . 1776, 1884
. 850, 854, 862	1954, 2214, 2233	\@stdgridfalse . . . 190
\@hframetrue 43	\@parseWhiteAndBlackCount	\@stdgridtrue 866
\@ifundefined . . . 2189	. . . . 742, 745, 771	\@stereofalse 226
\@ight 26, 236,	\@piecedef . . . 819,	\@stereotrue 256
327, 328, 381, 2297	822, 1230, 1239	\@stip@box 96
\@inner@hframe 2092,	\@piecedefsfalse . 198	\@stipulationfalse 195
2113, 2115, 2119	\@piecedefstrue . . 816	\@stipulationtrue 794
\@inner@vframe 2084,	\@pieces . 737, 743, 762	\@test@box 99, 1166, 1167
2101, 2103, 2107	\@piecesfalse 184	\@test@dimen 100
\@issuefalse . 170, 1299	\@piecestrue 763	\@theColor
\@issuetrue . . 694, 1277	\@pkelch 29	. 2255–2257, 2271
\@judgementfalse .	\@plane@job . . 1721,	\@thePiece
. 182, 1301	1726, 1731,	. 2260–2265, 2271
\@judgementtrue . .	1736, 1739, 1741	\@theRotation
. 846, 1289	\@remarkfalse 197	. 2249–2252, 2271
\@labelfalse . 160, 1297	\@remarktrue 812	\@themefalse . 180, 1301
\@labeltrue . 1267, 1792	\@selGrid . . 1764, 1901	\@themetrue . . 835, 1285
\@leaveOuterfalse 854	\@sep . . . 2203, 2206,	\@tindex 315, 518, 2231
\@leaveOutertrue . . 44	2219, 2223, 2228	\@tindexfalse 230
\@leftfalse 1177	\@set@label	\@tindextrue 909
\@lefttrue . . . . .	. . . 320, 524, 1795	\@tournamentfalse
. . 1160, 1169,	\@setPieceColor . .	. . . . . 172, 1299
1179, 1189,	. . . . . 916, 2236	\@tournamenttrue .
1205, 1246, 1257	\@setPieceRotation	. . . . . 702, 1279
\@months 686, 1477	. . . . . 916, 2245	\@twins 805, 807
\@nofieldsfalse . . 187	\@setPieceSpec 916, 2240	\@twinsfalse . 179, 1301
\@nofieldstrue . . . 781	\@short 1513	\@twinskip
\@noname 1514	\@shortformfalse 1485	. 1135, 1143, 1146
\@normalname 1515	\@shortformtrue . 1483	\@twinstrue . . 808, 1286
\@notfirstfalse . .	\@show@album 1126, 1131	\@typisfalse 199
. . 1026, 1317,	\@show@city . 1017, 1019	\@typistrue 288
1366, 1375, 1508	\@show@computertrue 194	\@vGrid 1627,
\@notfirsttrue 1017,	\@show@figurine . .	1630, 1750,
1360, 1481, 1489	. . . . . 527, 1338	1769, 1780, 2031
\@numberfalse 161, 1297	\@sindex 314, 517, 2221	\@versionfalse 175, 1300

<code>\@versiontrue</code>	712, 1282	1928, 1965,	354, 356–358,
<code>\@vframefalse</code>	....	1979, 1980,	367–371, 378,
	.... 850, 854, 858	2022, 2051, 2072	381, 384–386,
<code>\@vframetrue</code>	.... 42	<code>\after</code>	391, 398, 427,
<code>\@whitefield</code>	... 73,	<code>\after@tk</code>	437, 439, 448, 484
	1816, 1818, 1829	138, 717, 1037,	
<code>\@widiasfalse</code>	200, 891	1281, 1381, 1463	C
<code>\@widiastrue</code>	... 890	<code>\allwhite</code>	<code>\c@board@nr</code>
<code>\@write@christian</code>	.... 1494, 1498	.... 11, 71	.... 627
<code>\@write@short</code>	1501, 1506	<code>\and</code>	<code>\centering</code>
<code>\@write@sol</code>	... 1443, 1445	.... 1814	.. 424, 629
<code>\@yearfalse</code>	.. 169, 1298	<code>\any</code>	.. 1638, 1639
<code>\@yeartrue</code>	.. 690, 1276	.... 14, <u>610</u>	<code>\ch@cklst</code>
		<code>\arabic</code>	.... 919,
		.... 463,	922, 927, 930,
		464, 1844, 2269	933, 936, 939,
		<code>\arrowskip</code>	942, 945, 948,
		.... <u>597</u>	951, 954–960,
		<code>arrowskip</code> (environ-	1413, 2184, 2272
		ment) 14	<code>\check@piecedef</code>
		<code>\AtBeginDocument</code>	.. 1218, 1228
		.. 20	<code>\chessfont</code>
<code>\_</code>	.... 429, 463,	<code>\aut@tk</code>	325, 548,
	473, 616, 824,	.... 126,	551, 561, 564,
	924, 961, 1017,	649, 1010,	574, 577, 924,
	1069, 1071–	1013, 1269,	925, 961, 962,
	1073, 1102,	1315, 1320,	1865, 1960, 2297
	1135, 1235,	1368, 1451, 2214	<code>\chkr@tate</code>
	1369, 1377,	<code>\auth@rfalse</code>	.. 1551, 1554
	1381, 1384,	.. 163, 1297	<code>\chtexfont</code>
	1388, 1394,	<code>\auth@rtrue</code>	....
	1396, 1403,	.. 649, 1269	549, 552, 562,
	1407, 1411,	<code>\author</code>	565, 575, 578, 2186
	1423, 1427,	.... 4, 278,	<code>\city</code>
	1431, 1436,	300, 494, 503, 2289	.... 5, 665
	1441, 1480,	<code>\authorfont</code>	<code>\city@tk</code>
	1513, 1844,	.... <u>535</u> , 1001,	....
	1849, 2014–	1003, 1010,	127, 666, 1027,
	2017, 2047, 2068	1357, 1366, 1478	1270, 1376, 1452
		<code>\authorindex</code>	<code>\cityfont</code>
		.. 15, 912	<u>535</u> , 1026, 1375
		<code>\award</code>	<code>\cl@arsol</code>
		.... 5, 705	889, 1518, 2288
		<code>\award@tk</code>	<code>\clear@board</code>
	
		137, 707, 1112,	.. 1813, 1935,
		1280, 1407, 1462	2007, 2042, 2063
		<code>\awardfont</code>	<code>\Co</code>
		.... <u>535</u>,	.... 826
		1099, 1112,	<code>\CodelineIndex</code>
		1403, 1407, 1411	.... 6
			<code>\col@action</code>
		
			.. 1220, 1222, 1224
			<code>\comment</code>
			.... 6, 841
			<code>\comment@tk</code>
			146, 842,
			1288, 1327, 1470
			<code>\computer@tk</code>
			.. 147,
			827, 1287, 1469
			<code>\computerproofedsymbol</code>
			.. 8, 192, 473, 1436
			<code>\cond</code>
			.... 5, <u>869</u>
			<code>\condition</code>
			.. 5, 797, 874
			<code>\condition@tk</code>
			.. 156,
			801, 1212, 1427
			<code>\correction</code>
			.... 720

<code>\ifauth@r</code> 163, 1007, 1313, 1365, 2213	<code>\inner@v@frame@rule</code> . 2099, 2125, 2127	<code>\message</code> 662
<code>\ifdi@no</code> 51, 1001	<code>\insidediagram</code> 15, 296	<code>\month</code> 5, 280, 302, 496, 505, 2291
<code>\ifds@label</code> .. 231, 1795	<code>\isodd</code> 1828	<code>\months</code> 5, 685
<code>\iffgcnt</code> 56	<code>\issue</code> 5, 693	
<code>\ifimitator</code> 203	<code>\issue@tk</code> 134, 694, 1072, 1277, 1397, 1459	N
<code>\ifnormal@names</code> 204, 1008, 1314, 2211		<code>\n@xt</code> 748, 752
<code>\ifs@lu</code> 205, 1446		<code>\name@sep</code> 1318, 1480, 1481
<code>\ifspace@vertical</code> 48, 352, 2078, 2161, 2165, 2171, 2177	J	<code>\nC</code> 13
<code>\IfStrEqCase</code> . 1537, 1555, 1663, 1676	<code>\jobname</code> 889, 1518	<code>\nE</code> 13, 956
<code>\IfSubStr</code> 1658, 1661, 1674	<code>\judgement</code> 6, 845	<code>\newcommand</code> 14, 71, 76, 86–88, 192, 193, 232, 233, 296, 535– 544, 546, 559, 572, 593, 597– 600, 602, 610, 622, 653–655, 766, 820, 965, 1305, 2248, 2254, 2259, 2267
<code>\ifx@cond</code> 202, 985, 1145, 1207	<code>\judgement@tk</code> 145, 846, 1289, 1325, 1471	<code>\newenvironment</code> .. 606
<code>\ifx@twins</code> ... 201, 988, 1142, 1191	L	<code>\next@piecedef</code> 1219, 1228
<code>\ignorespaces</code> .. 40, 284, 290, 616, 643, 650, 652, 667, 671, 675, 679, 683, 687, 691, 695, 699, 703, 708, 713, 718, 723, 728, 732, 764, 774, 778, 782, 787, 791, 795, 802, 809, 813, 817, 828, 832, 836, 843, 847, 851, 855, 859, 863, 867, 879, 883, 887	<code>\l@@k</code> . 1576, 1611, 1947	<code>\nextlist</code> .. 1638, 1640
<code>\Imi</code> 13, 954	<code>\l@@klist</code> 819, 823, 1019, 1162, 1183, 1240, 1293, 1303, 1361, 1478, 1479, 1491, 1508, 1623, 1635, 1638, 1688–1690, 1704, 1706, 1774, 1873, 1874, 2206, 2228	<code>\nextpr@c</code> 1558, 1562, 1566, 1568– 1573, 1579, 1581, 1583, 1641, 1643, 1645
<code>\imitatorfalse</code> ... 203	<code>\label</code> 8	<code>\nGh</code> 13
<code>\init@vars</code> 277, 493, 1796	<code>\label@tk</code> 123, 310, 320, 429, 513, 524, 1267, 1311, 1449, 1792, 2206, 2219, 2228	<code>\nNr</code> 13
<code>\inner@frame</code> .. 111, 255, 264, 338, 339, 355, 356, 361, 383, 384, 1331, 1972, 2086, 2088, 2094, 2096, 2105, 2117, 2298	<code>\labelfont</code> 429, <u>535</u> , 2195	<code>\nocomputer</code> 8, 885
<code>\inner@h@frame@rule</code> 2111, 2126	<code>\lefttrightharrow</code> .. 600	<code>\nodiagnumbering</code> . 618
<code>\inner@h@enbox</code> 1990, 2012, 2045, 2066, 2123	<code>\legend</code> 8	<code>\nofields</code> 12, 780, 784, 1950
	<code>\legendfont</code> <u>535</u> , 1844, 1977	<code>\nofields@tk</code> 148, 781, 1954
	<code>\linebreak</code> 965	<code>\noframe</code> ... 6, 11, 849
	<code>\lineskip</code> 1961	<code>\noinnerframe</code> 6, 11, 853
	<code>\lra</code> 14, <u>597</u>	<code>\normal@namesfalse</code> 204, 893
	M	<code>\normal@nametrue</code> 892
	<code>\m@ne</code> 481, 596, 1602, 1617, 1620, 1652, 1816–1818, 1861	<code>\normalboardwidth</code> . 2295, 2297–2300
	<code>\magic</code> <u>869</u>	<code>\normalnames</code> 892
	<code>\makeaindex</code> ... 15, 894	<code>\nosquares</code> ... 12, 784
	<code>\makesindex</code> ... 15, 900	<code>\notcomputerproofedsymbol</code> 8, 193, 473
	<code>\maketindex</code> ... 15, 906	<code>\nowidedias</code> 891
		<code>\number@tk</code> ... 125, 641, 1268, 1312
		<code>\nX</code> 13, 959

O		
\OO	14, <u>610</u>	
\O00	14, <u>610</u>	
\OR	469	
\orig@author .....	...	300, 503, 2289
\orig@day	301, 504, 2290	
\orig@label .....	...	304, 507, 2293
\orig@month .....	...	302, 505, 2291
\orig@year	303, 506, 2292	
\outer@frame .....	...	112, 335, 336, 341, 349, 350, 358, 371, 386, 1332, 1333, 2130, 2132, 2139, 2151, 2300
\outer@h@frame@rule	.	2145, 2158, 2182
\outer@henbox	443, 2157	
\outer@v@frame@rule	.	2133, 2160, 2180
P		
\p@rseauthor	1706	
\p@rseauthor@figurine	...	1359, 1367
\p@rsecity .....	.	1019, 1027, 1376
\p@rsepieces .....	.	1417, 1689, 1946
\p@rsetext	.	1690, 1894
\pages	5, 697	
\pages@tk	135, 698, 1073, 1278, 1398, 1460	
\parse@aindex	2205, 2214	
\parse@params	1265, 1303	
\parse@piecedef ..	.	1226, 1228, 1234
\parse@tindex	2227, 2233	
\parse@fields	1576, 1577	
\piece@job .....	...	1418, 1568, 1572, 1575, 1947
\piececounter	7	
\piecedef	820	
\piecedefs	6, 815	
\piecedefs@tk .....	...	158, 816, 1249
\pieces	4, 734	
\pieces@tk	151, 763, 1419, 1948	
\plane@box	121, 1777, 1788, 1876, 1878, 1910, 1931, 1957, 1958, 1990, 2012, 2029, 2032, 2045, 2066	
\plane@char .....	...	1714, 1717, 1722, 1727, 1732
\plane@job .....	...	1712, 1739, 1744, 1748, 1889, 1895, 1901, 1947, 1953
\Prof	4, <u>652</u>	
\ProfDr	4, <u>652</u>	
\put@count ..	451, 467	
\put@plane .....	...	1881, 1988, 2008, 2043, 2064
\put@row	1838, 1964	
\put@sqs	249, 258, 272, 406	
\put@sqs@normal ..	...	249, 1987
\put@sqs@space	272, 2077	
\put@sqs@space@horizontal	...	2056, 2081
\put@sqs@space@vertical	...	2036, 2079
\put@sqs@stereo ..	...	258, 1993
\putsol	889	
R		
\r@tate	1551, 1555, 1569–1571	
\ra	14, <u>597</u>	
\raggedleft	631	
\raggedright	400, 429, 450, 630	
\read@plane	250, 259, 273, 1710, 1900	
\read@plane@normal	...	250, 1712
\read@plane@space	...	273, 1746
\read@plane@stereo	...	259, 1714
\read@square .....	...	1534, 1581, 1707, 1888, 1952
\rem	6, <u>869</u>	
\remark	6, 811, 875	
\remark@tk	157, 812, 1259, 1441	
\remfont	<u>535</u> , 1190, 1206, 1248, 1258, 1427, 1431	
\renewcommand	15–17, 55, 594, 603, 604	
\reversednames	893, 897	
\Rightarrow	616	
\rightarrow	599	
\rla	<u>597</u>	
\rlap ..	1958, 2014–2017, 2047, 2068	
\roman	1591, 1595	
S		
\s@lfd	209, 889, 1447, 1518	
\s@lufalse	1797	
\s@luttrue	831	
\sC	13	
\sE	13, 957	
\selectelchfont	8, 532	
\sep@names	1479, 1481	
\set	14, <u>610</u>	
\set@current@square@index	...	1586, 1600, 1615, 1823, 1856
\set@current@square@value	...	1589, 1603, 1605, 1620, 1829, 1830
\set@frame	1625, 1889	
\set@nofield	1613, 1953	
\set@piece	1609, 1947	
\set@text ..	1691, 1895	
\set@boardwidth ..	...	2296, 2303
\setcounter	240–242, 247, 248, 270, 556, 569, 582, 595, 746, 747, 760, 1587, 1594, 1651, 1708, 1709, 1718, 1723, 1728, 1733, 1738, 1747, 1804–1810, 1819,	

1821, 1824,	<code>\space@frame</code>	T
1839–1841,	. . . . 113, 335,	<code>\text@tk</code> 154, 1534, 1698
1914, 1922,	336, 349, 350, 1333	<code>\textproblem</code> 36
1940, 1941,	<code>\space@frame@dist</code>	<code>\theboard@nr</code> 55
1962, 1973,	. . . . 116, 333,	<code>\thediag</code> 55,
1974, 1996,	334, 347, 348, 1336	627, 642, 1001,
1999, 2000,	<code>\space@horizontal</code> 1517	1003, 1357, 1450
2002, 2003,	<code>\space@vertical</code> . 1516	<code>\theme@tk</code> 143, 835,
2038, 2046,	<code>\space@verticalfalse</code>	1285, 1467, 2233
2058, 2067, 2268	. . . . . 49, 1517	<code>\themeindex</code> . . . 15, 914
<code>\setmonthstyle</code> . 7, <u>632</u>	<code>\space@verticaltrue</code>	<code>\themes</code> 6, 834
<code>\sffamily</code> 544	. . . . . 1516, 2284	<code>\thr@@</code> 1541
<code>\sGh</code> 13	<code>\spacediagram</code> 262	<code>\times</code> 610
<code>\sh@wauthor</code> 1706	<code>spacediagram[]</code> (envi-	<code>\to@month</code> 132, 1058,
<code>\short@christian</code> .	ronment) 9	1275, 1457, 1477
. 1488, 1508	<code>\spacehorizontal</code> . . 49	<code>\topdist</code> 98, 426
<code>\show@squares</code> 1413, 1418	<code>\spacelayout</code> . . 11, 617	<code>\tourn</code> <u>869</u>
<code>\showacademictitle</code> . 8	<code>\specialdiagnum</code> 5, 633	<code>\tournament</code> . 5, 701, 871
<code>\showcity</code> 8	<code>\split@param</code> 1296, 1444	<code>\tournament@tk</code> . . .
<code>\showcomputer</code> . . 8, 881	<code>\sq@box</code> 120,	136, 702, 1100,
<code>\showlabel</code> . 1311, 2193	397, 398, 406,	1279, 1403, 1461
<code>\showtypis</code> 287	441, 443, 1989,	<code>\tw@</code> 325, 338–
<code>\sim</code> 615	1994, 2037, 2057	341, 355–358,
<code>\skip@plane</code>	<code>\sq@width</code> 108,	361, 371, 383–
. . 1721, 1726,	325, 327–330,	386, 435, 580,
1731, 1736, 1744	343, 344, 353,	581, 1309, 1334,
<code>\skipr@t</code> 1558,	360, 362, 363,	1335, 1540,
1562, 1566,	365, 375, 378,	1778, 1781,
1569–1571, 1575	381, 1167, 1175,	1783, 1786,
<code>\slash</code> 1017	1693–1696,	2030, 2031,
<code>\sloppy</code> 401	1751–1753,	2186, 2297–2300
<code>\slshape</code> 536	1758–1760,	<code>\twins</code> 5, 804
<code>\sNr</code> 13	1844, 1855,	<code>\twins@tk</code>
<code>\sol</code> 6, <u>869</u>	1857, 1911, 1976	144, 808, 1196,
<code>\sol@tk</code> 124, 831, 995,	<code>\ssL</code> 13	1286, 1431, 1468
1290, 1326, 1472	<code>\stdgrid</code> 865, 869	<code>\typis@tk</code> . . . 122, 289
<code>\solafterdiagram</code> . . 40	<code>\stepcounter</code> . . . 86–88	U
<code>\solhead</code> 1444, 1448, 1473	<code>\stereo@center</code> . . .	<code>\useasboundingbox</code>
<code>\solnamestyle</code> . . 7, 592	. . . . . 1905, 2027	. . . . . 1858, 1912
<code>\solpar</code> 15,	<code>\stereodiagram</code> . . . 253	V
1305, 1325–1327	<code>stereodiagram</code> (envi-	<code>\v@frame@dist</code> . 114,
<code>\solution</code> . . 6, 830, 876	ronment) 9	334, 348, 374,
<code>\source</code> 5, 673	<code>\stip</code> 5, <u>869</u>	1334, 2166, 2172
<code>\source@tk</code> . . . 129,	<code>\stipfont</code>	<code>\v@space@dist</code>
674, 1070, 1272,	399, 471, <u>535</u>,	. . . . 117, 332,
1395, 1454, 2223	1140, 1423, 1441	346, 1337, 1995,
<code>\sourcefont</code> . . . <u>535</u> ,	<code>\stipulation</code> 5, 793, 873	2021, 2039,
1068, 1079, 1393	<code>\stipulation@tk</code> . .	2050, 2168, 2174
<code>\sourceindex</code> . . 15, 913	. . . . 155, 402,	<code>\value</code> 242, 353, 360,
<code>\sourcenr</code> 5, 669	794, 1141, 1423	369, 375, 376,
<code>\sourcenr@tk</code>	<code>\switchcolors</code> . . 12, 76	378, 409, 411,
128, 670, 1069,	<code>\swL</code> 13	413, 464, 1587,
1271, 1394, 1453	<code>\sX</code> 13, 960	

v1.13	General: Implemented issue: 03f/99b:om: diagram.dtx: added new command fen to allow entering forsyth-edwards-notation 1	v1.22	Fixed typo in @dia@fidealbum command. 1
v1.14	General: Fixed issue with stereo- and space-diagrams. 1	v1.22	General: Fix empty argument detection. Change ra and lra commands to allow for common prefix and suffix. Added generic command insidediagram to allow e.g. footnotes inside diagrams. Fixed numbering when creating empty diagram numbering via speciadiagram. 1
v1.15	General: Fixed frame issue with stereo- and space-diagrams. Added hook commands for begin/end diagram. 1	v1.23	General: Fixed pdflatex/Acrobat-Reader issue by using tikz in put@row. Removed dependency to pstricks. Switched to LaTeX counters from TeX counters. Fixed spacing issue when using fen notation. 1
v1.16	General: Fixed date display issue in figurine environment. Added hook commands to figurine environment. Fixed documentation bug: separation character in themes command is comma not semicolon. command diagnumbering fixed: boolean is changed to true globally. 1	v1.5	General: Added license meta-comment to publish package on ctan. 1
v1.17	General: Added generation of cpdparse.sty containing generic command for parsing lists. 1	v1.5.1	General: Fixed font problem when writing producing piececounter in small diagrams. 1
v1.18	General: 03f/0be:om: Typo: above@newlne 03f/035:om: solnamestype has no effect 1	v1.5.2	General: Added some percent signs at line ends in @start@diagram and enddiagam to avoid accidentally added spaces. 1
v1.19	General: Minor fix in cl@arsol Added (empty) command gerne. 1	v1.5.3	General: Changed switch, which is used to decide, whether infomration about computer proof is displayed to use standard boolean syntax. Symbols about computer proof are now created by standard commands and may therefore be changed by users. 1
v1.20	General: Introduced two booleans to better control displaying diagram number globally and locally. Removed the old boolean 'di@no'. 1	v1.5.4	General: Defined 2 different versions of @writename command, to be able to change it in other stylefiles for
v1.21	General: Impletented issue: 03f/309: handle empty arguments in information collecting commands		

	the part over the diagram without influencing the one used for the solution. Added commands to set white, black and neutral Circles within text.	1		Linß and Thomas Brand added support for Equihopper and turned Equihopper (X) . . .	1
v1.5.5	General: Changed amount of lowering figurine pieces.	1	v1.6.6	General: Introduced new command to switch to the default diagram size.	1
v1.5.6	General: Added new command 'solpar' to allow use of 'putsol' inside a window environment.	1	v1.6.7	General: Fixed issue '19a' with allwhite on quadratic fields.	1
v1.6	General: Added boolean showcity and code to suppress display of city, when showcity is false. Added commands for academic titles, which allow to suppress their display.	1	v1.7.0	General: Implemented Issue '32c': the command diagnum now allows to specify a prefix to be used for the following diagrams.	1
v1.6.1	General: Added new command piecedefs specify names of fairy pieces for rotated pieces.	1	v1.8.0	General: Implemented issue '03f/f2a': Added code to display a legend around the board, controlled by the boolean 'legend'.	1
v1.6.2	General: Added boolean for allwhite problems.	1	v1.8.1	General: Implemented issue '03f/83c': changed tex boolean solafterdiagram to latex boolean.	1
v1.6.3	General: Added boolean for board with switched field colors.	1	v1.9	General: Implemented issue '03f/932': Renamed boardfont to cpd@boardfont due to a naming collision with another chess package. Changed all font definitions to newcommand instead of def.	1
v1.6.4	General: Added convenience command for 'allwhite' and 'switchcolors' booleans.	1			
v1.6.5	General: As suggested by Torsten				