Creating diagrams for chess problems

Version 1.5

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Abstract

It have 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 H"oning) 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 LaTeX 2_ε. 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

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 LaTeX-code to get nice looking diagrams.

1
Thomas Brand
Problemkiste 1992
Elmar Bartel gew.
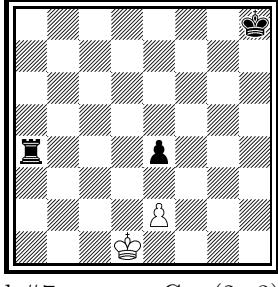
2
Thomas Brand
Problemkiste 1992

h#7   C− (2+3)
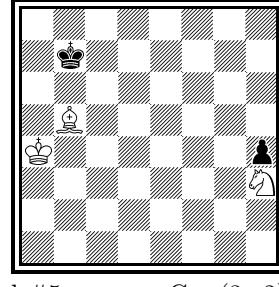
h#5   C− (3+2)

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 LaTeX 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}
  \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 LaTeX using `\normalnames` and `\reversednames`. This `\author` command does only overwrite the default behaviour when used inside a diagram environment.

\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 may be used to specify the piece.
  R U L may be used to specify an optional rotation: right, upside-down, left. So you may use `sDUc7` for a grashopper 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.

\stipulation
\stip
- is used to specify the stipulation of the problem, e.g. `\stipulation{\#2}` may be used to specify a *mate in two*. There is also an abbreviation `\stip` for this macro.

4

`\city`	• may be used to specify the city and country, where the author or the authors live. I use this inside the original section of **Die Schwalbe**. You should separate multiple cities (for multiple authors) with "; ".
`\specialdiagnum`	• 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.
`\sourcenr`	• May be used to specify the number which was used for the problem inside an originals section.
`\source`	• May be used to specify the book or magazine where the problem was issued first.
`\issue`	• May be used to specify e.g. the issue of a magazine where the problem was issued.
`\pages`	• May be used to specify the page (or pages) where the problem was issued.
`\day` `\month` `\months` `\year`	• 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 **Die Schwalbe** you will typically only specify the `\month` and the `\year`. For problems issued in **feenschach** you may specify a period of months like `\months{7-10}`.)
`\tournament` `\award`	• May be used to specify an award and a tournament for the problem.
`\dedication` `\dedic`	• May be used to specify a dedication which was given by the author of the problem.
`\condition` `\cond`	• May be used to specify the fairy conditions of a problem. Different conditions should be separated with "; ".
`\twins`	• May be used to specify the different twins of a problem. Different twins should be separated with "; ".
`\remark` `\rem`	• 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`.
`\solution` `\sol`	• `\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`.
`\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.

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 thorus 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 seperates 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
\solnamestyle
Using \dianamestyle (or \solnamestyle) you may specify how authornames 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 distuingish between firstname and sirname. You must specify one of the following options as parameter to \dianamestyle (or \solnamestyle):

fullname Writes the authorname as *firstname sirname*. This is the default.

sirname Writes the *sirname* only.

short Writes an abbreviation of the *firstname* and the *sirname*. 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 firstname using the form *sirname, firstname/abbreviation*. `\author{Brand, Thomas/Th.}` will be displayed as **Th. Brand**

noname displayes 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}`.

\nocomputer
- is used to suppress the display whether a problem has been computer-proved or not.

\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   In analogy to the defaults for fontsizes of a document you may specify sizes of the fonts used in a diagram. The default will be set according to the fontsize
\diagramxii   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.

\diagnum
- 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.

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 lines and then the rows as the following examples shows.

7

3

is created by

```
\begin{diagram}[17x11]
\label{bigdia}
\pieces{wKUi{11}, sKRj9, sCc5b4}
\end{diagram}
```
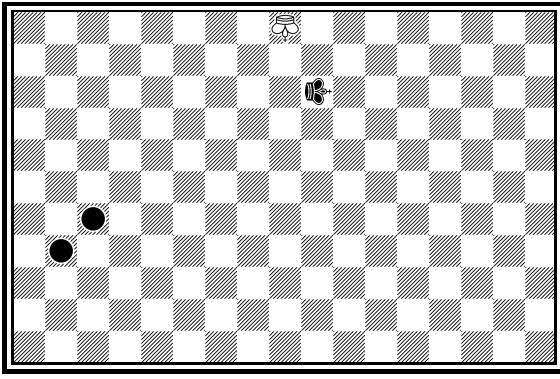
C− (1+1)

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 charachters **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 stereochess or spacechess 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

D

C

B

A
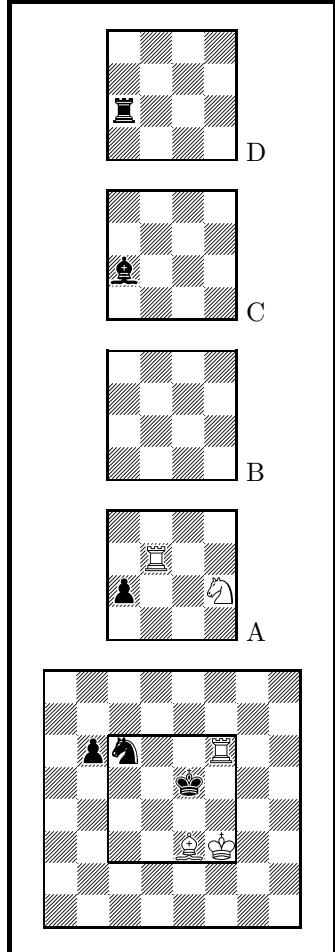
#9   C− (5+6)

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

E

D

C

B

A
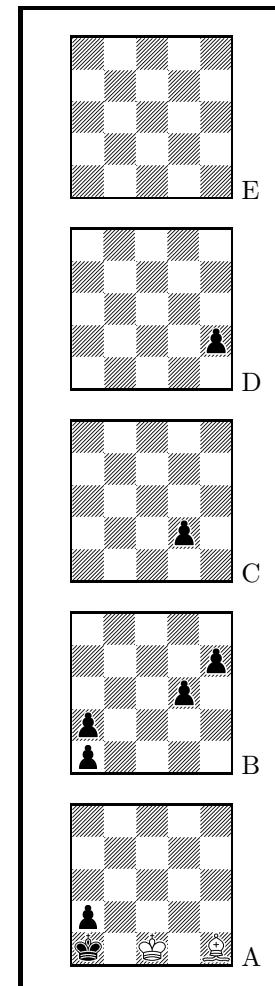
#2   C− (2+8)

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

6

C– (0+0)
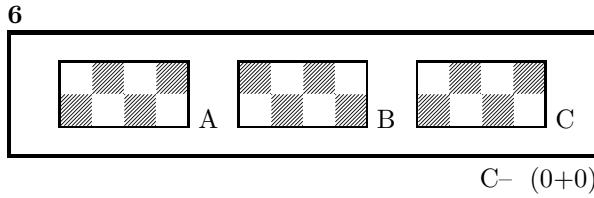
Is produced by

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

1.3.3 Cylindric boards / suppressing frames

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

1.3.4 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.

1.3.5 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.

```
\begin{diagram}[9x7]
\noinnerframe
\nofields{a2, b2, c2, a3, b3, c3, %
b5, c5, d5, b6, c6, d6, %
e1, e2, e3, e4, e5, e6, e7, %
g1, h1, h2, h2, g3, h3, g5, h5, g6, h6, g7, h7}
\gridlines{h004, h013, h033, h143, h163, h074, %
v001, v034, v142, v312, v404, v461, %
h501, h571, h632, h642, h801, h871, %
v507, v603, v643, v803, v843, v907}
\fieldtext{{It ...}c5, {works}b2}
\end{diagram}
```

C–   (0+0)
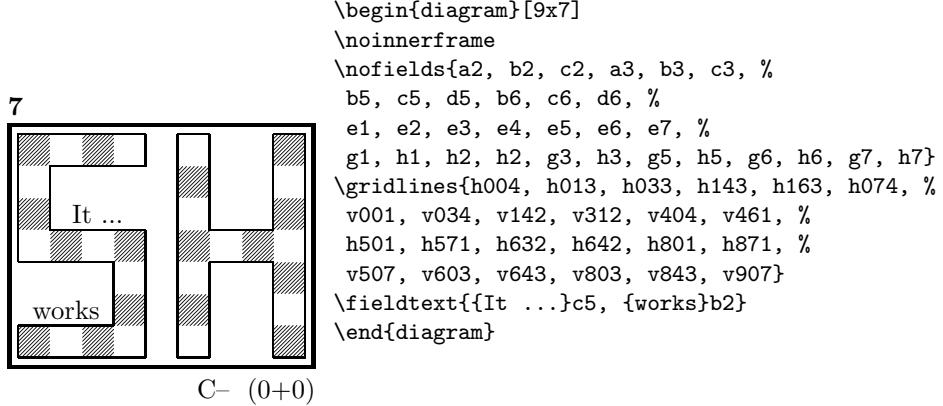
1.4   Misc

1.4.1   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

\sNr   a black nightrider

\wGh   a white grashopper

\sGh	🜚	a black grashopper
\Imi	●	an imitator

1.4.2 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:

\set	*	setplay
\ra	→	a left to right arrow
\lra	↔	a double ended arrow
\OO	**0-0**	king side castling
\OOO	**0-0-0**	queen side castling
\x	×	for "'takes"'
\any	∼	for any move (you may not simply use a ∼ within your text because TEX handles this as a protected space)

1.4.3 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 a capital **C**, because this is used for circles.

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}{KQRBNP}{LRU}
\wDU\bKR\bwB
creates 🜚🜚🜚

1.4.4 When writing books

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

- 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 LaTeX 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`.

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 LaTeX 2$_\varepsilon$.

```
1 ⟨∗driver⟩
2 \documentclass[a4paper]{article}
3 \usepackage{doc}
4 \usepackage{diagram}
5 \EnableCrossrefs
6 \CodelineIndex
7 \RecordChanges
```

---

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

```
 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}[2008/03/09]
14 \DeclareOption{10pt}{\AtBeginDocument{\diagramx}}
15 \DeclareOption{11pt}{\AtBeginDocument{\diagramxi}}
16 \DeclareOption{12pt}{\AtBeginDocument{\diagramxii}}
17 \ExecuteOptions{10pt}
18 \ProcessOptions
19 \RequirePackage{ifthen}
20 \RequirePackage{calc}
```

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

```
21 \chardef\f@ur=4
22 \chardef\@ight=8
23 \newcount\elchfont
24
25 \chardef\@pkelch=0
26 \chardef\@fselch=1
27
28 \newcount\dia@type
29
30 \newif\if@textproblem\@textproblemfalse
31 \def\textproblem{\@textproblemtrue\let\@dia@stipulation=\relax}
32
33 \newif\if@solafterdiagram\@solafterdiagramfalse
34 \def\solafterdiagram{\@solafterdiagramtrue\ignorespaces}
35
36 \newif\if@vframe\@vframetrue
37 \newif\if@hframe\@hframetrue
38 \newif\if@leaveOuter\@leaveOutertrue
39
40 \newif\if@shortform
41
42 \newif\ifspace@vertical
43 \def\spacehorizontal{\space@verticalfalse}
44
45 \newif\ifdi@no
46 \newcounter{board@nr}
47 % \newif\iffigcnt
48 \newboolean{piececounter}
49 \newcount\r@w
50 \newcount\lin@
51 \newcount\pl@ne
52 \newcount\current@plane
53
54 \newcount\w@cnt
```

```
55 \newcount\b@cnt
56 \newcount\n@cnt
```

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

```
57 \newboolean{cpd@checkPieceCounts}
58 \newcounter{cpd@defWhitePieces}
59 \newcounter{cpd@defBlackPieces}
60 \newcounter{cpd@defNeutralPieces}
61
62 \newcounter{cpd@whitePieces}
63 \newcounter{cpd@blackPieces}
64 \newcounter{cpd@neutralPieces}
65
66 \newcommand{\cpd@stepcounterWhite}{\stepcounter{cpd@whitePieces}}
67 \newcommand{\cpd@stepcounterBlack}{\stepcounter{cpd@blackPieces}}
68 \newcommand{\cpd@stepcounterNeutral}{\stepcounter{cpd@neutralPieces}}
69 \global\let\cpd@stepcounterPieces\relax
70
71 \newcount\help@a
72 \newcount\help@b
73
74 \newbox\dia@box
75 \newbox\@cnt@box
76 \newdimen\@cnt@wd
77 \newbox\@stip@box
78
79 \newdimen\topdist\topdist\z@
80 \newbox\@test@box
81 \newdimen\@test@dimen
82 \newif\if@left
83
84 \newcount\brd@ff
85
86 \newdimen\dia@lineskip
87
88 \newdimen\board@width
89 \newdimen\bd@width
90 \newdimen\head@width
91 \newdimen\sq@width
92
93 \newdimen\grid@width
94 \newdimen\inner@frame
95 \newdimen\outer@frame
96 \newdimen\space@frame
97 \newdimen\v@frame@dist
98 \newdimen\h@frame@dist
99 \newdimen\space@frame@dist
100 \newdimen\v@space@dist
101 \newdimen\h@space@dist
102
103 \newbox\sq@box
104 \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.

```
105 \newtoks\typis@tk\typis@tk={\relax}
106 \newtoks\label@tk\label@tk={\relax}
107 \newtoks\sol@tk\sol@tk={\relax}
108 \newtoks\number@tk\number@tk={\relax}
109 \newtoks\aut@tk\aut@tk={\relax}
110 \newtoks\city@tk\city@tk={\relax}
111 \newtoks\sourcenr@tk\sourcenr@tk={\relax}
112 \newtoks\source@tk\source@tk={\relax}
113 \newtoks\day@tk\day@tk={\relax}
114 \newcount\from@month\from@month=\z@
115 \newcount\to@month\to@month=\z@
116 \newtoks\year@tk\year@tk={\relax}
117 \newtoks\issue@tk\issue@tk={\relax}
118 \newtoks\pages@tk\pages@tk={\relax}
119 \newtoks\tournament@tk\tournament@tk={\relax}
120 \newtoks\award@tk\award@tk={\relax}
121 \newtoks\after@tk\after@tk={\relax}
122 \newtoks\version@tk\version@tk={\relax}
123 \newtoks\correction@tk\correction@tk={\relax}
124 \newtoks\dedic@tk\dedic@tk={\relax}
125 \newtoks\fidealbum@tk\fidealbum@tk={\relax}
126 \newtoks\theme@tk\theme@tk={\relax}
127 \newtoks\twins@tk\twins@tk={\relax}
128 \newtoks\judgement@tk\judgement@tk={\relax}
129 \newtoks\comment@tk\comment@tk={\relax}
130 \newtoks\computer@tk\computer@tk={-}
131 \newtoks\nofields@tk\nofields@tk={\relax}
132 \newtoks\fieldframe@tk\fieldframe@tk={\relax}
133 \newtoks\gridlines@tk\gridlines@tk={\relax}
134 \newtoks\pieces@tk\pieces@tk={\relax}
135 \newtoks\fieldtext@tk\fieldtext@tk={\relax}
136 \newtoks\text@tk\text@tk={\relax}
137 \newtoks\stipulation@tk\stipulation@tk={\relax}
138 \newtoks\condition@tk\condition@tk={\relax}
139 \newtoks\remark@tk\remark@tk={\relax}
```

To remember, which information has been specified, we define TeX-booleans for each command.

```
140 \newif\if@label\@labelfalse
141 \newif\if@number\@numberfalse
142 \newif\if@special\@specialfalse
143 \newif\ifauth@r\auth@rfalse
144 \newif\if@city\@cityfalse
145 \newif\if@sourcenr\@sourcenrfalse
146 \newif\if@source\@sourcefalse
147 \newif\if@date\@datefalse
148 \newif\if@day\@dayfalse
149 \newif\if@year\@yearfalse
150 \newif\if@issue\@issuefalse
151 \newif\if@pages\@pagesfalse
152 \newif\if@tournament\@tournamentfalse
153 \newif\if@award\@awardfalse
```

16

```
154 \newif\if@after\@afterfalse
155 \newif\if@version\@versionfalse
156 \newif\if@correction\@correctionfalse
157 \newif\if@dedication\@dedicationfalse
158 \newif\if@fidealbum\@fidealbumfalse
159 \newif\if@twins\@twinsfalse
160 \newif\if@theme\@themefalse
161 \newif\if@computer\@computerfalse
162 \newif\if@judgement\@judgementfalse
163 \newif\if@comment\@commentfalse
164 \newif\if@pieces\@piecesfalse
165 \newif\if@fieldtext\@fieldtextfalse
166 \newif\if@nofields\@nofieldsfalse
167 \newif\if@gridlines\@gridlinesfalse
168 \newif\if@fieldframe\@fieldframefalse
169 \newif\if@stdgrid\@stdgridfalse
170 \newif\if@show@computer\@show@computertrue
171 \newif\if@stipulation\@stipulationfalse
172 \newif\if@condition\@conditionfalse
173 \newif\if@remark\@remarkfalse
174 \newif\if@typis\@typisfalse
175 \newif\if@widedias\@widediasfalse
176 \newif\ifx@twins\x@twinsfalse
177 \newif\ifx@cond\x@condfalse
178 \newif\ifimitator\imitatorfalse
179 \newif\ifnormal@names\normal@namesfalse
180 \newif\ifs@lu
181 \newif\if@develop\@developfalse
182 \newif\if@notfirst
183 \newif\if@first

184 \newwrite\s@lfd
185 \let\below@newline=\relax
186 % These are used by the "old" board creating mechanism
187 \newcount\@lines
188 \newcount\@rows
189 \newcount\lines@max
190 \newcount\rows@max
191 \newcount\planes@max
```

The following counters are used when creating the diagram itself.

```
192 \newcounter{cpd@rowsmax}
193 \newcounter{cpd@linesmax}
194 \newcounter{cpd@current@row}
195 \newcounter{cpd@current@line}
196 \newcounter{cpd@maxsquare}
197 \newcounter{cpd@helper}
198 \newcounter{cpd@current@square@index}
199 \newcounter{cpd@current@square@value}
```

Some boolean TeX-switches used whithin stereo- or spacechess diagrams.

```
200 \newif\if@stereo\@stereofalse
201 \newif\if@space\@spacefalse
```

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

```
202 \newif\if@aindex\@aindexfalse
```

203 `\newif\if@sindex\@sindexfalse`
204 `\newif\if@tindex\@tindexfalse`
205 `\newif\ifds@label`

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

206 `\def\diagram{%`
207 `    \begingroup%`
208 `    \@ifnextchar [{\@diagram}{\@diagram[\@ight x\@ight]}%`
209 `}`
210
211 `\def\@diagram[#1x#2]{%`
212 `    \lines@max=#1%`
213 `    \rows@max=#2%`
214 `    \setcounter{cpd@linesmax}{#1}%`
215 `    \setcounter{cpd@rowsmax}{#2}%`
216 `    \setcounter{cpd@maxsquare}{\value{cpd@rowsmax}*\value{cpd@linesmax}}%`
217 `    \pl@ne=\z@%`
218 `    \current@plane=\z@%`
219 `    \let\put@sqs=\put@sqs@normal%`
220 `    \let\read@plane=\read@plane@normal%`
221 `    \@start@diagram%`
222 `}`
223 `\def\stereodiagram{%`
224 `    \begingroup%`
225 `    \@stereotrue%`
226 `    \let\put@sqs=\put@sqs@stereo%`
227 `    \let\read@plane=\read@plane@stereo%`
228 `    \@start@diagram%`
229 `}`
230 `\def\spacediagram{%`
231 `    \begingroup%`
232 `    \@spacetrue%`
233 `    \@ifnextchar [{\@spacediagram}{\@spacediagram[5x5x5]}%`
234 `}`
235
236 `\def\@spacediagram[#1x#2x#3]{%`
237 `    \lines@max=#1%`
238 `    \rows@max=#2%`
239 `    \planes@max=#3%`
240 `    \let\put@sqs=\put@sqs@space%`
241 `    \let\read@plane=\read@plane@space%`
242 `    \@start@diagram%`
243 `}`
244 `\def\@start@diagram{%`
245 `    \init@vars`
246 `    \let\author=\ds@author`
247 `    \let\day=\ds@day`
248 `    \let\month=\ds@month`
249 `    \let\year=\ds@year`
250 `    \let\label=\ds@label`
251 `    \ignorespaces%`
252 `}`

```
253
254 \def\showtypis#1{%
255    \@typistrue%
256    \typis@tk={#1}%
257    \ignorespaces%
258 }
259
260 \def\enddiagram{%
261    \let\author=\orig@author
262 \let\day=\orig@day
263 \let\month=\orig@month
264 \let\year=\orig@year
265 \let\label=\orig@label
266    \if@number%
267    \else%
268       \refstepcounter{board@nr}% so \label and \ref work properly
269    \fi%
270    %
271    % Now \label@tk should be set, if wanted, so
272    % we can generate the index entries
273    %
274    \@aindex%
275    \@sindex%
276    \@tindex%
277    %
278    % Now \@currentlabel will be set right, so we can use
279    % the original label
280    \if@label%
281       \expandafter\@set@label\the\label@tk;%
282    \fi%
283    %
284    % Now we know, if we have frames so we can setup our dimensions
285    %
286    \global\sq@width=\fontdimen\tw@\chessfont%
287    \if@stereo%
288       \bd@width=\@ight\sq@width%
289       \board@width=\@ight\sq@width%
290       \ifdim\h@frame@dist<\sq@width%
291          \h@frame@dist=\sq@width%
292       \fi%
293       % We do already skip with \v@space@dist
294       % So we use the additional skip \space@frame@dist here
295       \v@frame@dist=\space@frame@dist%
296       \ifdim\space@frame>\outer@frame%
297          \outer@frame=\space@frame%
298       \fi%
299       \advance\bd@width\tw@\inner@frame
300       \advance\board@width\tw@\inner@frame
301       \advance\board@width\tw@\h@frame@dist%
302       \advance\board@width\tw@\outer@frame%
303    \else\if@space%
304       \ifdim\h@frame@dist<1.5\sq@width%
305          \h@frame@dist=1.5\sq@width%
306       \fi%
```

```
307        % We do already skip with \v@space@dist
308        % So we use the additional skip \space@frame@dist here
309        \v@frame@dist=\space@frame@dist%
310        \ifdim\space@frame>\outer@frame%
311            \outer@frame=\space@frame%
312        \fi%
313        \ifspace@vertical%
314            \bd@width=\lines@max\sq@width%
315            \board@width\bd@width%
316            \advance\bd@width\tw@\inner@frame
317            \advance\board@width\tw@\inner@frame
318            \advance\board@width\tw@\h@frame@dist%
319            \advance\board@width\tw@\outer@frame%
320        \else%
321            \bd@width=\lines@max\sq@width%
322            \advance\bd@width\tw@\inner@frame%
323            \ifdim\h@space@dist<1.5\sq@width%
324                \h@space@dist=1.5\sq@width%
325            \fi%
326            %\h@space@dist=0.7\sq@width%
327            % Now we can compute the width of the complete board
328            \board@width\bd@width%
329            \advance\board@width\h@space@dist%
330            \multiply\board@width\planes@max%
331            \advance\board@width\h@space@dist%
332            \advance\board@width\tw@\outer@frame%
333        \fi%
334    \else%
335        \bd@width=\lines@max\sq@width%
336        \ifnum\lines@max>\@ight%
337            % Make the board wider
338            \board@width=\lines@max\sq@width%
339        \else%
340            % Make a normal width
341            \board@width=\@ight\sq@width%
342        \fi%
343        \advance\bd@width\tw@\inner@frame%
344        \advance\board@width\tw@\inner@frame%
345        \advance\board@width\tw@\h@frame@dist%
346        \advance\board@width\tw@\outer@frame%
347    \fi\fi%
348    \if@widedias%
349        \head@width=\textwidth%
350    \else%
351        \head@width=\board@width%
352    \fi%
353    %
354    % Now we should build the diagram itself
355    %
356    \if@textproblem%
357        % Put the stipulation into the \sq@box
358        \setbox\sq@box=\hbox{\vbox to \board@width{\hsize\board@width%
359            \stipfont%
360            \raggedright%
```

```
361        \sloppy%
362        \the\stipulation@tk%
363        \vfil%
364      }}%
365   \else%
366     \put@sqs% This builds up the \sq@box
367     % Check, if the given number of pieces is reached
368     \ifthenelse{\boolean{cpd@checkPieceCounts}}{%
369       \ifthenelse{\value{cpd@defWhitePieces}=\value{cpd@whitePieces}}{}%
370           {\errmessage{Wrong number of white pieces}}%
371       \ifthenelse{\value{cpd@defBlackPieces}=\value{cpd@blackPieces}}{}%
372           {\errmessage{Wrong number of black pieces}}%
373       \ifthenelse{\value{cpd@defNeutralPieces}=\value{cpd@neutralPieces}}{}%
374           {\errmessage{Wrong number of neutral pieces}}%
375     }{}%
376   \fi%
377   %
378   \global\setbox\dia@box=\hbox{\vbox{%
379     \parindent\z@%
380     \parskip\z@%
381     \baselineskip11\p@\advance\baselineskip\dia@lineskip%
382     \hsize\head@width%
383     \centering%
384     % diagram header
385     \vskip\topdist%
386     \vbox{\hsize\board@width\hbox{%
387         \if@develop\if@label%
388             \noindent\raggedright\llap{\labelfont\the\label@tk\ }%
389         \fi\fi%
390         \vbox{%
391             \he@dpos\dia@above%
392         }%
393     }}%
394     \vskip\tw@\p@%
395     % diagram itself
396     \vtop{\hsize\board@width%
397         \hbox to \head@width{\hss\vbox{%
398             \hsize\board@width%
399             \if@textproblem%
400                 \box\sq@box%
401             \else%
402                 \outer@henbox{\box\sq@box}%
403             \fi%
404         }\hss}%
405         % diagram trailer
406         \hbox to \head@width{\hss\vtop{%
407             \hsize\board@width%
408             \parskip\z@%
409             \raggedright%
410             \put@count%
411             \dia@below%
412         }\hss}%
413     }%
414   }}% End of \dia@box
```

```
415    \do@dia@job%
416    \endgroup%
417 }
418
419 \def\put@count{%
420    % First we build the box with the figure count
421    \ifthenelse{\boolean{piececounter}}{%
422      \global\setbox\@cnt@box=\hbox{%
423        \if@show@computer%
424          \ \ C\if@computer +\else --\fi%
425        \fi%
426        \ \ (\arabic{cpd@whitePieces}+\arabic{cpd@blackPieces}%
427        \ifthenelse{\value{cpd@neutralPieces}>0}{+\arabic{cpd@neutralPieces}}{})%
428      }%
429      \@cnt@wd=\wd\@cnt@box%
430      \hangindent-\@cnt@wd%
431      \hangafter\m@ne%
432      \noindent%
433      \hbox to \z@{%
434        \hbox to \board@width{\hfil\unhbox\@cnt@box}\hskip -\board@width%
435      }%
436    }{}%
437 }
438
439 \let\endstereodiagram=\enddiagram
440 \let\endspacediagram=\enddiagram
441 \def\figurine{%
442    \begingroup
443    \init@vars
444    \let\author=\ds@author
445    \let\day=\ds@day
446    \let\month=\ds@month
447    \let\year=\ds@year
448    \let\label=\ds@label
449 }
450
451 \def\endfigurine{%
452    \let\author=\orig@author
453    \let\day=\orig@day
454    \let\month=\orig@month
455    \let\year=\orig@year
456    \let\label=\orig@label
457    \if@number%
458    \else%
459      \refstepcounter{board@nr}% so \label and \ref work properly
460    \fi%
461    %
462    % Now \label@tk should be set, if wanted, so
463    % we can generate the index entries
464    %
465    \@aindex%
466    \@sindex%
467    \@tindex%
468    %
```

```
469    % Now \@currentlabel will be set right, so we can use
470    % the original label
471    %
472    \if@label%
473        \expandafter\@set@label\the\label@tk;%
474    \fi%
475    %
476    \@show@figurine%
477    \endgroup%
478 }
479 %
480 \gdef\selectelchfont#1{%
481    \global\elchfont\csname @#1elch\endcsname\defaultelchfont%
482 }
```

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   483 \newcommand*{\authorfont}{\bfseries}
\sourcefont   484 \newcommand*{\cityfont}{\slshape}
 \awardfont   485 \newcommand*{\sourcefont}{\bfseries\itshape}
 \dedicfont   486 \newcommand*{\awardfont}{\itshape}
  \stipfont   487 \newcommand*{\dedicfont}{\itshape}
   \remfont   488 \newcommand*{\stipfont}{\rmfamily}
 \labelfont   489 \newcommand*{\remfont}{\rmfamily}
 \boardfont   490 \newcommand*{\labelfont}{\rmfamily}
              491 \newcommand*{\boardfont}{\rmfamily}
```

We have three different default sizes for diagrams. The following commands switch fontsizes used for the chessfonts to typeset the diagrams.

```
  \diagramx
 \diagramxi   492 \newcommand*{\diagramx}{
\diagramxii   493    \ifcase\elchfont\relax%
              494        \font\chessfont=pkelch12
              495        \font\chtextfont=pkelch10
              496    \else%
              497        \font\chessfont=fselch12
              498        \font\chtextfont=fselch10
              499    \fi%
              500    \dia@lineskip\z@
              501    \dia@type\z@
              502 }
              503
              504 \newcommand*{\diagramxi}{
              505    \ifcase\elchfont\relax%
              506        \font\chessfont=pkelch14
              507        \font\chtextfont=pkelch11
              508    \else%
              509        \font\chessfont=fselch14
              510        \font\chtextfont=fselch11
              511    \fi%
              512    \dia@lineskip\@ne\p@
              513    \dia@type\@ne
```

23

```
514 }
515
516 \newcommand*{\diagramxii}{
517     \ifcase\elchfont\relax%
518         \font\chessfont=pkelch16
519         \font\chtextfont=pkelch12
520     \else%
521         \font\chessfont=fselch16
522         \font\chtextfont=fselch12
523     \fi%
524     \dia@lineskip\tw@\p@
525     \dia@type\tw@
526 }
```

\defaultelchfont   \defaultelchfont is used to define the fontsize used to typeset the diagrams
                    depending on the documentsize.

```
527 \def\defaultelchfont{%
528     \ifcase\@ptsize\relax%
529         \diagramx\or%
530         \diagramxi\or%
531         \diagramxii%
532     \fi%
533 }
534 \def\dianamestyle#1{\def\@dianame{\csname @#1\endcsname}}
535 \def\solnamestyle#1{\def\@solname{\csname @#1\endcsname}}
536 \def\diagnum#1{\c@board@nr=#1\advance\c@board@nr\m@ne}
```

\ra   Now we define a couple of abbreviations and special symbols often used when
\lra   setting problem chess documents.
\rla
\x
\set
\OO
\OOO
\any
\further

```
537 \def\ra{\mbox{$\rightarrow$}}
538 \def\lra{\mbox{$\leftrightarrow$}}
539 \let\rla=\lra
540 \def\x{\mbox{\ifmmode\times\else$\times$\fi}}
541 \def\set{\kern -.05em\raise .1ex\hbox{*}}
542 \def\@O{0\raise.25ex\hbox{-}\kern -.1em\relax}
543 \def\OO{\@O\@O}
544 \def\OOO{\@O\@O\@O}
545 \def\any{\ifmmode\sim\else$\sim$\fi}
546 \def\further{\ifmmode\Rightarrow\else$\Rightarrow$\fi\ \ignorespaces}

547 \def\spacelayout#1{\csname space@#1\endcsname}
548 \def\nodiagnumbering{\global\di@nofalse}
549 \def\diagnumbering#1{%
550     \di@notrue\diagnum{\@ne}%
551     \gdef\thediag{\csname @#1\endcsname\c@board@nr}%
552 }
```

\diagcenter   The macros \diagcenter, \diagleft and \diagright simply define the macro
\diagleft   \he@dpos to the corresponding paragraph alignment.
\diagright

```
553 \def\diagcenter{\def\he@dpos{\centering}}
554 \def\diagleft{\def\he@dpos{\raggedright}}
555 \def\diagright{\def\he@dpos{\raggedleft}}
```

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

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

```
557 \def\specialdiagnum#1{%
558     \@specialtrue%
559     \number@tk={#1}\@numbertrue\def\thediag{#1}\def\@currentlabel{#1}%
560     \ignorespaces%
561 }
```

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

```
562 \def\ds@label{%
563     \@ifstar{\ds@labelfalse\ds@xlabel}{\ds@labeltrue\ds@xlabel}%
564 }
565 \def\ds@author#1{%
566     \aut@tk={#1}\auth@rtrue%
567     \ignorespaces%
568 }
```

```
569 \def\city#1{%
570     \city@tk={#1}\@citytrue%
571     \ignorespaces%
572 }
573 \def\sourcenr#1{%
574     \sourcenr@tk={#1}\@sourcenrtrue%
575     \ignorespaces%
576 }
577 \def\source#1{%
578     \source@tk={#1}\@sourcetrue%
579     \ignorespaces%
580 }
581 \def\ds@day#1{%
582     \day@tk={#1}\@daytrue\@datetrue%
583     \ignorespaces%
584 }
585 \def\ds@month#1{%
586     \from@month=#1\@datetrue%
587     \ignorespaces%
588 }
589 \def\months#1{%
590     \@months#1;%
591     \ignorespaces%
592 }
593 \def\ds@year#1{%
594     \year@tk={#1}\@yeartrue\@datetrue%
595     \ignorespaces%
596 }
597 \def\issue#1{%
598     \issue@tk={#1}\@issuetrue%
599     \ignorespaces%
600 }
601 \def\pages#1{%
```

```
602     \pages@tk={#1}\@pagestrue%
603     \ignorespaces%
604 }
605 \def\tournament#1{%
606     \tournament@tk={#1}\@tournamenttrue%
607     \ignorespaces%
608 }
609 \def\award#1{%
610     \award@tk={#1}\@awardtrue%
611     \ignorespaces%
612 }
613 \def\version#1{%
614     \version@tk={#1}\@versiontrue%
615     \ignorespaces%
616 }
617 \def\after#1{%
618     \after@tk={#1}\@aftertrue%
619     \ignorespaces%
620 }
621 \def\correction#1{%
622     \correction@tk={#1}\@correctiontrue%
623     \ignorespaces%
624 }
625 \def\dedication#1{%
626     \dedic@tk={#1}\@dedicationtrue%
627     \ignorespaces%
628 }
629 \def\fidealbum#1{%
630     \fidealbum@tk={#1}\@fidealbumtrue%
631     \ignorespaces%
632 }
633 \def\pieces{%
634     \@ifnextchar[%
635     {\x@pieces}%
636     {\@pieces}%
637 }
638 \def\x@pieces[#1]{%
639     % We should parse the given piececounts
640     \setboolean{cpd@checkPieceCounts}{true}%
641     \@parseWhiteAndBlackCount#1+\e@list
642     \@pieces%
643 }
644 \def\@parseWhiteAndBlackCount#1+#2+{%
645     \setcounter{cpd@defWhitePieces}{#1}%
646     \setcounter{cpd@defBlackPieces}{#2}%
647     \futurelet\n@xt\cpd@checkNeutral%
648 }
649 \let\cpd@nextproc=\relax%
650 \def\cpd@checkNeutral{%
651     \if\n@xt\relax%
652         \let\cpd@nextproc=\relax%
653     \else%
654         \let\cpd@nextproc=\@parseNeutralCount%
655     \fi%
```

```
656     \cpd@nextproc%
657 }
658 \def\@parseNeutralCount#1+{%
659     \setcounter{cpd@defNeutralPieces}{#1}%
660 }
661 \def\@pieces#1{%
662     \pieces@tk={#1}\@piecestrue%
663     \ignorespaces%
664 }
665 \def\fieldtext#1{%
666     \fieldtext@tk={#1}\@fieldtexttrue%
667     \ignorespaces%
668 }
669 \def\nofields#1{%
670     \nofields@tk={#1}\@nofieldstrue%
671     \ignorespaces%
672 }
673 \let\nosquares\nofields
674 \def\gridlines#1{%
675     \gridlines@tk={#1}\@gridlinestrue%
676     \ignorespaces%
677 }
678 \def\fieldframe#1{%
679     \fieldframe@tk={#1}\@fieldframetrue%
680     \ignorespaces%
681 }
682 \def\stipulation#1{%
683     \stipulation@tk={#1}\@stipulationtrue%
684     \ignorespaces%
685 }
686 \def\condition{%
687     \@ifstar{\x@condtrue\@condition}{\@condition}%
688 }
689 \def\@condition#1{%
690     \condition@tk={#1}\@conditiontrue%
691     \ignorespaces%
692 }
693 \def\twins{%
694     \@ifstar{\x@twinstrue\@twins}{\@twins}%
695 }
696 \def\@twins#1{%
697     \twins@tk={#1}\@twinstrue%
698     \ignorespaces%
699 }
700 \def\remark#1{%
701     \remark@tk={#1}\@remarktrue%
702     \ignorespaces%
703 }
704 \def\Co#1{%
705     \ifx#1+\@computertrue\computer@tk={+}\fi%
706     \ignorespaces%
707 }
708 \long\def\solution#1{%
709     \sol@tk={#1}\global\s@lutrue%
```

```
710        \ignorespaces%
711 }
712 \def\themes#1{%
713        \theme@tk={#1}\@themetrue%
714        \ignorespaces%
715 }
716 \long\def\comment#1{%
717        \comment@tk={#1}\@commenttrue%
718        \ignorespaces%
719 }
720 \long\def\judgement#1{%
721        \judgement@tk={#1}\@judgementtrue%
722        \ignorespaces%
723 }
724 \def\noframe{%
725        \@vframefalse\@hframefalse%
726        \ignorespaces%
727 }
728 \def\noinnerframe{%
729        \@leaveOuterfalse\@vframefalse\@hframefalse%
730        \ignorespaces%
731 }
732 \def\verticalcylinder{%
733        \@vframefalse%
734        \ignorespaces%
735 }
736 \def\horizontalcylinder{%
737        \@hframefalse%
738        \ignorespaces%
739 }
740 \def\stdgrid{%
741        \@stdgridtrue%
742        \ignorespaces%
743 }
```

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

`\magic`
`\tourn`
`\dedic`
`\stip`
`\cond`
`\rem`
`\sol`

```
744 \let\gridchess=\stdgrid
745 \let\magic=\fieldframe
746 \let\tourn=\tournament
747 \let\dedic=\dedication
748 \let\stip=\stipulation
749 \let\cond=\condition
750 \let\rem=\remark
751 \let\sol=\solution

752 \def\develop{%
753        \@developtrue%
754        \ignorespaces%
755 }
756 \def\showcomputer{%
757        \@show@computertrue%
758        \ignorespaces%
759 }
760 \def\nocomputer{%
```

```
761    \@show@computerfalse%
762    \ignorespaces%
763 }
764 \def\putsol{\immediate\closeout\s@lfd\input\jobname.sol\cl@arsol}
765 \def\widedias{\@widediastrue\diagcenter}
766 \def\nowidedias{\@widediasfalse}
767 \def\normalnames{\normal@namestrue}
768 \def\reversednames{\normal@namesfalse}
769 \def\makeaindex{%
770    \@dia@index%
771    \newindex[thediag]{author}{adx}{and}{Autorenverzeichnis}%
772    \@aindextrue\reversednames%
773 }
774
775 \def\makesindex{%
776    \@dia@index%
777    \newindex[thediag]{source}{sdx}{snd}{Quellenregister}%
778    \@sindextrue%
779 }
780
781 \def\maketindex{%
782    \@dia@index%
783    \newindex[thediag]{theme}{tdx}{tnd}{Themenregister}%
784    \@tindextrue%
785 }
786
787 \def\authorindex{{\let\@idxitem\@aidxitem\printindex[author]}}
788 \def\sourceindex{\printindex[source]}
789 \def\themeindex{\printindex[theme]}
790 \def\DefinePieces#1#2#3{%
791    \@setPieceColor#1\@setPieceSpec#2\@setPieceRotation#3%
792    \loop@rotation%
793    \expandafter\xdef\csname\ds@black\ds@white\ds@bishop\endcsname{%
794       \noexpand\ch@fig{20}%
795    }%
796    \expandafter\xdef\csname\ds@black\ds@black\ds@bishop\endcsname{%
797       \noexpand\ch@fig{32}%
798    }%
799    \expandafter\xdef\csname\ds@white F\endcsname{{\chessfont\ }}
800    \expandafter\xdef\csname\ds@black F\endcsname{{\chessfont\char144}}
801    \expandafter\xdef\csname\ds@white Nr\endcsname{%
802       \noexpand\ch@fig{109}%
803    }%
804    \expandafter\xdef\csname\ds@black Nr\endcsname{%
805       \noexpand\ch@fig{121}%
806    }%
807    \expandafter\xdef\csname\ds@white Gh\endcsname{%
808       \noexpand\ch@fig{112}%
809    }%
810    \expandafter\xdef\csname\ds@black Gh\endcsname{%
811       \noexpand\ch@fig{124}%
812    }%
813 }
814 \def\Imi{\ch@fig{157}}
```

\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.

```
815 \def\dia@above{%
816     \@dia@number%
817     \@dia@authors%
818     \@dia@city%
819     \@dia@after%
820     \@dia@version%
821     \@dia@source%
822     \@dia@correction%
823     \@dia@tournament%
824     \@dia@award%
825     \@dia@dedic%
826     \@dia@fidealbum%
827 }
```

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

```
828 \def\dia@below{%
829     \bgroup%
830     \if@stipulation%
831         \@dia@stipulation%
832     \fi%
833     \ifx@cond\else%
834         \@dia@condition%
835     \fi%
836     \ifx@twins\else%
837         \@dia@twins%
838     \fi%
839     \@dia@remark%
840     \if@solafterdiagram%
841         \below@newline%
842         \the\sol@tk%
843     \fi%
844     \noindent\hbox{}\newline\hbox{}%
845     \egroup%
846 }
```

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

```
847 \def\@dia@number{%
848     {\authorfont\thediag\par}%
849 }
```

\@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.

```
850 \def\@dia@authors{%
851     \ifauth@r%
852         \bgroup%
853         \authorfont%
```

```
854        \ifnormal@names%
855            \the\aut@tk%
856        \else%
857            {\def\name@sep{\par}%
858            \@notfirstfalse%
859            \let\@action=\@writename% Parse the list of authors
860         \@parseTokenlist\aut@tk;}
861        \fi%
862        \egroup%
863    \fi%
864 }

865 \def\@show@city#1;{\if@notfirst\ \slash\ \else\@notfirsttrue\fi#1}
866
867 \def\p@rsecity#1; {\@show@city#1;\l@@klist}
868
869 \def\@dia@city{%
870    \if@city%
871        \bgroup%
872        \cityfont\@notfirstfalse%
873        \let\@action=\p@rsecity\@parseTokenlist\city@tk;%
874        \par%
875        \egroup%
876    \fi%
877 }
878
879 \def\@dia@after{%
880    \if@after%
881        \bgroup%
882        \dedicfont\the\after@tk\par%
883        \egroup%
884    \fi%
885 }
886
887 \def\@dia@version{%
888    \if@version%
889        \bgroup%
890        \dedicfont\the\version@tk\par%
891        \egroup%
892    \fi%
893 }
894
895 \def\@dia@date{%
896    \ifnum\from@month>\z@%
897        \if@day%
898            \the\day@tk.\write@month\from@month%
899        \else%
900            \write@month\from@month%
901        \fi%
902        \ifnum\to@month>\z@--\write@month\to@month\fi%
903        \if@day.\else/\fi%
904    \fi%
905    \if@year\the\year@tk\fi%
906 }
```

```
907
908  \def\@dia@source{%
909     \if@source%
910        \bgroup%
911        \sourcefont%
912        \if@sourcenr\the\sourcenr@tk\ \fi
913        \the\source@tk%
914        \if@date\ \ \fi\@dia@date%
915        \if@issue\ \ \the\issue@tk\fi%
916        \if@pages ,\ \the\pages@tk\fi%
917        \par%
918        \egroup%
919     \else%
920        \if@tournament\else\if@date%
921           \bgroup%
922           \sourcefont%
923           \@dia@date%
924           \par%
925           \egroup%
926        \fi\fi%
927     \fi%
928  }
929
930  \def\@dia@correction{%
931     \if@correction%
932        \bgroup%
933        \dedicfont\the\correction@tk%
934        \par%
935        \egroup%
936     \fi%
937  }
938
939  \def\@dia@tournament{%
940     \if@tournament
941        \bgroup%
942        \awardfont%
943        \the\tournament@tk
944        \if@source\else\if@date%
945           \ \ \@dia@date%
946        \fi\fi%
947        \par%
948        \egroup%
949     \fi%
950  }
951
952  \def\@dia@award{%
953     \if@award%
954        \bgroup%
955        \awardfont\the\award@tk%
956        \par%
957        \egroup%
958     \fi%
959  }
960
```

```
961 \def\@dia@dedic{%
962     \if@dedication%
963         \bgroup%
964         \dedicfont\the\dedic@tk%
965         \par%
966         \egroup%
967     \fi%
968 }
969
970 \def\@show@album#1/#2;{#1 FIDE-Album #2}
971
972 \def\@dia@fidealbum{%
973     \if@fidealbum{%
974         \expandafter\@show@album\the\fidealbum@tk;%
975         \par%
976     }\fi%
977 }
978
979 \def\@twinskip{\ \ }
980
981 \def\@dia@stipulation{%
982     \if@stipulation%
983         \bgroup%
984         \stipfont%
985         \the\stipulation@tk%
986         \ifx@twins%
987             \let\below@newline\@twinskip%
988             \@dia@twins%
989         \else\ifx@cond%
990             \let\below@newline\@twinskip%
991             \@dia@condition%
992         \fi\fi%
993         \egroup%
994         \let\below@newline\newline%
995     \else%
996         \x@twinsfalse%
997         \x@condfalse%
998         \let\below@newline\relax%
999     \fi%
1000 }
1001
1002 \def\x@write@twin#1; {%
1003     \hskip1em#1%
1004     \@lefttrue\let\below@newline\newline%
1005     \let\@action\write@twins%
1006     \l@@klist%
1007 }
1008
1009 \def\write@twins#1; {%
1010     \setbox\@test@box=\hbox{#1\if@left~~\fi}%
1011     \ifdim\wd\@test@box>4\sq@width%
1012         \below@newline%
1013         \@lefttrue%
1014         #1%
```

33

```
1015    \else%
1016        \if@left%
1017            \below@newline%
1018        \fi%
1019        \noindent\hbox to 4\sq@width{#1\hfil}%
1020        \if@left%
1021            \@leftfalse%
1022        \else%
1023            \@lefttrue%
1024        \fi%
1025    \fi%
1026    \let\below@newline\newline
1027    \l@@klist%
1028 }
1029
1030 \def\@dia@twins{%
1031    \if@twins%
1032        \bgroup%
1033        \@lefttrue%
1034        \remfont%
1035        \ifx@twins%
1036            \let\@action=\x@write@twin%
1037        \else%
1038            \let\@action=\write@twins%
1039        \fi%
1040        \@parseTokenlist\twins@tk;%
1041        \egroup%
1042        \let\below@newline\newline%
1043    \fi%
1044 }
1045
1046 \def\@dia@condition{%
1047    \if@condition%
1048        \bgroup%
1049        \@lefttrue%
1050        \remfont%
1051        \ifx@cond%
1052            \let\@action=\x@write@twin%
1053        \else%
1054            \let\@action=\write@twins%
1055        \fi%
1056        \@parseTokenlist\condition@tk;%
1057        \egroup%
1058        \let\below@newline\newline%
1059    \fi%
1060 }
1061
1062 \def\@dia@remark{%
1063    \if@remark%
1064        \bgroup%
1065        \@lefttrue%
1066        \remfont\let\@action=\write@twins%
1067        \@parseTokenlist\remark@tk;%
1068        \egroup%
```

```
1069        \let\below@newline\newline%
1070    \fi%
1071 }
1072
1073 \def\parse@params#1{%
1074    \ifcase\help@a\relax
1075        \label@tk={#1}\ifx\relax#1\else\@labeltrue\fi\or%
1076        \number@tk={#1}\ifx\relax#1\else\@numbertrue\fi\or%
1077        \aut@tk={#1}\ifx\relax#1\else\auth@rtrue\fi\or%
1078        \city@tk={#1}\ifx\relax#1\else\@citytrue\fi\or%
1079        \sourcenr@tk={#1}\ifx\relax#1\else\@sourcenrtrue\fi\or%
1080        \source@tk={#1}\ifx\relax#1\else\@sourcetrue\fi\or%
1081        \day@tk={#1}\ifx\relax#1\else\@daytrue\fi\or%
1082        \from@month=#1\or%
1083        \to@month=#1\or%
1084        \year@tk={#1}\ifx\relax#1\else\@yeartrue\fi\or%
1085        \issue@tk={#1}\ifx\relax#1\else\@issuetrue\fi\or%
1086        \pages@tk={#1}\ifx\relax#1\else\@pagestrue\fi\or%
1087        \tournament@tk={#1}\ifx\relax#1\else\@tournamenttrue\fi\or%
1088        \award@tk={#1}\ifx\relax#1\else\@awardtrue\fi\or%
1089        \after@tk={#1}\ifx\relax#1\else\@aftertrue\fi\or%
1090        \version@tk={#1}\ifx\relax#1\else\@versiontrue\fi\or%
1091        \correction@tk={#1}\ifx\relax#1\else\@correctiontrue\fi\or%
1092        \dedic@tk={#1}\ifx\relax#1\else\@dedicationtrue\fi\or%
1093        \theme@tk={#1}\ifx\relax#1\else\@themetrue\fi\or%
1094        \twins@tk={#1}\ifx\relax#1\else\@twinstrue\fi\or%
1095        \computer@tk={#1}\or%
1096        \comment@tk={#1}\ifx\relax#1\else\@commenttrue\fi\or%
1097        \judgement@tk={#1}\ifx\relax#1\else\@judgementtrue\fi\or%
1098        \sol@tk={#1}}
1099    \fi%
1100    \advance\help@a \@ne%
1101    \l@@klist%
1102 }
1103
1104 \def\split@param#1{%
1105    \@labelfalse\@numberfalse\auth@rfalse\@cityfalse%
1106    \@sourcenrfalse\@sourcefalse\@dayfalse\@yearfalse%
1107    \@issuefalse\@pagesfalse\@tournamentfalse\@awardfalse%
1108    \@afterfalse\@versionfalse\@correctionfalse\@dedicationfalse%
1109    \@themefalse\@twinsfalse\@commentfalse\@judgementfalse%
1110    \help@a=\z@%
1111    \let\@action=\parse@params\l@@klist#1\e@list%
1112 }
1113 \def\@dia@solution{%
1114    \bgroup%
1115    \parindent\z@%
1116    \parskip\tw@\p@%
1117    {\bf
1118        \noindent\if@label\showlabel{\the\label@tk}\fi%
1119        \the\number@tk) %
1120        \ifauth@r%
1121            \ifnormal@names%
1122                \the\aut@tk%
```

35

```
1123        \else%
1124           {\@notfirstfalse% We are the first one
1125            \def\name@sep{, }%
1126            \let\@action=\@writename%
1127            \@parseTokenlist\aut@tk;}:%
1128        \fi%
1129        \par%
1130      \fi%
1131    }%
1132    \if@develop\if@judgement\the\judgement@tk\par\fi\fi%
1133    \the\sol@tk\par%
1134    \if@comment\the\comment@tk\par\fi%
1135    \egroup%
1136 }
1137 \grid@width=0.6\p@
1138 \inner@frame=0.6\p@
1139 \outer@frame=1.2\p@
1140 \space@frame=\outer@frame
1141 \v@frame@dist=\tw@\p@%
1142 \h@frame@dist=\tw@\p@%
1143 \space@frame@dist=\z@
1144 \v@space@dist=1em
1145 \def\@show@figurine{%
1146    \noindent%
1147    \@figurine@number%
1148    \@figurine@author%
1149    \@figurine@city%
1150    \@figurine@after%
1151    \@figurine@correction%
1152    \@figurine@version%
1153    \@figurine@source%
1154    \@figurine@tournament%
1155    \@figurine@award%
1156    \@figurine@dedic%
1157    \@figurine@pieces%
1158    \@figurine@stip%
1159    \@figurine@twins%
1160    \@figurine@conditions%
1161    \@figurine@remarks%
1162    \@figurine@computer%
1163 }
1164 \def\@figurine@number{{\authorfont\thediag)}}
1165
1166 \def\p@rseauthor@figurine#1,#2; {%
1167    \if@notfirst, \else\@notfirsttrue\fi#2 #1%
1168    \l@@klist%
1169 }
1170
1171 \def\@figurine@author{%
1172    {\ifauth@r%
1173       \authorfont\@notfirstfalse%
1174       \let\@action=\p@rseauthor@figurine%
1175       \@parseTokenlist\aut@tk;%
1176       \ \ %
```

36

```
1177      \fi}%
1178 }
1179
1180 \def\@figurine@city{%
1181    {\if@city%
1182       \cityfont\@notfirstfalse%
1183       \let\@action=\p@rsecity\@parseTokenlist\city@tk;%
1184       \ \ \ %
1185    \fi}%
1186 }
1187
1188 \def\@figurine@after{\if@after{\dedicfont\ \ \the\after@tk}\fi}
1189
1190 \def\@figurine@correction{%
1191    \if@correction{\dedicfont\ \ \the\correction@tk}\fi%
1192 }
1193
1194 \def\@figurine@version{%
1195    \if@version{\dedicfont\ \ \the\version@tk}\fi%
1196 }
1197
1198 \def\@figurine@source{%
1199    {\if@source%
1200       \sourcefont%
1201       \if@sourcenr\the\sourcenr@tk\ \fi%
1202       \the\source@tk%
1203       \if@year%
1204          \ \ %
1205          \if@day%
1206             \ifnum\from@month>\z@%
1207                \the\day@tk.%
1208                \write@month\from@month%
1209                \ifnum\to@month>\z@%
1210                   -\write@month\to@month%
1211                \fi%
1212                .%
1213             \fi%
1214          \else%
1215             \write@month\the\from@month%
1216             \ifnum\to@month>\z@%
1217                -\write@month\the\to@month%
1218             \fi%
1219             /%
1220          \fi%
1221          \the\year@tk%
1222       \fi%
1223       \if@issue , \the\issue@tk\fi%
1224       \if@pages , \the\pages@tk\fi%
1225    \fi}%
1226 }
1227
1228 \def\@figurine@tournament{%
1229    \if@tournament{\awardfont\ \ \the\tournament@tk}\fi%
1230 }
```

```
1231
1232 \def\@figurine@award{%
1233     \if@award{\awardfont\ \ \the\award@tk}\fi%
1234 }
1235
1236 \def\@figurine@dedic{%
1237     \if@dedication{\awardfont\ \ \the\dedic@tk}\fi%
1238 }
1239 \def\show@squares#1\e@list{\ch@fig{\the\help@a}#1, }
1240
1241 \def\@figurine@pieces{%
1242     {\if@pieces%
1243         \let\@action=\p@rsepieces%
1244         \let\piece@job\show@squares%
1245         \@parseTokenlist\pieces@tk,%
1246     \fi}%
1247 }
1248 \def\@figurine@stip{%
1249     \if@stipulation{\stipfont\ \ \the\stipulation@tk}\fi%
1250 }
1251
1252 \def\@figurine@conditions{%
1253     \if@condition{\remfont\ \ \the\condition@tk}\fi%
1254 }
1255
1256 \def\@figurine@twins{%
1257     \if@twins{\remfont\ \ \the\twins@tk}\fi%
1258 }
1259
1260 \def\@figurine@computer{%
1261     \if@show@computer
1262         \if@computer\ (Co)\fi%
1263     \fi%
1264 }
1265
1266 \def\@figurine@remarks{%
1267     \if@remark{\stipfont\ \ \the\remark@tk}\fi%
1268 }
1269 \def\do@dia@job{\@write@sol\ifvmode\noindent\fi\unhbox\dia@box}
1270 \def\solhead#1{{\split@param{#1}\@dia@solution}}
1271 \def\@write@sol{%
1272     \ifs@lu%
1273         \immediate\write\s@lfd{%
1274             \noexpand\solhead{%
1275                 {\the\label@tk}%
1276                 {\thediag}%
1277                 {\the\aut@tk}%
1278                 {\the\city@tk}%
1279                 {\the\sourcenr@tk}%
1280                 {\the\source@tk}%
1281                 {\the\day@tk}%
1282                 {\the\from@month}%
1283                 {\the\to@month}%
1284                 {\the\year@tk}%
```

```
1285            {\the\issue@tk}%
1286            {\the\pages@tk}%
1287            {\the\tournament@tk}%
1288            {\the\award@tk}%
1289            {\the\after@tk}%
1290            {\the\version@tk}%
1291            {\the\correction@tk}%
1292            {\the\dedic@tk}%
1293            {\the\theme@tk}%
1294            {\the\twins@tk}%
1295            {\the\computer@tk}%
1296            {\the\comment@tk}%
1297            {\the\judgement@tk}%
1298            {\the\sol@tk}%
1299          } %end of \solhead
1300        }%
1301     \fi
1302 }
1303 \def\@months#1-#2;{\from@month=#1\to@month=#2\@datetrue}
1304 \def\@writename#1; {\sep@names\@dianame#1; \l@@klist}
1305 \def\name@sep{,\ }
1306 \def\sep@names{\if@notfirst\name@sep\else\@notfirsttrue\fi}
1307 \def\@checkshort#1/#2#3;{%
1308     \@shortformtrue%
1309     \ifx#2\e@list\relax%
1310        \@shortformfalse%
1311     \fi%
1312 }
1313 \def\short@christian#1#2-{%
1314     \if@notfirst -\else\@notfirsttrue\fi%
1315     #1.%
1316     \l@@klist%
1317 }
1318
1319 \def\@write@christian#1/#2;{#1}
1320
1321 \def\write@christian#1;{%
1322     \@checkshort#1/\e@list;%
1323     \if@shortform\@write@christian#1;\else#1\fi%
1324 }
1325
1326 \def\@write@short#1/#2;{#2}
1327
1328 \def\write@short#1;{%
1329     \@checkshort#1/\e@list;%
1330     \if@shortform%
1331        \@write@short#1;%
1332     \else%
1333        {\@notfirstfalse\let\@action\short@christian\l@@klist#1-\e@list}%
1334     \fi%
1335 }
1336 \def\@fullname#1, #2; {\hbox{\write@christian#2; #1}}
1337 \def\@sirname#1, #2; {#1}
1338 \def\@short#1, #2; {\write@short#2;\ #1}
```

39

```
1339 \def\@noname#1, #2; {}
1340 \def\@normalname#1; {#1}
1341 \def\space@vertical{\space@verticaltrue}
1342 \def\space@horizontal{\space@verticalfalse}
1343 \def\cl@arsol{\immediate\openout\s@lfd=\jobname.sol}
1344 \def\getc@lor#1{%
1345     \if#1\ds@white%
1346         \help@a\z@\global%
1347         \let\cpd@stepcounterPieces\cpd@stepcounterWhite%
1348     \else\if#1\ds@neutral%
1349         \help@a=6\global%
1350         \let\cpd@stepcounterPieces\cpd@stepcounterNeutral%
1351     \else\if#1\ds@black%
1352         \help@a=12\global%
1353         \let\cpd@stepcounterPieces\cpd@stepcounterBlack%
1354     \else\errmessage{invalid color!}%
1355     \fi\fi\fi%
1356     \getpi@ce%
1357 }
1358
1359 \def\get@text#1{\text@tk={#1}\read@square}
1360
1361 \def\getpi@ce#1{\if#1B\relax\else
1362     \if#1\ds@knight\advance\help@a\@ne%
1363     \else\if#1\ds@bishop\advance\help@a\tw@%
1364     \else\if#1\ds@rook\advance\help@a\thr@@%
1365     \else\if#1\ds@queen\advance\help@a\f@ur%
1366     \else\if#1\ds@king\advance\help@a 5%
1367     \else\if#1C%
1368         % An imitator should not count for any color.
1369         \let\cpd@stepcounterPieces\relax
1370         \advance\help@a 145%
1371     \else%
1372         \errmessage{invalid piece!}%
1373     \fi\fi\fi\fi\fi\fi\fi%
1374     \futurelet\r@tate\chkr@tate%
1375 }
1376
1377 \def\chkr@tate{%
1378     \if\r@tate \ds@upsidedown\advance\help@a 108\let\nextpr@c=\skipr@t\else
1379     \if\r@tate \ds@left\advance\help@a 36\let\nextpr@c=\skipr@t\else
1380     \if\r@tate \ds@right\advance\help@a 72\let\nextpr@c=\skipr@t\else
1381     \let\nextpr@c\piece@job\fi\fi\fi\nextpr@c%
1382 }
1383 \def\skipr@t#1{\piece@job}
1384 \def\l@@k{\futurelet\whatsnext\parsefi@lds}
1385 \def\parsefi@lds{%
1386     \if\whatsnext\e@list%
1387         \let\nextpr@c\relax%
1388     \else
1389         \let\nextpr@c\read@square%
1390     \fi%
1391     \nextpr@c%
1392 }
```

40

```
1393
1394 \def\set@current@square@index#1#2{%
1395   \setcounter{cpd@current@square@index}{#1+\value{cpd@linesmax}*#2}%
1396 }
1397 \def\set@current@square@value#1{%
1398   \expandafter%
1399     \xdef\csname cpd@square@\roman{cpd@current@square@index}\endcsname{#1}%
1400 }
1401 \def\get@current@square@value{%
1402   \setcounter{cpd@current@square@value}%
1403     {\csname cpd@square@\roman{cpd@current@square@index}\endcsname}%
1404 }
1405 \def\set@piece{%
1406   \ifnum\pl@ne=\current@plane%
1407     \cpd@stepcounterPieces%
1408     \set@current@square@index\lin@\r@w%
1409     \get@current@square@value%
1410     \ifthenelse{\value{cpd@current@square@value}=\m@ne}
1411       {\set@current@square@value{\the\help@a}}%
1412       {\ifthenelse{\value{cpd@current@square@value}=144}%
1413         {\set@current@square@value{\the\help@a+18}}%
1414         {\errmessage{Trying to set a piece to an occupied square}}}%
1415   \fi%
1416   \l@@k%
1417 }
1418 \def\set@nofield, {%
1419   \ifnum\pl@ne=\current@plane%
1420     \set@current@square@index\lin@\r@w%
1421     \get@current@square@value%
1422     \ifthenelse{\value{cpd@current@square@value}=\m@ne}%
1423       {}% This is an empty white square, nothing to do
1424       {\ifthenelse{\value{cpd@current@square@value}=144}%
1425         {\set@current@square@value{\m@ne}}%
1426         {\errmessage{Trying to set a piece to an occupied square}}}%
1427   \fi%
1428   \l@@klist%
1429 }
1430 \def\set@frame, {%
1431   \ifnum\pl@ne=\current@plane%
1432     \@vGrid{\the\lin@}{\the\r@w}\@ne%
1433     \@hGrid{\the\lin@}{\the\r@w}\@ne%
1434     \advance\lin@\@ne%
1435     \@vGrid{\the\lin@}{\the\r@w}\@ne%
1436     \advance\lin@\m@ne\advance\r@w\@ne%
1437     \@hGrid{\the\lin@}{\the\r@w}\@ne%
1438   \fi%
1439   \l@@klist%
1440 }
1441 \def\e@list{\relax}
1442 \def\l@@klist{\futurelet\nextlist\ch@cklst}
1443 \def\ch@cklst{%
1444   \ifx\nextlist\e@list%
1445     \let\nextpr@c=\relax%
1446   \else%
```

41

```
1447        \let\nextpr@c=\@action%
1448    \fi%
1449    \nextpr@c%
1450 }
1451 \def\p@rsepieces#1, {\getc@lor#1\e@list\l@@klist}
1452 \def\p@rsetext#1, {\get@text#1\e@list\l@@klist}
1453 \def\set@text{%
1454    \ifnum\pl@ne=\current@plane%
1455        \raise\r@w\sq@width\hbox to \z@{%
1456            \hskip\lin@\sq@width%
1457            \vbox to \sq@width{\vss%
1458            \hbox to \sq@width{%
1459                \hss%
1460                {\the\text@tk}%
1461                \hss%
1462            }\vss}%
1463            \hss%
1464        }%
1465    \fi%
1466    \l@@klist%
1467 }
1468 \def\p@rseauthor#1; {\sh@wauthor#1;\l@@klist}
1469 \def\read@square#1#2{%
1470    \lin@='#1\advance\lin@ by -'a\relax%
1471    \r@w=#2\advance\r@w by \m@ne%
1472    \read@plane%
1473 }
1474 \def\read@plane@normal{\plane@job}
1475
1476 \def\read@plane@stereo{\futurelet\plane@char\get@plane@stereo}
1477
1478 \def\get@plane@stereo{%
1479    \if\plane@char A%
1480        \pl@ne=\@ne\advance\r@w-\tw@\advance\lin@-\tw@%
1481        \let\@plane@job=\skip@plane%
1482    \else\if\plane@char B%
1483        \pl@ne=\tw@\advance\r@w-\tw@\advance\lin@-\tw@%
1484        \let\@plane@job=\skip@plane%
1485    \else\if\plane@char C%
1486        \pl@ne=\thr@@\advance\r@w-\tw@\advance\lin@-\tw@%
1487        \let\@plane@job=\skip@plane%
1488    \else\if\plane@char D%
1489        \pl@ne=\f@ur\advance\r@w-\tw@\advance\lin@-\tw@%
1490        \let\@plane@job=\skip@plane%
1491    \else%
1492        \pl@ne=\z@\let\@plane@job=\plane@job%
1493    \fi\fi\fi\fi%
1494    \@plane@job%
1495 }
1496
1497 \def\skip@plane#1{\plane@job}
1498
1499 \def\read@plane@space#1{\pl@ne='#1\advance\pl@ne by -'A\relax\plane@job}
1500 \def\@vGrid#1#2#3{%
```

42

```
1501    \raise#2\sq@width\hbox to \z@{%
1502        \hskip#1\sq@width\hskip-.5\grid@width%
1503        \vrule height#3\sq@width width\grid@width\hss%
1504    }%
1505 }
1506
1507 \def\@hGrid#1#2#3{%
1508    \raise#2\sq@width\hbox to \z@{%
1509        \hskip#1\sq@width%
1510        \vrule width#3\sq@width height .5\grid@width depth%
1511        .5\grid@width\hss%
1512    }%
1513 }
1514 \def\@selGrid#1#2, {%
1515    \ifnum\pl@ne=\current@plane%
1516        \if#1h%
1517            \@hGrid#2%
1518        \else\if#1v%
1519            \@vGrid#2%
1520        \else%
1521            \errmessage{Wrong GridSelector #1}%
1522        \fi\fi%
1523    \fi%
1524    \l@@klist%
1525 }
1526 \def\@stdgrid{%
1527    \setbox\plane@box=\vbox{\hbox{%
1528        \help@a=\tw@%
1529        \loop%
1530            \ifnum\help@a<\lines@max%
1531            \@vGrid{\the\help@a}{0}{\the\rows@max}%
1532            \advance\help@a\tw@%
1533        \repeat%
1534        \help@a=\tw@%
1535        \loop%
1536            \ifnum\help@a<\rows@max%
1537                \@hGrid{0}{\the\help@a}{\the\lines@max}%
1538                \advance\help@a\tw@%
1539        \repeat%
1540        \box\plane@box
1541    }}%
1542 }
1543 \def\ds@xlabel#1{%
1544    \label@tk={#1}\@labeltrue%
1545 }
1546
1547 \def\@set@label#1;{\ifds@label\label{#1}\fi}
1548 \def\init@vars{%
1549    \global\s@lufalse
1550    \setboolean{cpd@checkPieceCounts}{false}%
1551    \setcounter{cpd@defWhitePieces}{\z@}%
1552    \setcounter{cpd@defBlackPieces}{\z@}%
1553    \setcounter{cpd@defNeutralPieces}{\z@}%
1554    \setcounter{cpd@whitePieces}{\z@}%
```

```
1555    \setcounter{cpd@blackPieces}{\z@}%
1556    \setcounter{cpd@neutralPieces}{\z@}%
1557    \lin@\z@
1558 }
1559
1560 \def\clear@board{%
1561    % Now the new style
1562    \setcounter{cpd@current@row}{0}%
1563    \whiledo{\value{cpd@current@row}<\value{cpd@rowsmax}}{%
1564        \setcounter{cpd@current@line}{0}%
1565        \whiledo{\value{cpd@current@line}<\value{cpd@linesmax}}{%
1566            \set@current@square@index{\value{cpd@current@line}}{\value{cpd@current@row}}%
1567            \setcounter{cpd@helper}{\the\current@plane+\value{cpd@current@line}+\value{cpd@current@ro
1568            \ifthenelse{\isodd{\value{cpd@helper}}}%
1569                {\set@current@square@value{-1}}%
1570                {\set@current@square@value{144}}%
1571            \addtocounter{cpd@current@line}{\@ne}%
1572        }%
1573        \addtocounter{cpd@current@row}{\@ne}%
1574    }%
1575 }
1576
1577 \def\put@row#1{%
1578    \lin@\z@%
1579    \help@b=#1%
1580    \advance\help@b\brd@ff%
1581    \hbox{%
1582        \if@stereo%
1583            \ifnum\current@plane>\z@%
1584                \ifnum\@rows=12%
1585                    \llap{\raise .5\sq@width\hbox{\boardfont c6\ }}%
1586                \fi%
1587            \fi%
1588        \fi%
1589        \hbox to \z@{\vbox to \sq@width{}}%
1590        \set@current@square@index{\lin@}{#1}%
1591        \loop%
1592            \get@current@square@value%
1593            \ifthenelse{\value{cpd@current@square@value}=\m@ne}%
1594             {\wF}%
1595             {\char\value{cpd@current@square@value}}%
1596            % \ifnum\count\help@b=\m@ne\wF%
1597            % \else\char\count\help@b\fi%
1598            \advance\lin@\@ne%
1599            \addtocounter{cpd@current@square@index}{1}%
1600            % \advance\help@b\@ne%
1601        \ifnum\lin@<\lines@max\repeat%
1602    }%
1603 }
1604 \def\put@line#1{%
1605    \lin@\z@%
1606    \help@b=#1%
1607    \advance\help@b\brd@ff%
1608    \hbox{%
```

44

```
1609      \if@stereo%
1610          \ifnum\current@plane>\z@%
1611              \ifnum\@rows=12%
1612                  \llap{\raise .5\sq@width\hbox{\boardfont c6\ }}%
1613              \fi%
1614          \fi%
1615      \fi%
1616      \hbox to \z@{\vbox to \sq@width{}}%
1617      \loop%
1618          \ifnum\count\help@b=\m@ne\wF%
1619          \else\char\count\help@b\fi%
1620          \advance\lin@\@ne\advance\help@b\@ne%
1621      \ifnum\lin@<\lines@max\repeat%
1622    }%
1623 }
1624 \def\@parseTokenlist#1#2{\expandafter\l@@klist\the#1#2 \e@list}
1625 \def\@addToPlane#1{%
1626      \setbox\plane@box=\vbox{\hbox{%
1627          \@parseTokenlist#1,%
1628          \box\plane@box%
1629    }}%
1630 }
1631 \def\put@plane{%
1632      % We might want gridchess
1633          \if@stdgrid%
1634              \@stdgrid%
1635          \fi%
1636      % Let us first set the fieldframes
1637      \if@fieldframe%
1638          \let\@action\read@square%
1639          \let\plane@job\set@frame%
1640          \@addToPlane\fieldframe@tk%
1641      \fi%
1642      % Now we set text to all squares which are given using \fieldtext
1643      \if@fieldtext%
1644          \let\@action\p@rsetext%
1645          \let\plane@job\set@text%
1646          \@addToPlane\fieldtext@tk%
1647      \fi%
1648      % Then we should add the gridlines
1649      \if@gridlines%
1650          \let\@action\read@plane%
1651          \let\plane@job\@selGrid%
1652          \@addToPlane\gridlines@tk%
1653      \else%
1654          \if@stereo%
1655              \stereo@center%
1656          \fi%
1657      \fi%
1658      % Now we should clear the board
1659      \clear@board%
1660      % Let us now parse the list of pieces
1661      \if@pieces%
1662          \let\@action\p@rsepieces%
```

```
1663        \let\piece@job\l@@k\let\plane@job\set@piece%
1664        \@parseTokenlist\pieces@tk,%
1665     \fi%
1666     % Now we clear all fields, which are given using \nofields
1667     \if@nofields%
1668        \let\@action\read@square%
1669        \let\plane@job\set@nofield%
1670        \@parseTokenlist\nofields@tk,%
1671     \fi%
1672     % Now we can put the pieces to the board
1673     \global\setbox\plane@box=\hbox{%
1674        \vbox{\rlap{\box\plane@box}}%
1675        \vbox{%
1676           \chessfont%
1677           \baselineskip=\z@\lineskip=\z@%
1678           \@rows=\rows@max%
1679           % \multiply\@rows by \lines@max%
1680           \loop%
1681              % \advance\@rows -\lines@max%
1682              % \put@line\@rows%
1683              % Remove \put@line in future versions
1684              \advance\@rows \m@ne%
1685              \put@row\@rows%
1686           \ifnum\@rows>\z@\repeat%
1687        }%
1688     }%
1689 }
1690 \def\put@sqs@normal{%
1691     \put@plane%
1692     \setbox\sq@box=\hbox{%
1693        \inner@henbox{\box\plane@box}%
1694     }%
1695 }
1696 \def\put@sqs@stereo{%
1697     \setbox\sq@box=\hbox{\hfil\vbox{%
1698        \current@plane=5%
1699        \vskip\v@space@dist%
1700        \loop%
1701           \advance\current@plane\m@ne%
1702           \ifnum\current@plane=\z@%
1703              \lines@max=\@ight%
1704              \rows@max=\@ight%
1705           \else%
1706              \lines@max=\f@ur%
1707              \rows@max=\f@ur%
1708           \fi%
1709           % Now we should clear the board
1710           \begingroup% We need this for inner loops!
1711              \clear@board%
1712              \put@plane%
1713           \endgroup%
1714           \hbox to \bd@width{%
1715              \hfil%
1716              \inner@henbox{\box\plane@box}%
```

```
1717            \ifcase\current@plane\or%
1718                \rlap{{\boardfont\ A}}\or%
1719                \rlap{{\boardfont\ B}}\or%
1720                \rlap{{\boardfont\ C}}\or%
1721                \rlap{{\boardfont\ D}}%
1722            \fi%
1723            \hfil%
1724        }%
1725        \vskip\v@space@dist%
1726      \ifnum\z@<\current@plane\repeat%
1727    }\hfil}%
1728 }
1729
1730 \def\stereo@center{%
1731    \ifnum\current@plane=\z@%
1732      \setbox\plane@box=\vbox{\hbox{%
1733        \@hGrid\tw@\tw@\f@ur\@hGrid\tw@ 6\f@ur%
1734        \@vGrid\tw@\tw@\f@ur\@vGrid6\tw@\f@ur%
1735        \box\plane@box%
1736      }}%
1737    \fi%
1738 }
1739 \def\put@sqs@space@vertical{%
1740    \setbox\sq@box=\hbox{\hfil\vbox{%
1741      \current@plane=\planes@max%
1742      \vskip\v@space@dist%
1743      \loop%
1744        \advance\current@plane\m@ne%
1745        % Now we should clear the board
1746        \begingroup% We use inner loops!
1747        \clear@board%
1748        \put@plane%
1749        \hbox to \bd@width{%
1750          \inner@henbox{\box\plane@box}%
1751          \advance\current@plane`A%
1752          \rlap{{\boardfont\ \char\current@plane}}%
1753        }%
1754        \endgroup%
1755        \vskip\v@space@dist%
1756      \ifnum\z@<\current@plane\repeat%
1757    }\hfil}%
1758 }
1759
1760 \def\put@sqs@space@horizontal{%
1761    \setbox\sq@box=\hbox{%
1762      \current@plane=\z@%
1763      \hskip\h@space@dist%
1764      \loop%
1765        % Now we should clear the board
1766        \begingroup% We use inner loops!
1767        \clear@board%
1768        \put@plane%
1769        \hbox to \bd@width{%
1770          \inner@henbox{\box\plane@box}%
```

```
1771            \advance\current@plane`A%
1772            \rlap{{\boardfont\ \char\current@plane}}%
1773          }%
1774          \endgroup%
1775          \hskip\h@space@dist%
1776          \advance\current@plane\@ne%
1777        \ifnum\planes@max>\current@plane%
1778      \repeat%
1779    }%
1780 }
1781
1782 \def\put@sqs@space{%
1783    \ifspace@vertical%
1784        \put@sqs@space@vertical%
1785    \else%
1786        \put@sqs@space@horizontal%
1787    \fi%
1788 }
1789 \def\@inner@vframe{%
1790    \if@vframe%
1791        \vrule width \inner@frame%
1792    \else%
1793        \hskip\inner@frame%
1794    \fi%
1795 }
1796
1797 \def\@inner@hframe{%
1798    \if@hframe%
1799        \hrule height \inner@frame%
1800    \else%
1801        \vskip\inner@frame%
1802    \fi%
1803 }
1804 \def\inner@v@frame@rule{%
1805    \if@stereo%
1806        \@inner@vframe%
1807    \else\if@space%
1808        \@inner@vframe%
1809    \else\if@leaveOuter%
1810        \vrule width \inner@frame%
1811    \else%
1812        \@inner@vframe%
1813    \fi\fi\fi%
1814 }
1815
1816 \def\inner@h@frame@rule{%
1817    \if@stereo%
1818        \@inner@hframe%
1819    \else\if@space%
1820        \@inner@hframe%
1821    \else\if@leaveOuter%
1822        \hrule height \inner@frame%
1823    \else%
1824        \@inner@hframe%
```

```
1825     \fi\fi\fi%
1826 }
1827
1828 \def\inner@henbox#1{%
1829     \hbox{%
1830         \inner@v@frame@rule%
1831         \vbox{\inner@h@frame@rule#1\inner@h@frame@rule}%
1832         \inner@v@frame@rule%
1833     }%
1834 }
1835 \def\@outer@vrule{\vrule width \outer@frame}
1836
1837 \def\@outer@hrule{\hrule height \outer@frame}
1838 \def\outer@v@frame@rule{%
1839     \if@stereo%
1840         \@outer@vrule%
1841     \else\if@space%
1842         \@outer@vrule%
1843     \else\if@leaveOuter%
1844         \if@vframe\@outer@vrule\else\hskip\outer@frame\fi%
1845     \else%
1846         \@outer@vrule%
1847     \fi\fi\fi%
1848 }
1849
1850 \def\outer@h@frame@rule{%
1851     \if@stereo%
1852         \@outer@hrule%
1853     \else\if@space%
1854         \@outer@hrule%
1855     \else\if@leaveOuter%
1856         \if@hframe\@outer@hrule\else\vskip\outer@frame\fi%
1857     \else%
1858         \@outer@hrule%
1859     \fi\fi\fi%
1860 }
1861
1862 \def\outer@henbox#1{%
1863     \outer@h@frame@rule%
1864     \hbox{%
1865         \outer@v@frame@rule%
1866         \ifspace@vertical%
1867             \hskip\h@frame@dist%
1868         \fi%
1869         \vbox{%
1870             \ifspace@vertical%
1871                 \vskip\v@frame@dist%
1872             \else%
1873                 \vskip\v@space@dist%
1874             \fi%
1875             #1%
1876             \ifspace@vertical%
1877                 \vskip\v@frame@dist%
1878             \else%
```

```
1879              \vskip\v@space@dist%
1880          \fi%
1881      }%
1882      \ifspace@vertical%
1883          \hskip\h@frame@dist%
1884      \fi%
1885      \outer@v@frame@rule%
1886    }%
1887    \outer@h@frame@rule%
1888 }
1889 \def\ch@fig#1{%
1890    \ifvmode\noindent\fi%
1891    \hbox{\chtextfont\lower.3\fontdimen\tw@\chtextfont\hbox{\char#1}}%
1892 }
1893 \def\@dia@index{%
1894    \@ifundefined{newindex}%
1895    {\errmessage{You should add documentstyle-option 'index'}}{}%
1896 }
1897
1898 \def\showlabel#1{%
1899    \if@develop%
1900        \raise1ex\hbox{\labelfont#1}\penalty\exhyphenpenalty%
1901    \fi%
1902 }
1903
1904 \def\@aidxitem#1, #2, #3{%
1905    \par\medskip#1, \write@christian#2; \dotfill #3%
1906 }
1907
1908 \def\dia@index#1\@sep#2[#3]{\index[#3]{#2|showlabel{#1}}}
1909
1910 \def\parse@aindex#1; {%
1911    \expandafter\dia@index\the\label@tk\@sep#1[author]\l@@klist%
1912 }
1913
1914 \def\@aindex{%
1915    \if@aindex%
1916        \ifnormal@names%
1917            \errmessage{Cannot create index entries with normalnames}%
1918        \else\ifauth@r%
1919            \let\@action=\parse@aindex\@parseTokenlist\aut@tk;%
1920        \fi\fi%
1921    \fi%
1922 }
1923
1924 \def\x@sindex#1\@sep{\expandafter\dia@index\the\label@tk\@sep#1[source]}
1925
1926 \def\@sindex{%
1927    \if@sindex\if@source%
1928        \expandafter\x@sindex\the\source@tk\@sep%
1929    \fi\fi%
1930 }
1931
1932 \def\parse@tindex#1, {%
```

50

```
1933      \expandafter\dia@index\the\label@tk\@sep#1[theme]\l@@klist%
1934 }
1935
1936 \def\@tindex{%
1937      \if@tindex\if@theme%
1938          \let\@action=\parse@tindex\@parseTokenlist\theme@tk,%
1939      \fi\fi%
1940 }
1941 \def\@setPieceColor#1#2#3{%
1942      \gdef\ds@white{#1}\gdef\ds@black{#2}\gdef\ds@neutral{#3}%
1943 }
1944
1945 \def\@setPieceSpec#1#2#3#4#5#6{%
1946      \gdef\ds@king{#1}\gdef\ds@queen{#2}\gdef\ds@rook{#3}%
1947      \gdef\ds@bishop{#4}\gdef\ds@knight{#5}\gdef\ds@pawn{#6}%
1948 }
1949
1950 \def\@setPieceRotation#1#2#3{%
1951      \gdef\ds@left{#1}\gdef\ds@right{#2}\gdef\ds@upsidedown{#3}%
1952 }
1953 \def\loop@rotation{%
1954      \bgroup%
1955          \n@cnt\z@%
1956          \help@a\z@%
1957          \loop%
1958              \ifcase\n@cnt%
1959                  \def\@theRotation{}%
1960              \or%
1961                  \def\@theRotation{\ds@left}%
1962              \or%
1963                  \def\@theRotation{\ds@right}%
1964              \or%
1965                  \def\@theRotation{\ds@upsidedown}%
1966              \fi%
1967              \loop@color%
1968              \advance\n@cnt\@ne%
1969              \advance\help@a by 36\relax%
1970          \ifnum\n@cnt<\f@ur\repeat%
1971      \egroup%
1972 }
1973
1974 \def\loop@color{%
1975      \bgroup%
1976          \w@cnt\z@%
1977          \loop%
1978              \ifcase\w@cnt%
1979                  \def\@theColor{\ds@white}%
1980              \or%
1981                  \def\@theColor{\ds@neutral}%
1982              \or%
1983                  \def\@theColor{\ds@black}%
1984              \fi%
1985              \loop@piece%
1986              \advance\w@cnt\@ne%
```

```
1987            \advance\help@a by 6%
1988         \ifnum\w@cnt<\thr@@\repeat%
1989     \egroup%
1990 }
1991
1992 \def\loop@piece{%
1993     \bgroup%
1994         \b@cnt\z@%
1995         \loop%
1996             \ifcase\b@cnt%
1997                 \def\@thePiece{\ds@pawn}%
1998             \or%
1999                 \def\@thePiece{\ds@knight}%
2000             \or%
2001                 \def\@thePiece{\ds@bishop}%
2002             \or%
2003                 \def\@thePiece{\ds@rook}%
2004             \or%
2005                 \def\@thePiece{\ds@queen}%
2006             \or%
2007                 \def\@thePiece{\ds@king}%
2008             \fi%
2009             \expandafter\xdef\csname
2010             \@theColor\@thePiece\@theRotation\endcsname{%
2011                 \noexpand\ch@fig{\the\help@a}%
2012             }
2013             \advance\b@cnt\@ne%
2014             \advance\help@a by \@ne%
2015         \ifnum\b@cnt<6\repeat%
2016     \egroup%
2017 }
2018 \elchfont\@fselch
2019
2020 \defaultelchfont%
2021 \diagnum{\@ne}
2022 %% \figcnttrue
2023 \setboolean{piececounter}{true}
2024 \def\@dianame{\@fullname}
2025 \def\@solname{\@fullname}
2026 \space@verticaltrue
2027 \diagnumbering{arabic}
2028 \def\write@month{\@arabic}%
2029 \diagleft
2030 \cl@arsol
2031 \let\orig@author=\author
2032 \let\orig@day=\day
2033 \let\orig@month=\month
2034 \let\orig@year=\year
2035 \let\orig@label=\label
2036 \DefinePieces{wsn}{KDTLSB}{LRU}
2037 \newdimen\normalboardwidth
2038 \def\setboardwidth{%
2039     \normalboardwidth=\@ight\fontdimen\tw@\chessfont%
2040     \advance\normalboardwidth\tw@\inner@frame
```

```
2041    \advance\normalboardwidth\tw@\h@frame@dist
2042    \advance\normalboardwidth\tw@\outer@frame
2043 }
2044
2045 \setboardwidth
2046
2047 ⟨/style⟩
```

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.

54

55

57

59

Change History