Hypertext marks in LaTeX

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https://github.com/ho-tex/hyperref/issues

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1 Documentation overview for hyperref

The documentation for package hyperref consists of several files:

Manual The **USER MANUAL** (also available as HTML).

README The **README** file (also available as text file). Here information is collected that is not yet in the manual: new features, package compatibility, limitations, known problems, ...

ChangeLog This file records the version history (also available as text file).

Options This file provides a short option summary.

Bookmark talk, slides Slides for the talk "PDF information and navigation elements with hyperref, pdfTeX and thumbpdf" at EuroTeX 1999.

Bookmark talk, paper The paper version of the talk.

Source code documentation:

☞ **hyperref.dtx** This is the source code documentation for hyperref (this file).

backref.dtx "Back referencing from bibliographical citations"

nameref.dtx "Section name references in LaTeX"

2 Contents

1 Documentation overview for hyperref 1

2 Contents 2

3 File hycheck.tex 7

4 Package options and setup 11
- 4.1 Save catcodes . . . 11
- 4.2 Version check . . . 13
- 4.3 Checks with regular expressions . . . 14
- 4.4 Compatibility with format dumps . . . 15
- 4.5 Switches . . . 16

5 Common help macros 17
- 5.1 Macros for recursions . . . 17
- 5.2 Babel's protection of shorthand characters . . . 18
- 5.3 Coordinate transformations . . . 18

6 Dealing with PDF strings 19
- 6.1 Description of PDF strings . . . 19
- 6.2 Definition of \pdfstringdef . . . 19
  - 6.2.1 Preprocessing . . . 20
  - 6.2.2 Expansion . . . 26
  - 6.2.3 Postprocessing . . . 27
- 6.3 Encodings . . . 31
  - 6.3.1 XeTeX . . . 31
  - 6.3.2 Workaround for package linguex . . . 33
  - 6.3.3 Catcodes saving and restoring for .def files . . . 33
  - 6.3.4 PD1 encoding . . . 34
  - 6.3.5 PU encoding . . . 34
- 6.4 Additional user commands . . . 35
  - 6.4.1 \texorpdfstring . . . 35
  - 6.4.2 Hooks for \pdfstringdef . . . 35
- 6.5 Help macros for expansion . . . 36
  - 6.5.1 \ignorespaces . . . 36
  - 6.5.2 Babel languages . . . 37
  - 6.5.3 CJK patch . . . 42
  - 6.5.4 CJK bookmarks . . . 42
  - 6.5.5 CJK unicode . . . 44
  - 6.5.6 \@inmathwarn-Patch . . . 48
  - 6.5.7 Unexpandable spaces . . . 50
  - 6.5.8 Marker for commands . . . 50
  - 6.5.9 \hspace fix . . . 50
  - 6.5.10 Fix for AMS classes . . . 51
  - 6.5.11 Reference commands . . . 51
  - 6.5.12 Redefining the defining commands . . . 53
  - 6.5.13 \ifnextchar . . . 54
  - 6.5.14 \@protected@testoptifnextchar . . . 55
- 6.6 Help macros for postprocessing . . . 55
  - 6.6.1 Generic warning. . . . 55
  - 6.6.2 Protecting spaces . . . 55
  - 6.6.3 Remove grouping braces . . . 56

6.6.4 Catcode check . . . 57
6.6.5 Check for wrong glyphs . . . 61
6.6.6 Replacing tokens . . . 62
6.6.7 Support for package xspace . . . 63
6.6.8 Converting to Unicode . . . 63
6.6.9 Support for UTF-8 input encoding . . . 66
6.6.10 Support for die faces (ifsym et. al.) . . . 69
6.6.11 Support for moon phases of package china2e . . . 70
6.6.12 Support for package pifont . . . 70

7 Support of other packages 72
7.1 Class memoir . . . 72
7.2 Package subfigure . . . 72
7.3 Package xr and xr-hyper . . . 73

8 Help macros for links 73

9 Options 75
9.1 Help macros . . . 75
9.2 Defining the options . . . 77

10 Options for different drivers 82

11 Options to add extra features 86

12 Language options 87

13 Options to change appearance of links 94

14 Bookmarking 94

15 PDF-specific options 97
15.1 Package xspace support . . . 111
15.2 Option draft . . . 111
15.3 PDF/A . . . 111
15.4 Patch for babel's \texttilde . . . 112
15.4.1 Driver loading . . . 114
15.4.2 Bookmarks . . . 117

16 User hypertext macros 121
16.1 Link box support for XeTeX . . . 126

17 Underlying basic hypertext macros 127

18 Option 'destlabel' 131

19 Compatibility with the *LaTeX2html* package 133

20 Forms creation 134
20.1 Field flags . . . 134
20.1.1 Declarations of field flags . . . 136
20.1.2 Set submit flags . . . 138
20.1.3 Set annot flags in fields . . . 138
20.1.4 Pushbutton field . . . 139
20.1.5 Check box field . . . 139

20.1.6 Radio button field . . . 139
20.1.7 Text fields . . . 140
20.1.8 Choice fields . . . 140
20.2 Choice field . . . 141
20.3 Forms . . . 143

21 Setup **150**

22 Low-level utility macros **151**

23 Localized nullifying of package **152**

24 Package nohyperref **153**

25 The Mangling Of Aux and Toc Files **154**

26 Title strings **155**

27 Page numbers **157**

28 Every page **157**
28.1 PDF /PageLabels . . . 157
28.1.1 pdfTeX and VTeX . . . 161
28.1.2 xetex . . . 162
28.1.3 pdfmarkbase, dvipdfm, xetex . . . 163

29 Automated LaTeX hypertext cross-references **164**

30 Package lastpage support **170**

31 Package ifthen support **172**

32 Package titlesec and titletoc support **172**

33 Package varioref support **173**

34 Package longtable support **173**

35 Equations **174**

36 Footnotes **179**

37 Float captions **184**

38 Bibliographic references **186**
38.1 Package harvard . . . 189
38.2 Package chicago . . . 191

39 Page numbers **192**

40 Table of contents **194**

41 New counters **195**

42 AMSLaTeX compatibility **196**
42.1 \@addtoreset and \numberwithin patches . . . 197

43 Included figures **198**

44 hyperindex entries **198**

45 Compatibility with foiltex **202**

46 Compatibility with seminar slide package **202**

47 Configuration files **210**
47.1 PS/PDF strings . . . 210
47.2 pdftex . . . 211
47.2.1 Fix for problem with different nesting levels . . . 225
47.3 hypertex . . . 226
47.4 dviwindo . . . 228
47.5 dvipdfm/xetex dvi to PDF converter . . . 233
47.6 VTeX typesetting system . . . 243
47.7 Fix for Adobe bug number 466320 . . . 255
47.8 Direct pdfmark support . . . 256
47.9 Rokicki's dvips . . . 270
47.10 VTeX's vtexpdfmark driver . . . 272
47.11 Textures . . . 274
47.12 dvipsone . . . 278
47.13 TeX4ht . . . 282

48 Driver-specific form support **284**
48.1 pdfmarks . . . 284
48.2 HyperTeX . . . 292
48.3 TeX4ht . . . 293
48.4 pdfTeX . . . 295
48.5 dvipdfm, xetex . . . 304
48.6 Common forms part . . . 311

49 Bookmarks in the PDF file **319**
49.1 Bookmarks . . . 319
49.1.1 Rerun warning . . . 322
49.1.2 Driver stuff . . . 322

50 Compatibility with koma-script classes **328**

51 Encoding definition files for encodings of PDF strings **329**
51.1 PD1 encoding . . . 329
51.2 PU encoding . . . 337
51.2.1 NFSS2 accents . . . 337
51.2.2 Basic Latin: U+0000 to U+007F . . . 340
51.2.3 Latin-1 Supplement: U+0080 to U+00FF . . . 341
51.2.4 Latin Extended-A: U+0080 to U+017F . . . 345
51.2.5 Latin Extended-B: U+0180 to U+024F . . . 350
51.2.6 IPA Extensions: U+0250 to U+02AF . . . 354
51.2.7 Spacing Modifier Letters: U+02B0 to U+02FF . . . 360
51.2.8 Combining Diacritical Marks: U+0300 to U+036F . . . 361
51.2.9 Greek and Coptic: U+0370 to U+03FF . . . 361
51.2.10 Cyrillic: U+0400 to U+04FF . . . 364
51.2.11 Hebrew: U+0590 to U+05FF . . . 375
51.2.12 Thai: U+0E00 to U+0E7F . . . 376

51.2.13 Phonetic Extensions: U+1D00 to U+1D7F 376
51.2.14 Phonetic Extensions Supplement: U+1D80 to U+1DBF . . 377
51.2.15 Latin Extended Additional: U+1E00 to U+1EFF 377
51.2.16 General Punctuation: U+2000 to U+206F 383
51.2.17 Superscripts and Subscripts: U+2070 to U+209F 384
51.2.18 Currency Symbols: U+20A0 to U+20CF 386
51.2.19 Letterlike Symbols: U+2100 to U+214F 386
51.2.20 Number Forms: U+2150 to U+218F 387
51.2.21 Arrows: U+2190 to U+21FF 388
51.2.22 Mathematical Operators: U+2200 to U+22FF 391
51.2.23 Miscellaneous Technical: U+2300 to U+23FF 402
51.2.24 Control Pictures: U+2400 to U+243F 403
51.2.25 Optical Character Recognition: U+2440 to U+245F 403
51.2.26 Enclosed Alphanumerics: U+2460 to U+24FF 403
51.2.27 Box Drawing: U+2500 to 257F 406
51.2.28 Geometric Shapes: U+25A0 to U+25FF 406
51.2.29 Miscellaneous Symbols: U+2600 to U+26FF 407
51.2.30 Dingbats: U+2700 to U+27BF 411
51.2.31 Miscellaneous Mathematical Symbols-A: U+27C0 to U+27EF 414
51.2.32 Supplemental Arrows-A: U+27F0 to U+27FF 414
51.2.33 Supplemental Arrows-B: U+2900 to U+297F 415
51.2.34 Miscellaneous Mathematical Symbols-B: U+2980 to U+29FF 417
51.2.35 Supplemental Mathematical Operators: U+2A00 to U+2AFF 417
51.2.36 Miscellaneous Symbols and Arrows: U+2B00 to U+2BFF . 421
51.2.37 Latin Extended-C: U+2C60 to U+2C7F 421
51.2.38 Supplemental Punctuation: U+2E00 to U+2E7F 421
51.2.39 Modifier Tone Letters: U+A700 to U+A71F 421
51.2.40 Latin Extended-D: U+A720 to U+A7FF 421
51.2.41 Alphabetic Presentation Forms: U+FB00 to U+FB4F . . . 421
51.2.42 Musical Symbols: U+1D100 to U+1D1FF 421
51.2.43 Miscellaneous Symbols and Pictographs: U+1F300 to U+1F5FF 422
51.2.44 Transport and Map Symbols: U+1F680 to U+1F6FF . . . 422
51.2.45 Miscellaneous 422
51.2.46 Aliases 423
51.3 PU encoding, additions for VnTEX 423
51.4 PU encoding, additions for Arabi 425

52 End of file hycheck.tex **449**

53 Index **450**

3 File hycheck.tex

Many commands of LaTeX or other packages cannot be overloaded, but have to be redefined by hyperref directly. If these commands change in newer versions, these changes are not noticed by hyperref. With this test file this situation can be checked. It defines the command `\checkcommand` that is more powerful than LaTeX's `\CheckCommand`, because it takes `\DeclareRobustCommand` and optional parameters better into account.

```
1 ⟨*check⟩
2 \documentclass{article}
3 \makeatletter
```

`\checklatex` Optional argument: release date of LaTeX.

```
4 \newcommand*{\checklatex}[1][]{%
5   \typeout{}%
6   \typeout{* Format: `LaTeX2e' #1}%
7   \typeout{\space\space Loaded: `\fmtname' \fmtversion}%
8 }%
```

`\checkpackage` The argument of `\checkpackage` is the package name without extension optionally followed by a release date.

```
9 \newcommand*{\checkpackage}[1]{%
10  \def\HyC@package{#1}%
11  \let\HyC@date\@empty
12  \@ifnextchar[\HyC@getDate\HyC@checkPackage
13 }
```

`\HyC@getDate` The release date is scanned.

```
14 \def\HyC@getDate[#1]{%
15   \def\HyC@date{#1}%
16   \HyC@checkPackage
17 }
```

`\HyC@checkPackage`

```
18 \def\HyC@checkPackage{%
19   \typeout{}%
20   \begingroup
21     \edef\x{\endgroup
22       \noexpand\RequirePackage{\HyC@package}%
23       \ifx\HyC@date\@empty\relax\else[\HyC@date]\fi%
24     }%
25   \x
26   \typeout{}%
27   \typeout{%
28     * Package `\HyC@package'%
29     \ifx\HyC@date\@empty
30     \else
31       \space\HyC@date
32     \fi
33   }%
34   \@ifundefined{ver@\HyC@package.sty}{%
35   }{%
36     \typeout{%
37       \space\space Loaded: `\HyC@package' %
38       \csname ver@\HyC@package.sty\endcsname
39     }%
```

```
  }%
}
```

\checkcommand The macro \checkcommand parses the next tokens as a LaTeX definition and compares this definition with the current meaning of that command.

```
\newcommand*{\checkcommand}[1]{%
  \begingroup
  \ifx\long#1\relax
    \expandafter\HyC@checklong
  \else
    \def\HyC@defcmd{#1}%
    \expandafter\let\expandafter\HyC@next
      \csname HyC@\expandafter\@gobble\string#1\endcsname
    \expandafter\HyC@checkcommand
  \fi
}
```

\HyC@checklong The definition command \def or \edef is read.

```
\def\HyC@checklong#1{%
  \def\HyC@defcmd{\long#1}%
  \expandafter\let\expandafter\HyC@next
    \csname HyC@\expandafter\@gobble\string#1\endcsname
  \HyC@checkcommand
}
```

\HyC@checkcommand The optional star of LaTeX's definitions is parsed.

```
\def\HyC@checkcommand{%
  \ifx\HyC@next\relax
    \PackageError{hycheck}{%
      Unknown command `\expandafter\strip@prefix\meaning\HyC@cmd'%
    }\@ehd
    \expandafter\endinput
  \fi
  \@ifstar{%
    \def\HyC@star{*}%
    \HyC@check
  }{%
    \let\HyC@star\@empty
    \HyC@check
  }%
}
```

\HyC@check The macro \HyC@check reads the definition command.

```
\def\HyC@check#1{%
  \def\HyC@cmd{#1}%
  \let\HyC@org@cmd#1%
  \let#1\relax
  \let\HyC@param\@empty
  \HyC@Toks{}%
  \let\HyC@org@optcmd\HyC@noValue
  \let\HyC@org@robustcmd\HyC@noValue
  \let\HyC@org@robustoptcmd\HyC@noValue
  \HyC@next
}
```

\HyC@noValue

```
\def\HyC@noValue{NoValue}
```

\HyC@newcommand The code for \newcommand.

```
\def\HyC@newcommand{%
  \let\HyC@@cmd\HyC@cmd
  \@ifnextchar[\HyC@nc@opt\HyC@nc@noopt
}
```

\HyC@Toks A register for storing the default value of an optional argument.

```
\newtoks\HyC@Toks
```

\HyC@nc@noopt This macro \HyC@nc@noopt is called, if the parser has reached the definition text.

```
\long\def\HyC@nc@noopt#1{%
  \edef\x{%
    \expandafter\noexpand\HyC@defcmd
    \HyC@star
    \expandafter\noexpand\HyC@cmd
    \HyC@param\the\HyC@Toks
  }%
  \x{#1}%
  \HyC@doCheck
}
```

\HyC@nc@opt This macro scans the first optional argument of a LaTeX definition (number of arguments).

```
\def\HyC@nc@opt[#1]{%
  \def\HyC@param{[{#1}]}%
  \@ifnextchar[\HyC@nc@default\HyC@nc@noopt
}
```

\HyC@nc@default Macro \HyC@nc@default scans the default for an optional argument.

```
\def\HyC@nc@default[#1]{%
  \HyC@Toks={[{#1}]}%
  \edef\HyC@optcmd{%
    \expandafter\noexpand
    \csname\expandafter\string\HyC@@cmd\endcsname
  }%
  \expandafter\let\expandafter\HyC@org@optcmd\HyC@optcmd
  \HyC@nc@noopt
}
```

\HyC@DeclareRobustCommand \DeclareRobustCommand{\cmd} makes the command \cmd robust, that then calls \cmd␣ with an space at the end of the command name, defined by \newcommand. Therefore the further parsing is done by \HyC@nc@opt or \Hy@nc@noopt of the \HyC@newcommand chain.

```
\def\HyC@DeclareRobustCommand{%
  \edef\HyC@robustcmd{%
    \expandafter\noexpand
    \csname\expandafter\expandafter\expandafter\@gobble
      \expandafter\string\HyC@cmd\space\endcsname
  }%
  \expandafter\let\expandafter\HyC@org@robustcmd\HyC@robustcmd
  \expandafter\let\HyC@robustcmd\relax
  \let\HyC@@cmd\HyC@robustcmd
  \@ifnextchar[\HyC@nc@opt\HyC@nc@noopt
}
```

\HyC@def
\HyC@edef
The parameter text of \def or \edef is stored in the token register \HyC@Toks.

```
\def\HyC@def#1#{%
  \HyC@Toks={#1}%
  \HyC@nc@noopt
}
\let\HyC@edef\HyC@def
```

\HyC@doCheck
This command performs the checks and prints the result.

```
\def\HyC@doCheck{%
  \typeout{* Checking `\HyC@string\HyC@cmd':}%
  \HyC@checkItem{cmd}%
  \HyC@checkItem{robustcmd}%
  \HyC@checkItem{optcmd}%
  \HyC@checkItem{robustoptcmd}%
  \endgroup
}
```

\HyC@checkItem
A single check.

```
\def\HyC@checkItem#1{%
  \expandafter\ifx\csname HyC@org@#1\endcsname\HyC@noValue
  \else
    \expandafter\expandafter\expandafter\ifx
    \csname HyC@#1\expandafter\endcsname
    \csname HyC@org@#1\endcsname
      \expandafter\HyC@checkOk\csname HyC@#1\endcsname
    \else
      \expandafter\HyC@checkFailed
        \csname HyC@#1\expandafter\endcsname
        \csname HyC@org@#1\endcsname
    \fi
  \fi
}
```

\HyC@string
\HyC@meaning
Some shorthands.

```
\def\HyC@string#1{\expandafter\string#1}
\def\HyC@meaning#1{\expandafter\meaning#1}
```

\HyC@checkOk
The result, if the check succeeds.

```
\def\HyC@checkOk#1{%
  \typeout{\space\space`\HyC@string#1' ok.}%
}
```

\HyC@checkFailed
The result, if the check fails.

```
\def\HyC@checkFailed#1#2{%
  \typeout{\space\space`\HyC@string#1' failed.}%
  \typeout{\space\space* original: \meaning#2}%
  \typeout{\space\space* expected: \HyC@meaning#1}%
}

% ************************************************
⟨/check⟩
⟨*package⟩
```

4 Package options and setup

4.1 Save catcodes

There are many packages that change the standard catcodes.

First we save the original meaning of ` and = in the token register \toks@, because we need the two characters in the macros \Hy@SetCatcodes and \Hy@RestoreCatcodes.

```
\begingroup
  \@makeother\`%
  \@makeother\=%
  \edef\x{%
    \edef\noexpand\x{%
      \endgroup
      \noexpand\toks@{%
        \catcode 96=\noexpand\the\catcode`\noexpand\`\relax
        \catcode 61=\noexpand\the\catcode`\noexpand\=\relax
      }%
    }%
    \noexpand\x
  }%
\x
\@makeother\`
\@makeother\=
```

\Hy@SetCatcodes

```
\def\Hy@SetCatcodes{%
  \@makeother\`%
  \@makeother\=%
  \catcode`\$=3 %
  \catcode`\&=4 %
  \catcode`\^=7 %
  \catcode`\_=8 %
  \@makeother\|%
  \@makeother\:%
  \@makeother\(%
  \@makeother\)%
  \@makeother\[%
  \@makeother\]%
  \@makeother\/%
  \@makeother\!%
  \@makeother\<%
  \@makeother\>%
  \@makeother\.%
  \@makeother\;%
  \@makeother\+%
  \@makeother\-%
  \@makeother\"%
  \@makeother\'%
}
```

\Hy@RestoreCatcodes

```
\begingroup
  \def\x#1{\catcode`\noexpand#1=\the\catcode`#1\relax}%
  \xdef\Hy@RestoreCatcodes{%
    \the\toks@
    \x\$%
```

```
    \x\&%
    \x\^%
    \x\_%
    \x\|%
    \x\:%
    \x\(%
    \x\)%
    \x\[%
    \x\]%
    \x\/%
    \x\!%
    \x\<%
    \x\>%
    \x\.%
    \x\;%
    \x\+%
    \x\-%
    \x\"%
    \x\'%
  }%
\endgroup

\Hy@SetCatcodes
```

It needs the December 95 release of LaTeX, because it uses `\protected@write`, and it defines commands in options; and the page setup internal code changed at that point. It'll probably break with the later releases!

Use package `hobsub-hyperref` for faster package loading.

```
\IfFileExists{hobsub-hyperref.sty}{%
  \RequirePackage{hobsub-hyperref}[2011/01/30]%
}{}

\RequirePackage{ltxcmds}[2010/11/12]
\RequirePackage{ifpdf}[2006/02/20]
\RequirePackage{pdftexcmds}[2009/04/10]
\@ifpackagelater{pdftexcmds}{2010/11/04}{}{%
  \ltx@IfUndefined{pdfdraftmode}{%
    \let\pdf@ifdraftmode\ltx@secondoftwo
  }{%
    \ifpdf
      \def\pdf@ifdraftmode{%
        \ifnum\pdfdraftmode=\ltx@one
          \expandafter\ltx@firstoftwo
        \else
          \expandafter\ltx@secondoftwo
        \fi
      }%
    \else
      \let\pdf@ifdraftmode\ltx@secondoftwo
    \fi
  }%
}

\RequirePackage{infwarerr}[2010/04/08]
\RequirePackage{keyval}[1997/11/10]
\RequirePackage{kvsetkeys}[2007/09/29]
\RequirePackage{kvdefinekeys}[2011/04/07]
\RequirePackage{pdfescape}[2007/11/11]
\RequirePackage{ifvtex}
```

```
\RequirePackage{ifxetex}[2006/08/21]
\RequirePackage{hycolor}
\RequirePackage{letltxmacro}[2008/06/13]
\RequirePackage{auxhook}[2009/12/14]
\def\Hy@Error{\@PackageError{hyperref}}
\def\Hy@Warning{\@PackageWarning{hyperref}}
\def\Hy@WarningNoLine{\@PackageWarningNoLine{hyperref}}
\def\Hy@Info{\@PackageInfo{hyperref}}
\def\Hy@InfoNoLine{\@PackageInfoNoLine{hyperref}}
\def\Hy@Message#1{%
  \GenericWarning{%
    (hyperref)\@spaces\@spaces\@spaces\@spaces
  }{%
    Package hyperref Message: #1\ltx@gobble
  }%
}
```

4.2 Version check

\Hy@VersionChecked

```
\chardef\Hy@VersionChecked=0 %
```

\Hy@VersionCheck

```
\def\Hy@VersionCheck#1{%
  \begingroup
    \ltx@IfUndefined{ver@hyperref.sty}{%
      \Hy@Error{%
        This should not happen!\MessageBreak
        Missing hyperref version%
      }\@ehd
    }{%
      \ltx@IfUndefined{ver@#1}{%
        \Hy@Error{%
          This should not happen!\MessageBreak
          Missing version of `#1'%
        }\@ehd
      }{%
        \def\x##1##2##3{%
          \expandafter\expandafter\expandafter\Hy@@VersionCheck
          \expandafter\expandafter\expandafter##2%
          \csname ver@##3\endcsname##1##1\@nil
        }%
        \x{ }\y{hyperref.sty}%
        \x{ }\z{#1}%
        \ifx\y\z
        \else
          \edef\a{#1}%
          \edef\b{\HyOpt@CustomDriver.def}%
          \ifx\a\b
            \Hy@WarningNoLine{%
              Version mismatch (custom driver)!\MessageBreak
              * \y: hyperref.sty\MessageBreak
              * \z: \a
            }%
          \else
            \Hy@Error{%
              Version mismatch!\MessageBreak
```

```
312            * \y: hyperref.sty\MessageBreak
313            * \z: \a
314          }\@ehd
315        \fi
316      \fi
317    }%
318  }%
319  \endgroup
320  \chardef\Hy@VersionChecked=1 %
321 }
```

\Hy@@VersionCheck

```
322 \def\Hy@@VersionCheck #1#2 #3 #4\@nil{%
323  \def#1{#2 #3}%
324 }
```

4.3 Checks with regular expressions

```
325 \ltx@IfUndefined{pdfmatch}{%
326  \def\Hy@Match#1#2#3#4#5{}%
327 }{%
328  \def\Hy@Match#1#2#3{%
329   \begingroup
330   \edef\^{\ltx@backslashchar\string^}%
331   \edef\.{\ltx@backslashchar.}%
332   \edef\[{\ltx@backslashchar[}% ]]
333   \edef\${\ltx@backslashchar$}%
334   \edef\({\ltx@backslashchar(}%
335   \edef\){\ltx@backslashchar)}%
336   \edef\|{\ltx@backslashchar|}%
337   \edef\*{\ltx@backslashchar*}%
338   \edef\+{\ltx@backslashchar+}%
339   \edef\?{\ltx@backslashchar?}%
340   \edef\{{\ltx@backslashchar\ltx@leftbracechar}%
341   \edef\}{\ltx@rightbracechar}%
342   \edef\\{\ltx@backslashchar\ltx@backslashchar}%
343   \let\ \ltx@space
344   \ifcase\pdfmatch#2{#3}{#1} %
345     \endgroup
346     \expandafter\ltx@secondoftwo
347   \or
348     \endgroup
349     \expandafter\ltx@firstoftwo
350   \else
351     \Hy@Warning{%
352       Internal error: Wrong pattern!\MessageBreak
353       --> #3 <--\MessageBreak
354       Pattern check ignored%
355     }%
356     \endgroup
357     \expandafter\ltx@firstoftwo
358   \fi
359  }%
360  \ltx@ifpackagelater{ltxcmds}{2010/09/11}{}{%
361   \begingroup
362     \lccode`0=`\{\relax
363   \lowercase{\endgroup
```

```
    \def\ltx@leftbracechar{0}%
  }%
  \begingroup
    \lccode`0=`\}\relax
  \lowercase{\endgroup
    \def\ltx@rightbracechar{0}%
  }%
}%
}
```

4.4 Compatibility with format dumps

\AfterBeginDocument

For use with pre-compiled formats, created using the ldump package, there needs to be 2 hooks for adding material delayed until \begin{document}. These are called \AfterBeginDocument and \AtBeginDocument. If ldump is not loaded, then a single hook suffices for normal LaTeX processing.

The default definition of \AfterBeginDocument cannot be done by \let because of problems with xypic.

```
\@ifundefined{AfterBeginDocument}{%
  \def\AfterBeginDocument{\AtBeginDocument}%
}{}%
```

\Hy@AtBeginDocument

For the case that package 'hyperref' is loaded using \AtBeginDocument, we have to wrap the calls of \AtBeginDocument/\AfterBeginDocument in \AtEndOfPackage. However, packages must be loaded in \AtEndOfPackage *before* package 'kvoptions' has to perform its option cleanup. Therefore we use a hook.

```
\def\Hy@AtBeginDocument{%
  \ltx@LocalAppendToMacro\Hy@AtBeginDocumentHook
}
```

\Hy@AtEndOfPackage

```
\def\Hy@AtEndOfPackage{%
  \ltx@LocalAppendToMacro\Hy@AtEndOfPackageHook
}
```

\Hy@AtBeginDocumentHook

```
\let\Hy@AtBeginDocumentHook\ltx@empty
```

\Hy@AtEndOfPackageHook

```
\let\Hy@AtEndOfPackageHook\ltx@empty
```

Install the hook, before package 'kvoptions' is loaded.

```
\AtEndOfPackage{%
  \Hy@AtEndOfPackageHook
  \let\Hy@AtEndOfPackageHook\@undefined
  \AfterBeginDocument{%
    \Hy@AtBeginDocumentHook{}%
    \let\Hy@AtBeginDocumentHook\@undefined
  }%
}
```

Package kvoptions is used for processing options that are given as key value pairs. The package provides \ProcessKeyvalOptions, formerly known as \ProcessOptionsWithKV.

```
\RequirePackage{kvoptions}[2009/07/21]
```

4.5 Switches

```
\newif\ifHy@stoppedearly
\newif\ifHy@typexml
\newif\ifHy@activeanchor
\newif\ifHy@backref
\newif\ifHy@bookmarks
\newif\ifHy@bookmarksnumbered
\newif\ifHy@bookmarksopen
\newif\ifHy@breaklinks
\newif\ifHy@pdfcenterwindow
\newif\ifHy@CJKbookmarks
\newif\ifHy@colorlinks
\newif\ifHy@destlabel
\newif\ifHy@draft
\let\Hy@finaltrue\Hy@draftfalse
\let\Hy@finalfalse\Hy@drafttrue
\newif\ifHy@pdfescapeform
\newif\ifHy@hyperfigures
\newif\ifHy@pdffitwindow
\newif\ifHy@frenchlinks
\newif\ifHy@hyperfootnotes
\newif\ifHy@hyperindex
\newif\ifHy@hypertexnames
\newif\ifHy@implicit
\newif\ifHy@linktocpage
\newif\ifHy@localanchorname
\newif\ifHy@pdfmenubar
\newif\ifHy@naturalnames
\newif\ifHy@nesting
\newif\ifHy@pdfnewwindowset
\newif\ifHy@pdfnewwindow
\newif\ifHy@ocgcolorlinks
\newif\ifHy@pageanchor
\newif\ifHy@pdfpagelabels
\newif\ifHy@pdfpagehidden
\newif\ifHy@pdfstring
\newif\ifHy@plainpages
\newif\ifHy@psize
\newif\ifHy@raiselinks
\newif\ifHy@seminarslides
\newif\ifHy@setpagesize
\newif\ifHy@texht
\newif\ifHy@psdextra
\newif\ifHy@pdftoolbar
\newif\ifHy@unicode
\newif\ifHy@pdfusetitle
\newif\ifHy@verbose
\let\Hy@debugtrue\Hy@verbosetrue
\let\Hy@debugfalse\Hy@verbosefalse
\newif\ifHy@pdfwindowui
\newif\ifHy@pdfdisplaydoctitle
\newif\ifHy@pdfa
```

Defaults for the switches are now set.

```
\Hy@backreffalse
\Hy@bookmarksnumberedfalse
\Hy@bookmarksopenfalse
```

```
\Hy@bookmarkstrue
\Hy@breaklinksfalse
\Hy@pdfcenterwindowfalse
\Hy@CJKbookmarksfalse
\Hy@destlabelfalse
\Hy@pdfescapeformfalse
\Hy@hyperfiguresfalse
\Hy@pdffitwindowfalse
\Hy@hyperfootnotestrue
\Hy@hyperindextrue
\Hy@hypertexnamestrue
\Hy@implicittrue
\Hy@linktocpagefalse
\Hy@localanchornamefalse
\Hy@pdfmenubartrue
\Hy@naturalnamesfalse
\Hy@nestingfalse
\Hy@pdfnewwindowsetfalse
\Hy@pdfnewwindowfalse
\Hy@pageanchortrue
\Hy@pdfpagelabelstrue
\Hy@pdfpagehiddenfalse
\Hy@pdfstringfalse
\Hy@plainpagesfalse
\Hy@raiselinksfalse
\Hy@setpagesizetrue
\Hy@texhtfalse
\Hy@psdextrafalse
\Hy@pdftoolbartrue
\Hy@typexmlfalse
\Hy@unicodefalse
\Hy@pdfusetitlefalse
\Hy@verbosefalse
\Hy@pdfwindowuitrue
\Hy@pdfdisplaydoctitlefalse
\Hy@pdfafalse
```

5 Common help macros

\Hy@StepCount

```
\def\Hy@StepCount#1{\advance#1 by 1 }%
```

\Hy@GlobalStepCount

```
\def\Hy@GlobalStepCount#1{\global\advance#1 by 1 }%

\newdimen\@linkdim
\let\Hy@driver\ltx@empty
\let\MaybeStopEarly\relax
\newcount\Hy@linkcounter
\newcount\Hy@pagecounter
\Hy@linkcounter0
\Hy@pagecounter0
```

5.1 Macros for recursions

```
\let\Hy@ReturnEnd\@empty
\long\def\Hy@ReturnAfterFiFiEnd#1\fi#2\Hy@ReturnEnd{\fi\fi#1}
```

```
\long\def\Hy@ReturnAfterElseFiFiEnd#1\else#2\Hy@ReturnEnd{\fi\fi#1}
```

5.2 Babel's protection of shorthand characters

\Hy@safe@activestrue
\Hy@safe@activesfalse

Babel's switch setting commands cannot used directly, because they can be undefined if babel is not loaded.

```
\def\Hy@safe@activestrue{\csname @safe@activestrue\endcsname}
\def\Hy@safe@activesfalse{\csname @safe@activesfalse\endcsname}
```

5.3 Coordinate transformations

At some places numbers in pdf units are expected (eg: FitBH, ...). The following macros perform the transformation from TeX units (pt) to PDF units (bp).

\hypercalcbp

The user macro `\hypercalcbp` can be used, for example, inside option values:

```
pdfstartview={FitBH \hypercalcbp{\paperheight-\topmargin-1in}}
```

- It cannot be used inside `\usepackage`, because LaTeX expands the options before package hyperref is loaded and `\hypercalcbp` is defined.
- With e-TeX extensions an expandable implementation is very easy; `\hypercalcbp` can be used everywhere and is expanded at use.
- Without e-TeX's features `\hypercalcbp` cannot be implemented expandable (practically) and have to be supported by `\hypercalcbpdef`. Limitations:
  - Works only in options that use `\hypercalcbpdef` (currently only `pdfstartview`).
  - For calculations package `calc` has to be loaded.
  - The expansion of the argument is done at definition time.

Example (TEX):

```
\usepackage{calc}
\usepackage[...]{hyperref}
\hypersetup{
 pdfstartview={FitBH \hypercalcbp{\paperheight-\topmargin-1in
  -\headheight-\headsep}
}
```

\hypercalcbp

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname dimexpr\endcsname\relax
 \def\hypercalcbpdef#1#2{%
  \begingroup
   \toks@{}%
   \HyCal@scan#2\hypercalcbp\@nil
  \expandafter\endgroup
  \expandafter\def\expandafter#1\expandafter{\the\toks@}%
 }%
 \def\HyCal@scan#1\hypercalcbp#2\@nil{%
  \toks@\expandafter{\the\toks@ #1}%
  \ifx\\#2\\%
  \else
   \ltx@ReturnAfterFi{%
    \HyCal@do#2\@nil
   }%
```

```
  \fi
}%
\def\HyCal@do#1#2\@nil{%
  \@ifpackageloaded{calc}{}{%
    \Hy@Warning{%
      For calculations \string\hypercalcbp\space needs\MessageBreak
      package calc or e-TeX%
    }%
  }%
  \setlength{\dimen@}{#1}%
  \setlength{\dimen@}{0.99626401\dimen@}%
  \edef\x{%
    \toks@{%
      \the\toks@
      \strip@pt\dimen@
    }%
  }\x
  \HyCal@scan#2\@nil
}%
\else
  \def\hypercalcbp#1{%
    \strip@pt\dimexpr 0.99626401\dimexpr(#1)\relax\relax
  }%
  \def\hypercalcbpdef{\def}%
\fi
```

6 Dealing with PDF strings

The PDF string stuff done by Heiko Oberdiek.

Naming convention: All internal commands that are only needed by `\pdfstringdef` are prefixed with `\HyPsd@`.

6.1 Description of PDF strings

The PDF specification defines several places to hold text strings (bookmark names, document information, text annotations, etc.). The PDF strings have following properties:

- They are surrounded by parentheses. The hexadecimal form is not supported.
- Like PostScript language strings they use the same escaping mechanism:

`\\`	the backslash itself
`\)`, `\(`	unbalanced parentheses
`\n`, `\r`, `\t`, `\b`, `\f`	special white space escape sequences
`\ddd`	octal character code `ddd`

- Strings are stored either in PDFDocEncoding, which is a superset of ISO-Latin1 and is compatible with Unicode with character codes below 256, or in Unicode.

6.2 Definition of `\pdfstringdef`

The central macro for dealing with PDF strings is `\pdfstringdef`. It defines a command `#1` to be the result of the conversion from the string in `#2` to a le-

gal PDFDocEncoded string. Currently the definition is global, but this can be changed in the future.

Important: In TEX's view PDF strings are written to a file and are expanded only in its mouth. Stomach commands that cannot be expanded further aren't executed, they are written verbatim. But the PDF reader that reads such a string isn't a TEX interpreter!

The macro `\pdfstringdef` consists of three main parts:

1. Preprocessing. Here the expansion is prepared. The encoding is set and many commands are redefined, so that they work appropriate.
2. Expansion. The TEX string is expanded the first time to get a PDF string.
3. Postprocessing. The result of the expansion is checked and converted to the final form.

`\pdfstringdef` `\pdfstringdef` works on the tokens in `#2` and converts them to a PDF string as far as possible:

- The result should obey the rules of the PDF specification for strings.
- The string can safely processed by TEX, because the tokens have only catcodes 10 until 12.

The result is stored in the command token given in `#1`.

```
\def\pdfstringdef#1#2{%
```

Many redefinitions are needed, so all the work is done in a group.

```
\begingroup
```

6.2.1 Preprocessing

Octal escape sequences. To avoid problems with eight bit or non printable characters, the octal escape notation is supported. So most glyphs in the encoding definitions for PD1 and PU produce these octal escape sequences. All three octal digits have to be used:

- Wrong results are avoided, if digits follow that are not part of the octal sequence.
- Macros rely on the fact that the octal sequences always consist of three digits (vtex driver, Unicode support).

The escape sequences start with a backslash. By `\string` it will be printed. Therefore it is ensured that the TEX escape character indeed prints as a normal backslash. Eventually this line can be removed, because this is standard LATEX behaviour.

```
\escapechar`\\%
```

From the view of TEX a octal sequence consists of the command tokens `\0` until `\3` and two digits. For saving tokens `\0`, `\1`, `\2`, and `\3` are directly used without a preceding `\string` in the glyph definitions. This is done here locally by defining the `\0` until `\3` commands. So the user can use octal escape sequences directly, the disadvantage is that a previous definition of this short commands does not apply.

```
\edef\0{\string\0}%
\edef\1{\string\1}%
\edef\2{\string\2}%
\edef\3{\string\3}%
```

Setting font encoding. The unicode encoding uses `\8` and `\9` as marker for the higher byte. `\8` is an abbreviation for the higher bytes 0 until 7 that can be expressed by one digit. `\8` will be converted to `\00`. However `\9` only marks the next three digits as higher byte and will be removed later.

The encoding is set by `\enc@update` for optimizing reasons.

```
\ifHy@unicode
  \edef\8{\string\8}%
  \edef\9{\string\9}%
  \fontencoding{PU}%
  \HyPsd@UTFviii
  \def\ifpdfstringunicode##1##2{##1}%
\else
  \fontencoding{PD1}%
  \def\ifpdfstringunicode##1##2{##2}%
\fi
\let\utf@viii@undeferr\HyPsd@utf@viii@undeferr
\enc@update
```

Internal encoding commands. `\pdfstringdef` interpretes text strings which are not allowed to contain mathematical stuff. The text glyph commands will produce a warning, if called in math mode. But this warning disturbs while expanding. Therefore we check for math mode here, before `\@inmathwarn` will be disabled (see below).

```
\@inmathwarn\pdfstringdef
```

If a glyph is used, that isn't in the PD1/PU encoding there will be an infinite error loop, because the NFSS encoding stuff have to be expanded unprotected (`\edef`), so that the assigments of `\@changed@cmd` don't take place. To patch this behaviour I only found `\@inmathwarn` as a usable hook. While an `\edef` a warning message by `\@inmathwarn` or `\TextSymbolUnavailable` cannot be give out, so `\@inmathwarn` should be disabled. And with the help of it the assignments in `\@changed@cmd` can easily be caught (see below).

```
\let\@inmathwarn\HyPsd@inmathwarn
```

Unknown composite characters are built with `\add@accent`, so it is redefined to provide a warning.

```
\let\add@accent\HyPsd@add@accent
```

Commands that don't use NFSS directly. There are several commands that prints characters in the printable ASCII area that don't obey the NFSS, so they have to be redefined here. UF 29.09.2017: added a mapping for `\noboundary`, see issue #37 https://github.com/ho-tex/hyperref/issues/37 No test for PU, if some definition for PD1 is added it will work too.

```
\let\{\textbraceleft
\let\}\textbraceright
\let\\\textbackslash
\let\#\textnumbersign
\let\$\textdollar
\let\%\textpercent
\let\&\textampersand
%  \let\~\textasciitilde
\let\_\textunderscore
\let\P\textparagraph
\let\ldots\textellipsis
\let\dots\textellipsis
```

```
\ltx@IfUndefined{textEncodingNoboundary}%
  {}{\let\noboundary\textEncodingNoboundary}%
```

Newline \newline or \\ do not work in bookmarks, in text annotations they should expand to \r. In pdf strings \\ stands for a backslash. Therefore the commands are disabled now. The user can redefine them for a result what he want:

backslash: \pdfstringdefDisableCommands{\let\\\textbackslash}

new line: \pdfstringdefDisableCommands{\let\\\textCR}

disabled: \pdfstringdefDisableCommands{\let\\\empty}

At any case, however, the optional argument or the star cannot be scanned in a 100% sure manner.

```
\def\\{\pdfstringdefWarn\\}%
\def\newline{\pdfstringdefWarn\newline}%
```

Logos. Because the box shifting used in the TEX logo does not work while writing to a file, the standard TEX logos are redefined.

```
\def\TeX{TeX}%
\def\LaTeX{La\TeX}%
\def\LaTeXe{%
  \LaTeX2%
  \ifHy@unicode\textepsilon\else e\fi
}%
\def\eTeX{%
  \ifHy@unicode\textepsilon\else e\fi
  -\TeX%
}%
\def\SliTeX{Sli\TeX}%
\def\MF{Metafont}%
\def\MP{Metapost}%
```

Standard font commands. Because font changes do not work, the standard font switching commands are disabled.

```
\let\fontencoding\@gobble
\let\fontfamily\@gobble
\let\fontseries\@gobble
\let\fontshape\@gobble
\let\fontsize\@gobbletwo
\let\selectfont\@empty
\let\usefont\@gobblefour
\let\emph\@firstofone
\let\textnormal\@firstofone
\let\textrm\@firstofone
\let\textsf\@firstofone
\let\texttt\@firstofone
\let\textbf\@firstofone
\let\textmd\@firstofone
\let\textit\@firstofone
\let\textsc\@firstofone
\let\textsl\@firstofone
\let\textup\@firstofone
\let\normalfont\@empty
```

```
    \let\rmfamily\@empty
    \let\sffamily\@empty
    \let\ttfamily\@empty
    \let\bfseries\@empty
    \let\mdseries\@empty
    \let\itshape\@empty
    \let\scshape\@empty
    \let\slshape\@empty
    \let\upshape\@empty
    \let\em\@empty
    \let\rm\@empty
    \let\Huge\@empty
    \let\LARGE\@empty
    \let\Large\@empty
    \let\footnotesize\@empty
    \let\huge\@empty
    \let\large\@empty
    \let\normalsize\@empty
    \let\scriptsize\@empty
    \let\small\@empty
    \let\tiny\@empty
    \let\mathversion\@gobble
    \let\phantom\@gobble
    \let\vphantom\@gobble
    \let\hphantom\@gobble
```

Package pifont.

```
    \let\ding\HyPsd@ding
    \let\Cube\HyPsd@DieFace
%* \HyPsd@DieFace -> \epsdice (epsdice)
%* \HyPsd@DieFace -> \fcdice (hhcount)
```

Environments.

```
    \def\begin#1{\csname#1\endcsname}%
    \def\end#1{\csname end#1\endcsname}%
```

Package color.

```
    \def\textcolor##1##{\@secondoftwo}%
```

Upper- and lowercase.

```
    \def\MakeUppercase{\MakeUppercaseUnsupportedInPdfStrings}%
    \def\MakeLowercase{\MakeLowercaseUnsupportedInPdfStrings}%
```

Support of math commands without prefix `text`. This is controlled by option "psdextra" and only activated with Unicode PDF strings.

```
    \ifHy@psdextra
      \ifHy@unicode
        \csname psdmapshortnames\endcsname
        \csname psdaliasnames\endcsname
      \fi
    \fi
```

Package babel. Whereever "naturalnames" is used, disable `\textlatin` (from Babel 3.6k). Thanks to Felix Neubauer (Email: `Felix.Neubauer@gmx.net`).

```
\let\foreignlanguage\@secondoftwo
\let\textlatin\@firstofone
\ltx@IfUndefined{language@group}{}{%
  \csname HyPsd@babel@\language@group\endcsname
}%
\HyPsd@GreekPatch
\HyPsd@SpanishPatch
\HyPsd@RussianPatch
\HyPsd@BabelPatch
\let\@safe@activestrue\relax
\let\@safe@activesfalse\relax
```

Disable `\cyr`, used in russianb.ldf.

```
\let\cyr\relax
```

Redefine `\es@roman`, used in spanish.ldf.

```
\let\es@roman\@Roman
```

Package german.

```
\let\glqq\textglqq
\let\grqq\textgrqq
\let\glq\textglq
\let\grq\textgrq
\let\flqq\textflqq
\let\frqq\textfrqq
\let\flq\textflq
\let\frq\textfrq
```

Package french. The support is deferred, because it needs `\GenericError` to be disabled (see below).

Package FrenchPro. This package uses:

> `\if@mid@expandable{`not fully expandable code`}{`fully expandable code`}`

```
\let\if@mid@expandable\@firstoftwo
```

AMS classes.

```
\HyPsd@AMSclassfix
```

Redefinition of `\hspace` `\hspace` don't work in bookmarks, the following fix tries to set a space if the argument is a positive length.

```
\let\hspace\HyPsd@hspace
```

Commands of referencing and indexing systems. Some LaTeX commands that are legal in `\section` commands have to be disabled here.

```
\let\label\@gobble
\let\index\@gobble
\let\glossary\@gobble
\let\href\HyPsd@href
\let\@mkboth\@gobbletwo
```

The \ref and \pageref is much more complicate because of their star form.

```
\let\ref\HyPsd@ref
\let\pageref\HyPsd@pageref
\let\nameref\HyPsd@nameref
\let\autoref\HyPsd@autoref
```

Miscellaneous commands.

```
\let\leavevmode\@empty
\let\mbox\@empty
```

\halign causes error messages because of the template character #.

```
\def\halign{\pdfstringdefWarn\halign\@gobble}%
\let\ignorespaces\HyPsd@ignorespaces
\let\Hy@SectionAnchorHref\@gobble
\let\ensuremath\@firstofone
```

Patch for cjk bookmarks.

```
\HyPsd@CJKhook
```

User hook. The switch \Hy@pdfstring is turned on. So user commands can detect that they are processed not to be typesetted within TEX's stomach, but to be expanded by the mouth to give a PDF string. At this place before interpreting the string in #2 additional redefinitions can by added by the hook \pdfstringdefPreHook.

The position in the middle of the redefinitions is a compromise: The user should be able to provide his own (perhaps better) redefinitions, but some commands should have their original meaning, because they can be used in the hook (\bgroup, or \@protected@testopt, and \@ifnextchar for \renewcommand).

```
\Hy@pdfstringtrue
\pdfstringdefPreHook
```

Spaces. For checking the token of the string, spaces must be masked, because they cannot by caught by undelimited arguments.

```
\HyPsd@LetUnexpandableSpace\space
\HyPsd@LetUnexpandableSpace\ %
\HyPsd@LetUnexpandableSpace~%
\HyPsd@LetUnexpandableSpace\nobreakspace
```

Package xspace.

```
\ltx@IfUndefined{@xspace}{%
  \let\xspace\HyPsd@ITALCORR
}{%
  \let\xspace\HyPsd@XSPACE
}%
\let\/\HyPsd@ITALCORR
\let\bgroup\/%
\let\egroup\/%
```

Redefinitions of miscellaneous commands. Hyphenation does not make sense.

```
\let\discretionary\@gobbletwo
```

`\@ifstar` is defined in LaTeX as follows:

```
\def\@ifstar#1{\@ifnextchar *{\@firstoftwo{#1}}}
```

`\@ifnextchar` doesn't work, because it uses stomach commands like `\let` and `\futurelet`. But it doesn't break. Whereas `\@firstoftwo{#1}` gives an error message because `\@firstoftwo` misses its second argument.

A mimicry of `\@ifnextchar` only with expandible commands would be very extensive and the result would be only an approximation. So here a cheaper solution follows in order to get rid of the error message at least:

```
\def\@ifnextchar{\HyPsd@ifnextchar\@ifnextchar}%
\def\kernel@ifnextchar{\HyPsd@ifnextchar\kernel@ifnextchar}%
\def\new@ifnextchar{\HyPsd@ifnextchar\new@ifnextchar}%
\let\@protected@testopt\HyPsd@protected@testopt
```

Support for package 'xargs':

```
\let\@protected@testopt@xargs\HyPsd@protected@testopt
```

6.2.2 Expansion

There are several possibilities to expand tokens within LaTeX:

`\protected@edef`: The weakest form isn't usable, because it does not expand the font encoding commands. They are made roboust and protect themselves.

`\csname`: First the string is expanded whithin a `\csname` and `\endcsname`. Then the command name is converted to characters with catcode 12 by `\string` and the first escape character removed by `\@gobble`. This method has the great *advantage* that stomach tokens that aren't allowed in PDF strings are detected by TeX and reported as errors in order to force the user to write correct things. So he get no wrong results by forgetting the proofreading of his text. But the *disadvantage* is that old wrong code cannot processed without errors. Mainly the error message is very cryptic and for the normal user hard to understand. TeX provides no way to catch the error caused by `\csname` or allows to support the user with a descriptive error message. Therefore the experienced user had to enable this behaviour by an option `exactdef` in previous versions less or equal 6.50.

`\edef` This version uses this standard form for expansion. It is stronger than LaTeX's `\protected@edef`. So the font encoding mechanism works and the glyph commands are converted to the correct tokens for PDF strings whith the definitions of the PD1 encoding. Because the protecting mechanism of LaTeX doesn't work within an `\edef`, there are situations thinkable where code can break. For example, assignments and definitions aren't performed and so undefined command errors or argument parsing errors can occur. But this is only a compatibility problem with old texts. Now there are possibilities to write code that gives correct PDF strings (see `\texorpdfstring`). In the most cases unexpandable commands and tokens (math shift, grouping characters) remains. They don't cause an error like with `\csname`. However a PDF reader isn't TeX, so these tokens are viewed verbatim. So this version detects them now, and removes them with an descriptive warning for the user. As additional features xspace support is possible and grouping characters can be used without problems, because they are removed silently.

Generic messages. While expanding via `\xdef` the `\Generic`... messages don't work and causes problems (error messages, invalid `.out` file). So they are disabled while expanding and removed silently, because a user warning would be too expensive (memory and runtime, `\pdfstringdef` is slow enough).

```
\begingroup
  \let\GenericError\@gobblefour
  \let\GenericWarning\@gobbletwo
  \let\GenericInfo\@gobbletwo
```

Package french. This fix only works, if `\GenericError` is disabled.

```
  \ifx\nofrenchguillemets\@undefined
  \else
    \nofrenchguillemets
  \fi
```

Definition commands and expansion. Redefining the defining commands (see sec. 6.5.12). The original meaning of `\xdef` is saved in `\Hy@temp`.

```
  \let\Hy@temp\xdef
  \let\def\HyPsd@DefCommand
  \let\gdef\HyPsd@DefCommand
  \let\edef\HyPsd@DefCommand
  \let\xdef\HyPsd@DefCommand
  \let\futurelet\HyPsd@LetCommand
  \let\let\HyPsd@LetCommand
  \Hy@temp#1{#2}%
\endgroup
```

6.2.3 Postprocessing

If the string is empty time can be saved by omitting the postprocessing process.

```
\ifx#1\@empty
\else
```

Protecting spaces and removing grouping characters. In order to check the tokens we must separate them. This will be done with TEX's argument parsing. With this method we must the following item takes into account, that makes makes things a litte more complicate:

- TEX does not accept a space as an undelimited argument, it cancels space tokens while looking for an undelimited argument. Therefore we must protect the spaces now.
- An argument can be a single token or a group of many tokens. And within curly braces tokens aren't find by TEX's argument scanning process. Third curly braces as grouping characters cannot be expanded further, so they don't vanish by the string expansion above. So these characters with catcode 1 and 2 are removed in the following and replaced by an marker for the xspace support.
- TEX silently removes the outmost pair of braces of an argument. To prevent this on unwanted places, in the following the character `|` is appended to the string to make an outer brace to an inner one.

First the top level spaces are protected by replacing. Then the string is scanned to detect token groups. Each token group will now be space protected and again scanned for another token groups.

```
\HyPsd@ProtectSpaces#1%
\let\HyPsd@String\@empty
\expandafter\HyPsd@RemoveBraces\expandafter{#1|}%
\global\let#1\HyPsd@String
```

Check tokens. After removing the spaces and the grouping characters the string now should only consists of the following tokens/catcodes:

- 0 command names with start with an escape character.
- 3 math shift
- 4 alignment tabs
- 6 parameter, but this is unlikely.
- 7 superscript
- 8 subscript
- 11 letter
- 12 other
- 13 commands that are active characters.

After `\HyPsd@CheckCatcodes` the command `\HyPsd@RemoveMask` is reused to remove the group protection character `|`. This character is needed to ensure that the string at least consists of one token if `\HyPsd@CheckCatcodes` is called.

Because of internal local assignments and tabulars group braces are used.

```
\let\HyPsd@SPACEOPTI\relax
{%
  \let\HyPsd@String\@empty
  \expandafter\HyPsd@CheckCatcodes#1\HyPsd@End
  \global\let#1\HyPsd@String
}%
\expandafter\HyPsd@RemoveMask\expandafter
  |\expandafter\@empty#1\HyPsd@End#1%
```

`\HyPsd@CheckCatcodes` should no have removed the tokens with catcode 3, 4, 7, and 8. Because a parameter token (6) would cause to many errors before, there should now be only tokens with catcodes 11 or 12. So I think there is no need for a safety step like:

```
\xdef#1{\expandafter\strip@prefix\meaning#1}%
```

Looking for wrong glyphs. The case that glyphs aren't defined in the PD1 encoding is caught above in such a way, that the glyph name and a marker is inserted into the string. Now we can safely scan the string for this marker and provide a descriptive warning.

```
\expandafter
\HyPsd@Subst\expandafter{\HyPsd@GLYPHERR}{\relax}#1%
\let\HyPsd@String\@empty
\expandafter\HyPsd@GlyphProcess#1\relax\@empty
\global\let#1\HyPsd@String
```

Backslash. The double backslash disturbs parsing octal sequenzes, for example in an string like `abc\\051` the sequence `\051` is detected although the second `\` belongs to the first backslash.

```
\HyPsd@StringSubst{\\}{\textbackslash}#1%
```

Spaces. All spaces have already the form \040. The last postprocessing step will be an optimizing of the spaces, so we already introduce already the necessary command \HyPsd@SPACEOPTI. But first it is defined to be \relax in order to prevent a too early expansion by an \edef. Secondly a \relax serves as a marker for a token that is detected by \xspace.

The code of frenchb.ldf can produce an additional space before \guillemotright, because \lastskip and \unskip do not work. Therefore it is removed here.

```
\ifHy@unicode
  \expandafter\HyPsd@StringSubst\csname 80\040\endcsname
    \HyPsd@SPACEOPTI#1%
\edef\Hy@temp@A{\HyPsd@SPACEOPTI\HyPsd@SPACEOPTI\80\273}%
  \expandafter\HyPsd@Subst\expandafter{\Hy@temp@A}%
    {\HyPsd@SPACEOPTI\80\273}#1%
\else
  \HyPsd@StringSubst{\040}\HyPsd@SPACEOPTI#1%
  \expandafter\HyPsd@Subst\expandafter{%
    \expandafter\HyPsd@SPACEOPTI\expandafter\HyPsd@SPACEOPTI
    \string\273}{\HyPsd@SPACEOPTI\273}#1%
\fi
```

Right parenthesis. Also \xspace detects a right parenthesis. For the \xspace support and the following parenthesis check the different parenthesis notations), \), and \051 are converted to one type \) and before \HyPsd@empty with the meaning of \relax is introduced for \xspace. By redefining to \@empty \HyPsd@empty can easily removed later.

```
\ifHy@unicode
  \HyPsd@StringSubst{\)}{\80\051}#1%
  \HyPsd@Subst)}{\80\051}#1%
  \let\HyPsd@empty\relax
  \expandafter\HyPsd@StringSubst\csname 80\051\endcsname
    {\HyPsd@empty\80\051}#1%
\else
  \HyPsd@StringSubst{\)}{\051}#1%
  \HyPsd@Subst)}{\051}#1%
  \let\HyPsd@empty\relax
  \HyPsd@StringSubst{\051}{\HyPsd@empty\string\)}#1%
\fi
```

Support for package xspace. \xspace looks for the next token and decides if it expands to a space or not. Following tokens prevent its transformation to a space: Beginning and end of group, handled above by replacing by an italic correction, several punctuation marks, a closing parentheses, and several spaces.

Without package xspace there are tokens with catcode 11 and 12, \HyPsd@empty and \HyPsd@SPACEOPTI. With package xspace marker for the italic correction \/ and \xspace come with. In the package xspace case the two markers are replaced by commands and an \edef performs the \xspace processing.

In the opposite of the original \xspace \HyPsd@xspace uses an argument instead of a \futurelet, so we have to provide such an argument, if \HyPsd@xspace comes last. Because \HyPsd@Subst with several equal tokens (--) needs a safe last token, in both cases the string gets an additional \HyPsd@empty.

```
\expandafter\HyPsd@Subst\expandafter{\/}\HyPsd@empty#1%
\ltx@IfUndefined{@xspace}{%
}{%
```

```
      \let\HyPsd@xspace\relax
      \expandafter\HyPsd@Subst\expandafter
        {\HyPsd@XSPACE}\HyPsd@xspace#1%
      \let\HyPsd@xspace\HyPsd@doxspace
    }%
    \xdef#1{#1\HyPsd@empty}%
```

Ligatures. TEX forms ligatures in its stomach, but the PDF strings are treated only by TEX's mouth. The PDFDocEncoding contains some ligatures, but the current version 3 of the AcrobatReader lacks the `fi` and `fl` glyphs, and the Linux version lacks the `emdash` and `endash` glyphs. So the necessary code is provided here, but currently disabled, hoping that version 4 of the AcrobatReader is better. To break the ligatures the user can use an empty group, because it leads to an insertion of an `\HyPsd@empty`. If this ligature code will be enabled some day, then the italic correction should also break the ligatures. Currently this occurs only, if package `xspace` is loaded.

Since newer AcrobatReader versions now show the en- and emdash in a correct way (AR7/Linux, AR8/Linux), the substitution code for them is enabled starting with version 6.78l.

```
    \HyPsd@Subst{---}\textemdash#1%
    \HyPsd@Subst{--}\textendash#1%
%   \HyPsd@Subst{fi}\textfi#1%
%   \HyPsd@Subst{fl}\textfl#1%
    \HyPsd@Subst{!`}\textexclamdown#1%
    \HyPsd@Subst{?`}\textquestiondown#1%
```

With the next `\edef` we get rid of the token `\HyPsd@empty`.

```
    \let\HyPsd@empty\@empty
```

Left parentheses. Left parentheses are now converted to safe forms to avoid problems with unmatched ones (`\(` with PDFDocEncoding, the octal sequence with Unicode.

An optimization is possible. Matched parentheses can replaced by a `()` pair. But this code is removed to save TEX memory and time.

```
    \ifHy@unicode
      \HyPsd@StringSubst\(\textparenleft#1%
      \HyPsd@Subst(\textparenleft#1%
    \else
      \HyPsd@StringSubst\({\050}#1%
      \HyPsd@Subst({\050}#1%
      \HyPsd@StringSubst{\050}{\string\(}#1%
    \fi
```

Optimizing spaces. Spaces are often used, but they have a very long form `\040`. They are converted back to real spaces, but not all, so that no space follows after another. In the bookmark case several spaces are written to the `.out` file, but if the entries are read back, several spaces are merged to a single one.

With Unicode the spaces are replaced by their octal sequences.

```
    \ifHy@unicode
      \edef\HyPsd@SPACEOPTI{\80\040}%
    \else
      \let\HyPsd@SPACEOPTI\HyPsd@spaceopti
    \fi
    \xdef#1{#1\@empty}%
  \fi
```

Converting to Unicode. At last the eight bit letters have to be converted to Unicode, the masks \8 and \9 are removed and the Unicode marker is added.

```
  \endgroup
  \begingroup
    \ifHy@unicode
      \HyPsd@ConvertToUnicode#1%
```

Try conversion back to PDFDocEncoding.

```
      \ifx\HyPsd@pdfencoding\HyPsd@pdfencoding@auto
        \ltx@IfUndefined{StringEncodingConvertTest}{%
        }{%
          \EdefUnescapeString\HyPsd@temp#1%
          \ifxetex
            \let\HyPsd@UnescapedString\HyPsd@temp
            \StringEncodingConvertTest\HyPsd@temp\HyPsd@temp
                                {utf16be}{ascii-print}{%
              \EdefEscapeString\HyPsd@temp\HyPsd@temp
              \global\let#1\HyPsd@temp
              \HyPsd@EscapeTeX#1%
              \Hy@unicodefalse
            }{%
              \HyPsd@ToBigChars#1%
              \HyPsd@EscapeTeX#1%
            }%
          \else
            \StringEncodingConvertTest\HyPsd@temp\HyPsd@temp
                                {utf16be}{pdfdoc}{%
              \EdefEscapeString\HyPsd@temp\HyPsd@temp
              \global\let#1\HyPsd@temp
              \HyPsd@EscapeTeX#1%
              \Hy@unicodefalse
            }{}%
          \fi
        }%
      \fi
    \fi
    \HyPsd@XeTeXBigCharsfalse
```

User hook. The hook \pdfstringdefPostHook can be used for the purpose to postprocess the string further.

```
    \pdfstringdefPostHook#1%
  \endgroup
}
```

\Hy@pdfstringdef

```
\def\Hy@pdfstringdef#1#2{%
  \pdfstringdef\Hy@gtemp{#2}%
  \let#1\Hy@gtemp
}
```

6.3 Encodings

6.3.1 XeTEX

```
\edef\Hy@temp{\catcode0=\the\catcode0\relax}
\catcode\z@=12 %
```

```
\ifxetex
  \expandafter\@firstofone
\else
  \let\HyPsd@XeTeXBigCharstrue\@empty
  \let\HyPsd@XeTeXBigCharsfalse\@empty
  \expandafter\@gobble
\fi
{%
  \newif\ifHyPsd@XeTeXBigChars
  \def\HyPsd@XeTeXBigCharsfalse{%
    \global\let\ifHyPsd@XeTeXBigChars\iffalse
  }%
  \def\HyPsd@XeTeXBigCharstrue{%
    \global\let\ifHyPsd@XeTeXBigChars\iftrue
  }%
  \def\HyPsd@ToBigChars#1{%
    \ifHyPsd@XeTeXBigChars
      \EdefEscapeHex\HyPsd@UnescapedString{%
        \expandafter\@gobbletwo\HyPsd@UnescapedString
      }%
      \begingroup
        \toks@{}%
        \escapechar=92\relax
        \let\x\HyPsd@ToBigChar
        \expandafter\HyPsd@ToBigChar\HyPsd@UnescapedString
        \relax\relax\relax\relax\relax\relax\relax
      \edef\x{%
        \endgroup
        \gdef\noexpand#1{\the\toks@}%
      }%
      \x
    \fi
  }%
  \def\HyPsd@ToBigChar#1#2#3#4{%
    \ifx\relax#1\relax
      \let\x\relax
    \else
      \count@="#1#2#3#4\relax
      \let\y\@empty
      \lccode\z@=\count@
      \ifnum\count@=40 % (
        \let\y\@backslashchar
      \else
        \ifnum\count@=41 % )
          \let\y\@backslashchar
        \else
          \ifnum\count@=92 % backslash
            \let\y\@backslashchar
          \else
            \ifnum\count@=10 % newline
              \edef\y##1{\string\n}%
            \else
              \ifnum\count@=13 % carriage return
                \edef\y##1{\string\r}%
              \fi
            \fi
          \fi
```

```
      \fi
    \fi
    \lowercase{%
      \toks@\expandafter{%
        \the\expandafter\toks@
        \y
        ^^@%
      }%
    }%
  \fi
  \x
 }%
}
\Hy@temp
```

6.3.2 Workaround for package linguex

```
\@ifpackageloaded{linguex}{%
  \let\HyLinguex@OrgB\b
  \let\HyLinguex@OrgC\c
  \let\HyLinguex@OrgD\d
  \def\HyLinguex@Restore{%
    \let\b\HyLinguex@OrgB
    \let\c\HyLinguex@OrgC
    \let\d\HyLinguex@OrgD
  }%
  \Hy@AtEndOfPackage{%
    \pdfstringdefDisableCommands{%
      \ltx@IfUndefined{oldb}{}{\let\b\oldb}%
      \ltx@IfUndefined{oldc}{}{\let\c\oldc}%
      \ltx@IfUndefined{oldd}{}{\let\d\oldd}%
    }%
  }%
}{%
  \let\HyLinguex@Restore\relax
}%
```

6.3.3 Catcodes saving and restoring for .def files

\Hy@SaveCatcodeSettings

```
\def\Hy@SaveCatcodeSettings#1{%
  \expandafter\edef\csname Hy@cat@#1\endcsname{%
    \endlinechar=\the\endlinechar\relax
    \catcode32 \the\catcode32\relax % (space)
    \catcode34 \the\catcode34\relax % "
    \catcode35 \the\catcode35\relax % #
    \catcode37 \the\catcode37\relax % (percent)
    \catcode40 \the\catcode40\relax % (
    \catcode41 \the\catcode41\relax % )
    \catcode42 \the\catcode42\relax % *
    \catcode46 \the\catcode46\relax % .
    \catcode58 \the\catcode58\relax % :
    \catcode60 \the\catcode60\relax % <
    \catcode61 \the\catcode61\relax % =
    \catcode62 \the\catcode62\relax % >
    \catcode64 \the\catcode64\relax % @
    \catcode91 \the\catcode91\relax % [
    \catcode92 \the\catcode92\relax % \
    \catcode93 \the\catcode93\relax % ]
```

```
    \catcode123 \the\catcode123\relax % {
    \catcode124 \the\catcode124\relax % |
    \catcode125 \the\catcode125\relax % }
  }%
  \endlinechar=-1 %
  \catcode32 10 % (space)
  \catcode34 12 % "
  \catcode35 6 % #
  \catcode37 14 % (percent)
  \catcode40 12 % (
  \catcode41 12 % )
  \catcode42 12 % *
  \catcode46 12 % .
  \catcode58 12 % :
  \catcode60 12 % <
  \catcode61 12 % =
  \catcode62 12 % >
  \catcode91 12 % [
  \catcode92 0 % \
  \catcode93 12 % ]
  \catcode123 1 % {
  \catcode124 12 % |
  \catcode125 2 % }
  \makeatletter
}
```

\Hy@RestoreCatcodeSettings

```
\def\Hy@RestoreCatcodeSettings#1{%
  \csname Hy@cat@#1\endcsname
  \expandafter\let\csname Hy@cat@#1\endcsname\relax
}
```

6.3.4 PD1 encoding

The PD1 encoding implements the PDFDocEncoding for use with LaTeX 2_ε's NFSS. Because the informational strings are not set by TeX's typesetting mechanism but for interpreting by the PDF reader, the glyphs of the PD1 encoding are implemented to be safely written to a file (PDF output file, `.out` file).

The PD1 encoding can be specified as an option of the 'fontenc' package or loaded here. It does not matter what font family is selected, as TeX does not process it anyway. So use CM.

```
\@ifundefined{T@PD1}{%
  \Hy@SaveCatcodeSettings{pd1}%
  \input{pd1enc.def}%
  \Hy@RestoreCatcodeSettings{pd1}%
  \HyLinguex@Restore
}{}
\DeclareFontFamily{PD1}{pdf}{}
\DeclareFontShape{PD1}{pdf}{m}{n}{ <-> cmr10 }{}
\DeclareFontSubstitution{PD1}{pdf}{m}{n}
```

6.3.5 PU encoding

The PU encoding implements the Unicode encoding for use with LaTeX's NFSS. Because of large memory requirements the encoding file for Unicode support is only loaded, if option `unicode` is specified as package option.

\HyPsd@LoadUnicode Because the file puenc.def takes a lot of memory, the loading is defined in the macro \HyPsd@LoadUnicode called by the package option unicode.

```
\def\HyPsd@LoadUnicode{%
  \@ifundefined{T@PU}{%
    \Hy@SaveCatcodeSettings{pu}%
    \input{puenc.def}%
    \Hy@RestoreCatcodeSettings{pu}%
    \HyLinguex@Restore
  }{}%
  \DeclareFontFamily{PU}{pdf}{}%
  \DeclareFontShape{PU}{pdf}{m}{n}{ <-> cmr10 }{}%
  \DeclareFontSubstitution{PU}{pdf}{m}{n}%
  \HyPsd@LoadExtra
  \let\HyPsd@LoadUnicode\relax
}
```

\HyPsd@LoadExtra

```
\def\HyPsd@LoadExtra{%
  \ifHy@psdextra
    \ltx@iffileloaded{puenc.def}{%
      \Hy@SaveCatcodeSettings{psdextra}%
      \input{psdextra.def}%
      \Hy@RestoreCatcodeSettings{psdextra}%
      \let\HyPsd@LoadExtra\relax
    }{}%
  \fi
}
```

6.4 Additional user commands

6.4.1 \texorpdfstring

\texorpdfstring While expanding the string in \pdfstringdef the switch \ifHy@pdfstring is set. This is used by the full expandible macro \texorpdfstring. It expects two arguments, the first contains the string that will be set and processed by TEX's stomach, the second contains the replacement for PDF strings.

```
\def\texorpdfstring{%
  \ifHy@pdfstring
    \expandafter\@secondoftwo
  \else
    \expandafter\@firstoftwo
  \fi
}
```

6.4.2 Hooks for \pdfstringdef

\pdfstringdefPreHook \pdfstringdefPostHook Default definition of the hooks for \pdfstringdef. The construct \@ifundefined with \let is a little bit faster than \providecommand.

```
\@ifundefined{pdfstringdefPreHook}{%
  \let\pdfstringdefPreHook\@empty
}{}
\@ifundefined{pdfstringdefPostHook}{%
  \let\pdfstringdefPostHook\@gobble
}{}
```

\pdfstringdefDisableCommands In \pdfstringdefPreHook the user can add code that is executed before the string, that have to be converted by \pdfstringdef, is expanded. So replacements for

problematic macros can be given. The code in \pdfstringdefPreHook should not be replaced perhaps by an \renewcommand, because a previous meaning gets lost.

Macro \pdfstringdefDisableCommands avoids this, because it reuses the old meaning of the hook and appends the new code to \pdfstringdefPreHook, e.g.:

```
\pdfstringdefDisableCommands{%
  \let~\textasciitilde
  \def\url{\pdfstringdefWarn\url}%
  \let\textcolor\@gobble
}%
```

In the argument of \pdfstringdefDisableCommands the character @ can be used in command names. So it is easy to use useful LaTeX commands like \@gobble or \@firstofone.

```
\def\pdfstringdefDisableCommands{%
  \begingroup
    \makeatletter
    \HyPsd@DisableCommands
}
```

\HyPsd@DisableCommands

```
\long\def\HyPsd@DisableCommands#1{%
    \ltx@GlobalAppendToMacro\pdfstringdefPreHook{#1}%
  \endgroup
}
```

(Partial) fix for bug in frenchb.ldf 2010/08/21 v2.5a that destroys \pdfstringdefDisableCommands after usage in \AtBeginDocument.

```
\let\HyPsd@pdfstringdefDisableCommands\pdfstringdefDisableCommands
\AtBeginDocument{%
  \@ifundefined{pdfstringdefDisableCommands}{%
    \let\pdfstringdefDisableCommands\HyPsd@pdfstringdefDisableCommands
  }{}%
}
```

\pdfstringdefWarn The purpose of \pdfstringdefWarn is to produce a warning message, so the user can see, that something can go wrong with the conversion to PDF strings.

The prefix \<>- is added to the token. \noexpand protects the probably undefined one during the first expansion step. Then \HyPsd@CheckCatcodes can detect the not allowed token, \HyPsd@CatcodeWarning prints a warning message, after \HyPsd@RemovePrefix has removed the prefix.

\pdfstringdefWarn is intended for document authors or package writers, examples for use can be seen in the definition of \HyPsd@ifnextchar or \HyPsd@protected@testopt.

```
\def\pdfstringdefWarn#1{%
  \expandafter\noexpand\csname<>-\string#1\endcsname
}
```

6.5 Help macros for expansion

6.5.1 \ignorespaces

\HyPsd@ignorespaces With the help of a trick using \romannumeral the effect of \ignorespaces can be simulated a little, In a special case using an alphabetic constant \romannumeral eats an optional space. If the constant is zero, then the \romannumeral expression

vanishes. The following macro uses this trick twice, thus \HyPsd@ignorespaces eats up to two following spaces.

```
\begingroup
  \catcode0=12 %
  \def\x{\endgroup
    \def\HyPsd@ignorespaces{%
      \romannumeral\expandafter`\expandafter^^@%
      \romannumeral`^^@%
    }%
  }%
\x
```

6.5.2 Babel languages

Since version 2008/03/16 v3.8j babel uses inside \AtBeginDocument:

```
\pdfstringdefDisableCommands{%
  \languageshorthands{system}%
}
```

As consequence the shorthands are shown in the bookmarks, not its result. Therefore \languageshorthands is disabled before the user hook. If there is a need to use the command, then \HyOrg@languageshorthands can be used inside \pdfstringdefDisableCommands.

```
\def\HyPsd@BabelPatch{%
  \let\HyOrg@languageshorthands\languageshorthands
  \let\languageshorthands\HyPsd@LanguageShorthands
}
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname pdf@strcmp\endcsname\relax
  \let\HyPsd@langshort@system\@empty
  \def\HyPsd@LanguageShorthands#1{%
    \expandafter\ifx\csname HyPsd@langshort@#1\endcsname
                \HyPsd@langshort@system
      \expandafter\@gobble
    \else
      \expandafter\@firstofone
    \fi
    {%
      \HyOrg@languageshorthands{#1}%
    }%
  }%
\else
  \def\HyPsd@LanguageShorthands#1{%
    \ifnum\pdf@strcmp{#1}{system}=\z@
      \expandafter\@gobble
    \else
      \expandafter\@firstofone
    \fi
    {%
      \HyOrg@languageshorthands{#1}%
    }%
  }%
\fi
\def\Hy@temp{%
  \@ifpackageloaded{babel}{%
    \@ifpackagelater{babel}{2008/03/16}{%
```

```
      \let\Hy@temp\@empty
    }{%
      \def\HyPsd@BabelPatch{%
        \let\HyOrg@languageshorthands\languageshorthands
      }%
    }%
  }{}%
}
\Hy@temp
\expandafter\Hy@AtBeginDocument\expandafter{\Hy@temp}
\newif\ifHy@next
```

Nothing to do for english.

```
\ltx@IfUndefined{danish@sh@"@sel}{}{%
  \def\HyPsd@babel@danish{%
    \declare@shorthand{danish}{"|}{}%
    \declare@shorthand{danish}{"~}{-}%
  }%
}
\ltx@IfUndefined{dutch@sh@"@sel}{}{%
  \def\HyPsd@babel@dutch{%
    \declare@shorthand{dutch}{"|}{}%
    \declare@shorthand{dutch}{"~}{-}%
  }%
}
\ltx@IfUndefined{finnish@sh@"@sel}{}{%
  \def\HyPsd@babel@finnish{%
    \declare@shorthand{finnish}{"|}{}%
  }%
}
\ltx@IfUndefined{french@sh@:@sel}{}{%
  \def\HyPsd@babel@frenchb{%
    \def\guill@spacing{ }%
  }%
}
\ltx@IfUndefined{german@sh@"@sel}{}{%
  \def\HyPsd@babel@german{%
    \declare@shorthand{german}{"f}{f}%
    \declare@shorthand{german}{"|}{}%
    \declare@shorthand{german}{"~}{-}%
  }%
}
\ltx@IfUndefined{macedonian@sh@"@sel}{}{%
  \def\HyPsd@babel@macedonian{%
    \declare@shorthand{macedonian}{"|}{}%
    \declare@shorthand{macedonian}{"~}{-}%
  }%
}{}
\ltx@IfUndefined{ngerman@sh@"@sel}{}{%
  \def\HyPsd@babel@ngerman{%
    \declare@shorthand{ngerman}{"|}{}%
    \declare@shorthand{ngerman}{"~}{-}%
  }%
}
\ltx@IfUndefined{portuges@sh@"@sel}{}{%
  \def\HyPsd@babel@portuges{%
    \declare@shorthand{portuges}{"|}{}%
```

```
  }%
}
\ltx@IfUndefined{russian@sh@"@sel}{}{%
  \def\HyPsd@babel@russian{%
    \declare@shorthand{russian}{"|}{}%
    \declare@shorthand{russian}{"~}{-}%
  }%
}
\ltx@IfUndefined{slovene@sh@"@sel}{}{%
  \def\HyPsd@babel@slovene{%
    \declare@shorthand{slovene}{"|}{}%
  }%
}
```

Nested quoting environments are not supported (<<, >>).

```
\ltx@IfUndefined{spanish@sh@>@sel}{}{%
  \def\HyPsd@babel@spanish{%
    \declare@shorthand{spanish}{<<}{\guillemotleft}%
    \declare@shorthand{spanish}{>>}{\guillemotright}%
    \declare@shorthand{spanish}{"=}{-}%
    \declare@shorthand{spanish}{"~}{-}%
    \declare@shorthand{spanish}{"!}{\textexclamdown}%
    \declare@shorthand{spanish}{"?}{\textquestiondown}%
  }%
}
\ltx@IfUndefined{swedish@sh@"@sel}{}{%
  \def\HyPsd@babel@swedish{%
    \declare@shorthand{swedish}{"|}{}%
    \declare@shorthand{swedish}{"~}{-}%
  }%
}
\ltx@IfUndefined{ukrainian@sh@"@sel}{}{%
  \def\HyPsd@babel@ukrainian{%
    \declare@shorthand{ukrainian}{"|}{}%
    \declare@shorthand{ukrainian}{"~}{-}%
  }%
}
\ltx@IfUndefined{usorbian@sh@"@sel}{}{%
  \def\HyPsd@babel@usorbian{%
    \declare@shorthand{usorbian}{"f}{f}%
    \declare@shorthand{usorbian}{"|}{}%
  }%
}
\ltx@IfUndefined{greek@sh@\string~@sel}{%
  \let\HyPsd@GreekPatch\@empty
}{%
  \def\HyPsd@GreekPatch{%
    \let\greeknumeral\HyPsd@greeknumeral
    \let\Greeknumeral\HyPsd@Greeknumeral
  }%
}
\def\HyPsd@greeknumeral#1{%
  \HyPsd@GreekNum\@firstoftwo{#1}%
}
\def\HyPsd@Greeknumeral#1{%
  \HyPsd@GreekNum\@secondoftwo{#1}%
}
\def\HyPsd@GreekNum#1#2{%
```

```
  \ifHy@unicode
    \ifnum#2<\@ne
      \@arabic{#2}%
    \else
      \ifnum#2<1000000 %
        \HyPsd@@GreekNum#1{#2}%
      \else
        \@arabic{#2}%
      \fi
    \fi
  \else
    \@arabic{#2}%
  \fi
}
\def\HyPsd@@GreekNum#1#2{%
  \ifnum#2<\@m
    \ifnum#2<10 %
      \expandafter\HyPsd@GreekNumI
          \expandafter\@gobble\expandafter#1\number#2%
    \else
      \ifnum#2<100 %
        \expandafter\HyPsd@GreekNumII
            \expandafter\@gobble\expandafter#1\number#2%
      \else
        \expandafter\HyPsd@GreekNumIII
            \expandafter\@gobble\expandafter#1\number#2%
      \fi
    \fi
    \ifnum#2>\z@
      \textnumeralsigngreek
    \fi
  \else
    \ifnum#2<\@M
      \expandafter\HyPsd@GreekNumIV\expandafter#1\number#2%
    \else
      \ifnum#2<100000 %
        \expandafter\HyPsd@GreekNumV\expandafter#1\number#2%
      \else
        \expandafter\HyPsd@GreekNumVI\expandafter#1\number#2%
      \fi
    \fi
  \fi
}
\def\HyPsd@GreekNumI#1#2#3{%
  #1{%
    \ifnum#3>\z@
      \textnumeralsignlowergreek
    \fi
  }%
  \expandafter#2%
  \ifcase#3 %
    {}{}%
  \or\textalpha\textAlpha
  \or\textbeta\textBeta
  \or\textgamma\textGamma
  \or\textdelta\textDelta
  \or\textepsilon\textEpsilon
```

```
  \or\textstigmagreek\textStigmagreek
  \or\textzeta\textZeta
  \or\texteta\textEta
  \or\texttheta\textTheta
  \else
    {}{}%
  \fi
}
\def\HyPsd@GreekNumII#1#2#3#4{%
  #1{%
    \ifnum#3>\z@
      \textnumeralsignlowergreek
    \fi
  }%
  \expandafter#2%
  \ifcase#3 %
    {}{}%
  \or\textiota\textIota
  \or\textkappa\textKappa
  \or\textlambda\textLambda
  \or\textmu\textMu
  \or\textnu\textNu
  \or\textxi\textXi
  \or\textomicron\textOmicron
  \or\textpi\textPi
  \or\textkoppagreek\textKoppagreek
  \else
    {}{}%
  \fi
  \HyPsd@GreekNumI#1#2#4%
}
\def\HyPsd@GreekNumIII#1#2#3#4#5{%
  #1{%
    \ifnum#3>\z@
      \textnumeralsignlowergreek
    \fi
  }%
  \expandafter#2%
  \ifcase#3 %
    {}{}%
  \or\textrho\textRho
  \or\textsigma\textSigma
  \or\texttau\textTau
  \or\textupsilon\textUpsilon
  \or\textphi\textPhi
  \or\textchi\textChi
  \or\textpsi\textPsi
  \or\textomega\textOmega
  \or\textsampigreek\textSampigreek
  \else
    {}{}%
  \fi
  \HyPsd@GreekNumII#1#2#4#5%
}
\def\HyPsd@GreekNumIV#1#2#3#4#5{%
  \HyPsd@GreekNumI\@firstofone#1#2%
  \HyPsd@@GreekNum#1{#3#4#5}%
```

```
}
\def\HyPsd@GreekNumV#1#2#3#4#5#6{%
  \HyPsd@GreekNumII\@firstofone#1#2#3%
  \HyPsd@@GreekNum#1{#4#5#6}%
}
\def\HyPsd@GreekNumVI#1#2#3#4#5#6#7{%
  \HyPsd@GreekNumIII\@firstofone#1#2#3#4%
  \HyPsd@@GreekNum#1{#5#6#7}%
}
\def\HyPsd@SpanishPatch{%
  \ltx@IfUndefined{es@save@dot}{%
  }{%
    \let\.\es@save@dot
  }%
}
```

Shorthand "- of 'russianb.ldf' is not expandable, therefore it is disabled and replaced by -.

```
\def\HyPsd@RussianPatch{%
  \ltx@IfUndefined{russian@sh@"@-@}{%
  }{%
    \@namedef{russian@sh@"@-@}{-}%
  }%
}
```

6.5.3 CJK patch

```
\RequirePackage{intcalc}[2007/09/27]
```

\HyPsd@CJKhook

```
\def\HyPsd@CJKhook{%
  \ltx@ifpackageloaded{CJK}{%
    \let\CJK@kern\relax
    \let\CJKkern\relax
    \let\CJK@CJK\relax
    \ifHy@CJKbookmarks
      \HyPsd@CJKhook@bookmarks
    \fi
    \HyPsd@CJKhook@unicode
  }{}%
}
```

6.5.4 CJK bookmarks

\HyPsd@CJKhook Some internal commands of package cjk are redefined to avoid error messages. For a rudimental support of CJK bookmarks the active characters are redefined so that they print themselves.

After preprocessing of Big5 encoded data the following string for a double-byte character is emitted:

```
^^7f<arg1>^^7f<arg2>^^7f
```

`<arg1>` is the first byte in the range (always $>$ 0x80); `<arg2>` is the second byte in decimal notation ($\geq$ 0x40).

```
\begingroup
  \catcode"7F=\active
  \toks@{%
```

```
    \let\CJK@ignorespaces\empty
    \def\CJK@char#1{\@gobbletwo}%
    \let\CJK@charx\@gobblefour
    \let\CJK@punctchar\@gobblefour
    \def\CJK@punctcharx#1{\@gobblefour}%
    \catcode"7F=\active
    \def^^7f#1^^7f#2^^7f{%
      \string #1\HyPsd@DecimalToOctal{#2}%
    }%
    % ... ?
    \ifHy@unicode
      \def\Hy@cjkpu{\80}%
    \else
      \let\Hy@cjkpu\@empty
    \fi
    \HyPsd@CJKActiveChars
  }%
  \count@=127 %
  \@whilenum\count@<255 \do{%
    \advance\count@ by 1 %
    \lccode`\~=\count@
    \lowercase{%
      \toks@\expandafter{\the\toks@ ~}%
    }%
  }%
  \toks@\expandafter{\the\toks@ !}%
  \xdef\HyPsd@CJKhook@bookmarks{%
    \the\toks@
  }%
\endgroup
```

\HyPsd@CJKActiveChars The macro \HyPsd@CJKActiveChars is only defined to limit the memory consumption of \HyPsd@CJKhook.

```
\def\HyPsd@CJKActiveChars#1{%
  \ifx#1!%
    \let\HyPsd@CJKActiveChars\relax
  \else
    \edef#1{\noexpand\Hy@cjkpu\string#1}%
  \fi
  \HyPsd@CJKActiveChars
}
```

\HyPsd@DecimalToOctal A character, given by the decimal number is converted to a PDF character.

```
\def\HyPsd@DecimalToOctal#1{%
  \ifcase #1 %
       \000\or \001\or \002\or \003\or \004\or \005\or \006\or \007%
    \or \010\or \011\or \012\or \013\or \014\or \015\or \016\or \017%
    \or \020\or \021\or \022\or \023\or \024\or \025\or \026\or \027%
    \or \030\or \031\or \032\or \033\or \034\or \035\or \036\or \037%
    \or \040\or \041\or \042\or \043\or \044\or \045\or \046\or \047%
    \or \050\or \051\or \052\or \053\or \054\or \055\or \056\or \057%
    \or   0\or   1\or   2\or   3\or   4\or   5\or   6\or   7%
    \or   8\or   9\or \072\or \073\or \074\or \075\or \076\or \077%
    \or   @\or   A\or   B\or   C\or   D\or   E\or   F\or   G%
    \or   H\or   I\or   J\or   K\or   L\or   M\or   N\or   O%
    \or   P\or   Q\or   R\or   S\or   T\or   U\or   V\or   W%
    \or   X\or   Y\or   Z\or \133\or \134\or \135\or \136\or \137%
```

```
    \or \140\or   a\or   b\or   c\or   d\or   e\or   f\or   g%
    \or   h\or   i\or   j\or   k\or   l\or   m\or   n\or   o%
    \or   p\or   q\or   r\or   s\or   t\or   u\or   v\or   w%
    \or   x\or   y\or   z\or \173\or \174\or \175\or \176\or \177%
    \or \200\or \201\or \202\or \203\or \204\or \205\or \206\or \207%
    \or \210\or \211\or \212\or \213\or \214\or \215\or \216\or \217%
    \or \220\or \221\or \222\or \223\or \224\or \225\or \226\or \227%
    \or \230\or \231\or \232\or \233\or \234\or \235\or \236\or \237%
    \or \240\or \241\or \242\or \243\or \244\or \245\or \246\or \247%
    \or \250\or \251\or \252\or \253\or \254\or \255\or \256\or \257%
    \or \260\or \261\or \262\or \263\or \264\or \265\or \266\or \267%
    \or \270\or \271\or \272\or \273\or \274\or \275\or \276\or \277%
    \or \300\or \301\or \302\or \303\or \304\or \305\or \306\or \307%
    \or \310\or \311\or \312\or \313\or \314\or \315\or \316\or \317%
    \or \320\or \321\or \322\or \323\or \324\or \325\or \326\or \327%
    \or \330\or \331\or \332\or \333\or \334\or \335\or \336\or \337%
    \or \340\or \341\or \342\or \343\or \344\or \345\or \346\or \347%
    \or \350\or \351\or \352\or \353\or \354\or \355\or \356\or \357%
    \or \360\or \361\or \362\or \363\or \364\or \365\or \366\or \367%
    \or \370\or \371\or \372\or \373\or \374\or \375\or \376\or \377%
  \fi
}
```

6.5.5 CJK unicode

\HyPsd@CJKhook@unicode

```
\def\HyPsd@CJKhook@unicode{%
  \let\Unicode\HyPsd@CJK@Unicode
  \let\CJKnumber\HyPsd@CJKnumber
  \let\CJKdigits\HyPsd@CJKdigits
}
```

\HyPsd@CJK@Unicode

```
\def\HyPsd@CJK@Unicode#1#2{%
  \ifnum#1<256 %
    \HyPsd@DecimalToOctalFirst{#1}%
    \HyPsd@DecimalToOctalSecond{#2}%
  \else
    \933%
    \expandafter\expandafter\expandafter\HyPsd@HighA
    \intcalcDiv{#1}{4}!%
    \933%
    \ifcase\intcalcMod{#1}{4} %
      4\or 5\or 6\or 7%
    \fi
    \HyPsd@DecimalToOctalSecond{#2}%
  \fi
}

\def\HyPsd@HighA#1!{%
  \expandafter\expandafter\expandafter\HyPsd@HighB
  \IntCalcDiv#1!64!!%
  \expandafter\expandafter\expandafter\HyPsd@HighD
  \IntCalcMod#1!64!!%
}
\def\HyPsd@HighB#1!{%
  \expandafter\expandafter\expandafter\HyPsd@HighC
```

```
  \IntCalcDec#1!!%
}
\def\HyPsd@HighC#1!{%
  \IntCalcDiv#1!4!%
  \@backslashchar
  \IntCalcMod#1!4!%
}
\def\HyPsd@HighD#1!{%
  \ifcase\IntCalcDiv#1!8! %
    0\or 1\or 2\or 3\or 4\or 5\or 6\or 7%
  \fi
  \ifcase\IntCalcMod#1!8! %
    0\or 1\or 2\or 3\or 4\or 5\or 6\or 7%
  \fi
}
\def\HyPsd@DecimalToOctalFirst#1{%
  \9%
  \ifcase#1 %
       000\or 001\or 002\or 003\or 004\or 005\or 006\or 007%
    \or 010\or 011\or 012\or 013\or 014\or 015\or 016\or 017%
    \or 020\or 021\or 022\or 023\or 024\or 025\or 026\or 027%
    \or 030\or 031\or 032\or 033\or 034\or 035\or 036\or 037%
    \or 040\or 041\or 042\or 043\or 044\or 045\or 046\or 047%
    \or 050\or 051\or 052\or 053\or 054\or 055\or 056\or 057%
    \or 060\or 061\or 062\or 063\or 064\or 065\or 066\or 067%
    \or 070\or 071\or 072\or 073\or 074\or 075\or 076\or 077%
    \or 100\or 101\or 102\or 103\or 104\or 105\or 106\or 107%
    \or 120\or 111\or 112\or 113\or 114\or 115\or 116\or 117%
    \or 120\or 121\or 122\or 123\or 124\or 125\or 126\or 127%
    \or 130\or 131\or 132\or 133\or 134\or 135\or 136\or 137%
    \or 140\or 141\or 142\or 143\or 144\or 145\or 146\or 147%
    \or 150\or 151\or 152\or 153\or 154\or 155\or 156\or 157%
    \or 160\or 161\or 162\or 163\or 164\or 165\or 166\or 167%
    \or 170\or 171\or 172\or 173\or 174\or 175\or 176\or 177%
    \or 200\or 201\or 202\or 203\or 204\or 205\or 206\or 207%
    \or 210\or 211\or 212\or 213\or 214\or 215\or 216\or 217%
    \or 220\or 221\or 222\or 223\or 224\or 225\or 226\or 227%
    \or 230\or 231\or 232\or 233\or 234\or 235\or 236\or 237%
    \or 240\or 241\or 242\or 243\or 244\or 245\or 246\or 247%
    \or 250\or 251\or 252\or 253\or 254\or 255\or 256\or 257%
    \or 260\or 261\or 262\or 263\or 264\or 265\or 266\or 267%
    \or 270\or 271\or 272\or 273\or 274\or 275\or 276\or 277%
    \or 300\or 301\or 302\or 303\or 304\or 305\or 306\or 307%
    \or 310\or 311\or 312\or 313\or 314\or 315\or 316\or 317%
    \or 320\or 321\or 322\or 323\or 324\or 325\or 326\or 327%
    \or 330\or 331\or 332\or 333\or 334\or 335\or 336\or 337%
    \or 340\or 341\or 342\or 343\or 344\or 345\or 346\or 347%
    \or 350\or 351\or 352\or 353\or 354\or 355\or 356\or 357%
    \or 360\or 361\or 362\or 363\or 364\or 365\or 366\or 367%
    \or 370\or 371\or 372\or 373\or 374\or 375\or 376\or 377%
  \fi
}
\def\HyPsd@DecimalToOctalSecond#1{%
  \ifcase #1 %
       \000\or \001\or \002\or \003\or \004\or \005\or \006\or \007%
    \or \010\or \011\or \012\or \013\or \014\or \015\or \016\or \017%
    \or \020\or \021\or \022\or \023\or \024\or \025\or \026\or \027%
```

```
    \or \030\or \031\or \032\or \033\or \034\or \035\or \036\or \037%
    \or \040\or \041\or \042\or \043\or \044\or \045\or \046\or \047%
    \or \050\or \051\or \052\or \053\or \054\or \055\or \056\or \057%
    \or \060\or \061\or \062\or \063\or \064\or \065\or \066\or \067%
    \or \070\or \071\or \072\or \073\or \074\or \075\or \076\or \077%
    \or \100\or \101\or \102\or \103\or \104\or \105\or \106\or \107%
    \or \110\or \111\or \112\or \113\or \114\or \115\or \116\or \117%
    \or \120\or \121\or \122\or \123\or \124\or \125\or \126\or \127%
    \or \130\or \131\or \132\or \133\or \134\or \135\or \136\or \137%
    \or \140\or \141\or \142\or \143\or \144\or \145\or \146\or \147%
    \or \150\or \151\or \152\or \153\or \154\or \155\or \156\or \157%
    \or \160\or \161\or \162\or \163\or \164\or \165\or \166\or \167%
    \or \170\or \171\or \172\or \173\or \174\or \175\or \176\or \177%
    \or \200\or \201\or \202\or \203\or \204\or \205\or \206\or \207%
    \or \210\or \211\or \212\or \213\or \214\or \215\or \216\or \217%
    \or \220\or \221\or \222\or \223\or \224\or \225\or \226\or \227%
    \or \230\or \231\or \232\or \233\or \234\or \235\or \236\or \237%
    \or \240\or \241\or \242\or \243\or \244\or \245\or \246\or \247%
    \or \250\or \251\or \252\or \253\or \254\or \255\or \256\or \257%
    \or \260\or \261\or \262\or \263\or \264\or \265\or \266\or \267%
    \or \270\or \271\or \272\or \273\or \274\or \275\or \276\or \277%
    \or \300\or \301\or \302\or \303\or \304\or \305\or \306\or \307%
    \or \310\or \311\or \312\or \313\or \314\or \315\or \316\or \317%
    \or \320\or \321\or \322\or \323\or \324\or \325\or \326\or \327%
    \or \330\or \331\or \332\or \333\or \334\or \335\or \336\or \337%
    \or \340\or \341\or \342\or \343\or \344\or \345\or \346\or \347%
    \or \350\or \351\or \352\or \353\or \354\or \355\or \356\or \357%
    \or \360\or \361\or \362\or \363\or \364\or \365\or \366\or \367%
    \or \370\or \371\or \372\or \373\or \374\or \375\or \376\or \377%
  \fi
}
\def\HyPsd@CJKnumber#1{%
  \ifnum#1<\z@
    \CJK@minus
    \expandafter\HyPsd@@CJKnumber\expandafter{\number-\number#1}%
  \else
    \expandafter\HyPsd@@CJKnumber\expandafter{\number#1}%
  \fi
}
\def\HyPsd@@CJKnumber#1{%
  \ifcase#1 %
    \CJK@zero\or\CJK@one\or\CJK@two\or\CJK@three\or\CJK@four\or
    \CJK@five\or\CJK@six\or\CJK@seven\or\CJK@eight\or\CJK@nine\or
    \CJK@ten\or\CJK@ten\CJK@one\or\CJK@ten\CJK@two\or
    \CJK@ten\CJK@three\or\CJK@ten\CJK@four\or\CJK@ten\CJK@five\or
    \CJK@ten\CJK@six\or\CJK@ten\CJK@seven\or\CJK@ten\CJK@eight\or
    \CJK@ten\CJK@nine
  \else
    \ifnum#1<10000 %
      \HyPsd@CJKnumberFour#1!\@empty{20}%
      \@empty
    \else
      \ifnum#1<100000000 %
        \expandafter\expandafter\expandafter\HyPsd@CJKnumberFour
          \IntCalcDiv#1!10000!%
        !{}{20}%
        \CJK@tenthousand
```

```
      \expandafter\expandafter\expandafter\HyPsd@CJKnumberFour
        \IntCalcMod#1!10000!%
      !\CJK@zero{10}%
      \@empty
    \else
      \expandafter\HyPsd@CJKnumberLarge
      \number\IntCalcDiv#1!100000000!\expandafter!%
      \number\IntCalcMod#1!100000000!!%
    \fi
  \fi
 \fi
}
\def\HyPsd@CJKnumberLarge#1!#2!{%
 \HyPsd@CJKnumberFour#1!{}{20}%
 \CJK@hundredmillion
 \ifnum#2=\z@
 \else
  \expandafter\expandafter\expandafter\HyPsd@CJKnumberFour
    \IntCalcDiv#2!10000!%
  !\CJK@zero{10}%
  \CJK@tenthousand
  \expandafter\expandafter\expandafter\HyPsd@CJKnumberFour
    \IntCalcMod#2!10000!%
  !\CJK@zero{10}%
  \@empty
 \fi
}
\def\HyPsd@CJKnumberFour#1!#2#3{%
 \ifnum#1=\z@
  \expandafter\@gobble
 \else
  \ifnum#1<1000 %
    #2%
    \HyPsd@CJKnumberThree#1!{}{#3}%
  \else
    \HyPsd@@CJKnumber{\IntCalcDiv#1!1000!}%
    \CJK@thousand
    \expandafter\expandafter\expandafter\HyPsd@CJKnumberThree
      \IntCalcMod#1!1000!%
    !\CJK@zero{10}%
  \fi
 \fi
}
\def\HyPsd@CJKnumberThree#1!#2#3{%
 \ifnum#1=\z@
 \else
  \ifnum#1<100 %
    #2%
    \HyPsd@CJKnumberTwo#1!{}{#3}%
  \else
    \HyPsd@@CJKnumber{\IntCalcDiv#1!100!}%
    \CJK@hundred
    \expandafter\expandafter\expandafter\HyPsd@CJKnumberTwo
      \IntCalcMod#1!100!%
    !\CJK@zero{10}%
  \fi
 \fi
```

```
}
\def\HyPsd@CJKnumberTwo#1!#2#3{%
  \ifnum#1=\z@
  \else
    \ifnum#1<#3 %
      #2%
      \HyPsd@@CJKnumber{#1}%
    \else
      \HyPsd@@CJKnumber{\IntCalcDiv#1!10!}%
      \CJK@ten
      \ifnum\IntCalcMod#1!10!=\z@
      \else
        \HyPsd@@CJKnumber{\IntCalcMod#1!10!}%
      \fi
    \fi
  \fi
}
\def\HyPsd@CJKdigits#1{%
  \ifx*#1\relax
    \expandafter\HyPsd@@CJKdigits\expandafter\CJK@zero
  \else
    \HyPsd@@CJKdigits\CJK@null{#1}%
  \fi
}
\def\HyPsd@@CJKdigits#1#2{%
  \ifx\\#2\\%
  \else
    \HyPsd@@@CJKdigits#1#2\@nil
  \fi
}%
\def\HyPsd@@@CJKdigits#1#2#3\@nil{%
  \HyPsd@CJKdigit#1{#2}%
  \ifx\\#3\\%
    \expandafter\@gobble
  \else
    \expandafter\@firstofone
  \fi
  {%
    \HyPsd@@@CJKdigits#1#3\@nil
  }%
}
\def\HyPsd@CJKdigit#1#2{%
  \ifcase#2 %
    #1\or
    \CJK@one\or\CJK@two\or\CJK@three\or\CJK@four\or
    \CJK@five\or\CJK@six\or\CJK@seven\or\CJK@eight\or\CJK@nine
  \fi
}
```

6.5.6 \@inmathwarn-Patch

\HyPsd@inmathwarn

The patch of `\@inmathwarn` is needed to get rid of the infinite error loop with glyphs of other encodings (see the explanation above). Potentially the patch is dangerous, if the code in `ltoutenc.dtx` changes. Checked with LaTeX 2_ε versions [1998/06/01] and [1998/12/01]. I expect that versions below [1995/12/01] don't work.

To understand the patch easier, the original code of `\@current@cmd` and `\@changed@cmd` follows (LaTeX 2_ε release [1998/12/01]). In the normal case `\pdfstringdef` is executed in a context where `\protect` has the meaning of `\@typeset@protect` (=`\relax`).

```
\def\@current@cmd#1{%
  \ifx\protect\@typeset@protect
    \@inmathwarn#1%
  \else
    \noexpand#1\expandafter\@gobble
  \fi}
\def\@changed@cmd#1#2{%
  \ifx\protect\@typeset@protect
    \@inmathwarn#1%
    \expandafter\ifx\csname\cf@encoding\string#1\endcsname\relax
      \expandafter\ifx\csname ?\string#1\endcsname\relax
        \expandafter\def\csname ?\string#1\endcsname{%
          \TextSymbolUnavailable#1%
        }%
      \fi
      \global\expandafter\let
          \csname\cf@encoding \string#1\expandafter\endcsname
          \csname ?\string#1\endcsname
    \fi
    \csname\cf@encoding\string#1%
      \expandafter\endcsname
  \else
    \noexpand#1%
  \fi}
\gdef\TextSymbolUnavailable#1{%
  \@latex@error{%
    Command \protect#1 unavailable in encoding \cf@encoding%
  }\@eha}
\def\@inmathwarn#1{%
  \ifmmode
    \@latex@warning{Command \protect#1 invalid in math mode}%
  \fi}
```

```
\def\HyPsd@inmathwarn#1#2{%
  \ifx#2\expandafter
    \expandafter\ifx\csname\cf@encoding\string#1\endcsname\relax
      \HyPsd@GLYPHERR
      \expandafter\@gobble\string#1%
      >%
      \expandafter\expandafter\expandafter\HyPsd@EndWithElse
    \else
      \expandafter\expandafter\expandafter\HyPsd@GobbleFiFi
    \fi
  \else
    \expandafter#2%
  \fi
}
\def\HyPsd@GobbleFiFi#1\fi#2\fi{}
\def\HyPsd@EndWithElse#1\else{\else}
```

`\HyPsd@add@accent`

```
\def\HyPsd@add@accent#1#2{%
  \HyPsd@GLYPHERR\expandafter\@gobble\string#1+\string#2>%
```

```
  #2%
}%
```

6.5.7 Unexpandable spaces

\HyPsd@LetUnexpandableSpace

In \HyPsd@@ProtectSpaces the space tokens are replaced by not expandable commands, that work like spaces:

- So they can caught by undelimited arguments.
- And they work in number, dimen, and skip assignments.

These properties are used in \HyPsd@CheckCatcodes.

```
\def\HyPsd@LetUnexpandableSpace#1{%
  \expandafter\futurelet\expandafter#1\expandafter\@gobble\space\relax
}
```

\HyPsd@UnexpandableSpace

\HyPsd@UnexpandableSpace is used in \HyPsd@@ProtectSpaces. In \yPsd@@ProtectSpaces the space tokens are replaced by unexpandable commands \HyPsd@UnexpandableSpace, but that have the effect of spaces.

```
\HyPsd@LetUnexpandableSpace\HyPsd@UnexpandableSpace
```

6.5.8 Marker for commands

\HyPsd@XSPACE
\HyPsd@ITALCORR
\HyPsd@GLYPHERR

Some commands and informations cannot be utilized before the string expansion and the checking process. Command names are filtered out, so we need another way to transport the information: An unusual # with catcode 12 marks the beginning of the extra information.

```
\edef\HyPsd@XSPACE{\string#\string X}
\edef\HyPsd@ITALCORR{\string#\string I}
\edef\HyPsd@GLYPHERR{\string#\string G}
```

6.5.9 \hspace fix

\HyPsd@hspace

```
\def\HyPsd@hspace#1{\HyPsd@@hspace#1*\END}
```

\HyPsd@@hspace

\HyPsd@@hspace checks whether \hspace is called in its star form.

```
\def\HyPsd@@hspace#1*#2\END{%
  \ifx\\#2\\%
    \HyPsd@hspacetest{#1}%
  \else
    \expandafter\HyPsd@hspacetest
  \fi
}
```

\HyPsd@hspacetest

\HyPsd@hyspacetest replaces the \hspace by a space, if the length is greater than zero.

```
\def\HyPsd@hspacetest#1{\ifdim#1>\z@\space\fi}
```

6.5.10 Fix for AMS classes

```
\ltx@IfUndefined{tocsection}{%
  \let\HyPsd@AMSclassfix\relax
}{%
  \def\HyPsd@AMSclassfix{%
    \let\tocpart\HyPsd@tocsection
    \let\tocchapter\HyPsd@tocsection
    \let\tocappendix\HyPsd@tocsection
    \let\tocsection\HyPsd@tocsection
    \let\tocsubsection\HyPsd@tocsection
    \let\tocsubsubsection\HyPsd@tocsection
    \let\tocparagraph\HyPsd@tocsection
  }%
  \def\HyPsd@tocsection#1#2#3{%
    \if @#2@\else\if @#1@\else#1 \fi#2. \fi
    #3%
  }%
}
```

6.5.11 Reference commands

\HyPsd@href

```
\def\HyPsd@href#1#{\@secondoftwo}
```

\HyPsd@ref Macro \HyPsd@ref calls the macro \HyPsd@@ref for star checking. The same methods like in \HyPsd@hspace is used.

```
\def\HyPsd@ref#1{\HyPsd@@ref#1*\END}%
```

\HyPsd@@ref Macro \HyPsd@@ref checks if a star is present.

```
\def\HyPsd@@ref#1*#2\END{%
  \ifx\\#2\\%
    \HyPsd@@@ref{#1}%
  \else
    \expandafter\HyPsd@@@ref
  \fi
}%
```

\HyPsd@@@ref \HyPsd@@@ref does the work and extracts the first argument.

```
\def\HyPsd@@@ref#1{%
  \expandafter\ifx\csname r@#1\endcsname\relax
    ??%
  \else
    \expandafter\expandafter\expandafter
    \@car\csname r@#1\endcsname\@nil
  \fi
}
```

\HyPsd@pageref Macro \HyPsd@pageref calls the macro \HyPsd@@pageref for star checking. The same methods like in \HyPsd@hspace is used.

```
\def\HyPsd@pageref#1{\HyPsd@@pageref#1*\END}
```

\HyPsd@@pageref Macro \HyPsd@@pageref checks if a star is present.

```
\def\HyPsd@@pageref#1*#2\END{%
  \ifx\\#2\\%
    \HyPsd@@@pageref{#1}%
  \else
    \expandafter\HyPsd@@@pageref
```

```
  \fi
}
```

\HyPsd@@@pageref `\HyPsd@@@pageref` does the work and extracts the second argument.

```
\def\HyPsd@@@pageref#1{%
  \expandafter\ifx\csname r@#1\endcsname\relax
    ??%
  \else
    \expandafter\expandafter\expandafter\expandafter
    \expandafter\expandafter\expandafter\@car
    \expandafter\expandafter\expandafter\@gobble
    \csname r@#1\endcsname{}\@nil
  \fi
}
```

\HyPsd@nameref Macro `\HyPsd@nameref` calls the macro `\HyPsd@@nameref` for star checking. The same methods like in `\HyPsd@hspace` is used.

```
\def\HyPsd@nameref#1{\HyPsd@@nameref#1*\END}
```

\HyPsd@@nameref Macro `\HyPsd@@nameref` checks if a star is present.

```
\def\HyPsd@@nameref#1*#2\END{%
  \ifx\\#2\\%
    \HyPsd@@@nameref{#1}%
  \else
    \expandafter\HyPsd@@@nameref
  \fi
}
```

\HyPsd@@@nameref `\HyPsd@@@nameref` does the work and extracts the third argument.

```
\def\HyPsd@@@nameref#1{%
  \expandafter\ifx\csname r@#1\endcsname\relax
    ??%
  \else
    \expandafter\expandafter\expandafter\expandafter
    \expandafter\expandafter\expandafter\@car
    \expandafter\expandafter\expandafter\@gobbletwo
    \csname r@#1\endcsname{}{}\@nil
  \fi
}
```

\HyPsd@autoref Macro `\HyPsd@autoref` calls the macro `\HyPsd@@autoref` for star checking. The same methods like in `\HyPsd@hspace` is used.

```
\def\HyPsd@autoref#1{\HyPsd@@autoref#1*\END}
```

\HyPsd@@autoref Macro `\HyPsd@@autoref` checks if a star is present.

```
\def\HyPsd@@autoref#1*#2\END{%
  \ifx\\#2\\%
    \HyPsd@@@autoref{#1}%
  \else
    \expandafter\HyPsd@@@autoref
  \fi
}
```

\HyPsd@@@autoref `\HyPsd@@@autoref` does the work and extracts the second argument.

```
\def\HyPsd@@@autoref#1{%
  \expandafter\ifx\csname r@#1\endcsname\relax
```

```
    ??%
  \else
    \expandafter\expandafter\expandafter\HyPsd@autorefname
        \csname r@#1\endcsname{}{}{}{}\@nil
    \expandafter\expandafter\expandafter
    \@car\csname r@#1\endcsname\@nil
  \fi
}
```

\HyPsd@autorefname At least a basic definition for getting the \autoref name.

```
\def\HyPsd@autorefname#1#2#3#4#5\@nil{%
  \ifx\\#4\\%
  \else
    \HyPsd@@autorefname#4.\@nil
  \fi
}
```

\HyPsd@@autorefname

```
\def\HyPsd@@autorefname#1.#2\@nil{%
  \ltx@IfUndefined{#1autorefname}{%
    \ltx@IfUndefined{#1name}{%
    }{%
      \csname#1name\endcsname\space
    }%
  }{%
    \csname#1autorefname\endcsname\space
  }%
}
```

6.5.12 Redefining the defining commands

Definitions aren't allowed, because they aren't executed in an only expanding context. So the command to be defined isn't defined and can perhaps be undefined. This would causes TeX to stop with an error message. With a deep trick it is possible to define commands in such a context: \csname does the job, it defines the command to be \relax, if it has no meaning.

Active characters cannot be defined with this trick. It is possible to define all undefined active characters (perhaps that they have the meaning of \relax). To avoid side effects this should be done in \pdfstringdef shortly before the \xdef job. But checking and defining all possible active characters of the full range (0 until 255) would take a while. \pdfstringdef is slow enough, so this isn't done.

\HyPsd@DefCommand and \HyPsd@LetCommand expands to the commands \<def>-command and \<let>-command with the meaning of \def and \let. So it is detected by \HyPsd@CheckCatcodes and the command name \<def>-command or \<let>-command should indicate a forbidden definition command.

The command to be defined is converted to a string and back to a command name with the help of \csname. If the command is already defined, \noexpand prevents a further expansion, even though the command would expand to legal stuff. If the command don't have the meaning of \relax, \HyPsd@CheckCatcodes will produce a warning. (The command itself can be legal, but the warning is legitimate because of the position after a defining command.)

The difference between \HyPsd@DefCommand and \HyPsdLetCommand is that the first one also cancels this arguments, the parameter and definition text. The right side of the \let commands cannot be canceled with an undelimited parameter because of a possible space token after \futurelet.

To avoid unmachted \if... tokens, the cases \let\if...\iftrue and \let\if...\iffalse are checked and ignored.

\HyPsd@DefCommand
\HyPsd@LetCommand

```
\begingroup
  \def\x#1#2{%
    \endgroup
    \let#1\def
    \def\HyPsd@DefCommand##1##2##{%
      #1%
      \expandafter\noexpand
        \csname\expandafter\@gobble\string##1\@empty\endcsname
      \@gobble
    }%
    \let#2\let
    \def\HyPsd@@LetCommand##1{%
      \expandafter\ifx\csname##1\expandafter\endcsname
                  \csname iftrue\endcsname
        \pdfstringdefWarn\let
        \expandafter\@gobble
      \else
        \expandafter\ifx\csname##1\expandafter\endcsname
                    \csname iffalse\endcsname
          \pdfstringdefWarn\let
          \expandafter\expandafter\expandafter\@gobble
        \else
          #2%
          \expandafter\noexpand
            \csname##1\expandafter\expandafter\expandafter\endcsname
        \fi
      \fi
    }%
  }%
\expandafter\x\csname <def>-command\expandafter\endcsname
            \csname <let>-command\endcsname
\def\HyPsd@LetCommand#1{%
  \expandafter\expandafter\expandafter\HyPsd@@LetCommand
    \expandafter\expandafter\expandafter{%
    \expandafter\@gobble\string#1\@empty
  }%
}
```

6.5.13 \ifnextchar

\HyPsd@ifnextchar

In \pdfstringdef \@ifnextchar is disabled via a \let command to save time. First a warning message is given, then the three arguments are canceled. \@ifnextchar cannot work in a correct manner, because it uses \futurelet, but this is a stomach feature, that doesn't work in an expanding context. There are several variants of \@ifnextchar:

- \@ifnextchar
- \kernel@ifnextchar
- \new@ifnextchar from package amsgen.sty (bug report latex/3662).

```
\def\HyPsd@ifnextchar#1{%
  \pdfstringdefWarn#1%
```

```
  \expandafter\@gobbletwo\@gobble
}
```

6.5.14 \@protected@testoptifnextchar

\HyPsd@protected@testopt Macros with optional arguments doesn't work properly, because they call \@ifnextchar to detect the optional argument (see the explanation of \HyPsd@ifnextchar). But a warning, that \@ifnextchar doesn't work, doesn't help the user very much. Therefore \@protected@testopt is also disabled, because its first argument is the problematic macro with the optional argument and it is called before \@ifnextchar.

```
\def\HyPsd@protected@testopt#1{%
  \pdfstringdefWarn#1%
  \@gobbletwo
}
```

6.6 Help macros for postprocessing

6.6.1 Generic warning.

\HyPsd@Warning For several reasons \space is masked and does not have its normal meaning. But it is used in warning messages, so it is redefined locally:

```
\def\HyPsd@Warning#1{%
  \begingroup
    \let\space\ltx@space
    \Hy@Warning{#1}%
  \endgroup
}
```

6.6.2 Protecting spaces

```
\RequirePackage{etexcmds}[2007/09/09]
\ifetex@unexpanded
  \expandafter\@secondoftwo
\else
  \expandafter\@firstoftwo
\fi
{%
```

\HyPsd@ProtectSpaces \HyPsd@ProtectSpaces calls with the expanded string \HyPsd@@ProtectSpacesFi. The expanded string is protected by | at the beginning and end of the expanded string. Because of this there can be no group at the beginning or end of the string and grouping characters are not removed by the call of \HyPsd@@ProtectSpacesFi.

```
  \def\HyPsd@ProtectSpaces#1{%
    \iftrue
      \expandafter\HyPsd@@ProtectSpacesFi
        \expandafter|\expandafter\@empty#1| \HyPsd@End#1%
    \fi
  }%
```

\HyPsd@@ProtectSpacesFi The string can contain command tokens, so it is better to use an \def instead of an \edef.

```
  \def\HyPsd@@ProtectSpacesFi#1 #2\HyPsd@End#3\fi{%
    \fi
    \ifx\scrollmode#2\scrollmode
```

```
    \HyPsd@RemoveMask#1\HyPsd@End#3%
  \else
    \gdef#3{#1\HyPsd@UnexpandableSpace#2}%
    \expandafter\HyPsd@@ProtectSpacesFi#3\HyPsd@End#3%
  \fi
}%
```

Remove mask.

\HyPsd@RemoveMask `\HyPsd@RemoveMask` removes the protecting `|`. It is used by `\HyPsd@@ProtectSpacesFi` and by the code in `\pdfstringdef` that removes the grouping chararcters.

```
\def\HyPsd@RemoveMask|#1|\HyPsd@End#2{%
  \toks@\expandafter{#1}%
  \xdef#2{\the\toks@}%
}%
}{%
  \let\HyPsd@fi\fi
  \def\HyPsd@ProtectSpaces#1{%
    \xdef#1{%
      \iftrue
        \expandafter\HyPsd@@ProtectSpacesFi
          \expandafter|\expandafter\@empty#1| %
      \HyPsd@fi
    }%
    \expandafter\HyPsd@RemoveMask#1\HyPsd@End#1%
  }%
  \def\HyPsd@@ProtectSpacesFi#1 #2\HyPsd@fi{%
    \fi
    \etex@unexpanded{#1}%
    \ifx\scrollmode#2\scrollmode
    \else
      \HyPsd@@ProtectSpacesFi\HyPsd@UnexpandableSpace#2%
    \HyPsd@fi
  }%
  \def\HyPsd@RemoveMask|#1|\HyPsd@End#2{%
    \xdef#2{\etex@unexpanded\expandafter{#1}}%
  }%
}
```

6.6.3 Remove grouping braces

\HyPsd@RemoveBraces `#1` contains the expanded string, the result will be locally written in command `\HyPsd@String`.

```
\def\HyPsd@RemoveBraces#1{%
  \ifx\scrollmode#1\scrollmode
  \else
    \HyPsd@@RemoveBracesFi#1\HyPsd@End{#1}%
  \fi
}
```

\HyPsd@@RemoveBraces `\HyPsd@@RemoveBraces` is called with the expanded string, the end marked by `\HyPsd@End`, the expanded string again, but enclosed in braces and the string command. The first expanded string is scanned by the parameter text `#1#2`. By a comparison with the original form in `#3` we can decide whether `#1` is a single

token or a group. To avoid the case that #2 is a group, the string is extended by a | before.

While removing the grouping braces an italic correction marker is inserted for supporting package xspace and letting ligatures broken.

Because the string is already expanded, the \if commands should disappeared. So we can move some parts out of the argument of \ltx@ReturnAfterFi.

```
\def\HyPsd@@RemoveBracesFi#1#2\HyPsd@End#3\fi{%
  \fi
  \def\Hy@temp@A{#1#2}%
  \def\Hy@temp@B{#3}%
  \ifx\Hy@temp@A\Hy@temp@B
    \expandafter\def\expandafter\HyPsd@String\expandafter{%
      \HyPsd@String#1%
    }%
    \ifx\scrollmode#2\scrollmode
    \else
      \Hy@ReturnAfterFiFiEnd{%
        \HyPsd@RemoveBraces{#2}%
      }%
    \fi
  \else
    \def\Hy@temp@A{#1}%
    \HyPsd@AppendItalcorr\HyPsd@String
    \ifx\Hy@temp@A\@empty
      \Hy@ReturnAfterElseFiFiEnd{%
        \HyPsd@RemoveBraces{#2}%
      }%
    \else
      \HyPsd@ProtectSpaces\Hy@temp@A
      \HyPsd@AppendItalcorr\Hy@temp@A
      \Hy@ReturnAfterFiFiEnd{%
        \expandafter\HyPsd@RemoveBraces\expandafter
          {\Hy@temp@A#2}%
      }%
    \fi
  \fi
  \Hy@ReturnEnd
}
```

\HyPsd@AppendItalcorr
\HyPsd@@AppendItalcorr

The string can contain commands yet, so it is better to use \def instead of a shorter \edef. The two help macros limit the count of \expandafter.

```
\def\HyPsd@AppendItalcorr#1{%
  \expandafter\HyPsd@@AppendItalcorr\expandafter{\/}#1%
}
\def\HyPsd@@AppendItalcorr#1#2{%
  \expandafter\def\expandafter#2\expandafter{#2#1}%
}
```

6.6.4 Catcode check

Workaround for LuaTeX. \HyPsd@CheckCatcodes might trigger a bug of LuaTeX (0.60.2, 0.70.1, 0.70.2, ...) in the comparison with \ifcat, see http://tracker.luatex.org/view.php?id=773.

```
\ltx@IfUndefined{directlua}{%
}{%
  \expandafter\ifx\csname\endcsname\relax\fi
```

```
}
```

Check catcodes.

\HyPsd@CheckCatcodes

Because \ifcat expands its arguments, this is prevented by \noexpand. In case of command tokens and active characters \ifcat now sees a \relax. After protecting spaces and removing braces #1 should be a single token, no group of several tokens, nor an empty group. (So the \expandafter\relax between \ifcat and \noexpand is only for safety and it should be possible to remove it.)

\protect and \relax should be removed silently. But it is too dangerous and breaks some code giving them the meaning of \@empty. So commands with the meaning of \protect are removed here. (\protect should have the meaning of \@typeset@protect that is equal to \relax).

For the comparison with active characters, ~ cannot be used because it has the meaning of a blank space here. And active characters need to be checked, if they have been defined using \protected.

```
\begingroup
 \catcode`\Q=\active
 \let Q\ltx@empty
 \gdef\HyPsd@CheckCatcodes#1#2\HyPsd@End{%
  \global\let\HyPsd@Rest\relax
  \ifcat\relax\noexpand#1\relax
   \ifx#1\protect
   \else
    \ifx#1\penalty
     \setbox\z@=\hbox{%
      \afterassignment\HyPsd@AfterCountRemove
      \count@=#2\HyPsd@End
     }%
    \else
     \ifx#1\kern
      \setbox\z@=\hbox{%
       \afterassignment\HyPsd@AfterDimenRemove
       \dimen@=#2\HyPsd@End
      }%
     \else
      \ifx#1\hskip
       \setbox\z@=\hbox{%
        \afterassignment\HyPsd@AfterSkipRemove
        \skip@=#2\HyPsd@End
       }%
      \else
       \HyPsd@CatcodeWarning{#1}%
      \fi
     \fi
    \fi
   \fi
  \else
   \ifcat\noexpand#1\noexpandQ% active character
    \expandafter\expandafter\expandafter\def
    \expandafter\expandafter\expandafter\HyPsd@String
    \expandafter\expandafter\expandafter{%
     \expandafter\HyPsd@String\string#1%
    }%
   \else
    \ifcat#1A% letter
```

```
      \expandafter\def\expandafter\HyPsd@String\expandafter{%
        \HyPsd@String#1%
      }%
    \else
      \ifcat#1 % SPACE
        \expandafter\def\expandafter\HyPsd@String\expandafter{%
          \HyPsd@String\HyPsd@SPACEOPTI
        }%
      \else
        \ifcat$#1%
          \HyPsd@CatcodeWarning{math shift}%
        \else
          \ifcat&#1%
            \HyPsd@CatcodeWarning{alignment tab}%
          \else
            \ifcat^#1%
              \HyPsd@CatcodeWarning{superscript}%
            \else
              \ifcat_#1%
                \HyPsd@CatcodeWarning{subscript}%
              \else
                \expandafter\def\expandafter\HyPsd@String\expandafter{%
                  \HyPsd@String#1%
                }%
              \fi
            \fi
          \fi
        \fi
      \fi
    \fi
  \fi
  \ifx\HyPsd@Rest\relax
    \ifx\scrollmode#2\scrollmode
    \else
      \Hy@ReturnAfterFiFiEnd{%
        \HyPsd@CheckCatcodes#2\HyPsd@End
      }%
    \fi
  \else
    \ifx\HyPsd@Rest\@empty
    \else
      \Hy@ReturnAfterFiFiEnd{%
        \expandafter\HyPsd@CheckCatcodes\HyPsd@Rest\HyPsd@End
      }%
    \fi
  \fi
  \Hy@ReturnEnd
}%
\endgroup
```

Remove counts, dimens, skips.

\HyPsd@AfterCountRemove

Counts like \penalty are removed silently.

```
\def\HyPsd@AfterCountRemove#1\HyPsd@End{%
  \gdef\HyPsd@Rest{#1}%
}
```

\HyPsd@AfterDimenRemove If the value of the dimen (\kern) is zero, it can be removed silently. All other values are difficult to interpret. Negative values do not work in bookmarks. Should positive values be removed or should they be replaced by space(s)? The following code replaces positive values greater than 1ex with a space and removes them else.

```
\def\HyPsd@AfterDimenRemove#1\HyPsd@End{%
  \ifdim\ifx\HyPsd@String\@empty\z@\else\dimen@\fi>1ex %
    \HyPsd@ReplaceSpaceWarning{\string\kern\space\the\dimen@}%
    \gdef\HyPsd@Rest{\HyPsd@UnexpandableSpace #1}%
  \else
    \ifdim\dimen@=\z@
    \else
      \HyPsd@RemoveSpaceWarning{\string\kern\space\the\dimen@}%
    \fi
    \gdef\HyPsd@Rest{#1}%
  \fi
}
```

\HyPsd@AfterSkipRemove The glue part of skips do not work in PDF strings and are ignored. Skips (\hskip), that are not zero, have the same interpreting problems like dimens (see above).

```
\def\HyPsd@AfterSkipRemove#1\HyPsd@End{%
  \ifdim\ifx\HyPsd@String\@empty\z@\else\skip@\fi>1ex %
    \HyPsd@ReplaceSpaceWarning{\string\hskip\space\the\skip@}%
    \gdef\HyPsd@Rest{\HyPsd@UnexpandableSpace #1}%
  \else
    \ifdim\skip@=\z@
    \else
      \HyPsd@RemoveSpaceWarning{\string\kern\space\the\skip@}%
    \fi
    \gdef\HyPsd@Rest{#1}%
  \fi
}
```

Catcode warnings.

\HyPsd@CatcodeWarning \HyPsd@CatcodeWarning produces a warning for the user.

```
\def\HyPsd@CatcodeWarning#1{%
  \HyPsd@Warning{%
    Token not allowed in a PDF string (%
    \ifHy@unicode
      Unicode%
    \else
      PDFDocEncoding%
    \fi
    ):%
    \MessageBreak removing `\HyPsd@RemoveCmdPrefix#1'%
  }%
}
\begingroup
  \catcode`\|=0 %
  \catcode`\\=12 %
  |gdef|HyPsd@RemoveCmdPrefix#1{%
    |expandafter|HyPsd@@RemoveCmdPrefix
      |string#1|@empty\<>-|@empty|@empty
  }%
  |gdef|HyPsd@@RemoveCmdPrefix#1\<>-#2|@empty#3|@empty{#1#2}%
|endgroup
```

\HyPsd@RemoveSpaceWarning

```
\def\HyPsd@RemoveSpaceWarning#1{%
  \HyPsd@Warning{%
    Token not allowed in a PDF string (%
    \ifHy@unicode
      Unicode%
    \else
      PDFDocEncoding%
    \fi
    ):%
    \MessageBreak #1\MessageBreak
    removed%
  }%
}
```

\HyPsd@ReplaceSpaceWarning

```
\def\HyPsd@ReplaceSpaceWarning#1{%
  \HyPsd@Warning{%
    Token not allowed in a PDF string (%
    \ifHy@unicode
      Unicode%
    \else
      PDFDocEncoding%
    \fi
    ):%
    \MessageBreak #1\MessageBreak
    replaced by space%
  }%
}
```

6.6.5 Check for wrong glyphs

A wrong glyph is marked with `\relax`, the glyph name follows, delimited by `>`. `\@empty` ends the string.

```
\def\HyPsd@GlyphProcess#1\relax#2\@empty{%
  \expandafter\def\expandafter\HyPsd@String\expandafter{%
    \HyPsd@String#1%
  }%
  \ifx\\#2\\%
  \else
    \ltx@ReturnAfterFi{%
      \HyPsd@GlyphProcessWarning#2\@empty
    }%
  \fi
}
\def\HyPsd@GlyphProcessWarning#1>#2\@empty{%
  \HyPsd@@GlyphProcessWarning#1++>%
  \HyPsd@GlyphProcess#2\@empty
}
\def\HyPsd@@GlyphProcessWarning#1+#2+#3>{%
  \ifx\\#2\\%
    \HyPsd@Warning{%
      Glyph not defined in %
      P\ifHy@unicode U\else D1\fi\space encoding,\MessageBreak
      removing `\@backslashchar#1'%
    }%
  \else
```

```
    \HyPsd@Warning{%
      Composite letter `\@backslashchar#1+#2'\MessageBreak
      not defined in P\ifHy@unicode U\else D1\fi\space encoding,%
      \MessageBreak
      removing `\@backslashchar#1'%
    }%
  \fi
}
```

Spaces.

\HyPsd@spaceopti In the string the spaces are represented by \HyPsd@spaceopti tokens. Within an \edef it prints itself as a simple space and looks for its next argument. If another space follows, so it replaces the next \HyPsd@spaceopti by an protected space \040.

```
\def\HyPsd@spaceopti#1{ % first space
  \ifx\HyPsd@spaceopti#1%
    \040%
  \else
    #1%
  \fi
}%
```

6.6.6 Replacing tokens

\HyPsd@Subst To save tokens \HyPsd@StringSubst is an wrapper for the command \HyPsd@Subst that does all the work: In string stored in command #3 it replaces the tokens #1 with #2.

- #1 Exact the tokens that should be replaced.
- #2 The replacement (don't need to be expanded).
- #3 Command with the string.

```
\def\HyPsd@Subst#1#2#3{%
  \def\HyPsd@@ReplaceFi##1#1##2\END\fi{%
    \fi
    ##1%
    \ifx\scrollmode##2\scrollmode
    \else
      #2%
      \HyPsd@@ReplaceFi##2\END
    \fi
  }%
  \xdef#3{%
    \iftrue
      \expandafter\HyPsd@@ReplaceFi#3#1\END
    \fi
  }%
}
```

\HyPsd@StringSubst To save tokens in \pdfstringdef \HyPsd@StringSubst is a wrapper, that expands argument #1 before calling \HyPsd@Subst.

```
\def\HyPsd@StringSubst#1{%
  \expandafter\HyPsd@Subst\expandafter{\string#1}%
}
```

\HyPsd@EscapeTeX

```
\begingroup
```

```
  \lccode`\!=`\%%
  \lccode`\|=`\\%
  \lccode`\(=`\{%
  \lccode`\)=`\}%
  \lccode`0=\ltx@zero
  \lccode`1=\ltx@zero
  \lccode`3=\ltx@zero
  \lccode`4=\ltx@zero
  \lccode`5=\ltx@zero
  \lccode`7=\ltx@zero
\lowercase{\endgroup
  \def\HyPsd@EscapeTeX#1{%
    \HyPsd@Subst!{|045}#1%
    \HyPsd@Subst({|173}#1%
    \HyPsd@Subst){|175}#1%
  }%
}
```

6.6.7 Support for package xspace

\HyPsd@doxspace

`\xspace` does not work, because it uses a `\futurelet` that cannot be executed in TEX's mouth. So this implementation uses an argument to examine the next token. In a previous version I reused `\@xspace`, but this version is shorter and easier to understand.

```
\def\HyPsd@doxspace#1{%
  \ifx#1\relax\else
   \ifx#1.\else
    \ifx#1:\else
     \ifx#1,\else
      \ifx#1;\else
       \ifx#1!\else
        \ifx#1?\else
         \ifx#1/\else
          \ifx#1-\else
           \ifx#1'\else
             \HyPsd@SPACEOPTI
           \fi
          \fi
         \fi
        \fi
       \fi
      \fi
     \fi
    \fi
   \fi
  \fi
  #1%
}%
```

6.6.8 Converting to Unicode

Eight bit characters are converted to the sixteen bit ones, `\8` is replaced by `\00`, and `\9` is removed. The result should be a valid Unicode PDF string without the Unicode marker at the beginning.

```
\begingroup
  \catcode`\|=0 %
  \catcode`\\=12 %
```

\HyPsd@ConvertToUnicode

```
|gdef|HyPsd@ConvertToUnicode#1{%
  |xdef#1{%
    |expandafter|HyPsd@DoConvert#1|@empty|@empty|@empty
  }%
  |ifx#1|@empty
  |else
    |xdef#1{%
      \376\377%
      #1%
    }%
  |fi
}%
```

\HyPsd@DoConvert

```
|gdef|HyPsd@DoConvert#1{%
  |ifx#1|@empty
  |else
    |ltx@ReturnAfterFi{%
      |ifx#1\%%
        \%%
        |expandafter|HyPsd@DoEscape
      |else
        |HyPsd@Char{#1}%
        |expandafter|HyPsd@DoConvert
      |fi
    }%
  |fi
}%
```

\HyPsd@DoEscape

```
|gdef|HyPsd@DoEscape#1{%
  |ifx#19%
    |expandafter|HyPsd@GetTwoBytes
  |else
    |ltx@ReturnAfterFi{%
      |ifx#18%
        00%
        |expandafter|HyPsd@GetTwoBytes
      |else
        #1%
        |expandafter|HyPsd@GetOneByte
      |fi
    }%
  |fi
}%
```

\HyPsd@GetTwoBytes

```
|gdef|HyPsd@GetTwoBytes#1\#2#3#4{%
  #1\#2#3#4%
  |HyPsd@DoConvert
}%
```

\HyPsd@GetOneBye

```
|gdef|HyPsd@GetOneByte#1#2{%
  #1#2%
  |HyPsd@DoConvert
```

```
  }%
|endgroup
```

\HyPsd@@GetNextTwoTokens TEX does only allow nine parameters, so we need another macro to get more arguments.

```
\def\HyPsd@GetNextTwoTokens#1#2#3\END#4{%
  \xdef#4{#4#1#2}%
  \HyPsd@@ConvertToUnicode#3\END#4%
}
```

\HyPsd@Char

```
\begingroup
  \catcode0=9 %
  \catcode`\^=7 %
  \catcode`\^^^=12 %
  \def\x{^^^^0000}%
\expandafter\endgroup
\ifx\x\@empty
  \def\HyPsd@Char#1{%
    \ifnum`#1<128 %
      \@backslashchar 000#1%
    \else
      \ifnum`#1<65536 %
        \expandafter\HyPsd@CharTwoByte\number`#1!%
      \else
        \expandafter\expandafter\expandafter\HyPsd@CharSurrogate
        \intcalcSub{`#1}{65536}!%
      \fi
    \fi
  }%
  \def\HyPsd@CharTwoByte#1!{%
    \expandafter\expandafter\expandafter\HyPsd@CharOctByte
    \IntCalcDiv#1!256!!%
    \expandafter\expandafter\expandafter\HyPsd@CharOctByte
    \IntCalcMod#1!256!!%
  }%
  \def\HyPsd@CharOctByte#1!{%
    \@backslashchar
    \IntCalcDiv#1!64!%
    \intcalcDiv{\IntCalcMod#1!64!}{8}%
    \IntCalcMod#1!8!%
  }%
  \def\HyPsd@CharSurrogate#1!{%
    \@backslashchar 33%
    \IntCalcDiv#1!262144!%
    \expandafter\expandafter\expandafter\HyPsd@CharOctByte
    \intcalcDiv{\IntCalcMod#1!262144!}{1024}!%
    \@backslashchar 33%
    \expandafter\expandafter\expandafter\IntCalcAdd
    \intcalcDiv{\IntCalcMod#1!1024!}{256}!4!%
    \expandafter\expandafter\expandafter\HyPsd@CharOctByte
    \IntCalcMod#1!256!!%
  }%
\else
  \def\HyPsd@Char#1{%
    \@backslashchar 000#1%
  }%
\fi
```

6.6.9 Support for UTF-8 input encoding

After `\usepackage[utf8]{inputenc}` there are macros that expect the UTF-8 octets as arguments. Therefore we can calculate the PDF octal sequences directly. Because the PDF format is limited to UCS-2, conversion macros are needed for UTF-8 sequences with two and three octets only.

This calculation must be done in an expandable context, so we use eTEXhere for performance reasons. Unhappily the results of divisions are rounded. Thus a circumvention via `\dimexpr` is used, e.g.:

> `\numexpr 123/4\relax` is replaced by
> `\number\dimexpr.25\dimexpr 123sp\relax\relax`

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname numexpr\endcsname\relax
  \let\HyPsd@UTFviii\relax
\else
  \begingroup
    \lccode`\~=`^^f4\relax
  \lowercase{\endgroup
    \def\HyPsd@UTFviii{%
      \let\UTFviii@two@octets\HyPsd@UTFviii@two
      \let\UTFviii@three@octets\HyPsd@UTFviii@three
      \let\UTFviii@four@octets\HyPsd@UTFviii@four
      \ifx~\HyPsd@UTFviii@ccxliv@undef
        \let~\HyPsd@UTFviii@ccxliv@def
      \fi
      \let\unichar\HyPsd@unichar
    }%
  }%
  \def\HyPsd@UTFviii@ccxliv@undef{\@inpenc@undefined@{utf8}}%
  \edef\HyPsd@UTFviii@ccxliv@def{%
    \noexpand\UTFviii@four@octets\string ^^f4%
  }%
```

The two octet form of UTF-8 `110aaabb` (A) and `10cccddd` (B) must be converted into octal numbers `00a` and `bcd`. The result is `\8a\bcd` (with a, b, c, d as octal numbers). The conversion equations.

$$a := A/4 - 48 \tag{1}$$
$$b := A - 4 * (A/4) \tag{2}$$
$$c := B/8 - 8 * ((8 * (B/8))/8) \tag{3}$$
$$d := B - 8 * (B/8) \tag{4}$$
$$\tag{5}$$

```
\def\HyPsd@UTFviii@two#1#2{%
  \expandafter\HyPsd@UTFviii@@two
    \number\dimexpr.25\dimexpr`#1sp\expandafter\relax\expandafter|%
    \number`#1\expandafter|%
    \number\dimexpr.125\dimexpr`#2sp\expandafter\relax\expandafter|%
    \number`#2 \@nil
}%
\def\HyPsd@UTFviii@@two#1|#2|#3|#4\@nil{%
  \expandafter\8%
  \number\numexpr #1-48\expandafter\relax
  \csname\number\numexpr #2-4*#1\relax\expandafter\endcsname
  \number\numexpr #3-8*%
```

```
      \number\dimexpr.125\dimexpr#3sp\relax\relax\expandafter\relax
  \number\numexpr #4-8*#3\relax
}%
```

Three octet form: `1110aabb` (A), `10bcccdd` (B), and `10eeefff` (C). The result is `\9abc\def` (with a, …, f as octal numbers). The conversion equations:

$$a := A/4 - 56 \tag{6}$$
$$b := 2 * (A - 4 * (A/4)) + ((B - 128 < 32)?0 : 1) \tag{7}$$
$$c := B/4 - 32 - ((B - 128 < 32)?0 : 8) \tag{8}$$
$$d := B - 4 * (B/4) \tag{9}$$
$$e := C/8 - 16 \tag{10}$$
$$f := C - 8 * (C/8) \tag{11}$$
$$\tag{12}$$

```
\def\HyPsd@UTFviii@three#1#2#3{%
  \expandafter\HyPsd@UTFviii@@three
    \number\dimexpr.25\dimexpr`#1sp\expandafter\relax\expandafter|%
    \number`#1\expandafter|%
    \number\ifnum\numexpr`#2-128\relax <32 0\else 1\fi\expandafter|%
    \number\dimexpr.25\dimexpr`#2sp\expandafter\relax\expandafter|%
    \number`#2\expandafter|%
    \number\dimexpr.125\dimexpr`#3sp\expandafter\relax\expandafter|%
    \number`#3 \@nil
}%
\def\HyPsd@UTFviii@@three#1|#2|#3|#4|#5|#6|#7\@nil{%
  \expandafter\9%
  \number\numexpr #1-56\expandafter\relax
  \number\numexpr 2*(#2-4*#1)+#3\expandafter\relax
  \number\numexpr #4 - 32 -\ifcase#3 0\else 8\fi\expandafter\relax
  \csname\number\numexpr #5-4*#4\relax\expandafter\endcsname
  \number\numexpr #6-16\expandafter\relax
  \number\numexpr #7-8*#6\relax
}%
```

Surrogates: 4 octets in UTF-8, a surrogate pair in UTF-16. High surrogate range: U+D800–U+DBFF, low surrogate range: U+DC00-U+DFFF.

```
UTF-8:  11110uuu    10uuzzzz    10yyyyyy    10xxxxxx
wwww =  uuuuu - 1
UTF-16: 110110ww    wwzzzzyy    110111yy    yyxxxxxx
octal:  011 011 0ww  0ww zzz zyy  011 011 1yy  0yy xxx xxx
```

```
\def\HyPsd@UTFviii@four#1#2{%
  \expandafter\HyPsd@@UTFviii@four\number
  \numexpr-1+(`#1-240)*4+\dimexpr.0625\dimexpr`#2sp-128sp%
  \expandafter|\number
  \numexpr`#2-16*\dimexpr.0625\dimexpr`#2sp|%
}%
\def\HyPsd@@UTFviii@four#1|#2|#3{%
  \933\number\dimexpr.25\dimexpr#1sp\relax\relax
  \csname\number\numexpr#1-4*\dimexpr.25\dimexpr#1sp\endcsname
  \ifodd#2 %
    \number\numexpr(#2-1)/2\relax
  \else
    \number\numexpr#2/2\relax
  \fi
```

```
  \number\numexpr\ifodd#2 4+\fi
     \dimexpr.0625\dimexpr`#3sp-128sp\relax\relax\relax
  \933%
  \expandafter\HyPsd@@@UTFviii@four\number
  \numexpr`#3-16*\dimexpr.0625\dimexpr`#3sp|%
}%
\def\HyPsd@@@UTFviii@four#1|#2{%
  \number\numexpr4+\dimexpr.25\dimexpr#1sp\relax\relax\relax
  \csname\number\numexpr#1-4*\dimexpr.25\dimexpr#1sp\endcsname
  \number\dimexpr.125\dimexpr`#2sp-128sp\relax\relax
  \number\numexpr`#2-8*\dimexpr.125\dimexpr`#2sp\relax\relax\relax
}%
```

Input encoding `utf8x` of package `ucs` uses macro `\unichar`. Values greater than `"FFFF` are not supported.

```
\def\HyPsd@unichar#1{%
  \ifHy@unicode
    \ifnum#1>"10FFFF %
      \HyPsd@UnicodeReplacementCharacter % illegal
    \else
      \ifnum#1>"FFFF %
```

High-surrogate code point. (`"D800` = 55296, `\p@` = 1pt = 65536sp)

```
        \expandafter\HyPsd@unichar\expandafter{%
          \number\numexpr 55296+%
             \dimexpr.0009765625\dimexpr\number#1sp-\p@
             \relax\relax\relax
        }%
```

Low-surrogate code point. (`"DC00` = 56320, `"DC00 - 65536` = -9216)

```
        \expandafter\HyPsd@unichar\expandafter{%
          \number\numexpr#1-9216%
             -1024*\dimexpr.0009765625\dimexpr\number#1sp-\p@
             \relax\relax\relax
      }%
      \else
        \ifnum#1>"7FF %
          \9%
          \expandafter\HyPsd@unichar@first@byte\expandafter{%
            \number
            \dimexpr.00390625\dimexpr\number#1sp\relax\relax
          }%
        \else
          \8%
          \number\dimexpr.00390625\dimexpr\number#1sp\relax\relax
        \fi
        \expandafter\HyPsd@unichar@second@byte\expandafter{%
          \number
          \numexpr#1-256*\number
             \dimexpr.00390625\dimexpr\number#1sp\relax\relax\relax
        }%
      \fi
    \fi
  \else
    .% unsupported (Unicode -> PDF Doc Encoding)
  \fi
}%
\def\HyPsd@UnicodeReplacementCharacter{\9377\375}%
```

```
  \def\HyPsd@unichar@first@byte#1{%
    \number\dimexpr.015625\dimexpr#1sp\relax\relax
    \expandafter\HyPsd@unichar@octtwo\expandafter{%
      \number
      \numexpr#1-64*\number\dimexpr.015625\dimexpr#1sp%
      \relax\relax\relax
    }%
  }%
  \def\HyPsd@unichar@second@byte#1{%
    \csname\number\dimexpr.015625\dimexpr#1sp\relax\relax\endcsname
    \expandafter\HyPsd@unichar@octtwo\expandafter{%
      \number
      \numexpr#1-64*\number\dimexpr.015625\dimexpr#1sp%
      \relax\relax\relax
    }%
  }%
  \def\HyPsd@unichar@octtwo#1{%
    \number\dimexpr.125\dimexpr#1sp\relax\relax
    \number\numexpr#1-8*\number\dimexpr.125\dimexpr#1sp%
    \relax\relax\relax
  }%
\fi
```

\HyPsd@utf@viii@undeferr `\utf@viii@undeferr` comes from file utf8x.def from package ucs.

```
\def\HyPsd@utf@viii@undeferr#1#2#3#4#5#6{%
  \ifx\@gobble#1%
  \else
    [Please insert \textbackslash PrerenderUnicode%
    \textbraceleft#1\textbraceright\space
    into preamble]%
  \fi
}%
```

6.6.10 Support for die faces (ifsym et. al.)

\HyPsd@DieFace Die faces are provided by

Package	Macro
ifsym	`\Cube`
epsdice	`\epsdice`
hhcount	`\fcdice`

`\Cube` and `\epsdice` restrict the range to the numbers one to six. `\fcdice` generates for larger numbers several dice faces with the sum matching the number. The implementation for the PDF strings follows `\fcdice`.

```
\def\HyPsd@DieFace#1{%
  \ifHy@unicode
    \ifnum#1<1 %
      \HyPsd@UnicodeReplacementCharacter
    \else
      \ifnum#1>6 %
        \9046\205%
        \expandafter\expandafter\expandafter
        \HyPsd@DieFaceLarge\intcalcSub{#1}{6}!%
      \else
        \9046\20\intcalcDec{#1}%
      \fi
```

```
    \fi
  \else
    .% Die faces are not part of PDFDocEncoding
  \fi
}
```

\HyPsd@DieFaceLarge

```
\def\HyPsd@DieFaceLarge#1!{%
  \ifnum#1>6 %
    \expandafter\ltx@firstoftwo
  \else
    \expandafter\ltx@secondoftwo
  \fi
  {%
    \9046\205%
    \expandafter\expandafter\expandafter
    \HyPsd@DieFaceLarge\IntCalcSub#1!6!!%
  }{%
    \9046\20\IntCalcDec#1!%
  }%
}
```

6.6.11 Support for moon phases of package china2e

```
\def\HyPsd@MoonPha#1{%
  \ifcase\intcalcNum{#1} %
    \HyPsd@UnicodeReplacementCharacter
  \or % 1
% U+1F31A NEW MOON WITH FACE; \MoonPha{1} (china2e)
    \9330\074\9337\032%
  \or % 2
    \HyPsd@UnicodeReplacementCharacter
  \or % 3
% U+1F31D FULL MOON WITH FACE; \MoonPha{3} (china2e)
    \9330\074\9337\035%
  \or % 4
% U+1F31C LAST QUARTER MOON WITH FACE; \MoonPha{4} (china2e)
    \9330\074\9337\034%
  \else
    \HyPsd@UnicodeReplacementCharacter
  \fi
}
%* \HyPsd@MoonPha -> \MoonPha
```

6.6.12 Support for package pifont

\HyPsd@ding

```
\def\HyPsd@ding#1{%
  \ifHy@unicode
    \ifnum#1<32 %
      \HyPsd@UnicodeReplacementCharacter
    \else
      \ifnum#1>254 %
        \HyPsd@UnicodeReplacementCharacter
      \else
        \ifnum#1<127 %
          \expandafter\expandafter\expandafter
          \HyPsd@@ding\intcalcNum{#1}!%
```

```
      \else
        \ifnum#1>160 %
          \expandafter\expandafter\expandafter
          \HyPsd@@ding\intcalcNum{#1}!%
        \else
          \HyPsd@UnicodeReplacementCharacter
        \fi
      \fi
    \fi
  \fi
 \else
   .% Dingbats are not part of PDFDocEncoding
 \fi
}
```

\HyPsd@@ding

```
\def\HyPsd@@ding#1!{%
 \ltx@ifundefined{HyPsd@ding@#1}{%
  \ifnum#1<127 %
   \9047%
   \HyPsd@DecimalToOctalSecond{\IntCalcSub#1!32!}%
  \else
   \ifnum#1<168 %
    \9047\14\IntCalcSub#1!160!%
   \else
    \ifnum#1>181 %
     \9047\HyPsd@DecimalToOctalSecond{\IntCalcSub#1!64!}%
    \else
     % 172..181 -> U+2460..U+2469
     \9044\HyPsd@DecimalToOctalSecond{\IntCalcSub#1!76!}%
    \fi
   \fi
  \fi
 }{%
  \csname HyPsd@ding@#1\endcsname
 }%
}

\@namedef{HyPsd@ding@32}{\space}
% U+260E BLACK TELEPHONE
\@namedef{HyPsd@ding@37}{\9046\016}% U+260E
% U+261B BLACK RIGHT POINTING INDEX
\@namedef{HyPsd@ding@42}{\9046\033}% U+261B
% U+261E WHITE RIGHT POINTING INDEX
\@namedef{HyPsd@ding@43}{\9046\036}% U+261E
% U+2605 BLACK STAR
\@namedef{HyPsd@ding@72}{\9046\005}% U+2605
% U+25CF BLACK CIRCLE
\@namedef{HyPsd@ding@108}{\9045\317}% U+25CF
% U+25A0 BLACK SQUARE
\@namedef{HyPsd@ding@110}{\9045\240}% U+25A0
% U+25B2 BLACK UP-POINTING TRIANGLE
\@namedef{HyPsd@ding@115}{\9045\262}% U+25B2
% U+25BC BLACK DOWN-POINTING TRIANGLE
\@namedef{HyPsd@ding@116}{\9045\274}% U+25BC
% U+25C6 BLACK DIAMOND
\@namedef{HyPsd@ding@117}{\9045\306}% U+25C6
% U+25D7 RIGHT HALF BLACK CIRCLE
```

```
\@namedef{HyPsd@ding@119}{\9045\327}% U+25D7
\@namedef{HyPsd@ding@168}{\textclubsuitblack}%
\@namedef{HyPsd@ding@169}{\textdiamondsuitblack}%
\@namedef{HyPsd@ding@170}{\textheartsuitblack}%
\@namedef{HyPsd@ding@171}{\textspadesuitblack}%
\@namedef{HyPsd@ding@213}{\textrightarrow}%
\@namedef{HyPsd@ding@214}{\textleftrightarrow}%
\@namedef{HyPsd@ding@215}{\textupdownarrow}%
\@namedef{HyPsd@ding@240}{\HyPsd@UnicodeReplacementCharacter}
```

7 Support of other packages

7.1 Class memoir

```
\@ifclassloaded{memoir}{%
  \Hy@AtEndOfPackage{\RequirePackage{memhfixc}}%
}{}
```

7.2 Package subfigure

Added fix for version 2.1. Here `\sub@label` is defined.

```
\@ifpackageloaded{subfigure}{%
  \ltx@IfUndefined{sub@label}{%
    \Hy@hypertexnamesfalse
  }{%
    \renewcommand*{\sub@label}[1]{%
      \@bsphack
      \subfig@oldlabel{#1}%
      \if@filesw
        \begingroup
          \edef\@currentlabstr{%
            \expandafter\strip@prefix\meaning\@currentlabelname
          }%
          \protected@write\@auxout{}{%
            \string\newlabel{sub@#1}{%
              {\@nameuse{@@thesub\@captype}}%
              {\thepage}%
              {%
                \expandafter\strip@period\@currentlabstr
                \relax.\relax\@@@%
              }%
              {\@currentHref}%
              {}%
            }%
          }%
        \endgroup
      \fi
      \@esphack
    }%
    \@ifpackagelater{subfigure}{2002/03/26}{}{%
      \providecommand*{\toclevel@subfigure}{1}%
      \providecommand*{\toclevel@subtable}{1}%
    }%
  }%
}{}
```

7.3 Package xr and xr-hyper

The beta version of xr that supports \XR@addURL is called xr-hyper. Therefore we test for the macro itself and not for the package name:

```
\ltx@IfUndefined{XR@addURL}{%
}{%
```

If reading external aux files check whether they have a non zero fourth field in \newlabel and if so, add the URL as the fifth field.

```
  \def\XR@addURL#1{\XR@@dURL#1{}{}{}{}\\}%
  \def\XR@@dURL#1#2#3#4#5\\{%
    {#1}{#2}%
    \if!#4!%
    \else
      {#3}{#4}{\XR@URL}%
    \fi
  }%
}
\def\Hy@true{true}
\def\Hy@false{false}
```

Providing dummy definitions.

```
\let\literalps@out\@gobble
\newcommand\pdfbookmark[3][]{}
\def\Acrobatmenu#1#2{\leavevmode#2}
\def\Hy@writebookmark#1#2#3#4#5{}%
```

8 Help macros for links

Anchors get created on the baseline of where they occur. If an XYZ PDF view is set, this means that the link places the top of the screen *on the baseline* of the target. If this is an equation, for instance, it means that you cannot see anything. Some links, of course, are created at the start of environments, and so it works. To allow for this, anchors are raised, where possible, by some small amount. This defaults to \baselineskip, but users can set it to something else in two ways (thanks to Heiko Oberdiek for suggesting this):

1. Redefine \HyperRaiseLinkDefault to be eg the height of a \strut
2. Redefine \HyperRaiseLinkHook to do something complicated; it must give a value to \HyperRaiseLinkLength, which is what actually gets used

```
\let\HyperRaiseLinkHook\@empty
\def\HyperRaiseLinkDefault{\baselineskip}
```

\HyperRaiseLinkHook allows the user to reassign \HyperRaiseLinkLength.

```
\newcount\Hy@SavedSpaceFactor
\def\Hy@SaveSpaceFactor{%
  \global\Hy@SavedSpaceFactor=\ifhmode\spacefactor\else\z@\fi
}
\def\Hy@RestoreSpaceFactor{%
  \relax
  \ifhmode
    \ifnum\Hy@SavedSpaceFactor>\z@
      \spacefactor=\Hy@SavedSpaceFactor
    \fi
  \fi
```

```
}
\def\Hy@SaveSavedSpaceFactor{%
  \edef\Hy@RestoreSavedSpaceFactor{%
    \global\Hy@SavedSpaceFactor=\the\Hy@SavedSpaceFactor\relax
  }%
}
\def\Hy@raisedlink#1{%
  \ifvmode
    #1%
  \else
    \Hy@SaveSpaceFactor
    \penalty\@M
    \smash{%
      \begingroup
        \let\HyperRaiseLinkLength\@tempdima
        \setlength\HyperRaiseLinkLength\HyperRaiseLinkDefault
        \HyperRaiseLinkHook
      \expandafter\endgroup
      \expandafter\raise\the\HyperRaiseLinkLength\hbox{%
        \Hy@RestoreSpaceFactor
        #1%
        \Hy@SaveSpaceFactor
      }%
    }%
    \Hy@RestoreSpaceFactor
  \fi
}
```

\Hy@SaveLastskip
\Hy@RestoreLastskip

Inserting a \special command to set a destination destroys the \lastskip value.

```
\def\Hy@SaveLastskip{%
  \let\Hy@RestoreLastskip\relax
  \ifvmode
    \ifdim\lastskip=\z@
      \let\Hy@RestoreLastskip\nobreak
    \else
      \begingroup
        \skip@=-\lastskip
        \edef\x{%
          \endgroup
          \def\noexpand\Hy@RestoreLastskip{%
            \noexpand\ifvmode
              \noexpand\nobreak
              \vskip\the\skip@
              \vskip\the\lastskip\relax
            \noexpand\fi
          }%
        }%
      \x
    \fi
  \else
    \ifhmode
      \ifdim\lastskip=\z@
        \let\Hy@RestoreLastskip\nobreak
      \else
        \begingroup
          \skip@=-\lastskip
          \edef\x{%
```

```
          \endgroup
          \def\noexpand\Hy@RestoreLastskip{%
            \noexpand\ifhmode
              \noexpand\nobreak
              \hskip\the\skip@
              \hskip\the\lastskip\relax
            \noexpand\fi
          }%
        }%
      \x
    \fi
  \fi
 \fi
}%
```

9 Options

```
\SetupKeyvalOptions{%
  family=Hyp,%
  prefix=HyOpt%
}
```

9.1 Help macros

\IfHyperBooleanExists

```
\def\IfHyperBooleanExists#1{%
  \ltx@ifundefined{Hy@#1false}\ltx@secondoftwo{%
    \ltx@ifundefined{KV@Hyp@#1@default}\ltx@secondoftwo\ltx@firstoftwo
  }%
}

\@namedef{KV@Hyp@stoppedearly@default}{}
```

\IfHyperBoolean

```
\def\IfHyperBoolean#1{%
  \IfHyperBooleanExists{#1}{%
    \csname ifHy@#1\endcsname
      \expandafter\ltx@firstoftwo
    \else
      \expandafter\ltx@secondoftwo
    \fi
  }\ltx@secondoftwo
}
```

\Hy@boolkey

```
\def\Hy@boolkey#1#2{%
  \edef\Hy@tempa{#2}%
  \lowercase\expandafter{%
    \expandafter\def\expandafter\Hy@tempa\expandafter{\Hy@tempa}%
  }%
  \ifx\Hy@tempa\@empty
    \let\Hy@tempa\Hy@true
  \fi
  \ifx\Hy@tempa\Hy@true
  \else
    \ifx\Hy@tempa\Hy@false
    \else
```

```
    \let\Hy@tempa\relax
   \fi
  \fi
  \ifx\Hy@tempa\relax
   \Hy@WarnOptionValue{#2}{#1}{`true' or 'false'}%
  \else
   \Hy@Info{Option `#1' set `\Hy@tempa'}%
   \csname Hy@#1\Hy@tempa\endcsname
  \fi
}
```

\Hy@WarnOptionValue

```
\def\Hy@WarnOptionValue#1#2#3{%
  \Hy@Warning{%
   Unexpected value `#1'\MessageBreak
   of option `#2' instead of\MessageBreak
   #3%
  }%
}
```

\Hy@DisableOption

```
\def\Hy@DisableOption#1{%
  \ltx@ifundefined{KV@Hyp@#1@default}{%
   \define@key{Hyp}{#1}%
  }{%
   \define@key{Hyp}{#1}[]%
  }%
  {\Hy@WarnOptionDisabled{#1}}%
}
```

\Hy@WarnOptionDisabled

```
\def\Hy@WarnOptionDisabled#1{%
  \Hy@Warning{%
   Option `#1' has already been used,\MessageBreak
   setting the option has no effect%
  }%
}
```

\Hy@CheckOptionValue Some options take a string value out of a limited set of values. Macro \Hy@CheckOptionValue checks whether the given value #1 for option #2 is a member of the value list #3.

```
\def\Hy@CheckOptionValue#1#2#3{%
  \begingroup
   \edef\x{#1}%
   \@onelevel@sanitize\x
   \let\y=y%
   \def\do##1##2{%
    \def\z{##1}%
    \@onelevel@sanitize\z
    \ifx\x\z
     \let\y=n%
     \let\do\@gobbletwo
    \fi
   }%
   #3%
   \ifx\y y%
    \def\do##1##2{%
```

```
      * `##1'%
      \ifx\\##2\\\else\space(##2)\fi
      \MessageBreak
    }%
    \Hy@Warning{%
      Values of option `#2':\MessageBreak
      #3%
      * An empty value disables the option.\MessageBreak
      Unknown value `\x'%
    }%
  \fi
 \endgroup
}
```

\Hy@DefNameKey

#1: option name
#2: \do list with known values, first argument of \do is value, second argument is a comment.

```
\def\Hy@DefNameKey#1{%
 \expandafter\Hy@@DefNameKey\csname @#1\endcsname{#1}%
}
```

\Hy@@DefNameKey

#1: macro for value storage
#2: option name
#3: \do list with known values.

```
\def\Hy@@DefNameKey#1#2#3{%
 \define@key{Hyp}{#2}{%
  \edef#1{##1}%
  \ifx#1\@empty
  \else
   \Hy@CheckOptionValue{##1}{#2}{#3}%
  \fi
 }%
 \let#1\@empty
}
```

\Hy@UseNameKey

```
\def\Hy@UseNameKey#1#2{%
 \ifx#2\@empty
 \else
  /#1/#2%
 \fi
}
```

9.2 Defining the options

```
\define@key{Hyp}{implicit}[true]{%
 \Hy@boolkey{implicit}{#1}%
}
\define@key{Hyp}{draft}[true]{%
 \Hy@boolkey{draft}{#1}%
}
\define@key{Hyp}{final}[true]{%
 \Hy@boolkey{final}{#1}%
}
\let\KV@Hyp@nolinks\KV@Hyp@draft
\def\Hy@ObsoletePaperOption#1{%
```

```
  \Hy@WarningNoLine{%
    Option `#1' is no longer used%
  }%
  \define@key{Hyp}{#1}[true]{}%
}
\def\Hy@temp#1{%
  \define@key{Hyp}{#1}[true]{%
    \Hy@ObsoletePaperOption{#1}%
  }%
}
\Hy@temp{a4paper}
\Hy@temp{a5paper}
\Hy@temp{b5paper}
\Hy@temp{letterpaper}
\Hy@temp{legalpaper}
\Hy@temp{executivepaper}
\define@key{Hyp}{setpagesize}[true]{%
  \Hy@boolkey{setpagesize}{#1}%
}
\define@key{Hyp}{debug}[true]{%
  \Hy@boolkey{debug}{#1}%
}
\define@key{Hyp}{linktocpage}[true]{%
  \Hy@boolkey{linktocpage}{#1}%
  \ifHy@linktocpage
    \let\Hy@linktoc\Hy@linktoc@page
  \else
    \let\Hy@linktoc\Hy@linktoc@section
  \fi
}
\chardef\Hy@linktoc@none=0 %
\chardef\Hy@linktoc@section=1 %
\chardef\Hy@linktoc@page=2 %
\chardef\Hy@linktoc@all=3 %
\ifHy@linktocpage
  \let\Hy@linktoc\Hy@linktoc@page
\else
  \let\Hy@linktoc\Hy@linktoc@section
\fi
\define@key{Hyp}{linktoc}{%
  \@ifundefined{Hy@linktoc@#1}{%
    \Hy@Warning{%
      Unexpected value `#1' of\MessageBreak
      option `linktoc' instead of `none',\MessageBreak
      `section', `page' or `all'%
    }%
  }{%
    \expandafter\let\expandafter\Hy@linktoc
    \csname Hy@linktoc@#1\endcsname
  }%
}
\define@key{Hyp}{extension}{\def\XR@ext{#1}}
\let\XR@ext\relax
\define@key{Hyp}{verbose}[true]{%
  \Hy@boolkey{verbose}{#1}%
}
\define@key{Hyp}{typexml}[true]{%
```

```
  \Hy@boolkey{typexml}{#1}%
}
```

If we are going to PDF via HyperTeX `\special` commands, the dvips (-z option) processor does not know the *height* of a link, as it works solely on the position of the closing `\special`. If we use this option, the `\special` is raised up by the right amount, to fool the dvi processor.

```
\define@key{Hyp}{raiselinks}[true]{%
  \Hy@boolkey{raiselinks}{#1}%
}
```

Most PDF-creating drivers do not allow links to be broken

```
\def\Hy@setbreaklinks#1{%
  \csname breaklinks#1\endcsname
}
\def\Hy@breaklinks@unsupported{%
  \ifx\Hy@setbreaklinks\@gobble
    \ifHy@breaklinks
      \Hy@WarningNoLine{%
        You have enabled option `breaklinks'.\MessageBreak
        But driver `\Hy@driver.def' does not suppport this.\MessageBreak
        Expect trouble with the link areas of broken links%
      }%
    \fi
  \fi
}
\define@key{Hyp}{breaklinks}[true]{%
  \Hy@boolkey{breaklinks}{#1}%
  \let\Hy@setbreaklinks\@gobble
}
\define@key{Hyp}{localanchorname}[true]{%
  \Hy@boolkey{localanchorname}{#1}%
}
```

Determines whether an automatic anchor is put on each page

```
\define@key{Hyp}{pageanchor}[true]{%
  \Hy@boolkey{pageanchor}{#1}%
}
```

Are the page links done as plain arabic numbers, or do they follow the formatting of the package? The latter loses if you put in typesetting like `\textbf` or the like.

```
\define@key{Hyp}{plainpages}[true]{%
  \Hy@boolkey{plainpages}{#1}%
}
```

Are the names for anchors made as per the HyperTeX system, or do they simply use what LaTeX provides?

```
\define@key{Hyp}{naturalnames}[true]{%
  \Hy@boolkey{naturalnames}{#1}%
}
```

Completely ignore the names as per the HyperTeX system, and use unique counters.

```
\define@key{Hyp}{hypertexnames}[true]{%
  \Hy@boolkey{hypertexnames}{#1}%
}
```

Currently, `dvips` doesn't allow anchors nested within targets, so this option tries to stop that happening. Other processors may be able to cope.

```
\define@key{Hyp}{nesting}[true]{%
```

```
  \Hy@boolkey{nesting}{#1}%
}
\define@key{Hyp}{destlabel}[true]{%
  \Hy@boolkey{destlabel}{#1}%
}
\define@key{Hyp}{unicode}[true]{%
  \Hy@boolkey{unicode}{#1}%
  \ifHy@unicode
    \def\HyPsd@pdfencoding{unicode}%
    \HyPsd@LoadUnicode
  \else
    \def\HyPsd@pdfencoding{pdfdoc}%
  \fi
}
\Hy@AtBeginDocument{%
  \ifx\HyPsd@LoadUnicode\relax
  \else
    \def\HyPsd@LoadUnicode{%
      \Hy@Error{%
        Unicode support for bookmarks is not available.\MessageBreak
        Activate unicode support by using one of the options\MessageBreak
        `unicode', `pdfencoding=unicode', `pdfencoding=auto'\MessageBreak
        in the preamble%
      }\@ehc
      \global\let\HyPsd@LoadUnicode\relax
      \global\Hy@unicodefalse
      \global\let\Hy@unicodetrue\Hy@unicodefalse
    }%
  \fi
}
\define@key{Hyp}{pdfencoding}{%
  \edef\HyPsd@temp{#1}%
  \ifx\HyPsd@temp\HyPsd@pdfencoding@pdfdoc
    \let\HyPsd@pdfencoding\HyPsd@temp
    \Hy@unicodefalse
  \else
    \ifcase\ifx\HyPsd@temp\HyPsd@pdfencoding@unicode
            \z@
          \else
            \ifx\HyPsd@temp\HyPsd@pdfencoding@auto
              \z@
            \else
              \@ne
            \fi
          \fi
      \let\HyPsd@pdfencoding\HyPsd@temp
      \hypersetup{unicode}%
      \ifHy@unicode
        \def\HyPsd@pdfencoding{#1}%
        \ifx\HyPsd@pdfencoding\HyPsd@pdfencoding@auto
          \HyPsd@LoadStringEnc
        \fi
      \else
        \Hy@Warning{Cannot switch to unicode bookmarks}%
        \let\HyPsd@pdfencoding\HyPsd@pdfencoding@pdfdoc
      \fi
    \else
```

```
      \@onelevel@sanitize\HyPsd@temp
      \Hy@Warning{%
        Values of option `pdfencoding':\MessageBreak
        `pdfdoc', `unicode', `auto'.\MessageBreak
        Ignoring unknown value `\HyPsd@temp'%
      }%
    \fi
  \fi
}
\def\HyPsd@pdfencoding@auto{auto}
\def\HyPsd@pdfencoding@pdfdoc{pdfdoc}
\def\HyPsd@pdfencoding@unicode{unicode}
\let\HyPsd@pdfencoding\Hy@pdfencoding@pdfdoc
\def\HyPsd@LoadStringEnc{%
  \RequirePackage{stringenc}[2009/12/15]%
  \let\HyPsd@LoadStringEnc\relax
}
\Hy@AtBeginDocument{%
  \@ifpackageloaded{stringenc}{%
    \let\HyPsd@LoadStringEnc\relax
  }{%
    \def\HyPsd@LoadStringEnc{%
      \Hy@WarningNoLine{%
        Missing package `stringenc'. Use `pdfencoding=auto'\MessageBreak
        in the preamble or load the package there%
      }%
    }%
  }%
}
\define@key{Hyp}{psdextra}[true]{%
  \Hy@boolkey{psdextra}{#1}%
  \HyPsd@LoadExtra
}
\def\hypersetup{\kvsetkeys{Hyp}}
\newif\ifHy@setpdfversion
\define@key{Hyp}{pdfversion}{%
  \@ifundefined{Hy@pdfversion@#1}{%
    \PackageWarning{hyperref}{%
      Unsupported PDF version `#1'.\MessageBreak
      Valid values: 1.2 until 1.9%
    }%
  }{%
    \Hy@setpdfversiontrue
    \edef\Hy@pdfversion{\@nameuse{Hy@pdfversion@#1}}%
  }%
}
\@namedef{Hy@pdfversion@1.2}{2}%
\@namedef{Hy@pdfversion@1.3}{3}%
\@namedef{Hy@pdfversion@1.4}{4}%
\@namedef{Hy@pdfversion@1.5}{5}%
\@namedef{Hy@pdfversion@1.6}{6}%
\@namedef{Hy@pdfversion@1.7}{7}%
\@namedef{Hy@pdfversion@1.8}{8}%
\@namedef{Hy@pdfversion@1.9}{9}%
\def\Hy@pdfversion{5}
```

10 Options for different drivers

```
\newif\ifHy@DviMode
\let\Hy@DviErrMsg\ltx@empty
\ifpdf
  \def\Hy@DviErrMsg{pdfTeX or LuaTeX is running in PDF mode}%
\else
  \ifxetex
    \def\Hy@DviErrMsg{XeTeX is running}%
  \else
    \ifvtex
      \ifvtexdvi
        \Hy@DviModetrue
      \else
        \def\Hy@DviErrMsg{VTeX is running, but not in DVI mode}%
      \fi
    \else
      \Hy@DviModetrue
    \fi
  \fi
\fi
\def\HyOpt@CheckDvi#1{%
  \ifHy@DviMode
    \expandafter\ltx@firstofone
  \else
    \Hy@Error{%
      Wrong DVI mode driver option `#1',\MessageBreak
      because \Hy@DviErrMsg
    }\@ehc
    \expandafter\ltx@gobble
  \fi
}
\DeclareVoidOption{tex4ht}{%
  \Hy@texhttrue
  \kvsetkeys{Hyp}{colorlinks=true}%
  \def\BeforeTeXIVht{\RequirePackage{color}}%
  \def\Hy@driver{htex4ht}%
  \def\MaybeStopEarly{%
    \Hy@Message{Stopped early}%
    \Hy@AtBeginDocument{%
      \PDF@FinishDoc
      \gdef\PDF@FinishDoc{}%
    }%
    \endinput
  }%
}
\DeclareVoidOption{pdftex}{%
  \ifpdf
    \def\Hy@driver{hpdftex}%
    \PassOptionsToPackage{pdftex}{color}%
  \else
    \Hy@Error{%
      Wrong driver option `pdftex',\MessageBreak
      because pdfTeX in PDF mode is not detected%
    }\@ehc
  \fi
}
```

```
\DeclareVoidOption{luatex}{%
  \ifpdf
    \ifx\pdfextension\@undefined
      \def\Hy@driver{hpdftex}%
      \PassOptionsToPackage{pdftex}{color}%
    \else
      \def\Hy@driver{hluatex}%
      \PassOptionsToPackage{luatex}{color}%
    \fi
  \else
    \Hy@Error{%
      Wrong driver option `luatex',\MessageBreak
      because luaTeX in PDF mode is not detected%
    }\@ehc
  \fi
}
\DeclareVoidOption{nativepdf}{%
  \HyOpt@CheckDvi{nativepdf}{%
    \def\Hy@driver{hdvips}%
    \PassOptionsToPackage{dvips}{color}%
  }%
}
\DeclareVoidOption{dvipdfm}{%
  \HyOpt@CheckDvi{dvipdfm}{%
    \def\Hy@driver{hdvipdfm}%
  }%
}
\DeclareVoidOption{dvipdfmx}{%
  \HyOpt@CheckDvi{dvipdfmx}{%
    \def\Hy@driver{hdvipdfm}%
    \PassOptionsToPackage{dvipdfmx}{color}%
  }%
}
\define@key{Hyp}{dvipdfmx-outline-open}[true]{%
  \expandafter\ifx\csname if#1\expandafter\endcsname
                \csname iftrue\endcsname
    \chardef\SpecialDvipdfmxOutlineOpen\@ne
  \else
    \chardef\SpecialDvipdfmxOutlineOpen\z@
  \fi
}
\DeclareVoidOption{xetex}{%
  \ifxetex
    \def\Hy@driver{hxetex}%
  \else
    \Hy@Error{%
      Wrong driver option `xetex',\MessageBreak
      because XeTeX is not detected%
    }\@ehc
  \fi
}
\DeclareVoidOption{pdfmark}{%
  \HyOpt@CheckDvi{pdfmark}{%
    \def\Hy@driver{hdvips}%
  }%
}
\DeclareVoidOption{dvips}{%
```

```
  \HyOpt@CheckDvi{dvips}{%
    \def\Hy@driver{hdvips}%
    \PassOptionsToPackage{dvips}{color}%
  }%
}
\DeclareVoidOption{hypertex}{%
  \HyOpt@CheckDvi{hypertex}{%
    \def\Hy@driver{hypertex}%
  }%
}
\let\Hy@MaybeStopNow\relax
\DeclareVoidOption{vtex}{%
  \ifvtex
    \ifnum 0\ifnum\OpMode<1 1\fi \ifnum\OpMode>3 1\fi =0 %
      \def\Hy@driver{hvtex}%
    \else
      \ifnum\OpMode=10\relax
        \def\Hy@driver{hvtexhtm}%
        \def\MaybeStopEarly{%
          \Hy@Message{Stopped early}%
          \Hy@AtBeginDocument{%
            \PDF@FinishDoc
            \gdef\PDF@FinishDoc{}%
          }%
          \endinput
        }%
      \else
        \Hy@Error{%
          Wrong driver option `vtex',\MessageBreak
          because of wrong OpMode (\the\OpMode)%
        }\@ehc
      \fi
    \fi
  \else
    \Hy@Error{%
      Wrong driver option `vtex',\MessageBreak
      because VTeX is not running%
    }\@ehc
  \fi
}
\DeclareVoidOption{vtexpdfmark}{%
  \ifvtex
    \ifnum 0\ifnum\OpMode<1 1\fi \ifnum\OpMode>3 1\fi =0 %
      \def\Hy@driver{hvtexmrk}%
    \else
      \Hy@Error{%
        Wrong driver option `vtexpdfmark',\MessageBreak
        because of wrong OpMode (\the\OpMode)%
      }\@ehc
    \fi
  \else
    \Hy@Error{%
      Wrong driver option `vtexpdfmark,\MessageBreak
      because VTeX is not running%
    }\@ehc
  \fi
}
```

```
\DeclareVoidOption{dviwindo}{%
  \HyOpt@CheckDvi{dviwindo}{%
    \def\Hy@driver{hdviwind}%
    \kvsetkeys{Hyp}{colorlinks}%
    \PassOptionsToPackage{dviwindo}{color}%
  }%
}
\DeclareVoidOption{dvipsone}{%
  \HyOpt@CheckDvi{dvipsone}{%
    \def\Hy@driver{hdvipson}%
    \PassOptionsToPackage{dvipsone}{color}%
  }%
}
\DeclareVoidOption{textures}{%
  \HyOpt@CheckDvi{textures}{%
    \def\Hy@driver{htexture}%
  }%
}
\DeclareVoidOption{latex2html}{%
  \HyOpt@CheckDvi{latex2html}{%
    \Hy@AtBeginDocument{\@@latextohtmlX}%
  }%
}
```

No more special treatment for ps2pdf. Let it sink or swim.

```
\DeclareVoidOption{ps2pdf}{%
  \HyOpt@CheckDvi{ps2pdf}{%
    \def\Hy@driver{hdvips}%
    \PassOptionsToPackage{dvips}{color}%
  }%
}
\let\HyOpt@DriverFallback\ltx@empty
\define@key{Hyp}{driverfallback}{%
  \ifHy@DviMode
    \def\HyOpt@DriverFallback{#1}%
    \Hy@Match\HyOpt@DriverFallback{}{%
      ^(|dvipdfm|dvipdfmx|dvips|dvipsone|dviwindo|hypertex|ps2pdf|%
       latex2html|tex4ht)$%
    }{}{%
      \Hy@Warning{%
        Invalid driver `#1' for option\MessageBreak
        `driverfallback'%
      }%
      \let\HyOpt@DriverFallback\ltx@empty
    }%
  \fi
}
\let\HyOpt@CustomDriver\ltx@empty
\define@key{Hyp}{customdriver}{%
  \IfFileExists{#1.def}{%
    \def\HyOpt@CustomDriver{#1}%
  }{%
    \Hy@Warning{%
      Missing driver file `#1.def',\MessageBreak
      ignoring custom driver%
    }%
  }%
```

```
}
```

11 Options to add extra features

Make included figures (assuming they use the standard graphics package) be hypertext links. Off by default. Needs more work.

```
\define@key{Hyp}{hyperfigures}[true]{%
  \Hy@boolkey{hyperfigures}{#1}%
}
```

The automatic footnote linking can be disabled by option hyperfootnotes.

```
\define@key{Hyp}{hyperfootnotes}[true]{%
  \Hy@boolkey{hyperfootnotes}{#1}%
}
```

Set up back-referencing to be hyper links, by page, slide or section number,

```
\def\back@none{none}
\def\back@section{section}
\def\back@page{page}
\def\back@slide{slide}
\define@key{Hyp}{backref}[section]{%
  \lowercase{\def\Hy@tempa{#1}}%
  \ifx\Hy@tempa\@empty
    \let\Hy@tempa\back@section
  \fi
  \ifx\Hy@tempa\Hy@false
    \let\Hy@tempa\back@none
  \fi
  \ifx\Hy@tempa\back@slide
    \let\Hy@tempa\back@section
  \fi
  \ifx\Hy@tempa\back@page
    \PassOptionsToPackage{hyperpageref}{backref}%
    \Hy@backreftrue
  \else
    \ifx\Hy@tempa\back@section
      \PassOptionsToPackage{hyperref}{backref}%
      \Hy@backreftrue
    \else
      \ifx\Hy@tempa\back@none
        \Hy@backreffalse
      \else
        \Hy@WarnOptionValue{#1}{backref}{%
          `section', `slide', `page', `none',\MessageBreak
          or `false'}%
      \fi
    \fi
  \fi
}
\define@key{Hyp}{pagebackref}[true]{%
  \edef\Hy@tempa{#1}%
  \lowercase\expandafter{%
    \expandafter\def\expandafter\Hy@tempa\expandafter{\Hy@tempa}%
  }%
  \ifx\Hy@tempa\@empty
    \let\Hy@tempa\Hy@true
  \fi
  \ifx\Hy@tempa\Hy@true
```

```
    \PassOptionsToPackage{hyperpageref}{backref}%
    \Hy@backreftrue
  \else
    \ifx\Hy@tempa\Hy@false
      \Hy@backreffalse
    \else
      \Hy@WarnOptionValue{#1}{pagebackref}{`true' or `false'}%
    \fi
  \fi
}
```

Make index entries be links back to the relevant pages. By default this is turned on, but may be stopped.

```
\define@key{Hyp}{hyperindex}[true]{%
  \Hy@boolkey{hyperindex}{#1}%
}
```

Configuration of encap char.

```
\define@key{Hyp}{encap}[\|]{%
  \def\HyInd@EncapChar{#1}%
}
```

12 Language options

The **\autoref** feature depends on the language.

```
\def\HyLang@afrikaans{%
  \def\equationautorefname{Vergelyking}%
  \def\footnoteautorefname{Voetnota}%
  \def\itemautorefname{Item}%
  \def\figureautorefname{Figuur}%
  \def\tableautorefname{Tabel}%
  \def\partautorefname{Deel}%
  \def\appendixautorefname{Bylae}%
  \def\chapterautorefname{Hoofstuk}%
  \def\sectionautorefname{Afdeling}%
  \def\subsectionautorefname{Subafdeling}%
  \def\subsubsectionautorefname{Subsubafdeling}%
  \def\paragraphautorefname{Paragraaf}%
  \def\subparagraphautorefname{Subparagraaf}%
  \def\FancyVerbLineautorefname{Lyn}%
  \def\theoremautorefname{Teorema}%
  \def\pageautorefname{Bladsy}%
}
\def\HyLang@english{%
  \def\equationautorefname{Equation}%
  \def\footnoteautorefname{footnote}%
  \def\itemautorefname{item}%
  \def\figureautorefname{Figure}%
  \def\tableautorefname{Table}%
  \def\partautorefname{Part}%
  \def\appendixautorefname{Appendix}%
  \def\chapterautorefname{chapter}%
  \def\sectionautorefname{section}%
  \def\subsectionautorefname{subsection}%
  \def\subsubsectionautorefname{subsubsection}%
  \def\paragraphautorefname{paragraph}%
  \def\subparagraphautorefname{subparagraph}%
```

```
  \def\FancyVerbLineautorefname{line}%
  \def\theoremautorefname{Theorem}%
  \def\pageautorefname{page}%
}
\def\HyLang@french{%
  \def\equationautorefname{\'Equation}%
  \def\footnoteautorefname{note}%
  \def\itemautorefname{item}%
  \def\figureautorefname{Figure}%
  \def\tableautorefname{Tableau}%
  \def\partautorefname{Partie}%
  \def\appendixautorefname{Appendice}%
  \def\chapterautorefname{chapitre}%
  \def\sectionautorefname{section}%
  \def\subsectionautorefname{sous-section}%
  \def\subsubsectionautorefname{sous-sous-section}%
  \def\paragraphautorefname{paragraphe}%
  \def\subparagraphautorefname{sous-paragraphe}%
  \def\FancyVerbLineautorefname{ligne}%
  \def\theoremautorefname{Th\'eor\`eme}%
  \def\pageautorefname{page}%
}
\def\HyLang@german{%
  \def\equationautorefname{Gleichung}%
  \def\footnoteautorefname{Fu\ss note}%
  \def\itemautorefname{Punkt}%
  \def\figureautorefname{Abbildung}%
  \def\tableautorefname{Tabelle}%
  \def\partautorefname{Teil}%
  \def\appendixautorefname{Anhang}%
  \def\chapterautorefname{Kapitel}%
  \def\sectionautorefname{Abschnitt}%
  \def\subsectionautorefname{Unterabschnitt}%
  \def\subsubsectionautorefname{Unterunterabschnitt}%
  \def\paragraphautorefname{Absatz}%
  \def\subparagraphautorefname{Unterabsatz}%
  \def\FancyVerbLineautorefname{Zeile}%
  \def\theoremautorefname{Theorem}%
  \def\pageautorefname{Seite}%
}
\def\HyLang@italian{%
  \def\equationautorefname{Equazione}%
  \def\footnoteautorefname{nota}%
  \def\itemautorefname{punto}%
  \def\figureautorefname{Figura}%
  \def\tableautorefname{Tabella}%
  \def\partautorefname{Parte}%
  \def\appendixautorefname{Appendice}%
  \def\chapterautorefname{Capitolo}%
  \def\sectionautorefname{sezione}%
  \def\subsectionautorefname{sottosezione}%
  \def\subsubsectionautorefname{sottosottosezione}%
  \def\paragraphautorefname{paragrafo}%
  \def\subparagraphautorefname{sottoparagrafo}%
  \def\FancyVerbLineautorefname{linea}%
  \def\theoremautorefname{Teorema}%
  \def\pageautorefname{Pag.\@}%
```

```
}
\def\HyLang@magyar{%
  \def\equationautorefname{Egyenlet}%
  \def\footnoteautorefname{l\'abjegyzet}%
  \def\itemautorefname{Elem}%
  \def\figureautorefname{\'Abra}%
  \def\tableautorefname{T\'abl\'azat}%
  \def\partautorefname{R\'esz}%
  \def\appendixautorefname{F\"uggel\'ek}%
  \def\chapterautorefname{fejezet}%
  \def\sectionautorefname{szakasz}%
  \def\subsectionautorefname{alszakasz}%
  \def\subsubsectionautorefname{alalszakasz}%
  \def\paragraphautorefname{bekezd\'es}%
  \def\subparagraphautorefname{albekezd\'es}%
  \def\FancyVerbLineautorefname{sor}%
  \def\theoremautorefname{T\'etel}%
  \def\pageautorefname{oldal}%
}
\def\HyLang@portuges{%
  \def\equationautorefname{Equa\c c\~ao}%
  \def\footnoteautorefname{Nota de rodap\'e}%
  \def\itemautorefname{Item}%
  \def\figureautorefname{Figura}%
  \def\tableautorefname{Tabela}%
  \def\partautorefname{Parte}%
  \def\appendixautorefname{Ap\^endice}%
  \def\chapterautorefname{Cap\'itulo}%
  \def\sectionautorefname{Se\c c\~ao}%
  \def\subsectionautorefname{Subse\c c\~ao}%
  \def\subsubsectionautorefname{Subsubse\c c\~ao}%
  \def\paragraphautorefname{par\'agrafo}%
  \def\subparagraphautorefname{subpar\'agrafo}%
  \def\FancyVerbLineautorefname{linha}%
  \def\theoremautorefname{Teorema}%
  \def\pageautorefname{P\'agina}%
}
```

Next commented section for Russian is provided by Olga Lapko.

Next follow the checked reference names with commented variants and explanations. All they are abbreviated and they won't create a grammatical problems in the *middle* of sentences.

The most weak points in these abbreviations are the `\equationautorefname`, `\theoremautorefname` and the `\FancyVerbLineautorefname`. But those three, and also the `\footnoteautorefname` are not *too* often referenced. Another rather weak point is the `\appendixautorefname`.

```
\def\HyLang@russian{%
```

The abbreviated reference to the equation: it is not for "the good face of the book", but maybe it will be better to get the company for the `\theoremautorefname`?

```
  \def\equationautorefname{\cyr\cyrv\cyrery\cyrr.}%
```

The name of the equation reference has common form for both nominative and accusative but changes in other forms, like "of `\autoref{auto}`" etc. The full name must follow full name of the `\theoremautorefname`.

```
%  \def\equationautorefname{%
%    \cyr\cyrv\cyrery\cyrr\cyra\cyrzh\cyre\cyrn\cyri\cyre
%  }%
```

The variant of footnote has abbreviation form of the synonym of the word “footnote”. This variant of abbreviated synonym has alternative status (maybe obsolete?).

```
\def\footnoteautorefname{%
  \cyr\cyrp\cyro\cyrd\cyrs\cyrt\cyrr.\ \cyrp\cyrr\cyri\cyrm.%
}%
```

Commented form of the full synonym for “footnote”. It has common form for both nominative and accusative but changes in other forms, like “of `\autoref{auto}`”

```
% \def\footnoteautorefname{%
%   \cyr\cyrp\cyro\cyrd\cyrs\cyrt\cyrr\cyro\cyrch\cyrn\cyro\cyre\ %
%   \cyrp\cyrr\cyri\cyrm\cyre\cyrch\cyra\cyrn\cyri\cyre
% }%
```

Commented forms of the “footnote”: have different forms, the same is for the nominative and accusative. (The others needed?)

```
% \def\Nomfootnoteautorefname{\cyr\cyrs\cyrn\cyro\cyrs\cyrk\cyra}%
% \def\Accfootnoteautorefname{\cyr\cyrs\cyrn\cyro\cyrs\cyrk\cyru}%
```

Name of the list item, can be confused with the paragraph reference name, but reader could understand meaning from context(?). Commented variant has common form for both nominative and accusative but changes in other forms, like “of `\autoref{auto}`” etc.

```
\def\itemautorefname{\cyr\cyrp.}%
% \def\itemautorefname{\cyr\cyrp\cyru\cyrn\cyrk\cyrt}%
```

Names of the figure and table have stable (standard) abbreviation forms. No problem in the middle of sentence.

```
\def\figureautorefname{\cyr\cyrr\cyri\cyrs.}%
\def\tableautorefname{\cyr\cyrt\cyra\cyrb\cyrl.}%
```

Names of the part, chapter, section(s) have stable (standard) abbreviation forms. No problem in the middle of sentence.

```
\def\partautorefname{\cyr\cyrch.}%
\def\chapterautorefname{\cyr\cyrg\cyrl.}%
\def\sectionautorefname{\cyr\cyrr\cyra\cyrz\cyrd.}%
```

Name of the appendix can use this abbreviation, but it is not standard for books, i.e, not for “the good face of the book”. Commented variant has common form for both nominative and accusative but changes in other forms, like “of `\autoref{auto}`” etc.

```
\def\appendixautorefname{\cyr\cyrp\cyrr\cyri\cyrl.}%
% \def\appendixautorefname{%
%   \cyr\cyrp\cyrr\cyri\cyrl\cyro\cyrzh\cyre\cyrn\cyri\cyre
% }%
```

The sectioning command have stable (almost standard) and common abbreviation form for all levels (the meaning of these references visible from the section number). No problem.

```
\def\subsectionautorefname{\cyr\cyrr\cyra\cyrz\cyrd.}%
\def\subsubsectionautorefname{\cyr\cyrr\cyra\cyrz\cyrd.}%
```

The names of references to paragraphs also have stable (almost standard) and common abbreviation form for all levels (the meaning of these references is visible from the section number). No problem in the middle of sentence.

```
\def\paragraphautorefname{\cyr\cyrp.}%
\def\subparagraphautorefname{\cyr\cyrp.}%
```

Commented variant can be used in books but since it has common form for both nominative and accusative but it changes in other forms, like “of \autoref{auto}” etc.

```
% \def\paragraphautorefname{\cyr\cyrp\cyru\cyrn\cyrk\cyrt}%
% \def\subparagraphautorefname{\cyr\cyrp\cyru\cyrn\cyrk\cyrt}%
```

The name of verbatim line. Here could be a standard of the abbreviation (used very rare). But the author preprint publications (which have not any editor or corrector) can use this abbreviation for the page reference. So the meaning of the line reference can be read as reference to the page.

```
\def\FancyVerbLineautorefname{\cyr\cyrs\cyrt\cyrr.}%
```

Commented names of the “verbatim line”: have different forms, also the nominative and accusative.

```
% \def\NomFancyVerbLineautorefname{\cyr\cyrs\cyrt\cyrr\cyro\cyrk\cyra}%
% \def\AccFancyVerbLineautorefname{\cyr\cyrs\cyrt\cyrr\cyro\cyrk\cyru}%
```

The alternative, ve-e-e-ery professional abbreviation, was used in typography markup for typesetters.

```
% \def\FancyVerbLineautorefname{\cyr\cyrs\cyrt\cyrr\cyrk.}%
```

The names of theorem: if we want have “the good face of the book”, so the theorem reference must have the full name (like equation reference). But …

```
\def\theoremautorefname{\cyr\cyrt\cyre\cyro\cyrr.}%
```

Commented forms of the “theorem”: have different forms, also the nominative and accusative.

```
% \def\Nomtheoremautorefname{\cyr\cyrt\cyre\cyro\cyrr\cyre\cyrm\cyra}%
% \def\Acctheoremautorefname{\cyr\cyrt\cyre\cyro\cyrr\cyre\cyrm\cyru}%
```

Name of the page stable (standard) abbreviation form. No problem.

```
  \def\pageautorefname{\cyr\cyrs.}%
}
\def\HyLang@spanish{%
  \def\equationautorefname{Ecuaci\'on}%
  \def\footnoteautorefname{Nota a pie de p\'agina}%
  \def\itemautorefname{Elemento}%
  \def\figureautorefname{Figura}%
  \def\tableautorefname{Tabla}%
  \def\partautorefname{Parte}%
  \def\appendixautorefname{Ap\'endice}%
  \def\chapterautorefname{Cap\'itulo}%
  \def\sectionautorefname{Secci\'on}%
  \def\subsectionautorefname{Subsecci\'on}%
  \def\subsubsectionautorefname{Subsubsecci\'on}%
  \def\paragraphautorefname{P\'arrafo}%
  \def\subparagraphautorefname{Subp\'arrafo}%
  \def\FancyVerbLineautorefname{L\'inea}%
  \def\theoremautorefname{Teorema}%
  \def\pageautorefname{P\'agina}%
}
\def\HyLang@catalan{%
\def\equationautorefname{Equaci\'o}%
\def\footnoteautorefname{Nota al peu de p\`agina}%
\def\itemautorefname{Element}%
\def\figureautorefname{Figura}%
\def\tableautorefname{Taula}%
\def\partautorefname{Part}%
```

```
\def\appendixautorefname{Ap\`endix}%
\def\chapterautorefname{Cap\'itol}%
\def\sectionautorefname{Secci\'o}%
\def\subsectionautorefname{Subsecci\'o}%
\def\subsubsectionautorefname{Subsubsecci\'o}%
\def\paragraphautorefname{Par\`agraf}%
\def\subparagraphautorefname{Subpar\`agraf}%
\def\FancyVerbLineautorefname{L\'inia}%
\def\theoremautorefname{Teorema}%
\def\pageautorefname{P\`agina}%
}
\def\HyLang@vietnamese{%
  \def\equationautorefname{Ph\uhorn{}\ohorn{}ng tr\`inh}%
  \def\footnoteautorefname{Ch\'u th\'ich}%
  \def\itemautorefname{m\d{u}c}%
  \def\figureautorefname{H\`inh}%
  \def\tableautorefname{B\h{a}ng}%
  \def\partautorefname{Ph\`\acircumflex{}n}%
  \def\appendixautorefname{Ph\d{u} l\d{u}c}%
  \def\chapterautorefname{ch\uhorn{}\ohorn{}ng}%
  \def\sectionautorefname{m\d{u}c}%
  \def\subsectionautorefname{m\d{u}c}%
  \def\subsubsectionautorefname{m\d{u}c}%
  \def\paragraphautorefname{\dj{}o\d{a}n}%
  \def\subparagraphautorefname{\dj{}o\d{a}n}%
  \def\FancyVerbLineautorefname{d\`ong}%
  \def\theoremautorefname{\DJ{}\d{i}nh l\'y}%
  \def\pageautorefname{Trang}%
}
```

Instead of package babel's definition of `\addto` the implementation of package varioref is used. Additionally argument `#1` is checked for `\relax`.

```
\def\HyLang@addto#1#2{%
  #2%
  \@temptokena{#2}%
  \ifx#1\relax
    \let#1\@empty
  \fi
  \ifx#1\@undefined
    \edef#1{\the\@temptokena}%
  \else
    \toks@\expandafter{#1}%
    \edef#1{\the\toks@\the\@temptokena}%
  \fi
  \@temptokena{}\toks@\@temptokena
}
\def\HyLang@DeclareLang#1#2#3{%
  \@ifpackagewith{babel}{#1}{%
    \expandafter\HyLang@addto
        \csname extras#1\expandafter\endcsname
        \csname HyLang@#2\endcsname
    \begingroup
      \edef\x{\endgroup
        #3%
      }%
    \x
    \@namedef{HyLang@#1@done}{}%
```

```
  }{}%
  \begingroup
    \edef\x##1##2{%
      \noexpand\ifx##2\relax
        \errmessage{No definitions for language #2' found!}%
      \noexpand\fi
      \endgroup
      \noexpand\define@key{Hyp}{#1}[]{%
        \noexpand\@ifundefined{HyLang@#1@done}{%
          \noexpand\HyLang@addto{\noexpand##1}{\noexpand##2}%
          #3%
          \noexpand\@namedef{HyLang@#1@done}{}%
        }{}%
      }%
    }%
  \expandafter\x\csname extras#1\expandafter\endcsname
              \csname HyLang@#2\endcsname
}
\HyLang@DeclareLang{english}{english}{}
\HyLang@DeclareLang{UKenglish}{english}{}
\HyLang@DeclareLang{british}{english}{}
\HyLang@DeclareLang{USenglish}{english}{}
\HyLang@DeclareLang{american}{english}{}
\HyLang@DeclareLang{german}{german}{}
\HyLang@DeclareLang{austrian}{german}{}
\HyLang@DeclareLang{ngerman}{german}{}
\HyLang@DeclareLang{naustrian}{german}{}
\HyLang@DeclareLang{russian}{russian}{\noexpand\hypersetup{unicode}}
\HyLang@DeclareLang{brazil}{portuges}{}
\HyLang@DeclareLang{brazilian}{portuges}{}
\HyLang@DeclareLang{portuguese}{portuges}{}
\HyLang@DeclareLang{spanish}{spanish}{}
\HyLang@DeclareLang{catalan}{catalan}{}
\HyLang@DeclareLang{afrikaans}{afrikaans}{}
\HyLang@DeclareLang{french}{french}{}
\HyLang@DeclareLang{frenchb}{french}{}
\HyLang@DeclareLang{francais}{french}{}
\HyLang@DeclareLang{acadian}{french}{}
\HyLang@DeclareLang{canadien}{french}{}
\HyLang@DeclareLang{italian}{italian}{}
\HyLang@DeclareLang{magyar}{magyar}{}
\HyLang@DeclareLang{hungarian}{magyar}{}
```

More work is needed in case of options vietnamese and vietnam.

```
\DeclareVoidOption{vietnamese}{%
  \HyLang@addto\extrasvietnamese\HyLang@vietnamese
  \Hy@AtEndOfPackage{%
    \@ifundefined{T@PU}{}{%
      \input{puvnenc.def}%
    }%
  }%
}
\DeclareVoidOption{vietnam}{%
  \HyLang@addto\extrasvietnam\HyLang@vietnamese
  \Hy@AtEndOfPackage{%
    \@ifundefined{T@PU}{}{%
      \input{puvnenc.def}%
    }%
```

```
  }%
}
```

Similar for option `arabic` that just loads the additions to PU encoding for Arabi.

```
\DeclareVoidOption{arabic}{%
  \Hy@AtEndOfPackage{%
    \@ifundefined{T@PU}{}{%
      \input{puarenc.def}%
    }%
  }%
}
```

13 Options to change appearance of links

Colouring links at the LaTeX level is useful for debugging, perhaps.

```
\define@key{Hyp}{colorlinks}[true]{%
  \Hy@boolkey{colorlinks}{#1}%
}
\DeclareVoidOption{hidelinks}{%
  \Hy@colorlinksfalse
  \Hy@ocgcolorlinksfalse
  \Hy@frenchlinksfalse
  \def\Hy@colorlink##1{\begingroup}%
  \def\Hy@endcolorlink{\endgroup}%
  \def\@pdfborder{0 0 0}%
  \let\@pdfborderstyle\ltx@empty
}
\define@key{Hyp}{ocgcolorlinks}[true]{%
  \Hy@boolkey{ocgcolorlinks}{#1}%
}
\Hy@AtBeginDocument{%
  \begingroup
    \@ifundefined{OBJ@OCG@view}{%
      \ifHy@ocgcolorlinks
        \Hy@Warning{%
          Driver does not support `ocgcolorlinks',\MessageBreak
          using `colorlinks' instead%
        }%
      \fi
    }{}%
  \endgroup
}
\define@key{Hyp}{frenchlinks}[true]{%
  \Hy@boolkey{frenchlinks}{#1}%
}
```

14 Bookmarking

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname chapter\endcsname\relax
  \def\toclevel@part{0}%
\else
  \def\toclevel@part{-1}%
\fi
\def\toclevel@chapter{0}
\def\toclevel@section{1}
```

```
\def\toclevel@subsection{2}
\def\toclevel@subsubsection{3}
\def\toclevel@paragraph{4}
\def\toclevel@subparagraph{5}
\def\toclevel@figure{0}
\def\toclevel@table{0}
\@ifpackageloaded{listings}{%
  \providecommand*\theHlstlisting{\thelstlisting}%
  \providecommand*\toclevel@lstlisting{0}%
}{}
\@ifpackageloaded{listing}{%
  \providecommand*\theHlisting{\thelisting}%
  \providecommand*\toclevel@listing{0}%
}{}
```

```
\define@key{Hyp}{bookmarks}[true]{%
  \Hy@boolkey{bookmarks}{#1}%
}
```

```
\define@key{Hyp}{bookmarksopen}[true]{%
  \Hy@boolkey{bookmarksopen}{#1}%
}
```

The depth of the outlines is controlled by option `bookmarksdepth`. The option acts globally and distinguishes three cases:

- `bookmarksdepth`: Without value hyperref uses counter `tocdepth` (compatible behaviour and default).
- `bookmarksdepth=<number>`: the depth is set to `<number>`.
- `bookmarksdepth=<name>`: The `<name>` must not start with a number or minus sign. It is a document division name (part, chapter, section, ...). Internally the value of macro `\toclevel@<name>` is used.

```
\let\Hy@bookmarksdepth\c@tocdepth
\define@key{Hyp}{bookmarksdepth}[]{%
  \begingroup
    \edef\x{#1}%
    \ifx\x\empty
      \global\let\Hy@bookmarksdepth\c@tocdepth
    \else
      \@ifundefined{toclevel@\x}{%
        \@onelevel@sanitize\x
        \edef\y{\expandafter\@car\x\@nil}%
        \ifcase 0\expandafter\ifx\y-1\fi
                \expandafter\ifnum\expandafter`\y>47 %
                  \expandafter\ifnum\expandafter`\y<58 1\fi\fi\relax
          \Hy@Warning{Unknown document division name (\x)}%
        \else
          \setbox\z@=\hbox{%
            \count@=\x
            \xdef\Hy@bookmarksdepth{\the\count@}%
          }%
        \fi
      }{%
        \setbox\z@=\hbox{%
          \count@=\csname toclevel@\x\endcsname
          \xdef\Hy@bookmarksdepth{\the\count@}%
        }%
```

```
      }%
    \fi
  \endgroup
}
```

'bookmarksopenlevel' to specify the open level. From Heiko Oberdiek.

```
\define@key{Hyp}{bookmarksopenlevel}{%
  \def\@bookmarksopenlevel{#1}%
}
\def\@bookmarksopenlevel{\maxdimen}
% `bookmarkstype' to specify which `toc' file to mimic
\define@key{Hyp}{bookmarkstype}{%
  \def\Hy@bookmarkstype{#1}%
}
\def\Hy@bookmarkstype{toc}
```

Richard Curnow <richard@curnow.demon.co.uk> suggested this functionality. It adds section numbers etc to bookmarks.

```
\define@key{Hyp}{bookmarksnumbered}[true]{%
  \Hy@boolkey{bookmarksnumbered}{#1}%
}
```

Option CJKbookmarks enables the patch for CJK bookmarks.

```
\define@key{Hyp}{CJKbookmarks}[true]{%
  \Hy@boolkey{CJKbookmarks}{#1}%
}
\def\Hy@temp#1{%
  \expandafter\Hy@@temp\csname @#1color\endcsname{#1}%
}
\def\Hy@@temp#1#2#3{%
  \define@key{Hyp}{#2color}{%
    \HyColor@HyperrefColor{##1}#1%
  }%
  \def#1{#3}%
}
\Hy@temp{link}{red}
\Hy@temp{anchor}{black}
\Hy@temp{cite}{green}
\Hy@temp{file}{cyan}
\Hy@temp{url}{magenta}
\Hy@temp{menu}{red}
\Hy@temp{run}{\@filecolor}
\define@key{Hyp}{pagecolor}{%
  \Hy@WarningPageColor
}
\def\Hy@WarningPageColor{%
  \Hy@WarningNoLine{Option `pagecolor' is not available anymore}%
  \global\let\Hy@WarningPageColor\relax
}
\define@key{Hyp}{allcolors}{%
  \HyColor@HyperrefColor{#1}\@linkcolor
  \HyColor@HyperrefColor{#1}\@anchorcolor
  \HyColor@HyperrefColor{#1}\@citecolor
  \HyColor@HyperrefColor{#1}\@filecolor
  \HyColor@HyperrefColor{#1}\@urlcolor
  \HyColor@HyperrefColor{#1}\@menucolor
  \HyColor@HyperrefColor{#1}\@runcolor
}
```

```
\def\hyperbaseurl#1{\def\@baseurl{#1}}
\define@key{Hyp}{baseurl}{\hyperbaseurl{#1}}
\let\@baseurl\@empty
\def\hyperlinkfileprefix#1{\def\Hy@linkfileprefix{#1}}
\define@key{Hyp}{linkfileprefix}{\hyperlinkfileprefix{#1}}
\hyperlinkfileprefix{file:}
```

15 PDF-specific options

\@pdfpagetransition

The value of option pdfpagetransition is stored in \@pdfpagetransition. Its initial value is set to \relax in order to be able to differentiate between a not used option and an option with an empty value.

```
\let\@pdfpagetransition\relax
\define@key{Hyp}{pdfpagetransition}{%
  \def\@pdfpagetransition{#1}%
}
```

\@pdfpageduration

The value of option pdfpageduration is stored in \@pdfpageduration. Its initial value is set to \relax in order to be able to differentiate between a not used option and an option with an empty value.

```
\let\@pdfpageduration\relax
\define@key{Hyp}{pdfpageduration}{%
  \def\@pdfpageduration{#1}%
  \Hy@Match\@pdfpageduration{}{%
    ^(|[0-9]+\.?[0-9]*|[0-9]*\.?[0-9]+)$%
  }{}{%
    \Hy@Warning{%
      Invalid value `\@pdfpageduration'\MessageBreak
      of option `pdfpageduration'\MessageBreak
      is replaced by an empty value%
    }%
    \let\@pdfpageduration\ltx@empty
  }%
}
```

The entry for the /Hid key in the page object is only necessary, if it is used and set to true for at least one time. If it is always false, then the /Hid key is not written to the pdf page object in order not to enlarge the pdf file.

```
\newif\ifHy@useHidKey
\Hy@useHidKeyfalse
\define@key{Hyp}{pdfpagehidden}[true]{%
  \Hy@boolkey{pdfpagehidden}{#1}%
  \ifHy@pdfpagehidden
    \global\Hy@useHidKeytrue
  \fi
}
```

The value of the bordercolor options are not processed by the color package. Therefore the value consists of space separated rgb numbers in the range 0 until 1.

Package xcolor provides \XC@bordercolor since version 1.1. If the two spaces in the color specification are missing, then the value is processed as color specification from package xcolor by using \XC@bordercolor (since xcolor 2004/05/09 v1.11, versions 2005/03/24 v2.02 until 2006/11/28 v2.10 do not work because of a bug that is fixed in 2007/01/21 v2.11).

```
\def\Hy@ColorList{cite,file,link,menu,run,url}
\@for\Hy@temp:=\Hy@ColorList\do{%
  \edef\Hy@temp{%
    \noexpand\define@key{Hyp}{\Hy@temp bordercolor}{%
      \noexpand\HyColor@HyperrefBorderColor
         {##1}%
         \expandafter\noexpand\csname @\Hy@temp bordercolor\endcsname
         {hyperref}%
         {\Hy@temp bordercolor}%
    }%
  }%
  \Hy@temp
}
\define@key{Hyp}{pagebordercolor}{%
  \Hy@WarningPageBorderColor
}
\def\Hy@WarningPageBorderColor{%
  \Hy@WarningNoLine{Option `pagebordercolor' is not available anymore}%
  \global\let\Hy@WarningPageBorderColor\relax
}
\define@key{Hyp}{allbordercolors}{%
  \def\Hy@temp##1##2{%
    \HyColor@HyperrefBorderColor{#1}##1{hyperref}{##2bordercolor}%
  }%
  \Hy@temp\@citebordercolor{cite}%
  \Hy@temp\@filebordercolor{file}%
  \Hy@temp\@linkbordercolor{link}%
  \Hy@temp\@menubordercolor{menu}%
  \Hy@temp\@runbordercolor{run}%
  \Hy@temp\@urlbordercolor{url}%
}
\define@key{Hyp}{pdfhighlight}{\def\@pdfhighlight{#1}}
\Hy@DefNameKey{pdfhighlight}{%
  \do{/I}{Invert}%
  \do{/N}{None}%
  \do{/O}{Outline}%
  \do{/P}{Push}%
}
\def\Hy@setpdfhighlight{%
  \ifx\@pdfhighlight\@empty
  \else
    /H\@pdfhighlight
  \fi
}
\define@key{Hyp}{pdfborder}{%
  \let\Hy@temp\@pdfborder
  \def\@pdfborder{#1}%
  \Hy@Match\@pdfborder{}{%
    ^\HyPat@NonNegativeReal/ %
     \HyPat@NonNegativeReal/ %
     \HyPat@NonNegativeReal/%
     ( ?\[\HyPat@NonNegativeReal/( \HyPat@NonNegativeReal/)*])?$%
  }{}{%
    \Hy@Warning{%
      Invalid value `\@pdfborder'\MessageBreak
      for option `pdfborder'.\MessageBreak
      Option setting is ignored%
```

```
    }%
    \let\@pdfborder\Hy@temp
  }%
}
\define@key{Hyp}{pdfborderstyle}{%
  \let\Hy@temp\@pdfborderstyle
  \def\@pdfborderstyle{#1}%
  \Hy@Match\@pdfborderstyle{}{%
    ^%
    ( */Type */Border%
    | */W +\HyPat@NonNegativeReal/%
    | */S */[SDBIU]%
    | */D *\[ *(\HyPat@NonNegativeReal/( \HyPat@NonNegativeReal/)?)?]%
    )* *$%
  }{}{%
    \Hy@Warning{%
      Invalid value `\@pdfborderstyle'\MessageBreak
      for option `pdfborderstyle'.\MessageBreak
      Option setting is ignored%
    }%
    \let\@pdfborderstyle\Hy@temp
  }%
}
\def\Hy@setpdfborder{%
  \ifx\@pdfborder\@empty
  \else
    /Border[\@pdfborder]%
  \fi
  \ifx\@pdfborderstyle\@empty
  \else
    /BS<<\@pdfborderstyle>>%
  \fi
}
\Hy@DefNameKey{pdfpagemode}{%
  \do{UseNone}{}%
  \do{UseOutlines}{}%
  \do{UseThumbs}{}%
  \do{FullScreen}{}%
  \do{UseOC}{PDF 1.5}%
  \do{UseAttachments}{PDF 1.6}%
}
\Hy@DefNameKey{pdfnonfullscreenpagemode}{%
  \do{UseNone}{}%
  \do{UseOutlines}{}%
  \do{UseThumbs}{}%
  \do{FullScreen}{}%
  \do{UseOC}{PDF 1.5}%
  \do{UseAttachments}{PDF 1.6}%
}
\Hy@DefNameKey{pdfdirection}{%
  \do{L2R}{Left to right}%
  \do{R2L}{Right to left}%
}
\Hy@DefNameKey{pdfviewarea}{%
  \do{MediaBox}{}%
  \do{CropBox}{}%
  \do{BleedBox}{}%
```

```
  \do{TrimBox}{}%
  \do{ArtBox}{}%
}
\Hy@DefNameKey{pdfviewclip}{%
  \do{MediaBox}{}%
  \do{CropBox}{}%
  \do{BleedBox}{}%
  \do{TrimBox}{}%
  \do{ArtBox}{}%
}
\Hy@DefNameKey{pdfprintarea}{%
  \do{MediaBox}{}%
  \do{CropBox}{}%
  \do{BleedBox}{}%
  \do{TrimBox}{}%
  \do{ArtBox}{}%
}
\Hy@DefNameKey{pdfprintclip}{%
  \do{MediaBox}{}%
  \do{CropBox}{}%
  \do{BleedBox}{}%
  \do{TrimBox}{}%
  \do{ArtBox}{}%
}
\Hy@DefNameKey{pdfprintscaling}{%
  \do{AppDefault}{}%
  \do{None}{}%
}
\Hy@DefNameKey{pdfduplex}{%
  \do{Simplex}{}%
  \do{DuplexFlipShortEdge}{}%
  \do{DuplexFlipLongEdge}{}%
}
\Hy@DefNameKey{pdfpicktraybypdfsize}{%
  \do{true}{}%
  \do{false}{}%
}
\define@key{Hyp}{pdfprintpagerange}{%
  \def\@pdfprintpagerange{#1}%
}
\Hy@DefNameKey{pdfnumcopies}{%
  \do{2}{two copies}%
  \do{3}{three copies}%
  \do{4}{four copies}%
  \do{5}{five copies}%
}
\define@key{Hyp}{pdfusetitle}[true]{%
  \Hy@boolkey{pdfusetitle}{#1}%
}
\def\HyXeTeX@CheckUnicode{%
  \ifxetex
    \ifHy@unicode
    \else
      \Hy@WarningNoLine{%
        XeTeX driver only supports unicode.\MessageBreak
        Enabling option `unicode'%
      }%
```

```
      \kvsetkeys{Hyp}{unicode}%
    \fi
  \else
    \let\HyXeTeX@CheckUnicode\relax
  \fi
}
\def\HyPsd@PrerenderUnicode#1{%
  \begingroup
    \expandafter\ifx\csname PrerenderUnicode\endcsname\relax
    \else
      \sbox0{%
        \let\GenericInfo\@gobbletwo
        \let\GenericWarning\@gobbletwo
        \let\GenericError\@gobblefour
        \PrerenderUnicode{#1}%
       }%
    \fi
  \endgroup
}
\define@key{Hyp}{pdftitle}{%
  \HyXeTeX@CheckUnicode
  \HyPsd@XeTeXBigCharstrue
  \HyPsd@PrerenderUnicode{#1}%
  \pdfstringdef\@pdftitle{#1}%
}
\define@key{Hyp}{pdfauthor}{%
  \HyXeTeX@CheckUnicode
  \HyPsd@XeTeXBigCharstrue
  \HyPsd@PrerenderUnicode{#1}%
  \pdfstringdef\@pdfauthor{#1}%
}
\define@key{Hyp}{pdfproducer}{%
  \HyXeTeX@CheckUnicode
  \HyPsd@XeTeXBigCharstrue
  \HyPsd@PrerenderUnicode{#1}%
  \pdfstringdef\@pdfproducer{#1}%
  \ifxetex
    \Hy@Warning{%
      pdfproducer: %
      xdvipdfmx will use its own setting\MessageBreak
      instead of the value given%
    }%
  \else
    \def\Hy@temp{hdvipdfm}%
    \ifx\Hy@driver\Hy@temp
      \Hy@Warning{%
        pdfproducer: %
        dvipdfm(x) will use its own setting\MessageBreak
        instead of the value given%
      }%
    \fi
  \fi
}
\define@key{Hyp}{pdfcreator}{%
  \HyXeTeX@CheckUnicode
  \HyPsd@XeTeXBigCharstrue
  \HyPsd@PrerenderUnicode{#1}%
```

```
  \pdfstringdef\@pdfcreator{#1}%
}
\define@key{Hyp}{pdfcreationdate}{%
  \begingroup
    \Hy@unicodefalse
    \pdfstringdef\@pdfcreationdate{#1}%
  \endgroup
}
\define@key{Hyp}{pdfmoddate}{%
  \begingroup
    \Hy@unicodefalse
    \pdfstringdef\@pdfmoddate{#1}%
  \endgroup
}
\define@key{Hyp}{pdfsubject}{%
  \HyXeTeX@CheckUnicode
  \HyPsd@XeTeXBigCharstrue
  \HyPsd@PrerenderUnicode{#1}%
  \pdfstringdef\@pdfsubject{#1}%
}
\define@key{Hyp}{pdfkeywords}{%
  \HyXeTeX@CheckUnicode
  \HyPsd@XeTeXBigCharstrue
  \HyPsd@PrerenderUnicode{#1}%
  \pdfstringdef\@pdfkeywords{#1}%
}
\define@key{Hyp}{pdftrapped}{%
  \lowercase{\edef\Hy@temp{#1}}%
  \ifx\Hy@temp\HyInfo@trapped@true
    \def\@pdftrapped{True}%
  \else
    \ifx\Hy@temp\HyInfo@trapped@false
      \def\@pdftrapped{False}%
    \else
      \ifx\Hy@temp\HyInfo@trapped@unknown
        \def\@pdftrapped{Unknown}%
      \else
        \ifx\Hy@temp\@empty
        \else
          \Hy@Warning{%
            Unsupported value `#1'\MessageBreak
            for option `pdftrapped'%
          }%
        \fi
        \def\@pdftrapped{}%
      \fi
    \fi
  \fi
}
\def\HyInfo@trapped@true{true}
\def\HyInfo@trapped@false{false}
\def\HyInfo@trapped@unknown{unknown}
\def\HyInfo@TrappedUnsupported{%
  \ifx\@pdftrapped\@empty
  \else
    \Hy@WarningNoLine{`pdftrapped' is not supported by this driver}%
    \gdef\HyInfo@TrappedUnsupported{}%
```

```
  \fi
}
\define@key{Hyp}{pdfinfo}{%
  \kvsetkeys{pdfinfo}{#1}%
}
\def\Hy@temp#1{%
  \lowercase{\Hy@temp@A{#1}}{#1}%
}
\def\Hy@temp@A#1#2{%
  \define@key{pdfinfo}{#2}{%
    \hypersetup{pdf#1={##1}}%
  }%
}
\Hy@temp{Title}
\Hy@temp{Author}
\Hy@temp{Keywords}
\Hy@temp{Subject}
\Hy@temp{Creator}
\Hy@temp{Producer}
\Hy@temp{CreationDate}
\Hy@temp{ModDate}
\Hy@temp{Trapped}
\newif\ifHyInfo@AddonUnsupported
\kv@set@family@handler{pdfinfo}{%
  \HyInfo@AddonHandler{#1}{#2}%
}
\let\HyInfo@do\relax
\def\HyInfo@AddonHandler#1#2{%
  \ifx\kv@value\relax
    \Hy@Warning{%
      Option `pdfinfo': ignoring key `\kv@key' without value%
    }%
  \else
    \EdefEscapeName\HyInfo@KeyEscaped{\kv@key}%
    \EdefUnescapeName\HyInfo@Key{\HyInfo@KeyEscaped}%
    \expandafter\ifx\csname KV@pdfinfo@\HyInfo@Key\endcsname\relax
      \ifHyInfo@AddonUnsupported
        \Hy@Warning{%
          This driver does not support additional\MessageBreak
          information entries, therefore\MessageBreak
          `\kv@key' is ignored%
        }%
      \else
        \def\HyInfo@tmp##1{%
          \kv@define@key{pdfinfo}{##1}{%
            \HyXeTeX@CheckUnicode
            \HyPsd@XeTeXBigCharstrue
            \HyPsd@PrerenderUnicode{####1}%
            \pdfstringdef\HyInfo@Value{####1}%
            \global\expandafter
            \let\csname HyInfo@Value@##1\endcsname
                \HyInfo@Value
          }%
        }%
        \expandafter\HyInfo@tmp\expandafter{\HyInfo@Key}%
        \global\expandafter
        \let\csname KV@pdfinfo@\HyInfo@Key\expandafter\endcsname
```

```
        \csname KV@pdfinfo@\HyInfo@Key\endcsname
      \xdef\HyInfo@AddonList{%
        \HyInfo@AddonList
        \HyInfo@do{\HyInfo@Key}%
      }%
      \kv@parse@normalized{%
        \HyInfo@Key={#2}%
      }{%
        \kv@processor@default{pdfinfo}%
      }%
    \fi
  \else
    \kv@parse@normalized{%
      \HyInfo@Key={#2}%
    }{%
      \kv@processor@default{pdfinfo}%
    }%
  \fi
\fi
}
\def\HyInfo@GenerateAddons{%
  \ifHyInfo@AddonUnsupported
    \def\HyInfo@Addons{}%
  \else
    \begingroup
      \toks@{}%
      \def\HyInfo@do##1{%
        \EdefEscapeName\HyInfo@Key{##1}%
        \edef\x{%
          \toks@{%
            \the\toks@
            /\HyInfo@Key(\csname HyInfo@Value@##1\endcsname)%
          }%
        }%
        \x
      }%
      \HyInfo@AddonList
      \edef\x{\endgroup
        \def\noexpand\HyInfo@Addons{\the\toks@}%
      }%
    \x
  \fi
}
\global\let\HyInfo@AddonList\ltx@empty
\define@key{Hyp}{pdfview}{\calculate@pdfview#1 \\}
\define@key{Hyp}{pdflinkmargin}{\setpdflinkmargin{#1}}
\let\setpdflinkmargin\@gobble
\def\calculate@pdfview#1 #2\\{%
  \def\@pdfview{#1}%
  \ifx\\#2\\%
    \def\@pdfviewparams{ -32768}%
  \else
    \def\@pdfviewparams{ #2}%
  \fi
}
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname numexpr\endcsname\relax
```

```
  \def\Hy@number#1{%
    \expandafter\@firstofone\expandafter{\number#1}%
  }%
\else
  \def\Hy@number#1{%
    \the\numexpr#1\relax
  }%
\fi
\define@key{Hyp}{pdfstartpage}{%
  \ifx\\#1\\%
    \let\@pdfstartpage\ltx@empty
  \else
    \edef\@pdfstartpage{\Hy@number{#1}}%
  \fi
}%
\define@key{Hyp}{pdfstartview}{%
  \ifx\\#1\\%
    \let\@pdfstartview\ltx@empty
  \else
    \hypercalcbpdef\@pdfstartview{/#1}%
  \fi
}
\def\HyPat@NonNegativeReal/{%
  \ *([0-9]+\.?[0-9]*|[0-9]*\.?[0-9]+) *%
}
\define@key{Hyp}{pdfremotestartview}{%
  \ifx\\#1\\%
    \def\@pdfremotestartview{/Fit}%
  \else
    \hypercalcbpdef\@pdfremotestartview{#1}%
    \edef\@pdfremotestartview{\@pdfremotestartview}%
    \Hy@Match\@pdfremotestartview{}{%
      ^(XYZ(%
          ()| %
          (null|-?\HyPat@NonNegativeReal/) %
          (null|-?\HyPat@NonNegativeReal/) %
          (null|\HyPat@NonNegativeReal/)%
        )|% end of "XYZ"
       Fit(%
          ()|%
          B|%
          (H|V|BH|BV)(%
             ()| %
             (null|\HyPat@NonNegativeReal/)%
           )|%
          R %
             \HyPat@NonNegativeReal/ %
             \HyPat@NonNegativeReal/ %
             \HyPat@NonNegativeReal/ %
             \HyPat@NonNegativeReal/%
        )% end of "Fit"
      )$%
    }{}{%
      \Hy@Warning{%
        Invalid value `\@pdfremotestartview'\MessageBreak
        of `pdfremotestartview'\MessageBreak
        is replaced by `Fit'%
```

```
    }%
    \let\@pdfremotestartview\@empty
   }%
   \ifx\@pdfremotestartview\@empty
    \def\@pdfremotestartview{/Fit}%
   \else
    \edef\@pdfremotestartview{/\@pdfremotestartview}%
   \fi
  \fi
}
\define@key{Hyp}{pdfpagescrop}{\edef\@pdfpagescrop{#1}}
\define@key{Hyp}{pdftoolbar}[true]{%
  \Hy@boolkey{pdftoolbar}{#1}%
}
\define@key{Hyp}{pdfmenubar}[true]{%
  \Hy@boolkey{pdfmenubar}{#1}%
}
\define@key{Hyp}{pdfwindowui}[true]{%
  \Hy@boolkey{pdfwindowui}{#1}%
}
\define@key{Hyp}{pdffitwindow}[true]{%
  \Hy@boolkey{pdffitwindow}{#1}%
}
\define@key{Hyp}{pdfcenterwindow}[true]{%
  \Hy@boolkey{pdfcenterwindow}{#1}%
}
\define@key{Hyp}{pdfdisplaydoctitle}[true]{%
  \Hy@boolkey{pdfdisplaydoctitle}{#1}%
}
\define@key{Hyp}{pdfa}[true]{%
  \Hy@boolkey{pdfa}{#1}%
}
\define@key{Hyp}{pdfnewwindow}[true]{%
  \def\Hy@temp{#1}%
  \ifx\Hy@temp\@empty
    \Hy@pdfnewwindowsetfalse
  \else
    \Hy@pdfnewwindowsettrue
    \Hy@boolkey{pdfnewwindow}{#1}%
  \fi
}
\def\Hy@SetNewWindow{%
  \ifHy@pdfnewwindowset
    /NewWindow %
    \ifHy@pdfnewwindow true\else false\fi
  \fi
}
\Hy@DefNameKey{pdfpagelayout}{%
  \do{SinglePage}{}%
  \do{OneColumn}{}%
  \do{TwoColumnLeft}{}%
  \do{TwoColumnRight}{}%
  \do{TwoPageLeft}{PDF 1.5}%
  \do{TwoPageRight}{PDF 1.5}%
}
\define@key{Hyp}{pdflang}{%
  \edef\@pdflang{#1}%
```

```
\def\Hy@temp{\relax}%
\ifx\@pdflang\Hy@temp
  \let\@pdflang\relax
\fi
\ifx\@pdflang\relax
\else
  \ifx\@pdflang\ltx@empty
  \else
```

Test according to ABNF of RFC 3066.

```
    \Hy@Match\@pdflang{icase}{%
      ^%
      [a-z]{1,8}%
      (-[a-z0-9]{1,8})*%
      $%
    }{%
```

Test according to ABNF of RFC 5646.

```
      \Hy@Match\@pdflang{icase}{%
        ^%
        (%
        % langtag
          (% language
            [a-z]{2,3}%
            ([a-z]{3}(-[a-z]{3}){0,2})?% extlang
            |[a-z]{4}% reserved for future use
            |[a-z]{5,8}% registered language subtag
          )%
          (-[a-z]{4})?% script
          (-([a-z]{2}|[0-9]{3}))?% region
          (-([a-z]{5,8}|[0-9][a-z0-9]{3}))*% variant
          (-[0-9a-wyz](-[a-z0-9]{2,8})+)*% extension
          (-x(-[a-z0-9]{1,8})+)?% privateuse
        % privateuse
          |x-([a-z0-9]{1,8})+%
        % grandfathered/irregular
          |en-GB-oed%
          |i-(ami|bnn|default|enochian|hak|klingon|lux|%
             mingo|navajo|pwn|tao|tay|tsu)%
          |sgn-(BE-FR|BE-NL|CH-DE)%
        % grandfathered/regular
          |art-lojban%
          |cel-gaulish%
          |no-(bok|nyn)%
          |zh-(guoyu|hakka|min|min-nan|xiang)%
        )%
        $%
      }{%
```

Test for unique extensions.

```
        \Hy@Match{-\@pdflang}{icase}{-[a-wyz0-9]-}{%
          \Hy@Match\@pdflang{icase}{^x-}{}{%
            % remove privateuse
            \edef\Hy@temp{-\@pdflang}%
            \Hy@Match\Hy@temp{icase}{%
              ^%
              (%
                (-[a-wyz0-9]|-[a-z0-9]{2,8})*%
              )%
```

```
      -x-%
    }{%
      \edef\Hy@temp{%
        \expandafter\strip@prefix\pdflastmatch1%
      }%
    }{}%
    \Hy@Match\Hy@temp{icase}{%
      (-[a-wyz0-9]-).*\ltx@backslashchar1%
    }{%
      \Hy@Warning{%
        Invalid language identifier `#1'\MessageBreak
        for option `pdflang', because it violates\MessageBreak
        well-formedness defined in RFC 4646\MessageBreak
        by duplicate singleton subtags%
      }%
      \let\@pdflang\relax
    }{}%
  }%
}{}%
```

User-assigned country codes are forbidden in language tags (RFC 3066).

```
\ifx\@pdflang\relax
\else
  \Hy@Match\@pdflang{icase}{%
    ^%
    [a-zA-Z]{2}-%
    (%
      aa|AA|%
      [qQ][m-zM-Z]|%
      [xX][a-zA-Z]|%
      zz|ZZ%
    )%
    (-|$)%
  }{%
    \Hy@Warning{%
      Invalid language identifier `#1'\MessageBreak
      for option `pdflang' because of invalid country code%
      \MessageBreak
      in second subtag (RFC 3066)%
    }%
    \let\@pdflang\relax
  }{}%
  \fi
}{%
  \Hy@Warning{%
    Invalid language identifier `#1'\MessageBreak
    for option `pdflang', because it violates\MessageBreak
    well-formedness defined in RFC 5646%
  }%
  \let\@pdflang\relax
}%
}{%
  \Hy@Warning{%
    Invalid language identifier `#1'\MessageBreak
    for option `pdflang' (RFC 3066)%
  }%
  \let\@pdflang\relax
}%
```

```
    \fi
  \fi
}
\define@key{Hyp}{pdfpagelabels}[true]{%
  \Hy@boolkey{pdfpagelabels}{#1}%
}
\define@key{Hyp}{pdfescapeform}[true]{%
  \Hy@boolkey{pdfescapeform}{#1}%
}
```

Default values:

```
\def\@linkbordercolor{1 0 0}
\def\@urlbordercolor{0 1 1}
\def\@menubordercolor{1 0 0}
\def\@filebordercolor{0 .5 .5}
\def\@runbordercolor{0 .7 .7}
\def\@citebordercolor{0 1 0}
\def\@pdfhighlight{/I}
\let\@pdftitle\ltx@empty
\let\@pdfauthor\ltx@empty
\let\@pdfproducer\relax
\def\@pdfcreator{LaTeX with hyperref package}
\let\@pdfcreationdate\ltx@empty
\let\@pdfmoddate\ltx@empty
\let\@pdfsubject\ltx@empty
\let\@pdfkeywords\ltx@empty
\let\@pdftrapped\ltx@empty
\let\@pdfpagescrop\ltx@empty
\def\@pdfstartview{/Fit}
\def\@pdfremotestartview{/Fit}
\def\@pdfstartpage{1}
\let\@pdfprintpagerange\ltx@empty
\let\@pdflang\relax
\let\PDF@SetupDoc\@empty
\let\PDF@FinishDoc\@empty
\let\phantomsection\@empty
\let\special@paper\@empty
\def\HyperDestNameFilter#1{#1}
\Hy@AtBeginDocument{%
  \begingroup
    \edef\x{\@ifundefined{stockheight}\paperheight\stockheight}%
    \dimen@=\x\relax
    \ifdim\dimen@>\z@
    \else
      \dimen@=11in\relax
      \Hy@WarningNoLine{%
        Height of page (\expandafter\string\x) %
        is invalid (\the\x),\MessageBreak
        using 11in%
      }%
    \fi
    \dimen@=0.99626401\dimen@
    \xdef\Hy@pageheight{\strip@pt\dimen@}%
  \endgroup
}
\def\HyInd@EncapChar{\|}
```

Allow the user to use `\ExecuteOptions` in the cfg file even though this package does not use the normal option mechanism. Use `\hyper@normalise` as a scratch

macro, since it is going to be defined in a couple of lines anyway.

```
\let\hyper@normalise\ExecuteOptions
\let\ExecuteOptions\hypersetup
\Hy@RestoreCatcodes
\InputIfFileExists{hyperref.cfg}{}{}
\Hy@SetCatcodes
\let\ExecuteOptions\hyper@normalise
\ifx\Hy@MaybeStopNow\relax
\else
  \Hy@stoppedearlytrue
  \expandafter\Hy@MaybeStopNow
\fi
\Hy@stoppedearlyfalse
```

To add flexibility, we will not use the ordinary processing of package options, but put them through the *keyval* package. This section was written by David Carlisle.

```
\SetupKeyvalOptions{family=Hyp}
\DeclareLocalOptions{%
  a4paper,a5paper,b5paper,letterpaper,legalpaper,executivepaper%
}
```

Add option `tex4ht` if package `tex4ht` is loaded.

```
\@ifpackagewith{hyperref}{tex4ht}{%
}{%
  \@ifpackageloaded{tex4ht}{%
    \PassOptionsToPackage{tex4ht}{hyperref}%
  }{%
    \ltx@IfUndefined{HCode}{%
    }{%
      \begingroup
        \def\Hy@pkg{tex4ht}%
        \def\Hy@temp@A#1\RequirePackage[#2]#3#4\Hy@NIL{%
          \def\Hy@param{#2#3}%
          \ifx\Hy@param\ltx@empty
            \expandafter\ltx@gobble
          \else
            \def\Hy@param{#3}%
            \ifx\Hy@param\Hy@pkg
              \PassOptionsToPackage{#2}{tex4ht}%
              \expandafter\expandafter\expandafter\@gobble
            \else
              \expandafter\expandafter\expandafter\ltx@firstofone
            \fi
          \fi
          {\Hy@temp@A#4\Hy@NIL}%
        }%
        \expandafter
        \Hy@temp@A\@documentclasshook\RequirePackage[]{}\Hy@NIL
      \endgroup
      \PassOptionsToPackage{tex4ht}{hyperref}%
    }%
  }%
}
```

```
\let\ReadBookmarks\relax
\ProcessKeyvalOptions{Hyp}
```

After processing options.

15.1 Package xspace support

```
\def\Hy@xspace@end{}
\ltx@IfUndefined{xspaceaddexceptions}{%
  \Hy@AtBeginDocument{%
    \ltx@IfUndefined{xspaceaddexceptions}{%
    }{%
      \def\Hy@xspace@end{%
        \ltx@gobble{end for xspace}%
      }%
      \xspaceaddexceptions{%
        \Hy@xspace@end,\hyper@linkend,\hyper@anchorend
      }%
    }%
  }%
}{%
  \def\Hy@xspace@end{%
    \ltx@gobble{end for xspace}%
  }%
  \xspaceaddexceptions{\Hy@xspace@end,\hyper@linkend,\hyper@anchorend}%
}
```

15.2 Option draft

```
\Hy@AtBeginDocument{%
  \ifHy@draft
    \let\hyper@@anchor\@gobble
    \gdef\hyper@link#1#2#3{#3\Hy@xspace@end}%
    \def\hyper@anchorstart#1#2{#2\Hy@xspace@end}%
    \def\hyper@anchorend{\Hy@xspace@end}%
    \let\hyper@linkstart\@gobbletwo
    \def\hyper@linkend{\Hy@xspace@end}%
    \def\hyper@linkurl#1#2{#1\Hy@xspace@end}%
    \def\hyper@linkfile#1#2#3{#1\Hy@xspace@end}%
    \def\hyper@link@[#1]#2#3#4{#4\Hy@xspace@end}%
    \def\Acrobatmenu#1#2{\leavevmode#2\Hy@xspace@end}%
    \let\PDF@SetupDoc\@empty
    \let\PDF@FinishDoc\@empty
    \let\@fifthoffive\@secondoftwo
    \let\@secondoffive\@secondoftwo
    \let\ReadBookmarks\relax
    \let\WriteBookmarks\relax
    \Hy@WarningNoLine{Draft mode on}%
  \fi
  \Hy@DisableOption{draft}%
  \Hy@DisableOption{nolinks}%
  \Hy@DisableOption{final}%
}
```

15.3 PDF/A

```
\Hy@DisableOption{pdfa}
\ifHy@pdfa
  \ifnum \Hy@pdfversion < 4
  \kvsetkeys{Hyp}{pdfversion=1.4}%
  \fi
  \Hy@DisableOption{pdfversion}%
  \def\Hy@Acrobatmenu#1#2{%
    \leavevmode
```

```
    \begingroup
      \edef\x{#1}%
      \@onelevel@sanitize\x
      \ifx\x\Hy@NextPage
        \let\y=Y%
      \else
        \ifx\x\Hy@PrevPage
          \let\y=Y%
        \else
          \ifx\x\Hy@FirstPage
            \let\y=Y%
          \else
            \ifx\x\Hy@LastPage
              \let\y=Y%
            \else
              \let\y=N%
            \fi
          \fi
        \fi
      \fi
    \expandafter\endgroup
    \ifx\y Y%
    \else
      \Hy@Error{%
        PDF/A: Named action `#1' is not permitted%
      }\@ehc
      {#2}%
      \expandafter\@gobble
    \fi
  }%
  \def\Hy@temp#1{%
    \expandafter\def\csname Hy@#1\endcsname{#1}%
    \expandafter\@onelevel@sanitize\csname Hy@#1\endcsname
  }%
  \Hy@temp{NextPage}%
  \Hy@temp{PrevPage}%
  \Hy@temp{FirstPage}%
  \Hy@temp{LastPage}%
\else
  \def\Hy@Acrobatmenu#1#2{\leavevmode}%
\fi
```

15.4 Patch for babel's \texttilde

Babel does not define \texttilde in NFSS2 manner, so the NFSS2 definitions of PD1 or PU encoding is not compatible. To fix this, \texttilde is defined in babel manner.

```
\Hy@nextfalse
\ltx@IfUndefined{spanish@sh@"@sel}{}{\Hy@nexttrue}
\ltx@IfUndefined{galician@sh@"@sel}{}{\Hy@nexttrue}
\ltx@IfUndefined{estonian@sh@"@sel}{}{\Hy@nexttrue}
\ifHy@next
  \let\texttilde\~%
\fi
\def\Hy@wrapper@babel#1#2{%
  \begingroup
    \Hy@safe@activestrue
```

```
    \set@display@protect
    \edef\x{#2}%
    \@onelevel@sanitize\x
    \toks@{#1}%
    \edef\x{\endgroup\the\toks@{\x}}%
  \x
}
\def\Hy@WrapperDef#1{%
  \begingroup
    \escapechar=\m@ne
    \xdef\Hy@gtemp{%
      \expandafter\noexpand\csname HyWrap@\string#1\endcsname
    }%
  \endgroup
  \edef#1{%
    \noexpand\Hy@wrapper@babel
    \expandafter\noexpand\Hy@gtemp
  }%
  \expandafter\def\Hy@gtemp
}
\ifHy@hyperfigures
  \Hy@Info{Hyper figures ON}%
\else
  \Hy@Info{Hyper figures OFF}%
\fi
\ifHy@nesting
  \Hy@Info{Link nesting ON}%
\else
  \Hy@Info{Link nesting OFF}%
\fi
\ifHy@hyperindex
  \Hy@Info{Hyper index ON}%
\else
  \Hy@Info{Hyper index OFF}%
\fi
\ifHy@plainpages
  \Hy@Info{Plain pages ON}%
\else
  \Hy@Info{Plain pages OFF}%
\fi
\ifHy@backref
  \Hy@Info{Backreferencing ON}%
\else
  \Hy@Info{Backreferencing OFF}%
\fi
\ifHy@typexml
  \Hy@AtEndOfPackage{%
    \RequirePackage{color}%
    \RequirePackage{nameref}[2012/07/28]%
  }%
\fi
\Hy@DisableOption{typexml}
\ifHy@implicit
  \Hy@InfoNoLine{Implicit mode ON; LaTeX internals redefined}%
\else
  \Hy@InfoNoLine{Implicit mode OFF; no redefinition of LaTeX internals}%
  \def\MaybeStopEarly{%
```

```
    \Hy@Message{Stopped early}%
    \Hy@AtBeginDocument{%
      \PDF@FinishDoc
      \gdef\PDF@FinishDoc{}%
    }%
    \endinput
  }%
  \Hy@AtBeginDocument{%
    \let\autoref\ref
    \let\autopageref\pageref
    \ifx\@pdfpagemode\@empty
      \gdef\@pdfpagemode{UseNone}%
    \fi
    \global\Hy@backreffalse
  }%
  \Hy@AtEndOfPackage{%
    \global\let\ReadBookmarks\relax
    \global\let\WriteBookmarks\relax
  }%
\fi
\Hy@DisableOption{implicit}
```

15.4.1 Driver loading

```
\Hy@AtEndOfPackage{%
  \@ifpackageloaded{tex4ht}{%
    \def\Hy@driver{htex4ht}%
    \Hy@texhttrue
  }{}%
```

Some drivers can be detected. Check for these drivers, whether the given driver option is ok. Otherwise force the right driver or use the default driver.

```
  \ifx\Hy@driver\@empty
  \else
    \ifx\pdfextension\@undefined
      \def\Hy@temp{hpdftex}%
    \else
      \def\Hy@temp{hluatex}%
    \fi
    \ifpdf
      \ifx\Hy@driver\Hy@temp
      \else
        \Hy@WarningNoLine{%
          Wrong driver `\Hy@driver.def';\MessageBreak
          pdfTeX is running in PDF mode.\MessageBreak
          Forcing driver `\Hy@temp.def'%
        }%
        \let\Hy@driver\Hy@temp
      \fi
    \else
      \ifx\Hy@driver\Hy@temp
        \Hy@WarningNoLine{%
          Wrong driver `\Hy@driver.def';\MessageBreak
          pdfTeX is not running in PDF mode.\MessageBreak
          Using default driver%
        }%
        \let\Hy@driver\@empty
      \fi
```

```
  \fi
\fi
\ifHy@texht
\else
  \ifx\Hy@driver\@empty
  \else
    \def\Hy@temp{hxetex}%
    \ifxetex
      \ifx\Hy@driver\Hy@temp
      \else
        \Hy@WarningNoLine{%
          Wrong driver `\Hy@driver.def';\MessageBreak
          XeTeX is running.\MessageBreak
          Forcing driver `\Hy@temp.def' for XeTeX%
        }%
        \let\Hy@driver\Hy@temp
      \fi
    \fi
  \fi
\fi
\ifx\Hy@driver\@empty
\else
  \def\Hy@temp{hvtexhtm}%
  \ifvtexhtml
    \ifx\Hy@driver\Hy@temp
    \else
      \Hy@WarningNoLine{%
        Wrong driver `\Hy@driver.def';\MessageBreak
        VTeX is running in HTML mode.\MessageBreak
        Forcing driver `\Hy@temp.def'%
      }%
      \let\Hy@driver\Hy@temp
    \fi
  \else
    \ifx\Hy@driver\Hy@temp
      \Hy@WarningNoLine{%
        Wrong driver `\Hy@driver.def';\MessageBreak
        VTeX is not running in HTML mode.\MessageBreak
        Using default driver%
      }%
      \let\Hy@driver\@empty
    \fi
  \fi
\fi
```

If the driver is not given, find the right driver or use the default driver.

```
\let\HyOpt@DriverType\ltx@empty
\ifx\HyOpt@CustomDriver\ltx@empty
  \ifx\Hy@driver\@empty
    \def\HyOpt@DriverType{ (autodetected)}%
    \providecommand*{\Hy@defaultdriver}{hypertex}%
    \ifpdf
      \ifx\pdfextension\@undefined
        \def\Hy@driver{hpdftex}%
      \else
        \def\Hy@driver{hluatex}%
      \fi
    \else
```

```
      \ifxetex
        \def\Hy@driver{hxetex}%
      \else
        \ifvtexhtml
          \def\Hy@driver{hvtexhtm}%
          \def\MaybeStopEarly{%
            \Hy@Message{Stopped early}%
            \Hy@AtBeginDocument{%
              \PDF@FinishDoc
              \gdef\PDF@FinishDoc{}%
            }%
            \endinput
          }%
        \else
          \ifvtexpdf
            \def\Hy@driver{hvtex}%
          \else
            \ifvtexps
              \def\Hy@driver{hvtex}%
            \else
              \ifx\HyOpt@DriverFallback\ltx@empty
                \let\Hy@driver\Hy@defaultdriver
                \def\HyOpt@DriverType{ (default)}%
              \else
                \begingroup
                  \toks@\expandafter{\HyOpt@DriverFallback}%
                  \edef\x{\endgroup
                    \noexpand\kvsetkeys{Hyp}{\the\toks@}%
                  }%
                \x
                \ifx\Hy@driver\ltx@empty
                  \let\Hy@driver\Hy@defaultdriver
                  \def\HyOpt@DriverType{ (default)}%
                \else
                  \def\HyOpt@DriverType{ (fallback)}%
                \fi
              \fi
            \fi
          \fi
        \fi
      \fi
    \fi
    \ifx\Hy@driver\Hy@defaultdriver
      \def\Hy@temp{hdviwind}%
      \ifx\Hy@temp\Hy@driver
        \kvsetkeys{Hyp}{colorlinks}%
        \PassOptionsToPackage{dviwindo}{color}%
      \fi
    \fi
  \fi
\else
  \def\HyOpt@DriverType{ (custom)}%
  \let\Hy@driver\HyOpt@CustomDriver
\fi
\Hy@InfoNoLine{Driver\HyOpt@DriverType: \Hy@driver}%
\chardef\Hy@VersionChecked=0 %
\input{\Hy@driver.def}%
```

```
  \ifcase\Hy@VersionChecked
    \Hy@VersionCheck{\Hy@driver.def}%
  \fi
  \let\@unprocessedoptions\relax
  \Hy@RestoreCatcodes
  \Hy@DisableOption{tex4ht}%
  \Hy@DisableOption{pdftex}%
  \Hy@DisableOption{nativepdf}%
  \Hy@DisableOption{dvipdfm}%
  \Hy@DisableOption{dvipdfmx}%
  \Hy@DisableOption{dvipdfmx-outline-open}%
  \Hy@DisableOption{pdfmark}%
  \Hy@DisableOption{dvips}%
  \Hy@DisableOption{hypertex}%
  \Hy@DisableOption{vtex}%
  \Hy@DisableOption{vtexpdfmark}%
  \Hy@DisableOption{dviwindo}%
  \Hy@DisableOption{dvipsone}%
  \Hy@DisableOption{textures}%
  \Hy@DisableOption{latex2html}%
  \Hy@DisableOption{ps2pdf}%
  \Hy@DisableOption{xetex}%
  \Hy@DisableOption{driverfallback}%
  \Hy@DisableOption{customdriver}%
  \Hy@DisableOption{pdfversion}%
}
```

Support for open outlines is enabled for XeTEX >= 0.9995. I don't know, if older versions also support this. AFAIK older dvipdfmx versions will break, thus the switch cannot be turned on by default.

```
\newif\ifHy@DvipdfmxOutlineOpen
\ifxetex
  \ifdim\number\XeTeXversion\XeTeXrevision in<0.9995in %
  \else
    \chardef\SpecialDvipdfmxOutlineOpen\@ne
    \Hy@DvipdfmxOutlineOpentrue
  \fi
\fi
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname SpecialDvipdfmxOutlineOpen\endcsname\relax
\else
  \ifnum\SpecialDvipdfmxOutlineOpen>\z@
    \Hy@DvipdfmxOutlineOpentrue
  \fi
\fi
```

15.4.2 Bookmarks

```
\def\WriteBookmarks{0}
\def\@bookmarkopenstatus#1{%
  \ifHy@bookmarksopen
```

The purpose of the \@firstofone-number-space-construct is that no \relax will be inserted by TEX before the \else:

```
    \ifnum#1<\expandafter\@firstofone\expandafter
            {\number\@bookmarksopenlevel} % explicit space
    \else
      -%
    \fi
```

```
  \else
    -%
  \fi
}
\ifHy@bookmarks
  \Hy@Info{Bookmarks ON}%
  \ifx\@pdfpagemode\@empty
    \def\@pdfpagemode{UseOutlines}%
  \fi
\else
  \let\@bookmarkopenstatus\ltx@gobble
  \Hy@Info{Bookmarks OFF}%
  \Hy@AtEndOfPackage{%
    \global\let\ReadBookmarks\relax
    \global\let\WriteBookmarks\relax
  }%
  \ifx\@pdfpagemode\@empty
    \def\@pdfpagemode{UseNone}%
  \fi
\fi
\Hy@DisableOption{bookmarks}
```

Add wrapper for setting standard catcodes (babel's shorthands).

```
\def\Hy@CatcodeWrapper#1{%
  \let\Hy@EndWrap\ltx@empty
  \def\TMP@EnsureCode##1##2{%
    \edef\Hy@EndWrap{%
      \Hy@EndWrap
      \catcode##1 \the\catcode##1\relax
    }%
    \catcode##1 ##2\relax
  }%
  \TMP@EnsureCode{10}{12}% ^^J
  \TMP@EnsureCode{33}{12}% !
  \TMP@EnsureCode{34}{12}% "
  \TMP@EnsureCode{36}{3}% $ (math)
  \TMP@EnsureCode{38}{4}% & (alignment)
  \TMP@EnsureCode{39}{12}% '
  \TMP@EnsureCode{40}{12}% (
  \TMP@EnsureCode{41}{12}% )
  \TMP@EnsureCode{42}{12}% *
  \TMP@EnsureCode{43}{12}% +
  \TMP@EnsureCode{44}{12}% ,
  \TMP@EnsureCode{45}{12}% -
  \TMP@EnsureCode{46}{12}% .
  \TMP@EnsureCode{47}{12}% /
  \TMP@EnsureCode{58}{12}% :
  \TMP@EnsureCode{59}{12}% ;
  \TMP@EnsureCode{60}{12}% <
  \TMP@EnsureCode{61}{12}% =
  \TMP@EnsureCode{62}{12}% >
  \TMP@EnsureCode{63}{12}% ?
  \TMP@EnsureCode{91}{12}% [
  \TMP@EnsureCode{93}{12}% ]
  \TMP@EnsureCode{94}{7}% ^ (superscript)
  \TMP@EnsureCode{95}{8}% _ (subscript)
  \TMP@EnsureCode{96}{12}% `
  \TMP@EnsureCode{124}{12}% |
```

```
  \TMP@EnsureCode{126}{13}% ~ (active)
  #1\relax
  \Hy@EndWrap
}
```

\HyColor@UseColor expects a macro as argument. It contains the color specification.

```
\Hy@AtBeginDocument{%
  \ifHy@ocgcolorlinks
    \kvsetkeys{Hyp}{colorlinks}%
    \ifHy@pdfa
      \Hy@Warning{%
        PDF/A: Optional Content Groups are prohibited,\MessageBreak
        using `colorlinks' instead of `ocgcolorlinks'%
      }%
      \Hy@ocgcolorlinksfalse
    \fi
  \fi
  \ifHy@ocgcolorlinks
  \else
    \Hy@DisableOption{ocgcolorlinks}%
  \fi
  \ifHy@colorlinks
    \def\@pdfborder{0 0 0}%
    \let\@pdfborderstyle\@empty
    \ifHy@typexml
    \else
      \Hy@CatcodeWrapper{%
        \RequirePackage{color}%
      }%
    \fi
    \def\Hy@colorlink#1{%
      \begingroup
      \HyColor@UseColor#1%
    }%
    \def\Hy@endcolorlink{\endgroup}%
    \Hy@Info{Link coloring ON}%
  \else
    \ifHy@frenchlinks
      \def\Hy@colorlink#1{\begingroup\fontshape{sc}\selectfont}%
      \def\Hy@endcolorlink{\endgroup}%
      \Hy@Info{French linking ON}%
    \else
```

for grouping consistency:

```
      \def\Hy@colorlink#1{\begingroup}%
      \def\Hy@endcolorlink{\endgroup}%
      \Hy@Info{Link coloring OFF}%
    \fi
  \fi
  \Hy@DisableOption{colorlinks}%
  \Hy@DisableOption{frenchlinks}%
  \ifHy@texht
    \long\def\@firstoffive#1#2#3#4#5{#1}%
    \long\def\@secondoffive#1#2#3#4#5{#2}%
    \long\def\@thirdoffive#1#2#3#4#5{#3}%
    \long\def\@fourthoffive#1#2#3#4#5{#4}%
    \long\def\@fifthoffive#1#2#3#4#5{#5}%
    \providecommand*\@safe@activestrue{}%
```

```
    \providecommand*\@safe@activesfalse{}%
    \def\T@ref#1{%
      \Hy@safe@activestrue
      \expandafter\@setref\csname r@#1\endcsname\@firstoffive{#1}%
      \Hy@safe@activesfalse
    }%
    \def\T@pageref#1{%
      \Hy@safe@activestrue
      \expandafter\@setref\csname r@#1\endcsname\@secondoffive{#1}%
      \Hy@safe@activesfalse
    }%
  \else
    \ifHy@typexml
    \else
      \Hy@CatcodeWrapper{%
        \RequirePackage{nameref}[2012/07/28]%
      }%
    \fi
  \fi
  \DeclareRobustCommand\ref{%
    \@ifstar\@refstar\T@ref
  }%
  \DeclareRobustCommand\pageref{%
    \@ifstar\@pagerefstar\T@pageref
  }%
% \@ifclassloaded{memoir}{%
%   \ltx@IfUndefined{@mem@titlerefnolink}\ltx@secondoftwo{%
%     \ltx@IfUndefined{@mem@titleref}\ltx@secondoftwo\ltx@firstoftwo
%   }%
% }\ltx@secondoftwo
% {%
%   \DeclareRobustCommand*{\nameref}{%
%     \@ifstar\@mem@titlerefnolink\@mem@titleref
%   }%
% }{%
    \DeclareRobustCommand*{\nameref}{%
      \@ifstar\@namerefstar\T@nameref
    }%
% }%
}
\Hy@AtBeginDocument{%
  \ifHy@texht
  \else
    \Hy@CatcodeWrapper\ReadBookmarks
  \fi
}
\ifHy@backref
  \RequirePackage{backref}%
\else
  \let\Hy@backout\@gobble
\fi
\Hy@DisableOption{backref}
\Hy@DisableOption{pagebackref}
\Hy@activeanchorfalse
```

16 User hypertext macros

We need to normalise all user commands taking a URL argument; Within the argument the following special definitions apply: \#, \%, ~ produce #, %, ~ respectively. for consistency \~ produces ~ as well. At the *top level only* ie not within the argument of another command, you can use # and % unescaped, to produce themselves. even if, say, # is entered as # it will be converted to \# so it does not die if written to an aux file etc. \# will write as # locally while making \specials.

```
\begingroup
  \endlinechar=-1 %
  \catcode`\^^A=14 %
  \catcode`\^^M\active
  \catcode`\%\active
  \catcode`\#\active
  \catcode`\_\active
  \catcode`\$\active
  \catcode`\&\active
  \gdef\hyper@normalise{^^A
    \begingroup
    \catcode`\^^M\active
    \def^^M{ }^^A
    \catcode`\%\active
    \let%\@percentchar
    \let\%\@percentchar
    \catcode`\#\active
    \def#{\hyper@hash}^^A
    \def\#{\hyper@hash}^^A
    \@makeother\&^^A
    \edef&{\string&}^^A
    \edef\&{\string&}^^A
    \edef\textunderscore{\string_}^^A
    \let\_\textunderscore
    \catcode`\_\active
    \let_\textunderscore
    \let~\hyper@tilde
    \let\~\hyper@tilde
    \let\textasciitilde\hyper@tilde
    \let\\\@backslashchar
    \edef${\string$}^^A
    \Hy@safe@activestrue
    \hyper@n@rmalise
  }^^A
  \catcode`\#=6 ^^A
  \gdef\Hy@ActiveCarriageReturn{^^M}^^A
  \gdef\hyper@n@rmalise#1#2{^^A
    \def\Hy@tempa{#2}^^A
    \ifx\Hy@tempa\Hy@ActiveCarriageReturn
      \ltx@ReturnAfterElseFi{^^A
        \hyper@@normalise{#1}^^A
      }^^A
    \else
      \ltx@ReturnAfterFi{^^A
        \hyper@@normalise{#1}{#2}^^A
      }^^A
    \fi
  }^^A
```

```
  \gdef\hyper@@normalise#1#2{^^A
    \edef\Hy@tempa{^^A
      \endgroup
      \noexpand#1{\Hy@RemovePercentCr#2%^^M\@nil}^^A
    }^^A
    \Hy@tempa
  }^^A
  \gdef\Hy@RemovePercentCr#1%^^M#2\@nil{^^A
    #1^^A
    \ifx\limits#2\limits
    \else
      \ltx@ReturnAfterFi{^^A
        \Hy@RemovePercentCr #2\@nil
      }^^A
    \fi
  }^^A
\endgroup
\providecommand*\hyper@chars{%
  \let\#\hyper@hash
  \let\%\@percentchar
  \Hy@safe@activestrue
}
\def\hyperlink#1#2{%
  \hyper@@link{}{#1}{#2}%
}
\def\Hy@VerboseLinkStart#1#2{%
  \ifHy@verbose
    \begingroup
      \Hy@safe@activestrue
      \xdef\Hy@VerboseGlobalTemp{(#1) `#2'}%
      \Hy@Info{Reference \Hy@VerboseGlobalTemp}%
      \xdef\Hy@VerboseGlobalTemp{%
        \Hy@VerboseGlobalTemp, %
        line \the\inputlineno
      }%
    \endgroup
    \let\Hy@VerboseLinkInfo\Hy@VerboseGlobalTemp
    \@onelevel@sanitize\Hy@VerboseLinkInfo
  \fi
}
\def\Hy@VerboseLinkInfo{<VerboseLinkInfo>}
\def\Hy@VerboseLinkStop{%
  \ifHy@verbose
    \begingroup
      \edef\x{\endgroup
        \write\m@ne{%
          Package `hyperref' Info: %
          End of reference \Hy@VerboseLinkInfo.%
        }%
      }%
    \x
  \fi
}
\def\Hy@VerboseAnchor#1{%
  \ifHy@verbose
    \begingroup
```

```
      \Hy@safe@activestrue
      \Hy@Info{Anchor `\HyperDestNameFilter{#1}'}%
    \endgroup
  \fi
}
\def\Hy@AllowHyphens{%
  \relax
  \ifhmode
    \penalty\@M
    \hskip\z@skip
  \fi
}
\DeclareRobustCommand*{\href}[1][]{%
  \begingroup
  \setkeys{href}{#1}%
  \@ifnextchar\bgroup\Hy@href{\hyper@normalise\href@}%
}
\def\Hy@href#{%
  \hyper@normalise\href@
}
\begingroup
  \catcode`\$=6 %
  \catcode`\#=12 %
  \gdef\href@$1{\expandafter\href@split$1##\\}%
  \gdef\href@split$1#$2#$3\\$4{%
    \hyper@@link{$1}{$2}{$4}%
    \endgroup
  }%
\endgroup
```

Option 'page'.

```
\define@key{href}{page}{%
  \def\Hy@href@page{#1}%
}
\let\Hy@href@page\@empty
\newcount\c@Hy@tempcnt
\def\theHy@tempcnt{\the\c@Hy@tempcnt}
\def\Hy@MakeRemoteAction{%
  \ifx\Hy@href@page\@empty
    \def\Hy@href@page{0}%
  \else
    \setcounter{Hy@tempcnt}{\Hy@href@page}%
    \ifnum\c@Hy@tempcnt<\@ne
      \Hy@Warning{%
        Invalid page number (\theHy@tempcnt)\MessageBreak
        for remote PDF file.\MessageBreak
        Using page 1%
      }%
      \def\Hy@href@page{0}%
    \else
      \global\advance\c@Hy@tempcnt\m@ne
      \edef\Hy@href@page{\theHy@tempcnt}%
    \fi
  \fi
```

If a next action is set, then also a new window should be opened. Otherwise AR reclaims that it closes the current file with discarding the next actions.

```
  \ifx\Hy@href@nextactionraw\@empty
  \else
    \Hy@pdfnewwindowsettrue
    \Hy@pdfnewwindowtrue
  \fi
}
```

Option 'pdfremotestartview'.

```
\define@key{href}{pdfremotestartview}{%
  \setkeys{Hyp}{pdfremotestartview={#1}}%
}
```

Option 'pdfnewwindow'.

```
\let\KV@href@pdfnewwindow\KV@Hyp@pdfnewwindow
\let\KV@href@pdfnewwindow@default\KV@Hyp@pdfnewwindow@default
```

Option 'ismap'.

```
\newif\ifHy@href@ismap
\define@key{href}{ismap}[true]{%
  \ltx@IfUndefined{Hy@href@ismap#1}{%
    \Hy@Error{%
      Invalid value (#1) for key `ismap'.\MessageBreak
      Permitted values are `true' or `false'.\MessageBreak
      Ignoring `ismap'%
    }\@ehc
  }{%
    \csname Hy@href@ismap#1\endcsname
  }%
}
```

Option 'nextactionraw'.

```
\let\Hy@href@nextactionraw\@empty
\define@key{href}{nextactionraw}{%
  \edef\Hy@href@nextactionraw{#1}%
  \ifx\Hy@href@nextactionraw\@empty
  \else
    \Hy@Match\Hy@href@nextactionraw{}{%
      ^(\HyPat@ObjRef/|<<.*/S[ /].+>>|%
       \[( ?\HyPat@ObjRef/|<<.*/S[ /].+>>)+ ?])$%
    }{}{%
      \Hy@Warning{Invalid value for `nextactionraw':\MessageBreak
        \Hy@href@nextactionraw\MessageBreak
        The action is discarded%
      }%
    }%
    \ifx\Hy@href@nextactionraw\@empty
    \else
      \edef\Hy@href@nextactionraw{/Next \Hy@href@nextactionraw}%
    \fi
  \fi
}
\def\HyPat@ObjRef/{.+}
```

Load package url.sty and save the meaning of the original \url in \nolinkurl.

```
\RequirePackage{url}
\let\HyOrg@url\url
\def\Hurl{\begingroup \Url}
\DeclareRobustCommand*{\nolinkurl}{\hyper@normalise\nolinkurl@}
\def\nolinkurl@#1{\Hurl{#1}}
```

```
\DeclareRobustCommand*{\url}{\hyper@normalise\url@}
\def\url@#1{\hyper@linkurl{\Hurl{#1}}{#1}}

\DeclareRobustCommand*{\hyperimage}{\hyper@normalise\hyper@image}
\providecommand\hyper@image[2]{#2}

\def\hypertarget#1#2{%
  \ifHy@nesting
    \hyper@@anchor{#1}{#2}%
  \else
    \hyper@@anchor{#1}{\relax}#2%
  \fi
}
```

\hyperref is more complicated, as it includes the concept of a category of link, used to make the name. This is not really used in this package. **\hyperdef** sets up an anchor in the same way. They each have three parameters of category, linkname, and marked text, and **\hyperref** also has a first parameter of URL. If there is an optional first parameter to **\hyperdef**, it is the name of a LaTeX label which can be used in a short form of **\hyperref** later, to avoid remembering the name and category.

```
\DeclareRobustCommand*{\hyperref}{%
  \@ifnextchar[{\Hy@babelnormalise\label@hyperref}\@hyperref
}
\def\Hy@babelnormalise#1[#2]{%
  \begingroup
    \Hy@safe@activestrue
    \edef\Hy@tempa{%
      \endgroup
      \noexpand#1[{#2}]%
    }%
  \Hy@tempa
}
\def\@hyperref{\hyper@normalise\@@hyperref}
\def\@@hyperref#1#2#3{%
  \edef\ref@one{\ifx\\#2\\\else#2.\fi#3}%
  \expandafter\tryhyper@link\ref@one\\{#1}%
}
\def\tryhyper@link#1\\#2{%
  \hyper@@link{#2}{#1}%
}

\def\hyperdef{\@ifnextchar[{\label@hyperdef}{\@hyperdef}}
\def\@hyperdef#1#2#3{%, category, name, text
  \ifx\\#1\\%
    \def\Hy@AnchorName{#2}%
  \else
    \def\Hy@AnchorName{#1.#2}%
  \fi
  \ifHy@nesting
    \expandafter\hyper@@anchor\expandafter{\Hy@AnchorName}{#3}%
  \else
    \expandafter\hyper@@anchor\expandafter{\Hy@AnchorName}{\relax}#3%
  \fi
}
```

We also have a need to give a LaTeX *label* to a hyper reference, to ease the pain of referring to it later.

```
\def\label@hyperref[#1]{%
```

```
  \expandafter\label@@hyperref\csname r@#1\endcsname{#1}%
}%
\def\label@@hyperref#1#2#3{%
  \ifx#1\relax
    \protect\G@refundefinedtrue
    \@latex@warning{%
      Hyper reference `#2' on page \thepage \space undefined%
    }%
    \begingroup
      #3%
    \endgroup
  \else
    \hyper@@link{\expandafter\@fifthoffive#1}%
      {\expandafter\@fourthoffive#1\@empty\@empty}{#3}%
  \fi
}
\def\label@hyperdef[#1]#2#3#4{% label name, category, name,
                              % anchor text
  \@bsphack
  \ifx\\#2\\%
    \def\Hy@AnchorName{#3}%
  \else
    \def\Hy@AnchorName{#2.#3}%
  \fi
  \if@filesw
    \protected@write\@auxout{}{%
      \string\newlabel{#1}{{}{}{}{}{\Hy@AnchorName}{}}%
    }%
  \fi
  \@esphack
  \ifHy@nesting
    \expandafter\hyper@@anchor\expandafter{\Hy@AnchorName}{#4}%
  \else
    \expandafter\hyper@@anchor\expandafter{\Hy@AnchorName}{\relax}#4%
  \fi
}
```

16.1 Link box support for XeTeX

```
\newdimen\XeTeXLinkMargin
\setlength{\XeTeXLinkMargin}{2pt}
\ifxetex
  \font\XeTeXLink@font=pzdr at 1sp\relax
  \newcommand*{\XeTeXLink@space}{%
    \begingroup
      \XeTeXLink@font
      \@xxxii
    \endgroup
  }%
  \newcommand{\XeTeXLinkBox}[1]{%
    \begingroup
      \leavevmode
      \sbox\z@{#1}%
      \begingroup
        \dimen@=\dp\z@
        \advance\dimen@\XeTeXLinkMargin
        \setbox\tw@=\llap{%
```

```
        \hb@xt@\XeTeXLinkMargin{%
          \lower\dimen@\hbox{\XeTeXLink@space}%
          \hss
        }%
      }%
      \dp\tw@=\dp\z@
      \ht\tw@=\ht\z@
      \copy\tw@
    \endgroup
    \copy\z@
    \dimen@=\ht\z@
    \advance\dimen@\XeTeXLinkMargin
    \setbox\tw@=\rlap{%
      \hb@xt@\XeTeXLinkMargin{%
        \hss
        \raise\dimen@\hbox{\XeTeXLink@space}%
      }%
    }%
    \dp\tw@=\dp\z@
    \ht\tw@=\ht\z@
    \copy\tw@
  \endgroup
 }%
\else
 \newcommand*{\XeTeXLinkBox}[1]{%
  \begingroup
    \leavevmode
    \sbox\z@{#1}%
    \copy\z@
  \endgroup
 }%
\fi
```

17 Underlying basic hypertext macros

Links have an optional type, a filename (possibly a URL), an internal name, and some marked text. (Caution: the internal name may contain babel shorthand characters.) If the second parameter is empty, its an internal link, otherwise we need to open another file or a URL. A link start has a type, and a URL.

```
\def\hyper@@link{\let\Hy@reserved@a\relax
 \@ifnextchar[{\hyper@link@}{\hyper@link@[link]}%
}
% #1: type
% #2: URL
% #3: destination name
% #4: text
\def\hyper@link@[#1]#2#3#4{%
 \ltx@ifempty{#4}{% link text
  \Hy@Warning{Suppressing empty link}%
 }{%
  \begingroup
   \protected@edef\Hy@tempa{#2}%
   \edef\Hy@tempb{#3}%
   \ifx\Hy@tempa\ltx@empty
    \ifx\Hy@tempb\ltx@empty
     \Hy@Warning{Suppressing link with empty target}%
     \toks@{%
```

```
          \endgroup
          \ltx@secondoftwo
        }%
      \else
        \toks@{%
          \endgroup
          \hyper@link{#1}%
        }%
      \fi
    \else
      \toks@{%
        \endgroup
        \expandafter\hyper@readexternallink#2\\{#1}%
      }%
    \fi
    \Hy@safe@activesfalse
    \toks@\expandafter{%
      \the\expandafter\toks@
      \expandafter{\Hy@tempb}{#4}%
    }%
  \the\toks@
 }%
}
```

The problem here is that the first (URL) parameter may be a local `file:` reference (in which case some browsers treat it differently) or a genuine URL, in which case we'll have to activate a real Web browser. Note that a simple name is also a URL, as that is interpreted as a relative file name. We have to worry about `#` signs in a local file as well.

```
\def\hyper@readexternallink#1\\#2#3#4{%
  \begingroup
    \let\\\relax
  \expandafter\endgroup
  \expandafter\@@hyper@@readexternallink#1\\{#2}{#3}{#4}%
}
\def\@@hyper@@readexternallink#1\\#2#3#4{%
```

Parameters are:

1. The URL or file name
2. The type
3. The internal name
4. The link string

We need to get the 1st parameter properly expanded, so we delimit the arguments rather than passing it inside a group.

```
  \@hyper@readexternallink{#2}{#3}{#4}#1::\\{#1}%
}
```

Now (potentially), we are passed: 1) The link type 2) The internal name, 3) the link string, 4) the URL type (http, mailto, file etc), 5) the URL details 6) anything after a real : in the URL 7) the whole URL again

```
\def\@pdftempwordfile{file}%
\def\@pdftempwordrun{run}%
\def\@hyper@readexternallink#1#2#3#4:#5:#6\\#7{%
```

If there are no colons at all (#6 is blank), its a local file; if the URL type (#4) is blank, its probably a Mac filename, so treat it like a file: URL. The only flaw is if its a relative Mac path, with several colon-separated elements — then we lose. Such names must be prefixed with an explicit dvi:

```
\ifx\\#6\\%
  \@hyper@linkfile file:#7\\{#3}{#2}{#7}%
\else
  \ifx\\#4\\%
    \@hyper@linkfile file:#7\\{#3}{#2}{#7}%
  \else
```

If the URL type is 'file', pass it for local opening

```
    \def\@pdftempa{#4}%
    \ifx\@pdftempa\@pdftempwordfile
      \@hyper@linkfile#7\\{#3}{#2}{#7}%
    \else
```

if it starts 'run:', its to launch an application.

```
      \ifx\@pdftempa\@pdftempwordrun
        \ifHy@pdfa
          \Hy@Error{%
            PDF/A: Launch action is prohibited%
          }\@ehc
          \begingroup
            \leavevmode
            #2%
          \endgroup
        \else
          \@hyper@launch#7\\{#3}{#2}%
        \fi
      \else
```

otherwise its a URL

```
        \hyper@linkurl{#3}{#7\ifx\\#2\\\else\hyper@hash#2\fi}%
      \fi
    \fi
  \fi
\fi
}
```

By default, turn run: into file:

```
\def\@hyper@launch run:#1\\#2#3{% filename, anchor text, linkname
  \hyper@linkurl{#2}{%
    \Hy@linkfileprefix
    #1%
    \ifx\\#3\\%
    \else
      \hyper@hash
      #3%
    \fi
  }%
}
```

D P Story <story@uakron.edu> pointed out that relative paths starting .. fell over. Switched to using \filename@parse to solve this.

```
\def\@hyper@linkfile file:#1\\#2#3#4{%
    %file url,link string, name, original uri
  \filename@parse{#1}%
  \ifx\filename@ext\relax
```

```
    \edef\filename@ext{\XR@ext}%
  \fi
  \def\use@file{\filename@area\filename@base.\filename@ext}%
  \Hy@IfStringEndsWith\filename@ext\XR@ext{%
    \hyper@linkfile{#2}{\use@file}{#3}%
  }{%
    \ifx\@baseurl\@empty
      \hyper@linkurl{#2}{%
        #4\ifx\\#3\\\else\hyper@hash#3\fi
      }%
    \else
      \hyper@linkurl{#2}{\use@file\ifx\\#3\\\else\hyper@hash#3\fi}%
    \fi
  }%
}
\def\Hy@IfStringEndsWith#1#2{%
  \begingroup
    \edef\x{#1}%
    \@onelevel@sanitize\x
    \edef\x{.\x$}%
    \edef\y{#2}%
    \@onelevel@sanitize\y
    \edef\y{.\y$}%
   \expandafter\def\expandafter\z\expandafter##\expandafter1\y##2\@nil{%
      \endgroup
      \ifx\relax##2\relax
        \expandafter\ltx@secondoftwo
      \else
        \expandafter\ltx@firstoftwo
      \fi
    }%
  \expandafter\expandafter\expandafter\z\expandafter\x\y\@nil
}
\def\Hy@StringLocalhost{localhost}
\@onelevel@sanitize\Hy@StringLocalhost
\def\Hy@CleanupFile#1{%
  \edef#1{#1}%
  \expandafter\Hy@@CleanupFile#1\hbox///\hbox\@nil{#1}%
}
\def\Hy@@CleanupFile#1//#2/#3\hbox#4\@nil#5{%
  \begingroup
    \toks@{\endgroup}%
    \def\x{#1}%
    \ifx\x\@empty
      \def\x{#2}%
      \ifx\x\@empty
        \toks@{\endgroup\def#5{/#3}}%
      \else
        \@onelevel@sanitize\x
        \ifx\x\Hy@StringLocalhost
          \toks@{\endgroup\def#5{/#3}}%
        \fi
      \fi
    \fi
  \the\toks@
}
```

Anchors have a name, and marked text. We have to be careful with the marked text, as if we break off part of something to put a `\special` around it, all hell breaks loose. Therefore, we check the category code of the first token, and only proceed if its safe. Tanmoy sorted this out.

A curious case arises if the original parameter was in braces. That means that `#2` comes here a multiple letters, and the `noexpand` just looks at the first one, putting the rest in the output. Yuck.

```
\long\def\hyper@@anchor#1#2{\@hyper@@anchor#1\relax#2\relax}
\long\def\@hyper@@anchor#1\relax#2#3\relax{%
  \ifx\\#1\\%
    #2\Hy@Warning{Ignoring empty anchor}%
  \else
    \def\anchor@spot{#2#3}%
    \let\put@me@back\@empty
    \ifx\relax#2\relax
    \else
      \ifHy@nesting
      \else
        \ifcat a\noexpand#2\relax
        \else
          \ifcat 0\noexpand#2 \relax
          \else
%           \typeout{Anchor start is not alphanumeric %
%             on input line\the\inputlineno%
%           }%
            \let\anchor@spot\@empty
            \def\put@me@back{#2#3}%
          \fi
        \fi
      \fi
    \fi
    \ifHy@activeanchor
      \anchor@spot
    \else
      \hyper@anchor{#1}%
    \fi
    \expandafter\put@me@back
  \fi
  \let\anchor@spot\@empty
}
\let\anchor@spot\ltx@empty
```

18 Option 'destlabel'

```
\ifHy@destlabel
```

\hyper@newdestlabel

```
  \def\hyper@newdestlabel#1#2{%
    \begingroup
      \Hy@safe@activestrue
      \edef\x{\endgroup
        \noexpand\@newl@bel{HyDL}{#1}{#2}%
      }%
    \x
  }%
```

\hyper@destlabel@hook

```
\providecommand*{\hyper@destlabel@hook}{}%
```

\Hy@DestRename

```
\newcommand*{\Hy@DestRename}[2]{%
  \ltx@IfUndefined{HyDL!#1}{%
    \begingroup
      \Hy@safe@activestrue
      \edef\dest@name{#1}%
      \edef\label@name{#2}%
      \hyper@destlabel@hook
      \Hy@IsNotEmpty{dest@name}{%
        \Hy@IsNotEmpty{label@name}{%
          \global\expandafter
          \let\csname HyDL!#1\endcsname\ltx@empty
          \if@filesw
            \protected@write\@auxout{}{%
              \string\hyper@newdestlabel
              {#1}%
              {\label@name}%
            }%
          \fi
        }%
      }%
    \endgroup
  }{}%
}%
```

\HyperDestRename

```
\newcommand*{\HyperDestRename}[2]{%
  \AtBeginDocument{%
    \Hy@DestRename{#1}{#2}%
  }%
}%
\AtBeginDocument{%
  \let\HyperDestRename\Hy@DestRename
}%
```

\Hy@IsNotEmpty

```
\def\Hy@IsNotEmpty#1{%
  \ltx@IfUndefined{#1}\ltx@gobble{%
    \expandafter\ifx\csname#1\endcsname\ltx@empty
      \expandafter\ltx@gobble
    \else
      \expandafter\ltx@firstofone
    \fi
  }%
}%

\ltx@GlobalAppendToMacro\label@hook{%
  \HyperDestRename\@currentHref\label@name
}%
```

\HyperDestLabelReplace

```
\def\HyperDestLabelReplace#1{%
  \ltx@ifundefined{HyDL@#1}{%
    #1%
```

```
    }{%
      \csname HyDL@#1\endcsname
    }%
  }%
```

\HyperDestNameFilter

```
\let\HyperDestNameFilter\HyperDestLabelReplace
\else
```

\hyper@newdestlabel

```
  \let\hyper@newdestlabel\ltx@gobbletwo
```

\HyperDestLabelReplace

```
  \let\HyperDestLabelReplace\ltx@firstofone
```

\HyperDestRename

@gobbletwo

```
\fi
\Hy@DisableOption{destlabel}
```

Provide a dummy default definition of `\hyper@newdestlabel` inside the .aux files.

```
\AddLineBeginAux{%
  \string\providecommand\string\hyper@newdestlabel[2]{}%
}
```

19 Compatibility with the *LaTeX2html* package

Map our macro names on to Nikos', so that documents prepared for that system will work without change.

Note, however, that the whole complicated structure for segmenting documents is not supported; it is assumed that the user will load `html.sty` first, and then `hyperref.sty`, so that the definitions in `html.sty` take effect, and are then overridden in a few circumstances by this package.

```
\let\htmladdimg\hyperimage
\def\htmladdnormallink#1#2{\href{#2}{#1}}
\def\htmladdnormallinkfoot#1#2{\href{#2}{#1}\footnote{#2}}
\def\htmlref#1#2{% anchor text, label
  \label@hyperref[{#2}]{#1}%
}
```

This is really too much. The LaTeX2html package defines its own `\hyperref` command, with a different syntax. Was this always here? Its weird, anyway. We interpret it in the 'printed' way, since we are about fidelity to the page.

```
\def\@@latextohtmlX{%
  \let\hhyperref\hyperref
  \def\hyperref##1##2##3##4{% anchor text for HTML
                % text to print before label in print
                % label
                % post-label text in print
    ##2\ref{##4}##3%
  }%
}
```

20 Forms creation

Allow for creation of PDF or HTML forms. The effects here are limited somewhat by the need to support both output formats, so it may not be as clever as something which only wants to make PDF forms.

I (Sebastian) could not have started this without the encouragement of T V Raman.

20.1 Field flags

The field flags are organized in a bit set.

```
\RequirePackage{bitset}
```

Each flag has a option name, an `\if` switch, and a bit position. The default is always 'false', the flag is clear. This is also the default of the switch created by `\newif`.

The names of the flags in the PDF specification (1.7) are used as lowercase option names.

`\HyField@NewFlag`

#1: type: `F` annot flags, `Ff` field flags
#2: PDF name
#3: PDF position

```
\def\HyField@NewFlag#1#2{%
  \lowercase{\HyField@NewOption{#2}}%
  \lowercase{\HyField@NewBitsetFlag{#2}}{#2}{#1}%
}
```

`\HyField@NewFlagOnly`

```
\def\HyField@NewFlagOnly#1#2{%
  \lowercase{\HyField@NewBitsetFlag{#2}}{#2}{#1}%
}
```

`\HyField@NewOption`

#1: option name

```
\def\HyField@NewOption#1{%
  \expandafter\newif\csname ifFld@#1\endcsname
  \define@key{Field}{#1}[true]{%
    \lowercase{\Field@boolkey{##1}}{#1}%
  }%
}
```

`\HyField@NewBitsetFlag`

Package 'bitset' uses zero based positions, the PDF specification starts with one.
#1: option
#2: PDF name
#3: type: `F` annot flags, `Ff` field flags
#4: PDF position

```
\def\HyField@NewBitsetFlag#1#2#3#4{%
  \begingroup
    \count@=#4\relax
    \advance\count@\m@ne
    \def\x##1{%
      \endgroup
      \expandafter\def\csname HyField@#3@#1\endcsname{##1}%
      \expandafter\ifx\csname HyField@#3@##1\endcsname\relax
        \expandafter\edef\csname HyField@#3@##1\endcsname{%
          (\number#4) #2%
        }%
```

```
    \else
     \expandafter\edef\csname HyField@#3@##1\endcsname{%
      \csname HyField@#3@##1\endcsname
      /#2%
     }%
    \fi
   }%
  \expandafter\x\expandafter{\the\count@}%
}
```

\HyField@UseFlag The bit set is HyField@#1

```
\def\HyField@UseFlag#1#2{%
  \lowercase{\HyField@@UseFlag{#2}}{#1}%
}
```

\HyField@@UseFlag

```
\def\HyField@@UseFlag#1#2{%
  \bitsetSetValue{HyField@#2}{%
    \csname HyField@#2@#1\endcsname
  }{%
    \csname ifFld@#1\endcsname 1\else 0\fi
  }%
}
```

\HyField@SetFlag The bit set is HyField@#1

```
\def\HyField@SetFlag#1#2{%
  \lowercase{\HyField@@SetFlag{#2}}{#1}%
}
```

\HyField@@SetFlag

```
\def\HyField@@SetFlag#1#2{%
  \bitsetSetValue{HyField@#2}{%
    \csname HyField@#2@#1\endcsname
  }{1}%
}
```

\HyField@PrintFlags

```
\def\HyField@PrintFlags#1#2{%
  \ifHy@verbose
    \begingroup
      \let\Hy@temp\@empty
      \let\MessageBreak\relax
      \expandafter\@for\expandafter\x\expandafter:\expandafter=%
      \bitsetGetSetBitList{HyField@#1}\do{%
        \edef\Hy@temp{%
          \Hy@temp
          \csname HyField@#1@\x\endcsname\MessageBreak
        }%
      }%
    \edef\x{\endgroup
      \noexpand\Hy@Info{%
        Field flags: %
          \expandafter\ifx\@car#1\@nil S\else/\fi
          #1 %
          \bitsetGetDec{HyField@#1} %
          (0x\bitsetGetHex{HyField@#1}{32})\MessageBreak
        \Hy@temp
```

```
      for #2%
    }%
  }\x
 \fi
}
```

20.1.1 Declarations of field flags

"Table 8.70 Field flags common to all field types"

```
\HyField@NewFlag{Ff}{ReadOnly}{1}
\HyField@NewFlag{Ff}{Required}{2}
\HyField@NewFlag{Ff}{NoExport}{3}
```

"Table 8.75 Field flags specific to button fields"

```
\HyField@NewFlag{Ff}{NoToggleToOff}{15}
\HyField@NewFlag{Ff}{Radio}{16}
\HyField@NewFlag{Ff}{Pushbutton}{17}
\HyField@NewFlag{Ff}{RadiosInUnison}{26}
```

"Table 8.77 Field flags specific to text fields"

```
\HyField@NewFlag{Ff}{Multiline}{13}
\HyField@NewFlag{Ff}{Password}{14}
\HyField@NewFlag{Ff}{FileSelect}{21}% PDF 1.4
\HyField@NewFlag{Ff}{DoNotSpellCheck}{23}% PDF 1.4
\HyField@NewFlag{Ff}{DoNotScroll}{24}% PDF 1.4
\HyField@NewFlag{Ff}{Comb}{25}% PDF 1.4
\HyField@NewFlag{Ff}{RichText}{26}% PDF 1.5
```

"Table 8.79 field flags specific to choice fields"

```
\HyField@NewFlag{Ff}{Combo}{18}
\HyField@NewFlag{Ff}{Edit}{19}
\HyField@NewFlag{Ff}{Sort}{20}
\HyField@NewFlag{Ff}{MultiSelect}{22}% PDF 1.4
% \HyField@NewFlag{Ff}{DoNotSpellCheck}{23}% PDF 1.4
\HyField@NewFlag{Ff}{CommitOnSelChange}{27}% PDF 1.5
```

Signature fields are not supported.

Until 6.76i hyperref uses field option 'combo' to set three flags 'Combo', 'Edit', and 'Sort'. Option 'popdown' sets flag 'Combo' only.

```
\newif\ifFld@popdown
\define@key{Field}{popdown}[true]{%
  \lowercase{\Field@boolkey{#1}}{popdown}%
}
```

Annotation flags. The form objects are widget annotations. There are two flags for readonly settings, the one in the annotation flags is ignored, instead the other in the field flags is used.

Flag `Print` is not much useful, because hyperref do not use the appearance entry of the annotations for most fields.

```
\HyField@NewFlag{F}{Invisible}{1}
\HyField@NewFlag{F}{Hidden}{2}% PDF 1.2
\HyField@NewFlag{F}{Print}{3}% PDF 1.2
\HyField@NewFlag{F}{NoZoom}{4}% PDF 1.2
\HyField@NewFlag{F}{NoRotate}{5}% PDF 1.3
\HyField@NewFlag{F}{NoView}{6}% PDF 1.3
\HyField@NewFlag{F}{Locked}{8}% PDF 1.4
\HyField@NewFlag{F}{ToggleNoView}{9}% PDF 1.5
\HyField@NewFlag{F}{LockedContents}{10}% PDF 1.7
```

```
\ifHy@pdfa
  \def\HyField@PDFAFlagWarning#1#2{%
    \Hy@Warning{%
      PDF/A: Annotation flag `#1' must\MessageBreak
      be set to `#2'%
    }%
  }%
  \Fld@invisiblefalse
  \def\Fld@invisibletrue{%
    \HyField@PDFAFlagWarning{invisible}{false}%
  }%
  \Fld@hiddenfalse
  \def\Fld@hiddentrue{%
    \HyField@PDFAFlagWarning{hidden}{false}%
  }%
  \Fld@printtrue
  \def\Fld@printfalse{%
    \HyField@PDFAFlagWarning{print}{true}%
  }%
  \Fld@nozoomtrue
  \def\Fld@nozoomfalse{%
    \HyField@PDFAFlagWarning{nozoom}{true}%
  }%
  \Fld@norotatetrue
  \def\Fld@norotatefalse{%
    \HyField@PDFAFlagWarning{norotate}{true}%
  }%
  \Fld@noviewfalse
  \def\Fld@noviewtrue{%
    \HyField@PDFAFlagWarning{noview}{false}%
  }%
\fi
```

Submit flags. Flag 1 Include/Exclude is not supported, use option noexport instead.

```
\HyField@NewFlag{Submit}{IncludeNoValueFields}{2}
\HyField@NewFlagOnly{Submit}{ExportFormat}{3}
\HyField@NewFlag{Submit}{GetMethod}{4}
\HyField@NewFlag{Submit}{SubmitCoordinates}{5}
\HyField@NewFlagOnly{Submit}{XFDF}{6}
\HyField@NewFlag{Submit}{IncludeAppendSaves}{7}
\HyField@NewFlag{Submit}{IncludeAnnotations}{8}
\HyField@NewFlagOnly{Submit}{SubmitPDF}{9}
\HyField@NewFlag{Submit}{CanonicalFormat}{10}
\HyField@NewFlag{Submit}{ExclNonUserAnnots}{11}
\HyField@NewFlag{Submit}{ExclFKey}{12}
\HyField@NewFlag{Submit}{EmbedForm}{14}
```

```
\define@key{Field}{export}{%
  \lowercase{\def\Hy@temp{#1}}%
  \@ifundefined{Fld@export@\Hy@temp}{%
    \@onelevel@sanitize\Hy@temp
    \Hy@Error{%
      Unknown export format `\Hy@temp'.\MessageBreak
      Known formats are `FDF', `HTML', `XFDF', and `PDF'%
    }\@ehc
  }{%
    \let\Fld@export\Hy@temp
```

```
  }%
}
\def\Fld@export{fdf}
\@namedef{Fld@export@fdf}{0}%
\@namedef{Fld@export@html}{1}%
\@namedef{Fld@export@xfdf}{2}%
\@namedef{Fld@export@pdf}{3}%
```

20.1.2 Set submit flags

\HyField@FlagsSubmit

```
\def\HyField@FlagsSubmit{%
  \bitsetReset{HyField@Submit}%
  \ifcase\@nameuse{Fld@export@\Fld@export} %
    % FDF
    \HyField@UseFlag{Submit}{IncludeNoValueFields}%
    \HyField@UseFlag{Submit}{SubmitCoordinates}%
    \HyField@UseFlag{Submit}{IncludeAppendSaves}%
    \HyField@UseFlag{Submit}{IncludeAnnotations}%
    \HyField@UseFlag{Submit}{CanonicalFormat}%
    \HyField@UseFlag{Submit}{ExclNonUserAnnots}%
    \HyField@UseFlag{Submit}{ExclFKey}%
    \HyField@UseFlag{Submit}{EmbedForm}%
  \or % HTML
    \HyField@SetFlag{Submit}{ExportFormat}%
    \HyField@UseFlag{Submit}{IncludeNoValueFields}%
    \HyField@UseFlag{Submit}{GetMethod}%
    \HyField@UseFlag{Submit}{SubmitCoordinates}%
    \HyField@UseFlag{Submit}{CanonicalFormat}%
  \or % XFDF
    \HyField@SetFlag{Submit}{XFDF}%
    \HyField@UseFlag{Submit}{IncludeNoValueFields}%
    \HyField@UseFlag{Submit}{SubmitCoordinates}%
    \HyField@UseFlag{Submit}{CanonicalFormat}%
  \or % PDF
    \HyField@SetFlag{Submit}{SubmitPDF}%
    \HyField@UseFlag{Submit}{GetMethod}%
  \fi
  \HyField@PrintFlags{Submit}{submit button field}%
  \bitsetIsEmpty{HyField@Submit}{%
    \let\Fld@submitflags\ltx@empty
  }{%
    \edef\Fld@submitflags{/Flags \bitsetGetDec{HyField@Submit}}%
  }%
}
```

20.1.3 Set annot flags in fields

\HyField@FlagsAnnot

```
\def\HyField@FlagsAnnot#1{%
  \bitsetReset{HyField@F}%
  \HyField@UseFlag{F}{Invisible}%
  \HyField@UseFlag{F}{Hidden}%
  \HyField@UseFlag{F}{Print}%
  \HyField@UseFlag{F}{NoZoom}%
  \HyField@UseFlag{F}{NoRotate}%
  \HyField@UseFlag{F}{NoView}%
```

```
  \HyField@UseFlag{F}{Locked}%
  \HyField@UseFlag{F}{ToggleNoView}%
  \HyField@UseFlag{F}{LockedContents}%
  \HyField@PrintFlags{F}{#1}%
  \bitsetIsEmpty{HyField@F}{%
    \let\Fld@annotflags\ltx@empty
  }{%
    \edef\Fld@annotflags{/F \bitsetGetDec{HyField@F}}%
  }%
}
```

20.1.4 Pushbutton field

\HyField@FlagsPushButton

```
\def\HyField@FlagsPushButton{%
  \HyField@FlagsAnnot{push button field}%
  \bitsetReset{HyField@Ff}%
  \HyField@UseFlag{Ff}{ReadOnly}%
  \HyField@UseFlag{Ff}{Required}%
  \HyField@UseFlag{Ff}{NoExport}%
  \HyField@SetFlag{Ff}{Pushbutton}%
  \HyField@PrintFlags{Ff}{push button field}%
  \bitsetIsEmpty{HyField@Ff}{%
    \let\Fld@flags\ltx@empty
  }{%
    \edef\Fld@flags{/Ff \bitsetGetDec{HyField@Ff}}%
  }%
}
```

20.1.5 Check box field

\HyField@FlagsCheckBox

```
\def\HyField@FlagsCheckBox{%
  \HyField@FlagsAnnot{check box field}%
  \bitsetReset{HyField@Ff}%
  \HyField@UseFlag{Ff}{ReadOnly}%
  \HyField@UseFlag{Ff}{Required}%
  \HyField@UseFlag{Ff}{NoExport}%
  \HyField@PrintFlags{Ff}{check box field}%
  \bitsetIsEmpty{HyField@Ff}{%
    \let\Fld@flags\ltx@empty
  }{%
    \edef\Fld@flags{/Ff \bitsetGetDec{HyField@Ff}}%
  }%
}
```

20.1.6 Radio button field

\HyField@FlagsRadioButton

```
\def\HyField@FlagsRadioButton{%
  \HyField@FlagsAnnot{radio button field}%
  \bitsetReset{HyField@Ff}%
  \HyField@UseFlag{Ff}{ReadOnly}%
  \HyField@UseFlag{Ff}{Required}%
  \HyField@UseFlag{Ff}{NoExport}%
  \HyField@UseFlag{Ff}{NoToggleToOff}%
  \HyField@SetFlag{Ff}{Radio}%
```

```
  \HyField@UseFlag{Ff}{RadiosInUnison}%
  \HyField@PrintFlags{Ff}{radio button field}%
  \bitsetIsEmpty{HyField@Ff}{%
    \let\Fld@flags\ltx@empty
  }{%
    \edef\Fld@flags{/Ff \bitsetGetDec{HyField@Ff}}%
  }%
}
```

20.1.7 Text fields

\HyField@FlagsText

```
\def\HyField@FlagsText{%
  \HyField@FlagsAnnot{text field}%
  \bitsetReset{HyField@Ff}%
  \HyField@UseFlag{Ff}{ReadOnly}%
  \HyField@UseFlag{Ff}{Required}%
  \HyField@UseFlag{Ff}{NoExport}%
  \HyField@UseFlag{Ff}{Multiline}%
  \HyField@UseFlag{Ff}{Password}%
  \HyField@UseFlag{Ff}{FileSelect}%
  \HyField@UseFlag{Ff}{DoNotSpellCheck}%
  \HyField@UseFlag{Ff}{DoNotScroll}%
  \ifFld@comb
    \ifcase0\ifFld@multiline
          \else\ifFld@password
          \else\ifFld@fileselect
          \else 1\fi\fi\fi\relax
      \Hy@Error{%
        Field option `comb' cannot used together with\MessageBreak
        `multiline', `password', or `fileselect'%
      }\@ehc
    \else
      \HyField@UseFlag{Ff}{Comb}%
    \fi
  \fi
  \HyField@UseFlag{Ff}{RichText}%
  \HyField@PrintFlags{Ff}{text field}%
  \bitsetIsEmpty{HyField@Ff}{%
    \let\Fld@flags\ltx@empty
  }{%
    \edef\Fld@flags{/Ff \bitsetGetDec{HyField@Ff}}%
  }%
}
```

20.1.8 Choice fields

\HyField@FlagsChoice

```
\def\HyField@FlagsChoice{%
  \HyField@FlagsAnnot{choice field}%
  \bitsetReset{HyField@Ff}%
  \HyField@UseFlag{Ff}{ReadOnly}%
  \HyField@UseFlag{Ff}{Required}%
  \HyField@UseFlag{Ff}{NoExport}%
  \HyField@UseFlag{Ff}{Combo}%
  \ifFld@combo
    \HyField@UseFlag{Ff}{Edit}%
```

```
  \fi
  \HyField@UseFlag{Ff}{Sort}%
  \HyField@UseFlag{Ff}{MultiSelect}%
  \ifFld@combo
    \ifFld@edit
      \HyField@UseFlag{Ff}{DoNotSpellCheck}%
    \fi
  \fi
  \HyField@UseFlag{Ff}{CommitOnSelChange}%
  \HyField@PrintFlags{Ff}{choice field}%
  \bitsetIsEmpty{HyField@Ff}{%
    \let\Fld@flags\ltx@empty
  }{%
    \edef\Fld@flags{/Ff \bitsetGetDec{HyField@Ff}}%
  }%
}
```

20.2 Choice field

\HyField@PDFChoices

#1: list of choices in key value syntax, key = exported name, value = displayed text.
Input: \Fld@default, \Fld@value, \ifFld@multiselect
Result: \Fld@choices with entries: /Opt, /DV, /V, /I.

```
\def\HyField@PDFChoices#1{%
  \begingroup
    \global\let\Fld@choices\ltx@empty
    \let\HyTmp@optlist\ltx@empty
    \let\HyTmp@optitem\relax
    \count@=0 %
    \kv@parse{#1}{%
      \Hy@pdfstringdef\kv@key\kv@key
      \ifx\kv@value\relax
        \ifnum\Hy@pdfversion<3 % implementation note 122, PDF spec 1.7
          \xdef\Fld@choices{\Fld@choices[(\kv@key)(\kv@key)]}%
        \else
          \xdef\Fld@choices{\Fld@choices(\kv@key)}%
        \fi
      \else
        \Hy@pdfstringdef\kv@value\kv@value
        \xdef\Fld@choices{\Fld@choices[(\kv@value)(\kv@key)]}%
      \fi
      \edef\HyTmp@optlist{%
        \HyTmp@optlist
        \HyTmp@optitem{\the\count@}{\kv@key}0%
      }%
      \advance\count@ by 1 %
      \@gobbletwo
    }%
    \xdef\Fld@choices{/Opt[\Fld@choices]}%
    \ifFld@multiselect
      \HyField@@PDFChoices{DV}\Fld@default
      \HyField@@PDFChoices{V}\Fld@value
    \else
      \ifx\Fld@default\relax
      \else
        \pdfstringdef\Hy@gtemp\Fld@default
        \xdef\Fld@choices{\Fld@choices/DV(\Hy@gtemp)}%
```

```
      \fi
      \ifx\Fld@value\relax
      \else
        \pdfstringdef\Hy@gtemp\Fld@value
        \xdef\Fld@choices{\Fld@choices/V(\Hy@gtemp)}%
      \fi
    \fi
  \endgroup
}
```

\HyField@@PDFChoices

```
\def\HyField@@PDFChoices#1#2{%
  \ifx#2\relax
  \else
    \count@=0 %
    \def\HyTmp@optitem##1##2##3{%
      \def\HyTmp@key{##2}%
      \ifx\HyTmp@key\Hy@gtemp
        \expandafter\def\expandafter\HyTmp@optlist\expandafter{%
          \HyTmp@optlist
          \HyTmp@optitem{##1}{##2}1%
        }%
        \let\HyTmp@found=Y%
      \else
        \expandafter\def\expandafter\HyTmp@optlist\expandafter{%
          \HyTmp@optlist
          \HyTmp@optitem{##1}{##2}##3%
        }%
      \fi
    }%
    \expandafter\comma@parse\expandafter{#2}{%
      \pdfstringdef\Hy@gtemp\comma@entry
      \let\HyTmp@found=N %
      \expandafter\let\expandafter\HyTmp@optlist\expandafter\@empty
      \HyTmp@optlist
      \ifx\HyTmp@found Y%
        \advance\count@ by 1 %
      \else
        \@onelevel@sanitize\comma@entry
        \PackageWarning{hyperref}{%
          \string\ChoiceBox: Ignoring value `\comma@entry',%
          \MessageBreak
          it cannot be found in the choices%
        }%
      \fi
      \@gobble
    }%
    \def\HyTmp@optitem##1##2##3{%
      \ifnum##3=1 %
        (##2)%
      \fi
    }%
    \ifcase\count@
    \or
      \xdef\Fld@choices{\Fld@choices/#1\HyTmp@optlist}%
    \else
      \xdef\Fld@choices{\Fld@choices/#1[\HyTmp@optlist]}%
      \ifx#1V%
```

```
      \def\HyTmp@optitem##1##2##3{%
        \ifnum##3=1 %
          \@firstofone{ ##1}%
        \fi
      }%
      \edef\HyTmp@optlist{\HyTmp@optlist}%
      \xdef\Fld@choices{%
        \Fld@choices
        /I[\expandafter\@firstofone\HyTmp@optlist]%
      }%
    \fi
  \fi
\fi
}
```

20.3 Forms

\HyField@SetKeys

```
\def\HyField@SetKeys{%
  \kvsetkeys{Field}%
}

\newif\ifFld@checked
\newif\ifFld@disabled
\Fld@checkedfalse
\Fld@disabledfalse
\newcount\Fld@menulength
\newdimen\Field@Width
\newdimen\Fld@charsize
\Fld@charsize=10\p@
\def\Fld@maxlen{0}
\def\Fld@align{0}
\def\Fld@color{0 0 0 rg}
\def\Fld@bcolor{1 1 1}
\def\Fld@bordercolor{1 0 0}
\def\Fld@bordersep{1\p@}
\def\Fld@borderwidth{1}
\def\Fld@borderstyle{S}
\def\Fld@cbsymbol{4}
\def\Fld@radiosymbol{H}
\def\Fld@rotation{0}
\def\Form{\@ifnextchar[{\@Form}{\@Form[]}}
\def\endForm{\@endForm}
\newif\ifForm@html
\Form@htmlfalse
\def\Form@boolkey#1#2{%
  \csname Form@#2\ifx\relax#1\relax true\else#1\fi\endcsname
}
\define@key{Form}{action}{%
  \hyper@normalise\Hy@DefFormAction{#1}%
}
\def\Hy@DefFormAction{\def\Form@action}
\def\enc@@html{html}
\define@key{Form}{encoding}{%
  \def\Hy@tempa{#1}%
  \ifx\Hy@tempa\enc@@html
    \Form@htmltrue
```

```
    \def\Fld@export{html}%
  \else
    \Hy@Warning{%
      Form `encoding' key with \MessageBreak
      unknown value `#1'%
    }%
    \Form@htmlfalse
  \fi
}
\define@key{Form}{method}{%
  \lowercase{\def\Hy@temp{#1}}%
  \@ifundefined{Form@method@\Hy@temp}{%
    \@onelevel@sanitize\Hy@temp
    \Hy@Error{%
      Unknown method `\Hy@temp'.\MessageBreak
      Known values are `post' and `get'%
    }\@ehc
  }{%
    \let\Form@method\Hy@temp
    \ifcase\@nameuse{Form@method@\Hy@temp} %
      \Fld@getmethodfalse
    \else
      \Fld@getmethodtrue
    \fi
  }%
}
\def\Form@method{}
\@namedef{Form@method@post}{0}
\@namedef{Form@method@get}{1}
\newif\ifHyField@NeedAppearances
\def\HyField@NeedAppearancesfalse{%
  \global\let\ifHyField@NeedAppearances\iffalse
}
\def\HyField@NeedAppearancestrue{%
  \global\let\ifHyField@NeedAppearances\iftrue
}
\HyField@NeedAppearancestrue
\define@key{Form}{NeedAppearances}[true]{%
  \edef\Hy@tempa{#1}%
  \ifx\Hy@tempa\Hy@true
    \HyField@NeedAppearancestrue
  \else
    \ifx\Hy@tempa\Hy@false
      \HyField@NeedAppearancesfalse
    \else
      \Hy@Error{%
        Unexpected value `\Hy@tempa'\MessageBreak
        of option `NeedAppearances' instead of\MessageBreak
        `true' or `false'%
      }\@ehc
    \fi
  \fi
}
\def\Field@boolkey#1#2{%
  \csname Fld@#2\ifx\relax#1\relax true\else#1\fi\endcsname
}
\ifHy@texht
```

```
  \newtoks\Field@toks
  \Field@toks={ }%
  \def\Field@addtoks#1#2{%
    \edef\@processme{\Field@toks{\the\Field@toks\space #1="#2"}}%
    \@processme
  }%
\else
  \def\Hy@WarnHTMLFieldOption#1{%
    \Hy@Warning{%
      HTML field option `#1'\MessageBreak
      is ignored%
    }%
  }%
\fi
\def\Fld@checkequals#1=#2=#3\\{%
  \def\@currDisplay{#1}%
  \ifx\\#2\\%
    \def\@currValue{#1}%
  \else
    \def\@currValue{#2}%
  \fi
}
\define@key{Field}{loc}{%
  \def\Fld@loc{#1}%
}
\define@key{Field}{checked}[true]{%
  \lowercase{\Field@boolkey{#1}}{checked}%
}
\define@key{Field}{disabled}[true]{%
  \lowercase{\Field@boolkey{#1}}{disabled}%
}
\ifHy@texht
  \define@key{Field}{accesskey}{%
    \Field@addtoks{accesskey}{#1}%
  }%
  \define@key{Field}{tabkey}{%
    \Field@addtoks{tabkey}{#1}%
  }%
\else
  \define@key{Field}{accesskey}{%
    \Hy@WarnHTMLFieldOption{accesskey}%
  }%
  \define@key{Field}{tabkey}{%
    \Hy@WarnHTMLFieldOption{tabkey}%
  }%
\fi
\define@key{Field}{name}{%
  \def\Fld@name{#1}%
}
\let\Fld@altname\relax
\define@key{Field}{altname}{%
  \def\Fld@altname{#1}%
}
\let\Fld@mappingname\relax
\define@key{Field}{mappingname}{%
  \def\Fld@mappingname{#1}%
}
```

```
\define@key{Field}{width}{%
  \def\Fld@width{#1}%
  \Field@Width#1\setbox0=\hbox{m}%
}
\define@key{Field}{maxlen}{%
  \def\Fld@maxlen{#1}%
}
\define@key{Field}{menulength}{%
  \Fld@menulength=#1\relax
}
\define@key{Field}{height}{%
  \def\Fld@height{#1}%
}
\define@key{Field}{charsize}{%
  \setlength{\Fld@charsize}{#1}%
}
\define@key{Field}{borderwidth}{%
  \Hy@defaultbp\Fld@borderwidth{#1}%
}
\def\Hy@defaultbp#1#2{%
  \begingroup
  \afterassignment\Hy@defaultbpAux
  \dimen@=#2bp\relax{#1}{#2}%
}
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname dimexpr\endcsname\relax
  \def\Hy@defaultbpAux#1\relax#2#3{%
    \ifx!#1!%
      \endgroup
      \def#2{#3}%
    \else
      \dimen@=.99626\dimen@
      \edef\x{\endgroup
        \def\noexpand#2{%
          \strip@pt\dimen@
        }%
      }\x
    \fi
  }%
\else
  \def\Hy@defaultbpAux#1\relax#2#3{%
    \ifx!#1!%
      \endgroup
      \def#2{#3}%
    \else
      \edef\x{\endgroup
        \def\noexpand#2{%
          \strip@pt\dimexpr\dimen@*800/803\relax
        }%
      }\x
    \fi
  }%
\fi
\define@key{Field}{borderstyle}{%
  \let\Hy@temp\Fld@borderstyle
  \def\Fld@borderstyle{#1}%
  \Hy@Match\Fld@borderstyle{}{%
```

```
    ^[SDBIU]$%
  }{}{%
    \Hy@Warning{%
      Invalid value `\@pdfborderstyle'\MessageBreak
      for option `pdfborderstyle'. Valid values:\MessageBreak
      \space\space S (Solid), D (Dashed), B (Beveled),\MessageBreak
      \space\space I (Inset), U (Underline)\MessageBreak
      Option setting is ignored%
    }%
    \let\Fld@borderstyle\Hy@temp
  }%
}
\define@key{Field}{bordersep}{%
  \def\Fld@bordersep{#1}%
}
\define@key{Field}{default}{%
  \def\Fld@default{#1}%
}
\define@key{Field}{align}{%
  \def\Fld@align{#1}%
}
\define@key{Field}{value}{%
  \Hy@pdfstringdef\Fld@value{#1}%
}
\define@key{Field}{checkboxsymbol}{%
  \Fld@DingDef\Fld@cbsymbol{#1}%
}
\define@key{Field}{radiosymbol}{%
  \Fld@DingDef\Fld@radiosymbol{#1}%
}
\def\Fld@DingDef#1#2{%
  \let\Fld@temp\ltx@empty
  \Fld@@DingDef#2\ding{}\@nil
  \let#1\Fld@temp
}
\def\Fld@@DingDef#1\ding#2#3\@nil{%
  \expandafter\def\expandafter\Fld@temp\expandafter{%
    \Fld@temp
    #1%
  }%
  \ifx\\#3\\%
    \expandafter\@gobble
  \else
    \begingroup
      \lccode`0=#2\relax
    \lowercase{\endgroup
      \expandafter\def\expandafter\Fld@temp\expandafter{%
        \Fld@temp
        0%
      }%
    }%
    \expandafter\@firstofone
  \fi
  {%
    \Fld@@DingDef#3\@nil
  }%
}
```

```
\define@key{Field}{rotation}{%
  \def\Fld@rotation{#1}%
}
\define@key{Field}{backgroundcolor}{%
  \HyColor@FieldBColor{#1}\Fld@bcolor{hyperref}{backgroundcolor}%
}
\define@key{Field}{bordercolor}{%
  \HyColor@FieldBColor{#1}\Fld@bordercolor{hyperref}{bordercolor}%
}
\define@key{Field}{color}{%
  \HyColor@FieldColor{#1}\Fld@color{hyperref}{color}%
}
\let\Fld@onclick@code\ltx@empty
\let\Fld@format@code\ltx@empty
\let\Fld@validate@code\ltx@empty
\let\Fld@calculate@code\ltx@empty
\let\Fld@keystroke@code\ltx@empty
\let\Fld@onfocus@code\ltx@empty
\let\Fld@onblur@code\ltx@empty
\let\Fld@onmousedown@code\ltx@empty
\let\Fld@onmouseup@code\ltx@empty
\let\Fld@onenter@code\ltx@empty
\let\Fld@onexit@code\ltx@empty
\def\Hy@temp#1{%
  \expandafter\Hy@@temp\csname Fld@#1@code\endcsname{#1}%
}
\def\Hy@@temp#1#2{%
  \ifHy@pdfa
    \define@key{Field}{#2}{%
      \Hy@Error{%
        PDF/A: Additional action `#2' is prohibited%
      }\@ehc
    }%
  \else
    \define@key{Field}{#2}{%
      \def#1{##1}%
    }%
  \fi
}
\Hy@temp{keystroke}
\Hy@temp{format}
\Hy@temp{validate}
\Hy@temp{calculate}
\Hy@temp{onfocus}
\Hy@temp{onblur}
\Hy@temp{onenter}
\Hy@temp{onexit}
\let\Fld@calculate@sortkey\ltx@empty
\define@key{Field}{calculatesortkey}[1]{%
  \def\Fld@calculate@sortkey{#1}%
}
\ifHy@texht
  \def\Hy@temp#1{%
    \define@key{Field}{#1}{%
      \Field@addtoks{#1}{##1}%
    }%
```

```
  }%
\else
  \def\Hy@temp#1{%
    \define@key{Field}{#1}{%
      \Hy@WarnHTMLFieldOption{#1}%
    }%
  }%
\fi
\Hy@temp{ondblclick}
\Hy@temp{onmousedown}
\Hy@temp{onmouseup}
\Hy@temp{onmouseover}
\Hy@temp{onmousemove}
\Hy@temp{onmouseout}
\Hy@temp{onkeydown}
\Hy@temp{onkeyup}
\Hy@temp{onselect}
\Hy@temp{onchange}
\Hy@temp{onkeypress}
\ifHy@texht
  \define@key{Field}{onclick}{%
    \Field@addtoks{onclick}{#1}%
  }%
\else
  \ifHy@pdfa
    \define@key{Field}{onclick}{%
      \Hy@Error{%
        PDF/A: Action `onclick' is prohibited%
      }\@ehc
    }%
  \else
    \define@key{Field}{onclick}{%
      \def\Fld@onclick@code{#1}%
    }%
  \fi
\fi
\DeclareRobustCommand\TextField{%
  \@ifnextchar[{\@TextField}{\@TextField[]}%
}
\DeclareRobustCommand\ChoiceMenu{%
  \@ifnextchar[{\@ChoiceMenu}{\@ChoiceMenu[]}%
}
\DeclareRobustCommand\CheckBox{%
  \@ifnextchar[{\@CheckBox}{\@CheckBox[]}%
}
\DeclareRobustCommand\PushButton{%
  \@ifnextchar[{\@PushButton}{\@PushButton[]}%
}
\DeclareRobustCommand\Gauge{%
  \@ifnextchar[{\@Gauge}{\@Gauge[]}%
}
\DeclareRobustCommand\Submit{%
  \@ifnextchar[{\@Submit}{\@Submit[]}%
}
\DeclareRobustCommand\Reset{%
  \@ifnextchar[{\@Reset}{\@Reset[]}%
}
```

```
\def\LayoutTextField#1#2{% label, field
  #1 #2%
}
\def\LayoutChoiceField#1#2{% label, field
  #1 #2%
}
\def\LayoutCheckField#1#2{% label, field
  #1 #2%
}
\def\LayoutPushButtonField#1{% button
  #1%
}
\def\MakeRadioField#1#2{\vbox to #2{\hbox to #1{\hfill}\vfill}}
\def\MakeCheckField#1#2{\vbox to #2{\hbox to #1{\hfill}\vfill}}
\def\MakeTextField#1#2{\vbox to #2{\hbox to #1{\hfill}\vfill}}
\def\MakeChoiceField#1#2{\vbox to #2{\hbox to #1{\hfill}\vfill}}
\def\MakeButtonField#1{%
  \sbox0{%
    \hskip\Fld@borderwidth bp#1\hskip\Fld@borderwidth bp%
  }%
  \@tempdima\ht0 %
  \advance\@tempdima by \Fld@borderwidth bp %
  \advance\@tempdima by \Fld@borderwidth bp %
  \ht0\@tempdima
  \@tempdima\dp0 %
  \advance\@tempdima by \Fld@borderwidth bp %
  \advance\@tempdima by \Fld@borderwidth bp %
  \dp0\@tempdima
  \box0\relax
}
\def\DefaultHeightofSubmit{14pt}
\def\DefaultWidthofSubmit{2cm}
\def\DefaultHeightofReset{14pt}
\def\DefaultWidthofReset{2cm}
\def\DefaultHeightofCheckBox{\baselineskip}
\def\DefaultWidthofCheckBox{\baselineskip}
\def\DefaultHeightofChoiceMenu{\baselineskip}
\def\DefaultWidthofChoiceMenu{\baselineskip}
\def\DefaultHeightofText{\baselineskip}
\def\DefaultHeightofTextMultiline{4\baselineskip}
\def\DefaultWidthofText{3cm}
\def\DefaultOptionsofSubmit{print,name=Submit,noexport}
\def\DefaultOptionsofReset{print,name=Reset,noexport}
\def\DefaultOptionsofPushButton{print}
\def\DefaultOptionsofCheckBox{print}
\def\DefaultOptionsofText{print}
```

Default options for the types of \ChoiceMenu.

```
\def\DefaultOptionsofListBox{print}
\def\DefaultOptionsofComboBox{print,edit,sort}
\def\DefaultOptionsofPopdownBox{print}
\def\DefaultOptionsofRadio{print,notoggletooff}
```

21 Setup

```
\ifHy@hyperfigures
  \Hy@Info{Hyper figures ON}%
```

```
\else
  \Hy@Info{Hyper figures OFF}%
\fi
\ifHy@nesting
  \Hy@Info{Link nesting ON}%
\else
  \Hy@Info{Link nesting OFF}%
\fi
\ifHy@hyperindex
  \Hy@Info{Hyper index ON}%
\else
  \Hy@Info{Hyper index OFF}%
\fi
\ifHy@backref
  \Hy@Info{backreferencing ON}%
\else
  \Hy@Info{backreferencing OFF}%
\fi
\ifHy@colorlinks
  \Hy@Info{Link coloring ON}%
\else
  \Hy@Info{Link coloring OFF}%
\fi
\ifHy@ocgcolorlinks
  \Hy@Info{Link coloring with OCG ON}%
\else
  \Hy@Info{Link coloring with OCG OFF}%
\fi
\ifHy@pdfa
  \Hy@Info{PDF/A mode ON}%
\else
  \Hy@Info{PDF/A mode OFF}%
\fi
```

22 Low-level utility macros

We need unrestricted access to the #, ~ and " characters, so make them nice macros.

```
\edef\hyper@hash{\string#}
\edef\hyper@tilde{\string~}
\edef\hyper@quote{\string"}
```

Support \label before \begin{document}.

```
\def\@currentHref{Doc-Start}
\let\Hy@footnote@currentHref\@empty
```

We give the start of document a special label; this is used in backreferencing-by-section, to allow for cites before any sectioning commands. Set up PDF info.

```
\Hy@AtBeginDocument{%
  \Hy@pdfstringtrue
  \PDF@SetupDoc
  \let\PDF@SetupDoc\@empty
  \Hy@DisableOption{pdfpagescrop}%
  \Hy@DisableOption{pdfpagemode}%
  \Hy@DisableOption{pdfnonfullscreenpagemode}%
  \Hy@DisableOption{pdfdirection}%
  \Hy@DisableOption{pdfviewarea}%
  \Hy@DisableOption{pdfviewclip}%
```

```
  \Hy@DisableOption{pdfprintarea}%
  \Hy@DisableOption{pdfprintclip}%
  \Hy@DisableOption{pdfprintscaling}%
  \Hy@DisableOption{pdfduplex}%
  \Hy@DisableOption{pdfpicktraybypdfsize}%
  \Hy@DisableOption{pdfprintpagerange}%
  \Hy@DisableOption{pdfnumcopies}%
  \Hy@DisableOption{pdfstartview}%
  \Hy@DisableOption{pdfstartpage}%
  \Hy@DisableOption{pdftoolbar}%
  \Hy@DisableOption{pdfmenubar}%
  \Hy@DisableOption{pdfwindowui}%
  \Hy@DisableOption{pdffitwindow}%
  \Hy@DisableOption{pdfcenterwindow}%
  \Hy@DisableOption{pdfdisplaydoctitle}%
  \Hy@DisableOption{pdfpagelayout}%
  \Hy@DisableOption{pdflang}%
  \Hy@DisableOption{baseurl}%
  \ifHy@texht\else\hyper@anchorstart{Doc-Start}\hyper@anchorend\fi
  \Hy@pdfstringfalse
}
```

Ignore star from referencing macros:

```
\LetLtxMacro\NoHy@OrgRef\ref
\DeclareRobustCommand*{\ref}{%
  \@ifstar\NoHy@OrgRef\NoHy@OrgRef
}
\LetLtxMacro\NoHy@OrgPageRef\pageref
\DeclareRobustCommand*{\pageref}{%
  \@ifstar\NoHy@OrgPageRef\NoHy@OrgPageRef
}
```

23 Localized nullifying of package

Sometimes we just don't want the wretched package interfering with us. Define an environment we can put in manually, or include in a style file, which stops the hypertext functions doing anything. This is used, for instance, in the Elsevier classes, to stop **hyperref** playing havoc in the front matter.

```
\def\NoHyper{%
  \def\hyper@link@[##1]##2##3##4{##4\Hy@xspace@end}%
  \def\hyper@@anchor##1##2{##2\Hy@xspace@end}%
  \global\let\hyper@livelink\hyper@link
  \gdef\hyper@link##1##2##3{##3\Hy@xspace@end}%
  \let\hyper@anchor\ltx@gobble
  \let\hyper@anchorstart\ltx@gobble
  \def\hyper@anchorend{\Hy@xspace@end}%
  \let\hyper@linkstart\ltx@gobbletwo
  \def\hyper@linkend{\Hy@xspace@end}%
  \def\hyper@linkurl##1##2{##1\Hy@xspace@end}%
  \def\hyper@linkfile##1##2##3{##1\Hy@xspace@end}%
  \let\Hy@backout\@gobble
}
\def\stop@hyper{%
  \def\hyper@link@[##1]##2##3##4{##4\Hy@xspace@end}%
  \let\Hy@backout\@gobble
  \let\hyper@@anchor\ltx@gobble
```

```
  \def\hyper@link##1##2##3{##3\Hy@xspace@end}%
  \let\hyper@anchor\ltx@gobble
  \let\hyper@anchorstart\ltx@gobble
  \def\hyper@anchorend{\Hy@xspace@end}%
  \let\hyper@linkstart\ltx@gobbletwo
  \def\hyper@linkend{\Hy@xspace@end}%
  \def\hyper@linkurl##1##2{##1\Hy@xspace@end}%
  \def\hyper@linkfile##1##2##3{##1\Hy@xspace@end}%
}
\def\endNoHyper{%
  \global\let\hyper@link\hyper@livelink
}
```
⟨/package⟩

24 Package nohyperref

This package is introduced by Sebastian Rahtz.

Package nohyperref is a dummy package that defines some low level and some top-level commands. It is done for jadetex, which calls hyperref low-level commands, but it would also be useful with people using normal hyperref, who really do not want the package loaded at all.

Some low-level commands:

⟨*nohyperref⟩
```
\RequirePackage{letltxmacro}[2008/06/13]
\let\hyper@@anchor\@gobble
\def\hyper@link#1#2#3{#3}%
\let\hyper@anchorstart\@gobble
\let\hyper@anchorend\@empty
\let\hyper@linkstart\@gobbletwo
\let\hyper@linkend\@empty
\def\hyper@linkurl#1#2{#1}%
\def\hyper@linkfile#1#2#3{#1}%
\def\hyper@link@[#1]#2#3{}%
\let\PDF@SetupDoc\@empty
\let\PDF@FinishDoc\@empty
\def\nohyperpage#1{#1}
```

Some top-level commands:

```
\def\Acrobatmenu#1#2{\leavevmode#2}
\let\pdfstringdefDisableCommands\@gobbletwo
\let\texorpdfstring\@firstoftwo
\let\pdfbookmark\@undefined
\newcommand\pdfbookmark[3][]{}
\let\phantomsection\@empty
\let\hypersetup\@gobble
\let\hyperbaseurl\@gobble
\newcommand*{\href}[3][]{#3}
\let\hyperdef\@gobbletwo
\let\hyperlink\@gobble
\let\hypertarget\@gobble
\def\hyperref{%
  \@ifnextchar[\@gobbleopt{\expandafter\@gobbletwo\@gobble}%
}
\long\def\@gobbleopt[#1]{}
\let\hyperpage\@empty
```

Ignore star from referencing macros:

```
\LetLtxMacro\NoHy@OrgRef\ref
\DeclareRobustCommand*{\ref}{%
  \@ifstar\NoHy@OrgRef\NoHy@OrgRef
}
\LetLtxMacro\NoHy@OrgPageRef\pageref
\DeclareRobustCommand*{\pageref}{%
  \@ifstar\NoHy@OrgPageRef\NoHy@OrgPageRef
}
⟨/nohyperref⟩
```

25 The Mangling Of Aux and Toc Files

Some extra tests so that the hyperref package may be removed or added to a document without having to remove .aux and .toc files (this section is by David Carlisle) All the code is delayed to `\begin{document}`

```
⟨*package⟩
\Hy@AtBeginDocument{%
```

First the code to deal with removing the hyperref package from a document.

Write some stuff into the aux file so if the next run is done without hyperref, then `\contentsline` and `\newlabel` are defined to cope with the extra arguments.

```
  \if@filesw
    \ifHy@typexml
      \immediate\closeout\@mainaux
      \immediate\openout\@mainaux\jobname.aux\relax
      \immediate\write\@auxout{<relaxxml>\relax}%
    \fi
    \immediate\write\@auxout{%
      \string\providecommand\string\HyperFirstAtBeginDocument{%
        \string\AtBeginDocument}^^J%
      \string\HyperFirstAtBeginDocument{%
        \string\ifx\string\hyper@anchor\string\@undefined^^J%
          \string\global\string\let\string\oldcontentsline\string\contentsline^^J%
          \string\gdef\string\contentsline%
            \string#1\string#2\string#3\string#4{%
            \string\oldcontentsline%
              {\string#1}{\string#2}{\string#3}}^^J%
          \string\global\string\let\string\oldnewlabel\string\newlabel^^J%
          \string\gdef\string\newlabel\string#1\string#2{%
            \string\newlabelxx{\string#1}\string#2}^^J%
          \string\gdef\string\newlabelxx%
            \string#1\string#2\string#3\string#4\string#5\string#6{%
            \string\oldnewlabel{\string#1}{{\string#2}{\string#3}}}^^J%
```

But the new aux file will be read again at the end, with the normal definitions expected, so better put things back as they were.

```
          \string\AtEndDocument{%
            \string\ifx\string\hyper@anchor\string\@undefined^^J%
              \string\let\string\contentsline\string\oldcontentsline^^J%
              \string\let\string\newlabel\string\oldnewlabel^^J%
            \string\fi%
          }^^J%
```

If the document is being run with hyperref put this definition into the aux file, so we can spot it on the next run.

```
        \string\fi%
      }^^J%
```

```
    \string\global\string\let\string\hyper@last\relax^^J%
    \string\gdef\string\HyperFirstAtBeginDocument\string#1{\string#1}%
  }%
\fi
\let\HyperFirstAtBeginDocument\ltx@firstofone
```

Now the code to deal with adding the hyperref package to a document with aux and toc written the standard way.

If hyperref was used last time, do nothing. If it was not used, or an old version of hyperref was used, don't use that TOC at all but generate a warning. Not ideal, but better than failing with pre-5.0 hyperref TOCs.

```
\ifx\hyper@last\@undefined
  \def\@starttoc#1{%
    \begingroup
      \makeatletter
      \ltx@ifpackageloaded{parskip}{\parskip\z@}{}%
      \IfFileExists{\jobname.#1}{%
        \Hy@WarningNoLine{%
          old #1 file detected, not used; run LaTeX again%
        }%
      }{}%
      \if@filesw
        \expandafter\newwrite\csname tf@#1\endcsname
        \immediate\openout\csname tf@#1\endcsname \jobname.#1\relax
      \fi
      \@nobreakfalse
    \endgroup
  }%
  \def\newlabel#1#2{\@newl@bel r{#1}{#2{}{}{}{}}}%
\fi
}
```

26 Title strings

If options pdftitle and pdfauthor are not used, these informations for the pdf information dictionary can be extracted by the nd

```
\ifHy@pdfusetitle
  \let\HyOrg@title\title
  \let\HyOrg@author\author
  \def\title{\@ifnextchar[{\Hy@scanopttitle}{\Hy@scantitle}}%
  \def\Hy@scanopttitle[#1]{%
    \gdef\Hy@title{#1}%
    \HyOrg@title[{#1}]%
  }%
  \def\Hy@scantitle#1{%
    \gdef\Hy@title{#1}%
    \HyOrg@title{#1}%
  }%
  \def\author{\@ifnextchar[{\Hy@scanoptauthor}{\Hy@scanauthor}}%
  \def\Hy@scanoptauthor[#1]{%
    \gdef\Hy@author{#1}%
    \HyOrg@author[{#1}]%
  }%
  \def\Hy@scanauthor#1{%
    \gdef\Hy@author{#1}%
    \HyOrg@author{#1}%
```

```
}%
```

The case, that or re given before hyperref is loaded, is much more complicate, because LaTeX initializes the macros title and author with LaTeX error and warning messages.

```
\begingroup
  \def\process@me#1\@nil#2{%
    \expandafter\let\expandafter\x\csname @#2\endcsname
    \edef\y{\expandafter\strip@prefix\meaning\x}%
    \def\c##1#1##2\@nil{%
      \ifx\\##1\\%
      \else
       \expandafter\gdef\csname Hy@#2\expandafter\endcsname
           \expandafter{\x}%
      \fi
    }%
    \expandafter\c\y\relax#1\@nil
  }%
  \expandafter\process@me\string\@latex@\@nil{title}%
  \expandafter\process@me\string\@latex@\@nil{author}%
\endgroup
\fi
\Hy@DisableOption{pdfusetitle}
```

Macro \Hy@UseMaketitleInfos is used in the driver files, before the information entries are used.

The newline macro \newline or \\ is much more complicate. In the title a good replacement can be a space, but can be already a space after \\ in the title string. So this space is removed by scanning for the next non-empty argument.

In the macro \author the newline can perhaps separate the different authors, so the newline expands here to a comma with space.

The possible arguments such as space or the optional argument after the newline macros are not detected.

```
\def\Hy@UseMaketitleString#1{%
  \ltx@IfUndefined{Hy@#1}{}{%
    \begingroup
      \let\Hy@saved@hook\pdfstringdefPreHook
      \pdfstringdefDisableCommands{%
        \expandafter\let\expandafter\\\csname Hy@newline@#1\endcsname
        \let\newline\\%
        \def\and{; }%
      }%
      \expandafter\ifx\csname @pdf#1\endcsname\@empty
        \expandafter\pdfstringdef\csname @pdf#1\endcsname{%
          \csname Hy@#1\endcsname\@empty
        }%
      \fi
      \global\let\pdfstringdefPreHook\Hy@saved@hook
    \endgroup
  }%
}
\def\Hy@newline@title#1{ #1}
\def\Hy@newline@author#1{, #1}
\def\Hy@UseMaketitleInfos{%
  \Hy@UseMaketitleString{title}%
  \Hy@UseMaketitleString{author}%
}
```

27 Page numbers

This stuff is done by Heiko Oberdiek.

28 Every page

```
\RequirePackage{atbegshi}[2007/09/09]
\let\Hy@EveryPageHook\ltx@empty
\let\Hy@EveryPageBoxHook\ltx@empty
\let\Hy@FirstPageHook\ltx@empty
\AtBeginShipout{%
  \Hy@EveryPageHook
  \ifx\Hy@EveryPageBoxHook\ltx@empty
  \else
    \setbox\AtBeginShipoutBox=\vbox{%
      \offinterlineskip
      \Hy@EveryPageBoxHook
      \box\AtBeginShipoutBox
    }%
  \fi
}
\ltx@iffileloaded{hpdftex.def}{%
  \AtBeginShipout{%
    \Hy@FirstPageHook
    \global\let\Hy@FirstPageHook\ltx@empty
  }%
}{%
  \AtBeginShipoutFirst{%
    \Hy@FirstPageHook
  }%
}
\g@addto@macro\Hy@FirstPageHook{%
  \PDF@FinishDoc
  \global\let\PDF@FinishDoc\ltx@empty
}
```

28.1 PDF /PageLabels

Internal macros of this module are marked with \HyPL@.

```
\ifHy@pdfpagelabels
  \begingroup\expandafter\expandafter\expandafter\endgroup
  \expandafter\ifx\csname thepage\endcsname\relax
    \Hy@pdfpagelabelsfalse
    \Hy@WarningNoLine{%
      Option `pdfpagelabels' is turned off\MessageBreak
      because \string\thepage\space is undefined%
    }%
    \csname fi\endcsname
    \csname iffalse\expandafter\endcsname
  \fi
```

\thispdfpagelabel The command \thispdfpagelabel allows to label a special page without the redefinition of \thepage for the page.

```
  \def\thispdfpagelabel#1{%
    \gdef\HyPL@thisLabel{#1}%
  }%
  \global\let\HyPL@thisLabel\relax
```

\HyPL@Labels The page labels are collected in \HyPL@Labels and set at the end of the document.

```
\let\HyPL@Labels\ltx@empty
```

\Hy@abspage We have to know the the absolute page number and introduce a new counter for that.

```
\newcount\Hy@abspage
\Hy@abspage=0 %
```

For comparisons with the values of the previous page, some variables are needed:

```
\def\HyPL@LastType{init}%
\def\HyPL@LastNumber{0}%
\let\HyPL@LastPrefix\ltx@empty
```

Definitions for the PDF names of the LaTeX pendents.

```
\def\HyPL@arabic{D}%
\def\HyPL@Roman{R}%
\def\HyPL@roman{r}%
\def\HyPL@Alph{A}%
\def\HyPL@alph{a}%
```

```
\let\HyPL@SlidesSetPage\ltx@empty
\ltx@ifclassloaded{slides}{%
  \def\HyPL@SlidesSetPage{%
    \advance\c@page\ltx@one
    \ifnum\value{page}>\ltx@one
      \protected@edef\HyPL@SlidesOptionalPage{%
        \Hy@SlidesFormatOptionalPage{\thepage}%
      }%
    \else
      \let\HyPL@SlidesOptionalPage\ltx@empty
    \fi
    \advance\c@page-\ltx@one
    \def\HyPL@page{%
      \csname the\Hy@SlidesPage\endcsname
      \HyPL@SlidesOptionalPage
    }%
  }%
}{}%
```

\HyPL@EveryPage If a page is shipout and the page number is known, \HyPL@EveryPage has to be called. It stores the current page label.

```
\def\HyPL@EveryPage{%
  \begingroup
    \ifx\HyPL@thisLabel\relax
      \let\HyPL@page\thepage
      \HyPL@SlidesSetPage
    \else
      \let\HyPL@page\HyPL@thisLabel
      \global\let\HyPL@thisLabel\relax
    \fi
    \let\HyPL@Type\relax
    \ifnum\c@page>0 %
      \ifx\HyPL@SlidesSetPage\ltx@empty
        \expandafter\HyPL@CheckThePage\HyPL@page\@nil
      \fi
    \fi
    \let\Hy@temp Y%
    \ifx\HyPL@Type\HyPL@LastType
```

```
    \else
      \let\Hy@temp N%
    \fi
    \ifx\HyPL@Type\relax
       \pdfstringdef\HyPL@Prefix{\HyPL@page}%
    \else
       \pdfstringdef\HyPL@Prefix\HyPL@Prefix
    \fi
    \ifx\HyPL@Prefix\HyPL@LastPrefix
    \else
      \let\Hy@temp N%
    \fi
    \if Y\Hy@temp
      \advance\c@page by -1 %
      \ifnum\HyPL@LastNumber=\the\c@page\relax
      \else
        \let\Hy@temp N%
      \fi
      \Hy@StepCount\c@page
    \fi
    \if N\Hy@temp
      \ifx\HyPL@Type\relax
        \HyPL@StorePageLabel{/P(\HyPL@Prefix)}%
      \else
        \HyPL@StorePageLabel{%
          \ifx\HyPL@Prefix\@empty
          \else
            /P(\HyPL@Prefix)%
          \fi
          /S/\csname HyPL\HyPL@Type\endcsname
          \ifnum\the\c@page=1 %
          \else
            \space/St \the\c@page
          \fi
        }%
      \fi
    \fi
    \xdef\HyPL@LastNumber{\the\c@page}%
    \global\let\HyPL@LastType\HyPL@Type
    \global\let\HyPL@LastPrefix\HyPL@Prefix
  \endgroup
  \Hy@GlobalStepCount\Hy@abspage
}%
```

\HyPL@CheckThePage Macro \HyPL@CheckThePage calls \HyPL@@CheckThePage that does the job.

```
\def\HyPL@CheckThePage#1\@nil{%
  \HyPL@@CheckThePage{#1}#1\csname\endcsname\c@page\@nil
}%
```

\HyPL@@CheckThePage The first check is, is \thepage is defined such as in LaTeX, e. g.: \csname @arabic\endcsname\c@page. In the current implemenation the check fails, if there is another \csname before.

The second check tries to detect \arabic{page} at the end of the definition text of \thepage.

```
\def\HyPL@@CheckThePage#1#2\csname#3\endcsname\c@page#4\@nil{%
  \def\Hy@tempa{#4}%
  \def\Hy@tempb{\csname\endcsname\c@page}%
```

```
  \ifx\Hy@tempa\Hy@tempb
    \expandafter\ifx\csname HyPL#3\endcsname\relax
    \else
      \def\HyPL@Type{#3}%
      \def\HyPL@Prefix{#2}%
    \fi
  \else
    \begingroup
      \let\Hy@next\endgroup
      \let\HyPL@found\@undefined
      \def\arabic{\HyPL@Format{arabic}}%
      \def\Roman{\HyPL@Format{Roman}}%
      \def\roman{\HyPL@Format{roman}}%
      \def\Alph{\HyPL@Format{Alph}}%
      \def\alph{\HyPL@Format{alph}}%
      \protected@edef\Hy@temp{#1}%
      \ifx\HyPL@found\relax
        \toks@\expandafter{\Hy@temp}%
        \edef\Hy@next{\endgroup
          \noexpand\HyPL@@@CheckThePage\the\toks@
            \noexpand\HyPL@found\relax\noexpand\@nil
        }%
      \fi
    \Hy@next
  \fi
}%
```

\HyPL@Format The help macro \HyPL@Format is executed while a \protected@edef in the second check method of \HyPL@@CheckPage. The first occurences of, for example, \arabic{page} is marked by \HyPL@found that is also defined by \csname.

```
\def\HyPL@Format#1#2{%
  \ifx\HyPL@found\@undefined
    \expandafter\ifx\csname c@#2\endcsname\c@page
      \expandafter\noexpand\csname HyPL@found\endcsname{#1}%
    \else
      \expandafter\noexpand\csname#1\endcsname{#2}%
    \fi
  \else
    \expandafter\noexpand\csname#1\endcsname{#2}%
  \fi
}%
```

\HyPL@@@CheckThePage If the second check method is successful, \HyPL@@@CheckThePage scans the result of \HyPL@Format and stores the found values.

```
\def\HyPL@@@CheckThePage#1\HyPL@found#2#3\@nil{%
  \def\Hy@tempa{#3}%
  \def\Hy@tempb{\HyPL@found\relax}%
  \ifx\Hy@tempa\Hy@tempb
    \def\HyPL@Type{@#2}%
    \def\HyPL@Prefix{#1}%
  \fi
}%
```

\HyPL@StorePageLabel Dummy for drivers that does not support /PageLabel.

```
\providecommand*{\HyPL@StorePageLabel}[1]{}%
```

\HyPL@Useless The /PageLabels entry does not make sense, if the absolute page numbers and the page labels are the same. Then \HyPL@Labels has the meaning of \HyPL@Useless.

```
\def\HyPL@Useless{0<</S/D>>}%
\@onelevel@sanitize\HyPL@Useless
```

\HyPL@SetPageLabels The page labels are written to the PDF cataloge. The command \Hy@PutCatalog is defined in the driver files.

```
\def\HyPL@SetPageLabels{%
  \@onelevel@sanitize\HyPL@Labels
  \ifx\HyPL@Labels\@empty
  \else
    \ifx\HyPL@Labels\HyPL@Useless
    \else
      \Hy@PutCatalog{/PageLabels<</Nums[\HyPL@Labels]>>}%
    \fi
  \fi
}%

\g@addto@macro\Hy@EveryPageHook{\HyPL@EveryPage}%
\fi
```

Option 'pdfpagelabels' has been used and is now disabled.

```
\Hy@DisableOption{pdfpagelabels}
```

⟨/package⟩

28.1.1 pdfTeX and VTeX

Because of pdfTeX's \pdfcatalog command the /PageLabels entry can set at end of document in the first run.

\Hy@PutCatalog

```
⟨*pdftex⟩
\pdf@ifdraftmode{%
  \let\Hy@PutCatalog\ltx@gobble
}{%
  \let\Hy@PutCatalog\pdfcatalog
}
⟨/pdftex⟩
```

The code for VTeX is more complicate, because it does not allow the direct access to the /Catalog object. The command scans its argument and looks for a /PageLabels entry.

VTeX 6.59g is the first version, that implements \special{!pdfpagelabels...}. For this version \VTeXversion reports 660.

```
⟨*vtex⟩
\providecommand*{\XR@ext}{pdf}
\edef\Hy@VTeXversion{%
  \ifx\VTeXversion\@undefined
    \z@
  \else
    \ifx\VTeXversion\relax
      \z@
    \else
      \VTeXversion
    \fi
  \fi
```

```
}
\begingroup
  \ifnum\Hy@VTeXversion<660 %
    \gdef\Hy@PutCatalog#1{%
      \Hy@WarningNoLine{%
        VTeX 6.59g or above required for pdfpagelabels%
      }%
    }%
  \else
    \gdef\Hy@PutCatalog#1{%
      \Hy@vt@PutCatalog#1/PageLabels<<>>\@nil
    }%
    \gdef\Hy@vt@PutCatalog#1/PageLabels<<#2>>#3\@nil{%
      \ifx\\#2\\%
      \else
        \immediate\special{!pdfpagelabels #2}%
      \fi
    }%
  \fi
\endgroup
⟨/vtex⟩

⟨*pdftex | vtex⟩
```

\HyPL@StorePageLabel This macro adds the entry #1 to \HyPL@Labels.

```
\ifHy@pdfpagelabels
  \def\HyPL@StorePageLabel#1{%
    \toks@\expandafter{\HyPL@Labels}%
    \xdef\HyPL@Labels{%
      \the\toks@
      \the\Hy@abspage<<#1>>%
    }%
  }%
```

Package atveryend is used to get behind the final \clearpage and to avoid a \clearpage in \AtEndDocument. Then the PDF catalog entry for \PageLabels is set.

```
  \RequirePackage{atveryend}[2009/12/07]%
  \AtVeryEndDocument{%
    \HyPL@SetPageLabels
  }%
\fi
⟨/pdftex | vtex⟩
```

28.1.2 xetex

```
⟨*xetex⟩
\HyPsd@LoadUnicode
\Hy@unicodetrue
\ifx\HyPsd@pdfencoding\HyPsd@pdfencoding@unicode
\else
  \let\HyPsd@pdfencoding\HyPsd@pdfencoding@auto
\fi
\HyPsd@LoadStringEnc
\define@key{Hyp}{unicode}[true]{%
  \Hy@boolkey{unicode}{#1}%
  \ifHy@unicode
```

```
  \else
    \Hy@Warning{%
      XeTeX driver only supports `unicode=true'. Ignoring\MessageBreak
      option setting `unicode=false'%
    }%
    \Hy@unicodetrue
  \fi
}
\define@key{Hyp}{pdfencoding}{%
  \edef\HyPsd@temp{#1}%
  \ifx\HyPsd@temp\HyPsd@pdfencoding@unicode
    \let\HyPsd@pdfencoding\HyPsd@temp
  \else
    \ifx\HyPsd@temp\HyPsd@pdfencoding@auto
      \let\HyPsd@pdfencoding\HyPsd@temp
    \else
      \Hy@Warning{%
        XeTeX driver only supports\MessageBreak
        `pdfencoding=unicode|auto'. Ignoring option\MessageBreak
        setting `pdfencoding=\HyPsd@temp'%
      }%
    \fi
  \fi
}
\let\HyXeTeX@CheckUnicode\relax
⟨/xetex⟩
```

28.1.3 pdfmarkbase, dvipdfm, xetex

```
⟨*pdfmarkbase⟩
\begingroup
  \@ifundefined{headerps@out}{}{%
    \toks@\expandafter{\Hy@FirstPageHook}%
    \xdef\Hy@FirstPageHook{%
      \noexpand\headerps@out{%
        systemdict /pdfmark known%
        {%
          userdict /?pdfmark systemdict /exec get put%
        }{%
          userdict /?pdfmark systemdict /pop get put %
          userdict /pdfmark systemdict /cleartomark get put%
        }%
        ifelse%
      }%
      \the\toks@
    }%
  }%
\endgroup
⟨/pdfmarkbase⟩
```

\Hy@PutCatalog

```
⟨dvipdfm | xetex⟩\def\Hy@PutCatalog#1{\@pdfm@mark{docview <<#1>>}}
⟨*pdfmarkbase⟩
\def\Hy@PutCatalog#1{%
  \pdfmark{pdfmark=/PUT,Raw={\string{Catalog\string} <<#1>>}}%
}
⟨/pdfmarkbase⟩

⟨*pdfmarkbase | dvipdfm | xetex⟩
```

```
\ifHy@pdfpagelabels
```

\HyPL@StorePageLabel This macro writes a string to the .aux file.

```
\def\HyPL@StorePageLabel#1{%
  \if@filesw
    \begingroup
      \edef\Hy@tempa{\the\Hy@abspage<<#1>>}%
      \immediate\write\@mainaux{%
        \string\HyPL@Entry{\Hy@tempa}%
      }%
    \endgroup
  \fi
}%
```

Write a dummy definition of `\HyPL@Entry` for the case, that the next run is done without hyperref. A marker for the rerun warning is set and the /PageLabels is written.

```
\Hy@AtBeginDocument{%
  \if@filesw
    \immediate\write\@mainaux{%
      \string\providecommand\string*\string\HyPL@Entry[1]{}%
    }%
  \fi
  \ifx\HyPL@Labels\@empty
    \Hy@WarningNoLine{Rerun to get /PageLabels entry}%
  \else
    \HyPL@SetPageLabels
  \fi
  \let\HyPL@Entry\@gobble
}%
```

\HyPL@Entry

```
\def\HyPL@Entry#1{%
  \expandafter\gdef\expandafter\HyPL@Labels\expandafter{%
    \HyPL@Labels
    #1%
  }%
}%

\fi
⟨/pdfmarkbase | dvipdfm | xetex⟩

⟨*package⟩

\ifx\MaybeStopEarly\relax
\else
  \Hy@stoppedearlytrue
  \expandafter\MaybeStopEarly
\fi
\Hy@stoppedearlyfalse
```

29 Automated LaTeX hypertext cross-references

Anything which can be referenced advances some counter; we overload this to put in a hypertext starting point (with no visible anchor), and make a note of that for later use in `\label`. This will fail badly if `\theH<name>` does not expand to a sensible reference. This means that classes or package which introduce

new elements need to define an equivalent `\theH<name>` for every `\the<name>`. We do make a trap to make `\theH<name>` be the same as `\arabic{<name>}`, if `\theH<name>` is not defined, but this is not necessarily a good idea. Alternatively, the 'naturalnames' option uses whatever LaTeX provides, which may be useable. But then its up to you to make sure these are legal PDF and HTML names. The 'hypertexnames=false' option just makes up arbitrary names.

All the shenanigans is to make sure section numbers etc are always arabic, separated by dots. Who knows how people will set up `\@currentlabel`? If they put spaces in, or brackets (quite legal) then the hypertext processors will get upset.

But this is flaky, and open to abuse. Styles like `subeqn` will mess it up, for starters. Appendices are an issue, too. We just hope to cover most situations. We can at least cope with the standard sectioning structure, allowing for `\part` and `\chapter`.

Start with a fallback for equations

```
\def\Hy@CounterExists#1{%
  \begingroup\expandafter\expandafter\expandafter\endgroup
  \expandafter\ifx\csname c@#1\endcsname\relax
    \expandafter\@gobble
  \else
    \begingroup\expandafter\expandafter\expandafter\endgroup
    \expandafter\ifx\csname the#1\endcsname\relax
      \expandafter\expandafter\expandafter\@gobble
    \else
      \expandafter\expandafter\expandafter\@firstofone
    \fi
  \fi
}
\Hy@CounterExists{section}{%
  \providecommand\theHequation{\theHsection.\arabic{equation}}%
}
\Hy@CounterExists{part}{%
  \providecommand\theHpart{\arabic{part}}%
}
\ltx@IfUndefined{thechapter}{%
  \providecommand\theHsection    {\arabic{section}}%
  \providecommand\theHfigure     {\arabic{figure}}%
  \providecommand\theHtable      {\arabic{table}}%
}{%
  \providecommand\theHchapter    {\arabic{chapter}}%
  \providecommand\theHfigure     {\theHchapter.\arabic{figure}}%
  \providecommand\theHtable      {\theHchapter.\arabic{table}}%
  \providecommand\theHsection    {\theHchapter.\arabic{section}}%
}
\providecommand\theHsubsection   {\theHsection.\arabic{subsection}}
\providecommand\theHsubsubsection{\theHsubsection.\arabic{subsubsection}}
\providecommand\theHparagraph    {\theHsubsubsection.\arabic{paragraph}}
\providecommand\theHsubparagraph {\theHparagraph.\arabic{subparagraph}}
\providecommand\theHtheorem      {\theHsection.\arabic{theorem}}
\providecommand\theHthm          {\theHsection.\arabic{thm}}
```

Thanks to Greta Meyer (gbd@pop.cwru.edu) for making me realize that enumeration starts at 0 for every list! But `\item` occurs inside `\trivlist`, so check if its a real `\item` before incrementing counters.

```
\let\H@item\item
\newcounter{Item}
\def\theHItem{\arabic{Item}}
```

```
\def\item{%
  \@hyper@itemfalse
  \if@nmbrlist\@hyper@itemtrue\fi
  \H@item
}
\providecommand\theHenumi      {\theHItem}
\providecommand\theHenumii     {\theHItem}
\providecommand\theHenumiii    {\theHItem}
\providecommand\theHenumiv     {\theHItem}
\providecommand\theHHfootnote {\arabic{Hfootnote}}
\providecommand\theHmpfootnote{\arabic{mpfootnote}}
\@ifundefined{theHHmpfootnote}{%
  \let\theHHmpfootnote\theHHfootnote
}{}
```

Tanmoy asked for this default handling of undefined `\theH<name>` situations. It really isn't clear what would be ideal, whether to turn off hyperizing of unknown elements, to pick up the textual definition of the counter, or to default it to something like `\arabic{name}`. We take the latter course, slightly worriedly.

```
\let\H@refstepcounter\refstepcounter
\edef\name@of@eq{equation}%
\edef\name@of@slide{slide}%
```

We do not want the handler for `\refstepcounter` to cut in during the processing of `\item` (we handle that separately), so we provide a bypass conditional.

```
\newif\if@hyper@item
\newif\if@skiphyperref
\@hyper@itemfalse
\@skiphyperreffalse
\def\refstepcounter#1{%
  \ifHy@pdfstring
  \else
    \H@refstepcounter{#1}%
    \edef\This@name{#1}%
    \ifx\This@name\name@of@slide
    \else
      \if@skiphyperref
      \else
        \if@hyper@item
          \stepcounter{Item}%
          \hyper@refstepcounter{Item}%
          \@hyper@itemfalse
        \else
          \hyper@refstepcounter{#1}%
        \fi
      \fi
    \fi
  \fi
}
\let\Hy@saved@refstepcounter\refstepcounter
```

AMSLaTeX processes all equations twice; we want to make sure that the hyper stuff is not executed twice, so we use the AMS `\ifmeasuring@`, initialized if AMS math is not used.

```
\@ifpackageloaded{amsmath}{}{\newif\ifmeasuring@\measuring@false}
```

\hyper@refstepcounter

```
\def\hyper@refstepcounter#1{%
  \edef\This@name{#1}%
  \ifx\This@name\name@of@eq
    \@ifundefined{theHequation}{%
      \make@stripped@name{\theequation}%
      \let\theHequation\newname
    }{}%
  \fi
  \HyCnt@ProvideTheHCounter{#1}%
  \hyper@makecurrent{#1}%
  \ifmeasuring@
  \else
    \Hy@raisedlink{%
      \hyper@anchorstart{\@currentHref}\hyper@anchorend
    }%
  \fi
}
```

\Hy@ProvideTheHCounter

\theH<counter> is not set for counters that are defined before 'hyperref' is loaded. In \cl@@ckpt, the clear counter list of the artificial counter @ckpt, LaTeX remembers the defined counters (needed for \include). We check the clear counter lists, whether our counter is present. If we found it, then we add the parent counter value to \theH<counter>. The \@elt list is used in sanitized form for the comparison, because the list might contain other stuff than \@elts. Also it simplifies the implementation, because LaTeX', substring search \in@ can be used.

```
\def\HyCnt@ProvideTheHCounter#1{%
  \@ifundefined{theH#1}{%
    \expandafter\def\csname theH#1\endcsname{}%
    \def\Hy@temp{\@elt{#1}}%
    \ltx@onelevel@sanitize\Hy@temp
    \let\HyOrg@elt\@elt
    \edef\@elt{%
      \noexpand\HyCnt@LookForParentCounter
      \expandafter\noexpand\csname theH#1\endcsname
    }%
    \cl@@ckpt
    \let\@elt\HyOrg@elt
    \expandafter
    \ltx@LocalAppendToMacro\csname theH#1\expandafter\endcsname
    \expandafter{%
      \expandafter\@arabic\csname c@#1\endcsname
    }%
  }{}%
}
```

\Hy@LookForParentCounter

```
\def\HyCnt@LookForParentCounter#1#2{%
  \expandafter\let\expandafter\Hy@temp@A\csname cl@#2\endcsname
  \ltx@IfUndefined{cl@#2}{%
  }{%
    \ltx@onelevel@sanitize\Hy@temp@A
    \edef\Hy@temp@A{%
      \noexpand\in@{\Hy@temp}{\Hy@temp@A}%
    }\Hy@temp@A
    \ifin@
      \ltx@IfUndefined{theH#2}{%
        \expandafter\ltx@LocalAppendToMacro\expandafter#1%
```

```
      \expandafter{%
        \expandafter\@arabic\csname c@#2\endcsname.%
      }%
    }{%
      \expandafter\ltx@LocalAppendToMacro\expandafter#1%
      \expandafter{%
        \csname theH#2\endcsname.%
      }%
    }%
  \fi
}%
}
```

After **\appendix** "chapter" (or "section" for classes without chapter) should be replaced by "appendix" to get **\autoref** work. Macro **\Hy@chapapp** contains the current valid name like **\@chapapp**, which cannot be used, because this string depends on the current language.

The "french" package defines counter **\thechapter** by **\newcounterchapter**, if **\@ifundefinedchapter**.

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname chapter\endcsname\relax
  \def\Hy@chapterstring{section}%
\else
  \def\Hy@chapterstring{chapter}%
\fi
\def\Hy@appendixstring{appendix}
\def\Hy@chapapp{\Hy@chapterstring}
\ltx@IfUndefined{appendix}{%
}{%
  \let\HyOrg@appendix\appendix
  \def\Hy@AlphNoErr#1{%
    \ifnum\value{#1}>26 %
      Alph\number\value{#1}%
    \else
      \ifnum\value{#1}<1 %
        Alph\number\value{#1}%
      \else
        \Alph{#1}%
      \fi
    \fi
  }%
  \def\appendix{%
    \ltx@IfUndefined{chapter}{%
      \gdef\theHsection{\Hy@AlphNoErr{section}}%
    }{%
      \gdef\theHchapter{\Hy@AlphNoErr{chapter}}%
    }%
    \xdef\Hy@chapapp{\Hy@appendixstring}%
    \HyOrg@appendix
  }%
}
```

\Hy@Test@alph

```
\def\Hy@Test@alph#1{%
  \ifcase#1\or
    a\or b\or c\or d\or e\or f\or g\or h\or i\or j\or
    k\or l\or m\or n\or o\or p\or q\or r\or s\or t\or
```

```
    u\or v\or w\or x\or y\or z%
  \else
    \@ctrerr
  \fi
}
```

\Hy@Test@Alph

```
\def\Hy@Test@Alph#1{%
  \ifcase#1\or
    A\or B\or C\or D\or E\or F\or G\or H\or I\or J\or
    K\or L\or M\or N\or O\or P\or Q\or R\or S\or T\or
    U\or V\or W\or X\or Y\or Z%
  \else
    \@ctrerr
  \fi
}
```

\hyper@makecurrent Because of Babel mucking around, nullify \textlatin when making names. And \@number because of babel's lrbabel.def.

```
\def\hyper@makecurrent#1{%
  \begingroup
    \Hy@safe@activestrue
    \edef\Hy@param{#1}%
    \ifx\Hy@param\Hy@chapterstring
      \let\Hy@param\Hy@chapapp
    \fi
    \ifHy@hypertexnames
      \let\@number\@firstofone
      \def\@fnsymbol##1{fnsymbol\number##1}%
      \def\@arabic##1{\number##1}%
      \ifx\@alph\Hy@Test@alph
      \else
        \def\@alph{alph\number}%
      \fi
      \ifx\@Alph\Hy@Test@Alph
      \else
        \def\@Alph{Alph\number}%
      \fi
      \ifHy@naturalnames
        \let\textlatin\@firstofone
        \xdef\HyperGlobalCurrentHref{\csname the#1\endcsname}%
      \else
        \xdef\HyperGlobalCurrentHref{%
          \csname
            the%
            \expandafter\ifx\csname theH#1\endcsname\relax\else H\fi
            #1%
          \endcsname
        }%
      \fi
      \xdef\HyperGlobalCurrentHref{%
        \Hy@param.\expandafter\strip@prefix\meaning\HyperGlobalCurrentHref
      }%
    \else
      \Hy@GlobalStepCount\Hy@linkcounter
      \xdef\HyperGlobalCurrentHref{\Hy@param.\the\Hy@linkcounter}%
    \fi
```

```
  \endgroup
  \let\HyperLocalCurrentHref\HyperGlobalCurrentHref
  \ifHy@localanchorname
    \let\@currentHref\HyperLocalCurrentHref
  \else
    \global\let\@currentHref\HyperGlobalCurrentHref
  \fi
}
```

\Hy@MakeCurrentHref

```
\def\Hy@MakeCurrentHref#1{%
  \edef\HyperLocalCurrentHref{#1}%
  \@onelevel@sanitize\HyperLocalCurrentHref
  \global\let\HyperGlobalCurrentHref\HyperLocalCurrentHref
  \let\HyperLocalCurrentHref\HyperGlobalCurrentHref
  \ifHy@localanchorname
    \let\@currentHref\HyperLocalCurrentHref
  \else
    \global\let\@currentHref\HyperGlobalCurrentHref
  \fi
}
```

\Hy@MakeCurrentHrefAuto

```
\def\Hy@MakeCurrentHrefAuto#1{%
  \Hy@GlobalStepCount\Hy@linkcounter
  \Hy@MakeCurrentHref{#1.\the\Hy@linkcounter}%
}
```

\@currentHlabel `\@currrentHlabel` is only defined for compatibility with package 'hypdvips'.

```
\def\@currentHlabel{\@currentHref}
```

```
\@ifpackageloaded{fancyvrb}{%
  \@ifpackagelater{fancyvrb}{1998/05/20}{}{%
    \def\FV@StepLineNo{%
      \FV@SetLineNo
      \def\FV@StepLineNo{\H@refstepcounter{FancyVerbLine}}%
      \FV@StepLineNo
    }%
  }%
}{}
```

30 Package lastpage support

Package lastpage directly writes the `\newlabel` command to the aux file. Because package hyperref requires additional arguments, the internal command `\lastpage@putlabel` is redefined. The patch is deferred by `\AtBeginDocument`, because it is possible that package lastpage is loaded after package hyperref. The same algorithm (options hypertexnames and plainpages) is used to get the page anchor name as in `\Hy@EveryPageAnchor` (see sec. 39). The link will not work if option pageanchor is set to false.

\lastpage@putlabel

```
\Hy@AtBeginDocument{%
  \@ifclassloaded{revtex4}{%
    \@namedef{ver@lastpage.sty}{1994/06/25}%
  }{}%
```

```
\@ifpackageloaded{lastpage}{%
  \ifHy@pageanchor
  \else
    \Hy@WarningNoLine{%
      The \string\pageref{LastPage} link doesn't work\MessageBreak
      with disabled option `pageanchor'%
    }%
  \fi
  \def\lastpage@putlabel{%
    \addtocounter{page}{-1}%
    \if@filesw
      \begingroup
        \let\@number\@firstofone
        \ifHy@pageanchor
          \ifHy@hypertexnames
            \ifHy@plainpages
              \def\Hy@temp{\arabic{page}}%
            \else
              \Hy@unicodefalse
              \pdfstringdef\Hy@temp{\thepage}%
            \fi
          \else
            \def\Hy@temp{\the\Hy@pagecounter}%
          \fi
        \fi
        \immediate\write\@auxout{%
          \string\newlabel
            {LastPage}{{}{\thepage}{}{%
              \ifHy@pageanchor page.\Hy@temp\fi}{}}%
        }%
      \endgroup
    \fi
    \addtocounter{page}{1}%
  }%
  \@ifclassloaded{revtex4}{%
    \begingroup
      \toks@\expandafter{\lastpage@putlabel}%
      \edef\x{\endgroup
        \def\noexpand\lastpage@putlabel{%
          \noexpand\stepcounter{page}%
          \the\toks@
          \noexpand\addtocounter{page}\noexpand\m@ne
        }%
      }%
    \x
  }{}%
}{}%
}
⟨/package⟩
⟨*check⟩
\checkpackage{lastpage}[1994/06/25]
\checkcommand\def\lastpage@putlabel{%
  \addtocounter{page}{-1}%
  \immediate\write\@auxout{%
    \string\newlabel{LastPage}{{}{\thepage}}%
  }%
  \addtocounter{page}{1}%
```

```
}
⟨/check⟩
⟨*package⟩
```

31 Package ifthen support

Since version 6.75a this is done in package nameref.

For compatibility \hypergetref and \hypergetpageref are still provided. But they do not generate warnings, if the reference is undefined.

```
\def\hypergetref#1{\getrefbykeydefault{#1}{}{??}}
\def\hypergetpageref#1{\getrefbykeydefault{#1}{page}{0}}
```

32 Package titlesec and titletoc support

This code is contributed by Javier Bezos (Email: jbezos@arrakis.es).

Package titlesec support:

```
\@ifpackageloaded{titlesec}{%
  \def\ttl@Hy@steplink#1{%
    \Hy@MakeCurrentHrefAuto{#1*}%
    \edef\ttl@Hy@saveanchor{%
      \noexpand\Hy@raisedlink{%
        \noexpand\hyper@anchorstart{\@currentHref}%
        \noexpand\hyper@anchorend
        \def\noexpand\ttl@Hy@SavedCurrentHref{\@currentHref}%
        \noexpand\ttl@Hy@PatchSaveWrite
      }%
    }%
  }%
  \def\ttl@Hy@PatchSaveWrite{%
    \begingroup
      \toks@\expandafter{\ttl@savewrite}%
      \edef\x{\endgroup
        \def\noexpand\ttl@savewrite{%
          \let\noexpand\@currentHref
              \noexpand\ttl@Hy@SavedCurrentHref
          \the\toks@
        }%
      }%
    \x
  }%
  \def\ttl@Hy@refstepcounter#1{%
    \let\ttl@b\Hy@raisedlink
    \def\Hy@raisedlink##1{%
      \def\ttl@Hy@saveanchor{\Hy@raisedlink{##1}}%
    }%
    \refstepcounter{#1}%
    \let\Hy@raisedlink\ttl@b
  }%
}{}
```

Package titletoc support:

```
\@ifpackageloaded{titletoc}{%
  \def\ttl@gobblecontents#1#2#3#4{\ignorespaces}%
}{}
```

33 Package varioref support

Package nameref uses five arguments for the ref system. Fix provided by Felix Neubauer (felix.neubauer@gmx.net).

```
\def\Hy@varioref@undefined{{??}{??}{}{}{}}
\@ifpackageloaded{varioref}{%
  \def\vref@pagenum#1#2{%
    \@ifundefined{r@#2}{%
      \expandafter\let\csname r@#2\endcsname\Hy@varioref@undefined
    }{}%
    \edef#1{\getpagerefnumber{#2}}%
  }%
}{}
```

Package varioref redefines \refstepcounter, thus it needs fixing, if the package is loaded *after* hyperref.

```
\def\Hy@varioref@refstepcounter#1{%
  \stepcounter{#1}%
  \protected@edef\@currentlabel{%
    \csname p@#1\expandafter\endcsname\csname the#1\endcsname
  }%
}
\AtBeginDocument{%
  \ifx\refstepcounter\Hy@varioref@refstepcounter
    \let\H@refstepcounter\refstepcounter
    \let\refstepcounter\Hy@saved@refstepcounter
  \fi
}
```

34 Package longtable support

Sometimes the anchor of the longtable goes to the previous page. Thus the following patch separates the anchor setting and counter incrementation by hyperref's \refstepcounter and the anchor setting is moved after \vskip\LTpre.

Patch of \LT@array: replace \refstepcounter by the original \H@refstepcounter without anchor generation

```
\@ifpackageloaded{longtable}{%
  \begingroup
    \def\y{\LT@array}%
    \@ifundefined{scr@LT@array}{%
      \@ifundefined{adl@LT@array}{}{\def\y{\adl@LT@array}}%
    }{\def\y{\scr@LT@array}}%
    \long\def\x\refstepcounter#1#2\@sharp#3#4\@nil{%
      \expandafter\endgroup
      \expandafter\def\y[##1]##2{%
        \H@refstepcounter{#1}%
        \hyper@makecurrent{table}%
        \let\Hy@LT@currentHref\@currentHref
        #2\@sharp######4%
      }%
    }%
  \expandafter\expandafter\expandafter\x\y[{#1}]{#2}\@nil
```

Patch of \LT@start: add anchor before first line after \vskip\LTpre

```
\begingroup
  \def\x#1\ifvoid\LT@foot#2\fi#3\@nil{%
```

```
    \endgroup
    \def\LT@start{%
      #1%
      \ifvoid\LT@foot#2\fi
      \let\@currentHref\Hy@LT@currentHref
      \Hy@raisedlink{%
        \hyper@anchorstart{\@currentHref}\hyper@anchorend
      }%
      #3%
    }%
  }%
\expandafter\x\LT@start\@nil
}{}
```

35 Equations

We want to make the whole equation a target anchor. Overload equation, temporarily reverting to original `\refstepcounter`. If, however, it is in AMS math, we do not do anything, as the tag mechanism is used there (see section 42). The execption is that we move the equation incrementation inside the math environment to avoid specials outside and a wrong vertical spacing of equation environments.

```
\let\new@refstepcounter\refstepcounter
\let\H@equation\equation
\let\H@endequation\endequation

\@ifpackageloaded{amsmath}{%
  \long\def\Hy@temp{%
    \incr@eqnum
    \mathdisplay@push
    \st@rredfalse \global\@eqnswtrue
    \mathdisplay{equation}%
  }%
  \ifx\Hy@temp\equation
    \expandafter\ifx\csname if@fleqn\expandafter\endcsname
                    \csname iftrue\endcsname
    \else
      \long\def\equation{%
        \mathdisplay@push
        \st@rredfalse \global\@eqnswtrue
        \mathdisplay{equation}%
        \incr@eqnum
      }%
    \fi
  \fi
}{%
  \def\equation{%
    \let\refstepcounter\H@refstepcounter
    \H@equation
    \@ifundefined{theHequation}{%
      \make@stripped@name{\theequation}%
      \let\theHequation\newname
    }{}%
    \hyper@makecurrent{equation}%
```

`\mathopen` is needed in case the equation starts with an unary minus, for example.

```
    \mathopen{%
      \Hy@raisedlink{\hyper@anchorstart{\@currentHref}}%
```

```
    }%
    \let\refstepcounter\new@refstepcounter
  }%
  \def\endequation{%
    \ifx\Hy@raisedlink\ltx@empty
      \hyper@anchorend
    \else
      \mathclose{\Hy@raisedlink{\hyper@anchorend}}%
    \fi
    \H@endequation
  }%
}
```

My goodness, why can't LaTeX be consistent? Why is `\eqnarray` set up differently from other objects?

People (you know who you are, Thomas Beuth) sometimes make an eqnarray where *all* the lines end with `\notag`, so there is no suitable anchor at all. In this case, pass by on the other side.

```
\newif\if@eqnstar
\@eqnstarfalse
\let\H@eqnarray\eqnarray
\let\H@endeqnarray\endeqnarray
\def\eqnarray{%
  \let\Hy@reserved@a\relax
  \def\@currentHref{}%
  \H@eqnarray
  \if@eqnstar
  \else
    \ifx\\\@currentHref\\%
    \else
      \@ifundefined{theHequation}{%
        \make@stripped@name{\theequation}%
        \let\theHequation\newname
      }{}%
      \hyper@makecurrent{equation}%
      \mathopen{%
        \Hy@raisedlink{%
          \hyper@anchorstart{\@currentHref}\hyper@anchorend
        }%
      }%
    \fi
  \fi
}
\def\endeqnarray{%
  \H@endeqnarray
}
```

This is quite heavy-handed, but it works for now. If its an `eqnarray*` we need to disable the hyperref actions. There may well be a cleaner way to trap this. Bill Moss found this.

```
\@namedef{eqnarray*}{%
  \def\@eqncr{\nonumber\@seqncr}\@eqnstartrue\eqnarray
}
\@namedef{endeqnarray*}{%
  \nonumber\endeqnarray\@eqnstarfalse
}
```

Then again, we have the *subeqnarray* package. Tanmoy provided some code for

this:

```
\ltx@IfUndefined{subeqnarray}{}{%
  \let\H@subeqnarray\subeqnarray
  \let\H@endsubeqnarray\endsubeqnarray
  \def\subeqnarray{%
    \let\Hy@reserved@a\relax
    \H@subeqnarray
    \@ifundefined{theHequation}{%
      \make@stripped@name{\theequation}%
      \let\theHequation\newname
    }{}%
    \hyper@makecurrent{equation}%
    \hyper@anchorstart{\@currentHref}{}\hyper@anchorend
  }%
  \def\endsubeqnarray{%
    \H@endsubeqnarray
  }%
  \providecommand\theHsubequation{\theHequation\alph{subequation}}%
}
```

The aim of this macro is to produce a sanitized version of its argument, to make it a safe label.

```
\def\make@stripped@name#1{%
  \begingroup
    \escapechar\m@ne
    \global\let\newname\@empty
    \protected@edef\Hy@tempa{#1}%
    \edef\@tempb{%
      \noexpand\@tfor\noexpand\Hy@tempa:=%
        \expandafter\strip@prefix\meaning\Hy@tempa
    }%
    \@tempb\do{%
      \if{\Hy@tempa\else
        \if}\Hy@tempa\else
          \xdef\newname{\newname\Hy@tempa}%
        \fi
      \fi
    }%
  \endgroup
}
```

Support for amsmath's subequations:

```
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname subequations\endcsname\relax
\else
  \let\HyOrg@subequations\subequations
  \def\subequations{%
    \stepcounter{equation}%
    \protected@edef\theHparentequation{%
      \@ifundefined{theHequation}\theequation\theHequation
    }%
    \addtocounter{equation}{-1}%
    \HyOrg@subequations
    \def\theHequation{\theHparentequation\alph{equation}}%
    \ignorespaces
  }%
\fi
```

Support for package amsthm (Daniel Müllner): also cleveref.

```
\Hy@AtBeginDocument{%
\@ifpackageloaded{cleveref}{%
\let\Hy@savedthm\@thm
\def\@thm{\ifhmode\unskip\fi\Hy@savedthm}%
}{%
\@ifpackageloaded{amsthm}{%
```

Class amsbook uses a different definition of \@thm, where two lines are added (thanks to Dan Luecking for his analysis):

```
\let\thm@indent\indent % indent
\thm@headfont{\scshape}% heading font small caps
```

```
 \def\Hy@temp#1#2#3{%
   \ifhmode\unskip\unskip\par\fi
   \normalfont
   \trivlist
   \let\thmheadnl\relax
   \let\thm@swap\@gobble
   \let\thm@indent\indent % indent
   \thm@headfont{\scshape}% heading font small caps
   \thm@notefont{\fontseries\mddefault\upshape}%
   \thm@headpunct{.}% add period after heading
   \thm@headsep 5\p@ plus\p@ minus\p@\relax
   \thm@space@setup
   #1% style overrides
   \@topsep \thm@preskip              % used by thm head
   \@topsepadd \thm@postskip          % used by \@endparenv
   \def\@tempa{#2}\ifx\@empty\@tempa
     \def\@tempa{\@oparg{\@begintheorem{#3}{}}[]}%
   \else
     \refstepcounter{#2}%
     \def\@tempa{%
       \@oparg{\@begintheorem{#3}{\csname the#2\endcsname}}[]%
     }%
   \fi
   \@tempa
 }%
 \ifx\Hy@temp\@thm
   \def\@thm#1#2#3{%
     \ifhmode
       \unskip\unskip\par
     \fi
     \normalfont
     \trivlist
     \let\thmheadnl\relax
     \let\thm@swap\@gobble
     \let\thm@indent\indent % indent
     \thm@headfont{\scshape}% heading font small caps
     \thm@notefont{\fontseries\mddefault\upshape}%
     \thm@headpunct{.}% add period after heading
     \thm@headsep 5\p@ plus\p@ minus\p@\relax
     \thm@space@setup
     #1% style overrides
     \@topsep \thm@preskip              % used by thm head
     \@topsepadd \thm@postskip          % used by \@endparenv
     \def\dth@counter{#2}%
     \ifx\@empty\dth@counter
```

```
      \def\@tempa{%
        \@oparg{\@begintheorem{#3}{}}[]%
      }%
    \else
      \H@refstepcounter{#2}%
      \hyper@makecurrent{#2}%
      \let\Hy@dth@currentHref\@currentHref
      \def\@tempa{%
        \@oparg{\@begintheorem{#3}{\csname the#2\endcsname}}[]%
      }%
    \fi
    \@tempa
  }%
\else
  \def\@thm#1#2#3{%
    \ifhmode
      \unskip\unskip\par
    \fi
    \normalfont
    \trivlist
    \let\thmheadnl\relax
    \let\thm@swap\@gobble
    \thm@notefont{\fontseries\mddefault\upshape}%
    \thm@headpunct{.}% add period after heading
    \thm@headsep 5\p@ plus\p@ minus\p@\relax
    \thm@space@setup
    #1% style overrides
    \@topsep \thm@preskip              % used by thm head
    \@topsepadd \thm@postskip          % used by \@endparenv
    \def\dth@counter{#2}%
    \ifx\@empty\dth@counter
      \def\@tempa{%
        \@oparg{\@begintheorem{#3}{}}[]%
      }%
    \else
      \H@refstepcounter{#2}%
      \hyper@makecurrent{#2}%
      \let\Hy@dth@currentHref\@currentHref
      \def\@tempa{%
        \@oparg{\@begintheorem{#3}{\csname the#2\endcsname}}[]%
      }%
    \fi
    \@tempa
  }%
\fi
\dth@everypar={%
  \@minipagefalse
  \global\@newlistfalse
  \@noparitemfalse
  \if@inlabel
    \global\@inlabelfalse
    \begingroup
      \setbox\z@\lastbox
      \ifvoid\z@
        \kern-\itemindent
      \fi
    \endgroup
```

```
    \ifx\@empty\dth@counter
    \else
      \Hy@raisedlink{%
        \hyper@anchorstart{%
          \ltx@ifundefined{Hy@dth@currentHref}%
          \@currentHref\Hy@dth@currentHref
        }\hyper@anchorend
      }%
    \fi
    \unhbox\@labels
  \fi
  \if@nobreak
    \@nobreakfalse \clubpenalty\@M
  \else
    \clubpenalty\@clubpenalty \everypar{}%
  \fi
 }%
}%
```

non amsthm case, remove final space on line before a theorem for githib issue 11.

```
{%
\let\Hy@savedthm\@thm
\def\@thm{\ifhmode\unskip\fi\Hy@savedthm}%
}%
}%
}
```

36 Footnotes

The footnote mark is a hypertext link, and the text is a target. We separately number the footnotes sequentially through the text, separately from whatever labels the text assigns. Too hard to keep track of markers otherwise. If the raw forms \footnotemark and \footnotetext are used, force them to use un-hyper original.

```
\ifHy@hyperfootnotes
  \newcounter{Hfootnote}%
  \let\H@@footnotetext\@footnotetext
  \let\H@@footnotemark\@footnotemark
  \def\@xfootnotenext[#1]{%
    \begingroup
      \csname c@\@mpfn\endcsname #1\relax
      \unrestored@protected@xdef\@thefnmark{\thempfn}%
    \endgroup
    \ifx\@footnotetext\@mpfootnotetext
      \expandafter\H@@mpfootnotetext
    \else
      \expandafter\H@@footnotetext
    \fi
  }%
  \def\@xfootnotemark[#1]{%
    \begingroup
      \c@footnote #1\relax
      \unrestored@protected@xdef\@thefnmark{\thefootnote}%
    \endgroup
    \H@@footnotemark
  }%
```

```
\let\H@@mpfootnotetext\@mpfootnotetext
\long\def\@mpfootnotetext#1{%
  \H@@mpfootnotetext{%
    \ifHy@nesting
      \expandafter\ltx@firstoftwo
    \else
      \expandafter\ltx@secondoftwo
    \fi
    {%
      \expandafter\hyper@@anchor\expandafter{%
        \Hy@footnote@currentHref
       }{#1}%
    }{%
      \Hy@raisedlink{%
        \expandafter\hyper@@anchor\expandafter{%
          \Hy@footnote@currentHref
        }{\relax}%
      }#1%
    }%
  }%
}%
\long\def\@footnotetext#1{%
  \H@@footnotetext{%
    \ifHy@nesting
      \expandafter\ltx@firstoftwo
    \else
      \expandafter\ltx@secondoftwo
    \fi
    {%
      \expandafter\hyper@@anchor\expandafter{%
        \Hy@footnote@currentHref
      }{#1}%
    }{%
      \Hy@raisedlink{%
        \expandafter\hyper@@anchor\expandafter{%
          \Hy@footnote@currentHref
        }{\relax}%
      }%
      \let\@currentHref\Hy@footnote@currentHref
      \let\@currentlabelname\@empty
      #1%
    }%
  }%
}%
```

Redefine `\@footnotemark`, borrowing its code (at the cost of getting out of sync with latex.ltx), to take advantage of its white space and hyphenation fudges. If we just overload it, we can get variant documents (the word before the footnote is treated differently). Thanks to David Carlisle and Brian Ripley for confusing and helping me on this.

```
\def\@footnotemark{%
  \leavevmode
  \ifhmode\edef\@x@sf{\the\spacefactor}\nobreak\fi
  \stepcounter{Hfootnote}%
  \global\let\Hy@saved@currentHref\@currentHref
  \hyper@makecurrent{Hfootnote}%
  \global\let\Hy@footnote@currentHref\@currentHref
```

```
    \global\let\@currentHref\Hy@saved@currentHref
    \hyper@linkstart{link}{\Hy@footnote@currentHref}%
    \@makefnmark
    \hyper@linkend
    \ifhmode\spacefactor\@x@sf\fi
    \relax
  }%
```

Tabularx causes footnote problems, disable the linking if that is loaded. Since v6.82i footnotes are only disabled inside the environment 'tabularx'.

```
  \@ifpackageloaded{tabularx}{%
    \let\HyOrg@TX@endtabularx\TX@endtabularx
    \def\Hy@tabularx@hook{%
      \let\@footnotetext\H@@footnotetext
      \let\@footnotemark\H@@footnotemark
      \let\@mpfootnotetext\H@@mpfootnotetext
    }%
    \begingroup
      \toks@\expandafter{\TX@endtabularx}%
      \xdef\Hy@gtemp{%
        \noexpand\Hy@tabularx@hook
        \the\toks@
      }%
    \endgroup
    \let\TX@endtabularx\Hy@gtemp
  }{}%
```

Support for footnotes in p columns of longtable. Here `\footnote` commands are splitted into `\footnotemark` and a call of `\footnotetext` with the optional argument, that is not supported by hyperref. The result is a link by `\footnotemark` without valid anchor

```
  \@ifpackageloaded{longtable}{%
    \CheckCommand*{\LT@p@ftntext}[1]{%
      \edef\@tempa{%
        \the\LT@p@ftn
        \noexpand\footnotetext[\the\c@footnote]%
      }%
      \global\LT@p@ftn\expandafter{\@tempa{#1}}%
    }%
    \long\def\LT@p@ftntext#1{%
      \edef\@tempa{%
        \the\LT@p@ftn
        \begingroup
          \noexpand\c@footnote=\the\c@footnote\relax
          \noexpand\protected@xdef\noexpand\@thefnmark{%
            \noexpand\thempfn
          }%
          \noexpand\Hy@LT@footnotetext{%
            \Hy@footnote@currentHref
          }%
      }%
      \global\LT@p@ftn\expandafter{%
          \@tempa{#1}%
        \endgroup
      }%
    }%
    \long\def\Hy@LT@footnotetext#1#2{%
      \H@@footnotetext{%
```

```
      \ifHy@nesting
        \hyper@@anchor{#1}{#2}%
      \else
        \Hy@raisedlink{%
          \hyper@@anchor{#1}{\relax}%
        }%
        \def\@currentHref{#1}%
        \let\@currentlabelname\@empty
        #2%
      \fi
    }%
  }%
}{}%
```

Footnotes for fancyvrb (Fix by Manuel Pégourié-Gonnard).

```
\@ifpackageloaded{fancyvrb}{%
  \def\V@@footnotetext{%
    \insert\footins\bgroup
    \csname reset@font\endcsname
    \footnotesize
    \interlinepenalty\interfootnotelinepenalty
    \splittopskip\footnotesep
    \splitmaxdepth\dp\strutbox
    \floatingpenalty \@MM
    \hsize\columnwidth
    \@parboxrestore
    \edef\@currentlabel{\csname p@footnote\endcsname\@thefnmark}%
    \@makefntext{}%
    \rule{\z@}{\footnotesep}%
    \bgroup
    \aftergroup\V@@@footnotetext
    \Hy@raisedlink{%
      \expandafter\hyper@@anchor\expandafter{%
        \Hy@footnote@currentHref
      }{\relax}%
    }%
    \let\@currentHref\Hy@footnote@currentHref
    \let\@currentlabelname\@empty
    \ignorespaces
  }%
}{}%
```

KOMA-Script defines `\footref` that uses both `\ref` and `\@footnotemark` resulting in two links, one of them wrong.

```
\def\Hy@temp#1{%
  \begingroup
    \unrestored@protected@xdef\@thefnmark{\ref{#1}}%
  \endgroup
  \@footnotemark
}%
\ifx\Hy@temp\footref
  \def\footref#1{%
  \begingroup
    \unrestored@protected@xdef\@thefnmark{\ref{#1}}%
  \endgroup
  \H@@footnotemark
  }%
\fi
```

But the special footnotes in \maketitle are much too hard to deal with properly. Let them revert to plain behaviour. The koma classes add an optional argument.

```
\let\HyOrg@maketitle\maketitle
\def\maketitle{%
  \let\Hy@saved@footnotemark\@footnotemark
  \let\Hy@saved@footnotetext\@footnotetext
  \let\@footnotemark\H@@footnotemark
  \let\@footnotetext\H@@footnotetext
  \@ifnextchar[\Hy@maketitle@optarg{% ]
    \HyOrg@maketitle
    \Hy@maketitle@end
  }%
}%
\def\Hy@maketitle@optarg[#1]{%
  \HyOrg@maketitle[{#1}]%
  \Hy@maketitle@end
}%
\def\Hy@maketitle@end{%
  \ifx\@footnotemark\H@@footnotemark
    \let\@footnotemark\Hy@saved@footnotemark
  \fi
  \ifx\@footnotetext\H@@footnotetext
    \let\@footnotetext\Hy@saved@footnotetext
  \fi
}%
```

\realfootnote Does anyone remember the function and purpose of \realfootnote?

```
\def\realfootnote{%
  \@ifnextchar[\@xfootnote{%
    \stepcounter{\@mpfn}%
    \protected@xdef\@thefnmark{\thempfn}%
    \H@@footnotemark\H@@footnotetext
  }%
}%
\fi
\Hy@DisableOption{hyperfootnotes}

⟨/package⟩
⟨*check⟩
\checklatex
\checkcommand\def\@xfootnotenext[#1]{%
  \begingroup
    \csname c@\@mpfn\endcsname #1\relax
    \unrestored@protected@xdef\@thefnmark{\thempfn}%
  \endgroup
  \@footnotetext
}
\checkcommand\def\@xfootnotemark[#1]{%
  \begingroup
    \c@footnote #1\relax
    \unrestored@protected@xdef\@thefnmark{\thefootnote}%
  \endgroup
  \@footnotemark
}
\checkcommand\def\@footnotemark{%
  \leavevmode
```

```
  \ifhmode\edef\@x@sf{\the\spacefactor}\nobreak\fi
  \@makefnmark
  \ifhmode\spacefactor\@x@sf\fi
  \relax
}
⟨/check⟩
⟨*package⟩
```

37 Float captions

Make the float caption the hypertext anchor; curiously enough, we can't just copy the definition of \@caption. Its all to do with expansion. It screws up. Sigh.

```
\def\caption{%
  \ifx\@captype\@undefined
    \@latex@error{\noexpand\caption outside float}\@ehd
    \expandafter\@gobble
  \else
    \H@refstepcounter\@captype
    \let\Hy@tempa\@caption
    \@ifundefined{float@caption}{%
    }{%
      \expandafter\ifx\csname @float@c@\@captype\endcsname
                      \float@caption
        \let\Hy@tempa\Hy@float@caption
      \fi
    }%
    \expandafter\@firstofone
  \fi
  {\@dblarg{\Hy@tempa\@captype}}%
}
\long\def\@caption#1[#2]#3{%
  \expandafter\ifx\csname if@capstart\expandafter\endcsname
                  \csname iftrue\endcsname
    \global\let\@currentHref\hc@currentHref
  \else
    \hyper@makecurrent{\@captype}%
  \fi
  \@ifundefined{NR@gettitle}{%
    \def\@currentlabelname{#2}%
  }{%
    \NR@gettitle{#2}%
  }%
  \par\addcontentsline{\csname ext@#1\endcsname}{#1}{%
    \protect\numberline{\csname the#1\endcsname}{\ignorespaces #2}%
  }%
  \begingroup
    \@parboxrestore
    \if@minipage
      \@setminipage
    \fi
    \normalsize
    \expandafter\ifx\csname if@capstart\expandafter\endcsname
                    \csname iftrue\endcsname
      \global\@capstartfalse
      \@makecaption{\csname fnum@#1\endcsname}{\ignorespaces#3}%
    \else
```

```
      \@makecaption{\csname fnum@#1\endcsname}{%
        \ignorespaces
```

If we cannot have nesting, the anchor is empty.

```
        \ifHy@nesting
          \expandafter\hyper@@anchor\expandafter{\@currentHref}{#3}%
        \else
          \Hy@raisedlink{%
            \expandafter\hyper@@anchor\expandafter{%
              \@currentHref
            }{\relax}%
          }%
          #3%
        \fi
      }%
    \fi
    \par
  \endgroup
}
```

Compatibility with float.sty: anchor setting at the top of the float, if the float is controlled by float.sty. Several `\caption` commands inside one float are not supported.

`\HyNew@float@makebox` is introduced as feature request of Axel Sommerfeldt to make the life easier for his package 'caption'.

```
\let\Hy@float@caption\@caption
\newcommand{\HyNew@float@makebox}[1]{%
  \HyOrg@float@makebox{%
    #1\relax
    \ifx\Hy@float@currentHref\@undefined
    \else
      \expandafter\hyper@@anchor\expandafter{%
        \Hy@float@currentHref
      }{\relax}%
      \global\let\Hy@float@currentHref\@undefined
    \fi
  }%
}%
\@ifpackageloaded{float}{%
  \def\Hy@float@caption{%
    \ifx\Hy@float@currentHref\@undefined
      \hyper@makecurrent{\@captype}%
      \global\let\Hy@float@currentHref\@currentHref
    \else
      \let\@currentHref\Hy@float@currentHref
    \fi
    \float@caption
  }%
  \let\HyOrg@float@makebox\float@makebox
  \let\float@makebox\HyNew@float@makebox
}{}
```

```
⟨/package⟩
⟨*check⟩
\checklatex[1999/06/01 - 2000/06/01]
\checkcommand\def\caption{%
  \ifx\@captype\@undefined
    \@latex@error{\noexpand\caption outside float}\@ehd
    \expandafter\@gobble
```

```
  \else
    \refstepcounter\@captype
    \expandafter\@firstofone
  \fi
  {\@dblarg{\@caption\@captype}}%
}
\checkcommand\long\def\@caption#1[#2]#3{%
  \par
  \addcontentsline{\csname ext@#1\endcsname}{#1}{%
    \protect\numberline{\csname the#1\endcsname}{\ignorespaces #2}%
  }%
  \begingroup
    \@parboxrestore
    \if@minipage
      \@setminipage
    \fi
    \normalsize
    \@makecaption{\csname fnum@#1\endcsname}{\ignorespaces #3}\par
  \endgroup
}
⟨/check⟩
⟨*package⟩
```

38 Bibliographic references

This is not very robust, since many styles redefine these things. The package used to redefine `\@citex` and the like; then we tried adding the hyperref call explicitly into the .aux file. Now we redefine `\bibcite`; this still breaks some citation packages so we have to work around them. But this remains extremely dangerous. Any or all of *achemso* and *drftcite* may break.

However, lets make an attempt to get *natbib* right, because thats a powerful, important package. Patrick Daly (daly@linmpi.mpg.de) has provided hooks for us, so all we need to do is activate them.

```
\def\hyper@natlinkstart#1{%
  \Hy@backout{#1}%
  \hyper@linkstart{cite}{cite.#1}%
  \def\hyper@nat@current{#1}%
}
\def\hyper@natlinkend{%
  \hyper@linkend
}
\def\hyper@natlinkbreak#1#2{%
  \hyper@linkend#1\hyper@linkstart{cite}{cite.#2}%
}
\def\hyper@natanchorstart#1{%
  \Hy@raisedlink{\hyper@anchorstart{cite.#1}}%
}
\def\hyper@natanchorend{\hyper@anchorend}
```

Do not play games if we have natbib support. Macro extra@binfo added for chapterbib support. Chapterbib also wants `\@extra@binfo` in the hyper-link, but since the link tag is not expanded immediately, we use `\@extra@b@citeb`, so cites in a chapter will link to the bibliography in that chapter.

```
\ltx@IfUndefined{NAT@parse}{%
  \providecommand*\@extra@binfo{}%
  \providecommand*\@extra@b@citeb{}%
```

```
\def\bibcite#1#2{%
  \@newl@bel{b}{#1\@extra@binfo}{%
    \hyper@@link[cite]{}{cite.#1\@extra@b@citeb}{#2}%
  }%
}%
\gdef\@extra@binfo{}%
```

Package babel redefines \bibcite with macro \bbl@cite@choice. It needs to be overwritten to avoid the warning "Label(s) may have changed.".

```
\let\Hy@bibcite\bibcite
\begingroup
  \@ifundefined{bbl@cite@choice}{}{%
    \g@addto@macro\bbl@cite@choice{%
      \let\bibcite\Hy@bibcite
    }%
  }%
\endgroup
```

\@BIBLABEL is working around a 'feature' of RevTEX.

```
\providecommand*{\@BIBLABEL}{\@biblabel}%
\def\@lbibitem[#1]#2{%
  \@skiphyperreftrue
  \H@item[%
    \ifx\Hy@raisedlink\@empty
      \hyper@anchorstart{cite.#2\@extra@b@citeb}%
        \@BIBLABEL{#1}%
      \hyper@anchorend
    \else
      \Hy@raisedlink{%
        \hyper@anchorstart{cite.#2\@extra@b@citeb}\hyper@anchorend
      }%
      \@BIBLABEL{#1}%
    \fi
    \hfill
  ]%
  \@skiphyperreffalse
  \if@filesw
    \begingroup
      \let\protect\noexpand
      \immediate\write\@auxout{%
        \string\bibcite{#2}{#1}%
      }%
    \endgroup
  \fi
  \ignorespaces
}%
```

Since \bibitem is doing its own labelling, call the raw version of \item, to avoid extra spurious labels

```
\def\@bibitem#1{%
  \@skiphyperreftrue\H@item\@skiphyperreffalse
  \Hy@raisedlink{%
    \hyper@anchorstart{cite.#1\@extra@b@citeb}\relax\hyper@anchorend
  }%
  \if@filesw
    \begingroup
      \let\protect\noexpand
      \immediate\write\@auxout{%
        \string\bibcite{#1}{\the\value{\@listctr}}%
```

```
      }%
    \endgroup
  \fi
  \ignorespaces
 }%
}{}
⟨/package⟩
⟨*check⟩
\checklatex
\checkcommand\def\@lbibitem[#1]#2{%
 \item[\@biblabel{#1}\hfill]%
 \if@filesw
  {%
   \let\protect\noexpand
   \immediate\write\@auxout{%
    \string\bibcite{#2}{#1}%
   }%
  }%
 \fi
 \ignorespaces
}
\checkcommand\def\@bibitem#1{%
 \item
 \if@filesw
  \immediate\write\@auxout{%
   \string\bibcite{#1}{\the\value{\@listctr}}%
  }%
 \fi
 \ignorespaces
}
⟨/check⟩
⟨*package⟩
```

Revtex (bless its little heart) takes over `\bibcite` and looks at the result to measure something. Make this a hypertext link and it goes ape. Therefore, make an anodyne result first, call its business, then go back to the real thing.

```
\@ifclassloaded{revtex}{%
 \Hy@Info{*** compatibility with revtex **** }%
 \def\revtex@checking#1#2{%
  \expandafter\let\expandafter\T@temp\csname b@#1\endcsname
  \expandafter\def\csname b@#1\endcsname{#2}%
  \@SetMaxRnhefLabel{#1}%
  \expandafter\let\csname b@#1\endcsname\T@temp
 }%
```

Tanmoy provided this replacement for CITEX. Lord knows what it does. For chapterbib added: extra@b@citeb

```
 \@ifundefined{@CITE}{\def\@CITE{\@cite}}{}%
 \providecommand*{\@extra@b@citeb}{}%
 \def\@CITEX[#1]#2{%
  \let\@citea\@empty
  \leavevmode
  \unskip
  $^{%
   \scriptstyle
   \@CITE{%
    \@for\@citeb:=#2\do{%
```

```
        \@citea
        \def\@citea{,\penalty\@m\ }%
        \edef\@citeb{\expandafter\@firstofone\@citeb}%
        \if@filesw
          \immediate\write\@auxout{\string\citation{\@citeb}}%
        \fi
        \@ifundefined{b@\@citeb\extra@b@citeb}{%
          \mbox{\reset@font\bfseries ?}%
          \G@refundefinedtrue
          \@latex@warning{%
            Citation `\@citeb' on page \thepage \space undefined%
          }%
        }{%
          {\csname b@\@citeb\@extra@b@citeb\endcsname}%
        }%
      }%
    }{#1}%
  }$%
}%
```

No, life is too short. I am not going to understand the Revtex `\@collapse` macro, I shall just restore the original behaviour of `\@citex`; sigh. This is SO vile.

```
\def\@citex[#1]#2{%
  \let\@citea\@empty
  \@cite{%
    \@for\@citeb:=#2\do{%
      \@citea
      \def\@citea{,\penalty\@m\ }%
      \edef\@citeb{\expandafter\@firstofone\@citeb}%
      \if@filesw
        \immediate\write\@auxout{\string\citation{\@citeb}}%
      \fi
      \@ifundefined{b@\@citeb\@extra@b@citeb}{%
        \mbox{\reset@font\bfseries ?}%
        \G@refundefinedtrue
        \@latex@warning{%
          Citation `\@citeb' on page \thepage \space undefined%
        }%
      }{%
        \hbox{\csname b@\@citeb\@extra@b@citeb\endcsname}%
      }%
    }%
  }{#1}%
}%
}{}
```

38.1 Package harvard

Override Peter Williams' Harvard package; we have to a) make each of the citation types into a link; b) make each citation write a backref entry, and c) kick off a backreference section for each bibliography entry.

The redefinitions have to be deferred to `\begin{document}`, because if harvard.sty is loaded and html.sty is present and detects pdfTEX, then hyperref is already loaded at the begin of harvard.sty, and the `\newcommand` macros causes error messages.

```
\@ifpackageloaded{harvard}{%
  \Hy@AtBeginDocument{%
```

```
\Hy@Info{*** compatibility with harvard **** }%
\Hy@raiselinksfalse
\def\harvardcite#1#2#3#4{%
  \global\@namedef{HAR@fn@#1}{\hyper@@link[cite]{}{cite.#1}{#2}}%
  \global\@namedef{HAR@an@#1}{\hyper@@link[cite]{}{cite.#1}{#3}}%
  \global\@namedef{HAR@yr@#1}{\hyper@@link[cite]{}{cite.#1}{#4}}%
  \global\@namedef{HAR@df@#1}{\csname HAR@fn@#1\endcsname}%
}%
\def\HAR@citetoaux#1{%
  \if@filesw\immediate\write\@auxout{\string\citation{#1}}\fi%
  \ifHy@backref
    \ifx\@empty\@currentlabel
    \else
      \@bsphack
      \if@filesw
        \protected@write\@auxout{}{%
          \string\@writefile{brf}{%
            \string\backcite{#1}{%
              {\thepage}{\@currentlabel}{\@currentHref}%
            }%
          }%
        }%
      \fi
      \@esphack
    \fi
  \fi
}%
\def\harvarditem{%
  \@ifnextchar[{\@harvarditem}{\@harvarditem[\null]}%
}%
\def\@harvarditem[#1]#2#3#4#5\par{%
  \item[]%
  \hyper@anchorstart{cite.#4}\relax\hyper@anchorend
  \if@filesw
    \begingroup
      \def\protect##1{\string ##1\space}%
      \ifthenelse{\equal{#1}{\null}}%
        {\def\next{{#4}{#2}{#2}{#3}}}%
        {\def\next{{#4}{#2}{#1}{#3}}}%
      \immediate\write\@auxout{\string\harvardcite\codeof\next}%
   \endgroup
  \fi
  \protect\hspace*{-\labelwidth}%
  \protect\hspace*{-\labelsep}%
  \ignorespaces
  #5%
  \ifHy@backref
    \newblock
    \backref{\csname br@#4\endcsname}%
  \fi
  \par
}%
```

\HAR@checkcitations Package hyperref has added \hyper@@link, so the original test \HAR@checkcitations will fail every time and always will appear the "Changed labels" warning. So we have to redefine \Har@checkcitations:

```
\long\def\HAR@checkcitations#1#2#3#4{%
```

```
    \def\HAR@tempa{\hyper@@link[cite]{}{cite.#1}{#2}}%
    \expandafter\ifx\csname HAR@fn@#1\endcsname\HAR@tempa
      \def\HAR@tempa{\hyper@@link[cite]{}{cite.#1}{#3}}%
      \expandafter\ifx\csname HAR@an@#1\endcsname\HAR@tempa
        \def\HAR@tempa{\hyper@@link[cite]{}{cite.#1}{#4}}%
        \expandafter\ifx\csname HAR@yr@#1\endcsname\HAR@tempa
        \else
          \@tempswatrue
        \fi
      \else
        \@tempswatrue
      \fi
    \else
      \@tempswatrue
    \fi
  }%
}%
}{}
```

38.2 Package chicago

The links by \citeN and \shortciteN should include the closing parentheses.

```
\@ifpackageloaded{chicago}{%
```

\citeN

```
  \def\citeN{%
    \def\@citeseppen{-1000}%
    \def\@cite##1##2{##1}%
    \def\citeauthoryear##1##2##3{##1 (##3\@cite@opt)}%
    \@citedata@opt
  }%
```

\shortciteN

```
  \def\shortciteN{%
    \def\@citeseppen{-1000}%
    \def\@cite##1##2{##1}%
    \def\citeauthoryear##1##2##3{##2 (##3\@cite@opt)}%
    \@citedata@opt
  }%
```

\@citedata@opt

```
  \def\@citedata@opt{%
    \let\@cite@opt\@empty
    \@ifnextchar [{%
      \@tempswatrue
      \@citedatax@opt
    }{%
      \@tempswafalse
      \@citedatax[]%
    }%
  }%
```

\@citedatax@opt

```
  \def\@citedatax@opt[#1]{%
    \def\@cite@opt{, #1}%
    \@citedatax[{#1}]%
  }%
```

```
}{}
```

39 Page numbers

The last page should not contain a /Dur key, because there is no page after the last page. Therefore at the last page there should be a command `\hypersetup{pdfpageduration={}}`. This can be set with `\AtEndDocument`, but it can be too late, if the last page is already finished, or too early, if lots of float pages will follow. Therefore currently nothing is done by hyperref.

This where we supply a destination for each page.

```
\ltx@ifclassloaded{slides}{%
  \def\Hy@SlidesFormatOptionalPage#1{(#1)}%
  \def\Hy@PageAnchorSlidesPlain{%
    \advance\c@page\ltx@one
    \edef\Hy@TempPageAnchor{%
      \noexpand\hyper@@anchor{%
        page.\the\c@slide.\the\c@overlay.\the\c@note%
        \ifnum\c@page=\ltx@one
        \else
          .\the\c@page
        \fi
      }%
    }%
    \advance\c@page-\ltx@one
  }%
  \def\Hy@PageAnchorSlide{%
    \advance\c@page\ltx@one
    \ifnum\c@page>\ltx@one
      \ltx@IfUndefined{theHpage}{%
        \protected@edef\Hy@TheSlideOptionalPage{%
          \Hy@SlidesFormatOptionalPage{\thepage}%
        }%
      }{%
        \protected@edef\Hy@TheSlideOptionalPage{%
          \Hy@SlidesFormatOptionalPage{\theHpage}%
        }%
      }%
    \else
      \def\Hy@TheSlideOptionalPage{}%
    \fi
    \advance\c@page-\ltx@one
    \pdfstringdef\@the@H@page{%
      \csname
        the%
        \ltx@ifundefined{theH\Hy@SlidesPage}{}{H}%
        \Hy@SlidesPage
      \endcsname
      \Hy@TheSlideOptionalPage
    }%
    \ltx@gobblethree
  }%
  \def\Hy@SlidesPage{slide}%
  \g@addto@macro\slide{%
    \def\Hy@SlidesPage{slide}%
  }%
  \g@addto@macro\overlay{%
```

```
    \def\Hy@SlidesPage{overlay}%
  }%
  \g@addto@macro\note{%
    \def\Hy@SlidesPage{note}%
  }%
}{%
  \def\Hy@PageAnchorSlidesPlain{}%
  \def\Hy@PageAnchorSlide{}%
}
\def\Hy@EveryPageAnchor{%
  \Hy@DistillerDestFix
  \ifHy@pageanchor
    \ifHy@hypertexnames
      \ifHy@plainpages
        \def\Hy@TempPageAnchor{\hyper@@anchor{page.\the\c@page}}%
        \Hy@PageAnchorSlidesPlain
      \else
        \begingroup
          \let\@number\@firstofone
          \Hy@unicodefalse
          \Hy@PageAnchorSlide
          \pdfstringdef\@the@H@page{\thepage}%
        \endgroup
        \EdefUnescapeString\@the@H@page{\@the@H@page}%
        \def\Hy@TempPageAnchor{\hyper@@anchor{page.\@the@H@page}}%
      \fi
    \else
      \Hy@GlobalStepCount\Hy@pagecounter
      \def\Hy@TempPageAnchor{%
        \hyper@@anchor{page.\the\Hy@pagecounter}%
      }%
    \fi
    \vbox to 0pt{%
      \kern\voffset
      \kern\topmargin
      \kern-1bp\relax
      \hbox to 0pt{%
        \kern\hoffset
        \kern\ifodd\value{page}%
              \oddsidemargin
            \else
              \evensidemargin
            \fi
        \kern-1bp\relax
        \Hy@TempPageAnchor\relax
        \hss
      }%
      \vss
    }%
  \fi
}
\g@addto@macro\Hy@EveryPageBoxHook{%
  \Hy@EveryPageAnchor
}
```

40 Table of contents

TV Raman noticed that people who add arbitrary material into the TOC generate a bad or null link. We avoid that by checking if the current destination is empty. But if 'the most recent destination' is not what you expect, you will be in trouble.

```
\def\addcontentsline#1#2#3{% toc extension, type, tag
  \begingroup
    \let\label\@gobble
    \ifx\@currentHref\@empty
      \Hy@Warning{%
        No destination for bookmark of \string\addcontentsline,%
        \MessageBreak destination is added%
      }%
      \phantomsection
    \fi
    \expandafter\ifx\csname toclevel@#2\endcsname\relax
      \begingroup
        \def\Hy@tempa{#1}%
        \ifx\Hy@tempa\Hy@bookmarkstype
          \Hy@WarningNoLine{%
            bookmark level for unknown #2 defaults to 0%
          }%
        \else
          \Hy@Info{bookmark level for unknown #2 defaults to 0}%
        \fi
      \endgroup
      \expandafter\gdef\csname toclevel@#2\endcsname{0}%
    \fi
    \edef\Hy@toclevel{\csname toclevel@#2\endcsname}%
    \Hy@writebookmark{\csname the#2\endcsname}%
      {#3}%
      {\@currentHref}%
      {\Hy@toclevel}%
      {#1}%
    \ifHy@verbose
      \begingroup
        \def\Hy@tempa{#3}%
        \@onelevel@sanitize\Hy@tempa
        \let\temp@online\on@line
        \let\on@line\@empty
        \Hy@Info{%
          bookmark\temp@online:\MessageBreak
          thecounter {\csname the#2\endcsname}\MessageBreak
          text {\Hy@tempa}\MessageBreak
          reference {\@currentHref}\MessageBreak
          toclevel {\Hy@toclevel}\MessageBreak
          type {#1}%
        }%
      \endgroup
    \fi
    \addtocontents{#1}{%
      \protect\contentsline{#2}{#3}{\thepage}{\@currentHref}%
    }%
  \endgroup
}
```

\contentsline The page number might be empty. In this case the link for the page number is

suppressed to avoid little link boxes.

```
\def\contentsline#1#2#3#4{%
  \begingroup
    \Hy@safe@activestrue
  \edef\x{\endgroup
    \def\noexpand\Hy@tocdestname{#4}%
  }\x
  \ifx\Hy@tocdestname\ltx@empty
    \csname l@#1\endcsname{#2}{#3}%
  \else
    \ifcase\Hy@linktoc % none
      \csname l@#1\endcsname{#2}{#3}%
    \or % section
      \csname l@#1\endcsname{%
        \hyper@linkstart{link}{\Hy@tocdestname}{#2}\hyper@linkend
      }{#3}%
    \or % page
      \def\Hy@temp{#3}%
      \ifx\Hy@temp\ltx@empty
        \csname l@#1\endcsname{#2}{#3}%
      \else
        \csname l@#1\endcsname{{#2}}{%
          \hyper@linkstart{link}{\Hy@tocdestname}{#3}\hyper@linkend
        }%
      \fi
    \else % all
      \def\Hy@temp{#3}%
      \ifx\Hy@temp\ltx@empty
        \csname l@#1\endcsname{%
          \hyper@linkstart{link}{\Hy@tocdestname}{#2}\hyper@linkend
        }{}%
      \else
        \csname l@#1\endcsname{%
          \hyper@linkstart{link}{\Hy@tocdestname}{#2}\hyper@linkend
        }{%
          \hyper@linkstart{link}{\Hy@tocdestname}{#3}\hyper@linkend
        }%
      \fi
    \fi
  \fi
}
```

```
⟨/package⟩
⟨*check⟩
\checklatex
\checkcommand\def\addcontentsline#1#2#3{%
  \addtocontents{#1}{\protect\contentsline{#2}{#3}{\thepage}}%
}
\checkcommand\def\contentsline#1{\csname l@#1\endcsname}
⟨/check⟩
⟨*package⟩
```

41 New counters

The whole theorem business makes up new counters on the fly; we are going to intercept this. Sigh. Do it at the level where new counters are defined.

```
\let\H@definecounter\@definecounter
\def\@definecounter#1{%
  \H@definecounter{#1}%
  \expandafter\gdef\csname theH#1\endcsname{\arabic{#1}}%
}
```

But what if they have used the optional argument to e.g. `\newtheorem` to determine when the numbering is reset? OK, we'll trap that too.

```
\let\H@newctr\@newctr
\def\@newctr#1[#2]{%
  \H@newctr#1[{#2}]%
  \expandafter\gdef\csname theH#1\endcsname{%
    \csname the\@ifundefined{theH#2}{}{H}#2\endcsname.\arabic{#1}%
  }%
}
```

42 AMSLaTeX compatibility

Oh, no, they don't use anything as simple as `\refstepcounter` in the AMS! We need to intercept some low-level operations of theirs. Damned if we are going to try and work out what they get up to. Just stick a label of 'AMS' on the front, and use the label *they* worked out. If that produces something invalid, I give up. They'll change all the code again anyway, I expect (SR).

Version 6.77p uses a patch by Ross Moore.

```
\@ifpackageloaded{amsmath}{%
  \def\Hy@make@anchor{%
    \Hy@MakeCurrentHrefAuto{AMS}%
    \Hy@raisedlink{\hyper@anchorstart{\@currentHref}\hyper@anchorend}%
  }%
  \def\Hy@make@df@tag@@#1{%
    \gdef\df@tag{%
      \maketag@@@{\Hy@make@anchor#1}%
      \def\@currentlabel{#1}%
    }%
  }%
  \def\Hy@make@df@tag@@@#1{%
    \gdef\df@tag{%
      \tagform@{\Hy@make@anchor#1}%
      \toks@\@xp{\p@equation{#1}}%
      \edef\@currentlabel{\the\toks@}%
    }%
  }%
  \let\HyOrg@make@df@tag@@\make@df@tag@@
  \let\HyOrg@make@df@tag@@@\make@df@tag@@@
  \let\make@df@tag@@\Hy@make@df@tag@@
  \let\make@df@tag@@@\Hy@make@df@tag@@@
}{}
```

Only play with `\seteqlebal` if we are using pdftex. Other drivers cause problems; requested by Michael Downes (AMS).

```
\@ifpackagewith{hyperref}{pdftex}{%
  \let\H@seteqlabel\@seteqlabel
  \def\@seteqlabel#1{%
    \H@seteqlabel{#1}%
    \xdef\@currentHref{AMS.\the\Hy@linkcounter}%
    \Hy@raisedlink{%
```

```
      \hyper@anchorstart{\@currentHref}\hyper@anchorend
    }%
  }%
}{}
```

This code I simply cannot remember what I was trying to achieve. The final result seems to do nothing anyway.

```
\let\H@tagform@\tagform@
\def\tagform@#1{%
 \maketag@@@{\hyper@@anchor{\@currentHref}%
 {(\ignorespaces#1\unskip)}}%
}
\def\eqref#1{\textup{\H@tagform@{\ref{#1}}}}
```

42.1 \@addtoreset and \numberwithin patches

\@addtoreset puts a counter to the reset list of another counter. After a reset the counter starts again with perhaps already used values. Therefore the hyperref version of the counter print command \theHcounter is redefined in order to add the parent counter.

```
\let\HyOrg@addtoreset\@addtoreset
\def\@addtoreset#1#2{%
  \HyOrg@addtoreset{#1}{#2}%
  \expandafter\xdef\csname theH#1\endcsname{%
    \expandafter\noexpand
      \csname the\@ifundefined{theH#2}{}H#2\endcsname
    .\noexpand\the\noexpand\value{#1}%
  }%
}
```

\numberwithin A appropiate definition of hyperref's companion counter (\theH...) is added for correct link names.

```
⟨/package⟩
⟨*check⟩
\checkpackage{amsmath}[1999/12/14 - 2000/06/06]
\checkcommand\newcommand{\numberwithin}[3][\arabic]{%
  \@ifundefined{c@#2}{\@nocounterr{#2}}{%
    \@ifundefined{c@#3}{\@nocnterr{#3}}{%
      \@addtoreset{#2}{#3}%
      \@xp\xdef\csname the#2\endcsname{%
        \@xp\@nx\csname the#3\endcsname .\@nx#1{#2}%
      }%
    }%
  }%
}%
⟨/check⟩
⟨*package⟩
\@ifpackageloaded{amsmath}{%
  \@ifpackagelater{amsmath}{1999/12/14}{%
    \renewcommand*{\numberwithin}[3][\arabic]{%
      \@ifundefined{c@#2}{\@nocounterr{#2}}{%
        \@ifundefined{c@#3}{\@nocnterr{#3}}{%
          \HyOrg@addtoreset{#2}{#3}%
          \@xp\xdef\csname the#2\endcsname{%
            \@xp\@nx\csname the#3\endcsname .\@nx#1{#2}%
          }%
```

```
        \@xp\xdef\csname theH#2\endcsname{%
          \@xp\@nx
          \csname the\@ifundefined{theH#3}{}H#3\endcsname
          .\@nx#1{#2}%
        }%
      }%
    }%
  }%
}{%
  \Hy@WarningNoLine{%
    \string\numberwithin\space of package `amsmath' %
    only fixed\MessageBreak
    for version 2000/06/06 v2.12 or newer%
  }%
}%
}{}
```

43 Included figures

Simply intercept the low level graphics package macro.

```
\ifHy@hyperfigures
  \let\Hy@Gin@setfile\Gin@setfile
  \def\Gin@setfile#1#2#3{%
    \hyperimage{#3}{\Hy@Gin@setfile{#1}{#2}{#3}}%
  }%
\fi
\Hy@DisableOption{hyperfigures}
```

44 hyperindex entries

Internal command names are prefixed with `\HyInd@`.

Hyper-indexing works crudely, by forcing code onto the end of the index entry with the | feature; this puts a hyperlink around the printed page numbers. It will not proceed if the author has already used the | specifier for something like emboldening entries. That would make Makeindex fail (cannot have two | specifiers). The solution is for the author to use generic coding, and put in the requisite `\hyperpage` in his/her own macros along with the boldness.

This section is poor stuff; it's open to all sorts of abuse. Sensible large projects will design their own indexing macros any bypass this.

```
\ifHy@hyperindex
  \def\HyInd@ParenLeft{(}%
  \def\HyInd@ParenRight{)}%
  \def\hyperindexformat#1#2{%
    \let\HyOrg@hyperpage\hyperpage
    \let\hyperpage\@firstofone
    #1{\HyOrg@hyperpage{#2}}%
    \let\hyperpage\HyOrg@hyperpage
  }%
  \Hy@nextfalse
  \@ifpackageloaded{multind}{\Hy@nexttrue}{}%
  \@ifpackageloaded{index}{\Hy@nexttrue}{}%
  \@ifpackageloaded{amsmidx}{\Hy@nexttrue}{}%
  \begingroup
    \lccode`\|=\expandafter`\HyInd@EncapChar\relax
```

```
  \lccode`\/=`\\\relax
\lowercase{\endgroup
  \ifHy@next
    \let\HyInd@org@wrindex\@wrindex
    \def\@wrindex#1#2{\HyInd@@wrindex{#1}#2||\\}%
    \def\HyInd@@wrindex#1#2|#3|#4\\{%
      \ifx\\#3\\%
        \HyInd@org@wrindex{#1}{#2|hyperpage}%
      \else
        \HyInd@@@wrindex{#1}{#2}#3\\%
      \fi
    }%
    \def\HyInd@@@wrindex#1#2#3#4\\{%
      \def\Hy@temp@A{#3}%
      \ifcase0\ifx\Hy@temp@A\HyInd@ParenLeft 1\fi
            \ifx\Hy@temp@A\HyInd@ParenRight 1\fi
            \relax
        \HyInd@org@wrindex{#1}{%
          #2|hyperindexformat{/#3#4}%
        }%
      \else
        \ifx\\#4\\%
          \ifx\Hy@temp@A\HyInd@ParenRight
            \HyInd@org@wrindex{#1}{#2|#3}%
          \else
            \HyInd@org@wrindex{#1}{#2|#3hyperpage}%
          \fi
        \else
          \HyInd@org@wrindex{#1}{%
            #2|#3hyperindexformat{/#4}%
          }%
        \fi
      \fi
    }%
  \else
    \def\@wrindex#1{\@@wrindex#1||\\}%
    \def\@@wrindex#1|#2|#3\\{%
      \if@filesw
        \ifx\\#2\\%
          \protected@write\@indexfile{}{%
            \string\indexentry{#1|hyperpage}{\thepage}%
          }%
        \else
          \HyInd@@@wrindex{#1}#2\\%
        \fi
      \fi
      \endgroup
      \@esphack
    }%
    \def\HyInd@@@wrindex#1#2#3\\{%
      \def\Hy@temp@A{#2}%
      \ifcase0\ifx\Hy@temp@A\HyInd@ParenLeft 1\fi
            \ifx\Hy@temp@A\HyInd@ParenRight 1\fi
            \relax
        \protected@write\@indexfile{}{%
          \string\indexentry{%
            #1|hyperindexformat{/#2#3}%
```

```
        }{\thepage}%
      }%
    \else
      \ifx\\#3\\%
        \ifx\Hy@temp@A\HyInd@ParenRight
          \HyInd@DefKey{#1}%
          \ltx@IfUndefined{HyInd@(\HyInd@key)}{%
            \let\Hy@temp\ltx@empty
          }{%
            \expandafter\let\expandafter\Hy@temp
            \csname HyInd@(\HyInd@key)\endcsname
          }%
          \protected@write\@indexfile{}{%
            \string\indexentry{#1|#2\Hy@temp}{\thepage}%
          }%
        \else
          \protected@write\@indexfile{}{%
            \string\indexentry{#1|#2hyperpage}{\thepage}%
          }%
          \HyInd@DefKey{#1}%
          \expandafter
          \gdef\csname HyInd@(\HyInd@key)\endcsname{%
            hyperpage%
          }%
        \fi
      \else
        \protected@write\@indexfile{}{%
          \string\indexentry{%
            #1|#2hyperindexformat{/#3}%
          }{\thepage}%
        }%
        \ifx\Hy@temp@A\HyInd@ParenLeft
          \HyInd@DefKey{#1}%
          \expandafter
          \gdef\csname HyInd@(\HyInd@key)\endcsname{%
            hyperindexformat{/#3}%
          }%
        \fi
      \fi
    \fi
  }%
  \def\HyInd@DefKey#1{%
    \begingroup
      \let\protect\@unexpandable@protect
      \edef\Hy@temp{#1}%
      \ltx@onelevel@sanitize\Hy@temp
      \global\let\HyInd@key\Hy@temp
    \endgroup
  }%
 \fi
}%
\fi
\Hy@DisableOption{hyperindex}
\Hy@DisableOption{encap}
```

\nohyperpage The definition of \nohyperpage is just a precaution. It is used to mark code that does not belong to a page number, but \nohyperpage is never executed.

```
\def\nohyperpage#1{#1}
```

This again is quite flaky, but allow for the common situation of a page range separated by en-rule. We split this into two different hyperlinked pages.

```
\def\hyperpage#1{%
  \HyInd@hyperpage#1\nohyperpage{}\@nil
}
\def\HyInd@hyperpage#1\nohyperpage#2#3\@nil{%
  \HyInd@@hyperpage{#1}%
  #2%
  \def\Hy@temp{#3}%
  \ifx\Hy@temp\@empty
  \else
    \ltx@ReturnAfterFi{%
      \HyInd@hyperpage#3\@nil
    }%
  \fi
}
\def\HyInd@@hyperpage#1{\@hyperpage#1----\\}
\def\@hyperpage#1--#2--#3\\{%
  \ifx\\#2\\%
    \@commahyperpage{#1}%
  \else
    \HyInd@pagelink{#1}--\HyInd@pagelink{#2}%
  \fi
}
\def\@commahyperpage#1{\@@commahyperpage#1, ,\\}
\def\@@commahyperpage#1, #2,#3\\{%
  \ifx\\#2\\%
    \HyInd@pagelink{#1}%
  \else
    \HyInd@pagelink{#1}, \HyInd@pagelink{#2}%
  \fi
}
```

The argument of `\hyperpage` can be empty. And the line breaking algorithm of Makeindex can introduce spaces. So we have to remove them.

```
\def\HyInd@pagelink#1{%
  \begingroup
    \toks@={}%
    \HyInd@removespaces#1 \@nil
  \endgroup
}
\def\HyInd@removespaces#1 #2\@nil{%
  \toks@=\expandafter{\the\toks@#1}%
  \ifx\\#2\\%
    \edef\x{\the\toks@}%
    \ifx\x\@empty
    \else
      \hyperlink{page.\the\toks@}{\the\toks@}%
    \fi
  \else
    \ltx@ReturnAfterFi{%
      \HyInd@removespaces#2\@nil
    }%
  \fi
}
```

45 Compatibility with foiltex

```
\@ifclassloaded{foils}{%
  \providecommand*\ext@table{lot}%
  \providecommand*\ext@figure{lof}%
}{}
```

46 Compatibility with seminar slide package

This requires seminar.bg2, version 1.6 or later. Contributions by Denis Girou (denis.girou@idris.fr).

```
\@ifclassloaded{seminar}{%
  \Hy@seminarslidestrue
  \providecommand\theHslide{\arabic{slide}}%
}{%
  \Hy@seminarslidesfalse
}
\@ifpackageloaded{slidesec}{%
  \providecommand\theHslidesection   {\arabic{slidesection}}%
  \providecommand\theHslidesubsection{%
    \theHslidesection.\arabic{slidesubsection}%
  }%
  \def\slide@heading[#1]#2{%
    \H@refstepcounter{slidesection}%
    \@addtoreset{slidesubsection}{slidesection}%
    \addtocontents{los}{%
      \protect\l@slide{\the\c@slidesection}{\ignorespaces#1}%
        {\@SCTR}{slideheading.\theslidesection}%
    }%
    \def\Hy@tempa{#2}%
    \ifx\Hy@tempa\@empty
    \else
      {%
        \edef\@currentlabel{%
          \csname p@slidesection\endcsname\theslidesection
        }%
        \makeslideheading{#2}%
      }%
    \fi
    \gdef\theslideheading{#1}%
    \gdef\theslidesubheading{}%
    \ifHy@bookmarksnumbered
      \def\Hy@slidetitle{\theslidesection\space #1}%
    \else
      \def\Hy@slidetitle{#1}%
    \fi
    \ifHy@hypertexnames
      \ifHy@naturalnames
        \hyper@@anchor{slideheading.\theslidesection}{\relax}%
        \Hy@writebookmark
          {\theslidesection}%
          {\Hy@slidetitle}%
          {slideheading.\theslidesection}%
          {1}%
          {toc}%
      \else
        \hyper@@anchor{slideheading.\theHslidesection}{\relax}%
```

```
      \Hy@writebookmark
        {\theslidesection}%
        {\Hy@slidetitle}%
        {slideheading.\theHslidesection}%
        {1}%
        {toc}%
    \fi
  \else
    \Hy@GlobalStepCount\Hy@linkcounter
    \hyper@@anchor{slideheading.\the\Hy@linkcounter}{\relax}%
    \Hy@writebookmark
      {\theslidesection}%
      {\Hy@slidetitle}%
      {slideheading.\the\Hy@linkcounter}%
      {1}%
      {toc}%
  \fi
}%
\def\slide@subheading[#1]#2{%
  \H@refstepcounter{slidesubsection}%
  \addtocontents{los}{%
    \protect\l@subslide{\the\c@slidesubsection}{\ignorespaces#1}%
      {\@SCTR}{slideheading.\theslidesubsection}%
  }%
  \def\Hy@tempa{#2}%
  \ifx\Hy@tempa\@empty
  \else
    {%
      \edef\@currentlabel{%
        \csname p@slidesubsection\endcsname\theslidesubsection
      }%
      \makeslidesubheading{#2}%
    }%
  \fi
  \gdef\theslidesubheading{#1}%
  \ifHy@bookmarksnumbered
    \def\Hy@slidetitle{\theslidesubsection\space #1}%
  \else
    \def\Hy@slidetitle{#1}%
  \fi
  \ifHy@hypertexnames
    \ifHy@naturalnames
      \hyper@@anchor{slideheading.\theslidesubsection}{\relax}%
      \Hy@writebookmark
        {\theslidesubsection}%
        {\Hy@slidetitle}%
        {slideheading.\theslidesubsection}%
        {2}%
        {toc}%
    \else
      \hyper@@anchor{slideheading.\theHslidesubsection}{\relax}%
      \Hy@writebookmark
        {\theslidesubsection}%
        {\Hy@slidetitle}%
        {slideheading.\theHslidesubsection}%
        {2}%
        {toc}%
```

```
    \fi
  \else
    \Hy@GlobalStepCount\Hy@linkcounter
    \hyper@@anchor{slideheading.\the\Hy@linkcounter}{\relax}%
    \Hy@writebookmark
      {\theslidesubsection}%
      {\Hy@slidetitle}%
      {slideheading.\the\Hy@linkcounter}%
      {1}%
      {toc}%
  \fi
}%
\providecommand*{\listslidename}{List of Slides}%
\def\listofslides{%
  \section*{%
    \listslidename
    \@mkboth{%
      \expandafter\MakeUppercase\listslidename
    }{%
      \expandafter\MakeUppercase\listslidename
    }%
  }%
  \def\l@slide##1##2##3##4{%
    \slide@undottedcline{%
      \slidenumberline{##3}{\hyperlink{##4}{##2}}%
    }{}%
  }%
  \let\l@subslide\l@slide
  \@startlos
}%
\def\slide@contents{%
  \def\l@slide##1##2##3##4{%
    \slide@cline{\slidenumberline{##3}{\hyperlink{##4}{##2}}}{##3}%
  }%
  \let\l@subslide\@gobblefour
  \@startlos
}%
\def\Slide@contents{%
  \def\l@slide##1##2##3##4{%
    \ifcase\lslide@flag
      \message{##1 ** \the\c@slidesection}%
      \ifnum##1>\c@slidesection
        \def\lslide@flag{1}%
        {%
          \large
          \slide@cline{%
            \slidenumberline{$\Rightarrow\bullet$}%
              {\hyperlink{##4}{##2}}%
          }{##3}%
        }%
      \else
        {%
          \large
          \slide@cline{%
            \slidenumberline{$\surd\;\bullet$}%
              {\hyperlink{##4}{##2}}%
          }{##3}%
```

```
      }%
    \fi
  \or
    \def\lslide@flag{2}%
    {%
      \large
      \slide@cline{%
        \slidenumberline{$\bullet$}%
          {\hyperlink{##4}{##2}}%
      }{##3}%
    }%
  \or
    {%
      \large
      \slide@cline{%
        \slidenumberline{$\bullet$}%
          {\hyperlink{##4}{##2}}%
      }{##3}%
    }%
  \fi
 }%
 \def\l@subslide##1##2##3##4{%
  \ifnum\lslide@flag=1 %
    \@undottedtocline{2}{3.8em}{3.2em}{\hyperlink{##4}{##2}}{}%
  \fi
 }%
 \def\lslide@flag{0}%
 \@startlos
}%
}{}
```

This breaks TeX4ht, so leave it to last. Emend `\@setref` to put out a hypertext link as well as its normal text (which is used as an anchor). (`\endinput` have to be on the same line like `\fi`, or you have to use `\expandafter` before.)

```
\ifHy@texht
  \expandafter\endinput
\fi
\let\real@setref\@setref
\def\@setref#1#2#3{% csname, extract group, refname
  \ifx#1\relax
    \protect\G@refundefinedtrue
    \nfss@text{\reset@font\bfseries ??}%
    \@latex@warning{%
      Reference `#3' on page \thepage \space undefined%
    }%
  \else
    \expandafter\Hy@setref@link#1\@empty\@empty\@nil{#2}%
  \fi
}
```

`\Hy@setref@link` extracts the reference information entries, because `\hyper@@link` does not expand arguments for the automatic link type detection.

```
\def\Hy@setref@link#1#2#3#4#5#6\@nil#7{%
  \begingroup
    \toks0={\hyper@@link{#5}{#4}}%
    \toks1=\expandafter{#7{#1}{#2}{#3}{#4}{#5}}%
    \edef\x{\endgroup
      \the\toks0 {\the\toks1 }%
```

```
    }%
  \x
}
\def\@pagesetref#1#2#3{% csname, extract macro, ref
  \ifx#1\relax
    \protect\G@refundefinedtrue
    \nfss@text{\reset@font\bfseries ??}%
    \@latex@warning{%
      Reference `#3' on page \thepage \space undefined%
    }%
  \else
    \protect\hyper@@link
      {\expandafter\@fifthoffive#1}%
      {page.\expandafter\@secondoffive#1}%
      {\expandafter\@secondoffive#1}%
  \fi
}
```

```
⟨/package⟩
⟨*check⟩
\checklatex
\checkcommand\def\@setref#1#2#3{%
  \ifx#1\relax
    \protect\G@refundefinedtrue
    \nfss@text{\reset@font\bfseries ??}%
    \@latex@warning{%
      Reference `#3' on page \thepage\space undefined%
    }%
  \else
    \expandafter#2#1\null
  \fi
}
⟨/check⟩
⟨*package⟩
```

Now some extended referencing. `\ref*` and `\pageref*` are not linked, and `\autoref` prefixes with a tag based on the type.

```
\def\HyRef@StarSetRef#1{%
  \begingroup
    \Hy@safe@activestrue
    \edef\x{#1}%
    \@onelevel@sanitize\x
    \edef\x{\endgroup
      \noexpand\HyRef@@StarSetRef
        \expandafter\noexpand\csname r@\x\endcsname{\x}%
    }%
  \x
}
\def\HyRef@@StarSetRef#1#2#3{%
  \ifx#1\@undefined
    \let#1\relax
  \fi
  \real@setref#1#3{#2}%
}
\def\@refstar#1{%
  \HyRef@StarSetRef{#1}\@firstoffive
}
\def\@pagerefstar#1{%
```

```
  \HyRef@StarSetRef{#1}\@secondoffive
}
\def\@namerefstar#1{%
  \HyRef@StarSetRef{#1}\@thirdoffive
}
\Hy@AtBeginDocument{%
  \@ifpackageloaded{varioref}{%
    \def\@Refstar#1{%
      \HyRef@StarSetRef{#1}\HyRef@MakeUppercaseFirstOfFive
    }%
    \def\HyRef@MakeUppercaseFirstOfFive#1#2#3#4#5{%
      \MakeUppercase#1%
    }%
    \DeclareRobustCommand*{\Ref}{%
      \@ifstar\@Refstar\HyRef@Ref
    }%
    \def\HyRef@Ref#1{%
      \hyperref[{#1}]{\Ref*{#1}}%
    }%
    \def\Vr@f#1{%
      \leavevmode\unskip\vref@space
      \hyperref[{#1}]{%
        \Ref*{#1}%
        \let\vref@space\nobreakspace
        \@vpageref[\unskip]{#1}%
      }%
    }%
    \def\vr@f#1{%
      \leavevmode\unskip\vref@space
      \begingroup
        \let\T@pageref\@pagerefstar
        \hyperref[{#1}]{%
          \ref*{#1}%
          \vpageref[\unskip]{#1}%
        }%
      \endgroup
    }%
  }{}%
}
\DeclareRobustCommand*{\autopageref}{%
  \@ifstar{%
    \HyRef@autopagerefname\pageref*%
  }\HyRef@autopageref
}
\def\HyRef@autopageref#1{%
  \hyperref[{#1}]{\HyRef@autopagerefname\pageref*{#1}}%
}
\def\HyRef@autopagerefname{%
  \ltx@IfUndefined{pageautorefname}{%
    \ltx@IfUndefined{pagename}{%
      \Hy@Warning{No autoref name for `page'}%
    }{%
      \pagename\nobreakspace
    }%
  }{%
    \pageautorefname\nobreakspace
  }%
```

```
}
```

\leavevmode is added to make package wrapfigure happy, if \autoref starts a paragraph.

```
\DeclareRobustCommand*{\autoref}{%
  \leavevmode
  \@ifstar{\HyRef@autoref\@gobbletwo}{\HyRef@autoref\hyper@@link}%
}
\def\HyRef@autoref#1#2{%
  \begingroup
    \Hy@safe@activestrue
    \expandafter\HyRef@autosetref\csname r@#2\endcsname{#2}{#1}%
  \endgroup
}
\def\HyRef@autosetref#1#2#3{% link command, csname, refname
  \HyRef@ShowKeysRef{#2}%
  \ifcase 0\ifx#1\relax 1\fi\ifx#1\Hy@varioref@undefined 1\fi\relax
    \edef\HyRef@thisref{%
      \expandafter\@fourthoffive#1\@empty\@empty\@empty
    }%
    \expandafter\HyRef@testreftype\HyRef@thisref.\\%
    \Hy@safe@activesfalse
    #3{%
      \expandafter\@fifthoffive#1\@empty\@empty\@empty
    }{%
      \expandafter\@fourthoffive#1\@empty\@empty\@empty
    }{%
      \HyRef@currentHtag
      \expandafter\@firstoffive#1\@empty\@empty\@empty
      \null
    }%
  \else
    \protect\G@refundefinedtrue
    \nfss@text{\reset@font\bfseries ??}%
    \@latex@warning{%
      Reference `#2' on page \thepage\space undefined%
    }%
  \fi
}
\def\HyRef@testreftype#1.#2\\{%
  \ltx@IfUndefined{#1autorefname}{%
    \ltx@IfUndefined{#1name}{%
      \HyRef@StripStar#1\\*\\\@nil{#1}%
      \ltx@IfUndefined{\HyRef@name autorefname}{%
        \ltx@IfUndefined{\HyRef@name name}{%
          \def\HyRef@currentHtag{}%
          \Hy@Warning{No autoref name for `#1'}%
        }{%
          \edef\HyRef@currentHtag{%
            \expandafter\noexpand\csname\HyRef@name name\endcsname
            \noexpand~%
          }%
        }%
      }{%
        \edef\HyRef@currentHtag{%
          \expandafter\noexpand
          \csname\HyRef@name autorefname\endcsname
          \noexpand~%
```

```
      }%
    }%
  }{%
    \edef\HyRef@currentHtag{%
      \expandafter\noexpand\csname#1name\endcsname
      \noexpand~%
    }%
  }%
 }{%
  \edef\HyRef@currentHtag{%
    \expandafter\noexpand\csname#1autorefname\endcsname
    \noexpand~%
  }%
 }%
}
\def\HyRef@StripStar#1*\\#2\@nil#3{%
 \def\HyRef@name{#2}%
 \ifx\HyRef@name\HyRef@CaseStar
  \def\HyRef@name{#1}%
 \else
  \def\HyRef@name{#3}%
 \fi
}
\def\HyRef@CaseStar{*\\}
\def\HyRef@currentHtag{}
```

Support for package showkeys.

\HyRef@ShowKeysRef

```
\let\HyRef@ShowKeysRef\@gobble
\def\HyRef@ShowKeysInit{%
 \begingroup\expandafter\expandafter\expandafter\endgroup
 \expandafter\ifx\csname SK@@label\endcsname\relax
 \else
  \ifx\SK@ref\@empty
  \else
   \def\HyRef@ShowKeysRef{%
    \SK@\SK@@ref
   }%
  \fi
 \fi
}
\@ifpackageloaded{showkeys}{%
 \HyRef@ShowKeysInit
}{%
 \Hy@AtBeginDocument{%
  \@ifpackageloaded{showkeys}{%
   \HyRef@ShowKeysInit
  }{}%
 }%
}
```

Defaults for the names that \autoref uses.

```
\providecommand*\AMSautorefname{\equationautorefname}
\providecommand*\Hfootnoteautorefname{\footnoteautorefname}
\providecommand*\Itemautorefname{\itemautorefname}
\providecommand*\itemautorefname{item}
\providecommand*\equationautorefname{Equation}
```

```
\providecommand*\footnoteautorefname{footnote}
\providecommand*\itemautorefname{item}
\providecommand*\figureautorefname{Figure}
\providecommand*\tableautorefname{Table}
\providecommand*\partautorefname{Part}
\providecommand*\appendixautorefname{Appendix}
\providecommand*\chapterautorefname{chapter}
\providecommand*\sectionautorefname{section}
\providecommand*\subsectionautorefname{subsection}
\providecommand*\subsubsectionautorefname{subsubsection}
\providecommand*\paragraphautorefname{paragraph}
\providecommand*\subparagraphautorefname{subparagraph}
\providecommand*\FancyVerbLineautorefname{line}
\providecommand*\theoremautorefname{Theorem}
\providecommand*\pageautorefname{page}
```

⟨/package⟩

47 Configuration files

47.1 PS/PDF strings

Some drivers write PS or PDF strings. These strings are delimited by parentheses, therefore a lonely unmatched parenthesis must be avoided to avoid PS or PDF syntax errors. Also the backslash character itself has to be protected.

\Hy@pstringdef Therefore such strings should be passed through **\Hy@pstringdef**. The first argument holds a macro for the result, the second argument is the string that needs protecting. Since version 1.30.0 pdfTEX offers **\pdfescapestring**.

```
⟨*pdftex | dvipdfm | xetex | vtex | pdfmarkbase | dviwindo⟩
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname pdf@escapestring\endcsname\relax
  \begingroup
    \catcode`\|=0 %
    \@makeother\\%
  |@firstofone{|endgroup
    |def|Hy@pstringdef#1#2{%
      |begingroup
        |edef~{|string~}%
        |xdef|Hy@gtemp{#2}%
      |endgroup
      |let#1|Hy@gtemp
      |@onelevel@sanitize#1%
      |edef#1{|expandafter|Hy@ExchangeBackslash#1\|@nil}%
      |edef#1{|expandafter|Hy@ExchangeLeftParenthesis#1(|@nil}%
      |edef#1{|expandafter|Hy@ExchangeRightParenthesis#1)|@nil}%
    }%
    |def|Hy@ExchangeBackslash#1\#2|@nil{%
      #1%
      |ifx|\#2|\%%
      |else
        \\%
        |ltx@ReturnAfterFi{%
          |Hy@ExchangeBackslash#2|@nil
        }%
      |fi
    }%
```

```
  }%
  \def\Hy@ExchangeLeftParenthesis#1(#2\@nil{%
    #1%
    \ifx\\#2\\%
    \else
      \@backslashchar(%
      \ltx@ReturnAfterFi{%
        \Hy@ExchangeLeftParenthesis#2\@nil
      }%
    \fi
  }%
  \def\Hy@ExchangeRightParenthesis#1)#2\@nil{%
    #1%
    \ifx\\#2\\%
    \else
      \@backslashchar)%
      \ltx@ReturnAfterFi{%
        \Hy@ExchangeRightParenthesis#2\@nil
      }%
    \fi
  }%
\else
  \def\Hy@pstringdef#1#2{%
    \begingroup
      \edef~{\string~}%
      \xdef\Hy@gtemp{\pdf@escapestring{#2}}%
    \endgroup
    \let#1\Hy@gtemp
  }%
\fi
⟨/pdftex | dvipdfm | xetex | vtex | pdfmarkbase | dviwindo⟩
```

47.2 pdftex

```
⟨*pdftex⟩
\providecommand*{\XR@ext}{pdf}
\Hy@setbreaklinks{true}
\def\HyPat@ObjRef{%
  [0-9]*[1-9][0-9]* 0 R%
}
```

This driver is for Han The Thanh's TEX variant which produces PDF directly. This has new primitives to do PDF things, which usually translate almost directly to PDF code, so there is a lot of flexibility which we do not at present harness.

Set PDF version if requested by option pdfversion.

- pdfTEX 1.10a, 2003-01-16: \pdfoptionpdfminorversion
- pdfTEX 1.30, 2005-08-081: \pdfminorversion

```
\let\Hy@pdfminorversion\relax
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname pdfminorversion\endcsname\relax
  \begingroup\expandafter\expandafter\expandafter\endgroup
  \expandafter\ifx\csname pdfoptionpdfminorversion\endcsname\relax
  \else
    \def\Hy@pdfminorversion{\pdfoptionpdfminorversion}%
  \fi
\else
```

```
  \def\Hy@pdfminorversion{\pdfminorversion}%
\fi
\@ifundefined{Hy@pdfminorversion}{%
  \PackageInfo{hyperref}{%
    PDF version is not set, because pdfTeX is too old (<1.10a)%
  }%
}{%
  \ifHy@ocgcolorlinks
    \ifnum\Hy@pdfminorversion<5 %
      \kvsetkeys{Hyp}{pdfversion=1.5}%
    \fi
  \fi
  \ifHy@setpdfversion
    \ifnum\Hy@pdfversion<5 %
      \ltx@IfUndefined{pdfobjcompresslevel}{%
      }{%
        \ifHy@verbose
          \Hy@InfoNoLine{%
            PDF object streams are disabled, because they are%
            \MessageBreak
            not supported in requested PDF version %
            1.\Hy@pdfversion
          }%
        \fi
        \pdfobjcompresslevel=\ltx@zero
      }%
    \fi
    \ifnum\Hy@pdfminorversion=\Hy@pdfversion\relax
    \else
      \let\Hy@temp\ltx@empty
      \def\Hy@temp@A#1#2{%
        \ifnum#1>\ltx@zero
          \edef\Hy@temp{%
            \Hy@temp
            \space\space
            \the#1\space #2%
            \ifnum#1=\ltx@one\else s\fi
            \MessageBreak
          }%
        \fi
      }%
      \Hy@temp@A\pdflastobj{PDF object}%
      \Hy@temp@A\pdflastxform{form XObject}%
      \Hy@temp@A\pdflastximage{image XObject}%
      \Hy@temp@A\pdflastannot{annotation}%
      \ltx@IfUndefined{pdflastlink}{%
      }{%
         \Hy@temp@A\pdflastlink{link}%
      }%
      \ifx\Hy@temp\ltx@empty
        \Hy@pdfminorversion=\Hy@pdfversion\relax
      \else
        \let\Hy@temp@A\ltx@empty
        \ifnum\Hy@pdfversion=4 %
          \IfFileExists{pdf14.sty}{%
            \def\Hy@temp@A{%
              \MessageBreak
```

```
          Or \string\RequirePackage{pdf14} can be used%
          \MessageBreak
          before \string\documentclass\space as shortcut%
        }%
      }{}%
    \fi
    \Hy@WarningNoLine{%
      The PDF version number could not be set,\MessageBreak
      because some PDF objects are already written:%
      \MessageBreak
      \Hy@temp
      The version should be set as early as possible:%
      \MessageBreak
      \space\space
      \expandafter\string\Hy@pdfminorversion=\Hy@pdfversion
      \string\relax
      \ifnum\Hy@pdfversion<5 %
        \ltx@ifundefined{pdfobjcompresslevel}{%
        }{%
          \MessageBreak
          \space\space
          \string\pdfobjcompresslevel=0\string\relax
        }%
      \fi
      \Hy@temp@A
    }%
  \fi
 \fi
 \PackageInfo{hyperref}{%
  \expandafter\string\Hy@pdfminorversion
  :=\number\Hy@pdfversion\space
 }%
\fi
\edef\Hy@pdfversion{\number\Hy@pdfminorversion}%
}
\Hy@DisableOption{pdfversion}%
\ifHy@ocgcolorlinks
 \pdf@ifdraftmode{}{%
  \immediate\pdfobj{%
   <<%
    /Type/OCG%
    /Name(View)%
    /Usage<<%
     /Print<<%
      /PrintState/OFF%
     >>%
     /View<<%
      /ViewState/ON%
     >>%
    >>%
   >>%
  }%
  \edef\OBJ@OCG@view{\the\pdflastobj\space 0 R}%
  \immediate\pdfobj{%
   <<%
    /Type/OCG%
    /Name(Print)%
```

```
      /Usage<<%
        /Print<<%
          /PrintState/ON%
        >>%
        /View<<%
          /ViewState/OFF%
        >>%
      >>%
    >>%
  }%
  \edef\OBJ@OCG@print{\the\pdflastobj\space 0 R}%
  \immediate\pdfobj{%
    [%
      \OBJ@OCG@view\space\OBJ@OCG@print
    ]%
  }%
  \edef\OBJ@OCGs{\the\pdflastobj\space 0 R}%
  \pdfcatalog{%
    /OCProperties<<%
      /OCGs \OBJ@OCGs
      /D<<%
        /OFF[\OBJ@OCG@print]%
        /AS[%
          <<%
            /Event/View%
            /OCGs \OBJ@OCGs
            /Category[/View]%
          >>%
          <<%
            /Event/Print%
            /OCGs \OBJ@OCGs
            /Category[/Print]%
          >>%
          <<%
            /Event/Export%
            /OCGs \OBJ@OCGs
            /Category[/Print]%
          >>%
        ]%
      >>%
    >>%
  }%
  \begingroup
    \edef\x{\endgroup
      \pdfpageresources{%
        \the\pdfpageresources
        /Properties<<%
          /OCView \OBJ@OCG@view
          /OCPrint \OBJ@OCG@print
        >>%
      }%
    }%
    \x
}%
\Hy@AtBeginDocument{%
  \def\Hy@colorlink#1{%
    \begingroup
```

```
      \ifHy@ocgcolorlinks
        \def\Hy@ocgcolor{#1}%
        \setbox0=\hbox\bgroup\color@begingroup
      \else
        \HyColor@UseColor#1%
      \fi
    }%
    \def\Hy@endcolorlink{%
      \ifHy@ocgcolorlinks
        \color@endgroup\egroup
        \mbox{%
          \pdfliteral page{/OC/OCPrint BDC}%
          \rlap{\copy0}%
          \pdfliteral page{EMC/OC/OCView BDC}%
          \begingroup
            \expandafter\HyColor@UseColor\Hy@ocgcolor
            \box0 %
          \endgroup
          \pdfliteral page{EMC}%
        }%
      \fi
      \endgroup
    }%
  }%
\else
  \Hy@DisableOption{ocgcolorlinks}%
\fi
```

First, allow for some changes and additions to pdftex syntax:

```
\def\setpdflinkmargin#1{%
  \begingroup
    \setlength{\dimen@}{#1}%
  \expandafter\endgroup
  \expandafter\pdflinkmargin\the\dimen@\relax
}
\ifx\pdfstartlink\@undefined% less than version 14
  \let\pdfstartlink\pdfannotlink
  \let\pdflinkmargin\@tempdima
  \let\pdfxform\pdfform
  \let\pdflastxform\pdflastform
  \let\pdfrefxform\pdfrefform
\else
  \pdflinkmargin1pt %
\fi
```

First set up the default linking

```
\providecommand*\@pdfview{XYZ}
```

First define the anchors:

```
\Hy@WrapperDef\new@pdflink#1{%
  \ifhmode
    \@savsf\spacefactor
  \fi
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \Hy@pstringdef\Hy@pstringDest{\HyperDestNameFilter{#1}}%
  \Hy@DestName\Hy@pstringDest\@pdfview
  \Hy@RestoreLastskip
  \ifhmode
```

```
    \spacefactor\@savsf
  \fi
}
\let\pdf@endanchor\@empty
```

\Hy@DestName Wrap the call of \pdfdest name in \Hy@DestName. Then it can easier be catched by package hypdestopt.

```
\def\Hy@DestName#1#2{%
  \pdfdest name{#1}#2\relax
}
```

Now the links; the interesting part here is the set of attributes which define how the link looks. We probably want to add a border and color it, but there are other choices. This directly translates to PDF code, so consult the manual for how to change this. We will add an interface at some point.

```
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
\def\Hy@undefinedname{UNDEFINED}
\def\find@pdflink#1#2{%
  \leavevmode
  \protected@edef\Hy@testname{#2}%
  \ifx\Hy@testname\@empty
    \Hy@Warning{%
      Empty destination name,\MessageBreak
      using `\Hy@undefinedname'%
    }%
    \let\Hy@testname\Hy@undefinedname
  \else
    \Hy@pstringdef\Hy@testname{%
      \expandafter\HyperDestNameFilter\expandafter{\Hy@testname}%
    }%
  \fi
  \Hy@StartlinkName{%
    \ifHy@pdfa /F 4\fi
    \Hy@setpdfborder
    \Hy@setpdfhighlight
    \ifx\CurrentBorderColor\relax
    \else
      /C[\CurrentBorderColor]%
    \fi
  }\Hy@testname
  \expandafter\Hy@colorlink\csname @#1color\endcsname
}
\def\Hy@StartlinkName#1#2{%
  \pdfstartlink attr{#1}goto name{#2}\relax
}
\def\close@pdflink{%
  \Hy@endcolorlink
  \Hy@VerboseLinkStop
  \pdfendlink
}
\def\hyper@anchor#1{%
  \new@pdflink{#1}\anchor@spot\pdf@endanchor
}
\def\hyper@anchorstart#1{%
  \new@pdflink{#1}%
  \Hy@activeanchortrue
```

```
}
\def\hyper@anchorend{%
  \pdf@endanchor
  \Hy@activeanchorfalse
}
\def\hyper@linkstart#1#2{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \ltx@IfUndefined{@#1bordercolor}{%
    \let\CurrentBorderColor\relax
  }{%
    \edef\CurrentBorderColor{\csname @#1bordercolor\endcsname}%
  }%
  \find@pdflink{#1}{#2}%
}
\def\hyper@linkend{\close@pdflink}
\def\hyper@link#1#2#3{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \ltx@IfUndefined{@#1bordercolor}{%
    \let\CurrentBorderColor\relax
  }{%
    \edef\CurrentBorderColor{\csname @#1bordercolor\endcsname}%
  }%
  \find@pdflink{#1}{#2}#3\Hy@xspace@end
  \close@pdflink
}
\let\CurrentBorderColor\@linkbordercolor
\def\hyper@linkurl#1#2{%
  \begingroup
    \Hy@pstringdef\Hy@pstringURI{#2}%
    \hyper@chars
    \leavevmode
    \pdfstartlink
      attr{%
        \Hy@setpdfborder
        \Hy@setpdfhighlight
        \ifx\@urlbordercolor\relax
        \else
          /C[\@urlbordercolor]%
        \fi
      }%
      user{%
       /Subtype/Link%
       \ifHy@pdfa /F 4\fi
       /A<<%
         /Type/Action%
         /S/URI%
         /URI(\Hy@pstringURI)%
         \ifHy@href@ismap
           /IsMap true%
         \fi
         \Hy@href@nextactionraw
       >>%
      }%
      \relax
    \Hy@colorlink\@urlcolor#1\Hy@xspace@end
    \close@pdflink
  \endgroup
```

```
}
\def\hyper@linkfile#1#2#3{% anchor text, filename, linkname
  \begingroup
    \def\Hy@pstringF{#2}%
    \Hy@CleanupFile\Hy@pstringF
    \Hy@pstringdef\Hy@pstringF\Hy@pstringF
    \Hy@pstringdef\Hy@pstringD{#3}%
    \Hy@MakeRemoteAction
    \leavevmode
    \pdfstartlink
      attr{%
        \Hy@setpdfborder
        \Hy@setpdfhighlight
        \ifx\@filebordercolor\relax
        \else
          /C[\@filebordercolor]%
        \fi
      }%
      user {%
        /Subtype/Link%
        \ifHy@pdfa /F 4\fi
        /A<<%
          /F(\Hy@pstringF)%
          /S/GoToR%
          \Hy@SetNewWindow
```

If #3 is empty, page 0; if its a number, Page number, otherwise a named destination.

```
\afterassignment\xxx\count@=0\foo!%

\def\xxx#1!{%
 \ifx\xxx#1\xxx
   foo was an integer
 \else
   it wasnt
 \fi}
```

```
          \ifx\\#3\\%
            /D[\Hy@href@page\@pdfremotestartview]%
          \else
            /D(\Hy@pstringD)%
          \fi
          \Hy@href@nextactionraw
        >>%
      }%
      \relax
    \Hy@colorlink\@filecolor#1\Hy@xspace@end
    \close@pdflink
  \endgroup
}
\def\@hyper@launch run:#1\\#2#3{% filename, anchor text linkname
  \begingroup
    \Hy@pstringdef\Hy@pstringF{#1}%
    \Hy@pstringdef\Hy@pstringP{#3}%
    \leavevmode
    \pdfstartlink
      attr{%
```

```
      \Hy@setpdfborder
      \Hy@setpdfhighlight
      \ifx\@runbordercolor\relax
      \else
        /C[\@runbordercolor]%
      \fi
    }%
    user {%
      /Subtype/Link%
      \ifHy@pdfa /F 4\fi
      /A<<%
        /F(\Hy@pstringF)%
        /S/Launch%
        \Hy@SetNewWindow
        \ifx\\#3\\%
        \else
          /Win<</P(\Hy@pstringP)/F(\Hy@pstringF)>>%
        \fi
        \Hy@href@nextactionraw
      >>%
    }%
    \relax
  \Hy@colorlink\@runcolor#2\Hy@xspace@end
  \close@pdflink
 \endgroup
}
```

\@pdfproducer

```
\ifx\@pdfproducer\relax
 \begingroup\expandafter\expandafter\expandafter\endgroup
 \expandafter\ifx\csname luatexversion\endcsname\relax
  \def\@pdfproducer{pdfTeX}%
  \ifx\eTeXversion\@undefined
  \else
    \ifx\eTeXversion\relax
    \else
      \ifnum\eTeXversion>0 %
        \def\@pdfproducer{pdfeTeX}%
      \fi
    \fi
  \fi
  \ifx\pdftexversion\@undefined
  \else
    \ifnum\pdftexversion<100 %
      \edef\@pdfproducer{%
        \@pdfproducer
        \the\pdftexversion.\pdftexrevision
      }%
    \else
      \ifnum\pdftexversion<130 %
        \edef\@pdfproducer{%
          \@pdfproducer-%
          \expandafter\@car\the\pdftexversion\@empty\@nil.%
          \expandafter\@cdr\the\pdftexversion\@empty\@nil
          \pdftexrevision
        }%
      \else
```

```
        \ifnum\pdftexversion<140 %
        \else
          \def\@pdfproducer{pdfTeX}%
        \fi
        \edef\@pdfproducer{%
          \@pdfproducer-%
          \expandafter\@car\the\pdftexversion\@empty\@nil.%
          \expandafter\@cdr\the\pdftexversion\@empty\@nil.%
          \pdftexrevision
        }%
      \fi
    \fi
  \fi
 \else
  \begingroup
    \count@=\luatexversion
    \divide\count@ by 100 %
    \edef\x{\the\count@}%
    \count@=-\x\relax
    \multiply\count@ by 100 %
    \advance\count@ by \luatexversion
    \edef\x{\endgroup
      \def\noexpand\@pdfproducer{%
        LuaTeX-\x.\the\count@.\luatexrevision
      }%
    }%
    \x
  \fi
\fi
```

\PDF@SetupDox

```
\def\PDF@SetupDoc{%
  \ifx\@pdfpagescrop\@empty
  \else
    \edef\process@me{%
      \pdfpagesattr={%
        /CropBox[\@pdfpagescrop]%
        \expandafter\ifx\expandafter\\\the\pdfpagesattr\\%
        \else
          ^^J\the\pdfpagesattr
        \fi
      }%
    }%
    \process@me
  \fi
  \Hy@pstringdef\Hy@pstringB{\@baseurl}%
  \pdfcatalog{%
    /PageMode/\@pdfpagemode
    \ifx\@baseurl\@empty
    \else
      /URI<</Base(\Hy@pstringB)>>%
    \fi
  }%
  \ifx\@pdfstartpage\@empty
  \else
    \ifx\@pdfstartview\@empty
    \else
      openaction goto page\@pdfstartpage{\@pdfstartview}%
```

```
    \fi
  \fi
  \edef\Hy@temp{%
    \ifHy@pdftoolbar\else /HideToolbar true\fi
    \ifHy@pdfmenubar\else /HideMenubar true\fi
    \ifHy@pdfwindowui\else /HideWindowUI true\fi
    \ifHy@pdffitwindow /FitWindow true\fi
    \ifHy@pdfcenterwindow /CenterWindow true\fi
    \ifHy@pdfdisplaydoctitle /DisplayDocTitle true\fi
    \Hy@UseNameKey{NonFullScreenPageMode}\@pdfnonfullscreenpagemode
    \Hy@UseNameKey{Direction}\@pdfdirection
    \Hy@UseNameKey{ViewArea}\@pdfviewarea
    \Hy@UseNameKey{ViewClip}\@pdfviewclip
    \Hy@UseNameKey{PrintArea}\@pdfprintarea
    \Hy@UseNameKey{PrintClip}\@pdfprintclip
    \Hy@UseNameKey{PrintScaling}\@pdfprintscaling
    \Hy@UseNameKey{Duplex}\@pdfduplex
    \ifx\@pdfpicktraybypdfsize\@empty
    \else
      /PickTrayByPDFSize \@pdfpicktraybypdfsize
    \fi
    \ifx\@pdfprintpagerange\@empty
    \else
      /PrintPageRange[\@pdfprintpagerange]%
    \fi
    \ifx\@pdfnumcopies\@empty
    \else
      /NumCopies \@pdfnumcopies
    \fi
  }%
  \pdfcatalog{%
    \ifx\Hy@temp\@empty
    \else
      /ViewerPreferences<<\Hy@temp>>%
    \fi
    \Hy@UseNameKey{PageLayout}\@pdfpagelayout
    \ifx\@pdflang\relax
    \else
      /Lang(\@pdflang)%
    \fi
  }%
}
```

\PDF@FinishDoc

```
\def\PDF@FinishDoc{%
  \pdf@ifdraftmode{}{%
    \Hy@UseMaketitleInfos
    \HyInfo@GenerateAddons
    \pdfinfo{%
      /Author(\@pdfauthor)%
      /Title(\@pdftitle)%
      /Subject(\@pdfsubject)%
      /Creator(\@pdfcreator)%
      \ifx\@pdfcreationdate\@empty
      \else
        /CreationDate(\@pdfcreationdate)%
      \fi
      \ifx\@pdfmoddate\@empty
```

```
      \else
        /ModDate(\@pdfmoddate)%
      \fi
      \ifx\@pdfproducer\relax
      \else
        /Producer(\@pdfproducer)%
      \fi
      /Keywords(\@pdfkeywords)%
      \ifx\@pdftrapped\@empty
      \else
        /Trapped/\@pdftrapped
      \fi
      \HyInfo@Addons
    }%
  }%
  \Hy@DisableOption{pdfauthor}%
  \Hy@DisableOption{pdftitle}%
  \Hy@DisableOption{pdfsubject}%
  \Hy@DisableOption{pdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@DisableOption{pdfmoddate}%
  \Hy@DisableOption{pdfproducer}%
  \Hy@DisableOption{pdfkeywords}%
  \Hy@DisableOption{pdftrapped}%
  \Hy@DisableOption{pdfinfo}%
}
```

\hyper@pagetransition

`\@pdfpagetransition` is initialized with `\relax`. So it indicates, if option pdfpagetransition is used. First previous `/Trans` entries are removed. If a new `/Trans` key exists, it is appended to `\pdfpageattr`.

```
\def\hyper@pagetransition{%
  \ifx\@pdfpagetransition\relax
  \else
    \expandafter\Hy@RemoveTransPageAttr
    \the\pdfpageattr^^J/Trans{}>>\END
    \ifx\@pdfpagetransition\@empty
    \else
      \edef\@processme{%
        \global\pdfpageattr{%
          \the\pdfpageattr
          ^^J/Trans << /S /\@pdfpagetransition\space >>%
        }%
      }%
      \@processme
    \fi
  \fi
}
```

\Hy@RemoveTransPageAttr

Macro `\Hy@RemoveTransPageAttr` removes a `/Trans` entry from `\pdfpageattr`. It is called with the end marker `^^J/Trans{}>>\END`. The trick is the empty group that does not appear in legal `\pdfpageattr` code. It appears in argument `#2` and shows, whether the parameter text catches a really `/Trans` object or the end marker.

```
\gdef\Hy@RemoveTransPageAttr#1^^J/Trans#2#3>>#4\END{%
  \ifx\\#2\\%
    \global\pdfpageattr{#1}%
  \else
```

```
    \Hy@RemoveTransPageAttr#1#4\END
  \fi
}
```

\hyper@pageduration

`\@pdfpageduration` is initialized with `\relax`. So it indicates, if option pdfpageduration is used. First previous `/Dur` entries are removed. If a new `/Dur` key exists, it is appended to `\pdfpageattr`.

```
\def\hyper@pageduration{%
  \ifx\@pdfpageduration\relax
  \else
    \expandafter
    \Hy@RemoveDurPageAttr\the\pdfpageattr^^J/Dur{} \END
    \ifx\@pdfpageduration\@empty
    \else
      \edef\@processme{%
        \global\pdfpageattr{%
          \the\pdfpageattr
          ^^J/Dur \@pdfpageduration\space
        }%
      }%
      \@processme
    \fi
  \fi
}
```

\Hy@RemoveDurPageAttr

Macro `\Hy@RemoveDurPageAttr` removes a `/Dur` entry from `\pdfpageattr`. It is called with the end marker `^^J/Dur{} \END`. The trick is the empty group that does not appear in legal `\pdfpageattr` code. It appears in argument `#2` and shows, whether the parameter text catches a really `/Dur` object or the end marker.

```
\gdef\Hy@RemoveDurPageAttr#1^^J/Dur#2#3 #4\END{%
  \ifx\\#2\\%
    \global\pdfpageattr{#1}%
  \else
    \Hy@RemoveDurPageAttr#1#4\END
  \fi
}
```

\hyper@pagehidden

The boolean value of the key `/Hid` is stored in switch `\ifHy@pdfpagehidden`. First previous `/Hid` entries are removed, then the new one is appended, if the value is true (the PDF default is false).

```
\def\hyper@pagehidden{%
  \ifHy@useHidKey
    \expandafter
    \Hy@RemoveHidPageAttr\the\pdfpageattr^^J/Hid{} \END
    \ifHy@pdfpagehidden
      \edef\@processme{%
        \global\pdfpageattr{%
          \the\pdfpageattr
          ^^J/Hid true % SPACE
        }%
      }%
      \@processme
    \fi
  \fi
}
```

\Hy@RemoveHidPageAttr Macro \Hy@RemoveHidPageAttr removes a /Hid entry from \pdfpageattr. It is called with the end marker ^^J/Hid{} \END. The trick is the empty group that does not appear in legal \pdfpageattr code. It appears in argument #2 and shows, whether the parameter text catches a really /Hid object or the end marker.

```
\gdef\Hy@RemoveHidPageAttr#1^^J/Hid#2#3 #4\END{%
  \ifx\\#2\\%
    \global\pdfpageattr{#1}%
  \else
    \Hy@RemoveHidPageAttr#1#4\END
  \fi
}

\pdf@ifdraftmode{}{%
  \g@addto@macro\Hy@EveryPageHook{%
    \hyper@pagetransition
    \hyper@pageduration
    \hyper@pagehidden
  }%
}
```

Also XeTEX support \pdfpagewidth and \pdfpageheight, but it does not provide \pdfhorigin and \pdfvorigin.

```
⟨/pdftex⟩
⟨*pdftex | xetex⟩
\Hy@AtBeginDocument{%
  \ifHy@setpagesize
    \expandafter\@firstofone
  \else
    \expandafter\@gobble
  \fi
  {%
    \@ifclassloaded{seminar}{%
⟨*pdftex⟩
      \setlength{\pdfhorigin}{1truein}%
      \setlength{\pdfvorigin}{1truein}%
⟨/pdftex⟩
      \ifportrait
        \ifdim\paperwidth=\z@
        \else
          \setlength{\pdfpagewidth}{\strip@pt\paperwidth truept}%
        \fi
        \ifdim\paperheight=\z@
        \else
          \setlength{\pdfpageheight}{\strip@pt\paperheight truept}%
        \fi
      \else
        \ifdim\paperheight=\z@
        \else
          \setlength{\pdfpagewidth}{\strip@pt\paperheight truept}%
        \fi
        \ifdim\paperwidth=\z@
        \else
          \setlength{\pdfpageheight}{\strip@pt\paperwidth truept}%
        \fi
      \fi
    }{%
      \ltx@IfUndefined{stockwidth}{%
```

```
      \ifdim\paperwidth>\z@
        \setlength{\pdfpagewidth}{\paperwidth}%
      \fi
      \ifdim\paperheight>\z@
        \setlength{\pdfpageheight}{\paperheight}%
      \fi
    }{%
      \ifdim\stockwidth>\z@
        \setlength{\pdfpagewidth}{\stockwidth}%
      \fi
      \ifdim\stockheight>\z@
        \setlength{\pdfpageheight}{\stockheight}%
      \fi
    }%
  }%
 }%
 \Hy@DisableOption{setpagesize}%
}
⟨/pdftex | xetex⟩
⟨*pdftex⟩
\def\Acrobatmenu#1#2{%
 \Hy@Acrobatmenu{#1}{#2}{%
  \leavevmode
  \EdefEscapeName\Hy@temp@menu{#1}%
  \pdfstartlink
   attr{%
    \Hy@setpdfborder
    \Hy@setpdfhighlight
    \ifx\@menubordercolor\relax
    \else
     /C[\@menubordercolor]%
    \fi
   }%
   user{%
    /Subtype/Link%
    \ifHy@pdfa /F 4\fi
    /A<<%
     /S/Named%
     /N/\Hy@temp@menu
     \Hy@href@nextactionraw
    >>%
   }%
   \relax
  \Hy@colorlink\@menucolor#2%
  \close@pdflink
 }%
}
```

47.2.1 Fix for problem with different nesting levels

`\AtBeginShipoutFirst` adds an additional box layer around the first output page. This disturbs pdfTEX's low level link commands `\pdfstartlink` and `\pdfendlink`, if a link is broken across the first and second output page.

The problem could be fixed by replacing `\AtBeginShipoutFirst`, because the box layer is not necessary for pdfTEX– no `\special`s need to be inserted. However it's easier to add an additional box level for the pages after the first one. Also `\AtBeginShipoutFirst` could be invoked independently from hyperref.

Since version 2011/10/05 v1.16 of package 'atbegshi' \AtBeginShipoutFirst does not add a additional box layer.

```
\def\Hy@FixNotFirstPage{%
  \gdef\Hy@FixNotFirstPage{%
    \setbox\AtBeginShipoutBox=\hbox{%
      \copy\AtBeginShipoutBox
    }%
  }%
}
\ltx@ifpackagelater{atbegshi}{2011/10/05}{%
}{%
  \AtBeginShipout{\Hy@FixNotFirstPage}%
}
```

⟨/pdftex⟩

47.3 hypertex

The HyperTEX specification (this is borrowed from an article by Arthur Smith) says that conformant viewers/translators must recognize the following set of \special commands:

href: html:<a href = "href_string">

name: html:<a name = "name_string">

end: html:</a>

image: html:<img src = "href_string">

base_name: html:<base href = "href_string">

The *href*, *name* and *end* commands are used to do the basic hypertext operations of establishing links between sections of documents. The *image* command is intended (as with current html viewers) to place an image of arbitrary graphical format on the page in the current location. The *base_name* command is be used to communicate to the *dvi* viewer the full (URL) location of the current document so that files specified by relative URL's may be retrieved correctly.

The *href* and *name* commands must be paired with an *end* command later in the TEX file — the TEX commands between the two ends of a pair form an *anchor* in the document. In the case of an *href* command, the *anchor* is to be highlighted in the *dvi* viewer, and when clicked on will cause the scene to shift to the destination specified by *href_string*. The *anchor* associated with a name command represents a possible location to which other hypertext links may refer, either as local references (of the form href="#name_string" with the *name_string* identical to the one in the name command) or as part of a URL (of the form *URL#name_string*). Here *href_string* is a valid URL or local identifier, while name_string could be any string at all: the only caveat is that '"' characters should be escaped with a backslash (\), and if it looks like a URL name it may cause problems.

```
⟨*hypertex⟩
\providecommand*{\XR@ext}{dvi}
\let\PDF@FinishDoc\ltx@empty
\def\PDF@SetupDoc{%
  \ifx\@baseurl\@empty
  \else
    \special{html:<base href="\@baseurl">}%
```

```
  \fi
}
\Hy@WrapperDef\hyper@anchor#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \begingroup
    \let\protect=\string
    \hyper@chars
    \special{html:<a name=%
       \hyper@quote\HyperDestNameFilter{#1}\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
  \Hy@colorlink\@anchorcolor\anchor@spot\Hy@endcolorlink
  \special{html:</a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\Hy@WrapperDef\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \begingroup
    \hyper@chars
    \special{html:<a name=%
       \hyper@quote\HyperDestNameFilter{#1}\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \special{html:</a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\@urltype{url}
\def\hyper@linkstart#1#2{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \expandafter\Hy@colorlink\csname @#1color\endcsname
  \def\Hy@tempa{#1}%
  \ifx\Hy@tempa\@urltype
    \special{html:<a href=\hyper@quote#2\hyper@quote>}%
  \else
    \begingroup
      \hyper@chars
      \special{html:<a href=%
         \hyper@quote\#\HyperDestNameFilter{#2}\hyper@quote>}%
    \endgroup
  \fi
}
\def\hyper@linkend{%
  \special{html:</a>}%
  \Hy@endcolorlink
}
\def\hyper@linkfile#1#2#3{%
  \hyper@linkurl{#1}{\Hy@linkfileprefix#2\ifx\\#3\\\else\#\#3\fi}%
}
\def\hyper@linkurl#1#2{%
```

If we want to raise up the final link `\special`, we need to get its height; ask me why LaTeX constructs make this totally foul up, and make us revert to basic TeX.

I do not know.

```
  \leavevmode
  \ifHy@raiselinks
    \Hy@SaveSpaceFactor
    \Hy@SaveSavedSpaceFactor
    \sbox\@tempboxa{\Hy@RestoreSpaceFactor#1}%
    \Hy@RestoreSavedSpaceFactor
    \@linkdim\dp\@tempboxa
    \lower\@linkdim\hbox{%
      \hyper@chars
      \special{html:<a href=\hyper@quote#2\hyper@quote>}%
    }%
    \Hy@colorlink\@urlcolor
      \Hy@RestoreSpaceFactor
      #1%
      \Hy@SaveSpaceFactor
    \@linkdim\ht\@tempboxa
```

Because of the interaction with the dvihps processor, we have to subtract a little from the height. This is not clean, or checked. Check with Mark Doyle about what gives here. It may not be needed with the new dvips (Jan 1997).

```
    \advance\@linkdim by -6.5\p@
    \raise\@linkdim\hbox{\special{html:</a>}}%
    \Hy@endcolorlink
    \Hy@RestoreSpaceFactor
  \else
    \begingroup
      \hyper@chars
      \special{html:<a href=\hyper@quote#2\hyper@quote>}%
      \Hy@colorlink\@urlcolor#1\Hy@xspace@end
      \special{html:</a>}%
      \Hy@endcolorlink
    \endgroup
  \fi
}
```

Very poor implementation of `\hyper@link` without considering `#1`.

```
\def\hyper@link#1#2#3{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \hyper@linkurl{#3}{\#\HyperDestNameFilter{#2}}%
}
\def\hyper@image#1#2{%
  \begingroup
    \hyper@chars
    \special{html:<img src=\hyper@quote#1\hyper@quote>}%
  \endgroup
}
⟨/hypertex⟩
⟨*dviwindo⟩
```

47.4 dviwindo

[This was developed by David Carlisle]. Within a file dviwindo hyperlinking is used, for external URL's a call to `\wwwbrowser` is made. (You can define this command before or after loading the hyperref package if the default `c:/netscape/netscape` is not suitable) Dviwindo could in fact handle external links

to dvi files on the same machine without calling a web browser, but that would mean parsing the URL to recognise such, and this is currently not done.

This was more or less blindly copied from the hypertex cfg. For dviwindo, LaTeX must specify the size of the active area for links. For some hooks this information is available but for some, the start and end of the link are specified separately in which case a fixed size area of 10000000sp wide by \baselineskip high is used.

```
\providecommand*{\XR@ext}{dvi}
\providecommand*\wwwbrowser{c:\string\netscape\string\netscape}
\Hy@WrapperDef\hyper@anchor#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \begingroup
    \let\protect=\string
    \special{mark: #1}%
  \endgroup
  \Hy@activeanchortrue
  \Hy@colorlink\@anchorcolor\anchor@spot\Hy@endcolorlink
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\Hy@WrapperDef\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \special{mark: #1}%
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\hyper@linkstart#1#2{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \expandafter\Hy@colorlink\csname @#1color\endcsname
  \special{button: %
    10000000 %
    \number\baselineskip\space
    #2%
  }%
}
\def\hyper@linkend{%
  \Hy@endcolorlink
}
\def\hyper@link#1#2#3{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \leavevmode
  \ifHy@raiselinks
    \Hy@SaveSpaceFactor
    \Hy@SaveSavedSpaceFactor
    \sbox\@tempboxa{\Hy@RestoreSpaceFactor#3}%
    \Hy@RestoreSavedSpaceFactor
    \@linkdim\dp\@tempboxa
    \lower\@linkdim\hbox{%
      \special{button: %
        \number\wd\@tempboxa\space
        \number\ht\@tempboxa\space
        #2%
```

```
10363     }%
10364     \expandafter\Hy@colorlink\csname @#1color\endcsname
10365     \Hy@RestoreSpaceFactor
10366     #3\Hy@xspace@end
10367     \Hy@SaveSpaceFactor
10368     \Hy@endcolorlink
10369   }%
10370   \@linkdim\ht\@tempboxa
10371   \advance\@linkdim by -6.5\p@
10372   \raise\@linkdim\hbox{}%
10373   \Hy@RestoreSpaceFactor
10374  \else
10375   \special{button: %
10376     \number\wd\@tempboxa\space
10377     \number\ht\@tempboxa\space
10378     #2%
10379   }%
10380   \expandafter\Hy@colorlink\csname @#1color\endcsname
10381   #3\Hy@xspace@end
10382   \Hy@endcolorlink
10383  \fi
10384 }
10385 \def\hyper@linkurl#1#2{%
10386  \begingroup
10387   \hyper@chars
10388   \leavevmode
10389   \ifHy@raiselinks
10390     \Hy@SaveSpaceFactor
10391     \Hy@SaveSavedSpaceFactor
10392     \sbox\@tempboxa{\Hy@RestoreSpaceFactor#1}%
10393     \Hy@RestoreSavedSpaceFactor
10394     \@linkdim\dp\@tempboxa
10395     \lower\@linkdim\hbox{%
10396       \special{button: %
10397         \number\wd\@tempboxa\space
10398         \number\ht\@tempboxa\space
10399         launch: \wwwbrowser\space
10400         #2%
10401       }%
10402       \Hy@colorlink\@urlcolor
10403         \Hy@RestoreSpaceFactor
10404         #1\Hy@xspace@end
10405         \Hy@SaveSpaceFactor
10406       \Hy@endcolorlink
10407     }%
10408     \@linkdim\ht\@tempboxa
10409     \advance\@linkdim by -6.5\p@
10410     \raise\@linkdim\hbox{}%
10411     \Hy@RestoreSpaceFactor
10412   \else
10413     \special{button: %
10414       \number\wd\@tempboxa\space
10415       \number\ht\@tempboxa\space
10416       launch: \wwwbrowser\space
10417       #2%
10418     }%
10419     \Hy@colorlink\@urlcolor
```

```
      #1\Hy@xspace@end
    \Hy@endcolorlink
  \fi
 \endgroup
}
\def\hyper@linkfile#1#2#3{%
 \begingroup
  \hyper@chars
  \leavevmode
  \ifHy@raiselinks
    \Hy@SaveSpaceFactor
    \Hy@SaveSavedSpaceFactor
    \sbox\@tempboxa{\Hy@RestoreSpaceFactor#1}%
    \Hy@RestoreSavedSpaceFactor
    \@linkdim\dp\@tempboxa
    \lower\@linkdim\hbox{%
      \special{button: %
        \number\wd\@tempboxa\space
        \number\ht\@tempboxa\space
        #3,%
        file: #2%
      }%
      \Hy@colorlink\@filecolor
        \Hy@RestoreSpaceFactor
        #1\Hy@xspace@end
        \Hy@SaveSpaceFactor
      \Hy@endcolorlink
    }%
    \@linkdim\ht\@tempboxa
    \advance\@linkdim by -6.5\p@
    \raise\@linkdim\hbox{}%
    \Hy@RestoreSpaceFactor
  \else
    \special{button: %
      \number\wd\@tempboxa\space
      \number\ht\@tempboxa\space
      #3,%
      file: #2%
    }%
    \Hy@colorlink\@filecolor
      #1\Hy@xspace@end
    \Hy@endcolorlink
  \fi
 \endgroup
}
\ifx\@pdfproducer\relax
 \def\@pdfproducer{dviwindo + Distiller}%
\fi
\HyInfo@AddonUnsupportedtrue
\def\PDF@FinishDoc{%
 \Hy@UseMaketitleInfos
 \HyInfo@TrappedUnsupported
 \special{PDF: Keywords \@pdfkeywords}%
 \special{PDF: Title \@pdftitle}%
 \special{PDF: Creator \@pdfcreator}%
 \ifx\@pdfcreationdate\@empty
 \else
```

```
    \special{PDF: CreationDate \@pdfcreationdate}%
  \fi
  \ifx\@pdfmoddate\@empty
  \else
    \special{PDF: ModDate \@pdfmoddate}%
  \fi
  \special{PDF: Author \@pdfauthor}%
  \ifx\@pdfproducer\relax
  \else
    \special{PDF: Producer \@pdfproducer}%
  \fi
  \special{PDF: Subject \@pdfsubject}%
  \Hy@DisableOption{pdfauthor}%
  \Hy@DisableOption{pdftitle}%
  \Hy@DisableOption{pdfsubject}%
  \Hy@DisableOption{pdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@DisableOption{pdfmoddate}%
  \Hy@DisableOption{pdfproducer}%
  \Hy@DisableOption{pdfkeywords}%
  \Hy@DisableOption{pdftrapped}%
  \Hy@DisableOption{pdfinfo}%
}
\def\PDF@SetupDoc{%
  \ifx\@baseurl\@empty
  \else
    \special{PDF: Base \@baseurl}%
  \fi
  \ifx\@pdfpagescrop\@empty\else
    \special{PDF: BBox \@pdfpagescrop}%
  \fi
  \def\Hy@temp{}%
  \ifx\@pdfstartpage\@empty
  \else
    \ifx\@pdfstartview\@empty
    \else
      \edef\Hy@temp{%
        ,Page=\@pdfstartpage
        ,View=\@pdfstartview
      }%
    \fi
  \fi
  \edef\Hy@temp{%
    \noexpand\pdfmark{%
      pdfmark=/DOCVIEW,%
      PageMode=/\@pdfpagemode
      \Hy@temp
    }%
  }%
  \Hy@temp
  \ifx\@pdfpagescrop\@empty
  \else
    \pdfmark{pdfmark=/PAGES,CropBox=\@pdfpagescrop}%
  \fi
  \edef\Hy@temp{%
    \ifHy@pdftoolbar\else /HideToolbar true\fi
    \ifHy@pdfmenubar\else /HideMenubar true\fi
```

```
    \ifHy@pdfwindowui\else /HideWindowUI true\fi
    \ifHy@pdffitwindow /FitWindow true\fi
    \ifHy@pdfcenterwindow /CenterWindow true\fi
    \ifHy@pdfdisplaydoctitle /DisplayDocTitle true\fi
    \Hy@UseNameKey{NonFullScreenPageMode}\@pdfnonfullscreenpagemode
    \Hy@UseNameKey{Direction}\@pdfdirection
    \Hy@UseNameKey{ViewArea}\@pdfviewarea
    \Hy@UseNameKey{ViewClip}\@pdfviewclip
    \Hy@UseNameKey{PrintArea}\@pdfprintarea
    \Hy@UseNameKey{PrintClip}\@pdfprintclip
    \Hy@UseNameKey{PrintScaling}\@pdfprintscaling
    \Hy@UseNameKey{Duplex}\@pdfduplex
    \ifx\@pdfpicktraybypdfsize\@empty
    \else
      /PickTrayByPDFSize \@pdfpicktraybypdfsize
    \fi
    \ifx\@pdfprintpagerange\@empty
    \else
      /PrintPageRange[\@pdfprintpagerange]%
    \fi
    \ifx\@pdfnumcopies\@empty
    \else
      /NumCopies \@pdfnumcopies
    \fi
  }%
  \pdfmark{pdfmark=/PUT,%
    Raw={%
      \string{Catalog\string}<<%
        \ifx\Hy@temp\@empty
        \else
          /ViewerPreferences<<\Hy@temp>>%
        \fi
        \Hy@UseNameKey{PageLayout}\@pdfpagelayout
        \ifx\@pdflang\relax
        \else
          /Lang(\@pdflang)%
        \fi
      >>%
    }%
  }%
}
⟨/dviwindo⟩
⟨*dvipdfm | xetex⟩
```

47.5 dvipdfm/xetex dvi to PDF converter

Provided by Mark Wicks (mwicks@kettering.edu)

```
\providecommand*{\XR@ext}{pdf}
\Hy@setbreaklinks{true}
\def\HyPat@ObjRef{%
  @[^ ]+%
}
\newsavebox{\pdfm@box}
\def\@pdfm@mark#1{\special{pdf:#1}}
\Hy@WrapperDef\@pdfm@dest#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
```

```
\begingroup
  \Hy@pstringdef\Hy@pstringDest{\HyperDestNameFilter{#1}}%
  \def\x{XYZ}%
  \ifx\x\@pdfview
    \def\x{XYZ @xpos @ypos null}%
  \else
    \def\x{FitH}%
    \ifx\x\@pdfview
      \def\x{FitH @ypos}%
    \else
      \def\x{FitBH}%
      \ifx\x\@pdfview
        \def\x{FitBH @ypos}%
      \else
        \def\x{FitV}%
        \ifx\x\@pdfview
          \def\x{FitV @xpos}%
        \else
          \def\x{FitBV}%
          \ifx\x\@pdfview
            \def\x{FitBV @xpos}%
          \else
            \def\x{Fit}%
            \ifx\x\@pdfview
              \let\x\@pdfview
            \else
              \def\x{FitB}%
              \ifx\x\@pdfview
                \let\x\@pdfview
              \else
                \def\x{FitR}%
                \ifx\x\@pdfview
                  \Hy@Warning{`pdfview=FitR' is not supported}%
                  \def\x{XYZ @xpos @ypos null}%
                \else
                  \@onelevel@sanitize\@pdfview
                  \Hy@Warning{%
                    Unknown value `\@pdfview' for pdfview%
                  }%
                  \def\x{XYZ @xpos @ypos null}%
                \fi
              \fi
            \fi
          \fi
        \fi
      \fi
    \fi
  \fi
  \@pdfm@mark{dest (\Hy@pstringDest) [@thispage /\x]}%
\endgroup
\Hy@RestoreLastskip
}
\providecommand*\@pdfview{XYZ}
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
\def\hyper@anchor#1{%
  \@pdfm@dest{#1}%
```

```
}
\def\hyper@anchorstart#1{%
  \Hy@activeanchortrue
  \@pdfm@dest{#1}%
}
\def\hyper@anchorend{%
  \Hy@activeanchorfalse
}
\newcounter{Hy@AnnotLevel}
\ifHy@ocgcolorlinks
  \def\OBJ@OCG@view{@OCG@view}%
  \@pdfm@mark{%
    obj \OBJ@OCG@view <<%
      /Type/OCG%
      /Name(View)%
      /Usage<<%
        /Print<<%
          /PrintState/OFF%
        >>%
        /View<<%
          /ViewState/ON%
        >>%
      >>%
    >>%
  }%
  \@pdfm@mark{close \OBJ@OCG@view}%
  \def\OBJ@OCG@print{@OCG@print}%
  \@pdfm@mark{%
    obj \OBJ@OCG@print <<%
      /Type/OCG%
      /Name(Print)%
      /Usage<<%
        /Print<<%
          /PrintState/ON%
        >>%
        /View<<%
          /ViewState/OFF%
        >>%
      >>%
    >>%
  }%
  \@pdfm@mark{close \OBJ@OCG@print}%
  \def\OBJ@OCGs{@OCGs}%
  \@pdfm@mark{%
    obj \OBJ@OCGs [%
      \OBJ@OCG@view\space\OBJ@OCG@print
    ]%
  }%
  \@pdfm@mark{close \OBJ@OCGs}%
  \@pdfm@mark{%
    put @catalog <<%
      /OCProperties<<%
        /OCGs \OBJ@OCGs
        /D<<%
          /OFF[\OBJ@OCG@print]%
          /AS[%
            <<%
```

```
          /Event/View%
          /OCGs \OBJ@OCGs
          /Category[/View]%
        >>%
        <<%
          /Event/Print%
          /OCGs \OBJ@OCGs
          /Category[/Print]%
        >>%
        <<%
          /Event/Export%
          /OCGs \OBJ@OCGs
          /Category[/Print]%
        >>%
      ]%
    >>%
  >>%
>>%
}%
\AtBeginShipout{%
  \setbox\AtBeginShipoutBox=\hbox{%
    \copy\AtBeginShipoutBox
    \@pdfm@mark{%
      put @resources <<%
        /Properties<<%
          /OCView \OBJ@OCG@view
          /OCPrint \OBJ@OCG@print
        >>%
      >>%
    }%
  }%
}%
\Hy@AtBeginDocument{%
  \def\Hy@colorlink#1{%
    \begingroup
      \ifHy@ocgcolorlinks
        \def\Hy@ocgcolor{#1}%
        \setbox0=\hbox\bgroup\color@begingroup
      \else
        \HyColor@UseColor#1%
      \fi
  }%
  \def\Hy@endcolorlink{%
    \ifHy@ocgcolorlinks
      \color@endgroup\egroup
      \mbox{%
        \@pdfm@mark{content /OC/OCPrint BDC}%
        \rlap{\copy0}%
        \@pdfm@mark{content EMC/OC/OCView BDC}%
        \begingroup
          \expandafter\HyColor@UseColor\Hy@ocgcolor
          \box0 %
        \endgroup
        \@pdfm@mark{content EMC}%
      }%
    \fi
    \endgroup
```

```
    }%
  }%
\else
  \Hy@DisableOption{ocgcolorlinks}%
\fi
```

Use primitive counter arithmetic here to avoid amsmath redefining \stepcounter (github issue/13)

```
\def\Hy@BeginAnnot#1{%
  \global\advance\c@Hy@AnnotLevel\@ne
  \ifnum\c@Hy@AnnotLevel=\@ne
    #1%
  \fi
}
\def\Hy@EndAnnot{%
  \ifnum\value{Hy@AnnotLevel}=\@ne
    \Hy@endcolorlink
    \@pdfm@mark{eann}%
  \fi
  \global\advance\c@Hy@AnnotLevel\m@ne
}
\def\Hy@undefinedname{UNDEFINED}
\def\hyper@linkstart#1#2{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \leavevmode
  \Hy@BeginAnnot{%
    \protected@edef\Hy@testname{#2}%
    \ifx\Hy@testname\@empty
      \Hy@Warning{%
        Empty destination name,\MessageBreak
        using `\Hy@undefinedname'%
      }%
      \let\Hy@testname\Hy@undefinedname
    \else
      \Hy@pstringdef\Hy@testname{%
        \expandafter\HyperDestNameFilter\expandafter{%
          \Hy@testname
        }%
      }%
    \fi
    \@pdfm@mark{%
      bann<<%
        /Type/Annot%
        /Subtype/Link%
        \ifHy@pdfa /F 4\fi
        \Hy@setpdfborder
        \Hy@setpdfhighlight
        \expandafter\ifx\csname @#1bordercolor\endcsname\relax
        \else
          /C[\csname @#1bordercolor\endcsname]%
        \fi
        /A<<%
          /S/GoTo%
          /D(\Hy@testname)%
          \Hy@href@nextactionraw
        >>%
      >>%
```

```
    }%
    \expandafter\Hy@colorlink\csname @#1color\endcsname
  }%
}
\def\hyper@linkend{\Hy@EndAnnot}%
\def\hyper@link#1#2#3{%
  \hyper@linkstart{#1}{#2}#3\Hy@xspace@end\hyper@linkend
}
\def\hyper@linkfile#1#2#3{%
  \leavevmode
  \Hy@BeginAnnot{%
    \def\Hy@pstringF{#2}%
    \Hy@CleanupFile\Hy@pstringF
    \Hy@pstringdef\Hy@pstringF\Hy@pstringF
    \Hy@pstringdef\Hy@pstringD{#3}%
    \Hy@MakeRemoteAction
    \@pdfm@mark{%
      bann<<%
        /Type/Annot%
        /Subtype/Link%
        \ifHy@pdfa /F 4\fi
        \Hy@setpdfborder
        \Hy@setpdfhighlight
        \ifx\@filebordercolor\relax
        \else
          /C[\@filebordercolor]%
        \fi
        /A<<%
          /S/GoToR%
          /F(\Hy@pstringF)%
          /D%
          \ifx\\#3\\%
            [\Hy@href@page\@pdfremotestartview]%
          \else
            (\Hy@pstringD)%
          \fi
          \Hy@SetNewWindow
          \Hy@href@nextactionraw
        >>%
      >>%
    }%
    \Hy@colorlink\@filecolor
  }%
  #1\Hy@xspace@end
  \Hy@EndAnnot
}
\def\@hyper@launch run:#1\\#2#3{% filename, anchor text linkname
  \leavevmode
  \Hy@BeginAnnot{%
    \Hy@pstringdef\Hy@pstringF{#1}%
    \Hy@pstringdef\Hy@pstringP{#3}%
    \@pdfm@mark{%
      bann<<%
        /Type/Annot%
        /Subtype/Link%
        \ifHy@pdfa /F 4\fi
        \Hy@setpdfborder
```

```
      \Hy@setpdfhighlight
      \ifx\@runbordercolor\relax
      \else
        /C[\@runbordercolor]%
      \fi
      /A<<%
        /F(\Hy@pstringF)%
        /S/Launch%
        \Hy@SetNewWindow
        \ifx\\#3\\%
        \else
          /Win<</P(\Hy@pstringP)/F(\Hy@pstringF)>>%
        \fi
        \Hy@href@nextactionraw
      >>%
    >>%
  }%
  \Hy@colorlink\@runcolor
 }%
 #2\Hy@xspace@end
 \Hy@EndAnnot
}
\def\hyper@linkurl#1#2{%
 \leavevmode
 \Hy@BeginAnnot{%
  \Hy@pstringdef\Hy@pstringURI{#2}%
  \@pdfm@mark{%
   bann<<%
    /Type/Annot%
    /Subtype/Link%
    \ifHy@pdfa /F 4\fi
    \Hy@setpdfborder
    \Hy@setpdfhighlight
    \ifx\@urlbordercolor\relax
    \else
      /C[\@urlbordercolor]%
    \fi
    /A<<%
      /S/URI%
      /URI(\Hy@pstringURI)%
      \ifHy@href@ismap
        /IsMap true%
      \fi
      \Hy@href@nextactionraw
    >>%
   >>%
  }%
  \Hy@colorlink\@urlcolor
 }%
 #1\Hy@xspace@end
 \Hy@EndAnnot
}
\def\Acrobatmenu#1#2{%
 \Hy@Acrobatmenu{#1}{#2}{%
  \Hy@BeginAnnot{%
   \EdefEscapeName\Hy@temp@menu{#1}%
   \@pdfm@mark{%
```

```
      bann<<%
        /Type/Annot%
        /Subtype/Link%
        \ifHy@pdfa /F 4\fi
        \Hy@setpdfborder
        \Hy@setpdfhighlight
        \ifx\@menubordercolor\relax
        \else
          /C[\@menubordercolor]%
        \fi
        /A<<%
          /S/Named%
          /N/\Hy@temp@menu
          \Hy@href@nextactionraw
        >>%
      >>%
    }%
    \Hy@colorlink\@menucolor
  }%
  #2\Hy@xspace@end
  \Hy@EndAnnot
 }%
}
\ifx\@pdfproducer\relax
 \def\@pdfproducer{dvipdfm}%
```

Detect XeTEX. However, but xdvipdfmx will overwrite it in the final PDF file.

```
 \begingroup\expandafter\expandafter\expandafter\endgroup
 \expandafter\ifx\csname XeTeXversion\endcsname\relax
 \else
   \edef\@pdfproducer{XeTeX \the\XeTeXversion\XeTeXrevision}%
 \fi
\fi
\def\PDF@FinishDoc{%
 \Hy@UseMaketitleInfos
 \HyInfo@GenerateAddons
 \@pdfm@mark{%
   docinfo<<%
     /Title(\@pdftitle)%
     /Subject(\@pdfsubject)%
     /Creator(\@pdfcreator)%
     \ifx\@pdfcreationdate\@empty
     \else
       /CreationDate(\@pdfcreationdate)%
     \fi
     \ifx\@pdfmoddate\@empty
     \else
       /ModDate(\@pdfmoddate)%
     \fi
     /Author(\@pdfauthor)%
     \ifx\@pdfproducer\relax
     \else
       /Producer(\@pdfproducer)%
     \fi
     /Keywords(\@pdfkeywords)%
     \ifx\@pdftrapped\@empty
     \else
       /Trapped/\@pdftrapped
```

```
    \fi
    \HyInfo@Addons
  >>%
 }%
 \Hy@DisableOption{pdfauthor}%
 \Hy@DisableOption{pdftitle}%
 \Hy@DisableOption{pdfsubject}%
 \Hy@DisableOption{pdfcreator}%
 \Hy@DisableOption{pdfcreationdate}%
 \Hy@DisableOption{pdfmoddate}%
 \Hy@DisableOption{pdfproducer}%
 \Hy@DisableOption{pdfkeywords}%
 \Hy@DisableOption{pdftrapped}%
 \Hy@DisableOption{pdfinfo}%
}
\def\PDF@SetupDoc{%
 \edef\Hy@temp{%
  \ifHy@pdftoolbar\else /HideToolbar true\fi
  \ifHy@pdfmenubar\else /HideMenubar true\fi
  \ifHy@pdfwindowui\else /HideWindowUI true\fi
  \ifHy@pdffitwindow /FitWindow true\fi
  \ifHy@pdfcenterwindow /CenterWindow true\fi
  \ifHy@pdfdisplaydoctitle /DisplayDocTitle true\fi
  \Hy@UseNameKey{NonFullScreenPageMode}\@pdfnonfullscreenpagemode
  \Hy@UseNameKey{Direction}\@pdfdirection
  \Hy@UseNameKey{ViewArea}\@pdfviewarea
  \Hy@UseNameKey{ViewClip}\@pdfviewclip
  \Hy@UseNameKey{PrintArea}\@pdfprintarea
  \Hy@UseNameKey{PrintClip}\@pdfprintclip
  \Hy@UseNameKey{PrintScaling}\@pdfprintscaling
  \Hy@UseNameKey{Duplex}\@pdfduplex
  \ifx\@pdfpicktraybypdfsize\@empty
  \else
   /PickTrayByPDFSize \@pdfpicktraybypdfsize
  \fi
  \ifx\@pdfprintpagerange\@empty
  \else
   /PrintPageRange[\@pdfprintpagerange]%
  \fi
  \ifx\@pdfnumcopies\@empty
  \else
   /NumCopies \@pdfnumcopies
  \fi
 }%
 \Hy@pstringdef\Hy@pstringB{\@baseurl}%
 \@pdfm@mark{%
  docview<<%
   \ifx\@pdfstartpage\@empty
   \else
    \ifx\@pdfstartview\@empty
    \else
     /OpenAction[@page\@pdfstartpage\@pdfstartview]%
    \fi
   \fi
   \ifx\@baseurl\@empty
   \else
    /URI<</Base(\Hy@pstringB)>>%
```

```
      \fi
      /PageMode/\@pdfpagemode
      \ifx\Hy@temp\@empty
      \else
        /ViewerPreferences<<\Hy@temp>>%
      \fi
      \Hy@UseNameKey{PageLayout}\@pdfpagelayout
      \ifx\@pdflang\relax
      \else
        /Lang(\@pdflang)%
      \fi
    >>%
  }%
  \ifx\@pdfpagescrop\@empty
  \else
    \@pdfm@mark{put @pages <</CropBox[\@pdfpagescrop]>>}%
  \fi
}
⟨/dvipdfm | xetex⟩
⟨*dvipdfm | xetex⟩
```

\hyper@pagetransition

```
\def\hyper@pagetransition{%
  \ifx\@pdfpagetransition\relax
  \else
    \ifx\@pdfpagetransition\@empty
    \else
      \special{pdf:put @thispage %
        <</Trans<</S/\@pdfpagetransition>>>>%
      }%
    \fi
  \fi
}
```

\hyper@pageduration

```
\def\hyper@pageduration{%
  \ifx\@pdfpageduration\relax
  \else
    \ifx\@pdfpageduration\@empty
    \else
      \special{pdf:put @thispage %
        <</Dur \@pdfpageduration>>%
      }%
    \fi
  \fi
}
```

\hyper@pagehidden

```
\def\hyper@pagehidden{%
  \ifHy@useHidKey
    \special{pdf:put @thispage %
      <</Hid \ifHy@pdfpagehidden true\else false\fi>>%
    }%
  \fi
}

\g@addto@macro\Hy@EveryPageBoxHook{%
```

```
  \hyper@pagetransition
  \hyper@pageduration
  \hyper@pagehidden
}
⟨/dvipdfm | xetex⟩
```

XeTEX uses pdfTEX's method \pdfpagewidth and \pdfpageheight for setting the paper size.

```
⟨*dvipdfm⟩
\AtBeginShipoutFirst{%
  \ifHy@setpagesize
    \begingroup
      \@ifundefined{stockwidth}{%
        \ifdim\paperwidth>\z@
          \ifdim\paperheight>\z@
            \special{papersize=\the\paperwidth,\the\paperheight}%
          \fi
        \fi
      }{%
        \ifdim\stockwidth>\z@
          \ifdim\stockheight>\z@
            \special{papersize=\the\stockwidth,\the\stockheight}%
          \fi
        \fi
      }%
    \endgroup
  \fi
  \Hy@DisableOption{setpagesize}%
}
⟨/dvipdfm⟩
```

47.6 VTeX typesetting system

Provided by MicroPress, May 1998. They require VTeX version 6.02 or newer; see http://www.micropress-inc.com/ for details.

```
⟨*vtexhtml⟩
\providecommand*{\XR@ext}{htm}
\RequirePackage{vtexhtml}
\newif\if@Localurl
\let\PDF@FinishDoc\ltx@empty
\def\PDF@SetupDoc{%
  \ifx\@baseurl\@empty
  \else
    \special{!direct <base href="\@baseurl">}%
  \fi
}
\def\@urltype{url}
\def\hyper@link#1#2#3{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \leavevmode
  \special{!direct <a href=%
      \hyper@quote\hyper@hash\HyperDestNameFilter{#2}\hyper@quote>}%
  #3\Hy@xspace@end
  \special{!direct </a>}%
}
\def\hyper@linkurl#1#2{%
  \begingroup
```

```
    \hyper@chars
    \leavevmode
    \MathBSuppress=1\relax
    \special{!direct <a href=%
       \hyper@quote\HyperDestNameFilter{#2}\hyper@quote>}%
    #1\Hy@xspace@end
    \MathBSuppress=0\relax
    \special{!direct </a>}%
  \endgroup
}
\def\hyper@linkfile#1#2#3{%
  \hyper@linkurl{#1}{\Hy@linkfileprefix#2\ifx\\#3\\\else\##3\fi}%
}
\def\hyper@linkstart#1#2{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \def\Hy@tempa{#1}\ifx\Hy@tempa\@urltype
    \@Localurltrue
    \special{!direct <a href=\hyper@quote#2\hyper@quote>}%
  \else
    \@Localurlfalse
    \begingroup
      \hyper@chars
      \special{!aref \HyperDestNameFilter{#2}}%
    \endgroup
  \fi
}
\def\hyper@linkend{%
  \if@Localurl
    \special{!endaref}%
  \else
    \special{!direct </a>}%
  \fi
}
\Hy@WrapperDef\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \begingroup
    \hyper@chars
    \special{!aname #1}%
    \special{!direct <a name=%
       \hyper@quote\HyperDestNameFilter{#1}\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \special{!direct </a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\Hy@WrapperDef\hyper@anchor#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \begingroup
    \let\protect=\string
    \hyper@chars
    \leavevmode
    \special{!aname #1}%
```

```
    \special{!direct <a name=%
       \hyper@quote\HyperDestNameFilter{#1}\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
  \bgroup\anchor@spot\egroup
  \special{!direct </a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\@Form[#1]{%
  \Hy@Message{Sorry, TeXpider does not yet support FORMs}%
}
\let\@endForm\ltx@empty
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
  \Hy@Message{Sorry, TeXpider does not yet support FORM gauges}%
}
\def\@TextField[#1]#2{% parameters, label
  \Hy@Message{Sorry, TeXpider does not yet support FORM text fields}%
}
\def\@CheckBox[#1]#2{% parameters, label
  \Hy@Message{Sorry, TeXpider does not yet support FORM checkboxes}%
}
\def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
  \Hy@Message{Sorry, TeXpider does not yet support FORM choice menus}%
}
\def\@PushButton[#1]#2{% parameters, label
  \Hy@Message{Sorry, TeXpider does not yet support FORM pushbuttons}%
}
\def\@Reset[#1]#2{%
  \Hy@Message{Sorry, TeXpider does not yet support FORMs}%
}
\def\@Submit[#1]#2{%
  \Hy@Message{Sorry, TeXpider does not yet support FORMs}%
}
⟨/vtexhtml⟩
⟨*vtex⟩
```

VTeX version 6.68 supports \mediawidth and \mediaheight. The \ifx construct is better than a \csname, because it avoids the definition and the hash table entry of a previous undefined macro.

```
\ifx\mediaheight\@undefined
\else
  \ifx\mediaheight\relax
  \else
    \ifHy@setpagesize
      \providecommand*{\VTeXInitMediaSize}{%
        \ltx@IfUndefined{stockwidth}{%
          \ifdim\paperheight>0pt %
            \setlength\mediaheight\paperheight
          \fi
          \ifdim\paperheight>0pt %
            \setlength\mediawidth\paperwidth
          \fi
        }{%
          \ifdim\stockheight>0pt %
            \setlength\mediaheight\stockheight
          \fi
```

```
        \ifdim\stockwidth>0pt %
          \setlength\mediawidth\stockwidth
        \fi
       }%
     }%
     \Hy@AtBeginDocument{\VTeXInitMediaSize}%
   \fi
   \Hy@DisableOption{setpagesize}%
 \fi
\fi
```

Older versions of VTeX require `xyz` in lower case.

```
\providecommand*\@pdfview{xyz}
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
\let\CurrentBorderColor\@linkbordercolor
\Hy@WrapperDef\hyper@anchor#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \begingroup
    \let\protect=\string
    \hyper@chars
    \special{!aname \HyperDestNameFilter{#1};\@pdfview}%
  \endgroup
  \Hy@activeanchortrue
  \Hy@colorlink\@anchorcolor\anchor@spot\Hy@endcolorlink
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\Hy@WrapperDef\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \begingroup
    \hyper@chars
    \special{!aname \HyperDestNameFilter{#1};\@pdfview}%
  \endgroup
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\@urltype{url}
\def\Hy@undefinedname{UNDEFINED}
\def\hyper@linkstart#1#2{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \Hy@pstringdef\Hy@pstringURI{#2}%
  \expandafter\Hy@colorlink\csname @#1color\endcsname
  \ltx@IfUndefined{@#1bordercolor}{%
    \let\CurrentBorderColor\relax
  }{%
    \edef\CurrentBorderColor{%
      \csname @#1bordercolor\endcsname
    }%
  }%
  \def\Hy@tempa{#1}%
  \ifx\Hy@tempa\@urltype
    \special{!%
```

```
    aref <u=/Type/Action/S/URI/URI(\Hy@pstringURI)%
      \ifHy@href@ismap
        /IsMap true%
      \fi
      \Hy@href@nextactionraw
      >;%
    a=<%
      \ifHy@pdfa /F 4\fi
      \Hy@setpdfborder
      \ifx\CurrentBorderColor\relax
      \else
        /C [\CurrentBorderColor]%
      \fi
    >%
  }%
 \else
  \protected@edef\Hy@testname{#2}%
  \ifx\Hy@testname\@empty
    \Hy@Warning{%
      Empty destination name,\MessageBreak
      using `\Hy@undefinedname'%
    }%
    \let\Hy@testname\Hy@undefinedname
  \fi
  \special{!%
    aref \expandafter\HyperDestNameFilter
        \expandafter{\Hy@testname};%
    a=<%
      \ifHy@pdfa /F 4\fi
      \Hy@setpdfborder
      \ifx\CurrentBorderColor\relax
      \else
        /C [\CurrentBorderColor]%
      \fi
    >%
  }%
 \fi
}
\def\hyper@linkend{%
 \special{!endaref}%
 \Hy@endcolorlink
}
\def\hyper@linkfile#1#2#3{%
 \leavevmode
 \def\Hy@pstringF{#2}%
 \Hy@CleanupFile\Hy@pstringF
 \special{!%
  aref <%
  \ifnum\Hy@VTeXversion>753 \ifHy@pdfnewwindow n\fi\fi
  f=\Hy@pstringF>#3;%
  a=<%
    \ifHy@pdfa /F 4\fi
    \Hy@setpdfborder
    \ifx\@filebordercolor\relax
    \else
      /C [\@filebordercolor]%
    \fi
```

```
    >%
  }%
  \Hy@colorlink\@filecolor
    #1\Hy@xspace@end
  \Hy@endcolorlink
  \special{!endaref}%
}
\def\hyper@linkurl#1#2{%
  \begingroup
    \Hy@pstringdef\Hy@pstringURI{#2}%
    \hyper@chars
    \leavevmode
    \special{!%
      aref <u=/Type/Action/S/URI/URI(\Hy@pstringURI)%
        \ifHy@href@ismap
          /IsMap true%
        \fi
        \Hy@href@nextactionraw
        >;%
      a=<%
        \ifHy@pdfa /F 4\fi
        \Hy@setpdfborder
        \ifx\@urlbordercolor\relax
        \else
          /C [\@urlbordercolor]%
        \fi
      >%
    }%
    \Hy@colorlink\@urlcolor
      #1\Hy@xspace@end
    \Hy@endcolorlink
    \special{!endaref}%
  \endgroup
}
\def\hyper@link#1#2#3{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \ltx@IfUndefined{@#1bordercolor}{%
    \let\CurrentBorderColor\relax
  }{%
    \edef\CurrentBorderColor{\csname @#1bordercolor\endcsname}%
  }%
  \leavevmode
  \protected@edef\Hy@testname{#2}%
  \ifx\Hy@testname\@empty
    \Hy@Warning{%
      Empty destination name,\MessageBreak
      using `\Hy@undefinedname'%
    }%
    \let\Hy@testname\Hy@undefinedname
  \fi
  \special{!%
    aref \expandafter\HyperDestNameFilter
        \expandafter{\Hy@testname};%
    a=<%
      \ifHy@pdfa /F 4\fi
      \Hy@setpdfborder
      \ifx\CurrentBorderColor\relax
```

```
      \else
        /C [\CurrentBorderColor]%
      \fi
    >%
  }%
  \expandafter
  \Hy@colorlink\csname @#1color\endcsname
    #3\Hy@xspace@end
  \Hy@endcolorlink
  \special{!endaref}%
}
\def\hyper@image#1#2{%
  \hyper@linkurl{#2}{#1}%
}
\def\@hyper@launch run:#1\\#2#3{%
  \Hy@pstringdef\Hy@pstringF{#1}%
  \Hy@pstringdef\Hy@pstringP{#3}%
  \leavevmode
  \special{!aref %
    <u=%
      /Type/Action%
      /S/Launch%
      /F(\Hy@pstringF)%
      \Hy@SetNewWindow
      \ifx\\#3\\%
      \else
        /Win<</F(\Hy@pstringF)/P(\Hy@pstringP)>>%
      \fi
      \Hy@href@nextactionraw
    >;%
    a=<%
      \ifHy@pdfa /F 4\fi
      \Hy@setpdfborder
      \ifx\@runbordercolor\relax
      \else
        /C[\@runbordercolor]%
      \fi
    >%
  }%
  \Hy@colorlink\@runcolor
    #2\Hy@xspace@end
  \Hy@endcolorlink
  \special{!endaref}%
}
\def\Acrobatmenu#1#2{%
  \EdefEscapeName\Hy@temp@menu{#1}%
  \Hy@Acrobatmenu{#1}{#2}{%
    \special{!%
      aref <u=/S /Named /N /\Hy@temp@menu>;%
      a=<%
        \ifHy@pdfa /F 4\fi
        \Hy@setpdfborder
        \ifx\@menubordercolor\relax
        \else
          /C[\@menubordercolor]%
        \fi
      >%
```

```
    }%
    \Hy@colorlink\@menucolor
      #2\Hy@xspace@end
    \Hy@endcolorlink
    \special{!endaref}%
  }%
}
```

The following code (transition effects) is made by Alex Kostin.

The code below makes sense for VTEX 7.02 or later.

Please never use `\@ifundefined{VTeXversion}{..}{..}` *globally.*

```
\ifnum\Hy@VTeXversion<702 %
\else
  \def\hyper@pagetransition{%
    \ifx\@pdfpagetransition\relax
    \else
      \ifx\@pdfpagetransition\@empty
```

Standard incantation.

1. Does an old entry have to be deleted? 2. If 1=yes, how to delete?

```
      \else
        \hvtex@parse@trans\@pdfpagetransition
      \fi
    \fi
  }%
```

I have to write an "honest" parser to convert raw PDF code into VTEX `\special`. (AVK)

Syntax of VTEX `\special{!trans <transition_effect>}`:

```
<transition_effect> ::= <transition_style>[,<transition_duration>]
<transition_style> ::= <Blinds_effect> | <Box_effect> |
                       <Dissolve_effect> | <Glitter_effect> |
                       <Split_effect> | <Wipe_effect>
<Blinds_effect> ::= B[<effect_dimension>]
<Box_effect> ::= X[<effect_motion>]
<Dissolve_effect> ::= D
<Glitter_effect> ::= G[<effect_direction>]
<Split_effect> ::= S[<effect_motion>][<effect_dimension>]
<Wipe_effect> ::= W[<effect_direction>]
<Replace_effect> ::= R
<effect_direction> ::= <number>
<effect_dimension> ::= H | V
<effect_motion> ::= I | O
<transition_duration> ::= <number>
```

Transition codes:

```
  \def\hvtex@trans@effect@Blinds{\def\hvtex@trans@code{B}}%
  \def\hvtex@trans@effect@Box{\def\hvtex@trans@code{X}}%
  \def\hvtex@trans@effect@Dissolve{\def\hvtex@trans@code{D}}%
  \def\hvtex@trans@effect@Glitter{\def\hvtex@trans@code{G}}%
  \def\hvtex@trans@effect@Split{\def\hvtex@trans@code{S}}%
  \def\hvtex@trans@effect@Wipe{\def\hvtex@trans@code{W}}%
  \def\hvtex@trans@effect@R{\def\hvtex@trans@code{R}}%
```

Optional parameters:

```
  \def\hvtex@par@dimension{/Dm}%
  \def\hvtex@par@direction{/Di}%
  \def\hvtex@par@duration{/D}%
  \def\hvtex@par@motion{/M}%
```

Tokenizer:

```
\def\hvtex@gettoken{%
  \expandafter\hvtex@gettoken@\hvtex@buffer\@nil
}%
```

Notice that tokens in the input buffer must be space delimited.

```
\def\hvtex@gettoken@#1 #2\@nil{%
  \edef\hvtex@token{#1}%
  \edef\hvtex@buffer{#2}%
}%
\def\hvtex@parse@trans#1{%
```

Initializing code:

```
  \let\hvtex@trans@code\@empty
  \let\hvtex@param@dimension\@empty
  \let\hvtex@param@direction\@empty
  \let\hvtex@param@duration\@empty
  \let\hvtex@param@motion\@empty
  \edef\hvtex@buffer{#1\space}%
```

First token is the PDF transition name without escape.

```
  \hvtex@gettoken
  \ifx\hvtex@token\@empty
```

Leading space(s)?

```
    \ifx\hvtex@buffer\@empty
```

The buffer is empty, nothing to do.

```
    \else
      \hvtex@gettoken
    \fi
  \fi
  \csname hvtex@trans@effect@\hvtex@token\endcsname
```

Now is time to parse optional parameters.

```
  \hvtex@trans@params
}%
```

Reentrable macro to parse optional parameters.

```
\def\hvtex@trans@params{%
  \ifx\hvtex@buffer\@empty
  \else
    \hvtex@gettoken
    \let\hvtex@trans@par\hvtex@token
    \ifx\hvtex@buffer\@empty
    \else
      \hvtex@gettoken
      \ifx\hvtex@trans@par\hvtex@par@duration
```

/D is the effect duration in seconds. VTEX special takes it in milliseconds.

```
        \let\hvtex@param@duration\hvtex@token
      \else \ifx\hvtex@trans@par\hvtex@par@motion
```

/M can be either /I or /O

```
        \expandafter\edef\expandafter\hvtex@param@motion
          \expandafter{\expandafter\@gobble\hvtex@token}%
      \else \ifx\hvtex@trans@par\hvtex@par@dimension
```

/Dm can be either /H or /V

```
        \expandafter\edef\expandafter\hvtex@param@dimension
          \expandafter{\expandafter\@gobble\hvtex@token}%
      \else \ifx\hvtex@trans@par\hvtex@par@direction
```

Valid values for /Di are 0, 270, 315 (the Glitter effect) or 0, 90, 180, 270 (the Wipe effect).

```
      \let\hvtex@param@direction\hvtex@token
    \fi\fi\fi\fi
  \fi
 \fi
 \ifx\hvtex@buffer\@empty
  \let\next\hvtex@produce@trans
 \else
  \let\next\hvtex@trans@params
 \fi
 \next
}%
```

Merge <transition_effect> and issue the special when possible. Too lazy to validate optional parameters.

```
\def\hvtex@produce@trans{%
 \let\vtex@trans@special\@empty
 \if S\hvtex@trans@code
  \edef\vtex@trans@special{\hvtex@trans@code
   \hvtex@param@dimension\hvtex@param@motion}%
 \else\if B\hvtex@trans@code
  \edef\vtex@trans@special{%
   \hvtex@trans@code\hvtex@param@dimension
  }%
 \else\if X\hvtex@trans@code
  \edef\vtex@trans@special{%
   \hvtex@trans@code\hvtex@param@motion
  }%
 \else\if W\hvtex@trans@code
  \edef\vtex@trans@special{%
   \hvtex@trans@code\hvtex@param@direction
  }%
 \else\if D\hvtex@trans@code
  \let\vtex@trans@special\hvtex@trans@code
 \else\if R\hvtex@trans@code
  \let\vtex@trans@special\hvtex@trans@code
 \else\if G\hvtex@trans@code
  \edef\vtex@trans@special{%
   \hvtex@trans@code\hvtex@param@direction
  }%
 \fi\fi\fi\fi\fi\fi\fi
 \ifx\vtex@trans@special\@empty
 \else
  \ifx\hvtex@param@duration\@empty
  \else
   \setlength{\dimen@}{\hvtex@param@duration\p@}%
```

I'm not guilty of possible overflow.

```
   \multiply\dimen@\@m
   \edef\vtex@trans@special{%
    \vtex@trans@special,\strip@pt\dimen@
   }%
  \fi
```

And all the mess is just for this.

```
  \special{!trans \vtex@trans@special}%
 \fi
```

```
}%
\def\hyper@pageduration{%
  \ifx\@pdfpageduration\relax
  \else
    \ifx\@pdfpageduration\@empty
      \special{!duration-}%
    \else
      \special{!duration \@pdfpageduration}%
    \fi
  \fi
}%
\def\hyper@pagehidden{%
  \ifHy@useHidKey
    \special{!hidden\ifHy@pdfpagehidden +\else -\fi}%
  \fi
}%
\g@addto@macro\Hy@EveryPageBoxHook{%
  \hyper@pagetransition
  \hyper@pageduration
  \hyper@pagehidden
}%
\fi
```

Caution: In opposite to the other drivers, the argument of `\special{!onopen #1}` is a reference name. The VTeX's postscript mode will work with a version higher than 7.0x.

The command `\VTeXOS` is defined since version 7.45. Magic values encode the operating system:
1: WinTel
2: Linux
3: OS/2
4: MacOS
5: MacOS/X

```
\ifx\@pdfproducer\relax
  \def\@pdfproducer{VTeX}%
  \ifnum\Hy@VTeXversion>\z@
    \count@\VTeXversion
    \divide\count@ 100 %
    \edef\@pdfproducer{\@pdfproducer\space v\the\count@}%
    \multiply\count@ -100 %
    \advance\count@\VTeXversion
    \edef\@pdfproducer{%
      \@pdfproducer
      .\ifnum\count@<10 0\fi\the\count@
      \ifx\VTeXOS\@undefined\else
        \ifnum\VTeXOS>0 %
          \ifnum\VTeXOS<6 %
            \space(%
            \ifcase\VTeXOS
            \or Windows\or Linux\or OS/2\or MacOS\or MacOS/X%
            \fi
            )%
          \fi
        \fi
      \fi
      ,\space
      \ifnum\OpMode=\@ne PDF\else PS\fi
```

```
      \space backend%
      \ifx\gexmode\@undefined\else
        \ifnum\gexmode>\z@\space with GeX\fi
      \fi
    }%
  \fi
\fi
```

Current !pdfinfo key syntax:

Key	Field	Type
a	**A**uthor	String
b	Crop**B**ox	String
c	**C**reator	String
k	**K**eywords	String
l	Page**L**ayout	PS
p	**P**ageMode	PS
r	P**r**oducer	String
s	**S**ubject	String
t	**T**itle	String
u	**U**RI	PS
v	**V**iewPreferences	PS

Note: PS objects that are dicts are in <<<..>>> (yuck; no choice).

```
\def\PDF@SetupDoc{%
  \ifx\@pdfpagescrop\@empty
  \else
    \special{!pdfinfo b=<\@pdfpagescrop>}%
  \fi
  \ifx\@pdfstartpage\@empty
  \else
    \ifx\@pdfstartview\@empty
    \else
      \special{!onopen Page\@pdfstartpage}%
    \fi
  \fi
  \special{!pdfinfo p=</\@pdfpagemode>}%
  \ifx\@baseurl\@empty
  \else
    \special{!pdfinfo u=<<</Base (\@baseurl)>>>}%
  \fi
  \special{!pdfinfo v=<<<%
    \ifHy@pdftoolbar\else /HideToolbar true\fi
    \ifHy@pdfmenubar\else /HideMenubar true\fi
    \ifHy@pdfwindowui\else /HideWindowUI true\fi
    \ifHy@pdffitwindow /FitWindow true\fi
    \ifHy@pdfcenterwindow /CenterWindow true\fi
    \ifHy@pdfdisplaydoctitle /DisplayDocTitle true\fi
    \Hy@UseNameKey{NonFullScreenPageMode}\@pdfnonfullscreenpagemode
    \Hy@UseNameKey{Direction}\@pdfdirection
    \Hy@UseNameKey{ViewArea}\@pdfviewarea
    \Hy@UseNameKey{ViewClip}\@pdfviewclip
    \Hy@UseNameKey{PrintArea}\@pdfprintarea
    \Hy@UseNameKey{PrintClip}\@pdfprintclip
    \Hy@UseNameKey{PrintScaling}\@pdfprintscaling
    \Hy@UseNameKey{Duplex}\@pdfduplex
    \ifx\@pdfpicktraybypdfsize\@empty
    \else
      /PickTrayByPDFSize \@pdfpicktraybypdfsize
```

```
    \fi
    \ifx\@pdfprintpagerange\@empty
    \else
      /PrintPageRange[\@pdfprintpagerange]%
    \fi
    \ifx\@pdfnumcopies\@empty
    \else
      /NumCopies \@pdfnumcopies
    \fi
  >>>}%
  \ifx\@pdfpagelayout\@empty
  \else
    \special{!pdfinfo l=</\@pdfpagelayout\space>}%
  \fi
}%
\HyInfo@AddonUnsupportedtrue
\define@key{Hyp}{pdfcreationdate}{%
  \Hy@Warning{%
    VTeX does not support pdfcreationdate.\MessageBreak
    Therefore its setting is ignored%
  }%
}
\define@key{Hyp}{pdfmoddate}{%
  \Hy@Warning{%
    VTeX does not support pdfmoddate.\MessageBreak
    Therefore its setting is ignored%
  }%
}
\def\PDF@FinishDoc{%
  \Hy@UseMaketitleInfos
  \HyInfo@TrappedUnsupported
  \special{!pdfinfo a=<\@pdfauthor>}%
  \special{!pdfinfo t=<\@pdftitle>}%
  \special{!pdfinfo s=<\@pdfsubject>}%
  \special{!pdfinfo c=<\@pdfcreator>}%
  \ifx\@pdfproducer\relax
  \else
    \special{!pdfinfo r=<\@pdfproducer>}%
  \fi
  \special{!pdfinfo k=<\@pdfkeywords>}%
  \Hy@DisableOption{pdfauthor}%
  \Hy@DisableOption{pdftitle}%
  \Hy@DisableOption{pdfsubject}%
  \Hy@DisableOption{pdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@DisableOption{pdfmoddate}%
  \Hy@DisableOption{pdfproducer}%
  \Hy@DisableOption{pdfkeywords}%
  \Hy@DisableOption{pdftrapped}%
  \Hy@DisableOption{pdfinfo}%
}
⟨/vtex⟩
```

47.7 Fix for Adobe bug number 466320

If a destination occurs at the very begin of a page, the destination is moved to the previous page by Adobe Distiller 5. As workaround Adobe suggests:

```
/showpage {
 //showpage
 clippath stroke erasepage
} bind def
```

But unfortunately this fix generates an empty page at the end of the document. Therefore another fix is used by writing some clipped text.

```
⟨dviwindo⟩\def\literalps@out#1{\special{ps:#1}}%
⟨package⟩\providecommand*{\Hy@DistillerDestFix}{}
⟨*pdfmark | dviwindo⟩
\def\Hy@DistillerDestFix{%
  \begingroup
    \let\x\literalps@out
```

The fix has to be passed unchanged through GeX, if VTeX in PostScript mode with GeX is used.

```
    \ifnum \@ifundefined{OpMode}{0}{%
         \@ifundefined{gexmode}{0}{%
         \ifnum\gexmode>0 \OpMode\else 0\fi
         }}>1 %
      \def\x##1{%
       \immediate\special{!=##1}%
      }%
    \fi
    \x{%
     /product where{%
       pop %
       product(Distiller)search{%
         pop pop pop %
         version(.)search{%
           exch pop exch pop%
           (3011)eq{%
             gsave %
             newpath 0 0 moveto closepath clip%
             /Courier findfont 10 scalefont setfont %
             72 72 moveto(.)show %
             grestore%
           }if%
         }{pop}ifelse%
       }{pop}ifelse%
      }if%
    }%
  \endgroup
}
⟨/pdfmark | dviwindo⟩
```

47.8 Direct pdfmark support

Drivers that load `pdfmark.def` have to provide the correct macro definitions of

`\@pdfproducer`	for document information
`\literalps@out`	PostScript output
`\headerps@out`	PostScript output that goes in the header area

and the correct definitions of the following PostScript procedures:

H.S	start of anchor, link or rect
#1 H.A	end of anchor, argument=baselineskip in pt
#1 H.L	end of link, argument=baselineskip in pt
H.R	end of rect
H.B	raw rect code

```
⟨*pdfmark⟩
\Hy@breaklinks@unsupported
\def\HyPat@ObjRef{%
  \{[^{}]+\}%
}
\Hy@WrapperDef\hyper@anchor#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \begingroup
    \pdfmark[\anchor@spot]{%
      pdfmark=/DEST,%
      linktype=anchor,%
      View=/\@pdfview \@pdfviewparams,%
      DestAnchor={#1}%
    }%
  \endgroup
  \Hy@RestoreLastskip
}
\ltx@IfUndefined{hyper@anchorstart}{}{\endinput}
\Hy@WrapperDef\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \literalps@out{H.S}%
  \Hy@AllowHyphens
  \xdef\hyper@currentanchor{#1}%
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \literalps@out{\strip@pt@and@otherjunk\baselineskip\space H.A}%
  \pdfmark{%
    pdfmark=/DEST,%
    linktype=anchor,%
    View=/\@pdfview \@pdfviewparams,%
    DestAnchor=\hyper@currentanchor,%
  }%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\hyper@linkstart#1#2{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \ifHy@breaklinks
  \else
    \leavevmode
    \ifmmode
      \def\Hy@LinkMath{$}%
    \else
      \let\Hy@LinkMath\ltx@empty
    \fi
    \Hy@SaveSpaceFactor
    \hbox\bgroup
    \Hy@RestoreSpaceFactor
    \Hy@LinkMath
```

```
  \fi
  \expandafter\Hy@colorlink\csname @#1color\endcsname
  \literalps@out{H.S}%
  \Hy@AllowHyphens
  \xdef\hyper@currentanchor{#2}%
  \gdef\hyper@currentlinktype{#1}%
}
\def\hyper@linkend{%
  \literalps@out{\strip@pt@and@otherjunk\baselineskip\space H.L}%
  \ltx@IfUndefined{@\hyper@currentlinktype bordercolor}{%
    \let\Hy@tempcolor\relax
  }{%
    \edef\Hy@tempcolor{%
      \csname @\hyper@currentlinktype bordercolor\endcsname
    }%
  }%
  \pdfmark{%
    pdfmark=/ANN,%
    linktype=link,%
    Subtype=/Link,%
    PDFAFlags=4,%
    Dest=\hyper@currentanchor,%
    AcroHighlight=\@pdfhighlight,%
    Border=\@pdfborder,%
    BorderStyle=\@pdfborderstyle,%
    Color=\Hy@tempcolor,%
    Raw=H.B%
  }%
  \Hy@endcolorlink
  \ifHy@breaklinks
  \else
    \Hy@LinkMath
    \Hy@SaveSpaceFactor
    \egroup
    \Hy@RestoreSpaceFactor
  \fi
}
```

We have to allow for \baselineskip having an optional stretch and shrink (you meet this in slide packages, for instance), so we need to strip off the junk. David Carlisle, of course, wrote this bit of code.

```
\begingroup
  \catcode`P=12 %
  \catcode`T=12 %
  \lowercase{\endgroup
  \gdef\rem@ptetc#1.#2PT#3!{#1\ifnum#2>\z@.#2\fi}%
}
\def\strip@pt@and@otherjunk#1{\expandafter\rem@ptetc\the#1!}
```

\hyper@pagetransition

```
\def\hyper@pagetransition{%
  \ifx\@pdfpagetransition\relax
  \else
    \ifx\@pdfpagetransition\@empty
      % 1. Does an old entry have to be deleted?
      % 2. If 1=yes, how to delete?
    \else
```

```
      \pdfmark{%
        pdfmark=/PUT,%
        Raw={%
          \string{ThisPage\string}%
          <</Trans << /S /\@pdfpagetransition\space >> >>%
        }%
      }%
    \fi
  \fi
}
```

\hyper@pageduration

```
\def\hyper@pageduration{%
  \ifx\@pdfpageduration\relax
  \else
    \ifx\@pdfpageduration\@empty
      % 1. Does an old entry have to be deleted?
      % 2. If 1=yes, how to delete?
    \else
      \pdfmark{%
        pdfmark=/PUT,%
        Raw={%
          \string{ThisPage\string}%
          <</Dur \@pdfpageduration>>%
        }%
      }%
    \fi
  \fi
}
```

\hyper@pagehidden

```
\def\hyper@pagehidden{%
  \ifHy@useHidKey
    \pdfmark{%
      pdfmark=/PUT,%
      Raw={%
        \string{ThisPage\string}%
        <</Hid \ifHy@pdfpagehidden true\else false\fi>>%
      }%
    }%
  \fi
}

\g@addto@macro\Hy@EveryPageBoxHook{%
  \hyper@pagetransition
  \hyper@pageduration
  \hyper@pagehidden
}

\def\hyper@image#1#2{%
  \hyper@linkurl{#2}{#1}%
}
\def\Hy@undefinedname{UNDEFINED}
\def\hyper@link#1#2#3{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \ltx@IfUndefined{@#1bordercolor}{%
    \let\Hy@tempcolor\relax
  }{%
```

```
    \edef\Hy@tempcolor{\csname @#1bordercolor\endcsname}%
  }%
  \begingroup
    \protected@edef\Hy@testname{#2}%
    \ifx\Hy@testname\@empty
      \Hy@Warning{%
        Empty destination name,\MessageBreak
        using `\Hy@undefinedname'%
      }%
      \let\Hy@testname\Hy@undefinedname
    \fi
    \pdfmark[{#3}]{%
      Color=\Hy@tempcolor,%
      linktype={#1},%
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
      pdfmark=/ANN,%
      Subtype=/Link,%
      PDFAFlags=4,%
      Dest=\Hy@testname
    }%
  \endgroup
}
\newtoks\pdf@docset
\def\PDF@FinishDoc{%
  \Hy@UseMaketitleInfos
  \HyInfo@GenerateAddons
  \let\Hy@temp\@empty
  \ifx\@pdfcreationdate\@empty
  \else
    \def\Hy@temp{CreationDate=\@pdfcreationdate,}%
  \fi
  \ifx\@pdfmoddate\@empty
  \else
    \expandafter\def\expandafter\Hy@temp\expandafter{%
      \Hy@temp
      ModDate=\@pdfmoddate,%
    }%
  \fi
  \ifx\@pdfproducer\relax
  \else
    \expandafter\def\expandafter\Hy@temp\expandafter{%
      \Hy@temp
      Producer=\@pdfproducer,%
    }%
  \fi
  \expandafter
  \pdfmark\expandafter{%
    \Hy@temp
    pdfmark=/DOCINFO,%
    Title=\@pdftitle,%
    Subject=\@pdfsubject,%
    Creator=\@pdfcreator,%
    Author=\@pdfauthor,%
    Keywords=\@pdfkeywords,%
    Trapped=\@pdftrapped
```

```
  }%
  \ifx\HyInfo@Addons\@empty
  \else
    \pdfmark{%
      pdfmark=/DOCINFO,%
      Raw={\HyInfo@Addons}%
    }%
  \fi
  \Hy@DisableOption{pdfauthor}%
  \Hy@DisableOption{pdftitle}%
  \Hy@DisableOption{pdfsubject}%
  \Hy@DisableOption{pdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@DisableOption{pdfmoddate}%
  \Hy@DisableOption{pdfproducer}%
  \Hy@DisableOption{pdfkeywords}%
  \Hy@DisableOption{pdftrapped}%
  \Hy@DisableOption{pdfinfo}%
}
\def\PDF@SetupDoc{%
  \def\Hy@temp{}%
  \ifx\@pdfstartpage\@empty
  \else
    \ifx\@pdfstartview\@empty
    \else
      \edef\Hy@temp{%
        ,Page=\@pdfstartpage
        ,View=\@pdfstartview
      }%
    \fi
  \fi
  \edef\Hy@temp{%
    \noexpand\pdfmark{%
      pdfmark=/DOCVIEW,%
      PageMode=/\@pdfpagemode
      \Hy@temp
    }%
  }%
  \Hy@temp
  \ifx\@pdfpagescrop\@empty
  \else
    \pdfmark{pdfmark=/PAGES,CropBox=\@pdfpagescrop}%
  \fi
  \edef\Hy@temp{%
    \ifHy@pdftoolbar\else /HideToolbar true\fi
    \ifHy@pdfmenubar\else /HideMenubar true\fi
    \ifHy@pdfwindowui\else /HideWindowUI true\fi
    \ifHy@pdffitwindow /FitWindow true\fi
    \ifHy@pdfcenterwindow /CenterWindow true\fi
    \ifHy@pdfdisplaydoctitle /DisplayDocTitle true\fi
    \Hy@UseNameKey{NonFullScreenPageMode}\@pdfnonfullscreenpagemode
    \Hy@UseNameKey{Direction}\@pdfdirection
    \Hy@UseNameKey{ViewArea}\@pdfviewarea
    \Hy@UseNameKey{ViewClip}\@pdfviewclip
    \Hy@UseNameKey{PrintArea}\@pdfprintarea
    \Hy@UseNameKey{PrintClip}\@pdfprintclip
    \Hy@UseNameKey{PrintScaling}\@pdfprintscaling
```

```
    \Hy@UseNameKey{Duplex}\@pdfduplex
    \ifx\@pdfpicktraybypdfsize\@empty
    \else
      /PickTrayByPDFSize \@pdfpicktraybypdfsize
    \fi
    \ifx\@pdfprintpagerange\@empty
    \else
      /PrintPageRange[\@pdfprintpagerange]%
    \fi
    \ifx\@pdfnumcopies\@empty
    \else
      /NumCopies \@pdfnumcopies
    \fi
  }%
  \Hy@pstringdef\Hy@pstringB{\@baseurl}%
  \pdfmark{%
    pdfmark=/PUT,%
    Raw={%
      \string{Catalog\string}<<%
        \ifx\Hy@temp\@empty
        \else
          /ViewerPreferences<<\Hy@temp>>%
        \fi
        \Hy@UseNameKey{PageLayout}\@pdfpagelayout
        \ifx\@pdflang\relax
        \else
          /Lang(\@pdflang)%
        \fi
        \ifx\@baseurl\@empty
        \else
          /URI<</Base(\Hy@pstringB)>>%
        \fi
      >>%
    }%
  }%
}
⟨/pdfmark⟩
⟨*pdfmarkbase⟩
```

We define a single macro, pdfmark, which uses the 'keyval' system to define the various allowable keys; these are *exactly* as listed in the pdfmark reference for Acrobat 3.0. The only addition is `pdfmark` which specifies the type of pdfmark to create (like ANN, LINK etc). The surrounding round and square brackets in the pdfmark commands are supplied, but you have to put in / characters as needed for the values.

```
\newif\ifHy@pdfmarkerror
\def\pdfmark{\@ifnextchar[{\pdfmark@}{\pdfmark@[]}}
\def\pdfmark@[#1]#2{%
  \Hy@pdfmarkerrorfalse
  \edef\@processme{\noexpand\pdf@toks={\the\pdf@defaulttoks}}%
  \@processme
  \let\pdf@type\relax
  \let\pdf@objdef\ltx@empty
  \kvsetkeys{PDF}{#2}%
  \ifHy@pdfmarkerror
  \else
    \ifx\pdf@type\relax
```

```
      \Hy@WarningNoLine{no pdfmark type specified in #2!!}%
      \ifx\\#1\\%
      \else
        \pdf@rect{#1}%
      \fi
    \else
      \ifx\\#1\\%
        \literalps@out{%
          [%
          \ifx\pdf@objdef\ltx@empty
          \else
            /_objdef\string{\pdf@objdef\string}%
          \fi
          \the\pdf@toks\space\pdf@type\space pdfmark%
        }%
      \else
        \ltx@IfUndefined{@\pdf@linktype color}{%
          \Hy@colorlink\@linkcolor
        }{%
          \expandafter\Hy@colorlink
                    \csname @\pdf@linktype color\endcsname
        }%
        \pdf@rect{#1}%
        \literalps@out{%
          [%
          \ifx\pdf@objdef\ltx@empty
          \else
            /_objdef\string{\pdf@objdef\string}%
          \fi
          \the\pdf@toks\space\pdf@type\space pdfmark%
        }%
        \Hy@endcolorlink
      \fi
    \fi
  \fi
}
```

The complicated bit is working out the right enclosing rectangle of some piece of TEX text, needed by the /Rect key. This solution originates with Toby Thain (tobyt@netspace.net.au).

For the case breaklinks is enabled, I have added two hooks, the first one for package setouterhbox, it provides a hopefully better method without setting the text twice.

```
\usepackage[hyperref]{setouterhbox}
```

With the second hook, also you can set the text twice, e.g.:

```
\long\def\Hy@setouterhbox#1#2{\long\def\my@temp{#2}}
\def\Hy@breaklinksunhbox#1{\my@temp}
```

```
\newsavebox{\pdf@box}
\providecommand*{\Hy@setouterhbox}{\sbox}
\providecommand*{\Hy@breaklinksunhbox}{\unhbox}
\def\Hy@DEST{/DEST}
\def\pdf@rect#1{%
  \begingroup
    \chardef\x=1 %
    \def\Hy@temp{#1}%
```

```
    \ifx\Hy@temp\ltx@empty
      \chardef\x=0 %
    \else
      \def\y{\anchor@spot}%
      \ifx\Hy@temp\y
        \def\y{\relax}%
        \ifx\anchor@spot\y
          \chardef\x=0 %
        \fi
      \fi
    \fi
  \expandafter\endgroup
  \ifcase\x
    \literalps@out{H.S}%
    \literalps@out{H.R}%
  \else
    \leavevmode
    \Hy@SaveSpaceFactor
    \ifmmode
      \def\Hy@LinkMath{$}%
    \else
      \let\Hy@LinkMath\ltx@empty
    \fi
    \ifHy@breaklinks
      \Hy@setouterhbox\pdf@box{%
        \Hy@RestoreSpaceFactor
        \Hy@LinkMath
        \Hy@AllowHyphens#1\Hy@xspace@end
        \Hy@LinkMath
        \Hy@SaveSpaceFactor
      }%
    \else
      \sbox\pdf@box{%
        \Hy@RestoreSpaceFactor
        \Hy@LinkMath
        #1\Hy@xspace@end
        \Hy@LinkMath
        \Hy@SaveSpaceFactor
      }%
    \fi
    \dimen@\ht\pdf@box
    \ifdim\dp\pdf@box=\z@
      \literalps@out{H.S}%
    \else
      \lower\dp\pdf@box\hbox{\literalps@out{H.S}}%
    \fi
```

If the text has to be horizontal mode stuff then just unbox the saved box like this, which saves executing it twice, which can mess up counters etc (thanks DPC...).

```
    \ifHy@breaklinks
      \ifhmode
        \Hy@breaklinksunhbox\pdf@box
      \else
        \box\pdf@box
      \fi
    \else
      \expandafter\box\pdf@box
    \fi
```

but if it can have multiple paragraphs you'd need one of these, but in that case the measured box size would be wrong anyway.

```
\ifHy@breaklinks#1\else\box\pdf@box\fi
\ifHy@breaklinks{#1}\else\box\pdf@box\fi
```

```
    \ifdim\dimen@=\z@
      \literalps@out{H.R}%
    \else
      \raise\dimen@\hbox{\literalps@out{H.R}}%
    \fi
    \Hy@RestoreSpaceFactor
  \fi
  \ifx\pdf@type\Hy@DEST
  \else
    \pdf@addtoksx{H.B}%
  \fi
}
```

All the supplied material is stored in a token list; since I do not feel sure I quite understand these, things may not work as expected with expansion. We'll have to experiment.

```
\newtoks\pdf@toks
\newtoks\pdf@defaulttoks
\pdf@defaulttoks={}%
\def\pdf@addtoks#1#2{%
  \edef\@processme{\pdf@toks{\the\pdf@toks/#2 #1}}%
  \@processme
}
\def\pdf@addtoksx#1{%
  \edef\@processme{\pdf@toks{\the\pdf@toks\space #1}}%
  \@processme
}
\def\PDFdefaults#1{%
  \pdf@defaulttoks={#1}%
}
```

This is the list of allowed keys. See the Acrobat manual for an explanation.

```
% what is the type of pdfmark?
\define@key{PDF}{pdfmark}{\def\pdf@type{#1}}
% what is the link type?
\define@key{PDF}{linktype}{\def\pdf@linktype{#1}}
\def\pdf@linktype{link}
% named object?
\define@key{PDF}{objdef}{\edef\pdf@objdef{#1}}
\let\pdf@objdef\ltx@empty
% parameter is a stream of PDF
\define@key{PDF}{Raw}{\pdf@addtoksx{#1}}
% parameter is a name
\define@key{PDF}{Action}{\pdf@addtoks{#1}{Action}}
% parameter is a array
\define@key{PDF}{Border}{%
  \edef\Hy@temp{#1}%
  \ifx\Hy@temp\@empty
  \else
    \pdf@addtoks{[#1]\Hy@BorderArrayPatch}{Border}% hash-ok
  \fi
}
```

```
\let\Hy@BorderArrayPatch\@empty
% parameter is a dictionary
\define@key{PDF}{BorderStyle}{%
  \edef\Hy@temp{#1}%
  \ifx\Hy@temp\@empty
  \else
    \pdf@addtoks{<<#1>>}{BS}%
  \fi
}
% parameter is a array
\define@key{PDF}{Color}{%
  \ifx\relax#1\relax
  \else
    \pdf@addtoks{[#1]}{Color}% hash-ok
  \fi
}
% parameter is a string
\define@key{PDF}{Contents}{\pdf@addtoks{(#1)}{Contents}}
% parameter is a integer
\define@key{PDF}{Count}{\pdf@addtoks{#1}{Count}}
% parameter is a array
\define@key{PDF}{CropBox}{\pdf@addtoks{[#1]}{CropBox}}% hash-ok
% parameter is a string
\define@key{PDF}{DOSFile}{\pdf@addtoks{(#1)}{DOSFile}}
% parameter is a string or file
\define@key{PDF}{DataSource}{\pdf@addtoks{(#1)}{DataSource}}
% parameter is a destination
\define@key{PDF}{Dest}{%
  \Hy@pstringdef\Hy@pstringDest{\HyperDestNameFilter{#1}}%
  \ifx\Hy@pstringDest\@empty
    \Hy@pdfmarkerrortrue
    \Hy@Warning{Destination with empty name ignored}%
  \else
    \pdf@addtoks{(\Hy@pstringDest) cvn}{Dest}%
  \fi
}
\define@key{PDF}{DestAnchor}{%
  \Hy@pstringdef\Hy@pstringDest{\HyperDestNameFilter{#1}}%
  \ifx\Hy@pstringDest\@empty
    \Hy@pdfmarkerrortrue
    \Hy@Warning{Destination with empty name ignored}%
  \else
    \pdf@addtoks{(\Hy@pstringDest) cvn}{Dest}%
  \fi
}
% parameter is a string
\define@key{PDF}{Dir}{\pdf@addtoks{(#1)}{Dir}}
% parameter is a string
\define@key{PDF}{File}{\pdf@addtoks{(#1)}{File}}
% parameter is a int
\define@key{PDF}{Flags}{\pdf@addtoks{#1}{Flags}}
\define@key{PDF}{PDFAFlags}{%
  \ifHy@pdfa
    \pdf@addtoks{#1}{F}%
  \fi
}
% parameter is a name
```

```
\define@key{PDF}{AcroHighlight}{%
  \begingroup
    \edef\x{#1}%
  \expandafter\endgroup\ifx\x\@empty
  \else
    \pdf@addtoks{#1}{H}%
  \fi
}
% parameter is a string
\define@key{PDF}{ID}{\pdf@addtoks{[#1]}{ID}}% hash-ok
% parameter is a string
\define@key{PDF}{MacFile}{\pdf@addtoks{(#1)}{MacFile}}
% parameter is a string
\define@key{PDF}{ModDate}{\pdf@addtoks{(#1)}{ModDate}}
% parameter is a string
\define@key{PDF}{Op}{\pdf@addtoks{(#1)}{Op}}
% parameter is a Boolean
\define@key{PDF}{Open}{\pdf@addtoks{#1}{Open}}
% parameter is a integer or name
\define@key{PDF}{Page}{\pdf@addtoks{#1}{Page}}
% parameter is a name
\define@key{PDF}{PageMode}{\pdf@addtoks{#1}{PageMode}}
% parameter is a string
\define@key{PDF}{Params}{\pdf@addtoks{(#1)}{Params}}
% parameter is a array
\define@key{PDF}{Rect}{\pdf@addtoks{[#1]}{Rect}}% hash-ok
% parameter is a integer
\define@key{PDF}{SrcPg}{\pdf@addtoks{#1}{SrcPg}}
% parameter is a name
\define@key{PDF}{Subtype}{\pdf@addtoks{#1}{Subtype}}
% parameter is a string
\define@key{PDF}{Title}{\pdf@addtoks{(#1)}{Title}}
% parameter is a string
\define@key{PDF}{Unix}{\pdf@addtoks{(#1)}{Unix}}
% parameter is a string
\define@key{PDF}{UnixFile}{\pdf@addtoks{(#1)}{UnixFile}}
% parameter is an array
\define@key{PDF}{View}{\pdf@addtoks{[#1]}{View}}% hash-ok
% parameter is a string
\define@key{PDF}{WinFile}{\pdf@addtoks{(#1)}{WinFile}}
```

These are the keys used in the DOCINFO section.

```
\define@key{PDF}{Author}{\pdf@addtoks{(#1)}{Author}}
\define@key{PDF}{Creator}{\pdf@addtoks{(#1)}{Creator}}
\define@key{PDF}{CreationDate}{\pdf@addtoks{(#1)}{CreationDate}}
\define@key{PDF}{ModDate}{\pdf@addtoks{(#1)}{ModDate}}
\define@key{PDF}{Producer}{\pdf@addtoks{(#1)}{Producer}}
\define@key{PDF}{Subject}{\pdf@addtoks{(#1)}{Subject}}
\define@key{PDF}{Keywords}{\pdf@addtoks{(#1)}{Keywords}}
\define@key{PDF}{ModDate}{\pdf@addtoks{(#1)}{ModDate}}
\define@key{PDF}{Base}{\pdf@addtoks{(#1)}{Base}}
\define@key{PDF}{URI}{\pdf@addtoks{#1}{URI}}
\define@key{PDF}{Trapped}{%
  \edef\Hy@temp{#1}%
  \ifx\Hy@temp\@empty
  \else
    \pdf@addtoks{/#1}{Trapped}%
  \fi
```

```
}

⟨/pdfmarkbase⟩
⟨*pdfmark⟩
\def\Acrobatmenu#1#2{%
  \EdefEscapeName\Hy@temp@menu{#1}%
  \Hy@Acrobatmenu{#1}{#2}{%
    \pdfmark[{#2}]{%
      linktype=menu,%
      pdfmark=/ANN,%
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
      Color=\@menubordercolor,%
      Action={<</Subtype/Named/N/\Hy@temp@menu>>},%
      Subtype=/Link,%
      PDFAFlags=4%
    }%
  }%
}
```

And now for some useful examples:

```
\def\PDFNextPage{\@ifnextchar[{\PDFNextPage@}{\PDFNextPage@[]}}
\def\PDFNextPage@[#1]#2{%
  \pdfmark[{#2}]{%
    #1,%
    Border=\@pdfborder,%
    BorderStyle=\@pdfborderstyle,%
    Color=.2 .1 .5,%
    pdfmark=/ANN,%
    Subtype=/Link,%
    PDFAFlags=4,%
    Page=/Next%
  }%
}
\def\PDFPreviousPage{%
  \@ifnextchar[{\PDFPreviousPage@}{\PDFPreviousPage@[]}%
}
\def\PDFPreviousPage@[#1]#2{%
  \pdfmark[{#2}]{%
    #1,%
    Border=\@pdfborder,%
    BorderStyle=\@pdfborderstyle,%
    Color=.4 .4 .1,%
    pdfmark=/ANN,%
    Subtype=/Link,%
    PDFAFlags=4,%
    Page=/Prev%
  }%
}
\def\PDFOpen#1{%
  \pdfmark{#1,pdfmark=/DOCVIEW}%
}
```

This will only work if you use Distiller 2.1 or higher.

```
\def\hyper@linkurl#1#2{%
  \begingroup
    \Hy@pstringdef\Hy@pstringURI{#2}%
```

```
    \hyper@chars
    \leavevmode
    \pdfmark[{#1}]{%
      pdfmark=/ANN,%
      linktype=url,%
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
      Color=\@urlbordercolor,%
      Action={<<%
        /Subtype/URI%
        /URI(\Hy@pstringURI)%
        \ifHy@href@ismap
          /IsMap true%
        \fi
      >>},%
      Subtype=/Link,%
      PDFAFlags=4%
    }%
  \endgroup
}
\def\hyper@linkfile#1#2#3{%
  \begingroup
    \def\Hy@pstringF{#2}%
    \Hy@CleanupFile\Hy@pstringF
    \Hy@pstringdef\Hy@pstringF\Hy@pstringF
    \Hy@pstringdef\Hy@pstringD{#3}%
    \Hy@MakeRemoteAction
    \leavevmode
    \pdfmark[{#1}]{%
      pdfmark=/ANN,%
      Subtype=/Link,%
      PDFAFlags=4,%
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
      linktype=file,%
      Color=\@filebordercolor,%
      Action={%
        <<%
          /S/GoToR%
          \Hy@SetNewWindow
          /F(\Hy@pstringF)%
          /D%
          \ifx\\#3\\%
            [\Hy@href@page\@pdfremotestartview]%
          \else
            (\Hy@pstringD)cvn%
          \fi
          \Hy@href@nextactionraw
        >>%
      }%
    }%
  \endgroup
}
\def\@hyper@launch run:#1\\#2#3{%
  \begingroup
```

```
    \Hy@pstringdef\Hy@pstringF{#1}%
    \Hy@pstringdef\Hy@pstringP{#3}%
    \leavevmode
    \pdfmark[{#2}]{%
      pdfmark=/ANN,%
      Subtype=/Link,%
      PDFAFlags=4,%
      AcroHighlight=\@pdfhighlight,%
      Border=\@pdfborder,%
      BorderStyle=\@pdfborderstyle,%
      linktype=run,%
      Color=\@runbordercolor,%
      Action={%
        <<%
          /S/Launch%
          \Hy@SetNewWindow
          /F(\Hy@pstringF)%
          \ifx\\#3\\%
          \else
            /Win<</P(\Hy@pstringP)/F(\Hy@pstringF)>>%
          \fi
          \Hy@href@nextactionraw
        >>%
      }%
    }%
  \endgroup
}
```
⟨/pdfmark⟩

Unfortunately, some parts of the `pdfmark` PostScript code depend on vagaries of the dvi driver. We isolate here all the problems.

47.9 Rokicki's dvips

dvips thinks in 10ths of a big point, its coordinate space is resolution dependent, and its y axis starts at the top of the page. Other drivers can and will be different!

The work is done in `SDict`, because we add in some header definitions in a moment.

```
⟨*dvips⟩
\providecommand*{\XR@ext}{pdf}
\let\Hy@raisedlink\ltx@empty
\def\literalps@out#1{\special{ps:SDict begin #1 end}}%
\def\headerps@out#1{\special{! #1}}%
\input{pdfmark.def}%
\ifx\@pdfproducer\relax
  \def\@pdfproducer{dvips + Distiller}%
\fi
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
\providecommand*\@pdfview{XYZ}
\providecommand*\@pdfviewparams{ H.V}
\def\Hy@BorderArrayPatch{BorderArrayPatch}
\g@addto@macro\Hy@FirstPageHook{%
  \headerps@out{%
```

Unless I am going mad, this *appears* to be the relationship between the default coordinate system (PDF), and dvips;

```
/DvipsToPDF { .01383701 div Resolution div } def
/PDFToDvips { .01383701 mul Resolution mul } def
```

the latter's coordinates are resolution dependent, but what that .01383701 is, who knows? well, almost everyone except me, I expect…And yes, Maarten Gelderman <mgelderman@econ.vu.nl> points out that its 1/72.27 (the number of points to an inch, big points to inch is 1/72). This also suggests that the code would be more understandable (and exact) if 0.013 div would be replaced by 72.27 mul, so here we go. If this isn't right, I'll revert it.

```
12501   /DvipsToPDF{72.27 mul Resolution div} def%
12502   /PDFToDvips{72.27 div Resolution mul} def%
12503   /BPToDvips{72 div Resolution mul}def%
```

The values inside the /Boder array are not taken literally, but interpreted by ghostscript using the resolution of the dvi driver. I don't know how other distiller programs behaves in this manner.

```
12504   /BorderArrayPatch{%
12505     [exch{%
12506       dup dup type/integertype eq exch type/realtype eq or%
12507       {BPToDvips}if%
12508     }forall]%
12509   }def%
```

The rectangle around the links starts off *exactly* the size of the box; we will to make it slightly bigger, 1 point on all sides.

```
12510   /HyperBorder {1 PDFToDvips} def%
12511   /H.V {pdf@hoff pdf@voff null} def%
12512   /H.B {/Rect[pdf@llx pdf@lly pdf@urx pdf@ury]} def%
```

H.S (start of anchor, link, or rect) stores the x and y coordinates of the current point, in PDF coordinates

```
12513   /H.S {%
12514     currentpoint %
12515     HyperBorder add /pdf@lly exch def %
12516     dup DvipsToPDF 72 add /pdf@hoff exch def %
12517     HyperBorder sub /pdf@llx exch def%
12518   } def%
```

The calculation of upper left y is done without raising the point in TEX, by simply adding on the current \baselineskip to the current y. This is usually too much, so we remove a notional 2 points.

We have to see what the current baselineskip is, and convert it to the dvips coordinate system.

Argument: baselineskip in pt. The x and y coordinates of the current point, minus the baselineskip

```
12519   /H.L {%
12520     2 sub dup%
12521     /HyperBasePt exch def %
12522     PDFToDvips /HyperBaseDvips exch def %
12523     currentpoint %
12524     HyperBaseDvips sub /pdf@ury exch def%
12525     /pdf@urx exch def%
12526   } def%
12527   /H.A {%
12528     H.L %
12529 % |/pdf@voff| = the distance from the top of the page to a point
12530 % |\baselineskip| above the current point in PDF coordinates
```

```
      currentpoint exch pop %
      vsize 72 sub exch DvipsToPDF %
      HyperBasePt sub % baseline skip
      sub /pdf@voff exch def%
    } def%
    /H.R {%
      currentpoint %
      HyperBorder sub /pdf@ury exch def %
      HyperBorder add /pdf@urx exch def %
% |/pdf@voff| = the distance from the top of the page to the current point, in
% PDF coordinates
      currentpoint exch pop vsize 72 sub %
      exch DvipsToPDF sub /pdf@voff exch def%
    } def%
  }%
}
\AtBeginShipoutFirst{%
  \ifHy@setpagesize
    \begingroup
      \@ifundefined{stockwidth}{%
        \ifdim\paperwidth>\z@
          \ifdim\paperheight>\z@
            \special{papersize=\the\paperwidth,\the\paperheight}%
          \fi
        \fi
      }{%
        \ifdim\stockwidth>\z@
          \ifdim\stockheight>\z@
            \special{papersize=\the\stockwidth,\the\stockheight}%
          \fi
        \fi
      }%
    \endgroup
  \fi
  \Hy@DisableOption{setpagesize}%
}
\def\setpdflinkmargin#1{%
  \begingroup
    \setlength{\dimen@}{#1}%
    \literalps@out{%
      /HyperBorder{\strip@pt\dimen@\space PDFToDvips}def%
    }%
  \endgroup
}
```

⟨/dvips⟩

47.10 VTeX's vtexpdfmark driver

This part is derived from the dvips (many names reflect this).

The origin seems to be the same as TeX's origin, 1 in from the left and 1 in downwards from the top. The direction of the y axis is downwards, the opposite of the dvips case. Units seems to be pt or bp.

```
⟨*vtexpdfmark⟩
\providecommand*{\XR@ext}{pdf}
\let\Hy@raisedlink\ltx@empty
\def\literalps@out#1{\special{pS:#1}}%
```

```
\def\headerps@out#1{\immediate\special{pS:#1}}%
\input{pdfmark.def}%
\ifx\@pdfproducer\relax
  \ifnum\OpMode=\@ne
    \def\@pdfproducer{VTeX}%
  \else
    \def\@pdfproducer{VTeX + Distiller}%
  \fi
\fi
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
\providecommand*\@pdfview{XYZ}
\providecommand*\@pdfviewparams{ H.V}
\g@addto@macro\Hy@FirstPageHook{%
  \headerps@out{%
    /vsize {\Hy@pageheight} def%
```

The rectangle around the links starts off *exactly* the size of the box; we will to make it slightly bigger, 1 point on all sides.

```
    /HyperBorder {1} def%
    /H.V {pdf@hoff pdf@voff null} def%
    /H.B {/Rect[pdf@llx pdf@lly pdf@urx pdf@ury]} def%
```

H.S (start of anchor, link, or rect) stores the x and y coordinates of the current point, in PDF coordinates: pdf@lly $= Y_c -$ HyperBorder, pdf@hoff $= X_c + 72$, pdf@llx $= X_c -$ HyperBorder

```
    /H.S {%
      currentpoint %
      HyperBorder sub%
      /pdf@lly exch def %
      dup 72 add /pdf@hoff exch def %
      HyperBorder sub%
      /pdf@llx exch def%
    } def%
```

The x and y coordinates of the current point, minus the \baselineskip: pdf@ury $=$ $Y_c +$ HyperBasePt $+$ HyperBorder, pdf@urx $= X_c +$ HyperBorder

```
    /H.L {%
      2 sub%
      /HyperBasePt exch def %
      currentpoint %
      HyperBasePt add HyperBorder add%
      /pdf@ury exch def %
      HyperBorder add%
      /pdf@urx exch def%
    } def%
    /H.A {%
      H.L %
      currentpoint exch pop %
      vsize 72 sub exch %
      HyperBasePt add add%
      /pdf@voff exch def%
    } def%
```

pdf@ury $= Y_c +$ HyperBorder, pdf@urx $= X_c +$ HyperBorder

```
    /H.R {%
      currentpoint %
      HyperBorder add%
```

```
      /pdf@ury exch def %
      HyperBorder add%
      /pdf@urx exch def %
      currentpoint exch pop vsize 72 sub add%
      /pdf@voff exch def%
    } def%
  }%
}
\def\setpdflinkmargin#1{%
  \begingroup
    \setlength{\dimen@}{#1}%
    \literalps@out{%
      /HyperBorder{\strip@pt\dimen@}def%
    }%
  \endgroup
}
⟨/vtexpdfmark⟩
```

47.11 Textures

```
⟨*textures⟩
\providecommand*{\XR@ext}{pdf}
```

At the suggestion of Jacques Distler (distler@golem.ph.utexas.edu), try to derive a suitable driver for Textures. This was initially a copy of dvips, with some guesses about Textures behaviour. Ross Moore (ross@maths.mq.edu.au) has added modifications for better compatibility, and to support use of pdfmark.

Start by defining a macro that expands to the end-of-line character. This will be used to format the appearance of PostScript code, to enhance readability, and avoid excessively long lines which might otherwise become broken to bad places.

\Hy@ps@CR The macro \Hy@ps@CR contains the end-of-line character.

```
\begingroup
  \obeylines %
  \gdef\Hy@ps@CR{\noexpand
  }%
\endgroup %
```

Textures has two types of \special command for inserting PostScript code directly into the dvi output. The 'postscript' way preserves TeX's idea of where on the page the \special occurred, but it wraps the contents with a save–restore pair, and adjusts the user-space coordinate system for local drawing commands. The 'rawpostscript' way simply inserts code, without regard for the location on the page.

Thus, to put arbitrary PostScript coding at a fixed location requires using *both* \special constructions. It works by pushing the device-space coordinates onto the operand stack, where they can be used to transform back to the correct user-space coordinates for the whole page, within a 'rawpostscript' \special.

```
\def\literalps@out#1{%
  \special{postscript 0 0 transform}%
  \special{rawpostscript itransform moveto\Hy@ps@CR #1}%
}%
%
```

The 'prepostscript' is a 3rd kind of \special, used for inserting definitions into the dictionaries, before page-building begins. These are to be available for use on all pages.

```
\def\headerps@out#1{%
  \special{%
    prepostscript TeXdict begin\Hy@ps@CR
      #1\Hy@ps@CR
    end%
  }%
}%
%
```

To correctly support the pdfmark method, for embedding PDF definitions with .ps files in a non-intrusive way, an appropriate definition needs to be made *before* the file pdfmark.def is read. Other parameters are best set afterwards.

```
\g@addto@macro\Hy@FirstPageHook{%
  \headerps@out{%
    /betterpdfmark {%
      systemdict begin %
        dup /BP eq%
        {cleartomark gsave nulldevice []%
        {dup /EP eq%
          {cleartomark cleartomark grestore}%
          {cleartomark}%
          ifelse%
        }ifelse %
      end%
    }def\Hy@ps@CR
    ___pdfmark___ not{/pdfmark /betterpdfmark load def}if%
  }% end of \headerps@out
}% end of \AtBeginShipoutFirst
%
\input{pdfmark.def}%
%
\ifx\@pdfproducer\relax
  \def\@pdfproducer{Textures + Distiller}%
\fi
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
\providecommand*\@pdfview{XYZ}
\providecommand*\@pdfviewparams{ H.V}
%
```

These are called at the start and end of unboxed links; their job is to leave available PS variables called pdf@llx pdf@lly pdf@urx pdf@ury, which are the coordinates of the bounding rectangle of the link, and pdf@hoff pdf@voff which are the PDF page offsets. The Rect pair are called at the LL and UR corners of a box known to TEX.

```
\Hy@AtBeginDocument{%
  \headerps@out{%
```

Textures lives in normal points, I think. So conversion from one coordinate system to another involves doing nothing.

```
    /vsize {\Hy@pageheight} def%
    /DvipsToPDF {} def%
    /PDFToDvips {} def%
    /BPToDvips {} def%
    /HyperBorder  { 1 PDFToDvips } def\Hy@ps@CR
    /H.V {pdf@hoff pdf@voff null} def\Hy@ps@CR
    /H.B {/Rect[pdf@llx pdf@lly pdf@urx pdf@ury]} def\Hy@ps@CR
```

```
    /H.S {%
      currentpoint %
      HyperBorder add /pdf@lly exch def %
      dup DvipsToPDF 72 add /pdf@hoff exch def %
      HyperBorder sub /pdf@llx exch def%
    } def\Hy@ps@CR
    /H.L {%
      2 sub %
      PDFToDvips /HyperBase exch def %
      currentpoint %
      HyperBase sub /pdf@ury exch def%
      /pdf@urx exch def%
    } def\Hy@ps@CR
    /H.A {%
      H.L %
      currentpoint exch pop %
      vsize 72 sub exch DvipsToPDF %
      HyperBase sub % baseline skip
      sub /pdf@voff exch def%
    } def\Hy@ps@CR
    /H.R {%
      currentpoint %
      HyperBorder sub /pdf@ury exch def %
      HyperBorder add /pdf@urx exch def %
      currentpoint exch pop vsize 72 sub %
      exch DvipsToPDF sub /pdf@voff exch def%
    } def\Hy@ps@CR
  }%
}
\def\setpdflinkmargin#1{%
  \begingroup
    \setlength{\dimen@}{#1}%
    \literalps@out{%
      /HyperBorder{\strip@pt\dimen@\space PDFToDvips}def%
    }%
  \endgroup
}
\Hy@AtBeginDocument{%
  \ifHy@colorlinks
    \headerps@out{/PDFBorder{/Border [0 0 0]}def}%
  \fi
}
```

Textures provides built-in support for HyperTeX specials so this part combines code from `hypertex.def` with what is established by loading `pdfmark.def`, or any other driver.

```
\expandafter\let\expandafter\keepPDF@SetupDoc
  \csname PDF@SetupDoc\endcsname
\def\PDF@SetupDoc{%
  \ifx\@baseurl\@empty
  \else
    \special{html:<base href="\@baseurl">}%
  \fi
  \keepPDF@SetupDoc
}
\Hy@WrapperDef\hyper@anchor#1{%
  \Hy@SaveLastskip
```

```
  \Hy@VerboseAnchor{#1}%
  \begingroup
    \let\protect=\string
    \special{html:<a name=%
        \hyper@quote\HyperDestNameFilter{#1}\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
  \Hy@colorlink\@anchorcolor\anchor@spot\Hy@endcolorlink
  \special{html:</a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\Hy@WrapperDef\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \begingroup
    \hyper@chars
    \special{html:<a name=%
        \hyper@quote\HyperDestNameFilter{#1}\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \special{html:</a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\def\@urltype{url}
\def\hyper@linkstart#1#2{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \expandafter\Hy@colorlink\csname @#1color\endcsname
  \def\Hy@tempa{#1}%
  \ifx\Hy@tempa\@urltype
    \special{html:<a href=\hyper@quote#2\hyper@quote>}%
  \else
    \begingroup
      \hyper@chars
      \special{%
        html:<a href=%
        \hyper@quote\#\HyperDestNameFilter{#2}\hyper@quote>%
      }%
    \endgroup
  \fi
}
\def\hyper@linkend{%
  \special{html:</a>}%
  \Hy@endcolorlink
}
\def\hyper@linkfile#1#2#3{%
  \hyper@linkurl{#1}{%
    \Hy@linkfileprefix#2\ifx\\#3\\\else\##3\fi
  }%
}
\def\hyper@linkurl#1#2{%
  \leavevmode
  \ifHy@raiselinks
    \Hy@SaveSpaceFactor
```

```
    \Hy@SaveSavedSpaceFactor
    \sbox\@tempboxa{\Hy@RestoreSpaceFactor#1}%
    \Hy@RestoreSavedSpaceFactor
    \@linkdim\dp\@tempboxa
    \lower\@linkdim\hbox{%
      \hyper@chars
      \special{html:<a href=\hyper@quote#2\hyper@quote>}%
    }%
    \Hy@colorlink\@urlcolor
      \Hy@RestoreSpaceFactor
      #1\Hy@xspace@end
      \Hy@SaveSpaceFactor
      \@linkdim\ht\@tempboxa
      \advance\@linkdim by -6.5\p@
      \raise\@linkdim\hbox{\special{html:</a>}}%
    \Hy@endcolorlink
    \Hy@RestoreSpaceFactor
  \else
    \begingroup
      \hyper@chars
      \special{html:<a href=\hyper@quote#2\hyper@quote>}%
      \Hy@colorlink\@urlcolor#1\Hy@xspace@end
      \special{html:</a>}%
      \Hy@endcolorlink
    \endgroup
  \fi
}
```

Very poor implementation of `\hyper@link` without considering `#1`.

```
\def\hyper@link#1#2#3{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \hyper@linkurl{#3}{\#\HyperDestNameFilter{#2}}%
}
\def\hyper@image#1#2{%
  \begingroup
    \hyper@chars
    \special{html:<img src=\hyper@quote#1\hyper@quote>}%
  \endgroup
}
⟨/textures⟩
```

47.12 dvipsone

```
% \subsection{dvipsone driver}
% Over-ride the default setup macro in pdfmark driver to use Y\&Y
% |\special| commands.
⟨*dvipsone⟩
\providecommand*{\XR@ext}{pdf}
\let\Hy@raisedlink\ltx@empty
\providecommand*\@pdfborder{0 0 1}
\providecommand*\@pdfborderstyle{}
\def\literalps@out#1{\special{ps:#1}}%
\def\headerps@out#1{\special{headertext=#1}}%
\input{pdfmark.def}%
\ifx\@pdfproducer\relax
  \def\@pdfproducer{dvipsone + Distiller}%
\fi
\HyInfo@AddonUnsupportedtrue
```

```
\def\PDF@FinishDoc{%
  \Hy@UseMaketitleInfos
  \HyInfo@TrappedUnsupported
  \special{PDF: Keywords \@pdfkeywords}%
  \special{PDF: Title \@pdftitle}%
  \special{PDF: Creator \@pdfcreator}%
  \ifx\@pdfcreationdate\@empty
  \else
    \special{PDF: CreationDate \@pdfcreationdate}%
  \fi
  \ifx\@pdfmoddate\@empty
  \else
    \special{PDF: ModDate \@pdfmoddate}%
  \fi
  \special{PDF: Author \@pdfauthor}%
  \ifx\@pdfproducer\relax
  \else
    \special{PDF: Producer \@pdfproducer}%
  \fi
  \special{PDF: Subject \@pdfsubject}%
  \Hy@DisableOption{pdfauthor}%
  \Hy@DisableOption{pdftitle}%
  \Hy@DisableOption{pdfsubject}%
  \Hy@DisableOption{pdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@DisableOption{pdfmoddate}%
  \Hy@DisableOption{pdfproducer}%
  \Hy@DisableOption{pdfkeywords}%
  \Hy@DisableOption{pdftrapped}%
  \Hy@DisableOption{pdfinfo}%
}
\def\PDF@SetupDoc{%
  \def\Hy@temp{}%
  \ifx\@pdfstartpage\@empty
  \else
    \ifx\@pdfstartview\@empty
    \else
      \edef\Hy@temp{%
        ,Page=\@pdfstartpage
        ,View=\@pdfstartview
      }%
    \fi
  \fi
  \edef\Hy@temp{%
    \noexpand\pdfmark{%
      pdfmark=/DOCVIEW,%
      PageMode=/\@pdfpagemode
      \Hy@temp
    }%
  }%
  \Hy@temp
  \ifx\@pdfpagescrop\@empty
  \else
    \pdfmark{pdfmark=/PAGES,CropBox=\@pdfpagescrop}%
  \fi
  \edef\Hy@temp{%
    \ifHy@pdftoolbar\else /HideToolbar true\fi
```

```
    \ifHy@pdfmenubar\else /HideMenubar true\fi
    \ifHy@pdfwindowui\else /HideWindowUI true\fi
    \ifHy@pdffitwindow /FitWindow true\fi
    \ifHy@pdfcenterwindow /CenterWindow true\fi
    \ifHy@pdfdisplaydoctitle /DisplayDocTitle true\fi
    \Hy@UseNameKey{NonFullScreenPageMode}\@pdfnonfullscreenpagemode
    \Hy@UseNameKey{Direction}\@pdfdirection
    \Hy@UseNameKey{ViewArea}\@pdfviewarea
    \Hy@UseNameKey{ViewClip}\@pdfviewclip
    \Hy@UseNameKey{PrintArea}\@pdfprintarea
    \Hy@UseNameKey{PrintClip}\@pdfprintclip
    \Hy@UseNameKey{PrintScaling}\@pdfprintscaling
    \Hy@UseNameKey{Duplex}\@pdfduplex
    \ifx\@pdfpicktraybypdfsize\@empty
    \else
      /PickTrayByPDFSize \@pdfpicktraybypdfsize
    \fi
    \ifx\@pdfprintpagerange\@empty
    \else
      /PrintPageRange[\@pdfprintpagerange]%
    \fi
    \ifx\@pdfnumcopies\@empty
    \else
      /NumCopies \@pdfnumcopies
    \fi
  }%
  \Hy@pstringdef\Hy@pstringB{\@baseurl}%
  \pdfmark{%
    pdfmark=/PUT,%
    Raw={%
      \string{Catalog\string}<<%
        \ifx\Hy@temp\@empty
        \else
          /ViewerPreferences<<\Hy@temp>>%
        \fi
        \Hy@UseNameKey{PageLayout}\@pdfpagelayout
        \ifx\@pdflang\relax
        \else
          /Lang(\@pdflang)%
        \fi
        \ifx\@baseurl\@empty
        \else
          /URI<</Base(\Hy@pstringB)>>%
        \fi
      >>%
    }%
  }%
}
\providecommand*\@pdfview{XYZ}
\providecommand*\@pdfviewparams{ %
  gsave revscl currentpoint grestore %
  72 add exch pop null exch null%
}
\def\Hy@BorderArrayPatch{BorderArrayPatch}
```

These are called at the start and end of unboxed links; their job is to leave available PS variables called `pdf@llx` `pdf@lly` `pdf@urx` `pdf@ury`, which are the coordinates of the bounding rectangle of the link, and `pdf@hoff` `pdf@voff` which are the PDF

page offsets. These latter are currently not used in the dvipsone setup. The Rect pair are called at the LL and UR corners of a box known to TEX.

```
\g@addto@macro\Hy@FirstPageHook{%
  \headerps@out{%
```

dvipsone lives in scaled points; does this mean 65536 or 65781?

```
    /DvipsToPDF { 65781 div  } def%
    /PDFToDvips { 65781 mul } def%
    /BPToDvips{65781 mul}def%
    /HyperBorder  { 1 PDFToDvips } def%
    /H.B {/Rect[pdf@llx pdf@lly pdf@urx pdf@ury]} def%
```

The values inside the /Boder array are not taken literally, but interpreted by ghostscript using the resolution of the dvi driver. I don't know how other distiller programs behaves in this manner.

```
    /BorderArrayPatch{%
      [exch{%
        dup dup type/integertype eq exch type/realtype eq or%
        {BPToDvips}if%
      }forall]%
    }def%
    /H.S {%
      currentpoint %
      HyperBorder add /pdf@lly exch def %
      dup DvipsToPDF 72 add /pdf@hoff exch def %
      HyperBorder sub /pdf@llx exch def%
    } def%
    /H.L {%
      2 sub %
      PDFToDvips /HyperBase exch def %
      currentpoint %
      HyperBase sub /pdf@ury exch def%
      /pdf@urx exch def%
    } def%
    /H.A {%
      H.L %
      currentpoint exch pop %
      HyperBase sub % baseline skip
      DvipsToPDF /pdf@voff exch def%
    } def%
    /H.R {%
      currentpoint %
      HyperBorder sub /pdf@ury exch def %
      HyperBorder add /pdf@urx exch def %
      currentpoint exch pop DvipsToPDF /pdf@voff exch def%
    } def%
  }%
}
\def\setpdflinkmargin#1{%
  \begingroup
    \setlength{\dimen@}{#1}%
    \literalps@out{%
      /HyperBorder{\strip@pt\dimen@\space PDFToDvips}def%
    }%
  \endgroup
}
```

⟨/dvipsone⟩

47.13 TeX4ht

```
13022 ⟨*tex4ht⟩
13023 \providecommand*{\XR@ext}{html}
13024 \let\Hy@raisedlink\ltx@empty
13025 \@ifpackageloaded{tex4ht}{%
13026   \Hy@InfoNoLine{tex4ht is already loaded}%
13027 }{%
13028   \RequirePackage[htex4ht]{tex4ht}%
13029 }
13030 \hyperlinkfileprefix{}
13031 \let\PDF@FinishDoc\ltx@empty
13032 \def\PDF@SetupDoc{%
13033   \ifx\@baseurl\@empty
13034   \else
13035     \special{t4ht=<base href="\@baseurl">}%
13036   \fi
13037 }
13038 \Hy@WrapperDef\hyper@anchor#1{%
13039   \Hy@SaveLastskip
13040   \Hy@VerboseAnchor{#1}%
13041   \begingroup
13042     \let\protect=\string
13043     \special{t4ht=<a name=%
13044         \hyper@quote\HyperDestNameFilter{#1}\hyper@quote>}%
13045   \endgroup
13046   \Hy@activeanchortrue
13047   \Hy@colorlink\@anchorcolor\anchor@spot\Hy@endcolorlink
13048   \special{t4ht=</a>}%
13049   \Hy@activeanchorfalse
13050   \Hy@RestoreLastskip
13051 }
13052 \Hy@WrapperDef\hyper@anchorstart#1{%
13053   \Hy@SaveLastskip
13054   \Hy@VerboseAnchor{#1}%
13055   \begingroup
13056     \hyper@chars\special{t4ht=<a name=%
13057         \hyper@quote\HyperDestNameFilter{#1}\hyper@quote>}%
13058   \endgroup
13059   \Hy@activeanchortrue
13060 }
13061 \def\hyper@anchorend{%
13062   \special{t4ht=</a>}%
13063   \Hy@activeanchorfalse
13064   \Hy@RestoreLastskip
13065 }
13066 \def\@urltype{url}
13067 \def\hyper@linkstart#1#2{%
13068   \Hy@VerboseLinkStart{#1}{#2}%
13069   \expandafter\Hy@colorlink\csname @#1color\endcsname
13070   \def\Hy@tempa{#1}%
13071   \ifx\Hy@tempa\@urltype
13072     \special{t4ht=<a href=\hyper@quote#2\hyper@quote>}%
13073   \else
13074     \begingroup
13075       \hyper@chars
13076       \special{t4ht=<a href=%
13077           \hyper@quote\#\HyperDestNameFilter{#2}\hyper@quote>}%
```

```
    \endgroup
  \fi
}
\def\hyper@linkend{%
  \special{t4ht=</a>}%
  \Hy@endcolorlink
}
\def\hyper@linkfile#1#2#3{%
  \hyper@linkurl{#1}{\Hy@linkfileprefix#2\ifx\\#3\\\else\##3\fi}%
}
\def\hyper@linkurl#1#2{%
  \leavevmode
  \ifHy@raiselinks
    \Hy@SaveSpaceFactor
    \Hy@SaveSavedSpaceFactor
    \sbox\@tempboxa{\Hy@RestoreSpaceFactor#1}%
    \Hy@RestoreSavedSpaceFactor
    \@linkdim\dp\@tempboxa
    \lower\@linkdim\hbox{%
      \begingroup
        \hyper@chars
        \special{%
          t4ht=<a href=\hyper@quote#2\hyper@quote>%
        }%
      \endgroup
    }%
    \Hy@colorlink\@urlcolor
      \Hy@RestoreSpaceFactor
      #1\Hy@xspace@end
      \Hy@SaveSpaceFactor
    \Hy@endcolorlink
    \@linkdim\ht\@tempboxa
    \advance\@linkdim by -6.5\p@
    \raise\@linkdim\hbox{\special{t4ht=</a>}}%
    \Hy@RestoreSpaceFactor
  \else
    \begingroup
      \hyper@chars
      \special{t4ht=<a href=\hyper@quote#2\hyper@quote>}%
      \Hy@colorlink\@urlcolor
        #1\Hy@xspace@end
      \Hy@endcolorlink
      \special{t4ht=</a>}%
    \endgroup
  \fi
}
```

Poor implementation of \hyper@link without considering #1.

```
\def\hyper@link#1#2#3{%
  \Hy@VerboseLinkStart{#1}{#2}%
  \hyper@linkurl{#3}{\#\HyperDestNameFilter{#2}}%
}
\def\hyper@image#1#2{%
  \begingroup
    \hyper@chars
    \special{t4ht=<img src=\hyper@quote#1\hyper@quote>}%
  \endgroup
}
```

```
\let\autoref\ref
\ifx \rEfLiNK \UnDef
  \def\rEfLiNK #1#2{#2}%
\fi
\let\backref\ltx@gobble
```

Fix for tex4ht.

```
\AtBeginDocument{%
  \expandafter
  \let\expandafter\Hy@OrgMakeLabel\csname Make:Label\endcsname
  \expandafter\def\csname Make:Label\endcsname#1#2{%
    \ifhmode
      \Hy@SaveSpaceFactor
    \else
      \global\Hy@SavedSpaceFactor=1000 %
    \fi
    \Hy@OrgMakeLabel{#1}{%
      \Hy@RestoreSpaceFactor
      #2\Hy@xspace@end%
      \Hy@SaveSpaceFactor
    }%
    \Hy@RestoreSpaceFactor
  }%
}
⟨/tex4ht⟩
⟨*tex4htcfg⟩
\IfFileExists{\jobname.cfg}{\endinput}{}
\Preamble{html}
   \begin{document}%
\EndPreamble
\def\TeX{TeX}
\def\OMEGA{Omega}
\def\LaTeX{La\TeX}
\def\LaTeXe{\LaTeX2e}
\def\eTeX{e-\TeX}
\def\MF{Metafont}
\def\MP{MetaPost}
⟨/tex4htcfg⟩
```

48 Driver-specific form support

48.1 pdfmarks

```
⟨*pdfmark⟩
\long\def\@Form[#1]{%
\g@addto@macro\Hy@FirstPageHook{%
  \headerps@out{%
[%
  /_objdef{pdfDocEncoding}%
  /type/dict%
/OBJ pdfmark%
[%
  {pdfDocEncoding}%
  <<%
    /Type/Encoding%
    /Differences[%
      24/breve/caron/circumflex/dotaccent/hungarumlaut/ogonek/ring%
        /tilde %
```

```
      39/quotesingle %
      96/grave %
      128/bullet/dagger/daggerdbl/ellipsis/emdash/endash/florin%
        /fraction/guilsinglleft/guilsinglright/minus/perthousand%
        /quotedblbase/quotedblleft/quotedblright/quoteleft%
        /quoteright/quotesinglbase/trademark/fi/fl/Lslash/OE/Scaron%
        /Ydieresis/Zcaron/dotlessi/lslash/oe/scaron/zcaron %
      164/currency %
      166/brokenbar %
      168/dieresis/copyright/ordfeminine %
      172/logicalnot/.notdef/registered/macron/degree/plusminus%
        /twosuperior/threesuperior/acute/mu %
      183/periodcentered/cedilla/onesuperior/ordmasculine %
      188/onequarter/onehalf/threequarters %
      192/Agrave/Aacute/Acircumflex/Atilde/Adieresis/Aring/AE%
        /Ccedilla/Egrave/Eacute/Ecircumflex/Edieresis/Igrave%
        /Iacute/Icircumflex/Idieresis/Eth/Ntilde/Ograve/Oacute%
        /Ocircumflex/Otilde/Odieresis/multiply/Oslash/Ugrave%
        /Uacute/Ucircumflex/Udieresis/Yacute/Thorn/germandbls%
        /agrave/aacute/acircumflex/atilde/adieresis/aring/ae%
        /ccedilla/egrave/eacute/ecircumflex/edieresis/igrave%
        /iacute/icircumflex/idieresis/eth/ntilde/ograve/oacute%
        /ocircumflex/otilde/odieresis/divide/oslash/ugrave/uacute%
        /ucircumflex/udieresis/yacute/thorn/ydieresis%
    ]%
  >>%
/PUT pdfmark%
[%
   /_objdef{ZaDb}%
   /type/dict%
/OBJ pdfmark%
[%
  {ZaDb}%
  <<%
    /Type/Font%
    /Subtype/Type1%
    /Name/ZaDb%
    /BaseFont/ZapfDingbats%
  >>%
/PUT pdfmark%
[%
  /_objdef{Helv}%
  /type/dict%
/OBJ pdfmark%
[%
  {Helv}%
  <<%
    /Type/Font%
    /Subtype/Type1%
    /Name/Helv%
    /BaseFont/Helvetica%
    /Encoding{pdfDocEncoding}%
  >>%
/PUT pdfmark%
[%
  /_objdef{aform}%
  /type/dict%
```

```
/OBJ pdfmark%
[%
  /_objdef{afields}%
  /type/array%
/OBJ pdfmark%
[%
  /_objdef{corder}%
  /type/array%
/OBJ pdfmark%
{%
  [%
    /BBox[0 0 100 100]%
    /_objdef{Check}%
  /BP pdfmark %
  1 0 0 setrgbcolor%
  /ZapfDingbats 80 selectfont %
  20 20 moveto%
  (4)show%
  [/EP pdfmark%
  [%
    /BBox[0 0 100 100]%
    /_objdef{Cross}%
  /BP pdfmark %
  1 0 0 setrgbcolor%
  /ZapfDingbats 80 selectfont %
  20 20 moveto%
  (8)show%
  [/EP pdfmark%
  [%
    /BBox[0 0 250 100]%
    /_objdef{Submit}%
  /BP pdfmark %
  0.6 setgray %
  0 0 250 100 rectfill %
  1 setgray %
  2 2 moveto %
  2 98 lineto %
  248 98 lineto %
  246 96 lineto %
  4 96 lineto %
  4 4 lineto %
  fill %
  0.34 setgray %
  248 98 moveto %
  248 2 lineto %
  2 2 lineto %
  4 4 lineto %
  246 4 lineto %
  246 96 lineto %
  fill%
  /Helvetica 76 selectfont %
  0 setgray %
  8 22.5 moveto%
  (Submit)show%
  [/EP pdfmark%
  [%
    /BBox[0 0 250 100]%
```

```
    /__objdef{SubmitP}%
  /BP pdfmark %
  0.6 setgray %
  0 0 250 100 rectfill %
  0.34 setgray %
  2 2 moveto %
  2 98 lineto %
  248 98 lineto %
  246 96 lineto %
  4 96 lineto %
  4 4 lineto %
  fill %
  1 setgray %
  248 98 moveto %
  248 2 lineto %
  2 2 lineto %
  4 4 lineto %
  246 4 lineto %
  246 96 lineto %
  fill%
  /Helvetica 76 selectfont %
  0 setgray %
   10 20.5 moveto%
  (Submit)show%
  [/EP pdfmark%
} ?pdfmark%
[%
  {aform}%
  <<%
    /Fields{afields}%
    /DR<<%
      /Font<<%
        /ZaDb{ZaDb}%
        /Helv{Helv}%
      >>%
    >>%
    /DA(/Helv 10 Tf 0 g)%
    /CO{corder}%
    \ifHy@pdfa
    \else
      \ifHyField@NeedAppearances
        /NeedAppearances true%
      \fi
    \fi
  >>%
/PUT pdfmark%
[%
  {Catalog}%
  <<%
    /AcroForm{aform}%
  >>%
/PUT pdfmark%
}}%
  \kvsetkeys{Form}{#1}%
}
\let\@endForm\ltx@empty
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
```

```
  \Hy@Message{Sorry, pdfmark drivers do not support FORM gauges}%
}
\newcount\HyField@AnnotCount
\HyField@AnnotCount=\z@
\def\HyField@AdvanceAnnotCount{%
  \global\advance\HyField@AnnotCount\@ne
}
\def\HyField@TheAnnotCount{%
  \the\HyField@AnnotCount
}
\edef\Fld@pageobjref{/P\string{ThisPage\string}}
\def\HyField@AddToFields#1{%
  \pdfmark{%
    pdfmark=/APPEND,%
    Raw={%
      \string{afields\string}%
      \string{#1\HyField@TheAnnotCount\string}%
    }%
  }%
  \ifx\Fld@calculate@code\ltx@empty
  \else
    \pdfmark{%
      pdfmark=/APPEND,%
      Raw={%
        \string{corder\string}%
        \string{#1\HyField@TheAnnotCount\string}%
      }%
    }%
  \fi
}
\def\@TextField[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \let\Fld@default\ltx@empty
  \let\Fld@value\@empty
  \def\Fld@width{\DefaultWidthofText}%
  \def\Fld@height{%
    \ifFld@multiline
      \DefaultHeightofTextMultiline
    \else
      \DefaultHeightofText
    \fi
  }%
  \begingroup
    \expandafter\HyField@SetKeys\expandafter{%
      \DefaultOptionsofText,#1%
    }%
    \HyField@FlagsText
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \ifx\Fld@value\@empty\def\Fld@value{\Fld@default}\fi
    \HyField@AdvanceAnnotCount
    \LayoutTextField{#2}{%
      \leavevmode
      \Hy@escapeform\PDFForm@Text
      \pdfmark[\MakeTextField{\Fld@width}{\Fld@height}]{%
        pdfmark=/ANN,%
        objdef=text\HyField@TheAnnotCount,%
```

```
      Raw={\PDFForm@Text}%
    }%
  }%
  \HyField@AddToFields{text}%
 \endgroup
}
\def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
 \def\Fld@name{#2}%
 \let\Fld@default\relax
 \let\Fld@value\relax
 \def\Fld@width{\DefaultWidthofChoiceMenu}%
 \def\Fld@height{\DefaultHeightofChoiceMenu}%
 \begingroup
  \Fld@menulength=0 %
  \@tempdima\z@
  \@for\@curropt:=#3\do{%
   \expandafter\Fld@checkequals\@curropt==\\%
   \Hy@StepCount\Fld@menulength
   \settowidth{\@tempdimb}{\@currDisplay}%
   \ifdim\@tempdimb>\@tempdima\@tempdima\@tempdimb\fi
  }%
  \advance\@tempdima by 15\p@
  \begingroup
   \HyField@SetKeys{#1}%
  \edef\x{\endgroup
   \noexpand\expandafter
   \noexpand\HyField@SetKeys
   \noexpand\expandafter{%
    \expandafter\noexpand\csname DefaultOptionsof%
     \ifFld@radio
      Radio%
     \else
      \ifFld@combo
       \ifFld@popdown
        PopdownBox%
       \else
        ComboBox%
       \fi
      \else
       ListBox%
      \fi
     \fi
    \endcsname
   }%
  }\x
  \HyField@SetKeys{#1}%
  \ifFld@hidden\def\Fld@width{1sp}\fi
  \ifx\Fld@value\relax
   \let\Fld@value\Fld@default
  \fi
  \LayoutChoiceField{#2}{%
   \ifFld@radio
    \HyField@FlagsRadioButton
    \@@Radio{#3}%
   \else
    \begingroup
     \HyField@FlagsChoice
```

```
        \ifdim\Fld@width<\@tempdima
          \ifdim\@tempdima<1cm\@tempdima1cm\fi
          \edef\Fld@width{\the\@tempdima}%
        \fi
        \ifFld@combo
        \else
          \@tempdima=\the\Fld@menulength\Fld@charsize
          \advance\@tempdima by \Fld@borderwidth bp %
          \advance\@tempdima by \Fld@borderwidth bp %
          \edef\Fld@height{\the\@tempdima}%
        \fi
        \@@Listbox{#3}%
      \endgroup
    \fi
  }%
 \endgroup
}
\def\@@Radio#1{%
 \Fld@listcount=0 %
 \EdefEscapeName\Fld@default{\Fld@default}%
 \@for\@curropt:=#1\do{%
  \expandafter\Fld@checkequals\@curropt==\\%
  \EdefEscapeName\@currValue{\@currValue}%
  \Hy@StepCount\Fld@listcount
  \@currDisplay\space
  \Hy@escapeform\PDFForm@Radio
  \ifnum\Fld@listcount=1 %
    \HyField@AdvanceAnnotCount
  \fi
  \pdfmark[\MakeRadioField{\Fld@width}{\Fld@height}]{%
    pdfmark=/ANN,%
    objdef=\ifnum\Fld@listcount=1 radio\HyField@TheAnnotCount\fi,%
    Raw={%
      \PDFForm@Radio /AP <</N <</\@currValue\space {Check}>> >>%
    }%
  } % deliberate space between radio buttons
  \ifnum\Fld@listcount=1 %
    \HyField@AddToFields{radio}%
  \fi
 }%
}
\newcount\Fld@listcount
\def\@@Listbox#1{%
 \HyField@PDFChoices{#1}%
 \Hy@escapeform\PDFForm@List
 \HyField@AdvanceAnnotCount
 \pdfmark[\MakeChoiceField{\Fld@width}{\Fld@height}]{%
  pdfmark=/ANN,%
  objdef=list\HyField@TheAnnotCount,%
  Raw={\PDFForm@List}%
 }%
 \HyField@AddToFields{list}%
}
\def\@PushButton[#1]#2{% parameters, label
 \def\Fld@name{#2}%
 \begingroup
  \expandafter\HyField@SetKeys\expandafter{%
```

```
13526     \DefaultOptionsofPushButton,#1%
13527   }%
13528   \ifHy@pdfa
13529     \Hy@Error{%
13530       PDF/A: Push button with JavaScript is prohibited%
13531     }\@ehc
13532     \LayoutPushButtonField{%
13533       \leavevmode
13534       \MakeButtonField{#2}%
13535     }%
13536   \else
13537     \HyField@FlagsPushButton
13538     \ifFld@hidden\def\Fld@width{1sp}\fi
13539     \HyField@AdvanceAnnotCount
13540     \LayoutPushButtonField{%
13541       \leavevmode
13542       \Hy@escapeform\PDFForm@Push
13543       \pdfmark[\MakeButtonField{#2}]{%
13544         pdfmark=/ANN,%
13545         objdef=push\HyField@TheAnnotCount,%
13546         Raw={\PDFForm@Push}%
13547       }%
13548     }%
13549     \HyField@AddToFields{push}%
13550   \fi
13551 \endgroup
13552 }
13553 \def\@Submit[#1]#2{%
13554   \def\Fld@width{\DefaultWidthofSubmit}%
13555   \def\Fld@height{\DefaultHeightofSubmit}%
13556   \begingroup
13557     \expandafter\HyField@SetKeys\expandafter{%
13558       \DefaultOptionsofSubmit,#1%
13559     }%
13560     \HyField@FlagsPushButton
13561     \HyField@FlagsSubmit
13562     \ifFld@hidden\def\Fld@width{1sp}\fi
13563     \Hy@escapeform\PDFForm@Submit
13564     \HyField@AdvanceAnnotCount
13565     \pdfmark[\MakeButtonField{#2}]{%
13566       pdfmark=/ANN,%
13567       objdef=submit\HyField@TheAnnotCount,%
13568       Raw={\PDFForm@Submit /AP<</N{Submit}/D{SubmitP}>>}%
13569     }%
13570     \HyField@AddToFields{submit}%
13571   \endgroup
13572 }
13573 \def\@Reset[#1]#2{%
13574   \def\Fld@width{\DefaultWidthofReset}%
13575   \def\Fld@height{\DefaultHeightofReset}%
13576   \begingroup
13577     \expandafter\HyField@SetKeys\expandafter{%
13578       \DefaultOptionsofReset,#1%
13579     }%
13580     \leavevmode
13581     \ifHy@pdfa
13582       \Hy@Error{%
```

```
      PDF/A: Reset action is prohibited%
    }\@ehc
    \MakeButtonField{#2}%
  \else
    \HyField@FlagsPushButton
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \Hy@escapeform\PDFForm@Reset
    \HyField@AdvanceAnnotCount
    \pdfmark[\MakeButtonField{#2}]{%
      pdfmark=/ANN,%
      objdef=reset\HyField@TheAnnotCount,%
      Raw={\PDFForm@Reset}%
    }%
    \HyField@AddToFields{reset}%
  \fi
 \endgroup
}%
\def\@CheckBox[#1]#2{% parameters, label
 \def\Fld@name{#2}%
 \def\Fld@default{0}%
 \begingroup
  \def\Fld@width{\DefaultWidthofCheckBox}%
  \def\Fld@height{\DefaultHeightofCheckBox}%
  \expandafter\HyField@SetKeys\expandafter{%
    \DefaultOptionsofCheckBox,#1%
  }%
  \HyField@FlagsCheckBox
  \ifFld@hidden\def\Fld@width{1sp}\fi
  \HyField@AdvanceAnnotCount
  \LayoutCheckField{#2}{%
    \leavevmode
    \Hy@escapeform\PDFForm@Check
    \pdfmark[\MakeCheckField{\Fld@width}{\Fld@height}]{%
      pdfmark=/ANN,%
      objdef=check\HyField@TheAnnotCount,%
      Raw={\PDFForm@Check}%
    }%
  }%
  \HyField@AddToFields{check}%
 \endgroup
}
⟨/pdfmark⟩
```

48.2 HyperTeX

```
⟨*hypertex⟩
\def\@Form[#1]{%
 \Hy@Message{Sorry, HyperTeX does not support FORMs}%
}
\let\@endForm\ltx@empty
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
 \Hy@Message{Sorry, HyperTeX does not support FORM gauges}%
}
\def\@TextField[#1]#2{% parameters, label
 \Hy@Message{Sorry, HyperTeX does not support FORM text fields}%
}
\def\@CheckBox[#1]#2{% parameters, label
 \Hy@Message{Sorry, HyperTeX does not support FORM checkboxes}%
```

```
}
\def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
  \Hy@Message{Sorry, HyperTeX does not support FORM choice menus}%
}
\def\@PushButton[#1]#2{% parameters, label
  \Hy@Message{Sorry, HyperTeX does not support FORM pushbuttons}%
}
\def\@Reset[#1]#2{%
  \Hy@Message{Sorry, HyperTeX does not support FORMs}%
}
\def\@Submit[#1]#2{%
  \Hy@Message{Sorry, HyperTeX does not support FORMs}%
}
⟨/hypertex⟩
```

48.3 TeX4ht

```
⟨*tex4ht⟩
\def\@Form[#1]{%
  \kvsetkeys{Form}{#1}%
  \HCode{<form action="\Form@action" method="\Form@method">}%
}
\def\@endForm{\HCode{</form>}}
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
  \Hy@Message{Sorry, TeX4ht does not support gauges}%
}
\def\@TextField[#1]#2{% parameters, label
  \let\Hy@reserved@a\@empty
  \def\Fld@name{#2}%
  \let\Fld@default\ltx@empty
  \bgroup
    \Field@toks={ }%
    \kvsetkeys{Field}{#1}%
    \HCode{<label for="\Fld@name">#2</label>}%
    \ifFld@password
      \@@PasswordField
    \else
      \@@TextField
    \fi
  \egroup
}
\def\@@PasswordField{%
  \HCode{%
    <input type="password" %
     id="\Fld@name" %
     name="\Fld@name" %
     \ifFld@hidden type="hidden" \fi
     value="\Fld@default" %
     \the\Field@toks
    >%
  }%
}
\def\@@TextField{%
  \ifFld@multiline
    \HCode{<textarea %
      \ifFld@readonly readonly \fi
      id="\Fld@name" %
      name="\Fld@name" %
```

```
    \ifFld@hidden type="hidden" \fi
    \the\Field@toks>%
  }%
  \Fld@default
  \HCode{</textarea>}%
 \else
  \HCode{<input type="textbox" %
    \ifFld@readonly readonly \fi
    id="\Fld@name" %
    name="\Fld@name" %
    \ifFld@hidden type="hidden" \fi
    value="\Fld@default" %
    \the\Field@toks>%
  }%
 \fi
}
\def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
 \def\Fld@name{#2}%
 \let\Fld@default\ltx@empty
 \let\Hy@reserved@a\relax
 \begingroup
  \expandafter\Fld@findlength#3\\%
  \Field@toks={ }%
  \kvsetkeys{Field}{#1}%
  #2%
  \ifFld@radio
    \expandafter\@@Radio#3\\%
  \else
    \expandafter\@@Menu#3\\%
  \fi
 \endgroup
}
\def\Fld@findlength#1\\{%
 \Fld@menulength=0 %
 \@for\@curropt:=#1\do{\Hy@StepCount\Fld@menulength}%
}
\def\@@Menu#1\\{%
 \HCode{<select size="\the\Fld@menulength" %
   name="\Fld@name" %
   \the\Field@toks>%
 }%
 \@for\@curropt:=#1\do{%
  \expandafter\Fld@checkequals\@curropt==\\%
  \HCode{<option %
    \ifx\@curropt\Fld@default selected \fi
    value="\@currValue">\@currDisplay</option>%
  }%
 }%
 \HCode{</select>}%
}
\def\@@Radio#1\\{%
 \@for\@curropt:=#1\do{%
  \expandafter\Fld@checkequals\@curropt==\\%
  \HCode{<input type="radio" %
    \ifx\@curropt\Fld@default checked \fi
    name="\Fld@name" %
    value="\@currValue" %
```

```
      \the\Field@toks>%
    }%
    \@currDisplay
  }%
}
\def\@PushButton[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \bgroup
    \Field@toks={ }%
    \kvsetkeys{Field}{#1}%
    \HCode{<input type="button" %
      name="\Fld@name" %
      value="#2" %
      \the\Field@toks>%
    }%
    \HCode{</button>}%
  \egroup
}
\def\@Submit[#1]#2{%
  \HCode{<button type="submit">#2</button>}%
}
\def\@Reset[#1]#2{%
  \HCode{<button type="reset">#2</button>}%
}
\def\@CheckBox[#1]#2{% parameters, label
  \let\Hy@reserved@a\@empty
  \def\Fld@name{#2}%
  \def\Fld@default{0}%
  \bgroup
    \Field@toks={ }%
    \kvsetkeys{Field}{#1}%
    \HCode{<input type="checkbox" %
      \ifFld@checked checked \fi
      \ifFld@disabled disabled \fi
      \ifFld@readonly readonly \fi
      name="\Fld@name" %
      \ifFld@hidden type="hidden" \fi
      value="\Fld@default" %
      \the\Field@toks>%
      #2%
    }%
  \egroup
}
⟨/tex4ht⟩
```

48.4 pdfTeX

```
⟨*pdftex⟩
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
  \Hy@Message{Sorry, pdftex does not support FORM gauges}%
}
\def\MakeFieldObject#1#2{\sbox0{#1}%
  \immediate\pdfxform0 %
  \expandafter\edef\csname #2Object\endcsname{%
    \the\pdflastxform\space 0 R%
  }%
% \hbox to 0pt{\hskip-\maxdimen{\pdfrefxform \the\pdflastxform}}%
}%
```

```
\let\HyField@afields\ltx@empty
\let\HyField@cofields\ltx@empty
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname pdflastlink\endcsname\relax
  \let\HyField@AddToFields\relax
  \PackageInfo{hyperref}{%
    You need pdfTeX 1.40.0 for setting the /Fields entry.%
    \MessageBreak
    Adobe Reader/Acrobat accepts an empty /Field array,%
    \MessageBreak
    but other PDF viewers might complain%
  }%
\else
  \let\HyField@AuxAddToFields\ltx@gobble
  \let\HyField@AuxAddToCoFields\ltx@gobbletwo
  \def\HyField@AfterAuxOpen{\Hy@AtBeginDocument}%
```

Insertion sort for calculation field list. In case of equal sort keys (for example, if 'calculatesortkey' is not used at all) the keys keep document calling order.

```
  \def\HyField@ABD@AuxAddToCoFields#1#2{%
    \begingroup
      \Hy@safe@activestrue
      \let\ltx@secondoftwo\relax
      \ifx\HyField@cofields\ltx@empty
        \xdef\HyField@cofields{%
          \ltx@secondoftwo{#1}{ #2 0 R}%
        }%
      \else
        \let\ltx@secondoftwo\relax
        \def\HyField@AddCoField##1##2##3{%
          \ifx##1\ltx@empty
            \ltx@secondoftwo{#1}{ #2 0 R}%
            \expandafter\ltx@gobble
          \else
            \ifnum\pdfstrcmp{##2}{#1}>\ltx@zero
              \ltx@secondoftwo{#1}{ #2 0 R}%
              \ltx@secondoftwo{##2}{##3}%
              \expandafter\expandafter\expandafter\ltx@gobble
            \else
              \ltx@secondoftwo{##2}{##3}%
            \fi
          \fi
          \HyField@AddCoField
        }%
        \xdef\HyField@cofields{%
          \expandafter\HyField@AddCoField
          \HyField@cofields\ltx@empty\ltx@empty\ltx@empty
        }%
      \fi
    \endgroup
  }%
  \Hy@AtBeginDocument{%
    \if@filesw
      \immediate\write\@mainaux{%
        \string\providecommand\string\HyField@AuxAddToFields[1]{}%
      }%
      \immediate\write\@mainaux{%
        \string\providecommand\string\HyField@AuxAddToCoFields[2]{}%
```

```
    }%
  \fi
  \let\HyField@AfterAuxOpen\@firstofone
  \def\HyField@AuxAddToFields#1{%
    \xdef\HyField@afields{%
      \ifx\HyField@afields\@empty
      \else
        \HyField@afields
        \space
      \fi
      #1 0 R%
    }%
  }%
  \let\HyField@AuxAddToCoFields\HyField@ABD@AuxAddToCoFields
}%
\def\HyField@AddToFields{%
  \expandafter\HyField@@AddToFields\expandafter{%
    \the\pdflastlink
  }%
  \ifx\Fld@calculate@code\ltx@empty
  \else
    \begingroup
      \Hy@safe@activestrue
      \edef\Hy@temp{%
        \endgroup
        \if@filesw
          \write\@mainaux{%
            \string\HyField@AuxAddToCoFields{%
              \Fld@calculate@sortkey
            }{%
              \the\pdflastlink
            }%
          }%
        \fi
      }%
    \Hy@temp
  \fi
}%
\def\HyField@@AddToFields#1{%
  \HyField@AfterAuxOpen{%
    \if@filesw
      \write\@mainaux{%
        \string\HyField@AuxAddToFields{#1}%
      }%
    \fi
  }%
}%
\fi
\def\@Form[#1]{%
  \@ifundefined{textcolor}{\let\textcolor\@gobble}{}%
  \kvsetkeys{Form}{#1}%
  \pdf@ifdraftmode{}{%
    \Hy@FormObjects
    \ifnum\pdftexversion>13 %
      \pdfrefobj\OBJ@pdfdocencoding
      \pdfrefobj\OBJ@ZaDb
      \pdfrefobj\OBJ@Helv
```

```
    \fi
    \AtVeryEndDocument{%
      \immediate\pdfobj{%
        <<%
          /Fields[\HyField@afields]%
          \ifx\HyField@cofields\ltx@empty
          \else
            /CO[\romannumeral-`\Q\HyField@cofields]%
          \fi
          /DR<<%
            /Font<<%
              /ZaDb \OBJ@ZaDb\space 0 R%
              /Helv \OBJ@Helv\space 0 R%
            >>%
          >>%
          /DA(/Helv 10 Tf 0 g)%
          \ifHy@pdfa
          \else
            \ifHyField@NeedAppearances
              /NeedAppearances true%
            \fi
          \fi
        >>%
      }%
      \edef\OBJ@acroform{\the\pdflastobj}%
      \pdfcatalog{/AcroForm \OBJ@acroform\space 0 R}%
    }%
  }%
  \MakeFieldObject{%
```

Same as `\ding{123}` of package pifont.

```
    \begingroup
      \fontfamily{pzd}%
      \fontencoding{U}%
      \fontseries{m}%
      \fontshape{n}%
      \selectfont
      \char123 %
    \endgroup
  }{Ding}%
  \MakeFieldObject{%
    \fbox{\textcolor{yellow}{\textsf{Submit}}}%
  }{Submit}%
  \MakeFieldObject{%
    \fbox{\textcolor{yellow}{\textsf{SubmitP}}}%
  }{SubmitP}%
}
\let\@endForm\ltx@empty
\let\HyAnn@AbsPageLabel\ltx@empty
\let\Fld@pageobjref\ltx@empty
\ltx@IfUndefined{pdfpageref}{%
}{%
  \ltx@ifpackageloaded{zref-abspage}{%
    \newcount\HyAnn@Count
    \HyAnn@Count=\ltx@zero
    \def\HyAnn@AbsPageLabel{%
      \global\advance\HyAnn@Count by\ltx@one
      \zref@labelbyprops{HyAnn@\the\HyAnn@Count}{abspage}%
```

```
      \zref@refused{HyAnn@\the\HyAnn@Count}%
    }%
    \def\Fld@pageobjref{%
      \zref@ifrefundefined{HyAnn@\the\HyAnn@Count}{%
      }{%
        \zref@ifrefcontainsprop{HyAnn@\the\HyAnn@Count}{abspage}{%
          /P \pdfpageref
          \zref@extractdefault{HyAnn@\the\HyAnn@Count}{abspage}{1} %
          \space 0 R%
        }{%
        }%
      }%
    }%
  }{%
  }%
}
\def\@TextField[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \let\Fld@default\ltx@empty
  \let\Fld@value\@empty
  \def\Fld@width{\DefaultWidthofText}%
  \def\Fld@height{%
    \ifFld@multiline
      \DefaultHeightofTextMultiline
    \else
      \DefaultHeightofText
    \fi
  }%
  \begingroup
    \expandafter\HyField@SetKeys\expandafter{%
      \DefaultOptionsofText,#1%
    }%
    \PDFForm@Name
    \HyField@FlagsText
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \ifx\Fld@value\@empty\def\Fld@value{\Fld@default}\fi
    \LayoutTextField{#2}{%
      \leavevmode
      \HyAnn@AbsPageLabel
      \Hy@escapeform\PDFForm@Text
      \pdfstartlink user {\PDFForm@Text}\relax
      \MakeTextField{\Fld@width}{\Fld@height}\pdfendlink
      \HyField@AddToFields
    }%
  \endgroup
}
\def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
  \def\Fld@name{#2}%
  \let\Fld@default\relax
  \let\Fld@value\relax
  \def\Fld@width{\DefaultWidthofChoiceMenu}%
  \def\Fld@height{\DefaultHeightofChoiceMenu}%
  \begingroup
    \Fld@menulength=0 %
    \@tempdima\z@
    \@for\@curropt:=#3\do{%
      \expandafter\Fld@checkequals\@curropt==\\%
```

```
    \Hy@StepCount\Fld@menulength
    \settowidth{\@tempdimb}{\@currDisplay}%
    \ifdim\@tempdimb>\@tempdima\@tempdima\@tempdimb\fi
  }%
  \advance\@tempdima by 15\p@
  \begingroup
    \HyField@SetKeys{#1}%
  \edef\x{\endgroup
    \noexpand\expandafter
    \noexpand\HyField@SetKeys
    \noexpand\expandafter{%
      \expandafter\noexpand\csname DefaultOptionsof%
        \ifFld@radio
          Radio%
        \else
          \ifFld@combo
            \ifFld@popdown
              PopdownBox%
            \else
              ComboBox%
            \fi
          \else
            ListBox%
          \fi
        \fi
      \endcsname
    }%
  }\x
  \HyField@SetKeys{#1}%
  \PDFForm@Name
  \ifFld@hidden\def\Fld@width{1sp}\fi
  \ifx\Fld@value\relax
    \let\Fld@value\Fld@default
  \fi
  \LayoutChoiceField{#2}{%
    \ifFld@radio
      \HyField@FlagsRadioButton
      \@@Radio{#3}%
    \else
      \begingroup
        \HyField@FlagsChoice
        \ifdim\Fld@width<\@tempdima
          \ifdim\@tempdima<1cm\@tempdima1cm\fi
          \edef\Fld@width{\the\@tempdima}%
        \fi
        \ifFld@combo
        \else
          \@tempdima=\the\Fld@menulength\Fld@charsize
          \advance\@tempdima by \Fld@borderwidth bp %
          \advance\@tempdima by \Fld@borderwidth bp %
          \edef\Fld@height{\the\@tempdima}%
        \fi
        \@@Listbox{#3}%
      \endgroup
    \fi
  }%
\endgroup
```

```
}
\def\@@Radio#1{%
  \Fld@listcount=0 %
  \EdefEscapeName\Fld@default{\Fld@default}%
  \@for\@curropt:=#1\do{%
    \expandafter\Fld@checkequals\@curropt==\\%
    \EdefEscapeName\@currValue{\@currValue}%
    \Hy@StepCount\Fld@listcount
    \@currDisplay\space
    \leavevmode
    \HyAnn@AbsPageLabel
    \Hy@escapeform\PDFForm@Radio
    \pdfstartlink user {%
      \PDFForm@Radio
      /AP<<%
        /N<<%
```

Laurent.Guillope@math.univ-nantes.fr (Laurent Guillope) persuades me that this was wrong: `/\Fld@name\the\Fld@listcount`. But I leave it here to remind me that it is untested.

```
          /\@currValue\space \DingObject
        >>%
      >>%
    }%
    \relax
    \MakeRadioField{\Fld@width}{\Fld@height}\pdfendlink
    \ifnum\Fld@listcount=1 %
      \HyField@AddToFields
    \fi
    \space % deliberate space between radio buttons
  }%
}
\newcount\Fld@listcount
\def\@@Listbox#1{%
  \HyField@PDFChoices{#1}%
  \leavevmode
  \HyAnn@AbsPageLabel
  \Hy@escapeform\PDFForm@List
  \pdfstartlink user {\PDFForm@List}\relax
  \MakeChoiceField{\Fld@width}{\Fld@height}%
  \pdfendlink
  \HyField@AddToFields
}
\def\@PushButton[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \begingroup
    \expandafter\HyField@SetKeys\expandafter{%
      \DefaultOptionsofPushButton,#1%
    }%
    \PDFForm@Name
    \ifHy@pdfa
      \Hy@Error{%
        PDF/A: Push button with JavaScript is prohibited%
      }\@ehc
      \LayoutPushButtonField{%
        \leavevmode
        \MakeButtonField{#2}%
      }%
```

```
    \else
      \HyField@FlagsPushButton
      \ifFld@hidden\def\Fld@width{1sp}\fi
      \LayoutPushButtonField{%
        \leavevmode
        \HyAnn@AbsPageLabel
        \Hy@escapeform\PDFForm@Push
        \pdfstartlink user {\PDFForm@Push}\relax
        \MakeButtonField{#2}%
        \pdfendlink
        \HyField@AddToFields
      }%
    \fi
  \endgroup
}
\def\@Submit[#1]#2{%
  \def\Fld@width{\DefaultWidthofSubmit}%
  \def\Fld@height{\DefaultHeightofSubmit}%
  \begingroup
    \expandafter\HyField@SetKeys\expandafter{%
      \DefaultOptionsofSubmit,#1%
    }%
    \HyField@FlagsPushButton
    \HyField@FlagsSubmit
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \leavevmode
    \HyAnn@AbsPageLabel
    \Hy@escapeform\PDFForm@Submit
    \pdfstartlink user {%
      \PDFForm@Submit
      /AP<</N \SubmitObject/D \SubmitPObject>>%
    }%
    \relax
    \MakeButtonField{#2}%
    \pdfendlink
    \HyField@AddToFields
  \endgroup
}
\def\@Reset[#1]#2{%
  \def\Fld@width{\DefaultWidthofReset}%
  \def\Fld@height{\DefaultHeightofReset}%
  \begingroup
    \expandafter\HyField@SetKeys\expandafter{%
      \DefaultOptionsofReset,#1%
    }%
    \leavevmode
    \ifHy@pdfa
      \Hy@Error{%
        PDF/A: Reset action is prohibited%
      }\@ehc
      \MakeButtonField{#2}%
    \else
      \HyField@FlagsPushButton
      \ifFld@hidden\def\Fld@width{1sp}\fi
      \HyAnn@AbsPageLabel
      \Hy@escapeform\PDFForm@Reset
      \pdfstartlink user {\PDFForm@Reset}\relax
```

```
      \MakeButtonField{#2}%
      \pdfendlink
      \HyField@AddToFields
    \fi
  \endgroup
}
\def\@CheckBox[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \def\Fld@default{0}%
  \begingroup
    \def\Fld@width{\DefaultWidthofCheckBox}%
    \def\Fld@height{\DefaultHeightofCheckBox}%
    \expandafter\HyField@SetKeys\expandafter{%
      \DefaultOptionsofCheckBox,#1%
    }%
    \PDFForm@Name
    \HyField@FlagsCheckBox
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \LayoutCheckField{#2}{%
      \leavevmode
      \HyAnn@AbsPageLabel
      \Hy@escapeform\PDFForm@Check
      \pdfstartlink user {\PDFForm@Check}\relax
      \MakeCheckField{\Fld@width}{\Fld@height}%
      \pdfendlink
      \HyField@AddToFields
    }%
  \endgroup
}
\def\Hy@FormObjects{%
  \pdfobj {%
    <<%
      /Type/Encoding%
      /Differences[%
        24/breve/caron/circumflex/dotaccent/hungarumlaut/ogonek%
          /ring/tilde %
        39/quotesingle %
        96/grave %
        128/bullet/dagger/daggerdbl/ellipsis/emdash/endash/florin%
          /fraction/guilsinglleft/guilsinglright/minus/perthousand%
          /quotedblbase/quotedblleft/quotedblright/quoteleft%
          /quoteright/quotesinglbase/trademark/fi/fl/Lslash/OE%
          /Scaron/Ydieresis/Zcaron/dotlessi/lslash/oe/scaron/zcaron %
        164/currency %
        166/brokenbar %
        168/dieresis/copyright/ordfeminine %
        172/logicalnot/.notdef/registered/macron/degree/plusminus%
          /twosuperior/threesuperior/acute/mu %
        183/periodcentered/cedilla/onesuperior/ordmasculine %
        188/onequarter/onehalf/threequarters %
        192/Agrave/Aacute/Acircumflex/Atilde/Adieresis/Aring/AE%
          /Ccedilla/Egrave/Eacute/Ecircumflex/Edieresis/Igrave%
          /Iacute/Icircumflex/Idieresis/Eth/Ntilde/Ograve/Oacute%
          /Ocircumflex/Otilde/Odieresis/multiply/Oslash/Ugrave%
          /Uacute/Ucircumflex/Udieresis/Yacute/Thorn/germandbls%
          /agrave/aacute/acircumflex/atilde/adieresis/aring/ae%
          /ccedilla/egrave/eacute/ecircumflex/edieresis/igrave%
```

```
      /iacute/icircumflex/idieresis/eth/ntilde/ograve/oacute%
      /ocircumflex/otilde/odieresis/divide/oslash/ugrave%
      /uacute/ucircumflex/udieresis/yacute/thorn/ydieresis%
    ]%
  >>%
}%
\xdef\OBJ@pdfdocencoding{\the\pdflastobj}%
\pdfobj{%
  <<%
    /Type/Font%
    /Subtype/Type1%
    /Name/ZaDb%
    /BaseFont/ZapfDingbats%
  >>%
}%
\xdef\OBJ@ZaDb{\the\pdflastobj}%
\pdfobj{%
  <<%
    /Type/Font%
    /Subtype/Type1%
    /Name/Helv%
    /BaseFont/Helvetica%
    /Encoding \OBJ@pdfdocencoding\space 0 R%
  >>%
}%
\xdef\OBJ@Helv{\the\pdflastobj}%
\global\let\Hy@FormObjects\relax
}
```
⟨/pdftex⟩

48.5 dvipdfm, xetex

D. P. Story adapted the pdfTEX forms part for dvipdfm, of which version 0.12.7b or higher is required because of a bug.

⟨*dvipdfm | xetex⟩

\@Gauge

```
\def\@Gauge[#1]#2#3#4{% parameters, label, minimum, maximum
  \Hy@Message{Sorry, dvipdfm/XeTeX does not support FORM gauges}%
}
```

\@Form

```
\def\@Form[#1]{%
  \@ifundefined{textcolor}{\let\textcolor\@gobble}{}%
  \kvsetkeys{Form}{#1}%
  \Hy@FormObjects
  \@pdfm@mark{obj @afields []}%
  \@pdfm@mark{obj @corder []}%
  \@pdfm@mark{%
    obj @aform <<%
      /Fields @afields%
      /DR<<%
        /Font<<%
          /ZaDb @OBJZaDb%
          /Helv @OBJHelv%
        >>%
      >>%
      /DA(/Helv 10 Tf 0 g)%
```

```
      /CO @corder%
      \ifHy@pdfa
      \else
        \ifHyField@NeedAppearances
          /NeedAppearances true%
        \fi
      \fi
    >>%
  }%
  \@pdfm@mark{put @catalog <</AcroForm @aform>>}%
}
```

\@endForm

```
\let\@endForm\ltx@empty
```

\dvipdfm@setdim `\dvipdfm@setdim` sets dimensions for ann using `\pdfm@box`.

```
\def\dvipdfm@setdim{%
  height \the\ht\pdfm@box\space
  width  \the\wd\pdfm@box\space
  depth  \the\dp\pdfm@box\space
}
```

\HyField@AnnotCount

```
\newcount\HyField@AnnotCount
\HyField@AnnotCount=\z@
```

\HyField@AdvanceAnnotCount

```
\def\HyField@AdvanceAnnotCount{%
  \global\advance\HyField@AnnotCount\@ne
}
```

\HyField@TheAnnotCount

```
\def\HyField@TheAnnotCount{%
  \the\HyField@AnnotCount
}
```

\Fld@pageobjref

```
\def\Fld@pageobjref{/P @thispage}%
```

\HyField@AddToFields

```
\def\HyField@AddToFields#1{%
  \@pdfm@mark{put @afields @#1\HyField@TheAnnotCount}%
  \ifx\Fld@calculate@code\ltx@empty
  \else
    \@pdfm@mark{put @corder @#1\HyField@TheAnnotCount}%
  \fi
}
```

\@TextField

```
\def\@TextField[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \let\Fld@default\ltx@empty
  \let\Fld@value\@empty
  \def\Fld@width{\DefaultWidthofText}%
  \def\Fld@height{%
    \ifFld@multiline
```

```
14344      \DefaultHeightofTextMultiline
14345    \else
14346      \DefaultHeightofText
14347    \fi
14348  }%
14349  \begingroup
14350    \expandafter\HyField@SetKeys\expandafter{%
14351      \DefaultOptionsofText,#1%
14352    }%
14353    \PDFForm@Name
14354    \HyField@FlagsText
14355    \ifFld@hidden\def\Fld@width{1sp}\fi
14356    \ifx\Fld@value\@empty\def\Fld@value{\Fld@default}\fi
14357    \setbox\pdfm@box=\hbox{%
14358      \MakeTextField{\Fld@width}{\Fld@height}%
14359    }%
14360    \HyField@AdvanceAnnotCount
14361    \LayoutTextField{#2}{%
14362      \leavevmode
14363      \Hy@escapeform\PDFForm@Text
14364      \@pdfm@mark{%
14365        ann @text\HyField@TheAnnotCount\space
14366        \dvipdfm@setdim << \PDFForm@Text >>%
14367      }%
14368    }%
14369    \unhbox\pdfm@box
14370    \HyField@AddToFields{text}%
14371    % record in @afields array
14372  \endgroup
14373 }
```

\@ChoiceMenu

```
14374 \def\@ChoiceMenu[#1]#2#3{% parameters, label, choices
14375  \def\Fld@name{#2}%
14376  \let\Fld@default\relax
14377  \let\Fld@value\relax
14378  \def\Fld@width{\DefaultWidthofChoiceMenu}%
14379  \def\Fld@height{\DefaultHeightofChoiceMenu}%
14380  \begingroup
14381    \Fld@menulength=0 %
14382    \@tempdima\z@
14383    \@for\@curropt:=#3\do{%
14384      \expandafter\Fld@checkequals\@curropt==\\%
14385      \Hy@StepCount\Fld@menulength
14386      \settowidth{\@tempdimb}{\@currDisplay}%
14387      \ifdim\@tempdimb>\@tempdima\@tempdima\@tempdimb\fi
14388    }%
14389    \advance\@tempdima by 15\p@
14390    \begingroup
14391      \HyField@SetKeys{#1}%
14392    \edef\x{\endgroup
14393      \noexpand\expandafter
14394      \noexpand\HyField@SetKeys
14395      \noexpand\expandafter{%
14396        \expandafter\noexpand\csname DefaultOptionsof%
14397          \ifFld@radio
14398            Radio%
14399          \else
```

```
          \ifFld@combo
            \ifFld@popdown
              PopdownBox%
            \else
              ComboBox%
            \fi
          \else
            ListBox%
          \fi
        \fi
      \endcsname
    }%
  }\x
  \HyField@SetKeys{#1}%
  \PDFForm@Name
  \ifFld@hidden\def\Fld@width{1sp}\fi
  \ifx\Fld@value\relax
    \let\Fld@value\Fld@default
  \fi
  \LayoutChoiceField{#2}{%
    \ifFld@radio
      \HyField@FlagsRadioButton
      \@@Radio{#3}%
    \else
      \begingroup
        \HyField@FlagsChoice
        \ifdim\Fld@width<\@tempdima
          \ifdim\@tempdima<1cm\@tempdima1cm\fi
          \edef\Fld@width{\the\@tempdima}%
        \fi
        \ifFld@combo
        \else
          \@tempdima=\the\Fld@menulength\Fld@charsize
          \advance\@tempdima by \Fld@borderwidth bp %
          \advance\@tempdima by \Fld@borderwidth bp %
          \edef\Fld@height{\the\@tempdima}%
        \fi
        \@@Listbox{#3}%
      \endgroup
    \fi
  }%
 \endgroup
}
```

\@@Radio

```
\def\@@Radio#1{%
  \Fld@listcount=0 %
  \EdefEscapeName\Fld@default{\Fld@default}%
  \setbox\pdfm@box=\hbox{%
    \MakeRadioField{\Fld@width}{\Fld@height}%
  }%
  \@for\@curropt:=#1\do{%
    \expandafter\Fld@checkequals\@curropt==\\%
    \EdefEscapeName\@currValue{\@currValue}%
    \Hy@StepCount\Fld@listcount
    \@currDisplay\space
    \leavevmode
    \Hy@escapeform\PDFForm@Radio
```

```
    \ifnum\Fld@listcount=1 %
      \HyField@AdvanceAnnotCount
    \fi
    \@pdfm@mark{%
      ann %
      \ifnum\Fld@listcount=1 %
        @radio\HyField@TheAnnotCount%
        \space
      \fi
      \dvipdfm@setdim
      <<%
        \PDFForm@Radio
        /AP<</N<</\@currValue /null>>>>%
      >>%
    }%
    \unhcopy\pdfm@box\space% deliberate space between radio buttons
    \ifnum\Fld@listcount=1 %
      \HyField@AddToFields{radio}%
    \fi
  }%
}
```

\Fld@listcount

```
\newcount\Fld@listcount
```

\@@Listbox

```
\def\@@Listbox#1{%
  \HyField@PDFChoices{#1}%
  \setbox\pdfm@box=\hbox{%
    \MakeChoiceField{\Fld@width}{\Fld@height}%
  }%
  \leavevmode
  \Hy@escapeform\PDFForm@List
  \HyField@AdvanceAnnotCount
  \@pdfm@mark{%
    ann @list\HyField@TheAnnotCount\space
    \dvipdfm@setdim
    <<\PDFForm@List>>%
  }%
  \unhbox\pdfm@box
  \HyField@AddToFields{list}%
}
```

\@PushButton

```
\def\@PushButton[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \begingroup
    \expandafter\HyField@SetKeys\expandafter{%
      \DefaultOptionsofPushButton,#1%
    }%
    \PDFForm@Name
    \ifHy@pdfa
      \Hy@Error{%
        PDF/A: Push button with JavaScript is prohibited%
      }\@ehc
      \LayoutPushButtonField{%
        \leavevmode
```

```
      \MakeButtonField{#2}%
    }%
  \else
    \setbox\pdfm@box=\hbox{\MakeButtonField{#2}}%
    \HyField@FlagsPushButton
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \HyField@AdvanceAnnotCount
    \LayoutPushButtonField{%
      \leavevmode
      \Hy@escapeform\PDFForm@Push
      \@pdfm@mark{%
        ann @push\HyField@TheAnnotCount\space
        \dvipdfm@setdim
        <<\PDFForm@Push>>%
      }%
    }%
    \unhbox\pdfm@box
    \HyField@AddToFields{push}%
  \fi
 \endgroup
}
```

\@Submit

```
\def\@Submit[#1]#2{%
 \def\Fld@width{\DefaultWidthofSubmit}%
 \def\Fld@height{\DefaultHeightofSubmit}%
 \begingroup
  \expandafter\HyField@SetKeys\expandafter{%
    \DefaultOptionsofSubmit,#1%
  }%
  \HyField@FlagsPushButton
  \HyField@FlagsSubmit
  \ifFld@hidden\def\Fld@width{1sp}\fi
  \setbox\pdfm@box=\hbox{\MakeButtonField{#2}}%
  \leavevmode
  \Hy@escapeform\PDFForm@Submit
  \HyField@AdvanceAnnotCount
  \@pdfm@mark{%
    ann @submit\HyField@TheAnnotCount\space
    \dvipdfm@setdim
    <<\PDFForm@Submit>>%
  }%
  \unhbox\pdfm@box%
  \HyField@AddToFields{submit}%
 \endgroup
}
```

\@Reset

```
\def\@Reset[#1]#2{%
 \def\Fld@width{\DefaultWidthofReset}%
 \def\Fld@height{\DefaultHeightofReset}%
 \begingroup
  \expandafter\HyField@SetKeys\expandafter{%
    \DefaultOptionsofReset,#1%
  }%
  \leavevmode
  \ifHy@pdfa
```

```
      \Hy@Error{%
        PDF/A: Reset action is prohibited%
      }\@ehc
      \MakeButtonField{#2}%
    \else
      \HyField@FlagsPushButton
      \ifFld@hidden\def\Fld@width{1sp}\fi
      \setbox\pdfm@box=\hbox{\MakeButtonField{#2}}%
      \Hy@escapeform\PDFForm@Reset
      \HyField@AdvanceAnnotCount
      \@pdfm@mark{%
        ann @reset\HyField@TheAnnotCount\space
        \dvipdfm@setdim
        <<\PDFForm@Reset>>%
      }%
      \unhbox\pdfm@box
      \HyField@AddToFields{reset}%
    \fi
  \endgroup
}
```

\@CheckBox

```
\def\@CheckBox[#1]#2{% parameters, label
  \def\Fld@name{#2}%
  \def\Fld@default{0}%
  \begingroup
    \def\Fld@width{\DefaultWidthofCheckBox}%
    \def\Fld@height{\DefaultHeightofCheckBox}%
    \expandafter\HyField@SetKeys\expandafter{%
      \DefaultOptionsofCheckBox,#1%
    }%
    \PDFForm@Name
    \HyField@FlagsCheckBox
    \ifFld@hidden\def\Fld@width{1sp}\fi
    \setbox\pdfm@box=\hbox{%
      \MakeCheckField{\Fld@width}{\Fld@height}%
    }%
    \HyField@AdvanceAnnotCount
    \LayoutCheckField{#2}{%
      \leavevmode
      \Hy@escapeform\PDFForm@Check
      \@pdfm@mark{%
        ann @check\HyField@TheAnnotCount\space
        \dvipdfm@setdim
        <<\PDFForm@Check>>%
      }%
      \unhbox\pdfm@box
      \HyField@AddToFields{check}%
    }%
  \endgroup
}

\def\Hy@FormObjects{%
  \@pdfm@mark{obj @OBJpdfdocencoding%
    <<%
      /Type/Encoding%
      /Differences[%
        24/breve/caron/circumflex/dotaccent/hungarumlaut/ogonek/ring/tilde %
```

```
      39/quotesingle %
      96/grave %
     128/bullet/dagger/daggerdbl/ellipsis/emdash/endash/florin%
       /fraction/guilsinglleft/guilsinglright/minus/perthousand%
       /quotedblbase/quotedblleft/quotedblright/quoteleft/quoteright%
       /quotesinglbase/trademark/fi/fl/Lslash/OE/Scaron/Ydieresis%
       /Zcaron/dotlessi/lslash/oe/scaron/zcaron %
     164/currency %
     166/brokenbar %
     168/dieresis/copyright/ordfeminine %
     172/logicalnot/.notdef/registered/macron/degree/plusminus%
       /twosuperior/threesuperior/acute/mu %
     183/periodcentered/cedilla/onesuperior/ordmasculine %
     188/onequarter/onehalf/threequarters %
     192/Agrave/Aacute/Acircumflex/Atilde/Adieresis/Aring/AE%
       /Ccedilla/Egrave/Eacute/Ecircumflex/Edieresis/Igrave/Iacute%
       /Icircumflex/Idieresis/Eth/Ntilde/Ograve/Oacute/Ocircumflex%
       /Otilde/Odieresis/multiply/Oslash/Ugrave/Uacute/Ucircumflex%
       /Udieresis/Yacute/Thorn/germandbls/agrave/aacute/acircumflex%
       /atilde/adieresis/aring/ae/ccedilla/egrave/eacute%
       /ecircumflex/edieresis/igrave/iacute/icircumflex/idieresis%
       /eth/ntilde/ograve/oacute/ocircumflex/otilde/odieresis%
       /divide/oslash/ugrave/uacute/ucircumflex/udieresis/yacute%
       /thorn/ydieresis%
    ]%
   >>%
  }%
  \@pdfm@mark{obj @OBJZaDb%
   <<%
    /Type/Font%
    /Subtype/Type1%
    /Name/ZaDb%
    /BaseFont/ZapfDingbats%
   >>%
  }%
  \@pdfm@mark{obj @OBJHelv%
   <<%
    /Type/Font%
    /Subtype/Type1%
    /Name/Helv%
    /BaseFont/Helvetica%
    /Encoding @OBJpdfdocencoding%
   >>%
  }%
  \global\let\Hy@FormObjects\relax
}
```
⟨/dvipdfm | xetex⟩

48.6 Common forms part

⟨*pdfform⟩

\Fld@pageobjref

```
\providecommand*{\Fld@pageobjref}{}
```

\Hy@escapestring

```
\begingroup\expandafter\expandafter\expandafter\endgroup
```

```
\expandafter\ifx\csname pdf@escapestring\endcsname\relax
  \let\Hy@escapestring\@firstofone
  \def\Hy@escapeform#1{%
    \ifHy@pdfescapeform
      \def\Hy@escapestring##1{%
        \noexpand\Hy@escapestring{\noexpand##1}%
      }%
      \edef\Hy@temp{#1}%
      \expandafter\Hy@@escapeform\Hy@temp\Hy@escapestring{}\@nil
      \def\Hy@escapestring##1{%
        \@ifundefined{Hy@esc@\string##1}{%
          ##1%
          \ThisShouldNotHappen
        }{%
          \csname Hy@esc@\string##1\endcsname
        }%
      }%
    \else
      \let\Hy@escapestring\@firstofone
    \fi
  }%
  \def\Hy@@escapeform#1\Hy@escapestring#2#3\@nil{%
    \ifx\\#3\\%
    \else
      \expandafter
      \Hy@pstringdef\csname Hy@esc@\string#2\endcsname{#2}%
      \ltx@ReturnAfterFi{%
        \Hy@@escapeform#3\@nil
      }%
    \fi
  }%
\else
  \def\Hy@escapeform#1{%
    \ifHy@pdfescapeform
      \let\Hy@escapestring\pdfescapestring
    \else
      \let\Hy@escapestring\@firstofone
    \fi
  }%
  \Hy@escapeform{}%
\fi
```

\PDFForm@Name

```
\def\PDFForm@Name{%
  \PDFForm@@Name\Fld@name
  \ifx\Fld@altname\relax
  \else
    \PDFForm@@Name\Fld@altname
  \fi
  \ifx\Fld@mappingname\relax
  \else
    \PDFForm@@Name\Fld@mappingname
  \fi
}
```

\PDFForm@@Name

```
\def\PDFForm@@Name#1{%
```

```
  \begingroup
    \ifnum\Hy@pdfversion<5 % implementation note 117, PDF spec 1.7
      \ifHy@unicode
        \Hy@unicodefalse
      \fi
    \fi
    \HyPsd@XeTeXBigCharstrue
    \pdfstringdef\Hy@gtemp#1%
  \endgroup
  \let#1\Hy@gtemp
}
```

\Fld@additionalactions

```
\def\Fld@@additionalactions{%
```

K input (keystroke) format

```
  \ifx\Fld@keystroke@code\@empty
  \else
    /K<</S/JavaScript/JS(\Hy@escapestring{\Fld@keystroke@code})>>%
  \fi
```

F display format

```
  \ifx\Fld@format@code\@empty
  \else
    /F<</S/JavaScript/JS(\Hy@escapestring{\Fld@format@code})>>%
  \fi
```

V validation

```
  \ifx\Fld@validate@code\@empty
  \else
    /V<</S/JavaScript/JS(\Hy@escapestring{\Fld@validate@code})>>%
  \fi
```

C calculation

```
  \ifx\Fld@calculate@code\@empty
  \else
    /C<</S/JavaScript/JS(\Hy@escapestring{\Fld@calculate@code})>>%
  \fi
```

Fo receiving the input focus

```
  \ifx\Fld@onfocus@code\@empty
  \else
    /Fo<</S/JavaScript/JS(\Hy@escapestring{\Fld@onfocus@code})>>%
  \fi
```

Bl loosing the input focus (blurred)

```
  \ifx\Fld@onblur@code\@empty
  \else
    /Bl<</S/JavaScript/JS(\Hy@escapestring{\Fld@onblur@code})>>%
  \fi
```

D pressing the mouse button (down)

```
  \ifx\Fld@onmousedown@code\@empty
  \else
    /D<</S/JavaScript/JS(\Hy@escapestring{\Fld@onmousedown@code})>>%
  \fi
```

U releasing the mouse button (up)

```
  \ifx\Fld@onmouseup@code\@empty
  \else
    /U<</S/JavaScript/JS(\Hy@escapestring{\Fld@onmouseup@code})>>%
  \fi
```

E cursor enters the annotation's active area.

```
  \ifx\Fld@onenter@code\@empty
  \else
    /E<</S/JavaScript/JS(\Hy@escapestring{\Fld@onenter@code})>>%
  \fi
```

X cursor exits the annotation's active area.

```
  \ifx\Fld@onexit@code\@empty
  \else
    /X<</S/JavaScript/JS(\Hy@escapestring{\Fld@onexit@code})>>%
  \fi
}
\def\Fld@additionalactions{%
  \if-\Fld@@additionalactions-%
  \else
    \ifHy@pdfa
    \else
      /AA<<\Fld@@additionalactions>>%
    \fi
  \fi
}
```

\Fld@annotnames

```
\def\Fld@annotnames{%
  /T(\Fld@name)%
  \ifx\Fld@altname\relax
  \else
    /TU(\Fld@altname)%
  \fi
  \ifx\Fld@mappingname\relax
  \else
    /TM(\Fld@mappingname)%
  \fi
}
```

\PDFForm@Check

```
\def\PDFForm@Check{%
  /Subtype/Widget%
  \Fld@annotflags
  \Fld@pageobjref
  \Fld@annotnames
  /FT/Btn%
  \Fld@flags
  /Q \Fld@align
  /BS<</W \Fld@borderwidth /S/\Fld@borderstyle>>%
  /AP<< /N <</Yes<<>>>> >>  %new string /Yes is from below
  /MK<<%
    \ifnum\Fld@rotation=\z@
    \else
      /R \Fld@rotation
    \fi
    \ifx\Fld@bordercolor\relax
    \else
      /BC[\Fld@bordercolor]%
    \fi
    \ifx\Fld@bcolor\relax
    \else
```

```
14812     /BG[\Fld@bcolor]%
14813   \fi
14814   /CA(\Hy@escapestring{\Fld@cbsymbol})%
14815  >>%
14816  /DA(/ZaDb \strip@pt\Fld@charsize\space Tf%
14817     \ifx\Fld@color\@empty\else\space\Fld@color\fi)%
14818  /H/P%
14819  \ifFld@checked /V/Yes/AS/Yes\else /V/Off/AS/Off\fi
14820  \Fld@additionalactions
14821 }
```

\PDFForm@Push

```
14822 \ifHy@pdfa
14823 \else
14824  \def\PDFForm@Push{%
14825   /Subtype/Widget%
14826   \Fld@annotflags
14827   \Fld@pageobjref
14828   \Fld@annotnames
14829   /FT/Btn%
14830   \Fld@flags
14831   /H/P%
14832   /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
14833   \ifcase0\ifnum\Fld@rotation=\z@   \else 1\fi
14834         \ifx\Fld@bordercolor\relax\else 1\fi
14835         \space
14836   \else
14837    /MK<<%
14838     \ifnum\Fld@rotation=\z@
14839     \else
14840      /R \Fld@rotation
14841     \fi
14842     \ifx\Fld@bordercolor\relax
14843     \else
14844      /BC[\Fld@bordercolor]%
14845     \fi
14846    >>%
14847   \fi
14848   /A<</S/JavaScript/JS(\Hy@escapestring{\Fld@onclick@code})>>%
14849   \Fld@additionalactions
14850  }%
14851 \fi
```

\PDFForm@List

```
14852 \def\PDFForm@List{%
14853  /Subtype/Widget%
14854  \Fld@annotflags
14855  \Fld@pageobjref
14856  \Fld@annotnames
14857  /FT/Ch%
14858  \Fld@flags
14859  /Q \Fld@align
14860  /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
14861  \ifcase0\ifnum\Fld@rotation=\z@   \else 1\fi
14862        \ifx\Fld@bordercolor\relax\else 1\fi
14863        \ifx\fld@bcolor\relax     \else 1\fi
14864        \space
```

```
  \else
    /MK<<%
      \ifnum\Fld@rotation=\z@
      \else
        /R \Fld@rotation
      \fi
      \ifx\Fld@bordercolor\relax
      \else
        /BC[\Fld@bordercolor]%
      \fi
      \ifx\Fld@bcolor\relax
      \else
        /BG[\Fld@bcolor]%
      \fi
    >>%
  \fi
  /DA(/Helv \strip@pt\Fld@charsize\space Tf%
      \ifx\Fld@color\@empty\else\space\Fld@color\fi)%
  \Fld@choices
  \Fld@additionalactions
}
```

\PDFForm@Radio

```
\def\PDFForm@Radio{%
  /Subtype/Widget%
  \Fld@annotflags
  \Fld@pageobjref
  \Fld@annotnames
  /FT/Btn%
  \Fld@flags
  /H/P%
  /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
  /MK<<%
    \ifnum\Fld@rotation=\z@
    \else
      /R \Fld@rotation
    \fi
    \ifx\Fld@bordercolor\relax
    \else
      /BC[\Fld@bordercolor]%
    \fi
    \ifx\Fld@bcolor\relax
    \else
      /BG[\Fld@bcolor]%
    \fi
    /CA(\Hy@escapestring{\Fld@radiosymbol})%
  >>%
  /DA(/ZaDb \strip@pt\Fld@charsize\space Tf%
      \ifx\Fld@color\@empty\else\space\Fld@color\fi)%
```

New code, the default value is used for all buttons

```
  \ifx\Fld@default\@empty
    /V/Off%
    /DV/Off%
  \else
   /V/\Fld@default
   /DV/\Fld@default
  \fi
```

```
  \Fld@additionalactions
}
```

\PDFForm@Text

```
\def\PDFForm@Text{%
  /Subtype/Widget%
  \Fld@annotflags
  \Fld@pageobjref
  \Fld@annotnames
  /FT/Tx%
  \Fld@flags
  /Q \Fld@align
  /BS<</W \Fld@borderwidth\space /S /\Fld@borderstyle>>%
  \ifcase0\ifnum\Fld@rotation=\z@   \else 1\fi
        \ifx\Fld@bordercolor\relax\else 1\fi
        \ifx\Fld@bcolor\relax     \else 1\fi
        \space
  \else
    /MK<<%
      \ifnum\Fld@rotation=\z@
      \else
        /R \Fld@rotation
      \fi
      \ifx\Fld@bordercolor\relax
      \else
        /BC[\Fld@bordercolor]%
      \fi
      \ifx\Fld@bcolor\relax
      \else
        /BG[\Fld@bcolor]%
      \fi
    >>%
  \fi
  /DA(/Helv \strip@pt\Fld@charsize\space Tf%
     \ifx\Fld@color\@empty\else\space\Fld@color\fi)%
  /DV(\Hy@escapestring{\Fld@default})%
  /V(\Hy@escapestring{\Fld@value})%
  \Fld@additionalactions
  \ifnum\Fld@maxlen>\z@/MaxLen \Fld@maxlen \fi
}
```

\PDFForm@Submit

```
\def\PDFForm@Submit{%
  /Subtype/Widget%
  \Fld@annotflags
  \Fld@pageobjref
  \Fld@annotnames
  /FT/Btn%
  \Fld@flags
  /H/P%
  /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
  \ifcase0\ifnum\Fld@rotation=\z@   \else 1\fi
        \ifx\Fld@bordercolor\relax\else 1\fi
        \space
  \else
    /MK<<%
      \ifnum\Fld@rotation=\z@
```

```
      \else
        /R \Fld@rotation
      \fi
      \ifx\Fld@bordercolor\relax
      \else
        /BC[\Fld@bordercolor]%
      \fi
    >>%
  \fi
  /A<<%
    /S/SubmitForm%
    /F<<%
      /FS/URL%
      /F(\Hy@escapestring{\Form@action})%
    >>%
    \Fld@submitflags
  >>%
  \Fld@additionalactions
}
```

\PDFForm@Reset

```
\ifHy@pdfa
\else
  \def\PDFForm@Reset{%
    /Subtype/Widget%
    \Fld@annotflags
    \Fld@pageobjref
    \Fld@annotnames
    /FT/Btn%
    \Fld@flags
    /H/P%
    /DA(/Helv \strip@pt\Fld@charsize\space Tf 0 0 1 rg)%
    \ifcase0\ifnum\Fld@rotation=\z@   \else 1\fi
          \ifx\Fld@bordercolor\relax\else 1\fi
          \space
    \else
      /MK<<%
        \ifnum\Fld@rotation=\z@
        \else
          /R \Fld@rotation
        \fi
        \ifx\Fld@bordercolor\relax
        \else
          /BC[\Fld@bordercolor]%
        \fi
%     /CA (Clear)
%     /AC (Done)
      >>%
    \fi
    /BS<</W \Fld@borderwidth/S/\Fld@borderstyle>>%
    /A<</S/ResetForm>>%
    \Fld@additionalactions
  }%
\fi

⟨/pdfform⟩
⟨*package⟩
```

49 Bookmarks in the PDF file

This was originally developed by Yannis Haralambous (it was the separate repere.sty); it needed the repere or makebook.pl post-processor to work properly. Now redundant, as it is done entirely in LaTeX macros.

To write out the current section title, and its rationalized number, we have to intercept the \@sect command, which is rather dangerous. But how else to see the information we need? We do the *same* for \@ssect, giving anchors to unnumbered sections. This allows things like bibliographies to get bookmarks when used with a manual \addcontentsline

```
\def\phantomsection{%
  \Hy@MakeCurrentHrefAuto{section*}%
  \Hy@raisedlink{\hyper@anchorstart{\@currentHref}\hyper@anchorend}%
}
⟨/package⟩
```

49.1 Bookmarks

```
⟨*outlines⟩
```

This section was written by Heiko Oberdiek; the code replaces an earlier version by David Carlisle.

The first part of bookmark code is in section 6. Further documentation is available as paper and slides of the talk, that Heiko Oberdiek has given at the EuroTeX'99 meating in Heidelberg. See paper.pdf and slides.pdf in the doc directory of hyperref.

When using the right-to-left typesetting based on ε-TeX, the order of the \BOOKMARK commands written to the \@outlinefile could appear wrong, because of mis-feature of ε-TeX's implementation (that it processes the shipped out lines left-to-right, instead of the order in which they appear in the document). The wrong order will appear when the file contains two bookmarks on the same line typeset right-to-left.

To work around this problem, the bookmark@seq@number counter is used to write the bookmark's sequential number into a comment in the \@outlinefile, which could be used to post-process it to achieve the proper ordering of \BOOKMARK commands in that file.

```
\def\Hy@writebookmark#1#2#3#4#5{%
    % section number, text, label, level, file
  \ifx\WriteBookmarks\relax%
  \else
    \ifnum#4>\Hy@bookmarksdepth\relax
    \else
      \@@writetorep{#1}{#2}{#3}{#4}{#5}%
    \fi
  \fi
}
\def\Hy@currentbookmarklevel{0}
\def\Hy@numberline#1{#1 }
\def\@@writetorep#1#2#3#4#5{%
  \begingroup
    \edef\Hy@tempa{#5}%
    \ifx\Hy@tempa\Hy@bookmarkstype
      \edef\Hy@level{#4}%
      \ifx\Hy@levelcheck Y%
        \@tempcnta\Hy@level\relax
        \advance\@tempcnta by -1 %
```

```
      \ifnum\Hy@currentbookmarklevel<\@tempcnta
        \advance\@tempcnta by -\Hy@currentbookmarklevel\relax
        \advance\@tempcnta by 1 %
        \Hy@Warning{%
          Difference (\the\@tempcnta) between bookmark levels is %
          greater \MessageBreak than one, level fixed%
        }%
        \@tempcnta\Hy@currentbookmarklevel
        \advance\@tempcnta by 1 %
        \edef\Hy@level{\the\@tempcnta}%
      \fi
    \else
      \global\let\Hy@levelcheck Y%
    \fi
    \global\let\Hy@currentbookmarklevel\Hy@level
    \@tempcnta\Hy@level\relax
    \expandafter\xdef\csname Parent\Hy@level\endcsname{#3}%
    \advance\@tempcnta by -1 %
    \edef\Hy@tempa{#3}%
    \edef\Hy@tempb{\csname Parent\the\@tempcnta\endcsname}%
    \ifx\Hy@tempa\Hy@tempb
      \Hy@Warning{%
        The anchor of a bookmark and its parent's must not%
        \MessageBreak be the same. Added a new anchor%
      }%
      \phantomsection
    \fi
    \ifHy@bookmarksnumbered
      \let\numberline\Hy@numberline
      \let\booknumberline\Hy@numberline
      \let\partnumberline\Hy@numberline
      \let\chapternumberline\Hy@numberline
    \else
      \let\numberline\@gobble
      \let\booknumberline\@gobble
      \let\partnumberline\@gobble
      \let\chapternumberline\@gobble
    \fi
    \HyPsd@XeTeXBigCharstrue
    \pdfstringdef\Hy@tempa{#2}%
    \HyPsd@SanitizeForOutFile\Hy@tempa
    \if@filesw
      \stepcounter{bookmark@seq@number}%
      \@ifundefined{@outlinefile}{%
      }{%
        \protected@write\@outlinefile{}{%
          \protect\BOOKMARK
            [\Hy@level][\@bookmarkopenstatus{\Hy@level}]{#3}%
            {\Hy@tempa}{\Hy@tempb}%
            \@percentchar\space\thebookmark@seq@number
        }%
      }%
    \fi
  \fi
\endgroup
}
\newcounter{bookmark@seq@number}
```

```
\begingroup
  \lccode`(=`{%
  \lccode`)=`}%
  \lccode`1=\z@
  \lccode`2=\z@
  \lccode`3=\z@
  \lccode`5=\z@
  \lccode`7=\z@
  \lccode`\#=\z@
  \lccode`\`=\z@
  \lccode`\{=\z@
  \lccode`\}=\z@
\lowercase{%
  \endgroup
  \def\HyPsd@SanitizeForOutFile#1{%
    \@onelevel@sanitize\Hy@tempa
    \escapechar`\\%
    \edef\Hy@tempa{%
      \expandafter\HyPsd@SanitizeOut@BraceLeft\Hy@tempa(\@nil
    }%
    \edef\Hy@tempa{%
      \expandafter\HyPsd@SanitizeOut@BraceRight\Hy@tempa)\@nil
    }%
  }%
  \def\HyPsd@SanitizeOut@BraceLeft#1(#2\@nil{%
    #1%
    \ifx\\#2\\%
      \expandafter\ltx@gobble
    \else
      \expandafter\ltx@firstofone
    \fi
    {%
      \string\173%
      \HyPsd@SanitizeOut@BraceLeft#2\@nil
    }%
  }%
  \def\HyPsd@SanitizeOut@BraceRight#1)#2\@nil{%
    #1%
    \ifx\\#2\\%
      \expandafter\ltx@gobble
    \else
      \expandafter\ltx@firstofone
    \fi
    {%
      \string\175%
      \HyPsd@SanitizeOut@BraceRight#2\@nil
    }%
  }%
}
```

In the call of \BOOKMARK the braces around #4 are omitted, because it is not likely, that the level number contains].

```
\newcommand{\currentpdfbookmark}{%
  \pdfbookmark[\Hy@currentbookmarklevel]%
}
\newcommand{\subpdfbookmark}{%
  \@tempcnta\Hy@currentbookmarklevel
  \Hy@StepCount\@tempcnta
```

```
  \expandafter\pdfbookmark\expandafter[\the\@tempcnta]%
}
\newcommand{\belowpdfbookmark}[2]{%
  \@tempcnta\Hy@currentbookmarklevel
  \Hy@StepCount\@tempcnta
  \expandafter\pdfbookmark\expandafter[\the\@tempcnta]{#1}{#2}%
  \advance\@tempcnta by -1 %
  \xdef\Hy@currentbookmarklevel{\the\@tempcnta}%
}
```

Tobias Oetiker rightly points out that we need a way to force a bookmark entry. So we introduce `\pdfbookmark`, with two parameters, the title, and a symbolic name. By default this is at level 1, but we can reset that with the optional first argument.

```
\renewcommand\pdfbookmark[3][0]{%
  \Hy@writebookmark{}{#2}{#3.#1}{#1}{toc}%
  \hyper@anchorstart{#3.#1}\hyper@anchorend
}
\def\BOOKMARK{%
  \@ifnextchar[{\@BOOKMARK}{\@@BOOKMARK[1][-]}%
}
\def\@BOOKMARK[#1]{%
  \@ifnextchar[{\@@BOOKMARK[{#1}]}{\@@BOOKMARK[{#1}][-]}%
}
```

The macros for calculating structure of outlines are derived from those by Petr Olsak used in the texinfopdf macros.

49.1.1 Rerun warning

\Hy@OutlineRerunCheck

```
\RequirePackage{rerunfilecheck}[2009/12/10]
\def\Hy@OutlineRerunCheck{%
  \RerunFileCheck{\jobname.out}{%
    \immediate\closeout\@outlinefile
  }{%
    Rerun to get outlines right\MessageBreak
    or use package `bookmark'%
  }%
}
```

49.1.2 Driver stuff

The VTEX section was written originally by VTEX, but then amended by Denis Girou (denis.girou@idris.fr), then by by Taco Hoekwater (taco.hoekwater@wkap.nl. The problem is that VTEX, with its close integration of the PDF backend, does look at the contents of bookmarks, escaping \ and the like.

```
⟨*vtex⟩
\newcount\@serial@counter\@serial@counter=1\relax
```

\hv@pdf@char Plain octal codes doesn't work with versions below 6.50. So for early versions hex numbers have to be used. It would be possible to program this instead of the large `\ifcase`, but I'm too lazy to sort that out now.

```
\begingroup
  \catcode`\'=12 %
  \ifnum\Hy@VTeXversion<650 %
    \catcode`\"=12 %
    \gdef\hv@pdf@char#1#2#3{%
```

```
      \char
      \ifcase'#1#2#3 %
        "00\or"01\or"02\or"03\or"04\or"05\or"06\or"07%
      \or"08\or"09\or"0A\or"0B\or"0C\or"0D\or"0E\or"0F%
      \or"10\or"11\or"12\or"13\or"14\or"15\or"16\or"17%
      \or"18\or"19\or"1A\or"1B\or"1C\or"1D\or"1E\or"1F%
      \or"20\or"21\or"22\or"23\or"24\or"25\or"26\or"27%
      \or"28\or"29\or"2A\or"2B\or"2C\or"2D\or"2E\or"2F%
      \or"30\or"31\or"32\or"33\or"34\or"35\or"36\or"37%
      \or"38\or"39\or"3A\or"3B\or"3C\or"3D\or"3E\or"3F%
      \or"40\or"41\or"42\or"43\or"44\or"45\or"46\or"47%
      \or"48\or"49\or"4A\or"4B\or"4C\or"4D\or"4E\or"4F%
      \or"50\or"51\or"52\or"53\or"54\or"55\or"56\or"57%
      \or"58\or"59\or"5A\or"5B\or"5C\or"5D\or"5E\or"5F%
      \or"60\or"61\or"62\or"63\or"64\or"65\or"66\or"67%
      \or"68\or"69\or"6A\or"6B\or"6C\or"6D\or"6E\or"6F%
      \or"70\or"71\or"72\or"73\or"74\or"75\or"76\or"77%
      \or"78\or"79\or"7A\or"7B\or"7C\or"7D\or"7E\or"7F%
      \or"80\or"81\or"82\or"83\or"84\or"85\or"86\or"87%
      \or"88\or"89\or"8A\or"8B\or"8C\or"8D\or"8E\or"8F%
      \or"90\or"91\or"92\or"93\or"94\or"95\or"96\or"97%
      \or"98\or"99\or"9A\or"9B\or"9C\or"9D\or"9E\or"9F%
      \or"A0\or"A1\or"A2\or"A3\or"A4\or"A5\or"A6\or"A7%
      \or"A8\or"A9\or"AA\or"AB\or"AC\or"AD\or"AE\or"AF%
      \or"B0\or"B1\or"B2\or"B3\or"B4\or"B5\or"B6\or"B7%
      \or"B8\or"B9\or"BA\or"BB\or"BC\or"BD\or"BE\or"BF%
      \or"C0\or"C1\or"C2\or"C3\or"C4\or"C5\or"C6\or"C7%
      \or"C8\or"C9\or"CA\or"CB\or"CC\or"CD\or"CE\or"CF%
      \or"D0\or"D1\or"D2\or"D3\or"D4\or"D5\or"D6\or"D7%
      \or"D8\or"D9\or"DA\or"DB\or"DC\or"DD\or"DE\or"DF%
      \or"E0\or"E1\or"E2\or"E3\or"E4\or"E5\or"E6\or"E7%
      \or"E8\or"E9\or"EA\or"EB\or"EC\or"ED\or"EE\or"EF%
      \or"F0\or"F1\or"F2\or"F3\or"F4\or"F5\or"F6\or"F7%
      \or"F8\or"F9\or"FA\or"FB\or"FC\or"FD\or"FE\or"FF%
      \fi
    }%
  \else
    \gdef\hv@pdf@char{\char'}%
  \fi
\endgroup
```

\@@BOOKMARK

```
\def\@@BOOKMARK[#1][#2]#3#4#5{%
  \expandafter\edef\csname @count@#3\endcsname{%
    \the\@serial@counter
  }%
  \edef\@mycount{\the\@serial@counter}%
  \Hy@StepCount\@serial@counter
  \edef\@parcount{%
    \expandafter\ifx\csname @count@#5\endcsname\relax
      0%
    \else
      \csname @count@#5\endcsname
    \fi
  }%
  \immediate\special{%
    !outline \HyperDestNameFilter{#3};p=\@parcount,i=\@mycount,%
    s=\ifx#2-c\else o\fi,t=#4%
```

```
  }%
}%
```

\ReadBookmarks

```
\def\ReadBookmarks{%
  \begingroup
    \def\0{\hv@pdf@char 0}%
    \def\1{\hv@pdf@char 1}%
    \def\2{\hv@pdf@char 2}%
    \def\3{\hv@pdf@char 3}%
    \def\({(}%
    \def\){)}%
    \def\do##1{%
      \ifnum\catcode`##1=\active
        \@makeother##1%
      \else
        \ifnum\catcode`##1=6 %
          \@makeother##1%
        \fi
      \fi
    }%
    \dospecials
    \Hy@safe@activestrue
    \InputIfFileExists{\jobname.out}{}{}%
  \endgroup
  \ifx\WriteBookmarks\relax
  \else
    \if@filesw
      \newwrite\@outlinefile
      \Hy@OutlineRerunCheck
      \immediate\openout\@outlinefile=\jobname.out\relax
      \ifHy@typexml
        \immediate\write\@outlinefile{<relaxxml>\relax}%
      \fi
    \fi
  \fi
}
```

⟨/vtex⟩

⟨*!vtex⟩

```
\def\ReadBookmarks{%
  \pdf@ifdraftmode{}{%
    \begingroup
      \def\do##1{%
        \ifnum\catcode`##1=\active
          \@makeother##1%
        \else
          \ifnum\catcode`##1=6 %
            \@makeother##1%
          \fi
        \fi
      }%
      \dospecials
      \Hy@safe@activestrue
      \escapechar=`\\%
      \def\@@BOOKMARK[##1][##2]##3##4##5{%
        \calc@bm@number{##5}%
```

```
    }%
    \InputIfFileExists{\jobname.out}{}{}%
    \ifx\WriteBookmarks\relax
      \global\let\WriteBookmarks\relax
    \fi
    \def\@@BOOKMARK[##1][##2]##3##4##5{%
      \def\Hy@temp{##4}%
⟨*pdftex⟩
      \Hy@pstringdef\Hy@pstringName{\HyperDestNameFilter{##3}}%
      \Hy@OutlineName{}\Hy@pstringName{%
        ##2\check@bm@number{##3}%
      }{%
        \expandafter\strip@prefix\meaning\Hy@temp
      }%
⟨/pdftex⟩
⟨*pdfmark⟩
      \pdfmark{%
        pdfmark=/OUT,%
        Count={##2\check@bm@number{##3}},%
        Dest={##3},%
        Title=\expandafter\strip@prefix\meaning\Hy@temp
      }%
⟨/pdfmark⟩
⟨*dvipdfm | xetex⟩
      \Hy@pstringdef\Hy@pstringName{\HyperDestNameFilter{##3}}%
      \@pdfm@mark{%
        outline \ifHy@DvipdfmxOutlineOpen
                [%
                \ifnum##21>\z@
                \else
                  -%
                \fi
                ] %
               \fi
               ##1<<%
          /Title(\expandafter\strip@prefix\meaning\Hy@temp)%
          /A<<%
            /S/GoTo%
            /D(\Hy@pstringName)%
          >>%
        >>%
      }%
⟨/dvipdfm | xetex⟩
    }%
    \begingroup
      \def\WriteBookmarks{0}%
      \InputIfFileExists{\jobname.out}{}{}%
    \endgroup
    %{\escapechar\m@ne\InputIfFileExists{\jobname.out}{}{}}%
  \endgroup
}%
\ifx\WriteBookmarks\relax
\else
  \if@filesw
    \newwrite\@outlinefile
    \Hy@OutlineRerunCheck
    \immediate\openout\@outlinefile=\jobname.out\relax
```

```
      \ifHy@typexml
        \immediate\write\@outlinefile{<relaxxml>\relax}%
      \fi
    \fi
  \fi
}
⟨*pdftex⟩
\def\Hy@OutlineName#1#2#3#4{%
  \pdfoutline goto name{#2}count#3{#4}%
}
⟨/pdftex⟩
\def\check@bm@number#1{%
  \expandafter\ifx\csname B_#1\endcsname\relax
    0%
  \else
    \csname B_#1\endcsname
  \fi
}
\def\calc@bm@number#1{%
  \@tempcnta=\check@bm@number{#1}\relax
  \advance\@tempcnta by 1 %
  \expandafter\xdef\csname B_#1\endcsname{\the\@tempcnta}%
}
⟨/!vtex⟩

\ifHy@implicit
\else
  \expandafter\endinput
\fi

⟨/outlines⟩
⟨*outlines | hypertex⟩

\newlength\Hy@SectionHShift
\def\Hy@SectionAnchorHref#1{%
  \ifx\protect\@typeset@protect
    \Hy@@SectionAnchor{#1}%
  \fi
}
\DeclareRobustCommand*{\Hy@@SectionAnchor}[1]{%
  \leavevmode
  \hbox to 0pt{%
    \kern-\Hy@SectionHShift
    \Hy@raisedlink{%
      \hyper@anchorstart{#1}\hyper@anchorend
    }%
    \hss
  }%
}
\let\H@old@ssect\@ssect
\def\@ssect#1#2#3#4#5{%
  \Hy@MakeCurrentHrefAuto{section*}%
  \setlength{\Hy@SectionHShift}{#1}%
  \begingroup
    \toks@{\H@old@ssect{#1}{#2}{#3}{#4}}%
    \toks\tw@\expandafter{%
      \expandafter\Hy@SectionAnchorHref\expandafter{\@currentHref}%
      #5%
    }%
```

```
  \edef\x{\endgroup
    \the\toks@{\the\toks\tw@}%
  }\x
}
\let\H@old@schapter\@schapter
\def\@schapter#1{%
  \begingroup
    \let\@mkboth\@gobbletwo
    \Hy@MakeCurrentHrefAuto{\Hy@chapapp*}%
    \Hy@raisedlink{%
      \hyper@anchorstart{\@currentHref}\hyper@anchorend
    }%
  \endgroup
  \H@old@schapter{#1}%
}
```

If there is no chapter number (\frontmatter or \backmatter) then the counting by \refstepcounter{chapter} is not executed, so there will be no destination for \ddcontentsline. So \@chapter is overloaded to avoid this:

```
\ltx@IfUndefined{@chapter}{}{%
  \let\Hy@org@chapter\@chapter
  \def\@chapter{%
    \def\Hy@next{%
      \Hy@MakeCurrentHrefAuto{\Hy@chapapp*}%
      \Hy@raisedlink{%
        \hyper@anchorstart{\@currentHref}\hyper@anchorend
      }%
    }%
    \ifnum\c@secnumdepth>\m@ne
      \ltx@IfUndefined{if@mainmatter}%
      \iftrue{\csname if@mainmatter\endcsname}%
        \let\Hy@next\relax
      \fi
    \fi
    \Hy@next
    \Hy@org@chapter
  }%
}
\let\H@old@part\@part
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname chapter\endcsname\relax
  \let\Hy@secnum@part\z@
\else
  \let\Hy@secnum@part\m@ne
\fi
\def\@part{%
  \ifnum\Hy@secnum@part>\c@secnumdepth
    \phantomsection
  \fi
  \H@old@part
}
\let\H@old@spart\@spart
\def\@spart#1{%
  \Hy@MakeCurrentHrefAuto{part*}%
  \Hy@raisedlink{%
    \hyper@anchorstart{\@currentHref}\hyper@anchorend
  }%
```

```
  \H@old@spart{#1}%
}
\let\H@old@sect\@sect
\def\@sect#1#2#3#4#5#6[#7]#8{%
  \ifnum #2>\c@secnumdepth
    \expandafter\@firstoftwo
  \else
    \expandafter\@secondoftwo
  \fi
  {%
    \Hy@MakeCurrentHrefAuto{section*}%
    \setlength{\Hy@SectionHShift}{#3}%
    \begingroup
      \toks@{\H@old@sect{#1}{#2}{#3}{#4}{#5}{#6}[{#7}]}%
      \toks\tw@\expandafter{%
        \expandafter\Hy@SectionAnchorHref\expandafter{\@currentHref}%
        #8%
      }%
    \edef\x{\endgroup
      \the\toks@{\the\toks\tw@}%
    }\x
  }{%
    \H@old@sect{#1}{#2}{#3}{#4}{#5}{#6}[{#7}]{#8}%
  }%
}
```

⟨/outlines | hypertex⟩
⟨*outlines⟩

```
\expandafter\def\csname Parent-4\endcsname{}
\expandafter\def\csname Parent-3\endcsname{}
\expandafter\def\csname Parent-2\endcsname{}
\expandafter\def\csname Parent-1\endcsname{}
\expandafter\def\csname Parent0\endcsname{}
\expandafter\def\csname Parent1\endcsname{}
\expandafter\def\csname Parent2\endcsname{}
\expandafter\def\csname Parent3\endcsname{}
\expandafter\def\csname Parent4\endcsname{}
```

⟨/outlines⟩

50 Compatibility with koma-script classes

⟨*outlines | hypertex⟩

Hard-wire in an unpleasant over-ride of komascript 'scrbook' class for Tobias Isenberg (Tobias.Isenberg@gmx.de). With version 6.71b the hack is also applied to 'scrreprt' class and is removed for koma-script versions since 2001/01/01, because Markus Kohm supports hyperref in komascript.

```
\def\Hy@tempa{%
  \def\@addchap[##1]##2{%
    \typeout{##2}%
    \if@twoside
      \@mkboth{##1}{}%
    \else
      \@mkboth{}{##1}%
    \fi
    \addtocontents{lof}{\protect\addvspace{10\p@}}%
    \addtocontents{lot}{\protect\addvspace{10\p@}}%
```

```
    \Hy@MakeCurrentHrefAuto{\Hy@chapapp*}%
    \Hy@raisedlink{%
      \hyper@anchorstart{\@currentHref}\hyper@anchorend
    }%
    \if@twocolumn
      \@topnewpage[\@makeschapterhead{##2}]%
    \else
      \@makeschapterhead{##2}%
      \@afterheading
    \fi
    \addcontentsline{toc}{chapter}{##1}%
  }%
}
\@ifclassloaded{scrbook}{%
  \@ifclasslater{scrbook}{2001/01/01}{%
    \let\Hy@tempa\@empty
  }{}%
}{%
  \@ifclassloaded{scrreprt}{%
    \@ifclasslater{scrreprt}{2001/01/01}{%
      \let\Hy@tempa\@empty
    }{}%
  }{%
    \let\Hy@tempa\@empty
  }%
}%
\Hy@tempa
```
⟨/outlines | hypertex⟩

51 Encoding definition files for encodings of PDF strings

This was contributed by Heiko Oberdiek.

51.1 PD1 encoding

⟨*pd1enc⟩
```
\DeclareFontEncoding{PD1}{}{}
```
Accents
```
\DeclareTextAccent{\`}{PD1}{\textasciigrave}
\DeclareTextAccent{\'}{PD1}{\textacute}
\DeclareTextAccent{\^}{PD1}{\textasciicircum}
\DeclareTextAccent{\~}{PD1}{\texttilde}
\DeclareTextAccent{\"}{PD1}{\textasciidieresis}
\DeclareTextAccent{\r}{PD1}{\textring}
\DeclareTextAccent{\v}{PD1}{\textasciicaron}
\DeclareTextAccent{\.}{PD1}{\textdotaccent}
\DeclareTextAccent{\c}{PD1}{\textcedilla}
\DeclareTextAccent{\=}{PD1}{\textasciimacron}
\DeclareTextAccent{\b}{PD1}{\textmacronbelow}
\DeclareTextAccent{\d}{PD1}{\textdotbelow}
\DeclareTextCompositeCommand{\`}{PD1}{\@empty}{\textasciigrave}
\DeclareTextCompositeCommand{\'}{PD1}{\@empty}{\textacute}
\DeclareTextCompositeCommand{\^}{PD1}{\@empty}{\textasciicircum}
\DeclareTextCompositeCommand{\~}{PD1}{\@empty}{\texttilde}
\DeclareTextCompositeCommand{\"}{PD1}{\@empty}{\textasciidieresis}
```

```
\DeclareTextCompositeCommand{\r}{PD1}{\@empty}{\textring}
\DeclareTextCompositeCommand{\v}{PD1}{\@empty}{\textasciicaron}
\DeclareTextCompositeCommand{\.}{PD1}{\@empty}{\textdotaccent}
\DeclareTextCompositeCommand{\c}{PD1}{\@empty}{\textcedilla}
\DeclareTextCompositeCommand{\=}{PD1}{\@empty}{\textasciimacron}
\DeclareTextCompositeCommand{\b}{PD1}{\@empty}{\textmacronbelow}
\DeclareTextCompositeCommand{\d}{PD1}{\@empty}{\textdotbelow}
\DeclareTextCompositeCommand{\`}{PD1}{\ }{\textasciigrave}
\DeclareTextCompositeCommand{\'}{PD1}{\ }{\textacute}
\DeclareTextCompositeCommand{\^}{PD1}{\ }{\textasciicircum}
\DeclareTextCompositeCommand{\~}{PD1}{\ }{\texttilde}
\DeclareTextCompositeCommand{\"}{PD1}{\ }{\textasciidieresis}
\DeclareTextCompositeCommand{\r}{PD1}{\ }{\textring}
\DeclareTextCompositeCommand{\v}{PD1}{\ }{\textasciicaron}
\DeclareTextCompositeCommand{\.}{PD1}{\ }{\textdotaccent}
\DeclareTextCompositeCommand{\c}{PD1}{\ }{\textcedilla}
\DeclareTextCompositeCommand{\=}{PD1}{\ }{\textasciimacron}
\DeclareTextCompositeCommand{\b}{PD1}{\ }{\textmacronbelow}
\DeclareTextCompositeCommand{\d}{PD1}{\ }{\textdotbelow}
\DeclareTextCommand{\k}{PD1}[1]{\TextSymbolUnavailable{\k{#1}}#1}
\DeclareTextCommand{\t}{PD1}[1]{\TextSymbolUnavailable{\t{#1}}#1}
\DeclareTextCommand{\newtie}{PD1}[1]{%
  \TextSymbolUnavailable{\newtie{#1}}#1%
}
```

Special white space escape characters not for use in bookmarks but for other PDF strings.

```
% U+0009 (CHARACTER TABULATION)
\DeclareTextCommand{\textHT}{PD1}{\011}% U+0009
% U+000A (LINE FEED)
\DeclareTextCommand{\textLF}{PD1}{\012}% U+000A
% U+000D (CARRIAGE RETURN)
\DeclareTextCommand{\textCR}{PD1}{\015}% U+000D
```

Accent glyph names

```
% U+02D8 BREVE; breve
\DeclareTextCommand{\textasciibreve}{PD1}{\030}% U+02D8
% U+02C7 CARON; caron
\DeclareTextCommand{\textasciicaron}{PD1}{\031}% U+02C7
% U+02C6 MODIFIER LETTER CIRCUMFLEX ACCENT; circumflex
\DeclareTextCommand{\textcircumflex}{PD1}{\032}% U+02C6
% U+02D9 DOT ABOVE; dotaccent
\DeclareTextCommand{\textdotaccent}{PD1}{\033}% U+02D9
% U+02DD DOUBLE ACUTE ACCENT; hungarumlaut
\DeclareTextCommand{\texthungarumlaut}{PD1}{\034}% U+02DD
% U+02DB OGONEK; ogonek
\DeclareTextCommand{\textogonek}{PD1}{\035}% U+02DB
% U+02DA RING ABOVE; ring
\DeclareTextCommand{\textring}{PD1}{\036}% U+02DA
% U+02DC SMALL TILDE; ilde, *tilde
\DeclareTextCommand{\texttilde}{PD1}{\037}% U+02DC
```

\040: U+0020 SPACE; *space, spacehackarabic

\041: U+0021 EXCLAMATION MARK; exclam

```
% U+0022 QUOTATION MARK; quotedbl
\DeclareTextCommand{\textquotedbl}{PD1}{"}% \042 U+0022
% U+0023 NUMBER SIGN; numbersign
\DeclareTextCommand{\textnumbersign}{PD1}{\043}% U+0023
% U+0024 DOLLAR SIGN; dollar
```

```
\DeclareTextCommand{\textdollar}{PD1}{\044}% U+0024
% U+0025 PERCENT SIGN; percent
\DeclareTextCommand{\textpercent}{PD1}{\045}% U+0025
% U+0026 AMPERSAND; ampersand
\DeclareTextCommand{\textampersand}{PD1}{\046}% U+0026
```

\047: U+0027 APOSTROPHE; quotesingle

```
% U+0028 LEFT PARENTHESIS; parenleft
\DeclareTextCommand{\textparenleft}{PD1}{\string\(}% \050 U+0028
% U+0029 RIGHT PARENTHESIS; parenright
\DeclareTextCommand{\textparenright}{PD1}{\string\)}% \051 U+0029
```

\052: U+002A ASTERISK; asterisk
\053: U+002B PLUS SIGN; plus
\054: U+002C COMMA; comma
\055: U+002D HYPHEN-MINUS; hyphen
\056: U+002E FULL STOP; period

```
% U+002E FULL STOP; period
\DeclareTextCommand{\textdotbelow}{PD1}{.}% \056 U+002E
```

\057: U+002F SOLIDUS; slash
\060: U+0030 DIGIT ZERO; zero
...
\071: U+0039 DIGIT NINE; nine
\072: U+003A COLON; colon
\073: U+003B SEMICOLON; semicolon

```
% U+003C LESS-THAN SIGN; less
\DeclareTextCommand{\textless}{PD1}{<}% \074 U+003C
```

\075: U+003D EQUALS SIGN; equal

```
% U+003E GREATER-THAN SIGN; greater
\DeclareTextCommand{\textgreater}{PD1}{>}% \076 U+003E
```

\077: U+003F QUESTION MARK; question
\100: U+0040 COMMERCIAL AT; at
\101: U+0041 LATIN CAPITAL LETTER A; A
...
\132: U+005A LATIN CAPITAL LETTER Z; Z
\133: U+005B LEFT SQUARE BRACKET; bracketleft

```
% U+005C REVERSE SOLIDUS; backslash
\DeclareTextCommand{\textbackslash}{PD1}{\134}% U+005C
% "U+2216 SET MINUS" simulated by "U+005C REVERSE SOLIDUS"
\DeclareTextCommand{\textsetminus}{PD1}{\textbackslash}
```

\135: U+005D RIGHT SQUARE BRACKET; bracketright

```
% U+005E CIRCUMFLEX ACCENT; asciicircum
\DeclareTextCommand{\textasciicircum}{PD1}{\136}% U+005E
% U+005F LOW LINE; underscore
\DeclareTextCommand{\textunderscore}{PD1}{\137}% U+005F
\DeclareTextCommand{\textmacronbelow}{PD1}{\137}% U+005F
% U+0060 GRAVE ACCENT; grave
\DeclareTextCommand{\textasciigrave}{PD1}{\140}% U+0060
```

\141: U+0061 LATIN SMALL LETTER A; a
...
\150: U+0068 LATIN SMALL LETTER H; h

```
% U+0069 LATIN SMALL LETTER I; i
\DeclareTextCompositeCommand{\.}{PD1}{i}{i}% \151 U+0069
```

\152: U+006A LATIN SMALL LETTER J; j
...
\172: U+007A LATIN SMALL LETTER Z; z

```
% U+007B LEFT CURLY BRACKET; braceleft
\DeclareTextCommand{\textbraceleft}{PD1}{\173}% U+007B
% U+007C VERTICAL LINE; *bar, verticalbar
\DeclareTextCommand{\textbar}{PD1}{|}% U+007C
% U+007D RIGHT CURLY BRACKET; braceright
\DeclareTextCommand{\textbraceright}{PD1}{\175}% U+007D
% U+007E TILDE; asciitilde
\DeclareTextCommand{\textasciitilde}{PD1}{\176}% U+007E
```

Slot \177 (0x7F) is undefined in PDFDocEncoding.

```
% U+2022 BULLET; bullet
\DeclareTextCommand{\textbullet}{PD1}{\200}% U+2022
% U+2020 DAGGER; dagger
\DeclareTextCommand{\textdagger}{PD1}{\201}% U+2020
% U+2021 DOUBLE DAGGER; daggerdbl; \ddagger (LaTeX)
\DeclareTextCommand{\textdaggerdbl}{PD1}{\202}% U+2021
\DeclareTextCommand{\textddagger}{PD1}{\textddagger}
% U+2026 HORIZONTAL ELLIPSIS; ellipsis
\DeclareTextCommand{\textellipsis}{PD1}{\203}% U+2026
% U+2014 EM DASH; emdash
\DeclareTextCommand{\textemdash}{PD1}{\204}% U+2014
% U+2013 EN DASH; endash
\DeclareTextCommand{\textendash}{PD1}{\205}% U+2013
% U+0192 LATIN SMALL LETTER F WITH HOOK; florin
\DeclareTextCommand{\textflorin}{PD1}{\206}% U+0192
% U+2044 FRACTION SLASH; fraction
\DeclareTextCommand{\textfractionsolidus}{PD1}{\207}% U+2044
% U+2039 SINGLE LEFT-POINTING ANGLE QUOTATION MARK; guilsinglleft
\DeclareTextCommand{\guilsinglleft}{PD1}{\210}% U+2039
% U+203A SINGLE RIGHT-POINTING ANGLE QUOTATION MARK; guilsinglright
\DeclareTextCommand{\guilsinglright}{PD1}{\211}% U+203A
% U+2212 MINUS SIGN; minus
\DeclareTextCommand{\textminus}{PD1}{\212}% U+2212
% U+2030 PER MILLE SIGN; perthousand
\DeclareTextCommand{\textperthousand}{PD1}{\213}% U+2030
% U+201E DOUBLE LOW-9 QUOTATION MARK; quotedblbase
\DeclareTextCommand{\quotedblbase}{PD1}{\214}% U+201E
% U+201C LEFT DOUBLE QUOTATION MARK; quotedblleft
\DeclareTextCommand{\textquotedblleft}{PD1}{\215}% U+201C
% U+201D RIGHT DOUBLE QUOTATION MARK; quotedblright
\DeclareTextCommand{\textquotedblright}{PD1}{\216}% U+201D
% U+2018 LEFT SINGLE QUOTATION MARK; quoteleft
\DeclareTextCommand{\textquoteleft}{PD1}{\217}% U+2018
% U+2019 RIGHT SINGLE QUOTATION MARK; quoteright
\DeclareTextCommand{\textquoteright}{PD1}{\220}% U+2019
% U+201A SINGLE LOW-9 QUOTATION MARK; quotesinglbase
\DeclareTextCommand{\quotesinglbase}{PD1}{\221}% U+201A
% U+2122 TRADE MARK SIGN; trademark
\DeclareTextCommand{\texttrademark}{PD1}{\222}% U+2122
% U+FB01 LATIN SMALL LIGATURE FI; fi
\DeclareTextCommand{\textfi}{PD1}{\223}% U+FB01
% U+FB02 LATIN SMALL LIGATURE FL; fl
\DeclareTextCommand{\textfl}{PD1}{\224}% U+FB02
```

```
% U+0141 LATIN CAPITAL LETTER L WITH STROKE; Lslash
\DeclareTextCommand{\L}{PD1}{\225}% U+0141
% U+0152 LATIN CAPITAL LIGATURE OE; OE
\DeclareTextCommand{\OE}{PD1}{\226}% U+0152
% U+0160 LATIN CAPITAL LETTER S WITH CARON; Scaron
\DeclareTextCompositeCommand{\v}{PD1}{S}{\227}% U+0160
% U+0178 LATIN CAPITAL LETTER Y WITH DIAERESIS; Ydieresis
\DeclareTextCompositeCommand{\"}{PD1}{Y}{\230}% U+0178
\DeclareTextCommand{\IJ}{PD1}{IJ}% ligature U+0049 U+004A
% U+017D LATIN CAPITAL LETTER Z WITH CARON; Zcaron
\DeclareTextCompositeCommand{\v}{PD1}{Z}{\231}% U+017D
% U+0131 LATIN SMALL LETTER DOTLESS I; dotlessi
\DeclareTextCommand{\i}{PD1}{\232}% U+0131
% U+0142 LATIN SMALL LETTER L WITH STROKE; lslash
\DeclareTextCommand{\l}{PD1}{\233}% U+0142
% U+0153 LATIN SMALL LIGATURE OE; oe
\DeclareTextCommand{\oe}{PD1}{\234}% U+0153
% U+0161 LATIN SMALL LETTER S WITH CARON; scaron
\DeclareTextCompositeCommand{\v}{PD1}{s}{\235}% U+0161
% U+017E LATIN SMALL LETTER Z WITH CARON; zcaron
\DeclareTextCompositeCommand{\v}{PD1}{z}{\236}% U+017E
```

Slot \237 (0x9F) is not defined in PDFDocEncoding.

The euro \240 is inserted in version 1.3 of the pdf specification.

```
% U+20AC EURO SIGN; *Euro, euro
\DeclareTextCommand{\texteuro}{PD1}{\240}% U+20AC
% U+00A1 INVERTED EXCLAMATION MARK; exclamdown
\DeclareTextCommand{\textexclamdown}{PD1}{\241}% U+00A1
% U+00A2 CENT SIGN; cent
\DeclareTextCommand{\textcent}{PD1}{\242}% U+00A2
% U+00A3 POUND SIGN; sterling
\DeclareTextCommand{\textsterling}{PD1}{\243}% U+00A3
% U+00A4 CURRENCY SIGN; currency
\DeclareTextCommand{\textcurrency}{PD1}{\244}% U+00A4
% U+00A5 YEN SIGN; yen
\DeclareTextCommand{\textyen}{PD1}{\245}% U+00A5
% U+00A6 BROKEN BAR; brokenbar
\DeclareTextCommand{\textbrokenbar}{PD1}{\246}% U+00A6
% U+00A7 SECTION SIGN; section
\DeclareTextCommand{\textsection}{PD1}{\247}% U+00A7
% U+00A8 DIAERESIS; dieresis
\DeclareTextCommand{\textasciidieresis}{PD1}{\250}% U+00A8
% U+00A9 COPYRIGHT SIGN; copyright
\DeclareTextCommand{\textcopyright}{PD1}{\251}% U+00A9
% U+00AA FEMININE ORDINAL INDICATOR; ordfeminine
\DeclareTextCommand{\textordfeminine}{PD1}{\252}% U+00AA
% U+00AB LEFT-POINTING DOUBLE ANGLE QUOTATION MARK; guillemotleft
\DeclareTextCommand{\guillemotleft}{PD1}{\253}% U+00AB
% U+00AC NOT SIGN; logicalnot
\DeclareTextCommand{\textlogicalnot}{PD1}{\254}% U+00AC
\DeclareTextCommand{\textlnot}{PD1}{\254}% logical not
```

No glyph \255 in PDFDocEncoding.

```
% U+00AE REGISTERED SIGN; registered
\DeclareTextCommand{\textregistered}{PD1}{\256}% U+00AE
% U+00AF MACRON; *macron, overscore
\DeclareTextCommand{\textasciimacron}{PD1}{\257}% U+00AF
% U+00B0 DEGREE SIGN; degree
```

```
\DeclareTextCommand{\textdegree}{PD1}{\260}% U+00B0
% U+00B1 PLUS-MINUS SIGN; plusminus
\DeclareTextCommand{\textplusminus}{PD1}{\261}% U+00B1
% U+00B2 SUPERSCRIPT TWO; twosuperior
\DeclareTextCommand{\texttwosuperior}{PD1}{\262}%* U+00B2
% U+00B3 SUPERSCRIPT THREE; threesuperior
\DeclareTextCommand{\textthreesuperior}{PD1}{\263}%* U+00B3
% U+00B4 ACUTE ACCENT; acute
\DeclareTextCommand{\textacute}{PD1}{\264}% U+00B4
% U+00B5 MICRO SIGN; mu, mu1
\DeclareTextCommand{\textmu}{PD1}{\265}% U+00B5
% U+00B6 PILCROW SIGN; paragraph
\DeclareTextCommand{\textparagraph}{PD1}{\266}% U+00B6
% U+00B7 MIDDLE DOT; middot, *periodcentered
\DeclareTextCommand{\textperiodcentered}{PD1}{\267}% U+00B7
% U+00B8 CEDILLA; cedilla
\DeclareTextCommand{\textcedilla}{PD1}{\270}% U+00B8
% U+00B9 SUPERSCRIPT ONE; onesuperior
\DeclareTextCommand{\textonesuperior}{PD1}{\271}%* U+00B9
% U+00BA MASCULINE ORDINAL INDICATOR; ordmasculine
\DeclareTextCommand{\textordmasculine}{PD1}{\272}% U+00BA
% U+00BB RIGHT-POINTING DOUBLE ANGLE QUOTATION MARK; guille-
    motright
\DeclareTextCommand{\guillemotright}{PD1}{\273}% U+00BB
% U+00BC VULGAR FRACTION ONE QUARTER; onequarter
\DeclareTextCommand{\textonequarter}{PD1}{\274}% U+00BC
% U+00BD VULGAR FRACTION ONE HALF; onehalf
\DeclareTextCommand{\textonehalf}{PD1}{\275}% U+00BD
% U+00BE VULGAR FRACTION THREE QUARTERS; threequarters
\DeclareTextCommand{\textthreequarters}{PD1}{\276}% U+00BE
% U+00BF INVERTED QUESTION MARK; questiondown
\DeclareTextCommand{\textquestiondown}{PD1}{\277}% U+00BF
% U+00C0 LATIN CAPITAL LETTER A WITH GRAVE; Agrave
\DeclareTextCompositeCommand{\`}{PD1}{A}{\300}% U+00C0
% U+00C1 LATIN CAPITAL LETTER A WITH ACUTE; Aacute
\DeclareTextCompositeCommand{\'}{PD1}{A}{\301}% U+00C1
% U+00C2 LATIN CAPITAL LETTER A WITH CIRCUMFLEX; Acircumflex
\DeclareTextCompositeCommand{\^}{PD1}{A}{\302}% U+00C2
% U+00C3 LATIN CAPITAL LETTER A WITH TILDE; Atilde
\DeclareTextCompositeCommand{\~}{PD1}{A}{\303}% U+00C3
% U+00C4 LATIN CAPITAL LETTER A WITH DIAERESIS; Adieresis
\DeclareTextCompositeCommand{\"}{PD1}{A}{\304}% U+00C4
% U+00C5 LATIN CAPITAL LETTER A WITH RING ABOVE; Aring
\DeclareTextCompositeCommand{\r}{PD1}{A}{\305}% U+00C5
% U+00C6 LATIN CAPITAL LETTER AE; AE
\DeclareTextCommand{\AE}{PD1}{\306}% U+00C6
% U+00C7 LATIN CAPITAL LETTER C WITH CEDILLA; Ccedilla
\DeclareTextCompositeCommand{\c}{PD1}{C}{\307}% U+00C7
% U+00C8 LATIN CAPITAL LETTER E WITH GRAVE; Egrave
\DeclareTextCompositeCommand{\`}{PD1}{E}{\310}% U+00C8
% U+00C9 LATIN CAPITAL LETTER E WITH ACUTE; Eacute
\DeclareTextCompositeCommand{\'}{PD1}{E}{\311}% U+00C9
% U+00CA LATIN CAPITAL LETTER E WITH CIRCUMFLEX; Ecircumflex
\DeclareTextCompositeCommand{\^}{PD1}{E}{\312}% U+00CA
% U+00CB LATIN CAPITAL LETTER E WITH DIAERESIS; Edieresis
\DeclareTextCompositeCommand{\"}{PD1}{E}{\313}% U+00CB
% U+00CC LATIN CAPITAL LETTER I WITH GRAVE; Igrave
```

```
\DeclareTextCompositeCommand{\`}{PD1}{I}{\314}% U+00CC
% U+00CD LATIN CAPITAL LETTER I WITH ACUTE; Iacute
\DeclareTextCompositeCommand{\'}{PD1}{I}{\315}% U+00CD
% U+00CE LATIN CAPITAL LETTER I WITH CIRCUMFLEX; Icircumflex
\DeclareTextCompositeCommand{\^}{PD1}{I}{\316}% U+00CE
% U+00CF LATIN CAPITAL LETTER I WITH DIAERESIS; Idieresis
\DeclareTextCompositeCommand{\"}{PD1}{I}{\317}% U+00CF
% U+00D0 LATIN CAPITAL LETTER ETH; Eth
\DeclareTextCommand{\DH}{PD1}{\320}% U+00D0
\DeclareTextCommand{\DJ}{PD1}{\320}% U+00D0
% U+00D1 LATIN CAPITAL LETTER N WITH TILDE; Ntilde
\DeclareTextCompositeCommand{\~}{PD1}{N}{\321}% U+00D1
% U+00D2 LATIN CAPITAL LETTER O WITH GRAVE; Ograve
\DeclareTextCompositeCommand{\`}{PD1}{O}{\322}% U+00D2
% U+00D3 LATIN CAPITAL LETTER O WITH ACUTE; Oacute
\DeclareTextCompositeCommand{\'}{PD1}{O}{\323}% U+00D3
% U+00D4 LATIN CAPITAL LETTER O WITH CIRCUMFLEX; Ocircumflex
\DeclareTextCompositeCommand{\^}{PD1}{O}{\324}% U+00D4
% U+00D5 LATIN CAPITAL LETTER O WITH TILDE; Otilde
\DeclareTextCompositeCommand{\~}{PD1}{O}{\325}% U+00D5
% U+00D6 LATIN CAPITAL LETTER O WITH DIAERESIS; Odieresis
\DeclareTextCompositeCommand{\"}{PD1}{O}{\326}% U+00D6
% U+00D7 MULTIPLICATION SIGN; multiply
\DeclareTextCommand{\textmultiply}{PD1}{\327}% U+00D7
% U+00D8 LATIN CAPITAL LETTER O WITH STROKE; Oslash
\DeclareTextCommand{\O}{PD1}{\330}% U+00D8
% U+00D9 LATIN CAPITAL LETTER U WITH GRAVE; Ugrave
\DeclareTextCompositeCommand{\`}{PD1}{U}{\331}% U+00D9
% U+00DA LATIN CAPITAL LETTER U WITH ACUTE; Uacute
\DeclareTextCompositeCommand{\'}{PD1}{U}{\332}% U+00DA
% U+00DB LATIN CAPITAL LETTER U WITH CIRCUMFLEX; Ucircumflex
\DeclareTextCompositeCommand{\^}{PD1}{U}{\333}% U+00DB
% U+00DC LATIN CAPITAL LETTER U WITH DIAERESIS; Udieresis
\DeclareTextCompositeCommand{\"}{PD1}{U}{\334}% U+00DC
% U+00DD LATIN CAPITAL LETTER Y WITH ACUTE; Yacute
\DeclareTextCompositeCommand{\'}{PD1}{Y}{\335}% U+00DD
% U+00DE LATIN CAPITAL LETTER THORN; Thorn; \TH, \Thorn (wasysym)
\DeclareTextCommand{\TH}{PD1}{\336}% U+00DE
\DeclareTextCommand{\textThorn}{PD1}{\336}%* U+00DE
% U+00DF LATIN SMALL LETTER SHARP S; germandbls
\DeclareTextCommand{\ss}{PD1}{\337}% U+00DF
% U+00E0 LATIN SMALL LETTER A WITH GRAVE; agrave
\DeclareTextCompositeCommand{\`}{PD1}{a}{\340}% U+00E0
% U+00E1 LATIN SMALL LETTER A WITH ACUTE; aacute
\DeclareTextCompositeCommand{\'}{PD1}{a}{\341}% U+00E1
% U+00E2 LATIN SMALL LETTER A WITH CIRCUMFLEX; acircumflex
\DeclareTextCompositeCommand{\^}{PD1}{a}{\342}% U+00E2
% U+00E3 LATIN SMALL LETTER A WITH TILDE; atilde
\DeclareTextCompositeCommand{\~}{PD1}{a}{\343}% U+00E3
% U+00E4 LATIN SMALL LETTER A WITH DIAERESIS; adieresis
\DeclareTextCompositeCommand{\"}{PD1}{a}{\344}% U+00E4
% U+00E5 LATIN SMALL LETTER A WITH RING ABOVE; aring
\DeclareTextCompositeCommand{\r}{PD1}{a}{\345}% U+00E5
% U+00E6 LATIN SMALL LETTER AE; ae
\DeclareTextCommand{\ae}{PD1}{\346}% U+00E6
% U+00E7 LATIN SMALL LETTER C WITH CEDILLA; ccedilla
\DeclareTextCompositeCommand{\c}{PD1}{c}{\347}% U+00E7
```

```
% U+00E8 LATIN SMALL LETTER E WITH GRAVE; egrave
\DeclareTextCompositeCommand{\`}{PD1}{e}{\350}% U+00E8
% U+00E9 LATIN SMALL LETTER E WITH ACUTE; eacute
\DeclareTextCompositeCommand{\'}{PD1}{e}{\351}% U+00E9
% U+00EA LATIN SMALL LETTER E WITH CIRCUMFLEX; ecircumflex
\DeclareTextCompositeCommand{\^}{PD1}{e}{\352}% U+00EA
% U+00EB LATIN SMALL LETTER E WITH DIAERESIS; edieresis
\DeclareTextCompositeCommand{\"}{PD1}{e}{\353}% U+00EB
% U+00EC LATIN SMALL LETTER I WITH GRAVE; igrave
\DeclareTextCompositeCommand{\`}{PD1}{i}{\354}% U+00EC
\DeclareTextCompositeCommand{\`}{PD1}{\i}{\354}% U+00EC
% U+00ED LATIN SMALL LETTER I WITH ACUTE; iacute
\DeclareTextCompositeCommand{\'}{PD1}{i}{\355}% U+00ED
\DeclareTextCompositeCommand{\'}{PD1}{\i}{\355}% U+00ED
% U+00EE LATIN SMALL LETTER I WITH CIRCUMFLEX; icircumflex
\DeclareTextCompositeCommand{\^}{PD1}{i}{\356}% U+00EE
\DeclareTextCompositeCommand{\^}{PD1}{\i}{\356}% U+00EE
% U+00EF LATIN SMALL LETTER I WITH DIAERESIS; idieresis
\DeclareTextCompositeCommand{\"}{PD1}{i}{\357}% U+00EF
\DeclareTextCompositeCommand{\"}{PD1}{\i}{\357}% U+00EF
% U+00F0 LATIN SMALL LETTER ETH; eth
\DeclareTextCommand{\dh}{PD1}{\360}% U+00F0
% U+00F1 LATIN SMALL LETTER N WITH TILDE; ntilde
\DeclareTextCompositeCommand{\~}{PD1}{n}{\361}% U+00F1
% U+00F2 LATIN SMALL LETTER O WITH GRAVE; ograve
\DeclareTextCompositeCommand{\`}{PD1}{o}{\362}% U+00F2
% U+00F3 LATIN SMALL LETTER O WITH ACUTE; oacute
\DeclareTextCompositeCommand{\'}{PD1}{o}{\363}% U+00F3
% U+00F4 LATIN SMALL LETTER O WITH CIRCUMFLEX; ocircumflex
\DeclareTextCompositeCommand{\^}{PD1}{o}{\364}% U+00F4
% U+00F5 LATIN SMALL LETTER O WITH TILDE; otilde
\DeclareTextCompositeCommand{\~}{PD1}{o}{\365}% U+00F5
% U+00F6 LATIN SMALL LETTER O WITH DIAERESIS; odieresis
\DeclareTextCompositeCommand{\"}{PD1}{o}{\366}% U+00F6
% U+00F7 DIVISION SIGN; divide
\DeclareTextCommand{\textdivide}{PD1}{\367}% U+00F7
% U+00F8 LATIN SMALL LETTER O WITH STROKE; oslash
\DeclareTextCommand{\o}{PD1}{\370}% U+00F8
% U+00F9 LATIN SMALL LETTER U WITH GRAVE; ugrave
\DeclareTextCompositeCommand{\`}{PD1}{u}{\371}% U+00F9
% U+00FA LATIN SMALL LETTER U WITH ACUTE; uacute
\DeclareTextCompositeCommand{\'}{PD1}{u}{\372}% U+00FA
% U+00FB LATIN SMALL LETTER U WITH CIRCUMFLEX; ucircumflex
\DeclareTextCompositeCommand{\^}{PD1}{u}{\373}% U+00FB
% U+00FC LATIN SMALL LETTER U WITH DIAERESIS; udieresis
\DeclareTextCompositeCommand{\"}{PD1}{u}{\374}% U+00FC
% U+00FD LATIN SMALL LETTER Y WITH ACUTE; yacute
\DeclareTextCompositeCommand{\'}{PD1}{y}{\375}% U+00FD
% U+00FE LATIN SMALL LETTER THORN; thorn; \th, \thorn (wasysym)
\DeclareTextCommand{\th}{PD1}{\376}% U+00FE
\DeclareTextCommand{\textthorn}{PD1}{\376}%* U+00FE
% U+00FF LATIN SMALL LETTER Y WITH DIAERESIS; ydieresis
\DeclareTextCompositeCommand{\"}{PD1}{y}{\377}% U+00FF
\DeclareTextCommand{\ij}{PD1}{ij}% ligature U+0069 U+006A
```

Glyphs that consist of several characters.

```
\DeclareTextCommand{\SS}{PD1}{SS}%
\DeclareTextCommand{\textcelsius}{PD1}{\textdegree C}%
```

Aliases (german.sty)

```
\DeclareTextCommand{\textglqq}{PD1}{\quotedblbase}%
\DeclareTextCommand{\textgrqq}{PD1}{\textquotedblleft}%
\DeclareTextCommand{\textglq}{PD1}{\quotesinglbase}%
\DeclareTextCommand{\textgrq}{PD1}{\textquoteleft}%
\DeclareTextCommand{\textflqq}{PD1}{\guillemotleft}%
\DeclareTextCommand{\textfrqq}{PD1}{\guillemotright}%
\DeclareTextCommand{\textflq}{PD1}{\guilsinglleft}%
\DeclareTextCommand{\textfrq}{PD1}{\guilsinglright}%
```

Aliases (math names)

```
\DeclareTextCommand{\textneg}{PD1}{\textlogicalnot}%
\DeclareTextCommand{\texttimes}{PD1}{\textmultiply}%
\DeclareTextCommand{\textdiv}{PD1}{\textdivide}%
\DeclareTextCommand{\textpm}{PD1}{\textplusminus}%
\DeclareTextCommand{\textcdot}{PD1}{\textperiodcentered}%
\DeclareTextCommand{\textbeta}{PD1}{\ss}%
```

Polish aliases. PDF encoding does not have the characters, but it is useful to Poles to have the plain letters regardless. Requested by Wojciech Myszka (W.Myszka@immt.pwr.wroc.pl).

```
\DeclareTextCompositeCommand{\k}{PD1}{a}{a}% aogonek
\DeclareTextCompositeCommand{\'}{PD1}{c}{c}% cacute
\DeclareTextCompositeCommand{\k}{PD1}{e}{e}% eogonek
\DeclareTextCompositeCommand{\'}{PD1}{n}{n}% nacute
\DeclareTextCompositeCommand{\'}{PD1}{s}{s}% sacute
\DeclareTextCompositeCommand{\'}{PD1}{z}{z}% zacute
\DeclareTextCompositeCommand{\.}{PD1}{z}{z}% zdot
\DeclareTextCompositeCommand{\k}{PD1}{A}{A}% Aogonek
\DeclareTextCompositeCommand{\'}{PD1}{C}{C}% Cacute
\DeclareTextCompositeCommand{\k}{PD1}{E}{E}% Eogonek
\DeclareTextCompositeCommand{\'}{PD1}{N}{N}% Nacute
\DeclareTextCompositeCommand{\'}{PD1}{S}{S}% Sacute
\DeclareTextCompositeCommand{\'}{PD1}{Z}{Z}% Zacute
\DeclareTextCompositeCommand{\.}{PD1}{Z}{Z}% Zdot
```

⟨/pd1enc⟩

51.2 PU encoding

⟨*puenc⟩

```
\DeclareFontEncoding{PU}{}{}
```

51.2.1 NFSS2 accents

```
% U+0300 COMBINING GRAVE ACCENT; gravecmb, *gravecomb
\DeclareTextCommand{\`}{PU}[1]{#1\83\000}% U+0300
% U+0301 COMBINING ACUTE ACCENT; acutecmb, *acutecomb
\DeclareTextCommand{\'}{PU}[1]{#1\83\001}% U+0301
% U+0302 COMBINING CIRCUMFLEX ACCENT; circumflexcmb
\DeclareTextCommand{\^}{PU}[1]{#1\83\002}% U+0302
% U+0303 COMBINING TILDE; tildecmb, *tildecomb
\DeclareTextCommand{\~}{PU}[1]{#1\83\003}% U+0303
% U+0304 COMBINING MACRON; macroncmb
\DeclareTextCommand{\=}{PU}[1]{#1\83\004}% U+0304
% U+0306 COMBINING BREVE; brevecmb
\DeclareTextCommand{\u}{PU}[1]{#1\83\006}% U+0306
\DeclareTextCommand{\U}{PU}[1]{#1\83\006}% U+0306
% U+0307 COMBINING DOT ABOVE; dotaccentcmb
\DeclareTextCommand{\.}{PU}[1]{#1\83\007}% U+0307
% U+0308 COMBINING DIAERESIS; dieresiscmb
```

```
\DeclareTextCommand{\"}{PU}[1]{#1\83\010}% U+0308
% U+030A COMBINING RING ABOVE; ringcmb
\DeclareTextCommand{\r}{PU}[1]{#1\83\012}% U+030A
% U+030B COMBINING DOUBLE ACUTE ACCENT; hungarumlautcmb
\DeclareTextCommand{\H}{PU}[1]{#1\83\013}% U+030B
% U+030C COMBINING CARON; caroncmb
\DeclareTextCommand{\v}{PU}[1]{#1\83\014}% U+030C
% U+030F COMBINING DOUBLE GRAVE ACCENT; dblgravecmb
\DeclareTextCommand{\G}{PU}[1]{#1\83\017}% U+030F
\DeclareTextCommand{\C}{PU}[1]{#1\83\017}% U+030F
% U+0311 COMBINING INVERTED BREVE; breveinvertedcmb
\DeclareTextCommand{\textinvbreve}{PU}[1]{#1\83\021}% U+0311
\DeclareTextCommand{\newtie}{PU}[1]{#1\83\021}% U+0311
% U+0323 COMBINING DOT BELOW; dotbelowcmb, *dotbelowcomb
\DeclareTextCommand{\d}{PU}[1]{#1\83\043}% U+0323
% U+0324 COMBINING DIAERESIS BELOW; dieresisbelowcmb; \textsubum-
    laut (tipa)
\DeclareTextCommand{\textsubumlaut}{PU}[1]{#1\83\044}% U+0324
% U+0325 COMBINING RING BELOW; ringbelowcmb; \textsubring (tipa)
\DeclareTextCommand{\textsubring}{PU}[1]{#1\83\045}% U+0325
% U+0327 COMBINING CEDILLA; cedillacmb
\DeclareTextCommand{\c}{PU}[1]{#1\83\047}% U+0327
% U+0328 COMBINING OGONEK; ogonekcmb
\DeclareTextCommand{\k}{PU}[1]{#1\83\050}% U+0328
% U+032D COMBINING CIRCUMFLEX ACCENT BELOW;
%   \textsubcircum (tipa)
\DeclareTextCommand{\textsubcircum}{PU}[1]{#1\83\055}% U+032D
% U+032E COMBINING BREVE BELOW; brevebelowcmb
\DeclareTextCommand{\textsubbreve}{PU}[1]{#1\83\056}% U+032E
% U+0330 COMBINING TILDE BELOW; tildebelowcmb; \textsubtilde (tipa)
\DeclareTextCommand{\textsubtilde}{PU}[1]{#1\83\060}% U+0330
% U+0331 COMBINING MACRON BELOW; macronbelowcmb
\DeclareTextCommand{\b}{PU}[1]{#1\83\061}% U+0331
% U+0361 COMBINING DOUBLE INVERTED BREVE; breveinverteddou-
    blecmb
\DeclareTextCommand{\t}{PU}[1]{#1\83\141}% U+0361
% U+20DD COMBINING ENCLOSING CIRCLE
\DeclareTextCommand{\textcircled}{PU}[1]{#1\9040\335}% U+20DD
```

Double accents.

```
\DeclareTextCommand{\textacutemacron}{PU}[1]{#1\83\001\83\004}% U+0301 U+0304
\DeclareTextCommand{\textgravemacron}{PU}[1]{#1\83\000\83\004}% U+0300 U+0304
```

`\@empty` is an artefact of the NFSS2 machinery, it gets inserted for empty arguments and spaces.

```
\DeclareTextCompositeCommand{\`}{PU}{\@empty}{\textasciigrave}%
\DeclareTextCompositeCommand{\'}{PU}{\@empty}{\textacute}%
\DeclareTextCompositeCommand{\^}{PU}{\@empty}{\textasciicircum}%
\DeclareTextCompositeCommand{\~}{PU}{\@empty}{\texttilde}%
\DeclareTextCompositeCommand{\"}{PU}{\@empty}{\textasciidieresis}%
\DeclareTextCompositeCommand{\r}{PU}{\@empty}{\textring}%
\DeclareTextCompositeCommand{\v}{PU}{\@empty}{\textasciicaron}%
\DeclareTextCompositeCommand{\.}{PU}{\@empty}{\textdotaccent}%
\DeclareTextCompositeCommand{\c}{PU}{\@empty}{\textcedilla}%
\DeclareTextCompositeCommand{\u}{PU}{\@empty}{\textasciibreve}%
\DeclareTextCompositeCommand{\G}{PU}{\@empty}{\textdoublegrave}%
\DeclareTextCompositeCommand{\=}{PU}{\@empty}{\textasciimacron}%
\DeclareTextCompositeCommand{\H}{PU}{\@empty}{\texthungarumlaut}%
\DeclareTextCompositeCommand{\k}{PU}{\@empty}{\textogonek}%
```

```
\DeclareTextCompositeCommand{\textinvbreve}{PU}{\@empty}{{ \83\021}}% U+0311
\DeclareTextCompositeCommand{\textsubumlaut}{PU}{\@empty}{{ \83\044}}% U+0324
\DeclareTextCompositeCommand{\textsubring}{PU}{\@empty}{\textringlow}%
\DeclareTextCompositeCommand{\textsubcircum}{PU}{\@empty}{\textcircum-
low}%
\DeclareTextCompositeCommand{\textsubbreve}{PU}{\@empty}{{ \83\056}}% U+032E
\DeclareTextCompositeCommand{\textsubtilde}{PU}{\@empty}{\texttildelow}%
\DeclareTextCompositeCommand{\b}{PU}{\@empty}{\textmacronbelow}%
\DeclareTextCompositeCommand{\d}{PU}{\@empty}{\textdotbelow}%
\DeclareTextCompositeCommand{\t}{PU}{\@empty}{\texttie}%
\DeclareTextCompositeCommand{\newtie}{PU}{\@empty}{\textnewtie}%
\DeclareTextCompositeCommand{\textcircled}{PU}{\@empty}{\textbigcircle}%
\DeclareTextCompositeCommand{\textacutemacron}{PU}{\@empty}{{ \83\001\83\004}}% U+0301 U
\DeclareTextCompositeCommand{\textgravemacron}{PU}{\@empty}{{ \83\000\83\004}}% U+0300 U
\DeclareTextCompositeCommand{\`}{PU}{\ }{\textasciigrave}%
\DeclareTextCompositeCommand{\'}{PU}{\ }{\textacute}%
\DeclareTextCompositeCommand{\^}{PU}{\ }{\textasciicircum}%
\DeclareTextCompositeCommand{\~}{PU}{\ }{\texttilde}%
\DeclareTextCompositeCommand{\"}{PU}{\ }{\textasciidieresis}%
\DeclareTextCompositeCommand{\r}{PU}{\ }{\textring}%
\DeclareTextCompositeCommand{\v}{PU}{\ }{\textasciicaron}%
\DeclareTextCompositeCommand{\.}{PU}{\ }{\textdotaccent}%
\DeclareTextCompositeCommand{\c}{PU}{\ }{\textcedilla}%
\DeclareTextCompositeCommand{\u}{PU}{\ }{\textasciibreve}%
\DeclareTextCompositeCommand{\G}{PU}{\ }{\textdoublegrave}%
\DeclareTextCompositeCommand{\=}{PU}{\ }{\textasciimacron}%
\DeclareTextCompositeCommand{\H}{PU}{\ }{\texthungarumlaut}%
\DeclareTextCompositeCommand{\k}{PU}{\ }{\textogonek}%
\DeclareTextCompositeCommand{\textinvbreve}{PU}{\ }{{ \83\021}}% U+0311
\DeclareTextCompositeCommand{\textsubumlaut}{PU}{\ }{{ \83\044}}% U+0324
\DeclareTextCompositeCommand{\textsubring}{PU}{\ }{\textringlow}%
\DeclareTextCompositeCommand{\textsubcircum}{PU}{\ }{\textcircumlow}%
\DeclareTextCompositeCommand{\textsubbreve}{PU}{\ }{{ \83\056}}% U+032E
\DeclareTextCompositeCommand{\textsubtilde}{PU}{\ }{\texttildelow}%
\DeclareTextCompositeCommand{\b}{PU}{\ }{\textmacronbelow}%
\DeclareTextCompositeCommand{\d}{PU}{\ }{\textdotbelow}%
\DeclareTextCompositeCommand{\t}{PU}{\ }{\texttie}%
\DeclareTextCompositeCommand{\newtie}{PU}{\ }{\textnewtie}%
\DeclareTextCompositeCommand{\textcircled}{PU}{\ }{\textbigcircle}%
\DeclareTextCompositeCommand{\textacutemacron}{PU}{\ }{{ \83\001\83\004}}% U+0301 U+0304
\DeclareTextCompositeCommand{\textgravemacron}{PU}{\ }{{ \83\000\83\004}}% U+0300 U+0304
```

Accents for capitals (see encoding TS1)

```
\DeclareTextCommand{\capitalcedilla}{PU}[1]{\c{#1}}%
\DeclareTextCommand{\capitalogonek}{PU}[1]{\k{#1}}%
\DeclareTextCommand{\capitalgrave}{PU}[1]{\`{#1}}%
\DeclareTextCommand{\capitalacute}{PU}[1]{\'{#1}}%
\DeclareTextCommand{\capitalcircumflex}{PU}[1]{\^{#1}}%
\DeclareTextCommand{\capitaltilde}{PU}[1]{\~{#1}}%
\DeclareTextCommand{\capitaldieresis}{PU}[1]{\"{#1}}%
\DeclareTextCommand{\capitalhungarumlaut}{PU}[1]{\H{#1}}%
\DeclareTextCommand{\capitalring}{PU}[1]{\r{#1}}%
\DeclareTextCommand{\capitalcaron}{PU}[1]{\v{#1}}%
\DeclareTextCommand{\capitalbreve}{PU}[1]{\u{#1}}%
\DeclareTextCommand{\capitalmacron}{PU}[1]{\={#1}}%
\DeclareTextCommand{\capitaldotaccent}{PU}[1]{\.{#1}}%
\DeclareTextCommand{\capitaltie}{PU}[1]{\t{#1}}%
\DeclareTextCommand{\capitalnewtie}{PU}[1]{\newtie{#1}}%
```

51.2.2 Basic Latin: U+0000 to U+007F

Special white space escape characters.

```
% U+0009 (CHARACTER TABULATION)
\DeclareTextCommand{\textHT}{PU}{\80\011}% U+0009
% U+000A (LINE FEED)
\DeclareTextCommand{\textLF}{PU}{\80\012}% U+000A
% U+000D (CARRIAGE RETURN)
\DeclareTextCommand{\textCR}{PU}{\80\015}% U+000D
```

\80\040: U+0020 SPACE; space, spacehackarabic
\80\041: U+0021 EXCLAMATION MARK; exclam

```
% U+0022 QUOTATION MARK; quotedbl
\DeclareTextCommand{\textquotedbl}{PU}{"}% \80\042 U+0022
% U+0023 NUMBER SIGN; numbersign
\DeclareTextCommand{\textnumbersign}{PU}{\80\043}% U+0023
% U+0024 DOLLAR SIGN; dollar
\DeclareTextCommand{\textdollar}{PU}{\80\044}% U+0024
%* \textdollar -> \mathdollar
%* \textdollar -> \EyesDollar (marvosym)
% U+0025 PERCENT SIGN; percent
\DeclareTextCommand{\textpercent}{PU}{\80\045}% U+0025
% U+0026 AMPERSAND; ampersand
\DeclareTextCommand{\textampersand}{PU}{\80\046}% U+0026
%* \textampersand -> \binampersand (stmaryrd)
%* \textampersand -> \with (cmll)
% U+0027 APOSTROPHE; quotesingle
\DeclareTextCommand{\textquotesingle}{PU}{\80\047}% U+0027
% U+0028 LEFT PARENTHESIS; parenleft
\DeclareTextCommand{\textparenleft}{PU}{\80\050}% U+0028
% U+0029 RIGHT PARENTHESIS; parenright
\DeclareTextCommand{\textparenright}{PU}{\80\051}% U+0029
% U+002A ASTERISK; asterisk; (?)
\DeclareTextCommand{\textasteriskcentered}{PU}{\80\052}% U+002A
% U+002B PLUS SIGN; plus; \MVPlus (marvosym)
\DeclareTextCommand{\textMVPlus}{PU}{\80\053}%* U+002B
% U+002C COMMA; comma; \MVComma (marvosym)
\DeclareTextCommand{\textMVComma}{PU}{\80\054}%* U+002C
% U+002D HYPHEN-MINUS; hyphen; \MVMinus (marvosym)
\DeclareTextCommand{\textMVMinus}{PU}{\80\055}%* U+002D
% U+002E FULL STOP; period; \MVPeriod (marvosym)
\DeclareTextCommand{\textMVPeriod}{PU}{\80\056}%* U+002E
% U+002F SOLIDUS; slash; \MVDivision (marvosym)
\DeclareTextCommand{\textMVDivision}{PU}{\80\057}%* U+002F
% U+0030 DIGIT ZERO; zero; \MVZero (marvosym)
\DeclareTextCommand{\textMVZero}{PU}{\80\060}%* U+0030
% U+0031 DIGIT ONE; one; \MVOne (marvosym)
\DeclareTextCommand{\textMVOne}{PU}{\80\061}%* U+0031
% U+0032 DIGIT TWO; two; \MVTwo (marvosym)
\DeclareTextCommand{\textMVTwo}{PU}{\80\062}%* U+0032
% U+0033 DIGIT THREE; three; \MVThree (marvosym)
\DeclareTextCommand{\textMVThree}{PU}{\80\063}%* U+0033
% U+0034 DIGIT FOUR; four; \MVFour (marvosym)
\DeclareTextCommand{\textMVFour}{PU}{\80\064}%* U+0034
% U+0035 DIGIT FIVE; five; \MVFive (marvosym)
\DeclareTextCommand{\textMVFive}{PU}{\80\065}%* U+0035
% U+0036 DIGIT SIX; six; \MVSix (marvosym)
\DeclareTextCommand{\textMVSix}{PU}{\80\066}%* U+0036
```

```
% U+0037 DIGIT SEVEM; seven; \MVSeven (marvosym)
\DeclareTextCommand{\textMVSeven}{PU}{\80\067}%* U+0037
% U+0038 DIGIT EIGHT; eight; \MVEight (marvosym)
\DeclareTextCommand{\textMVEight}{PU}{\80\070}%* U+0038
% U+0039 DIGIT NINE; nine; \MVNine (marvosym)
\DeclareTextCommand{\textMVNine}{PU}{\80\071}%* U+0039
```

\80\072: U+003A COLON; colon
\80\073: U+003B SEMICOLON; semicolon

```
% U+003C LESS-THAN SIGN; less
\DeclareTextCommand{\textless}{PU}{<}% \80\074 U+003C
```

\80\075: U+003D EQUALS SIGN; equal

```
% U+003E GREATER-THAN SIGN; greater
\DeclareTextCommand{\textgreater}{PU}{>}% \80\076 U+003E
```

\80\077: U+003F QUESTION MARK; question

```
% U+0040 COMMERCIAL AT; at; \MVAt (marvosym)
\DeclareTextCommand{\textMVAt}{PU}{\80\100}%* U+0040
```

\80\101: U+0041 LATIN CAPITAL LETTER A; A
...
\80\132: U+005A LATIN CAPITAL LETTER Z; Z
\80\133: U+005B LEFT SQUARE BRACKET; bracketleft

```
% U+005C REVERSE SOLIDUS; backslash
\DeclareTextCommand{\textbackslash}{PU}{\80\134}% U+005C
```

\80\135: U+005D RIGHT SQUARE BRACKET; bracketright

```
% U+005E CIRCUMFLEX ACCENT; asciicircum
\DeclareTextCommand{\textasciicircum}{PU}{\80\136}% U+005E
% U+005F LOW LINE; underscore
\DeclareTextCommand{\textunderscore}{PU}{\80\137}% U+005F
%* \textunderscore -> \mathunderscore (LaTeX)
% U+0060 GRAVE ACCENT; grave
\DeclareTextCommand{\textasciigrave}{PU}{\80\140}% U+0060
```

\80\141: U+0061 LATIN SMALL LETTER A; a
...
\80\150: U+0068 LATIN SMALL LETTER H; h

```
% U+0069 LATIN SMALL LETTER I; i
\DeclareTextCompositeCommand{\.}{PU}{\i}{i}% \80\151 U+0069
\DeclareTextCompositeCommand{\.}{PU}{i}{i}% \80\151 U+0069
```

\80\152: U+006A LATIN SMALL LETTER J; j
...
\80\172: U+007A LATIN SMALL LETTER Z; z

```
% U+007B LEFT CURLY BRACKET; braceleft
\DeclareTextCommand{\textbraceleft}{PU}{\80\173}% U+007B
% U+007C VERTICAL LINE; *bar, verticalbar
\DeclareTextCommand{\textbar}{PU}{|}% \80\174 U+007C
%* \textbar -> \textvertline (tipa)
% U+007D RIGHT CURLY BRACKET; braceright
\DeclareTextCommand{\textbraceright}{PU}{\80\175}% U+007D
% U+007E TILDE; asciitilde
\DeclareTextCommand{\textasciitilde}{PU}{\80\176}% U+007E
```

51.2.3 Latin-1 Supplement: U+0080 to U+00FF

\80\240: U+00A0 NO-BREAK SPACE; nbspace, nonbreakingspace

```
% U+00A1 INVERTED EXCLAMATION MARK; exclamdown
\DeclareTextCommand{\textexclamdown}{PU}{\80\241}% U+00A1
% U+00A2 CENT SIGN; cent
\DeclareTextCommand{\textcent}{PU}{\80\242}% U+00A2
% U+00A3 POUND SIGN; sterling
\DeclareTextCommand{\textsterling}{PU}{\80\243}% U+00A3
%* \textsterling -> \mathsterling (LaTeX)
%* \textsterling -> \pounds (LaTeX)
% U+00A4 CURRENCY SIGN; currency
\DeclareTextCommand{\textcurrency}{PU}{\80\244}% U+00A4
% U+00A5 YEN SIGN; yen
\DeclareTextCommand{\textyen}{PU}{\80\245}% U+00A5
% U+00A6 BROKEN BAR; brokenbar
\DeclareTextCommand{\textbrokenbar}{PU}{\80\246}% U+00A6
%* \textbrokenbar -> \brokenvert (wasysym)
% U+00A7 SECTION SIGN; section
\DeclareTextCommand{\textsection}{PU}{\80\247}% U+00A7
%* \textsection -> \mathsection (LaTeX)
%* \textsection -> \S (LaTeX)
% U+00A8 DIAERESIS; dieresis
\DeclareTextCommand{\textasciidieresis}{PU}{\80\250}% U+00A8
% U+00A9 COPYRIGHT SIGN; copyright
\DeclareTextCommand{\textcopyright}{PU}{\80\251}%* U+00A9
% U+00AA FEMININE ORDINAL INDICATOR; ordfeminine
\DeclareTextCommand{\textordfeminine}{PU}{\80\252}% U+00AA
% U+00AB LEFT-POINTING DOUBLE ANGLE QUOTATION MARK; guille-
    motleft
\DeclareTextCommand{\guillemotleft}{PU}{\80\253}% U+00AB
% U+00AC NOT SIGN; logicalnot
\DeclareTextCommand{\textlogicalnot}{PU}{\80\254}% U+00AC
\DeclareTextCommand{\textlnot}{PU}{\80\254}% U+00AC
```

\80\255: U+00AD SOFT HYPHEN; sfthyphen, softhyphen

```
% U+00AE REGISTERED SIGN; registered
\DeclareTextCommand{\textregistered}{PU}{\80\256}% U+00AE
% U+00AF MACRON; *macron, overscore
\DeclareTextCommand{\textasciimacron}{PU}{\80\257}% U+00AF
% U+00B0 DEGREE SIGN; degree
\DeclareTextCommand{\textdegree}{PU}{\80\260}% U+00B0
% U+00B1 PLUS-MINUS SIGN; plusminus
\DeclareTextCommand{\textplusminus}{PU}{\80\261}% U+00B1
% U+00B2 SUPERSCRIPT TWO; twosuperior
\DeclareTextCommand{\texttwosuperior}{PU}{\80\262}%* U+00B2
% U+00B3 SUPERSCRIPT THREE; threesuperior
\DeclareTextCommand{\textthreesuperior}{PU}{\80\263}%* U+00B3
% U+00B4 ACUTE ACCENT; acute
\DeclareTextCommand{\textacute}{PU}{\80\264}% U+00B4
\DeclareTextCommand{\textasciiacute}{PU}{\80\264}% U+00B4
% U+00B5 MICRO SIGN; mu, mu1
\DeclareTextCommand{\textmu}{PU}{\80\265}% U+00B5
% U+00B6 PILCROW SIGN; paragraph
\DeclareTextCommand{\textparagraph}{PU}{\80\266}% U+00B6
%* \textparagraph -> \mathparagraph (LaTeX)
% U+00B7 MIDDLE DOT; middot, *periodcentered
\DeclareTextCommand{\textperiodcentered}{PU}{\80\267}% U+00B7
%* \textperiodcentered -> \MultiplicationDot (marvosym)
%* \textperiodcentered -> \Squaredot (marvosym)
% U+00B8 CEDILLA; cedilla
```

```
\DeclareTextCommand{\textcedilla}{PU}{\80\270}% U+00B8
% U+00B9 SUPERSCRIPT ONE; onesuperior
\DeclareTextCommand{\textonesuperior}{PU}{\80\271}%* U+00B9
% U+00BA MASCULINE ORDINAL INDICATOR; ordmasculine
\DeclareTextCommand{\textordmasculine}{PU}{\80\272}% U+00BA
% U+00BB RIGHT-POINTING DOUBLE ANGLE QUOTATION MARK; guillemotright
\DeclareTextCommand{\guillemotright}{PU}{\80\273}% U+00BB
% U+00BC VULGAR FRACTION ONE QUARTER; onequarter
\DeclareTextCommand{\textonequarter}{PU}{\80\274}% U+00BC
% U+00BD VULGAR FRACTION ONE HALF; onehalf
\DeclareTextCommand{\textonehalf}{PU}{\80\275}% U+00BD
% U+00BE VULGAR FRACTION THREE QUARTERS; threequarters
\DeclareTextCommand{\textthreequarters}{PU}{\80\276}% U+00BE
% U+00BF INVERTED QUESTION MARK; questiondown
\DeclareTextCommand{\textquestiondown}{PU}{\80\277}% U+00BF
% U+00C0 LATIN CAPITAL LETTER A WITH GRAVE; Agrave
\DeclareTextCompositeCommand{\`}{PU}{A}{\80\300}% U+00C0
% U+00C1 LATIN CAPITAL LETTER A WITH ACUTE; Aacute
\DeclareTextCompositeCommand{\'}{PU}{A}{\80\301}% U+00C1
% U+00C2 LATIN CAPITAL LETTER A WITH CIRCUMFLEX; Acircumflex
\DeclareTextCompositeCommand{\^}{PU}{A}{\80\302}% U+00C2
% U+00C3 LATIN CAPITAL LETTER A WITH TILDE; Atilde
\DeclareTextCompositeCommand{\~}{PU}{A}{\80\303}% U+00C3
% U+00C4 LATIN CAPITAL LETTER A WITH DIAERESIS; Adieresis
\DeclareTextCompositeCommand{\"}{PU}{A}{\80\304}% U+00C4
% U+00C5 LATIN CAPITAL LETTER A WITH RING ABOVE; Aring
\DeclareTextCompositeCommand{\r}{PU}{A}{\80\305}% U+00C5
% U+00C6 LATIN CAPITAL LETTER AE; AE
\DeclareTextCommand{\AE}{PU}{\80\306}% U+00C6
% U+00C7 LATIN CAPITAL LETTER C WITH CEDILLA; Ccedilla
\DeclareTextCompositeCommand{\c}{PU}{C}{\80\307}% U+00C7
% U+00C8 LATIN CAPITAL LETTER E WITH GRAVE; Egrave
\DeclareTextCompositeCommand{\`}{PU}{E}{\80\310}% U+00C8
% U+00C9 LATIN CAPITAL LETTER E WITH ACUTE; Eacute
\DeclareTextCompositeCommand{\'}{PU}{E}{\80\311}% U+00C9
% U+00CA LATIN CAPITAL LETTER E WITH CIRCUMFLEX; Ecircumflex
\DeclareTextCompositeCommand{\^}{PU}{E}{\80\312}% U+00CA
% U+00CB LATIN CAPITAL LETTER E WITH DIAERESIS; Edieresis
\DeclareTextCompositeCommand{\"}{PU}{E}{\80\313}% U+00CB
% U+00CC LATIN CAPITAL LETTER I WITH GRAVE; Igrave
\DeclareTextCompositeCommand{\`}{PU}{I}{\80\314}% U+00CC
% U+00CD LATIN CAPITAL LETTER I WITH ACUTE; Iacute
\DeclareTextCompositeCommand{\'}{PU}{I}{\80\315}% U+00CD
% U+00CE LATIN CAPITAL LETTER I WITH CIRCUMFLEX; Icircumflex
\DeclareTextCompositeCommand{\^}{PU}{I}{\80\316}% U+00CE
% U+00CF LATIN CAPITAL LETTER I WITH DIAERESIS; Idieresis
\DeclareTextCompositeCommand{\"}{PU}{I}{\80\317}% U+00CF
% U+00D0 LATIN CAPITAL LETTER ETH; Eth
\DeclareTextCommand{\DH}{PU}{\80\320}% U+00D0
% U+00D1 LATIN CAPITAL LETTER N WITH TILDE; Ntilde
\DeclareTextCompositeCommand{\~}{PU}{N}{\80\321}% U+00D1
% U+00D2 LATIN CAPITAL LETTER O WITH GRAVE; Ograve
\DeclareTextCompositeCommand{\`}{PU}{O}{\80\322}% U+00D2
% U+00D3 LATIN CAPITAL LETTER O WITH ACUTE; Oacute
\DeclareTextCompositeCommand{\'}{PU}{O}{\80\323}% U+00D3
% U+00D4 LATIN CAPITAL LETTER O WITH CIRCUMFLEX; Ocircumflex
```

```
\DeclareTextCompositeCommand{\^}{PU}{O}{\80\324}% U+00D4
% U+00D5 LATIN CAPITAL LETTER O WITH TILDE; Otilde
\DeclareTextCompositeCommand{\~}{PU}{O}{\80\325}% U+00D5
% U+00D6 LATIN CAPITAL LETTER O WITH DIAERESIS; Odieresis
\DeclareTextCompositeCommand{\"}{PU}{O}{\80\326}% U+00D6
% U+00D7 MULTIPLICATION SIGN; multiply
\DeclareTextCommand{\textmultiply}{PU}{\80\327}% U+00D7
%* \textmultiply -> \vartimes (stmaryrd)
%* \textmultiply -> \MVMultiplication (marvosym)
% U+00D8 LATIN CAPITAL LETTER O WITH STROKE; Oslash
\DeclareTextCommand{\O}{PU}{\80\330}% U+00D8
% U+00D9 LATIN CAPITAL LETTER U WITH GRAVE; Ugrave
\DeclareTextCompositeCommand{\`}{PU}{U}{\80\331}% U+00D9
% U+00DA LATIN CAPITAL LETTER U WITH ACUTE; Uacute
\DeclareTextCompositeCommand{\'}{PU}{U}{\80\332}% U+00DA
% U+00DB LATIN CAPITAL LETTER U WITH CIRCUMFLEX; Ucircumflex
\DeclareTextCompositeCommand{\^}{PU}{U}{\80\333}% U+00DB
% U+00DC LATIN CAPITAL LETTER U WITH DIAERESIS; Udieresis
\DeclareTextCompositeCommand{\"}{PU}{U}{\80\334}% U+00DC
% U+00DD LATIN CAPITAL LETTER Y WITH ACUTE; Yacute
\DeclareTextCompositeCommand{\'}{PU}{Y}{\80\335}% U+00DD
% U+00DE LATIN CAPITAL LETTER THORN; Thorn; \TH, \Thorn (wasysym)
\DeclareTextCommand{\TH}{PU}{\80\336}% U+00DE
\DeclareTextCommand{\textThorn}{PU}{\80\336}%* U+00DE
% U+00DF LATIN SMALL LETTER SHARP S; germandbls
\DeclareTextCommand{\ss}{PU}{\80\337}% U+00DF
% U+00E0 LATIN SMALL LETTER A WITH GRAVE; agrave
\DeclareTextCompositeCommand{\`}{PU}{a}{\80\340}% U+00E0
% U+00E1 LATIN SMALL LETTER A WITH ACUTE; aacute
\DeclareTextCompositeCommand{\'}{PU}{a}{\80\341}% U+00E1
% U+00E2 LATIN SMALL LETTER A WITH CIRCUMFLEX; acircumflex
\DeclareTextCompositeCommand{\^}{PU}{a}{\80\342}% U+00E2
% U+00E3 LATIN SMALL LETTER A WITH TILDE; atilde
\DeclareTextCompositeCommand{\~}{PU}{a}{\80\343}% U+00E3
% U+00E4 LATIN SMALL LETTER A WITH DIAERESIS; adieresis
\DeclareTextCompositeCommand{\"}{PU}{a}{\80\344}% U+00E4
% U+00E5 LATIN SMALL LETTER A WITH RING ABOVE; aring
\DeclareTextCompositeCommand{\r}{PU}{a}{\80\345}% U+00E5
% U+00E6 LATIN SMALL LETTER AE; ae
\DeclareTextCommand{\ae}{PU}{\80\346}% U+00E6
% U+00E7 LATIN SMALL LETTER C WITH CEDILLA; ccedilla
\DeclareTextCompositeCommand{\c}{PU}{c}{\80\347}% U+00E7
% U+00E8 LATIN SMALL LETTER E WITH GRAVE; egrave
\DeclareTextCompositeCommand{\`}{PU}{e}{\80\350}% U+00E8
% U+00E9 LATIN SMALL LETTER E WITH ACUTE; eacute
\DeclareTextCompositeCommand{\'}{PU}{e}{\80\351}% U+00E9
% U+00EA LATIN SMALL LETTER E WITH CIRCUMFLEX; ecircumflex
\DeclareTextCompositeCommand{\^}{PU}{e}{\80\352}% U+00EA
% U+00EB LATIN SMALL LETTER E WITH DIAERESIS; edieresis
\DeclareTextCompositeCommand{\"}{PU}{e}{\80\353}% U+00EB
% U+00EC LATIN SMALL LETTER I WITH GRAVE; igrave
\DeclareTextCompositeCommand{\`}{PU}{i}{\80\354}% U+00EC
\DeclareTextCompositeCommand{\`}{PU}{\i}{\80\354}% U+00EC
% U+00ED LATIN SMALL LETTER I WITH ACUTE; iacute
\DeclareTextCompositeCommand{\'}{PU}{i}{\80\355}% U+00ED
\DeclareTextCompositeCommand{\'}{PU}{\i}{\80\355}% U+00ED
% U+00EE LATIN SMALL LETTER I WITH CIRCUMFLEX; icircumflex
```

```
\DeclareTextCompositeCommand{\^}{PU}{i}{\80\356}% U+00EE
\DeclareTextCompositeCommand{\^}{PU}{\i}{\80\356}% U+00EE
% U+00EF LATIN SMALL LETTER I WITH DIAERESIS; idieresis
\DeclareTextCompositeCommand{\"}{PU}{i}{\80\357}% U+00EF
\DeclareTextCompositeCommand{\"}{PU}{\i}{\80\357}% U+00EF
% U+00F0 LATIN SMALL LETTER ETH; eth
\DeclareTextCommand{\dh}{PU}{\80\360}% U+00F0
%* \dh -> \eth (wsuipa, phonetic)
% U+00F1 LATIN SMALL LETTER N WITH TILDE; ntilde
\DeclareTextCompositeCommand{\~}{PU}{n}{\80\361}% U+00F1
% U+00F2 LATIN SMALL LETTER O WITH GRAVE; ograve
\DeclareTextCompositeCommand{\`}{PU}{o}{\80\362}% U+00F2
% U+00F3 LATIN SMALL LETTER O WITH ACUTE; oacute
\DeclareTextCompositeCommand{\'}{PU}{o}{\80\363}% U+00F3
% U+00F4 LATIN SMALL LETTER O WITH CIRCUMFLEX; ocircumflex
\DeclareTextCompositeCommand{\^}{PU}{o}{\80\364}% U+00F4
% U+00F5 LATIN SMALL LETTER O WITH TILDE; otilde
\DeclareTextCompositeCommand{\~}{PU}{o}{\80\365}% U+00F5
% U+00F6 LATIN SMALL LETTER O WITH DIAERESIS; odieresis
\DeclareTextCompositeCommand{\"}{PU}{o}{\80\366}% U+00F6
% U+00F7 DIVISION SIGN; divide
\DeclareTextCommand{\textdivide}{PU}{\80\367}% U+00F7
% U+00F8 LATIN SMALL LETTER O WITH STROKE; oslash
\DeclareTextCommand{\o}{PU}{\80\370}% U+00F8
% U+00F9 LATIN SMALL LETTER U WITH GRAVE; ugrave
\DeclareTextCompositeCommand{\`}{PU}{u}{\80\371}% U+00F9
% U+00FA LATIN SMALL LETTER U WITH ACUTE; uacute
\DeclareTextCompositeCommand{\'}{PU}{u}{\80\372}% U+00FA
% U+00FB LATIN SMALL LETTER U WITH CIRCUMFLEX; ucircumflex
\DeclareTextCompositeCommand{\^}{PU}{u}{\80\373}% U+00FB
% U+00FC LATIN SMALL LETTER U WITH DIAERESIS; udieresis
\DeclareTextCompositeCommand{\"}{PU}{u}{\80\374}% U+00FC
% U+00FD LATIN SMALL LETTER Y WITH ACUTE; yacute
\DeclareTextCompositeCommand{\'}{PU}{y}{\80\375}% U+00FD
% U+00FE LATIN SMALL LETTER THORN; thorn;
%   \th, \thorn (wasysym), \textthorn (tipa)
\DeclareTextCommand{\th}{PU}{\80\376}% U+00FE
\DeclareTextCommand{\textthorn}{PU}{\80\376}%* U+00FE
% U+00FF LATIN SMALL LETTER Y WITH DIAERESIS; ydieresis
\DeclareTextCompositeCommand{\"}{PU}{y}{\80\377}% U+00FF
```

51.2.4 Latin Extended-A: U+0080 to U+017F

```
% U+0100 LATIN CAPITAL LETTER A WITH MACRON; Amacron
\DeclareTextCompositeCommand{\=}{PU}{A}{\81\000}% U+0100
% U+0101 LATIN SMALL LETTER A WITH MACRON; amacron
\DeclareTextCompositeCommand{\=}{PU}{a}{\81\001}% U+0101
% U+0102 LATIN CAPITAL LETTER A WITH BREVE; Abreve
\DeclareTextCompositeCommand{\u}{PU}{A}{\81\002}% U+0102
% U+0103 LATIN SMALL LETTER A WITH BREVE; abreve
\DeclareTextCompositeCommand{\u}{PU}{a}{\81\003}% U+0103
% U+0104 LATIN CAPITAL LETTER A WITH OGONEK; Aogonek
\DeclareTextCompositeCommand{\k}{PU}{A}{\81\004}% U+0104
% U+0105 LATIN SMALL LETTER A WITH OGONEK; aogonek
\DeclareTextCompositeCommand{\k}{PU}{a}{\81\005}% U+0105
% U+0106 LATIN CAPITAL LETTER C WITH ACUTE; Cacute
\DeclareTextCompositeCommand{\'}{PU}{C}{\81\006}% U+0106
```

```
% U+0107 LATIN SMALL LETTER C WITH ACUTE; cacute
\DeclareTextCompositeCommand{\'}{PU}{c}{\81\007}% U+0107
% U+0108 LATIN CAPITAL LETTER C WITH CIRCUMFLEX; Ccircumflex
\DeclareTextCompositeCommand{\^}{PU}{C}{\81\010}% U+0108
% U+0109 LATIN SMALL LETTER C WITH CIRCUMFLEX; ccircumflex
\DeclareTextCompositeCommand{\^}{PU}{c}{\81\011}% U+0109
% U+010A LATIN CAPITAL LETTER C WITH DOT ABOVE; Cdot, Cdotaccent
\DeclareTextCompositeCommand{\.}{PU}{C}{\81\012}% U+010A
% U+010B LATIN SMALL LETTER C WITH DOT ABOVE; cdot, cdotaccent
\DeclareTextCompositeCommand{\.}{PU}{c}{\81\013}% U+010B
% U+010C LATIN CAPITAL LETTER C WITH CARON; Ccaron
\DeclareTextCompositeCommand{\v}{PU}{C}{\81\014}% U+010C
% U+010D LATIN SMALL LETTER C WITH CARON; ccaron
\DeclareTextCompositeCommand{\v}{PU}{c}{\81\015}% U+010D
% U+010E LATIN CAPITAL LETTER D WITH CARON; Dcaron
\DeclareTextCompositeCommand{\v}{PU}{D}{\81\016}% U+010E
% U+010F LATIN SMALL LETTER D WITH CARON; dcaron
\DeclareTextCompositeCommand{\v}{PU}{d}{\81\017}% U+010F
% U+0110 LATIN CAPITAL LETTER D WITH STROKE; Dcroat, Dslash
\DeclareTextCommand{\DJ}{PU}{\81\020}% U+0110
% U+0111 LATIN SMALL LETTER D WITH STROKE; dcroat, dmacron;
%   \textcrd (tipa)
\DeclareTextCommand{\dj}{PU}{\81\021}% U+0111
\DeclareTextCommand{\textcrd}{PU}{\81\021}% U+0111
%* \textcrd -> \crossd (wsuipa)
% An alternate glyph with the stroke through the bowl:
%* \textcrd -> \textbard (tipa)
%* \textcrd -> \bard (wsuipa)
% U+0112 LATIN CAPITAL LETTER E WITH MACRON; Emacron
\DeclareTextCompositeCommand{\=}{PU}{E}{\81\022}% U+0112
% U+0113 LATIN SMALL LETTER E WITH MACRON; emacron
\DeclareTextCompositeCommand{\=}{PU}{e}{\81\023}% U+0113
% U+0114 LATIN CAPITAL LETTER E WITH BREVE; Ebreve
\DeclareTextCompositeCommand{\u}{PU}{E}{\81\024}% U+0114
% U+0115 LATIN SMALL LETTER E WITH BREVE; ebreve
\DeclareTextCompositeCommand{\u}{PU}{e}{\81\025}% U+0115
% U+0116 LATIN CAPITAL LETTER E WITH DOT ABOVE; Edot, Edotaccent
\DeclareTextCompositeCommand{\.}{PU}{E}{\81\026}% U+0116
% U+0117 LATIN SMALL LETTER E WITH DOT ABOVE; edot, edotaccent
\DeclareTextCompositeCommand{\.}{PU}{e}{\81\027}% U+0117
% U+0118 LATIN CAPITAL LETTER E WITH OGONEK; Eogonek
\DeclareTextCompositeCommand{\k}{PU}{E}{\81\030}% U+0118
% U+0119 LATIN SMALL LETTER E WITH OGONEK; eogonek
\DeclareTextCompositeCommand{\k}{PU}{e}{\81\031}% U+0119
% U+011A LATIN CAPITAL LETTER E WITH CARON; Ecaron
\DeclareTextCompositeCommand{\v}{PU}{E}{\81\032}% U+011A
% U+011B LATIN SMALL LETTER E WITH CARON; ecaron
\DeclareTextCompositeCommand{\v}{PU}{e}{\81\033}% U+011B
% U+011C LATIN CAPITAL LETTER G WITH CIRCUMFLEX; Gcircumflex
\DeclareTextCompositeCommand{\^}{PU}{G}{\81\034}% U+011C
% U+011D LATIN SMALL LETTER G WITH CIRCUMFLEX; gcircumflex
\DeclareTextCompositeCommand{\^}{PU}{g}{\81\035}% U+011D
% U+011E LATIN CAPITAL LETTER G WITH BREVE; Gbreve
\DeclareTextCompositeCommand{\u}{PU}{G}{\81\036}% U+011E
% U+011F LATIN SMALL LETTER G WITH BREVE; gbreve
\DeclareTextCompositeCommand{\u}{PU}{g}{\81\037}% U+011F
```

```
% U+0120 LATIN CAPITAL LETTER G WITH DOT ABOVE; Gdot, Gdotaccent
\DeclareTextCompositeCommand{\.}{PU}{G}{\81\040}% U+0120
% U+0121 LATIN SMALL LETTER G WITH DOT ABOVE; gdot, gdotaccent
\DeclareTextCompositeCommand{\.}{PU}{g}{\81\041}% U+0121
% U+0122 LATIN CAPITAL LETTER G WITH CEDILLA; Gcedilla, Gcommaaccent
\DeclareTextCompositeCommand{\c}{PU}{G}{\81\042}% U+0122
% U+0123 LATIN SMALL LETTER G WITH CEDILLA; gcedilla, gcommaaccent
\DeclareTextCompositeCommand{\c}{PU}{g}{\81\043}% U+0123
% U+0124 LATIN CAPITAL LETTER H WITH CIRCUMFLEX; Hcircumflex
\DeclareTextCompositeCommand{\^}{PU}{H}{\81\044}% U+0124
% U+0125 LATIN SMALL LETTER H WITH CIRCUMFLEX; hcircumflex
\DeclareTextCompositeCommand{\^}{PU}{h}{\81\045}% U+0125
% U+0126 LATIN CAPITAL LETTER H WITH STROKE; Hbar
\DeclareTextCommand{\textHslash}{PU}{\81\046}% U+0126
% U+0127 LATIN SMALL LETTER H WITH STROKE; hbar; \hbar (AmS)
\DeclareTextCommand{\texthbar}{PU}{\81\047}%* U+0127
%* \texthbar -> \textcrh (tipa)
%* \texthbar -> \crossh (wsuipa)
%* \texthbar -> \planck (phonetic)
% U+0128 LATIN CAPITAL LETTER I WITH TILDE; Itilde
\DeclareTextCompositeCommand{\~}{PU}{I}{\81\050}% U+0128
% U+0129 LATIN SMALL LETTER I WITH TILDE; itilde
\DeclareTextCompositeCommand{\~}{PU}{i}{\81\051}% U+0129
\DeclareTextCompositeCommand{\~}{PU}{\i}{\81\051}% U+0129
% U+012A LATIN CAPITAL LETTER I WITH MACRON; Imacron
\DeclareTextCompositeCommand{\=}{PU}{I}{\81\052}% U+012A
% U+012B LATIN SMALL LETTER I WITH MACRON; imacron
\DeclareTextCompositeCommand{\=}{PU}{i}{\81\053}% U+012B
\DeclareTextCompositeCommand{\=}{PU}{\i}{\81\053}% U+012B
% U+012C LATIN CAPITAL LETTER I WITH BREVE; Ibreve
\DeclareTextCompositeCommand{\u}{PU}{I}{\81\054}% U+012C
% U+012D LATIN SMALL LETTER I WITH BREVE; ibreve
\DeclareTextCompositeCommand{\u}{PU}{i}{\81\055}% U+012D
\DeclareTextCompositeCommand{\u}{PU}{\i}{\81\055}% U+012D
% U+012E LATIN CAPITAL LETTER I WITH OGONEK; Iogonek
\DeclareTextCompositeCommand{\k}{PU}{I}{\81\056}% U+012E
% U+012F LATIN SMALL LETTER I WITH OGONEK; iogonek
\DeclareTextCompositeCommand{\k}{PU}{i}{\81\057}% U+012F
\DeclareTextCompositeCommand{\k}{PU}{\i}{\81\057}% U+012F
% U+0130 LATIN CAPITAL LETTER I WITH DOT ABOVE; Idot, Idotaccent
\DeclareTextCompositeCommand{\.}{PU}{I}{\81\060}% U+0130
% U+0131 LATIN SMALL LETTER DOTLESS I; dotlessi
\DeclareTextCommand{\i}{PU}{\81\061}% U+0131
% U+0132 LATIN CAPITAL LIGATURE IJ; IJ
\DeclareTextCommand{\IJ}{PU}{\81\062}% U+0132
% U+0133 LATIN SMALL LIGATURE IJ; ij
\DeclareTextCommand{\ij}{PU}{\81\063}% U+0133
% U+0134 LATIN CAPITAL LETTER J WITH CIRCUMFLEX; Jcircumflex
\DeclareTextCompositeCommand{\^}{PU}{J}{\81\064}% U+0134
% U+0135 LATIN SMALL LETTER J WITH CIRCUMFLEX; jcircumflex
\DeclareTextCompositeCommand{\^}{PU}{j}{\81\065}% U+0135
\DeclareTextCompositeCommand{\^}{PU}{\j}{\81\065}% U+0135
% U+0136 LATIN CAPITAL LETTER K WITH CEDILLA; Kcedilla, Kcommaaccent
\DeclareTextCompositeCommand{\c}{PU}{K}{\81\066}% U+0136
```

```
% U+0137 LATIN SMALL LETTER K WITH CEDILLA; kcedilla, kcommaaccent
\DeclareTextCompositeCommand{\c}{PU}{k}{\81\067}% U+0137
```

The canonical name of U+0138, small letter kra, would be \textkgreenlandic, following the glyph naming convention. However latex/base/inputenc.dtx has choosen \textkra.

```
% U+0138 LATIN SMALL LETTER KRA; kgreenlandic
\DeclareTextCommand{\textkra}{PU}{\81\070}% U+0138
% U+0139 LATIN CAPITAL LETTER L WITH ACUTE; Lacute
\DeclareTextCompositeCommand{\'}{PU}{L}{\81\071}% U+0139
% U+013A LATIN SMALL LETTER L WITH ACUTE; lacute
\DeclareTextCompositeCommand{\'}{PU}{l}{\81\072}% U+013A
% U+013B LATIN CAPITAL LETTER L WITH CEDILLA; Lcedilla, Lcommaaccent
\DeclareTextCompositeCommand{\c}{PU}{L}{\81\073}% U+013B
% U+013C LATIN SMALL LETTER L WITH CEDILLA; lcedilla, lcommaaccent
\DeclareTextCompositeCommand{\c}{PU}{l}{\81\074}% U+013C
% U+013D LATIN CAPITAL LETTER L WITH CARON; Lcaron
\DeclareTextCompositeCommand{\v}{PU}{L}{\81\075}% U+013D
% U+013E LATIN SMALL LETTER L WITH CARON; lcaron
\DeclareTextCompositeCommand{\v}{PU}{l}{\81\076}% U+013E
```

There seems to be no variants of letters 'L' and 'l' with a dot above (reasonable). Therefore the \. accent is reused instead of making a separate accent macro \textmiddledot.

```
% U+013F LATIN CAPITAL LETTER L WITH MIDDLE DOT; Ldot, Ldotaccent
\DeclareTextCompositeCommand{\.}{PU}{L}{\81\077}% U+013F
% U+0140 LATIN SMALL LETTER L WITH MIDDLE DOT; ldot, ldotaccent
\DeclareTextCompositeCommand{\.}{PU}{l}{\81\100}% U+0140
% U+0141 LATIN CAPITAL LETTER L WITH STROKE; Lslash
\DeclareTextCommand{\L}{PU}{\81\101}% U+0141
% U+0142 LATIN SMALL LETTER L WITH STROKE; lslash
\DeclareTextCommand{\l}{PU}{\81\102}% U+0142
% U+0143 LATIN CAPITAL LETTER N WITH ACUTE; Nacute
\DeclareTextCompositeCommand{\'}{PU}{N}{\81\103}% U+0143
% U+0144 LATIN SMALL LETTER N WITH ACUTE; nacute
\DeclareTextCompositeCommand{\'}{PU}{n}{\81\104}% U+0144
% U+0145 LATIN CAPITAL LETTER N WITH CEDILLA; Ncedilla, Ncommaaccent
\DeclareTextCompositeCommand{\c}{PU}{N}{\81\105}% U+0145
% U+0146 LATIN SMALL LETTER N WITH CEDILLA; ncedilla, ncommaaccent
\DeclareTextCompositeCommand{\c}{PU}{n}{\81\106}% U+0146
% U+0147 LATIN CAPITAL LETTER N WITH CARON; Ncaron
\DeclareTextCompositeCommand{\v}{PU}{N}{\81\107}% U+0147
% U+0148 LATIN SMALL LETTER N WITH CARON; ncaron
\DeclareTextCompositeCommand{\v}{PU}{n}{\81\110}% U+0148
% U+0149 LATIN SMALL LETTER N PRECEDED BY APOSTROPHE; napostrophe, quoterightn
\DeclareTextCommand{\textnapostrophe}{PU}{\81\111}% U+0149
% U+014A LATIN CAPITAL LETTER ENG; Eng
\DeclareTextCommand{\NG}{PU}{\81\112}% U+014A
% U+014B LATIN SMALL LETTER ENG; eng
\DeclareTextCommand{\ng}{PU}{\81\113}% U+014B
%* \ng -> \eng (wsuipa)
%* \ng -> \engma (phonetic)
% U+014C LATIN CAPITAL LETTER O WITH MACRON; Omacron
\DeclareTextCompositeCommand{\=}{PU}{O}{\81\114}% U+014C
```

```
% U+014D LATIN SMALL LETTER O WITH MACRON; omacron
\DeclareTextCompositeCommand{\=}{PU}{o}{\81\115}% U+014D
% U+014E LATIN CAPITAL LETTER O WITH BREVE; Obreve
\DeclareTextCompositeCommand{\u}{PU}{O}{\81\116}% U+014E
% U+014F LATIN SMALL LETTER O WITH BREVE; obreve
\DeclareTextCompositeCommand{\u}{PU}{o}{\81\117}% U+014F
% U+0150 LATIN CAPITAL LETTER O WITH DOUBLE ACUTE; Odblacute, Ohungarumlaut
\DeclareTextCompositeCommand{\H}{PU}{O}{\81\120}% U+0150
% U+0151 LATIN SMALL LETTER O WITH DOUBLE ACUTE; odblacute, ohungarumlaut
\DeclareTextCompositeCommand{\H}{PU}{o}{\81\121}% U+0151
% U+0152 LATIN CAPITAL LIGATURE OE; OE
\DeclareTextCommand{\OE}{PU}{\81\122}% U+0152
% U+0153 LATIN SMALL LIGATURE OE; oe
\DeclareTextCommand{\oe}{PU}{\81\123}% U+0153
% U+0154 LATIN CAPITAL LETTER R WITH ACUTE; Racute
\DeclareTextCompositeCommand{\'}{PU}{R}{\81\124}% U+0154
% U+0155 LATIN SMALL LETTER R WITH ACUTE; racute
\DeclareTextCompositeCommand{\'}{PU}{r}{\81\125}% U+0155
% U+0156 LATIN CAPITAL LETTER R WITH CEDILLA; Rcedilla, Rcommaaccent
\DeclareTextCompositeCommand{\c}{PU}{R}{\81\126}% U+0156
% U+0157 LATIN SMALL LETTER R WITH CEDILLA; rcedilla, rcommaaccent
\DeclareTextCompositeCommand{\c}{PU}{r}{\81\127}% U+0157
% U+0158 LATIN CAPITAL LETTER R WITH CARON; Rcaron
\DeclareTextCompositeCommand{\v}{PU}{R}{\81\130}% U+0158
% U+0159 LATIN SMALL LETTER R WITH CARON; rcaron
\DeclareTextCompositeCommand{\v}{PU}{r}{\81\131}% U+0159
% U+015A LATIN CAPITAL LETTER S WITH ACUTE; Sacute
\DeclareTextCompositeCommand{\'}{PU}{S}{\81\132}% U+015A
% U+015B LATIN SMALL LETTER S WITH ACUTE; sacute
\DeclareTextCompositeCommand{\'}{PU}{s}{\81\133}% U+015B
% U+015C LATIN CAPITAL LETTER S WITH CIRCUMFLEX; Scircumflex
\DeclareTextCompositeCommand{\^}{PU}{S}{\81\134}% U+015C
% U+015D LATIN SMALL LETTER S WITH CIRCUMFLEX; scircumflex
\DeclareTextCompositeCommand{\^}{PU}{s}{\81\135}% U+015D
% U+015E LATIN CAPITAL LETTER S WITH CEDILLA; Scedilla
\DeclareTextCompositeCommand{\c}{PU}{S}{\81\136}% U+015E
% U+015F LATIN SMALL LETTER S WITH CEDILLA; scedilla
\DeclareTextCompositeCommand{\c}{PU}{s}{\81\137}% U+015F
% U+0160 LATIN CAPITAL LETTER S WITH CARON; Scaron
\DeclareTextCompositeCommand{\v}{PU}{S}{\81\140}% U+0160
% U+0161 LATIN SMALL LETTER S WITH CARON; scaron
\DeclareTextCompositeCommand{\v}{PU}{s}{\81\141}% U+0161
% U+0162 LATIN CAPITAL LETTER T WITH CEDILLA; Tcedilla, Tcommaaccent
\DeclareTextCompositeCommand{\c}{PU}{T}{\81\142}% U+0162
% U+0163 LATIN SMALL LETTER T WITH CEDILLA; tcedilla, tcommaaccent
\DeclareTextCompositeCommand{\c}{PU}{t}{\81\143}% U+0163
% U+0164 LATIN CAPITAL LETTER T WITH CARON; Tcaron
\DeclareTextCompositeCommand{\v}{PU}{T}{\81\144}% U+0164
% U+0165 LATIN SMALL LETTER T WITH CARON; tcaron
\DeclareTextCompositeCommand{\v}{PU}{t}{\81\145}% U+0165
% U+0166 LATIN CAPITAL LETTER T WITH STROKE; Tbar
\DeclareTextCommand{\textTslash}{PU}{\81\146}% U+0166
% U+0167 LATIN SMALL LETTER T WITH STROKE; tbar
```

```
\DeclareTextCommand{\texttslash}{PU}{\81\147}% U+0167
% U+0168 LATIN CAPITAL LETTER U WITH TILDE; Utilde
\DeclareTextCompositeCommand{\~}{PU}{U}{\81\150}% U+0168
% U+0169 LATIN SMALL LETTER U WITH TILDE; utilde
\DeclareTextCompositeCommand{\~}{PU}{u}{\81\151}% U+0169
% U+016A LATIN CAPITAL LETTER U WITH MACRON; Umacron
\DeclareTextCompositeCommand{\=}{PU}{U}{\81\152}% U+016A
% U+016B LATIN SMALL LETTER U WITH MACRON; umacron
\DeclareTextCompositeCommand{\=}{PU}{u}{\81\153}% U+016B
% U+016C LATIN CAPITAL LETTER U WITH BREVE; Ubreve
\DeclareTextCompositeCommand{\u}{PU}{U}{\81\154}% U+016C
% U+016D LATIN SMALL LETTER U WITH BREVE; ubreve
\DeclareTextCompositeCommand{\u}{PU}{u}{\81\155}% U+016D
% U+016E LATIN CAPITAL LETTER U WITH RING ABOVE; Uring
\DeclareTextCompositeCommand{\r}{PU}{U}{\81\156}% U+016E
% U+016F LATIN SMALL LETTER U WITH RING ABOVE; uring
\DeclareTextCompositeCommand{\r}{PU}{u}{\81\157}% U+016F
% U+0170 LATIN CAPITAL LETTER U WITH DOUBLE ACUTE; Udbla-
    cute, Uhungarumlaut
\DeclareTextCompositeCommand{\H}{PU}{U}{\81\160}% U+0170
% U+0171 LATIN SMALL LETTER U WITH DOUBLE ACUTE; udbla-
    cute, uhungarumlaut
\DeclareTextCompositeCommand{\H}{PU}{u}{\81\161}% U+0171
% U+0172 LATIN CAPITAL LETTER U WITH OGONEK; Uogonek
\DeclareTextCompositeCommand{\k}{PU}{U}{\81\162}% U+0172
% U+0173 LATIN SMALL LETTER U WITH OGONEK; uogonek
\DeclareTextCompositeCommand{\k}{PU}{u}{\81\163}% U+0173
% U+0174 LATIN CAPITAL LETTER W WITH CIRCUMFLEX; Wcircumflex
\DeclareTextCompositeCommand{\^}{PU}{W}{\81\164}% U+0174
% U+0175 LATIN SMALL LETTER W WITH CIRCUMFLEX; wcircumflex
\DeclareTextCompositeCommand{\^}{PU}{w}{\81\165}% U+0175
% U+0176 LATIN CAPITAL LETTER Y WITH CIRCUMFLEX; Ycircumflex
\DeclareTextCompositeCommand{\^}{PU}{Y}{\81\166}% U+0176
% U+0177 LATIN SMALL LETTER Y WITH CIRCUMFLEX; ycircumflex
\DeclareTextCompositeCommand{\^}{PU}{y}{\81\167}% U+0177
% U+0178 LATIN CAPITAL LETTER Y WITH DIAERESIS; Ydieresis
\DeclareTextCompositeCommand{\"}{PU}{Y}{\81\170}% U+0178
% U+0179 LATIN CAPITAL LETTER Z WITH ACUTE; Zacute
\DeclareTextCompositeCommand{\'}{PU}{Z}{\81\171}% U+0179
% U+017A LATIN SMALL LETTER Z WITH ACUTE; zacute
\DeclareTextCompositeCommand{\'}{PU}{z}{\81\172}% U+017A
% U+017B LATIN CAPITAL LETTER Z WITH DOT ABOVE; Zdot, Zdotaccent
\DeclareTextCompositeCommand{\.}{PU}{Z}{\81\173}% U+017B
% U+017C LATIN SMALL LETTER Z WITH DOT ABOVE; zdot, zdotaccent
\DeclareTextCompositeCommand{\.}{PU}{z}{\81\174}% U+017C
% U+017D LATIN CAPITAL LETTER Z WITH CARON; Zcaron
\DeclareTextCompositeCommand{\v}{PU}{Z}{\81\175}% U+017D
% U+017E LATIN SMALL LETTER Z WITH CARON; zcaron
\DeclareTextCompositeCommand{\v}{PU}{z}{\81\176}% U+017E
% U+017F LATIN SMALL LETTER LONG S; longs, slong
\DeclareTextCommand{\textlongs}{PU}{\81\177}% U+017F
```

51.2.5 Latin Extended-B: U+0180 to U+024F

```
% U+0180 LATIN SMALL LETTER B WITH STROKE; bstroke; \textcrb (tipa)
\DeclareTextCommand{\textcrb}{PU}{\81\200}% U+0180
%* \textcrb -> \crossb (wsuipa)
% An alternate glyph with the stroke through the bowl:
```

```
%* \textcrb -> \textbarb (tipa)
%* \textcrb -> \barb (wsuipa)
% U+0181 LATIN CAPITAL LETTER B WITH HOOK; Bhook; \hausaB (phonetic)
\DeclareTextCommand{\texthausaB}{PU}{\81\201}%* U+0181
% U+0188 LATIN SMALL LETTER C WITH HOOK; chook; \texthtc (tipa)
\DeclareTextCommand{\texthtc}{PU}{\81\210}% U+0188
% U+018A LATIN CAPITAL LETTER D WITH HOOK; Dhook; \hausaD (phonetic)
\DeclareTextCommand{\texthausaD}{PU}{\81\212}%* U+018A
% U+018E LATIN CAPITAL LETTER REVERSED E; Ereversed
\DeclareTextCommand{\textEreversed}{PU}{\81\216}% U+018E
\DeclareTextCommand{\textrevE}{PU}{\81\216}% U+018E
% U+0192 LATIN SMALL LETTER F WITH HOOK; florin
\DeclareTextCommand{\textflorin}{PU}{\81\222}% U+0192
%* \textflorin -> \Florin (marvosym)
% U+0195 LATIN SMALL LETTER HV; hv; \texthvlig (tipa)
\DeclareTextCommand{\texthvlig}{PU}{\81\225}% U+0195
%* \texthvlig -> \hv (wsuipa)
% U+0198 LATIN CAPITAL LETTER K WITH HOOK; Khook; \hausaK (phonetic)
\DeclareTextCommand{\texthausaK}{PU}{\81\230}%* U+0198
% U+0199 LATIN SMALL LETTER K WITH HOOK; khook; \texthtk (tipa)
\DeclareTextCommand{\texthtk}{PU}{\81\231}% U+0199
%* \texthtk -> \hausak (phonetic)
% U+019A LATIN SMALL LETTER L WITH BAR; lbar;
%   \textbarl (tipa), \barl (wsuipa)
\DeclareTextCommand{\textbarl}{PU}{\81\232}%* U+019A
% U+019B LATIN SMALL LETTER LAMBDA WITH STROKE/
%   LATIN SMALL LETTER BARRED LAMBDA; lambdastroke;
%   \textcrlambda (tipa)
\DeclareTextCommand{\textcrlambda}{PU}{\81\233}% U+019B
%* \textcrlambda -> \crossnilambda (wsuipa)
%* \textcrlambda -> \barlambda (phonetic)
%* \textcrlambda -> \lambdabar (txfonts/pxfonts)
%* \textcrlambda -> \lambdaslash (txfonts/pxfonts)
% U+019E LATIN SMALL LETTER N WITH LONG RIGHT LEG; nlegrightlong;
%   \textnrleg (tipx)
\DeclareTextCommand{\textPUnrleg}{PU}{\81\236}% U+019E
%* \textPUnrleg -> \textnrleg (tipx)
% U+01A5 LATIN SMALL LETTER P WITH HOOK; phook; \texthtp (tipa)
\DeclareTextCommand{\texthtp}{PU}{\81\245}% U+01A5
% U+01AB LATIN SMALL LETTER T WITH PALATAL HOOK; tpalatalhook;
%   \textlhookt (tipa)
\DeclareTextCommand{\textlhookt}{PU}{\81\253}% U+01AB
% U+01AD LATIN SMALL LETTER T WITH HOOK; thook; \texthtt (tipa)
\DeclareTextCommand{\texthtt}{PU}{\81\255}% U+01AD
% U+01B9 LATIN SMALL LETTER EZH REVERSED/
%   LATIN SMALL LETTER REVERSED YOGH; \textrevyogh (tipa)
\DeclareTextCommand{\textrevyogh}{PU}{\81\271}% U+01B9
% U+01BB LATIN LETTER TWO WITH STROKE; twostroke; \textcrtwo (tipa)
\DeclareTextCommand{\textcrtwo}{PU}{\81\273}% U+01BB
% U+01BE LATIN LETTER INVERTED GLOTTAL STOP WITH STROKE;
%   glottalinvertedstroke; \textcrinvglotstop (tipa)
\DeclareTextCommand{\textcrinvglotstop}{PU}{\81\276}% U+01BE
% U+01BF LATIN LETTER WYNN; wynn; \textwynn (tipa)
```

```
\DeclareTextCommand{\textwynn}{PU}{\81\277}% U+01BF
% U+01C0 LATIN LETTER DENTAL CLICK/LATIN LETTER PIPE; clickdental;
%   \textpipe (tipa)
\DeclareTextCommand{\textpipe}{PU}{\81\300}% U+01C0
%* \textpipe -> \textpipevar (tipx)
% U+01C1 LATIN LETTER LATERAL CLICK/LATIN LETTER
%   DOUBLE PIPE; clicklateral; \textdoublepipe (tipa)
\DeclareTextCommand{\textdoublepipe}{PU}{\81\301}% U+01C1
%* \textdoublepipe -> \textdoublepipevar (tipx)
% U+01C2 LATIN LETTER ALVEOLAR CLICK/LATIN LETTER PIPE DOUBLE BAR;
%   clickalveolar; \textdoublebarpipe (tipa)
\DeclareTextCommand{\textdoublebarpipe}{PU}{\81\302}% U+01C2
%* \textdoublebarpipe -> \textdoublebarpipevar (tipx)
% U+01CD LATIN CAPITAL LETTER A WITH CARON; Acaron
\DeclareTextCompositeCommand{\v}{PU}{A}{\81\315}% U+01CD
% U+01CE LATIN SMALL LETTER A WITH CARON; acaron
\DeclareTextCompositeCommand{\v}{PU}{a}{\81\316}% U+01CE
% U+01CF LATIN CAPITAL LETTER I WITH CARON; Icaron
\DeclareTextCompositeCommand{\v}{PU}{I}{\81\317}% U+01CF
% U+01D0 LATIN SMALL LETTER I WITH CARON; icaron
\DeclareTextCompositeCommand{\v}{PU}{\i}{\81\320}% U+01D0
\DeclareTextCompositeCommand{\v}{PU}{i}{\81\320}% U+01D0
% U+01D1 LATIN CAPITAL LETTER O WITH CARON; Ocaron
\DeclareTextCompositeCommand{\v}{PU}{O}{\81\321}% U+01D1
% U+01D2 LATIN SMALL LETTER O WITH CARON; ocaron
\DeclareTextCompositeCommand{\v}{PU}{o}{\81\322}% U+01D2
% U+01D3 LATIN CAPITAL LETTER U WITH CARON; Ucaron
\DeclareTextCompositeCommand{\v}{PU}{U}{\81\323}% U+01D3
% U+01D4 LATIN SMALL LETTER U WITH CARON; ucaron
\DeclareTextCompositeCommand{\v}{PU}{u}{\81\324}% U+01D4
% U+01DD LATIN SMALL LETTER TURNED E; eturned; \inve (wasysym)
\DeclareTextCommand{\textinve}{PU}{\81\335}%* U+01DD
% U+01E4 LATIN CAPITAL LETTER G WITH STROKE; Gstroke
\DeclareTextCommand{\textGslash}{PU}{\81\344}% U+01E4
% U+01E5 LATIN SMALL LETTER G WITH STROKE; gstroke
\DeclareTextCommand{\textgslash}{PU}{\81\345}% U+01E5
%* \textgslash -> \textcrg (tipa)
% U+01E6 LATIN CAPITAL LETTER G WITH CARON; Gcaron
\DeclareTextCompositeCommand{\v}{PU}{G}{\81\346}% U+01E6
% U+01E7 LATIN SMALL LETTER G WITH CARON; gcaron
\DeclareTextCompositeCommand{\v}{PU}{g}{\81\347}% U+01E7
% U+01E8 LATIN CAPITAL LETTER K WITH CARON; Kcaron
\DeclareTextCompositeCommand{\v}{PU}{K}{\81\350}% U+01E8
% U+01E9 LATIN SMALL LETTER K WITH CARON; kcaron
\DeclareTextCompositeCommand{\v}{PU}{k}{\81\351}% U+01E9
% U+01EA LATIN CAPITAL LETTER O WITH OGONEK; Oogonek
\DeclareTextCompositeCommand{\k}{PU}{O}{\81\352}% U+01EA
% U+01EB LATIN SMALL LETTER O WITH OGONEK; oogonek
\DeclareTextCompositeCommand{\k}{PU}{o}{\81\353}% U+01EB
% U+01F0 LATIN SMALL LETTER J WITH CARON; jcaron
\DeclareTextCompositeCommand{\v}{PU}{\j}{\81\360}% U+01F0
\DeclareTextCompositeCommand{\v}{PU}{j}{\81\360}% U+01F0
% U+01F4 LATIN CAPITAL LETTER G WITH ACUTE; Gacute
\DeclareTextCompositeCommand{\'}{PU}{G}{\81\364}% U+01F4
% U+01F5 LATIN SMALL LETTER G WITH ACUTE; gacute
```

```
\DeclareTextCompositeCommand{\'}{PU}{g}{\81\365}% U+01F5
% U+01F8 LATIN CAPITAL LETTER N WITH GRAVE
\DeclareTextCompositeCommand{\`}{PU}{N}{\81\370}% U+01F8
% U+01F9 LATIN SMALL LETTER N WITH GRAVE
\DeclareTextCompositeCommand{\`}{PU}{n}{\81\371}% U+01F9
% U+01FC LATIN CAPITAL LETTER AE WITH ACUTE; AEacute
\DeclareTextCompositeCommand{\'}{PU}{\AE}{\81\374}% U+01FC
% U+01FD LATIN SMALL LETTER AE WITH ACUTE; aeacute
\DeclareTextCompositeCommand{\'}{PU}{\ae}{\81\375}% U+01FD
% U+01FE LATIN CAPITAL LETTER O WITH STROKE AND ACUTE;
%   *Oslashacute, Ostrokeacut
\DeclareTextCompositeCommand{\'}{PU}{\O}{\81\376}% U+01FE
% U+01FF LATIN SMALL LETTER O WITH STROKE AND ACUTE;
%   *oslashacute, ostrokeacute
\DeclareTextCompositeCommand{\'}{PU}{\o}{\81\377}% U+01FF
% U+0200 LATIN CAPITAL LETTER A WITH DOUBLE GRAVE; Adblgrave
\DeclareTextCompositeCommand{\G}{PU}{A}{\82\000}% U+0200
% U+0201 LATIN SMALL LETTER A WITH DOUBLE GRAVE; adblgrave
\DeclareTextCompositeCommand{\G}{PU}{a}{\82\001}% U+0201
% U+0204 LATIN CAPITAL LETTER E WITH DOUBLE GRAVE; Edblgrave
\DeclareTextCompositeCommand{\G}{PU}{E}{\82\004}% U+0204
% U+0205 LATIN SMALL LETTER E WITH DOUBLE GRAVE; edblgrave
\DeclareTextCompositeCommand{\G}{PU}{e}{\82\005}% U+0205
% U+0206 LATIN CAPITAL LETTER E WITH INVERTED BREVE; Einvert-
    edbreve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{E}{\82\006}% U+0206
% U+0207 LATIN SMALL LETTER E WITH INVERTED BREVE; einverted-
    breve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{e}{\82\007}% U+0207
% U+0208 LATIN CAPITAL LETTER I WITH DOUBLE GRAVE; Idblgrave
\DeclareTextCompositeCommand{\G}{PU}{I}{\82\010}% U+0208
% U+0209 LATIN SMALL LETTER I WITH DOUBLE GRAVE; idblgrave
\DeclareTextCompositeCommand{\G}{PU}{\i}{\82\011}% U+0209
\DeclareTextCompositeCommand{\G}{PU}{i}{\82\011}% U+0209
% U+020A LATIN CAPITAL LETTER I WITH INVERTED BREVE; Iinverted-
    breve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{I}{\82\012}% U+020A
% U+020B LATIN SMALL LETTER I WITH INVERTED BREVE; iinverted-
    breve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{i}{\82\013}% U+020B
\DeclareTextCompositeCommand{\textinvbreve}{PU}{\i}{\82\013}% U+020B
% U+020C LATIN CAPITAL LETTER O WITH DOUBLE GRAVE; Odblgrave
\DeclareTextCompositeCommand{\G}{PU}{O}{\82\014}% U+020C
% U+020D LATIN SMALL LETTER O WITH DOUBLE GRAVE; odblgrave
\DeclareTextCompositeCommand{\G}{PU}{o}{\82\015}% U+020D
% U+020E LATIN CAPITAL LETTER O WITH INVERTED BREVE; Oinvert-
    edbreve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{O}{\82\016}% U+020E
% U+020F LATIN SMALL LETTER O WITH INVERTED BREVE; oinverted-
    breve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{o}{\82\017}% U+020F
% U+0210 LATIN CAPITAL LETTER R WITH DOUBLE GRAVE; Rdblgrave
\DeclareTextCompositeCommand{\G}{PU}{R}{\82\020}% U+0210
% U+0211 LATIN SMALL LETTER R WITH DOUBLE GRAVE; rdblgrave
\DeclareTextCompositeCommand{\G}{PU}{r}{\82\021}% U+0211
% U+0214 LATIN CAPITAL LETTER U WITH DOUBLE GRAVE; Udblgrave
\DeclareTextCompositeCommand{\G}{PU}{U}{\82\024}% U+0214
```

```
% U+0215 LATIN SMALL LETTER U WITH DOUBLE GRAVE; udblgrave
\DeclareTextCompositeCommand{\G}{PU}{u}{\82\025}% U+0215
% U+0216 LATIN CAPITAL LETTER U WITH INVERTED BREVE; Uinvertedbreve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{U}{\82\026}% U+0216
% U+0217 LATIN SMALL LETTER U WITH INVERTED BREVE; uinvertedbreve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{u}{\82\027}% U+0217
% U+021E LATIN CAPITAL LETTER H WITH CARON
\DeclareTextCompositeCommand{\v}{PU}{H}{\82\036}% U+021E
% U+021F LATIN SMALL LETTER H WITH CARON
\DeclareTextCompositeCommand{\v}{PU}{h}{\82\037}% U+021F
% U+0221 LATIN SMALL LETTER D WITH CURL; \textctd (tipa)
\DeclareTextCommand{\textctd}{PU}{\82\041}% U+0221
% U+0225 LATIN SMALL LETTER Z WITH HOOK; \textcommatailz (tipa)
\DeclareTextCommand{\textcommatailz}{PU}{\82\045}% U+0225
% U+0226 LATIN CAPITAL LETTER A WITH DOT ABOVE
\DeclareTextCompositeCommand{\.}{PU}{A}{\82\046}% U+0226
% U+0227 LATIN SMALL LETTER A WITH DOT ABOVE
\DeclareTextCompositeCommand{\.}{PU}{a}{\82\047}% U+0227
% U+0228 LATIN CAPITAL LETTER E WITH CEDILLA
\DeclareTextCompositeCommand{\c}{PU}{E}{\82\050}% U+0228
% U+0229 LATIN SMALL LETTER E WITH CEDILLA
\DeclareTextCompositeCommand{\c}{PU}{e}{\82\051}% U+0229
% U+022E LATIN CAPITAL LETTER O WITH DOT ABOVE
\DeclareTextCompositeCommand{\.}{PU}{O}{\82\056}% U+022E
% U+022F LATIN SMALL LETTER O WITH DOT ABOVE
\DeclareTextCompositeCommand{\.}{PU}{o}{\82\057}% U+022F
% U+0232 LATIN CAPITAL LETTER Y WITH MACRON
\DeclareTextCompositeCommand{\=}{PU}{Y}{\82\062}% U+0232
% U+0233 LATIN SMALL LETTER Y WITH MACRON
\DeclareTextCompositeCommand{\=}{PU}{y}{\82\063}% U+0233
% U+0235 LATIN SMALL LETTER N WITH CURL; \textctn (tipa)
\DeclareTextCommand{\textctn}{PU}{\82\065}% U+0235
% U+0236 LATIN SMALL LETTER T WITH CURL; \textctt (tipa)
\DeclareTextCommand{\textctt}{PU}{\82\066}% U+0236
% U+0237 LATIN SMALL LETTER DOTLESS J
\DeclareTextCommand{\j}{PU}{\82\067}% U+0237
% U+0238 LATIN SMALL LETTER DB DIGRAPH; \textdblig (tipx)
\DeclareTextCommand{\textPUdblig}{PU}{\82\070}% U+0238
%* \textPUdblig -> \textdblig (tipx)
% U+0239 LATIN SMALL LETTER QP DIGRAPH; \textqplig (tipx)
\DeclareTextCommand{\textPUqplig}{PU}{\82\071}% U+0239
%* \textPUqplig -> \textqplig (tipx)
% U+023C LATIN SMALL LETTER C WITH STROKE; \slashc (wsuipa)
\DeclareTextCommand{\textslashc}{PU}{\82\074}%* U+023C
%* \textslashc -> \textcentoldstyle (textcomp)
% With bar instead of stroke:
%* \textslashc -> \textbarc (tipa)
```

51.2.6 IPA Extensions: U+0250 to U+02AF

```
% U+0250 LATIN SMALL LETTER TURNED A; aturned; \textturna (tipa)
\DeclareTextCommand{\textturna}{PU}{\82\120}% U+0250
%* \textturna -> \inva (wasysym)
% U+0251 LATIN SMALL LETTER ALPHA/LATIN SMALL LETTER
%   SCRIPT A; ascript; \textscripta (tipa), \scripta (wsuipa)
\DeclareTextCommand{\textscripta}{PU}{\82\121}%* U+0251
```

```
%* \textscripta -> \vara (phonetic)
% U+0252 LATIN SMALL LETTER TURNED ALPHA; ascriptturned;
%   \textturnscripta (tipa)
\DeclareTextCommand{\textturnscripta}{PU}{\82\122}% U+0252
%* \textturnscripta -> \invscripta (wsuipa)
%* \textturnscripta -> \rotvara (phonetic)
% U+0253 LATIN CAPITAL LETTER B WITH HOOK; bhook; \texthtb (tipa)
\DeclareTextCommand{\texthtb}{PU}{\82\123}% U+0253
%* \texthtb -> \hookb (wsuipa)
%* \texthtb -> \hausab (phonetic)
% U+0254 LATIN SMALL LETTER OPEN O; oopen;
%   \textopeno (tipa), \openo (wasysym)
\DeclareTextCommand{\textopeno}{PU}{\82\124}%* U+0254
%* \textopeno -> \varopeno (phonetic)
% U+0255 LATIN SMALL LETTER C WITH CURL; ccurl; \textctc (tipa)
\DeclareTextCommand{\textctc}{PU}{\82\125}% U+0255
%* \textctc -> \curlyc (wsuipa)
% U+0256 LATIN SMALL LETTER D WITH TAIL; dtail; \textrtaild (tipa)
\DeclareTextCommand{\textrtaild}{PU}{\82\126}%* U+0256
%* \textrtaild -> \taild (wsuipa)
% U+0257 LATIN SMALL LETTER D WITH HOOK; dhook; \texthtd (tipa)
\DeclareTextCommand{\texthtd}{PU}{\82\127}% U+0257
%* \texthtd -> \hookd (wsuipa)
%* \texthtd -> \hausad (phonetic)
% U+0258 LATIN SMALL LETTER REVERSED E; ereversed;
%   \textreve (tipa), \reve (wsuipa)
\DeclareTextCommand{\textreve}{PU}{\82\130}%* U+0258
% U+0259 LATIN SMALL LETTER SCHWA; schwa;
%   \textschwa (tipa), \schwa (wsuipa, phonetic)
\DeclareTextCommand{\textschwa}{PU}{\82\131}%* U+0259
% U+025A LATIN SMALL LETTER SCHWA WITH HOOK; schwahook;
%   \textrhookschwa (tipa)
\DeclareTextCommand{\textrhookschwa}{PU}{\82\132}% U+025A
%* \textrhookschwa -> \er (wsuipa)
% U+025B LATIN SMALL LETTER OPEN E/LATIN SMALL LETTER EPSILON; eopen;
%   \niepsilon (wsuipa)
\DeclareTextCommand{\textniepsilon}{PU}{\82\133}%* U+025B
%* \textniepsilon -> \epsi (phonetic)
% U+025C LATIN SMALL LETTER REVERSED OPEN E; eopenreversed;
%   \textrevepsilon (tipa), \revepsilon (wsuipa)
\DeclareTextCommand{\textrevepsilon}{PU}{\82\134}%* U+025C
% U+025D LATIN SMALL LETTER REVERSED OPEN E WITH HOOK; eopenreversedhook;
%   \textrhookrevepsilon (tipa)
\DeclareTextCommand{\textrhookrevepsilon}{PU}{\82\135}%* U+025D
%* \textrhookrevepsilon -> \hookrevepsilon (wsuipa)
% U+025E LATIN SMALL LETTER CLOSED REVERSED OPEN E; eopenreversedclosed;
%   \textcloserevepsilon (tipa)
\DeclareTextCommand{\textcloserevepsilon}{PU}{\82\136}% U+025E
%* \textcloserevepsilon -> \closedrevepsilon (wsuipa)
% U+025F LATIN SMALL LETTER DOTLESS J WITH STROKE; jdotlessstroke;
%   \textbardotlessj (tipa)
\DeclareTextCommand{\textbardotlessj}{PU}{\82\137}% U+025F
%* \textbardotlessj -> \barj (phonetic)
```

```
% U+0260 LATIN SMALL LETTER G WITH HOOK; ghook; \texthtg (tipa)
\DeclareTextCommand{\texthtg}{PU}{\82\140}% U+0260
%* \texthtg -> \hookg (wsuipa)
% U+0261 LATIN SMALL LETTER SCRIPT G; gscript;
%   \textscriptg (tipa), \scriptg (wsuipa)
\DeclareTextCommand{\textscriptg}{PU}{\82\141}%* U+0261
%* \textscriptg -> \varg (phonetic)
% U+0262 LATIN LETTER SMALL CAPITAL G; \textscg (tipa), \scg (wsuipa)
\DeclareTextCommand{\textscg}{PU}{\82\142}%* U+0262
% U+0263 LATIN SMALL LETTER GAMMA; gammalatinsmall;
%   \ipagamma (wsuipa), \vod (phonetic)
\DeclareTextCommand{\textipagamma}{PU}{\82\143}%* U+0263
%* \textipagamma -> \vod (pnonetic)
% U+0264 LATIN SMALL LETTER RAMS HORN; ramshorn;
%   \babygamma (wsuipa)
\DeclareTextCommand{\textbabygamma}{PU}{\82\144}%* U+0264
% U+0265 LATIN SMALL LETTER TURNED H; hturned; \textturnh (tipa)
\DeclareTextCommand{\textturnh}{PU}{\82\145}% U+0265
%* \textturnh -> \invh (wsuipa)
%* \textturnh -> \udesc (phonetic)
% U+0266 LATIN SMALL LETTER H WITH HOOK; hhook; \texthth (tipa)
\DeclareTextCommand{\texthth}{PU}{\82\146}% U+0266
%* \texthth -> \hookh (wsuipa)
%* \texthth -> \voicedh (phonetic)
% U+0267 LATIN SMALL LETTER HENG WITH HOOK; henghook; \tex-
    ththeng (tipa)
\DeclareTextCommand{\texththeng}{PU}{\82\147}% U+0267
%* \texththeng -> \hookheng (wsuipa)
% U+0268 LATIN SMALL LETTER I WITH STROKE;
%   \textbari (tipa), \bari (wsuipa)
\DeclareTextCommand{\textbari}{PU}{\82\150}%* U+0268
%* \textbari -> \ibar (phonetic)
% U+0269 LATIN SMALL LETTER IOTA; iotalatin; \niiota (wsuipa)
\DeclareTextCommand{\textniiota}{PU}{\82\151}%* U+0269
%* \textniiota -> \vari (phonetic)
% U+026A LATIN LETTER SMALL CAPITAL I; \textsci (tipa), \sci (wsuipa)
\DeclareTextCommand{\textsci}{PU}{\82\152}%* U+026A
% U+026B LATIN SMALL LETTER L WITH MIDDLE TILDE; lmiddletilde;
%   \textltilde (tipa)
\DeclareTextCommand{\textltilde}{PU}{\82\153}% U+026B
%* \textltilde -> \tildel (wsuipa)
% U+026C LATIN SMALL LETTER L WITH BELT; lbelt; \textbeltl (tipa)
\DeclareTextCommand{\textbeltl}{PU}{\82\154}% U+026C
%* \textbeltl -> \latfric (wsuipa)
% U+026D LATIN SMALL LETTER L WITH RETROFLEX HOOK;
%   lhookretroflex; \textrtaill (tipa)
\DeclareTextCommand{\textrtaill}{PU}{\82\155}% U+026D
%* \textrtaill -> \taill (wsuipa)
% U+026E LATIN SMALL LETTER LEZH; lezh; \textlyoghlig (tipa)
\DeclareTextCommand{\textlyoghlig}{PU}{\82\156}% U+026E
%* \textlyoghlig -> \lz (wsuipa)
% U+026F LATIN SMALL LETTER TURNED M; mturned; \textturnm (tipa)
\DeclareTextCommand{\textturnm}{PU}{\82\157}% U+026F
%* \textturnm -> \invm (wsuipa)
%* \textturnm -> \rotm (phonetic)
% U+0270 LATIN SMALL LETTER TURNED M WITH LONG LEG; mlongleg-
    turned;
```

```
16965 %   \textturnmrleg (tipa)
16966 \DeclareTextCommand{\textturnmrleg}{PU}{\82\160}% U+0270
16967 %* \textturnmrleg -> \legm (wsuipa)
16968 % U+0271 LATIN SMALL LETTER M WITH HOOK; mhook; \textltailm (tipa)
16969 \DeclareTextCommand{\textltailm}{PU}{\82\161}% U+0271
16970 %* \textltailm -> \labdentalnas (wsuipa)
16971 %* \textltailm -> \emgma (phonetic)
16972 % U+0272 LATIN SMALL LETTER N WITH LEFT HOOK; nhookleft; \textl-
      tailn (tipa)
16973 \DeclareTextCommand{\textltailn}{PU}{\82\162}% U+0272
16974 %* \textltailn -> \nj (wsuipa)
16975 %* \textltailn -> \enya (phonetic)
16976 % U+0273 LATIN SMALL LETTER N WITH RETROFLEX HOOK;
16977 %   nhookretroflex; \textrtailn (tipa)
16978 \DeclareTextCommand{\textrtailn}{PU}{\82\163}% U+0273
16979 %* \textrtailn -> \tailn (wsuipa)
16980 % U+0274 LATIN LETTER SMALL CAPITAL N; \textscn (tipa), \scn (wsuipa)
16981 \DeclareTextCommand{\textscn}{PU}{\82\164}%* U+0274
16982 % U+0275 LATIN CAPITAL LETTER O WITH MIDDLE TILDE/
16983 %   LATIN CAPITAL LETTER BARRED O; obarred;
16984 %   \textbaro (tipa), \baro (wsuipa)
16985 % But \baro from stmaryrd is different!
16986 \DeclareTextCommand{\textbaro}{PU}{\82\165}% U+0275
16987 % U+0276 LATIN LETTER SMALL CAPITAL OE; \textscoelig (tipa)
16988 \DeclareTextCommand{\textscoelig}{PU}{\82\166}% U+0276
16989 % U+0277 LATIN SMALL LETTER CLOSED OMEGA; omegalatinclosed;
16990 %   \textcloseomega (tipa)
16991 \DeclareTextCommand{\textcloseomega}{PU}{\82\167}% U+0277
16992 %* \textcloseomega -> \closedniomega (wsuipa)
16993 %* \textcloseomega -> \varomega (phonetic)
16994 % U+0278 LATIN SMALL LETTER PHI; philatin; \niphi (wsuipa)
16995 \DeclareTextCommand{\textniphi}{PU}{\82\170}%* U+0278
16996 % U+0279 LATIN SMALL LETTER TURNED R; rturned; \textturnr (tipa)
16997 \DeclareTextCommand{\textturnr}{PU}{\82\171}% U+0279
16998 %* \textturnr -> \invr (wsuipa)
16999 %* \textturnr -> \rotr (phonetic)
17000 % U+027A LATIN SMALL LETTER TURNED R WITH LONG LEG;
17001 %   rlonglegturned; \textturnlonglegr (tipa)
17002 \DeclareTextCommand{\textturnlonglegr}{PU}{\82\172}% U+027A
17003 %* \textturnlonglegr -> \invlegr (wsuipa)
17004 % U+027B LATIN SMALL LETTER TURNED R WITH HOOK; rhookturned;
17005 %   \textturnrrtail (tipa)
17006 \DeclareTextCommand{\textturnrrtail}{PU}{\82\173}% U+027B
17007 %* \textturnrrtail -> \tailinvr (wsuipa)
17008 % U+027C LATIN SMALL LETTER R WITH LONG LEG; rlongleg; \textlon-
      glegr (tipa)
17009 \DeclareTextCommand{\textlonglegr}{PU}{\82\174}%* U+027C
17010 %* \textlonglegr -> \legr (wsuipa)
17011 % U+027D LATIN SMALL LETTER R WITH TAIL; rhook; \textrtailr (tipa)
17012 \DeclareTextCommand{\textrtailr}{PU}{\82\175}% U+027D
17013 %* \textrtailr -> \tailr (wsuipa)
17014 % U+027E LATIN SMALL LETTER R WITH FISHHOOK; rfishhook;
17015 %   \textfishhookr (tipa)
17016 \DeclareTextCommand{\textfishhookr}{PU}{\82\176}% U+027E
17017 %* \textfishhookr -> \flapr (wsuipa)
17018 %* \textfishhookr -> \flap (phonetic)
17019 % U+027F LATIN SMALL LETTER REVERSED R WITH FISHHOOK; rfish-
```

```
hookreversed;
% \textlhtlongi (tipa)
\DeclareTextCommand{\textlhtlongi}{PU}{\82\177}% U+027F
% U+0280 LATIN LETTER SMALL CAPITAL R; \textscr (tipa), \scr (wsuipa)
\DeclareTextCommand{\textscr}{PU}{\82\200}%* U+0280
% U+0281 LATIN LETTER SMALL CAPITAL INVERTED R; Rsmallinverted;
% \textinvscr (tipa), \invscr (wsuipa)
\DeclareTextCommand{\textinvscr}{PU}{\82\201}%* U+0281
% U+0282 LATIN SMALL LETTER S WITH HOOK; shook; \textrtails (tipa)
\DeclareTextCommand{\textrtails}{PU}{\82\202}% U+0282
%* \textrtails -> \tails (wsuipa)
% U+0283 LATIN SMALL LETTER ESH; esh; \textesh (tipa), \esh (wsuipa)
\DeclareTextCommand{\textesh}{PU}{\82\203}%* U+0283
% U+0284 LATIN SMALL LETTER DOTLESS J WITH STROKE AND HOOK;
% dotlessjstrokehook; \texthtbardotlessj (tipa)
\DeclareTextCommand{\texthtbardotlessj}{PU}{\82\204}% U+0284
% U+0285 LATIN SMALL LETTER SQUAT REVERSED ESH; eshsquatre-
versed;
% \textvibyi (tipa)
\DeclareTextCommand{\textvibyi}{PU}{\82\205}% U+0285
% U+0286 LATIN SMALL LETTER ESH WITH CURL; eshcurl; \textctesh (tipa)
\DeclareTextCommand{\textctesh}{PU}{\82\206}% U+0286
%* \textctesh -> \curlyesh (wsuipa)
% U+0287 LATIN SMALL LETTER TURNED T; tturned; \textturnt (tipa)
\DeclareTextCommand{\textturnt}{PU}{\82\207}% U+0287
%* \textturnt -> \clickt (wsuipa)
% U+0288 LATIN SMALL LETTER T WITH RETROFLEX HOOK; tretroflex-
hook;
% \textrtailt (tipa)
\DeclareTextCommand{\textrtailt}{PU}{\82\210}% U+0288
%* \textrtailt -> \tailt (wsuipa)
% U+0289 LATIN SMALL LETTER U BAR; ubar;
% \textbaru (tipa), \baru (wsuipa)
\DeclareTextCommand{\textbaru}{PU}{\82\211}%* U+0289
%* \textbaru -> \ubar (phonetic)
% U+028A LATIN SMALL LETTER UPSILON; \niupsilon (wsuipa)
\DeclareTextCommand{\textniupsilon}{PU}{\82\212}%* U+028A
%* \textniupsilon -> \rotOmega (phonetic)
% U+028B LATIN SMALL LETTER V WITH HOOK/LATIN SMALL LET-
TER SCRIPT V;
% vhook; \textscriptv (tipa), \scriptv (wsuipa)
\DeclareTextCommand{\textscriptv}{PU}{\82\213}%* U+028B
% U+028C LATIN SMALL LETTER TURNED V; vturned; \textturnv (tipa)
\DeclareTextCommand{\textturnv}{PU}{\82\214}%* U+028C
%* \textturnv -> \invv (wsuipa)
%* \textturnv -> \pwedge (phonetic)
% U+028D LATIN SMALL LETTER TURNED W; wturned; \textturnw (tipa)
\DeclareTextCommand{\textturnw}{PU}{\82\215}%* U+028D
%* \textturnw -> \invw (wsuipa)
%* \textturnw -> \rotw (phonetic)
% U+028E LATIN SMALL LETTER TURNED Y; yturned; \textturny (tipa)
\DeclareTextCommand{\textturny}{PU}{\82\216}%* U+028E
%* \textturny -> \invy (wsuipa)
%* \textturny -> \roty (phonetic)
% U+028F LATIN LETTER SMALL CAPITAL Y; \textscy (tipa), \scy (wsuipa)
\DeclareTextCommand{\textscy}{PU}{\82\217}%* U+028F
% U+0290 LATIN SMALL LETTER Z WITH RETROFLEX HOOK; zretroflex-
```

```
    hook;
17073 %   \textrtailz (tipa)
17074 \DeclareTextCommand{\textrtailz}{PU}{\82\220}% U+0290
17075 %* \textrtailz -> \tailz (wsuipa)
17076 % U+0291 LATIN SMALL LETTER Z WITH CURL; zcurl; \textctz (tipa)
17077 \DeclareTextCommand{\textctz}{PU}{\82\221}% U+0291
17078 %* \textctz -> \curlyz (wsuipa)
17079 % U+0292 LATIN SMALL LETTER EZH/LATIN SMALL LETTER YOGH; ezh;
17080 %   \textyogh (tipa), \yogh (wsuipa)
17081 \DeclareTextCommand{\textyogh}{PU}{\82\222}%* U+0292
17082 % U+0293 LATIN SMALL LETTER EZH WITH CURL/LATIN SMALL LET-
    TER YOGH CURL;
17083 %   ezhcurl; \textctyogh (tipa)
17084 \DeclareTextCommand{\textctyogh}{PU}{\82\223}% U+0293
17085 %* \textctyogh -> \curlyyogh (wsuipa)
17086 % U+0294 LATIN LETTER GLOTTAL STOP; glottalstop;
17087 %   \textglotstop (tipa), \glotstop (wsuipa)
17088 \DeclareTextCommand{\textglotstop}{PU}{\82\224}%* U+0294
17089 %* \textglotstop -> \ejective (wsuipa)
17090 %* \textglotstop -> \glottal (phonetic)
17091 % U+0295 LATIN LETTER PHARYNGEAL VOICED FRICATIVE/
17092 %   LATIN LETTER REVERSED GLOTTAL STOP; glottalstopreversed;
17093 %   \textrevglotstop (tipa), \revglotstop (wsuipa)
17094 \DeclareTextCommand{\textrevglotstop}{PU}{\82\225}%* U+0295
17095 %* \textrevglotstop -> \reveject (wsuipa)
17096 % U+0296 LATIN LETTER INVERTED GLOTTAL STOP; glottalstopinverted;
17097 %   \textinvglotstop (tipa), \invglotstop (wsuipa)
17098 \DeclareTextCommand{\textinvglotstop}{PU}{\82\226}%* U+0296
17099 % U+0297 LATIN LETTER STRETCHED C; cstretched; \textstretchc (tipa)
17100 \DeclareTextCommand{\textstretchc}{PU}{\82\227}% U+0297
17101 %* \textstretchc -> \clickc (wsuipa)
17102 %* \textstretchc -> \textstretchcvar (tipx)
17103 % U+0298 LATIN LETTER BILABIAL CLICK; bilabialclick;
17104 %   \textbullseye (tipa)
17105 \DeclareTextCommand{\textbullseye}{PU}{\82\230}% U+0298
17106 %* \textbullseye -> \clickb (wsuipa)
17107 %* \textbullseye -> \textObullseye (tipx)
17108 % U+0299 LATIN LETTER SMALL CAPITAL B; \textscb (tipa)
17109 \DeclareTextCommand{\textscb}{PU}{\82\231}% U+0299
17110 % U+029A LATIN SMALL LETTER CLOSED OPEN E; eopenclosed;
17111 %   \textcloseepsilon (tipa)
17112 \DeclareTextCommand{\textcloseepsilon}{PU}{\82\232}% U+029A
17113 % U+029B LATIN LETTER SMALL CAPITAL G WITH HOOK; Gsmallhook;
17114 %   \texthtscg (tipa)
17115 \DeclareTextCommand{\texthtscg}{PU}{\82\233}% U+029B
17116 % U+029C LATIN LETTER SMALL CAPITAL H; \textsch (tipa)
17117 \DeclareTextCommand{\textsch}{PU}{\82\234}% U+029C
17118 % U+029D LATIN SMALL LETTER J WITH CROSSED-TAIL; jcrossed-
    tail; \textcdj (tipa)
17119 \DeclareTextCommand{\textctj}{PU}{\82\235}% U+029D
17120 %* \textctj -> \textctjvar (tipx)
17121 % U+029E LATIN SMALL LETTER TURNED K; kturned; \textturnk (tipa)
17122 \DeclareTextCommand{\textturnk}{PU}{\82\236}% U+029E
17123 %* \textturnk -> \textturnsck (tipx)
17124 % U+029F LATIN LETTER SMALL CAPITAL L; \textscl (tipa)
17125 \DeclareTextCommand{\textscl}{PU}{\82\237}% U+029F
17126 % U+02A0 LATIN SMALL LETTER Q WITH HOOK; qhook; \texthtq (tipa)
```

```
\DeclareTextCommand{\texthtq}{PU}{\82\240}% U+02A0
% U+02A1 LATIN LETTER GLOTTAL STOP WITH STROKE; glottalstopstroke;
%   \textbarglotstop (tipa)
\DeclareTextCommand{\textbarglotstop}{PU}{\82\241}% U+02A1
% U+02A2 LATIN LETTER REVERSED GLOTTAL STOP WITH STROKE/
%   LATIN LETTER REVERSED GLOTTAL STOP BAR; glottalstopstrokereversed;
%   \textbarrevglotstop (tipa)
\DeclareTextCommand{\textbarrevglotstop}{PU}{\82\242}% U+02A2
% U+02A3 LATIN SMALL LETTER DZ DIGRAPH; dzaltone; \textdzlig (tipa)
\DeclareTextCommand{\textdzlig}{PU}{\82\243}% U+02A3
%* \textdzlig -> \dz (wsupipa)
% U+02A4 LATIN SMALL LETTER DEZH DIGRAPH; dezh; \textdyoghlig (tipa)
\DeclareTextCommand{\textdyoghlig}{PU}{\82\244}% U+02A4
% U+02A5 LATIN SMALL LETTER DZ DIGRAPH WITH CURL; dzcurl;
%   \textdctzlig (tipa)
\DeclareTextCommand{\textdctzlig}{PU}{\82\245}% U+02A5
% U+02A6 LATIN SMALL LETTER TS DIGRAPH; ts; \texttslig (tipa)
\DeclareTextCommand{\texttslig}{PU}{\82\246}% U+02A6
% U+02A7 LATIN SMALL LETTER TESH DIGRAPH; tesh; \textteshlig (tipa)
\DeclareTextCommand{\textteshlig}{PU}{\82\247}% U+02A7
%* \textteshlig -> \tesh (wsuipa)
% U+02A8 LATIN SMALL LETTER TC DIGRAPH WITH CURL; tccurl;
%   \texttctclig (tipa)
\DeclareTextCommand{\texttctclig}{PU}{\82\250}% U+02A8
% U+02AE LATIN SMALL LETTER TURNED H WITH FISHHOOK;
%   \textlhtlongy (tipa)
\DeclareTextCommand{\textlhtlongy}{PU}{\82\256}% U+02AE
% U+02AF LATIN SMALL LETTER TURNED H WITH FISHHOOK AND TAIL;
%   \textvibyy (tipa)
\DeclareTextCommand{\textvibyy}{PU}{\82\257}% U+02AF
```

51.2.7 Spacing Modifier Letters: U+02B0 to U+02FF

```
% U+02BD MODIFIER LETTER REVERSED COMMA;
%   commareversedmod, afii64937; \textrevapostrophe (tipa)
\DeclareTextCommand{\textrevapostrophe}{PU}{\82\275}% U+02BD
% U+02C0 MODIFIER LETTER GLOTTAL STOP; glottalstopmod;
%   \textraiseglotstop (tipa)
\DeclareTextCommand{\textraiseglotstop}{PU}{\82\300}% U+02C0
% U+02C2 MODIFIER LETTER LEFT ARROWHEAD; arrowheadleftmod;
%   \textlptr (tipa)
\DeclareTextCommand{\textlptr}{PU}{\82\302}% U+02C2
% U+02C3 MODIFIER LETTER RIGHT ARROWHEAD; arrowheadrightmod;
%   \textrptr (tipa)
\DeclareTextCommand{\textrptr}{PU}{\82\303}% U+02C3
% U+02C7 CARON; caron
\DeclareTextCommand{\textasciicaron}{PU}{\82\307}% U+02C7
% U+02C8 MODIFIER LETTER VERTICAL LINE; verticallinemod;
%   \textprimstress (tipa)
\DeclareTextCommand{\textprimstress}{PU}{\82\310}% U+02C8
% U+02CC MODIFIER LETTER LOW VERTICAL LINE; verticallinelowmod;
%   \textsecstress (tipa)
\DeclareTextCommand{\textsecstress}{PU}{\82\314}% U+02CC
% U+02D0 MODIFIER LETTER TRIANGULAR COLON; colontriangularmod;
%   \textlengthmark (tipa)
```

```
\DeclareTextCommand{\textlengthmark}{PU}{\82\320}% U+02D0
% U+02D1 MODIFIER LETTER HALF TRIANGULAR COLON; colontriangularhalfmod;
%   \texthalflength (tipa)
\DeclareTextCommand{\texthalflength}{PU}{\82\321}% U+02D1
% U+02D8 BREVE; breve
\DeclareTextCommand{\textasciibreve}{PU}{\82\330}% U+02D8
% U+02D9 DOT ABOVE; dotaccent
\DeclareTextCommand{\textdotaccent}{PU}{\82\331}% U+02D9
% U+02DA RING ABOVE; ring
\DeclareTextCommand{\textring}{PU}{\82\332}% U+02DA
% U+02DB OGONEK; ogonek
\DeclareTextCommand{\textogonek}{PU}{\82\333}% U+02DB
% U+02DC SMALL TILDE; ilde, *tilde
\DeclareTextCommand{\texttilde}{PU}{\82\334}% U+02DC
% U+02DD DOUBLE ACUTE ACCENT; hungarumlaut
\DeclareTextCommand{\texthungarumlaut}{PU}{\82\335}% U+02DD
\DeclareTextCommand{\textacutedbl}{PU}{\82\335}% U+02DD
% U+02F3 MODIFIER LETTER LOW RING
\DeclareTextCommand{\textringlow}{PU}{\82\363}% U+02F3
% U+02F5 MODIFIER LETTER MIDDLE DOUBLE GRAVE ACCENT
\DeclareTextCommand{\textgravedbl}{PU}{\82\365}% U+02F5
% U+02F7 MODIFIER LETTER LOW TILDE
\DeclareTextCommand{\texttildelow}{PU}{\82\367}% U+02F7
% U+02F9 MODIFIER LETTER BEGIN HIGH TONE; \textopencorner (tipa)
\DeclareTextCommand{\textopencorner}{PU}{\82\371}% U+02F9
% U+02FA MODIFIER LETTER END HIGH TONE; \textcorner (tipa)
\DeclareTextCommand{\textcorner}{PU}{\82\372}% U+02FA
```

51.2.8 Combining Diacritical Marks: U+0300 to U+036F

```
% U+030F COMBINING DOUBLE GRAVE ACCENT; dblgravecmb
\DeclareTextCommand{\textdoublegrave}{PU}{ \83\017}% U+030F
% U+0311 COMBINING INVERTED BREVE; breveinvertedcmb
\DeclareTextCommand{\textnewtie}{PU}{ \83\021}% U+0311
% U+0323 COMBINING DOT BELOW; dotbelowcmb, *dotbelowcomb
\DeclareTextCommand{\textdotbelow}{PU}{ \83\043}% U+0323
% U+0331 COMBINING MACRON BELOW; macronbelowcmb
\DeclareTextCommand{\textmacronbelow}{PU}{ \83\061}% U+0331
% U+0361 COMBINING DOUBLE INVERTED BREVE; breveinverteddoublecmb
\DeclareTextCommand{\texttie}{PU}{ \83\141}% U+0361
```

51.2.9 Greek and Coptic: U+0370 to U+03FF

```
% U+0374 GREEK NUMERAL SIGN; numeralsigngreek
\DeclareTextCommand{\textnumeralsigngreek}{PU}{\83\164}% U+0374
% U+0375 GREEK LOWER NUMERAL SIGN; numeralsignlowergreek
\DeclareTextCommand{\textnumeralsignlowergreek}{PU}{\83\165}% U+0375
% U+0386 GREEK CAPITAL LETTER ALPHA WITH TONOS; Alphatonos
\DeclareTextCompositeCommand{\'}{PU}{\textAlpha}{\83\206}% U+0386
% U+0388 GREEK CAPITAL LETTER EPSILON WITH TONOS; Epsilontonos
\DeclareTextCompositeCommand{\'}{PU}{\textEpsilon}{\83\210}% U+0388
% U+0389 GREEK CAPITAL LETTER ETA WITH TONOS; Etatonos
\DeclareTextCompositeCommand{\'}{PU}{\textEta}{\83\211}% U+0389
% U+038A GREEK CAPITAL LETTER IOTA WITH TONOS; Iotatonos
\DeclareTextCompositeCommand{\'}{PU}{\textIota}{\83\212}% U+038A
% U+038C GREEK CAPITAL LETTER OMICRON WITH TONOS; Omicrontonos
```

```
\DeclareTextCompositeCommand{\'}{PU}{\textOmicron}{\83\214}% U+038C
% U+038E GREEK CAPITAL LETTER UPSILON WITH TONOS; Upsilontonos
\DeclareTextCompositeCommand{\'}{PU}{\textUpsilon}{\83\216}% U+038E
% U+038F GREEK CAPITAL LETTER OMEGA WITH TONOS; Omegatonos
\DeclareTextCompositeCommand{\'}{PU}{\textOmega}{\83\217}% U+038F
% U+0390 GREEK SMALL LETTER IOTA WITH DIALYTIKA AND TONOS;
%   iotadieresistonos
\DeclareTextCompositeCommand{\'}{PU}{\textIotadieresis}{\83\220}% U+0390
% U+0391 GREEK CAPITAL LETTER ALPHA; Alpha
\DeclareTextCommand{\textAlpha}{PU}{\83\221}% U+0391
% U+0392 GREEK CAPITAL LETTER BETA; Beta
\DeclareTextCommand{\textBeta}{PU}{\83\222}% U+0392
% U+0393 GREEK CAPITAL LETTER GAMMA; Gamma; \Gamma (LaTeX)
\DeclareTextCommand{\textGamma}{PU}{\83\223}%* U+0393
% U+0394 GREEK CAPITAL LETTER DELTA; Deltagreek, *Delta; \Delta (La-
    TeX)
\DeclareTextCommand{\textDelta}{PU}{\83\224}%* U+0394
% U+0395 GREEK CAPITAL LETTER EPSILON; Epsilon
\DeclareTextCommand{\textEpsilon}{PU}{\83\225}% U+0395
% U+0396 GREEK CAPITAL LETTER ZETA; Zeta
\DeclareTextCommand{\textZeta}{PU}{\83\226}% U+0396
% U+0397 GREEK CAPITAL LETTER ETA; Eta
\DeclareTextCommand{\textEta}{PU}{\83\227}% U+0397
% U+0398 GREEK CAPITAL LETTER THETA; Theta; \Theta (LaTeX)
\DeclareTextCommand{\textTheta}{PU}{\83\230}%* U+0398
% U+0399 GREEK CAPITAL LETTER IOTA; Iota
\DeclareTextCommand{\textIota}{PU}{\83\231}% U+0399
% U+039A GREEK CAPITAL LETTER KAPPA; Kappa
\DeclareTextCommand{\textKappa}{PU}{\83\232}% U+039A
% U+039B GREEK CAPITAL LETTER LAMDA; Lambda; \Lambda (LaTeX)
\DeclareTextCommand{\textLambda}{PU}{\83\233}%* U+039B
% U+039C GREEK CAPITAL LETTER MU; Mu
\DeclareTextCommand{\textMu}{PU}{\83\234}% U+039C
% U+039D GREEK CAPITAL LETTER NU; Nu
\DeclareTextCommand{\textNu}{PU}{\83\235}% U+039D
% U+039E GREEK CAPITAL LETTER XI; Xi; \Xi (LaTeX)
\DeclareTextCommand{\textXi}{PU}{\83\236}%* U+039E
% U+039F GREEK CAPITAL LETTER OMICRON; Omicron
\DeclareTextCommand{\textOmicron}{PU}{\83\237}% U+039F
% U+03A0 GREEK CAPITAL LETTER PI; Pi
\DeclareTextCommand{\textPi}{PU}{\83\240}%* U+03A0
% U+03A1 GREEK CAPITAL LETTER RHO; Rho
\DeclareTextCommand{\textRho}{PU}{\83\241}% U+03A1
% U+03A3 GREEK CAPITAL LETTER SIGMA; Sigma; \Sigma (LaTeX)
\DeclareTextCommand{\textSigma}{PU}{\83\243}%* U+03A3
% U+03A4 GREEK CAPITAL LETTER TAU; Tau
\DeclareTextCommand{\textTau}{PU}{\83\244}% U+03A4
% U+03A5 GREEK CAPITAL LETTER UPSILON; Upsilon; \Upsilon (LaTeX)
\DeclareTextCommand{\textUpsilon}{PU}{\83\245}%* U+03A5
% U+03A6 GREEK CAPITAL LETTER PHI; Phi; \Phi (LaTeX)
\DeclareTextCommand{\textPhi}{PU}{\83\246}%* U+03A6
% U+03A7 GREEK CAPITAL LETTER CHI; Chi
\DeclareTextCommand{\textChi}{PU}{\83\247}% U+03A7
% U+03A8 GREEK CAPITAL LETTER PSI; Psi; \Psi (LaTeX)
\DeclareTextCommand{\textPsi}{PU}{\83\250}%* U+03A8
% U+03A9 GREEK CAPITAL LETTER OMEGA; Omegagreek, *Omega;
%   \Omega (LaTeX)
```

```
\DeclareTextCommand{\textOmega}{PU}{\83\251}%* U+03A9
% U+03AA GREEK CAPITAL LETTER IOTA WITH DIALYTIKA; Iotadieresis
\DeclareTextCommand{\textIotadieresis}{PU}{\83\252}% U+03AA
\DeclareTextCompositeCommand{\"}{PU}{\textIota}{\83\252}% U+03AA
% U+03AB GREEK CAPITAL LETTER UPSILON WITH DIALYTIKA; Upsilondieresis
\DeclareTextCompositeCommand{\"}{PU}{\textUpsilon}{\83\253}% U+03AB
% U+03AC GREEK SMALL LETTER ALPHA WITH TONOS; alphatonos
\DeclareTextCompositeCommand{\'}{PU}{\textalpha}{\83\254}%* U+03AC
% U+03AD GREEK SMALL LETTER EPSILON WITH TONOS; epsilontonos
\DeclareTextCompositeCommand{\'}{PU}{\textepsilon}{\83\255}% U+03AD
% U+03AE GREEK SMALL LETTER ETA WITH TONOS; etatonos
\DeclareTextCompositeCommand{\'}{PU}{\texteta}{\83\256}% U+03AE
% U+03AF GREEK SMALL LETTER IOTA WITH TONOS; iotatonos
\DeclareTextCompositeCommand{\'}{PU}{\textiota}{\83\257}% U+03AF
% U+03B0 GREEK SMALL LETTER UPSILON WITH DIALYTIKA
%   AND TONOS; upsilondieresisto
\DeclareTextCompositeCommand{\"}{PU}{\textupsilonacute}{\83\260}% U+03B0
% U+03B1 GREEK SMALL LETTER ALPHA; alpha; \alpha (LaTeX)
\DeclareTextCommand{\textalpha}{PU}{\83\261}%* U+03B1
% U+03B2 GREEK SMALL LETTER BETA; beta; \beta (LaTeX)
\DeclareTextCommand{\textbeta}{PU}{\83\262}%* U+03B2
% U+03B3 GREEK SMALL LETTER GAMMA; gamma; \gamma (LaTeX)
\DeclareTextCommand{\textgamma}{PU}{\83\263}%* U+03B3
% U+03B4 GREEK SMALL LETTER DELTA; delta; \delta (LaTeX)
\DeclareTextCommand{\textdelta}{PU}{\83\264}%* U+03B4
% U+03B5 GREEK SMALL LETTER EPSILON; epsilon; \epsilon (LaTeX)
\DeclareTextCommand{\textepsilon}{PU}{\83\265}%* U+03B5
% U+03B6 GREEK SMALL LETTER ZETA; zeta; \zeta (LaTeX)
\DeclareTextCommand{\textzeta}{PU}{\83\266}%* U+03B6
% U+03B7 GREEK SMALL LETTER ETA; eta; \eta (LaTeX)
\DeclareTextCommand{\texteta}{PU}{\83\267}%* U+03B7
% U+03B8 GREEK SMALL LETTER THETA; theta; \theta (LaTeX)
\DeclareTextCommand{\texttheta}{PU}{\83\270}%* U+03B8
% U+03B9 GREEK SMALL LETTER IOTA; iota; \iota (LaTeX)
\DeclareTextCommand{\textiota}{PU}{\83\271}%* U+03B9
% U+03BA GREEK SMALL LETTER KAPPA; kappa; \kappa (LaTeX)
\DeclareTextCommand{\textkappa}{PU}{\83\272}%* U+03BA
% U+03BB GREEK SMALL LETTER LAMDA; lambda; \lambda (LaTeX)
\DeclareTextCommand{\textlambda}{PU}{\83\273}%* U+03BB
% U+03BC GREEK SMALL LETTER MU; mugreek, *mu; \mu (LaTeX)
\DeclareTextCommand{\textmugreek}{PU}{\83\274}%* U+03BC
% U+03BD GREEK SMALL LETTER NU; nu; \nu (LaTeX)
\DeclareTextCommand{\textnu}{PU}{\83\275}%* U+03BD
% U+03BE GREEK SMALL LETTER XI; xi; \xi (LaTeX)
\DeclareTextCommand{\textxi}{PU}{\83\276}%* U+03BE
% U+03BF GREEK SMALL LETTER OMICRON; omicron
\DeclareTextCommand{\textomicron}{PU}{\83\277}% U+03BF
% U+03C0 GREEK SMALL LETTER PI; pi; \pi (LaTeX)
\DeclareTextCommand{\textpi}{PU}{\83\300}%* U+03C0
% U+03C1 GREEK SMALL LETTER RHO; rho; \rho (LaTeX)
\DeclareTextCommand{\textrho}{PU}{\83\301}%* U+03C1
% U+03C2 GREEK SMALL LETTER FINAL SIGMA; *sigma1, sigmafinal
\DeclareTextCommand{\textvarsigma}{PU}{\83\302}%* U+03C2
% U+03C3 GREEK SMALL LETTER SIGMA; sigma; \sigma (LaTeX)
\DeclareTextCommand{\textsigma}{PU}{\83\303}%* U+03C3
% U+03C4 GREEK SMALL LETTER TAU; tau; \tau (LaTeX)
```

```
\DeclareTextCommand{\texttau}{PU}{\83\304}%* U+03C4
% U+03C5 GREEK SMALL LETTER UPSILON; upsilon; \upsilon (LaTeX)
\DeclareTextCommand{\textupsilon}{PU}{\83\305}%* U+03C5
% U+03C6 GREEK SMALL LETTER PHI; phi; \phi (LaTeX)
\DeclareTextCommand{\textphi}{PU}{\83\306}%* U+03C6
% U+03C7 GREEK SMALL LETTER CHI; chi; \chi (LaTeX)
\DeclareTextCommand{\textchi}{PU}{\83\307}%* U+03C7
% U+03C8 GREEK SMALL LETTER PSI; psi; \psi (LaTeX)
\DeclareTextCommand{\textpsi}{PU}{\83\310}%* U+03C8
% U+03C9 GREEK SMALL LETTER OMEGA; omega; \omega (LaTeX)
\DeclareTextCommand{\textomega}{PU}{\83\311}%* U+03C9
% U+03CA GREEK SMALL LETTER IOTA WITH DIALYTIKA; iotadieresis
\DeclareTextCompositeCommand{\"}{PU}{\textiota}{\83\312}% U+03CA
% U+03CB GREEK SMALL LETTER UPSILON WITH DIALYTIKA; upsilondieresis
\DeclareTextCompositeCommand{\"}{PU}{\textupsilon}{\83\313}% U+03CB
% U+03CC GREEK SMALL LETTER OMICRON WITH TONOS; omicrontonos
\DeclareTextCompositeCommand{\'}{PU}{\textomicron}{\83\314}% U+03CC
% U+03CD GREEK SMALL LETTER UPSILON WITH TONOS; upsilontonos
\DeclareTextCommand{\textupsilonacute}{PU}{\83\315}% U+03CD
\DeclareTextCompositeCommand{\'}{PU}{\textupsilon}{\83\315}% U+03CD
% U+03CE GREEK SMALL LETTER OMEGA WITH TONOS; omegatonos
\DeclareTextCompositeCommand{\'}{PU}{\textomega}{\83\316}% U+03CE
% U+03DA GREEK LETTER STIGMA; Stigmagreek
\DeclareTextCommand{\textStigmagreek}{PU}{\83\332}% U+03DA
% U+03DB GREEK SMALL LETTER STIGMA
\DeclareTextCommand{\textstigmagreek}{PU}{\83\333}% U+03DB
% U+03DC GREEK LETTER DIGAMMA; Digammagreek
\DeclareTextCommand{\textDigammagreek}{PU}{\83\334}% U+03DC
% U+03DD GREEK SMALL LETTER DIGAMMA
\DeclareTextCommand{\textdigammagreek}{PU}{\83\335}% U+03DD
%* \textdigammagreek -> \digamma (AmS)
% U+03DE GREEK LETTER KOPPA; Koppagreek
\DeclareTextCommand{\textKoppagreek}{PU}{\83\336}% U+03DE
% U+03DF GREEK SMALL LETTER KOPPA
\DeclareTextCommand{\textkoppagreek}{PU}{\83\337}% U+03DF
% U+03E0 GREEK LETTER SAMPI; Sampigreek
\DeclareTextCommand{\textSampigreek}{PU}{\83\340}% U+03E0
% U+03E1 GREEK SMALL LETTER SAMPI
\DeclareTextCommand{\textsampigreek}{PU}{\83\341}% U+03E1
% U+03F6 GREEK REVERSED LUNATE EPSILON SYMBOL;
%   \backepsilon (AmS)
\DeclareTextCommand{\textbackepsilon}{PU}{\83\366}% U+03F6
```

51.2.10 Cyrillic: U+0400 to U+04FF

Thanks to Vladimir Volovich (vvv@vvv.vsu.ru) for the help with the Cyrillic glyph names.

```
% U+0400 CYRILLIC CAPITAL LETTER IE WITH GRAVE
\DeclareTextCompositeCommand{\`}{PU}{\CYRE}{\84\000}% U+0400
% U+0401 CYRILLIC CAPITAL LETTER IO; Iocyrillic, *afii10023
\DeclareTextCommand{\CYRYO}{PU}{\84\001}% U+0401
\DeclareTextCompositeCommand{\"}{PU}{\CYRE}{\84\001}% U+0401
% U+0402 CYRILLIC CAPITAL LETTER DJE; Djecyrillic, *afii10051
\DeclareTextCommand{\CYRDJE}{PU}{\84\002}% U+0402
% U+0403 CYRILLIC CAPITAL LETTER GJE; Gjecyrillic, *afii10052
\DeclareTextCompositeCommand{\'}{PU}{\CYRG}{\84\003}% U+0403
% U+0404 CYRILLIC CAPITAL LETTER UKRAINIAN IE; Ecyrillic, *afii10053
```

```
\DeclareTextCommand{\CYRIE}{PU}{\84\004}% U+0404
% U+0405 CYRILLIC CAPITAL LETTER DZE; Dzecyrillic, *afii10054
\DeclareTextCommand{\CYRDZE}{PU}{\84\005}% U+0405
% U+0406 CYRILLIC CAPITAL LETTER BYELORUSSIAN-UKRAINIAN I;
%   Icyrillic, *afii10055
\DeclareTextCommand{\CYRII}{PU}{\84\006}% U+0406
% U+0407 CYRILLIC CAPITAL LETTER YI; Yicyrillic, *afii10056
\DeclareTextCommand{\CYRYI}{PU}{\84\007}% U+0407
\DeclareTextCompositeCommand{\"}{PU}{\CYRII}{\84\007}% U+0407
% U+0408 CYRILLIC CAPITAL LETTER JE; Jecyrillic, *afii10057
\DeclareTextCommand{\CYRJE}{PU}{\84\010}% U+0408
% U+0409 CYRILLIC CAPITAL LETTER LJE; Ljecyrillic, *afii10058
\DeclareTextCommand{\CYRLJE}{PU}{\84\011}% U+0409
% U+040A CYRILLIC CAPITAL LETTER NJE; Njecyrillic, *afii10059
\DeclareTextCommand{\CYRNJE}{PU}{\84\012}% U+040A
% U+040B CYRILLIC CAPITAL LETTER TSHE; Tshecyrillic, *afii10060
\DeclareTextCommand{\CYRTSHE}{PU}{\84\013}% U+040B
% U+040C CYRILLIC CAPITAL LETTER KJE; Kjecyrillic, *afii10061
\DeclareTextCompositeCommand{\'}{PU}{\CYRK}{\84\014}% U+040C
% U+040D CYRILLIC CAPITAL LETTER I WITH GRAVE
\DeclareTextCompositeCommand{\`}{PU}{\CYRI}{\84\015}% U+040D
% U+040E CYRILLIC CAPITAL LETTER SHORT U; Ushortcyrillic, *afii10062
\DeclareTextCommand{\CYRUSHRT}{PU}{\84\016}% U+040E
\DeclareTextCompositeCommand{\U}{PU}{\CYRU}{\84\016}% U+040E
% U+040F CYRILLIC CAPITAL LETTER DZHE; Dzhecyrillic, *afii10145
\DeclareTextCommand{\CYRDZHE}{PU}{\84\017}% U+040F
% U+0410 CYRILLIC CAPITAL LETTER A; Acyrillic, *afii10017
\DeclareTextCommand{\CYRA}{PU}{\84\020}% U+0410
% U+0411 CYRILLIC CAPITAL LETTER BE; Becyrillic, *afii10018
\DeclareTextCommand{\CYRB}{PU}{\84\021}% U+0411
% U+0412 CYRILLIC CAPITAL LETTER VE; Vecyrillic, *afii10019
\DeclareTextCommand{\CYRV}{PU}{\84\022}% U+0412
% U+0413 CYRILLIC CAPITAL LETTER GHE; Gecyrillic, *afii10020
\DeclareTextCommand{\CYRG}{PU}{\84\023}% U+0413
% U+0414 CYRILLIC CAPITAL LETTER DE; Decyrillic, *afii10021
\DeclareTextCommand{\CYRD}{PU}{\84\024}% U+0414
% U+0415 CYRILLIC CAPITAL LETTER IE; Iecyrillic, *afii10022
\DeclareTextCommand{\CYRE}{PU}{\84\025}% U+0415
% U+0416 CYRILLIC CAPITAL LETTER ZHE; Zhecyrillic, *afii10024
\DeclareTextCommand{\CYRZH}{PU}{\84\026}% U+0416
% U+0417 CYRILLIC CAPITAL LETTER ZE; Zecyrillic, *afii10025
\DeclareTextCommand{\CYRZ}{PU}{\84\027}% U+0417
% U+0418 CYRILLIC CAPITAL LETTER I; Iicyrillic, *afii10026
\DeclareTextCommand{\CYRI}{PU}{\84\030}% U+0418
% U+0419 CYRILLIC CAPITAL LETTER SHORT I; Iishortcyrillic, *afii10027
\DeclareTextCommand{\CYRISHRT}{PU}{\84\031}% U+0419
\DeclareTextCompositeCommand{\U}{PU}{\CYRI}{\84\031}% U+0419
% U+041A CYRILLIC CAPITAL LETTER KA; Kacyrillic, *afii10028
\DeclareTextCommand{\CYRK}{PU}{\84\032}% U+041A
% U+041B CYRILLIC CAPITAL LETTER EL; Elcyrillic, *afii10029
\DeclareTextCommand{\CYRL}{PU}{\84\033}% U+041B
% U+041C CYRILLIC CAPITAL LETTER EM; Emcyrillic, *afii10030
\DeclareTextCommand{\CYRM}{PU}{\84\034}% U+041C
% U+041D CYRILLIC CAPITAL LETTER EN; Encyrillic, *afii10031
\DeclareTextCommand{\CYRN}{PU}{\84\035}% U+041D
% U+041E CYRILLIC CAPITAL LETTER O; Ocyrillic, *afii10032
\DeclareTextCommand{\CYRO}{PU}{\84\036}% U+041E
```

```
% U+041F CYRILLIC CAPITAL LETTER PE; Pecyrillic, *afii10033
\DeclareTextCommand{\CYRP}{PU}{\84\037}% U+041F
% U+0420 CYRILLIC CAPITAL LETTER ER; Ercyrillic, *afii10034
\DeclareTextCommand{\CYRR}{PU}{\84\040}% U+0420
% U+0421 CYRILLIC CAPITAL LETTER ES; Escyrillic, *afii10035
\DeclareTextCommand{\CYRS}{PU}{\84\041}% U+0421
% U+0422 CYRILLIC CAPITAL LETTER TE; Tecyrillic, *afii10036
\DeclareTextCommand{\CYRT}{PU}{\84\042}% U+0422
% U+0423 CYRILLIC CAPITAL LETTER U; Ucyrillic, *afii10037
\DeclareTextCommand{\CYRU}{PU}{\84\043}% U+0423
% U+0424 CYRILLIC CAPITAL LETTER EF; Efcyrillic, *afii10038
\DeclareTextCommand{\CYRF}{PU}{\84\044}% U+0424
% U+0425 CYRILLIC CAPITAL LETTER HA; Khacyrillic, *afii10039
\DeclareTextCommand{\CYRH}{PU}{\84\045}% U+0425
% U+0426 CYRILLIC CAPITAL LETTER TSE; Tsecyrillic, *afii10040
\DeclareTextCommand{\CYRC}{PU}{\84\046}% U+0426
% U+0427 CYRILLIC CAPITAL LETTER CHE; Checyrillic, *afii10041
\DeclareTextCommand{\CYRCH}{PU}{\84\047}% U+0427
% U+0428 CYRILLIC CAPITAL LETTER SHA; Shacyrillic, *afii10042
\DeclareTextCommand{\CYRSH}{PU}{\84\050}% U+0428
% U+0429 CYRILLIC CAPITAL LETTER SHCHA; Shchacyrillic, *afii10043
\DeclareTextCommand{\CYRSHCH}{PU}{\84\051}% U+0429
% U+042A CYRILLIC CAPITAL LETTER HARD SIGN;
%   Hardsigncyrillic, *afii10044
\DeclareTextCommand{\CYRHRDSN}{PU}{\84\052}% U+042A
% U+042B CYRILLIC CAPITAL LETTER YERU; Yericyrillic, *afii10045
\DeclareTextCommand{\CYRERY}{PU}{\84\053}% U+042B
% U+042C CYRILLIC CAPITAL LETTER SOFT SIGN;
%   Softsigncyrillic, *afii10046
\DeclareTextCommand{\CYRSFTSN}{PU}{\84\054}% U+042C
% U+042D CYRILLIC CAPITAL LETTER E; Ereversedcyrillic, *afii10047
\DeclareTextCommand{\CYREREV}{PU}{\84\055}% U+042D
% U+042E CYRILLIC CAPITAL LETTER YU; IUcyrillic, *afii10048
\DeclareTextCommand{\CYRYU}{PU}{\84\056}% U+042E
% U+042F CYRILLIC CAPITAL LETTER YA; IAcyrillic, *afii10049
\DeclareTextCommand{\CYRYA}{PU}{\84\057}% U+042F
% U+0430 CYRILLIC SMALL LETTER A; acyrillic, *afii10065
\DeclareTextCommand{\cyra}{PU}{\84\060}% U+0430
% U+0431 CYRILLIC SMALL LETTER BE; *afii10066, becyrillic
\DeclareTextCommand{\cyrb}{PU}{\84\061}% U+0431
% U+0432 CYRILLIC SMALL LETTER VE; *afii10067, vecyrillic
\DeclareTextCommand{\cyrv}{PU}{\84\062}% U+0432
% U+0433 CYRILLIC SMALL LETTER GHE; *afii10068, gecyrillic
\DeclareTextCommand{\cyrg}{PU}{\84\063}% U+0433
% U+0434 CYRILLIC SMALL LETTER DE; *afii10069, decyrillic
\DeclareTextCommand{\cyrd}{PU}{\84\064}% U+0434
% U+0435 CYRILLIC SMALL LETTER IE; *afii10070, iecyrillic
\DeclareTextCommand{\cyre}{PU}{\84\065}% U+0435
% U+0436 CYRILLIC SMALL LETTER ZHE; *afii10072, zhecyrillic
\DeclareTextCommand{\cyrzh}{PU}{\84\066}% U+0436
% U+0437 CYRILLIC SMALL LETTER ZE; *afii10073, zecyrillic
\DeclareTextCommand{\cyrz}{PU}{\84\067}% U+0437
% U+0438 CYRILLIC SMALL LETTER I; *afii10074, iicyrillic
\DeclareTextCommand{\cyri}{PU}{\84\070}% U+0438
% U+0439 CYRILLIC SMALL LETTER SHORT I; *afii10075, iishortcyrillic
\DeclareTextCommand{\cyrishrt}{PU}{\84\071}% U+0439
\DeclareTextCompositeCommand{\U}{PU}{\cyri}{\84\071}% U+0439
```

```
% U+043A CYRILLIC SMALL LETTER KA; *afii10076, kacyrillic
\DeclareTextCommand{\cyrk}{PU}{\84\072}% U+043A
% U+043B CYRILLIC SMALL LETTER EL; *afii10077, elcyrillic
\DeclareTextCommand{\cyrl}{PU}{\84\073}% U+043B
% U+043C CYRILLIC SMALL LETTER EM; *afii10078, emcyrillic
\DeclareTextCommand{\cyrm}{PU}{\84\074}% U+043C
% U+043D CYRILLIC SMALL LETTER EN; *afii10079, encyrillic
\DeclareTextCommand{\cyrn}{PU}{\84\075}% U+043D
% U+043E CYRILLIC SMALL LETTER O; *afii10080, ocyrillic
\DeclareTextCommand{\cyro}{PU}{\84\076}% U+043E
% U+043F CYRILLIC SMALL LETTER PE; *afii10081, pecyrillic
\DeclareTextCommand{\cyrp}{PU}{\84\077}% U+043F
% U+0440 CYRILLIC SMALL LETTER ER; *afii10082, ercyrillic
\DeclareTextCommand{\cyrr}{PU}{\84\100}% U+0440
% U+0441 CYRILLIC SMALL LETTER ES; *afii10083, escyrillic
\DeclareTextCommand{\cyrs}{PU}{\84\101}% U+0441
% U+0442 CYRILLIC SMALL LETTER TE; *afii10084, tecyrillic
\DeclareTextCommand{\cyrt}{PU}{\84\102}% U+0442
% U+0443 CYRILLIC SMALL LETTER U; *afii10085, ucyrillic
\DeclareTextCommand{\cyru}{PU}{\84\103}% U+0443
% U+0444 CYRILLIC SMALL LETTER EF; *afii10086, efcyrillic
\DeclareTextCommand{\cyrf}{PU}{\84\104}% U+0444
% U+0445 CYRILLIC SMALL LETTER HA; *afii10087, khacyrillic
\DeclareTextCommand{\cyrh}{PU}{\84\105}% U+0445
% U+0446 CYRILLIC SMALL LETTER TSE; *afii10088, tsecyrillic
\DeclareTextCommand{\cyrc}{PU}{\84\106}% U+0446
% U+0447 CYRILLIC SMALL LETTER CHE; *afii10089, checyrillic
\DeclareTextCommand{\cyrch}{PU}{\84\107}% U+0447
% U+0448 CYRILLIC SMALL LETTER SHA; *afii10090, shacyrillic
\DeclareTextCommand{\cyrsh}{PU}{\84\110}% U+0448
% U+0449 CYRILLIC SMALL LETTER SHCHA; *afii10091, shchacyrillic
\DeclareTextCommand{\cyrshch}{PU}{\84\111}% U+0449
% U+044A CYRILLIC SMALL LETTER HARD SIGN; *afii10092, hardsigncyril-
    lic
\DeclareTextCommand{\cyrhrdsn}{PU}{\84\112}% U+044A
%* \cyrhrdsn -> \hardsign (tipa)
% U+044B CYRILLIC SMALL LETTER YERU; *afii10093, yericyrillic
\DeclareTextCommand{\cyrery}{PU}{\84\113}% U+044B
% U+044C CYRILLIC SMALL LETTER SOFT SIGN; *afii10094, softsigncyrillic
\DeclareTextCommand{\cyrsftsn}{PU}{\84\114}% U+044C
%* \cyrsftsn -> \softsign (tipa)
% U+044D CYRILLIC SMALL LETTER E; *afii10095, ereversedcyrillic
\DeclareTextCommand{\cyrerev}{PU}{\84\115}% U+044D
% U+044E CYRILLIC SMALL LETTER YU; *afii10096, iucyrillic
\DeclareTextCommand{\cyryu}{PU}{\84\116}% U+044E
% U+044F CYRILLIC SMALL LETTER YA; *afii10097, iacyrillic
\DeclareTextCommand{\cyrya}{PU}{\84\117}% U+044F
% U+0450 CYRILLIC SMALL LETTER IE WITH GRAVE
\DeclareTextCompositeCommand{\`}{PU}{\cyre}{\84\120}% U+0450
% U+0451 CYRILLIC SMALL LETTER IO; *afii10071, iocyrillic
\DeclareTextCommand{\cyryo}{PU}{\84\121}% U+0451
\DeclareTextCompositeCommand{\"}{PU}{\cyre}{\84\121}% U+0451
% U+0452 CYRILLIC SMALL LETTER DJE; *afii10099, djecyrillic
\DeclareTextCommand{\cyrdje}{PU}{\84\122}% U+0452
% U+0453 CYRILLIC SMALL LETTER GJE; *afii10100, gjecyrillic
\DeclareTextCompositeCommand{\'}{PU}{\cyrg}{\84\123}% U+0453
% U+0454 CYRILLIC SMALL LETTER UKRAINIAN IE; *afii10101, ecyrillic
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\DeclareTextCommand{\cyrie}{PU}{\84\124}% U+0454
% U+0455 CYRILLIC SMALL LETTER DZE; *afii10102, dzecyrillic
\DeclareTextCommand{\cyrdze}{PU}{\84\125}% U+0455
% U+0456 CYRILLIC SMALL LETTER BYELORUSSIAN-UKRAINIAN I;
%   *afii10103, icyrillic
\DeclareTextCommand{\cyrii}{PU}{\84\126}% U+0456
% U+0457 CYRILLIC SMALL LETTER YI; *afii10104, yicyrillic
\DeclareTextCommand{\cyryi}{PU}{\84\127}% U+0457
\DeclareTextCompositeCommand{\"}{PU}{\cyrii}{\84\127}% U+0457
% U+0458 CYRILLIC SMALL LETTER JE; *afii10105, jecyrillic
\DeclareTextCommand{\cyrje}{PU}{\84\130}% U+0458
% U+0459 CYRILLIC SMALL LETTER LJE; *afii10106, ljecyrillic
\DeclareTextCommand{\cyrlje}{PU}{\84\131}% U+0459
% U+045A CYRILLIC SMALL LETTER NJE; *afii10107, njecyrillic
\DeclareTextCommand{\cyrnje}{PU}{\84\132}% U+045A
% U+045B CYRILLIC SMALL LETTER TSHE; *afii10108, tshecyrillic
\DeclareTextCommand{\cyrtshe}{PU}{\84\133}% U+045B
% U+045C CYRILLIC SMALL LETTER KJE; *afii10109, kjecyrillic
\DeclareTextCompositeCommand{\'}{PU}{\cyrk}{\84\134}% U+045C
% U+045D CYRILLIC SMALL LETTER I WITH GRAVE
\DeclareTextCompositeCommand{\`}{PU}{\cyri}{\84\135}% U+045D
% U+045E CYRILLIC SMALL LETTER SHORT U; *afii10110, ushortcyrillic
\DeclareTextCommand{\cyrushrt}{PU}{\84\136}% U+045E
\DeclareTextCompositeCommand{\U}{PU}{\curu}{\84\136}% U+045E
% U+045F CYRILLIC SMALL LETTER DZHE; *afii10193, dzhecyrillic
\DeclareTextCommand{\cyrdzhe}{PU}{\84\137}% U+045F
% U+0460 CYRILLIC CAPITAL LETTER OMEGA; Omegacyrillic
\DeclareTextCommand{\CYROMEGA}{PU}{\84\140}% U+0460
% U+0461 CYRILLIC SMALL LETTER OMEGA; omegacyrillic
\DeclareTextCommand{\cyromega}{PU}{\84\141}% U+0461
% U+0462 CYRILLIC CAPITAL LETTER YAT; Yatcyrillic, *afii10146
\DeclareTextCommand{\CYRYAT}{PU}{\84\142}% U+0462
% U+0463 CYRILLIC SMALL LETTER YAT; *afii10194, yatcyrillic
\DeclareTextCommand{\cyryat}{PU}{\84\143}% U+0463
% U+0464 CYRILLIC CAPITAL LETTER IOTIFIED E; Eiotifiedcyrillic
\DeclareTextCommand{\CYRIOTE}{PU}{\84\144}% U+0464
% U+0465 CYRILLIC SMALL LETTER IOTIFIED E; eiotifiedcyrillic
\DeclareTextCommand{\cyriote}{PU}{\84\145}% U+0465
% U+0466 CYRILLIC CAPITAL LETTER LITTLE YUS; Yuslittlecyrillic
\DeclareTextCommand{\CYRLYUS}{PU}{\84\146}% U+0466
% U+0467 CYRILLIC SMALL LETTER LITTLE YUS; yuslittlecyrillic
\DeclareTextCommand{\cyrlyus}{PU}{\84\147}% U+0467
% U+0468 CYRILLIC CAPITAL LETTER IOTIFIED LITTLE YUS; Yuslittlei-
    otifiedcyrillic
\DeclareTextCommand{\CYRIOTLYUS}{PU}{\84\150}% U+0468
% U+0469 CYRILLIC SMALL LETTER IOTIFIED LITTLE YUS; yuslittleiotifiedcyrillic
\DeclareTextCommand{\cyriotlyus}{PU}{\84\151}% U+0469
% U+046A CYRILLIC CAPITAL LETTER BIG YUS; Yusbigcyrillic
\DeclareTextCommand{\CYRBYUS}{PU}{\84\152}% U+046A
% U+046B CYRILLIC SMALL LETTER BIG YUS; yusbigcyrillic
\DeclareTextCommand{\cyrbyus}{PU}{\84\153}% U+046B
% U+046C CYRILLIC CAPITAL LETTER IOTIFIED BIG YUS; Yusbigiotified-
    cyrillic
\DeclareTextCommand{\CYRIOTBYUS}{PU}{\84\154}% U+046C
% U+046D CYRILLIC SMALL LETTER IOTIFIED BIG YUS; yusbigiotified-
    cyrillic
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\DeclareTextCommand{\cyriotbyus}{PU}{\84\155}% U+046D
% U+046E CYRILLIC CAPITAL LETTER KSI; Ksicyrillic
\DeclareTextCommand{\CYRKSI}{PU}{\84\156}% U+046E
% U+046F CYRILLIC SMALL LETTER KSI; ksicyrillic
\DeclareTextCommand{\cyrksi}{PU}{\84\157}% U+046F
% U+0470 CYRILLIC CAPITAL LETTER PSI; Psicyrillic
\DeclareTextCommand{\CYRPSI}{PU}{\84\160}% U+0470
% U+0471 CYRILLIC SMALL LETTER PSI; psicyrillic
\DeclareTextCommand{\cyrpsi}{PU}{\84\161}% U+0471
% U+0472 CYRILLIC CAPITAL LETTER FITA; Fitacyrillic, *afii10147
\DeclareTextCommand{\CYRFITA}{PU}{\84\162}% U+0472
% U+0473 CYRILLIC SMALL LETTER FITA; *afii10195, fitacyrillic
\DeclareTextCommand{\cyrfita}{PU}{\84\163}% U+0473
% U+0474 CYRILLIC CAPITAL LETTER IZHITSA; Izhitsacyrillic, *afii10148
\DeclareTextCommand{\CYRIZH}{PU}{\84\164}% U+0474
% U+0475 CYRILLIC SMALL LETTER IZHITSA; *afii10196, izhitsacyrillic
\DeclareTextCommand{\cyrizh}{PU}{\84\165}% U+0475
% U+0476 CYRILLIC CAPITAL LETTER IZHITSA WITH DOUBLE
%   GRAVE ACCENT; Izhitsadblgravecyrillic
\DeclareTextCompositeCommand{\C}{PU}{\CYRIZH}{\84\166}% U+0476
% U+0477 CYRILLIC SMALL LETTER IZHITSA WITH DOUBLE
%   GRAVE ACCENT; izhitsadblgravecyrillic
\DeclareTextCompositeCommand{\C}{PU}{\cyrizh}{\84\167}% U+0477
% U+0478 CYRILLIC CAPITAL LETTER UK; Ukcyrillic
\DeclareTextCommand{\CYRUK}{PU}{\84\170}% U+0478
% U+0479 CYRILLIC SMALL LETTER UK; ukcyrillic
\DeclareTextCommand{\cyruk}{PU}{\84\171}% U+0479
% U+047A CYRILLIC CAPITAL LETTER ROUND OMEGA; Omegaroundcyrillic
\DeclareTextCommand{\CYROMEGARND}{PU}{\84\172}% U+047A
% U+047B CYRILLIC SMALL LETTER ROUND OMEGA; omegaroundcyrillic
\DeclareTextCommand{\cyromegarnd}{PU}{\84\173}% U+047B
% U+047C CYRILLIC CAPITAL LETTER OMEGA WITH TITLO; Omegatitlocyrillic
\DeclareTextCommand{\CYROMEGATITLO}{PU}{\84\174}% U+047C
% U+047D CYRILLIC SMALL LETTER OMEGA WITH TITLO; omegatitlocyrillic
\DeclareTextCommand{\cyromegatitlo}{PU}{\84\175}% U+047D
% U+047E CYRILLIC CAPITAL LETTER OT; Otcyrillic
\DeclareTextCommand{\CYROT}{PU}{\84\176}% U+047E
% U+047F CYRILLIC SMALL LETTER OT; otcyrillic
\DeclareTextCommand{\cyrot}{PU}{\84\177}% U+047F
% U+0480 CYRILLIC CAPITAL LETTER KOPPA; Koppacyrillic
\DeclareTextCommand{\CYRKOPPA}{PU}{\84\200}% U+0480
% U+0481 CYRILLIC SMALL LETTER KOPPA; koppacyrillic
\DeclareTextCommand{\cyrkoppa}{PU}{\84\201}% U+0481
% U+0482 CYRILLIC THOUSANDS SIGN; thousandcyrillic
\DeclareTextCommand{\cyrthousands}{PU}{\84\202}% U+0482
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\84\203: U+0483 COMBINING CYRILLIC TITLO; titlocyrilliccmb
\84\204: U+0484 COMBINING CYRILLIC PALATALIZATION; palatalizationcyrilliccmb
\84\205: U+0485 COMBINING CYRILLIC DASIA PNEUMATA; dasiapneumatacyrilliccmb
\84\206: U+0486 COMBINING CYRILLIC PSILI PNEUMATA; psilipneumatacyrilliccmb
\84\207: U+0487 COMBINING CYRILLIC POKRYTIE

\84\210: U+0488 COMBINING CYRILLIC HUNDRED THOUSANDS SIGN
\84\211: U+0489 COMBINING CYRILLIC MILLIONS SIGN

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% U+048A CYRILLIC CAPITAL LETTER SHORT I WITH TAIL
\DeclareTextCommand{\CYRISHRTDSC}{PU}{\84\212}% U+048A
% U+048B CYRILLIC SMALL LETTER SHORT I WITH TAIL
\DeclareTextCommand{\cyrishrtdsc}{PU}{\84\213}% U+048B
% U+048C CYRILLIC CAPITAL LETTER SEMISOFT SIGN
\DeclareTextCommand{\CYRSEMISFTSN}{PU}{\84\214}% U+048C
% U+048D CYRILLIC SMALL LETTER SEMISOFT SIGN
\DeclareTextCommand{\cyrsemisftsn}{PU}{\84\215}% U+048D
% U+048E CYRILLIC CAPITAL LETTER ER WITH TICK
\DeclareTextCommand{\CYRRTICK}{PU}{\84\216}% U+048E
% U+048F CYRILLIC SMALL LETTER ER WITH TICK
\DeclareTextCommand{\cyrrtick}{PU}{\84\217}% U+048F
% U+0490 CYRILLIC CAPITAL LETTER GHE WITH UPTURN; Gheupturncyrillic, *afii10050
\DeclareTextCommand{\CYRGUP}{PU}{\84\220}% U+0490
% U+0491 CYRILLIC SMALL LETTER GHE WITH UPTURN; *afii10098, gheupturncyrillic
\DeclareTextCommand{\cyrgup}{PU}{\84\221}% U+0491
% U+0492 CYRILLIC CAPITAL LETTER GHE WITH STROKE; Ghestrokecyrillic
\DeclareTextCommand{\CYRGHCRS}{PU}{\84\222}% U+0492
% U+0493 CYRILLIC SMALL LETTER GHE WITH STROKE; ghestrokecyrillic
\DeclareTextCommand{\cyrghcrs}{PU}{\84\223}% U+0493
% U+0494 CYRILLIC CAPITAL LETTER GHE WITH MIDDLE HOOK;
%   Ghemiddlehookcyrillic
\DeclareTextCommand{\CYRGHK}{PU}{\84\224}% U+0494
% U+0495 CYRILLIC SMALL LETTER GHE WITH MIDDLE HOOK;
%   ghemiddlehookcyrillic
\DeclareTextCommand{\cyrghk}{PU}{\84\225}% U+0495
% U+0496 CYRILLIC CAPITAL LETTER ZHE WITH DESCENDER;
%   Zhedescendercyrillic
\DeclareTextCommand{\CYRZHDSC}{PU}{\84\226}% U+0496
% U+0497 CYRILLIC SMALL LETTER ZHE WITH DESCENDER;
%   zhedescendercyrillic
\DeclareTextCommand{\cyrzhdsc}{PU}{\84\227}% U+0497
% U+0498 CYRILLIC CAPITAL LETTER ZE WITH DESCENDER; Zedescendercyrillic
\DeclareTextCommand{\CYRZDSC}{PU}{\84\230}% U+0498
\DeclareTextCompositeCommand{\c}{PU}{\CYRZ}{\84\230}% U+0498
% U+0499 CYRILLIC SMALL LETTER ZE WITH DESCENDER; zedescendercyrillic
\DeclareTextCommand{\cyrzdsc}{PU}{\84\231}% U+0499
\DeclareTextCompositeCommand{\c}{PU}{\cyrz}{\84\231}% U+0499
% U+049A CYRILLIC CAPITAL LETTER KA WITH DESCENDER; Kadescendercyrillic
\DeclareTextCommand{\CYRKDSC}{PU}{\84\232}% U+049A
% U+049B CYRILLIC SMALL LETTER KA WITH DESCENDER; kadescendercyrillic
\DeclareTextCommand{\cyrkdsc}{PU}{\84\233}% U+049B
% U+049C CYRILLIC CAPITAL LETTER KA WITH VERTICAL STROKE;
%   Kaverticalstrokecyrillic
\DeclareTextCommand{\CYRKVCRS}{PU}{\84\234}% U+049C
% U+049D CYRILLIC SMALL LETTER KA WITH VERTICAL STROKE;
%   kaverticalstrokecyrillic
\DeclareTextCommand{\cyrkvcrs}{PU}{\84\235}% U+049D
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% U+049E CYRILLIC CAPITAL LETTER KA WITH STROKE; Kastrokecyrillic
\DeclareTextCommand{\CYRKHCRS}{PU}{\84\236}% U+049E
% U+049F CYRILLIC SMALL LETTER KA WITH STROKE; kastrokecyrillic
\DeclareTextCommand{\cyrkhcrs}{PU}{\84\237}% U+049F
% U+04A0 CYRILLIC CAPITAL LETTER BASHKIR KA; Kabashkircyrillic
\DeclareTextCommand{\CYRKBEAK}{PU}{\84\240}% U+04A0
% U+04A1 CYRILLIC SMALL LETTER BASHKIR KA; kabashkircyrillic
\DeclareTextCommand{\cyrkbeak}{PU}{\84\241}% U+04A1
% U+04A2 CYRILLIC CAPITAL LETTER EN WITH DESCENDER; Endescendercyrillic
\DeclareTextCommand{\CYRNDSC}{PU}{\84\242}% U+04A2
% U+04A3 CYRILLIC SMALL LETTER EN WITH DESCENDER; endescendercyrillic
\DeclareTextCommand{\cyrndsc}{PU}{\84\243}% U+04A3
% U+04A4 CYRILLIC CAPITAL LIGATURE EN GHE; Enghecyrillic
\DeclareTextCommand{\CYRNG}{PU}{\84\244}% U+04A4
% U+04A5 CYRILLIC SMALL LIGATURE EN GHE; enghecyrillic
\DeclareTextCommand{\cyrng}{PU}{\84\245}% U+04A5
% U+04A6 CYRILLIC CAPITAL LETTER PE WITH MIDDLE HOOK; Pemiddlehookcyrillic
\DeclareTextCommand{\CYRPHK}{PU}{\84\246}% U+04A6
% U+04A7 CYRILLIC SMALL LETTER PE WITH MIDDLE HOOK; pemiddlehookcyrillic
\DeclareTextCommand{\cyrphk}{PU}{\84\247}% U+04A7
% U+04A8 CYRILLIC CAPITAL LETTER ABKHASIAN HA; Haabkhasiancyrillic
\DeclareTextCommand{\CYRABHHA}{PU}{\84\250}% U+04A8
% U+04A9 CYRILLIC SMALL LETTER ABKHASIAN HA; haabkhasiancyrillic
\DeclareTextCommand{\cyrabhha}{PU}{\84\251}% U+04A9
% U+04AA CYRILLIC CAPITAL LETTER ES WITH DESCENDER; Esdescendercyrillic
\DeclareTextCommand{\CYRSDSC}{PU}{\84\252}% U+04AA
\DeclareTextCompositeCommand{\CYRSDSC}{PU}{\CYRS}{\84\252}% U+04AA
% U+04AB CYRILLIC SMALL LETTER ES WITH DESCENDER; esdescendercyrillic
\DeclareTextCommand{\cyrsdsc}{PU}{\84\253}% U+04AB
\DeclareTextCompositeCommand{\k}{PU}{\cyrs}{\84\253}% U+04AB
% U+04AC CYRILLIC CAPITAL LETTER TE WITH DESCENDER; Tedescendercyrillic
\DeclareTextCommand{\CYRTDSC}{PU}{\84\254}% U+04AC
% U+04AD CYRILLIC SMALL LETTER TE WITH DESCENDER; tedescendercyrillic
\DeclareTextCommand{\cyrtdsc}{PU}{\84\255}% U+04AD
% U+04AE CYRILLIC CAPITAL LETTER STRAIGHT U; Ustraightcyrillic
\DeclareTextCommand{\CYRY}{PU}{\84\256}% U+04AE
% U+04AF CYRILLIC SMALL LETTER STRAIGHT U; ustraightcyrillic
\DeclareTextCommand{\cyry}{PU}{\84\257}% U+04AF
% U+04B0 CYRILLIC CAPITAL LETTER STRAIGHT U WITH STROKE; Ustraightstrokecyrillic
\DeclareTextCommand{\CYRYHCRS}{PU}{\84\260}% U+04B0
% U+04B1 CYRILLIC SMALL LETTER STRAIGHT U WITH STROKE; ustraightstrokecyrillic
\DeclareTextCommand{\cyryhcrs}{PU}{\84\261}% U+04B1
% U+04B2 CYRILLIC CAPITAL LETTER HA WITH DESCENDER; Hadescendercyrillic
\DeclareTextCommand{\CYRHDSC}{PU}{\84\262}% U+04B2
% U+04B3 CYRILLIC SMALL LETTER HA WITH DESCENDER; hadescen-
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dercyrillic
\DeclareTextCommand{\cyrhdsc}{PU}{\84\263}% U+04B3
% U+04B4 CYRILLIC CAPITAL LIGATURE TE TSE; Tetsecyrillic
\DeclareTextCommand{\CYRTETSE}{PU}{\84\264}% U+04B4
% U+04B5 CYRILLIC SMALL LIGATURE TE TSE; tetsecyrillic
\DeclareTextCommand{\cyrtetse}{PU}{\84\265}% U+04B5
% U+04B6 CYRILLIC CAPITAL LETTER CHE WITH DESCENDER;
% Chedescendercyrillic
\DeclareTextCommand{\CYRCHRDSC}{PU}{\84\266}% U+04B6
% U+04B7 CYRILLIC SMALL LETTER CHE WITH DESCENDER; chedescendercyrillic
\DeclareTextCommand{\cyrchrdsc}{PU}{\84\267}% U+04B7
% U+04B8 CYRILLIC CAPITAL LETTER CHE WITH VERTICAL STROKE;
% Cheverticalstrokecyrillic
\DeclareTextCommand{\CYRCHVCRS}{PU}{\84\270}% U+04B8
% U+04B9 CYRILLIC SMALL LETTER CHE WITH VERTICAL STROKE;
% cheverticalstrokecyrillic
\DeclareTextCommand{\cyrchvcrs}{PU}{\84\271}% U+04B9
% U+04BA CYRILLIC CAPITAL LETTER SHHA; Shhacyrillic
\DeclareTextCommand{\CYRSHHA}{PU}{\84\272}% U+04BA
% U+04BB CYRILLIC SMALL LETTER SHHA; shhacyrillic
\DeclareTextCommand{\cyrshha}{PU}{\84\273}% U+04BB
% U+04BC CYRILLIC CAPITAL LETTER ABKHASIAN CHE; Cheabkhasiancyrillic
\DeclareTextCommand{\CYRABHCH}{PU}{\84\274}% U+04BC
% U+04BD CYRILLIC SMALL LETTER ABKHASIAN CHE; cheabkhasiancyrillic
\DeclareTextCommand{\cyrabhch}{PU}{\84\275}% U+04BD
% U+04BE CYRILLIC CAPITAL LETTER ABKHASIAN CHE WITH DESCENDER; Chedescenderabkhasiancyrillic
\DeclareTextCommand{\CYRABHCHDSC}{PU}{\84\276}% U+04BE
\DeclareTextCompositeCommand{\k}{PU}{\CYRABHCH}{\84\276}% U+04BE
% U+04BF CYRILLIC SMALL LETTER ABKHASIAN CHE WITH DESCENDER; chedescenderabkhasiancyrillic
\DeclareTextCommand{\cyrabhchdsc}{PU}{\84\277}% U+04BF
\DeclareTextCompositeCommand{\k}{PU}{\cyrabhch}{\84\277}% U+04BF
% U+04C0 CYRILLIC LETTER PALOCHKA; palochkacyrillic
\DeclareTextCommand{\CYRpalochka}{PU}{\84\300}% U+04C0
% U+04C1 CYRILLIC CAPITAL LETTER ZHE WITH BREVE; Zhebrevecyrillic
\DeclareTextCompositeCommand{\U}{PU}{\CYRZH}{\84\301}% U+04C1
% U+04C2 CYRILLIC SMALL LETTER ZHE WITH BREVE; zhebrevecyrillic
\DeclareTextCompositeCommand{\U}{PU}{\cyrzh}{\84\302}% U+04C2
% U+04C3 CYRILLIC CAPITAL LETTER KA WITH HOOK; Kahookcyrillic
\DeclareTextCommand{\CYRKHK}{PU}{\84\303}% U+04C3
% U+04C4 CYRILLIC SMALL LETTER KA WITH HOOK; kahookcyrillic
\DeclareTextCommand{\cyrkhk}{PU}{\84\304}% U+04C4
% U+04C5 CYRILLIC CAPITAL LETTER EL WITH TAIL
\DeclareTextCommand{\CYRLDSC}{PU}{\84\305}% U+04C5
% U+04C6 CYRILLIC SMALL LETTER EL WITH TAIL
\DeclareTextCommand{\cyrldsc}{PU}{\84\306}% U+04C6
% U+04C7 CYRILLIC CAPITAL LETTER EN WITH HOOK; Enhookcyrillic
\DeclareTextCommand{\CYRNHK}{PU}{\84\307}% U+04C7
% U+04C8 CYRILLIC SMALL LETTER EN WITH HOOK; enhookcyrillic
\DeclareTextCommand{\cyrnhk}{PU}{\84\310}% U+04C8
% U+04CB CYRILLIC CAPITAL LETTER KHAKASSIAN CHE; Chekhakassiancyrillic
\DeclareTextCommand{\CYRCHLDSC}{PU}{\84\313}% U+04CB

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% U+04CC CYRILLIC SMALL LETTER KHAKASSIAN CHE; chekhakassian-
    cyrillic
\DeclareTextCommand{\cyrchldsc}{PU}{\84\314}% U+04CC
% U+04CD CYRILLIC CAPITAL LETTER EM WITH TAIL
\DeclareTextCommand{\CYRMDSC}{PU}{\84\315}% U+04CD
% U+04CE CYRILLIC SMALL LETTER EM WITH TAIL
\DeclareTextCommand{\cyrmdsc}{PU}{\84\316}% U+04CE
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\84\317: U+04CF CYRILLIC SMALL LETTER PALOCHKA

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% U+04D0 CYRILLIC CAPITAL LETTER A WITH BREVE; Abrevecyrillic
\DeclareTextCompositeCommand{\U}{PU}{\CYRA}{\84\320}% U+04D0
% U+04D1 CYRILLIC SMALL LETTER A WITH BREVE; abrevecyrillic
\DeclareTextCompositeCommand{\U}{PU}{\cyra}{\84\321}% U+04D1
% U+04D2 CYRILLIC CAPITAL LETTER A WITH DIAERESIS; Adieresiscyril-
    lic
\DeclareTextCompositeCommand{\"}{PU}{\CYRA}{\84\322}% U+04D2
% U+04D3 CYRILLIC SMALL LETTER A WITH DIAERESIS; adieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\cyra}{\84\323}% U+04D3
% U+04D4 CYRILLIC CAPITAL LIGATURE A IE; Aiecyrillic
\DeclareTextCommand{\CYRAE}{PU}{\84\324}% U+04D4
% U+04D5 CYRILLIC SMALL LIGATURE A IE; aiecyrillic
\DeclareTextCommand{\cyrae}{PU}{\84\325}% U+04D5
% U+04D6 CYRILLIC CAPITAL LETTER IE WITH BREVE; Iebrevecyrillic
\DeclareTextCompositeCommand{\U}{PU}{\CYRE}{\84\326}% U+04D6
% U+04D7 CYRILLIC SMALL LETTER IE WITH BREVE; iebrevecyrillic
\DeclareTextCompositeCommand{\U}{PU}{\cyre}{\84\327}% U+04D7
% U+04D8 CYRILLIC CAPITAL LETTER SCHWA; Schwacyrillic
\DeclareTextCommand{\CYRSCHWA}{PU}{\84\330}% U+04D8
% U+04D9 CYRILLIC SMALL LETTER SCHWA; *afii10846, schwacyrillic
\DeclareTextCommand{\cyrschwa}{PU}{\84\331}% U+04D9
% U+04DA CYRILLIC CAPITAL LETTER SCHWA WITH DIAERESIS;
%   Schwadieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\CYRSCHWA}{\84\332}% U+04DA
% U+04DB CYRILLIC SMALL LETTER SCHWA WITH DIAERESIS;
%   schwadieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\cyrschwa}{\84\333}% U+04DB
% U+04DC CYRILLIC CAPITAL LETTER ZHE WITH DIAERESIS; Zhedieres-
    iscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\CYRZH}{\84\334}% U+04DC
% U+04DD CYRILLIC SMALL LETTER ZHE WITH DIAERESIS; zhedieresis-
    cyrillic
\DeclareTextCompositeCommand{\"}{PU}{\cyrzh}{\84\335}% U+04DD
% U+04DE CYRILLIC CAPITAL LETTER ZE WITH DIAERESIS; Zedieresis-
    cyrillic
\DeclareTextCompositeCommand{\"}{PU}{\CYRZ}{\84\336}% U+04DE
% U+04DF CYRILLIC SMALL LETTER ZE WITH DIAERESIS; zedieresiscyril-
    lic
\DeclareTextCompositeCommand{\"}{PU}{\cyrz}{\84\337}% U+04DF
% U+04E0 CYRILLIC CAPITAL LETTER ABKHASIAN DZE; Dzeabkhasian-
    cyrillic
\DeclareTextCommand{\CYRABHDZE}{PU}{\84\340}% U+04E0
% U+04E1 CYRILLIC SMALL LETTER ABKHASIAN DZE; dzeabkhasiancyril-
    lic
\DeclareTextCommand{\cyrabhdze}{PU}{\84\341}% U+04E1
% U+04E2 CYRILLIC CAPITAL LETTER I WITH MACRON; Imacroncyrillic
\DeclareTextCompositeCommand{\=}{PU}{\CYRI}{\84\342}% U+04E2
% U+04E3 CYRILLIC SMALL LETTER I WITH MACRON; imacroncyrillic
\DeclareTextCompositeCommand{\=}{PU}{\cyri}{\84\343}% U+04E3
```

```
% U+04E4 CYRILLIC CAPITAL LETTER I WITH DIAERESIS; Idieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\CYRI}{\84\344}% U+04E4
% U+04E5 CYRILLIC SMALL LETTER I WITH DIAERESIS; idieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\cyri}{\84\345}% U+04E5
% U+04E6 CYRILLIC CAPITAL LETTER O WITH DIAERESIS; Odieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\CYRO}{\84\346}% U+04E6
% U+04E7 CYRILLIC SMALL LETTER O WITH DIAERESIS; odieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\cyro}{\84\347}% U+04E7
% U+04E8 CYRILLIC CAPITAL LETTER BARRED O; Obarredcyrillic
\DeclareTextCommand{\CYROTLD}{PU}{\84\350}% U+04E8
% U+04E9 CYRILLIC SMALL LETTER BARRED O; obarredcyrillic
\DeclareTextCommand{\cyrotld}{PU}{\84\351}% U+04E9
% U+04EA CYRILLIC CAPITAL LETTER BARRED O WITH DIAERESIS;
%   Obarreddieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\CYROTLD}{\84\352}% U+04EA
% U+04EB CYRILLIC SMALL LETTER BARRED O WITH DIAERESIS;
%   obarreddieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\cyrotld}{\84\353}% U+04EB
% U+04EC CYRILLIC CAPITAL LETTER E WITH DIAERESIS
\DeclareTextCompositeCommand{\"}{PU}{\CYREREV}{\84\354}% U+04EC
% U+04ED CYRILLIC SMALL LETTER E WITH DIAERESIS
\DeclareTextCompositeCommand{\"}{PU}{\cyreref}{\84\355}% U+04ED
% U+04EE CYRILLIC CAPITAL LETTER U WITH MACRON; Umacroncyrillic
\DeclareTextCompositeCommand{\=}{PU}{\CYRU}{\84\356}% U+04EE
% U+04EF CYRILLIC SMALL LETTER U WITH MACRON; umacroncyrillic
\DeclareTextCompositeCommand{\=}{PU}{\cyru}{\84\357}% U+04EF
% U+04F0 CYRILLIC CAPITAL LETTER U WITH DIAERESIS; Udieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\CYRU}{\84\360}% U+04F0
% U+04F1 CYRILLIC SMALL LETTER U WITH DIAERESIS; udieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\cyru}{\84\361}% U+04F1
% U+04F2 CYRILLIC CAPITAL LETTER U WITH DOUBLE ACUTE; Uhungarumlautcyrillic
\DeclareTextCompositeCommand{\H}{PU}{\CYRU}{\84\362}% U+04F2
% U+04F3 CYRILLIC SMALL LETTER U WITH DOUBLE ACUTE; uhungarumlautcyrillic
\DeclareTextCompositeCommand{\H}{PU}{\cyru}{\84\363}% U+04F3
% U+04F4 CYRILLIC CAPITAL LETTER CHE WITH DIAERESIS; Chedieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\CYRCH}{\84\364}% U+04F4
% U+04F5 CYRILLIC SMALL LETTER CHE WITH DIAERESIS; chedieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\cyrch}{\84\365}% U+04F5
% U+04F6 CYRILLIC CAPITAL LETTER GHE WITH DESCENDER
\DeclareTextCommand{\CYRGDSC}{PU}{\84\366}% U+04F6
% U+04F7 CYRILLIC SMALL LETTER GHE WITH DESCENDER
\DeclareTextCommand{\cyrgdsc}{PU}{\84\367}% U+04F7
% U+04F8 CYRILLIC CAPITAL LETTER YERU WITH DIAERESIS; Yerudieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\CYRERY}{\84\370}% U+04F8
% U+04F9 CYRILLIC SMALL LETTER YERU WITH DIAERESIS; yerudieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\cyrery}{\84\371}% U+04F9
```

\84\372: U+04FA CYRILLIC CAPITAL LETTER GHE WITH STROKE AND HOOK

\84\373: U+04FB CYRILLIC SMALL LETTER GHE WITH STROKE AND

HOOK

```
% U+04FC CYRILLIC CAPITAL LETTER HA WITH HOOK
\DeclareTextCommand{\CYRHHK}{PU}{\84\374}% U+04FC
% U+04FD CYRILLIC SMALL LETTER HA WITH HOOK
\DeclareTextCommand{\cyrhhk}{PU}{\84\375}% U+04FD
```

\84\376: U+04FE CYRILLIC CAPITAL LETTER HA WITH STROKE
\84\377: U+04FF CYRILLIC SMALL LETTER HA WITH STROKE

51.2.11 Hebrew: U+0590 to U+05FF

Macro names are taken from he8enc.def.

```
% U+05C3 HEBREW PUNCTUATION SOF PASUQ
\DeclareTextCommand{\sofpasuq}{PU}{\85\303}% U+05C3
% U+05D0 HEBREW LETTER ALEF
\DeclareTextCommand{\hebalef}{PU}{\85\320}% U+05D0
% U+05D1 HEBREW LETTER BET
\DeclareTextCommand{\hebbet}{PU}{\85\321}% U+05D1
% U+05D2 HEBREW LETTER GIMEL
\DeclareTextCommand{\hebgimel}{PU}{\85\322}% U+05D2
% U+05D3 HEBREW LETTER DALET
\DeclareTextCommand{\hebdalet}{PU}{\85\323}% U+05D3
% U+05D4 HEBREW LETTER HE
\DeclareTextCommand{\hebhe}{PU}{\85\324}% U+05D4
% U+05D5 HEBREW LETTER VAV
\DeclareTextCommand{\hebvav}{PU}{\85\325}% U+05D5
% U+05D6 HEBREW LETTER ZAYIN
\DeclareTextCommand{\hebzayin}{PU}{\85\326}% U+05D6
% U+05D7 HEBREW LETTER HET
\DeclareTextCommand{\hebhet}{PU}{\85\327}% U+05D7
% U+05D8 HEBREW LETTER TET
\DeclareTextCommand{\hebtet}{PU}{\85\330}% U+05D8
% U+05D9 HEBREW LETTER YOD
\DeclareTextCommand{\hebyod}{PU}{\85\331}% U+05D9
% U+05DA HEBREW LETTER FINAL KAF
\DeclareTextCommand{\hebfinalkaf}{PU}{\85\332}% U+05DA
% U+05DB HEBREW LETTER KAF
\DeclareTextCommand{\hebkaf}{PU}{\85\333}% U+05DB
% U+05DC HEBREW LETTER LAMED
\DeclareTextCommand{\heblamed}{PU}{\85\334}% U+05DC
% U+05DD HEBREW LETTER FINAL MEM
\DeclareTextCommand{\hebfinalmem}{PU}{\85\335}% U+05DD
% U+05DE HEBREW LETTER MEM
\DeclareTextCommand{\hebmem}{PU}{\85\336}% U+05DE
% U+05DF HEBREW LETTER FINAL NUN
\DeclareTextCommand{\hebfinalnun}{PU}{\85\337}% U+05DF
% U+05E0 HEBREW LETTER NUN
\DeclareTextCommand{\hebnun}{PU}{\85\340}% U+05E0
% U+05E1 HEBREW LETTER SAMEKH
\DeclareTextCommand{\hebsamekh}{PU}{\85\341}% U+05E1
% U+05E2 HEBREW LETTER AYIN
\DeclareTextCommand{\hebayin}{PU}{\85\342}% U+05E2
% U+05E3 HEBREW LETTER FINAL PE
\DeclareTextCommand{\hebfinalpe}{PU}{\85\343}% U+05E3
% U+05E4 HEBREW LETTER PE
\DeclareTextCommand{\hebpe}{PU}{\85\344}% U+05E4
% U+05E5 HEBREW LETTER FINAL TSADI
```

```
\DeclareTextCommand{\hebfinaltsadi}{PU}{\85\345}% U+05E5
% U+05E6 HEBREW LETTER TSADI
\DeclareTextCommand{\hebtsadi}{PU}{\85\346}% U+05E6
% U+05E7 HEBREW LETTER QOF
\DeclareTextCommand{\hebqof}{PU}{\85\347}% U+05E7
% U+05E8 HEBREW LETTER RESH
\DeclareTextCommand{\hebresh}{PU}{\85\350}% U+05E8
% U+05E9 HEBREW LETTER SHIN
\DeclareTextCommand{\hebshin}{PU}{\85\351}% U+05E9
%* \hebshin -> \hebsin (he8)
% U+05EA HEBREW LETTER TAV
\DeclareTextCommand{\hebtav}{PU}{\85\352}% U+05EA
% U+05F0 HEBREW LIGATURE YIDDISH DOUBLE VAV
\DeclareTextCommand{\doublevav}{PU}{\85\360}% U+05F0
% U+05F1 HEBREW LIGATURE YIDDISH VAV YOD
\DeclareTextCommand{\vavyod}{PU}{\85\361}% U+05F1
% U+05F2 HEBREW LIGATURE YIDDISH DOUBLE YOD
\DeclareTextCommand{\doubleyod}{PU}{\85\362}% U+05F2
```

51.2.12 Thai: U+0E00 to U+0E7F

```
% U+0E3F THAI CURRENCY SYMBOL BAHT; bahtthai
\DeclareTextCommand{\textbaht}{PU}{\9016\077}% U+0E3F
```

51.2.13 Phonetic Extensions: U+1D00 to U+1D7F

```
% U+1D00 LATIN LETTER SMALL CAPITAL A; \textsca (tipa)
\DeclareTextCommand{\textsca}{PU}{\9035\000}% U+1D00
% U+1D05 LATIN LETTER SMALL CAPITAL D; \scd (wsuipa)
\DeclareTextCommand{\textscd}{PU}{\9035\005}%* U+1D05
% U+1D07 LATIN LETTER SMALL CAPITAL E; \textsce (tipa)
\DeclareTextCommand{\textsce}{PU}{\9035\007}% U+1D07
% U+1D0A LATIN LETTER SMALL CAPITAL J; \textscj (tipa)
\DeclareTextCommand{\textscj}{PU}{\9035\012}% U+1D0A
% U+1D0B LATIN LETTER SMALL CAPITAL K; \textsck (tipx)
\DeclareTextCommand{\textPUsck}{PU}{\9035\013}% U+1D0B
%* \textPUsck -> \textsck (tipx)
% U+1D0D LATIN LETTER SMALL CAPITAL M; \textscm (tipx)
\DeclareTextCommand{\textPUscm}{PU}{\9035\015}% U+1D0D
%* \textPUscm -> \textscm (tipx)
% U+1D18 LATIN LETTER SMALL CAPITAL P; \textscp (tipx)
\DeclareTextCommand{\textPUscp}{PU}{\9035\030}% U+1D18
%* \textPUscp -> \textscp (tipx)
% U+1D19 LATIN LETTER SMALL CAPITAL REVERSED R; \textrevscr (tipx)
\DeclareTextCommand{\textPUrevscr}{PU}{\9035\031}% U+1D19
%* \textPUrevscr -> \textrevscr (tipx)
% U+1D1C LATIN LETTER SMALL CAPITAL U; \textscu (tipa), \scu (wsuipa)
\DeclareTextCommand{\textscu}{PU}{\9035\034}%* U+1D1C
% U+1D62 LATIN SUBSCRIPT SMALL LETTER I
\DeclareTextCommand{\textiinferior}{PU}{\9035\142}%* U+1D62
% U+1D63 LATIN SUBSCRIPT SMALL LETTER R
\DeclareTextCommand{\textrinferior}{PU}{\9035\143}%* U+1D63
% U+1D64 LATIN SUBSCRIPT SMALL LETTER U
\DeclareTextCommand{\textuinferior}{PU}{\9035\144}%* U+1D64
% U+1D65 LATIN SUBSCRIPT SMALL LETTER V
\DeclareTextCommand{\textvinferior}{PU}{\9035\145}%* U+1D65
% U+1D66 GREEK SUBSCRIPT SMALL LETTER BETA
\DeclareTextCommand{\textbetainferior}{PU}{\9035\146}%* U+1D66
```

```
% U+1D67 GREEK SUBSCRIPT SMALL LETTER GAMMA
\DeclareTextCommand{\textgammainferior}{PU}{\9035\147}%* U+1D67
% U+1D68 GREEK SUBSCRIPT SMALL LETTER RHO
\DeclareTextCommand{\textrhoinferior}{PU}{\9035\150}%* U+1D68
% U+1D69 GREEK SUBSCRIPT SMALL LETTER PHI
\DeclareTextCommand{\textphiinferior}{PU}{\9035\151}%* U+1D69
% U+1D6A GREEK SUBSCRIPT SMALL LETTER CHI
\DeclareTextCommand{\textchiinferior}{PU}{\9035\152}%* U+1D6A
% U+1D7B LATIN SMALL CAPITAL LETTER I WITH STROKE;
%   \barsci (wsuipa)
\DeclareTextCommand{\textbarsci}{PU}{\9035\173}%* U+1D7B
% U+1D7D LATIN SMALL LETTER P WITH STROKE; \barp (wsuipa)
\DeclareTextCommand{\textbarp}{PU}{\9035\175}%* U+1D7D
% U+1D7E LATIN SMALL CAPITAL LETTER U WITH STROKE;
%   \barscu (wsuipa)
\DeclareTextCommand{\textbarscu}{PU}{\9035\176}%* U+1D7E
```

51.2.14 Phonetic Extensions Supplement: U+1D80 to U+1DBF

```
% U+1D8F LATIN SMALL LETTER A WITH RETROFLEX HOOK; \textrhooka (tipx)
\DeclareTextCommand{\textPUrhooka}{PU}{\9035\217}% U+1D8F
%* \textPUrhooka -> \textrhooka (tipx)
% U+1D91 LATIN SMALL LETTER D WITH HOOK AND TAIL; \texthtrtaild (tipa)
\DeclareTextCommand{\texthtrtaild}{PU}{\9035\221}%* U+1D91
% U+1D92 LATIN SMALL LETTER E WITH RETROFLEX HOOK; \textrhooke (tipx)
\DeclareTextCommand{\textPUrhooke}{PU}{\9035\222}% U+1D92
%* \textPUrhooke -> \textrhooke (tipx)
% U+1D93 LATIN SMALL LETTER OPEN E WITH RETROFLEX HOOK;
%   \textrhookepsilon (tipx)
\DeclareTextCommand{\textPUrhookepsilon}{PU}{\9035\223}% U+1D93
%* \textPUrhookepsilon -> \textrhookepsilon (tipx)
% U+1D97 LATIN SMALL LETTER OPEN O WITH RETROFLEX HOOK;
%   \textrhookopeno (tipx)
\DeclareTextCommand{\textPUrhookopeno}{PU}{\9035\227}% U+1D97
%* \textPUrhookopeno -> \textrhookopeno (tipx)
```

51.2.15 Latin Extended Additional: U+1E00 to U+1EFF

```
% U+1E00 LATIN CAPITAL LETTER A WITH RING BELOW; Aringbelow
\DeclareTextCompositeCommand{\textsubring}{PU}{A}{\9036\000}% U+1E00
% U+1E01 LATIN SMALL LETTER A WITH RING BELOW; aringbelow
\DeclareTextCompositeCommand{\textsubring}{PU}{a}{\9036\001}% U+1E01
% U+1E02 LATIN CAPITAL LETTER B WITH DOT ABOVE; Bdotaccent
\DeclareTextCompositeCommand{\.}{PU}{B}{\9036\002}% U+1E02
% U+1E03 LATIN SMALL LETTER B WITH DOT ABOVE; bdotaccent
\DeclareTextCompositeCommand{\.}{PU}{b}{\9036\003}% U+1E03
% U+1E04 LATIN CAPITAL LETTER B WITH DOT BELOW; Bdotbelow
\DeclareTextCompositeCommand{\d}{PU}{B}{\9036\004}% U+1E04
% U+1E05 LATIN SMALL LETTER B WITH DOT BELOW; bdotbelow
\DeclareTextCompositeCommand{\d}{PU}{b}{\9036\005}% U+1E05
% U+1E06 LATIN CAPITAL LETTER B WITH LINE BELOW; Blinebelow
\DeclareTextCompositeCommand{\b}{PU}{B}{\9036\006}% U+1E06
% U+1E07 LATIN SMALL LETTER B WITH LINE BELOW; blinebelow
\DeclareTextCompositeCommand{\b}{PU}{b}{\9036\007}% U+1E07
% U+1E0A LATIN CAPITAL LETTER D WITH DOT ABOVE; Ddotaccent
\DeclareTextCompositeCommand{\.}{PU}{D}{\9036\012}% U+1E0A
```

```
% U+1E0B LATIN SMALL LETTER D WITH DOT ABOVE; ddotaccent
\DeclareTextCompositeCommand{\.}{PU}{d}{\9036\013}% U+1E0B
% U+1E0C LATIN CAPITAL LETTER D WITH DOT BELOW; Ddotbelow
\DeclareTextCompositeCommand{\d}{PU}{D}{\9036\014}% U+1E0C
% U+1E0D LATIN SMALL LETTER D WITH DOT BELOW; ddotbelow
\DeclareTextCompositeCommand{\d}{PU}{d}{\9036\015}% U+1E0D
% U+1E0E LATIN CAPITAL LETTER D WITH LINE BELOW; Dlinebelow
\DeclareTextCompositeCommand{\b}{PU}{D}{\9036\016}% U+1E0E
% U+1E0F LATIN SMALL LETTER D WITH LINE BELOW; dlinebelow
\DeclareTextCompositeCommand{\b}{PU}{d}{\9036\017}% U+1E0F
% U+1E10 LATIN CAPITAL LETTER D WITH CEDILLA; Dcedilla
\DeclareTextCompositeCommand{\c}{PU}{D}{\9036\020}% U+1E10
% U+1E11 LATIN SMALL LETTER D WITH CEDILLA; dcedilla
\DeclareTextCompositeCommand{\c}{PU}{d}{\9036\021}% U+1E11
% U+1E12 LATIN CAPITAL LETTER D WITH CIRCUMFLEX BELOW; Dcir-
    cumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{D}{\9036\022}% U+1E12
% U+1E13 LATIN SMALL LETTER D WITH CIRCUMFLEX BELOW; dcir-
    cumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{d}{\9036\023}% U+1E13
% U+1E14 LATIN CAPITAL LETTER E WITH MACRON AND GRAVE;
%   Emacrongrave
\DeclareTextCompositeCommand{\textgravemacron}{PU}{E}{\9036\024}% U+1E14
% U+1E15 LATIN SMALL LETTER E WITH MACRON AND GRAVE;
%   emacrongrave
\DeclareTextCompositeCommand{\textgravemacron}{PU}{e}{\9036\025}% U+1E15
% U+1E16 LATIN CAPITAL LETTER E WITH MACRON AND ACUTE;
%   Emacronacute
\DeclareTextCompositeCommand{\textacutemacron}{PU}{E}{\9036\026}% U+1E16
% U+1E17 LATIN SMALL LETTER E WITH MACRON AND ACUTE;
%   emacronacute
\DeclareTextCompositeCommand{\textacutemacron}{PU}{e}{\9036\027}% U+1E17
% U+1E18 LATIN CAPITAL LETTER E WITH CIRCUMFLEX BELOW; Ecir-
    cumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{E}{\9036\030}% U+1E18
% U+1E19 LATIN SMALL LETTER E WITH CIRCUMFLEX BELOW; ecir-
    cumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{e}{\9036\031}% U+1E19
% U+1E1A LATIN CAPITAL LETTER E WITH TILDE BELOW; Etildebelow
\DeclareTextCompositeCommand{\textsubtilde}{PU}{E}{\9036\032}% U+1E1A
% U+1E1B LATIN SMALL LETTER E WITH TILDE BELOW; etildebelow
\DeclareTextCompositeCommand{\textsubtilde}{PU}{e}{\9036\033}% U+1E1B
% U+1E1E LATIN CAPITAL LETTER F WITH DOT ABOVE; Fdotaccent
\DeclareTextCompositeCommand{\.}{PU}{F}{\9036\036}% U+1E1E
% U+1E1F LATIN SMALL LETTER F WITH DOT ABOVE; fdotaccent
\DeclareTextCompositeCommand{\.}{PU}{f}{\9036\037}% U+1E1F
% U+1E20 LATIN CAPITAL LETTER G WITH MACRON; Gmacron
\DeclareTextCompositeCommand{\=}{PU}{G}{\9036\040}% U+1E20
% U+1E21 LATIN SMALL LETTER G WITH MACRON; gmacron
\DeclareTextCompositeCommand{\=}{PU}{g}{\9036\041}% U+1E21
% U+1E22 LATIN CAPITAL LETTER H WITH DOT ABOVE; Hdotaccent
\DeclareTextCompositeCommand{\.}{PU}{H}{\9036\042}% U+1E22
% U+1E23 LATIN SMALL LETTER H WITH DOT ABOVE; hdotaccent
\DeclareTextCompositeCommand{\.}{PU}{h}{\9036\043}% U+1E23
% U+1E24 LATIN CAPITAL LETTER H WITH DOT BELOW; Hdotbelow
\DeclareTextCompositeCommand{\d}{PU}{H}{\9036\044}% U+1E24
% U+1E25 LATIN SMALL LETTER H WITH DOT BELOW; hdotbelow
```

```
\DeclareTextCompositeCommand{\d}{PU}{h}{\9036\045}% U+1E25
% U+1E26 LATIN CAPITAL LETTER H WITH DIAERESIS; Hdieresis
\DeclareTextCompositeCommand{\"}{PU}{H}{\9036\046}% U+1E26
% U+1E27 LATIN SMALL LETTER H WITH DIAERESIS; hdieresis
\DeclareTextCompositeCommand{\"}{PU}{h}{\9036\047}% U+1E27
% U+1E28 LATIN CAPITAL LETTER H WITH CEDILLA; Hcedilla
\DeclareTextCompositeCommand{\c}{PU}{H}{\9036\050}% U+1E28
% U+1E29 LATIN SMALL LETTER H WITH CEDILLA; hcedilla
\DeclareTextCompositeCommand{\c}{PU}{h}{\9036\051}% U+1E29
% U+1E2A LATIN CAPITAL LETTER H WITH BREVE BELOW; Hbrevebelow
\DeclareTextCompositeCommand{\textsubbreve}{PU}{H}{\9036\052}% U+1E2A
% U+1E2B LATIN SMALL LETTER H WITH BREVE BELOW; hbrevebelow
\DeclareTextCompositeCommand{\textsubbreve}{PU}{h}{\9036\053}% U+1E2B
% U+1E2C LATIN CAPITAL LETTER I WITH TILDE BELOW; Itildebelow
\DeclareTextCompositeCommand{\textsubtilde}{PU}{I}{\9036\054}% U+1E2C
% U+1E2D LATIN SMALL LETTER I WITH TILDE BELOW; itildebelow
\DeclareTextCompositeCommand{\textsubtilde}{PU}{i}{\9036\055}% U+1E2D
% U+1E30 LATIN CAPITAL LETTER K WITH ACUTE; Kacute
\DeclareTextCompositeCommand{\'}{PU}{K}{\9036\060}% U+1E30
% U+1E31 LATIN SMALL LETTER K WITH ACUTE; kacute
\DeclareTextCompositeCommand{\'}{PU}{k}{\9036\061}% U+1E31
% U+1E32 LATIN CAPITAL LETTER K WITH DOT BELOW; Kdotbelow
\DeclareTextCompositeCommand{\d}{PU}{K}{\9036\062}% U+1E32
% U+1E33 LATIN SMALL LETTER K WITH DOT BELOW; kdotbelow
\DeclareTextCompositeCommand{\d}{PU}{k}{\9036\063}% U+1E33
% U+1E34 LATIN CAPITAL LETTER K WITH LINE BELOW; Klinebelow
\DeclareTextCompositeCommand{\b}{PU}{K}{\9036\064}% U+1E34
% U+1E35 LATIN SMALL LETTER K WITH LINE BELOW; klinebelow
\DeclareTextCompositeCommand{\b}{PU}{k}{\9036\065}% U+1E35
% U+1E36 LATIN CAPITAL LETTER L WITH DOT BELOW; Ldotbelow
\DeclareTextCompositeCommand{\d}{PU}{L}{\9036\066}% U+1E36
% U+1E37 LATIN SMALL LETTER L WITH DOT BELOW; ldotbelow
\DeclareTextCompositeCommand{\d}{PU}{l}{\9036\067}% U+1E37
% U+1E3A LATIN CAPITAL LETTER L WITH LINE BELOW; Llinebelow
\DeclareTextCompositeCommand{\b}{PU}{L}{\9036\072}% U+1E3A
% U+1E3B LATIN SMALL LETTER L WITH LINE BELOW; llinebelow
\DeclareTextCompositeCommand{\b}{PU}{l}{\9036\073}% U+1E3B
% U+1E3C LATIN CAPITAL LETTER L WITH CIRCUMFLEX BELOW; Lcir-
    cumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{L}{\9036\074}% U+1E3C
% U+1E3D LATIN SMALL LETTER L WITH CIRCUMFLEX BELOW; lcir-
    cumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{l}{\9036\075}% U+1E3D
% U+1E3E LATIN CAPITAL LETTER M WITH ACUTE; Macute
\DeclareTextCompositeCommand{\'}{PU}{M}{\9036\076}% U+1E3E
% U+1E3F LATIN SMALL LETTER M WITH ACUTE; macute
\DeclareTextCompositeCommand{\'}{PU}{m}{\9036\077}% U+1E3F
% U+1E40 LATIN CAPITAL LETTER M WITH DOT ABOVE; Mdotaccent
\DeclareTextCompositeCommand{\.}{PU}{M}{\9036\100}% U+1E40
% U+1E41 LATIN SMALL LETTER M WITH DOT ABOVE; mdotaccent
\DeclareTextCompositeCommand{\.}{PU}{m}{\9036\101}% U+1E41
% U+1E42 LATIN CAPITAL LETTER M WITH DOT BELOW; Mdotbelow
\DeclareTextCompositeCommand{\d}{PU}{M}{\9036\102}% U+1E42
% U+1E43 LATIN SMALL LETTER M WITH DOT BELOW; mdotbelow
\DeclareTextCompositeCommand{\d}{PU}{m}{\9036\103}% U+1E43
% U+1E44 LATIN CAPITAL LETTER N WITH DOT ABOVE; Ndotaccent
\DeclareTextCompositeCommand{\.}{PU}{N}{\9036\104}% U+1E44
```

```
% U+1E45 LATIN SMALL LETTER N WITH DOT ABOVE; ndotaccent
\DeclareTextCompositeCommand{\.}{PU}{n}{\9036\105}% U+1E45
% U+1E46 LATIN CAPITAL LETTER N WITH DOT BELOW; Ndotbelow
\DeclareTextCompositeCommand{\d}{PU}{N}{\9036\106}% U+1E46
% U+1E47 LATIN SMALL LETTER N WITH DOT BELOW; ndotbelow
\DeclareTextCompositeCommand{\d}{PU}{n}{\9036\107}% U+1E47
% U+1E48 LATIN CAPITAL LETTER N WITH LINE BELOW; Nlinebelow
\DeclareTextCompositeCommand{\b}{PU}{N}{\9036\110}% U+1E48
% U+1E49 LATIN SMALL LETTER N WITH LINE BELOW; nlinebelow
\DeclareTextCompositeCommand{\b}{PU}{n}{\9036\111}% U+1E49
% U+1E4A LATIN CAPITAL LETTER N WITH CIRCUMFLEX BELOW; Ncircumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{N}{\9036\112}% U+1E4A
% U+1E4B LATIN SMALL LETTER N WITH CIRCUMFLEX BELOW; ncircumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{n}{\9036\113}% U+1E4B
% U+1E50 LATIN CAPITAL LETTER O WITH MACRON AND GRAVE;
%   Omacrongrave
\DeclareTextCompositeCommand{\textgravemacron}{PU}{O}{\9036\120}% U+1E50
% U+1E51 LATIN SMALL LETTER O WITH MACRON AND GRAVE;
%   omacrongrave
\DeclareTextCompositeCommand{\textgravemacron}{PU}{o}{\9036\121}% U+1E51
% U+1E52 LATIN CAPITAL LETTER O WITH MACRON AND ACUTE;
%   Omacronacute
\DeclareTextCompositeCommand{\textacutemacron}{PU}{O}{\9036\122}% U+1E52
% U+1E53 LATIN SMALL LETTER O WITH MACRON AND ACUTE;
%   omacronacute
\DeclareTextCompositeCommand{\textacutemacron}{PU}{o}{\9036\123}% U+1E53
% U+1E54 LATIN CAPITAL LETTER P WITH ACUTE; Pacute
\DeclareTextCompositeCommand{\'}{PU}{P}{\9036\124}% U+1E54
% U+1E55 LATIN SMALL LETTER P WITH ACUTE; pacute
\DeclareTextCompositeCommand{\'}{PU}{p}{\9036\125}% U+1E55
% U+1E56 LATIN CAPITAL LETTER P WITH DOT ABOVE; Pdotaccent
\DeclareTextCompositeCommand{\.}{PU}{P}{\9036\126}% U+1E56
% U+1E57 LATIN SMALL LETTER P WITH DOT ABOVE; pdotaccent
\DeclareTextCompositeCommand{\.}{PU}{p}{\9036\127}% U+1E57
% U+1E58 LATIN CAPITAL LETTER R WITH DOT ABOVE; Rdotaccent
\DeclareTextCompositeCommand{\.}{PU}{R}{\9036\130}% U+1E58
% U+1E59 LATIN SMALL LETTER R WITH DOT ABOVE; rdotaccent
\DeclareTextCompositeCommand{\.}{PU}{r}{\9036\131}% U+1E59
% U+1E5A LATIN CAPITAL LETTER R WITH DOT BELOW; Rdotbelow
\DeclareTextCompositeCommand{\d}{PU}{R}{\9036\132}% U+1E5A
% U+1E5B LATIN SMALL LETTER R WITH DOT BELOW; rdotbelow
\DeclareTextCompositeCommand{\d}{PU}{r}{\9036\133}% U+1E5B
% U+1E5E LATIN CAPITAL LETTER R WITH LINE BELOW; Rlinebelow
\DeclareTextCompositeCommand{\b}{PU}{R}{\9036\136}% U+1E5E
% U+1E5F LATIN SMALL LETTER R WITH LINE BELOW; rlinebelow
\DeclareTextCompositeCommand{\b}{PU}{r}{\9036\137}% U+1E5F
% U+1E60 LATIN CAPITAL LETTER S WITH DOT ABOVE; Sdotaccent
\DeclareTextCompositeCommand{\.}{PU}{S}{\9036\140}% U+1E60
% U+1E61 LATIN SMALL LETTER S WITH DOT ABOVE; sdotaccent
\DeclareTextCompositeCommand{\.}{PU}{s}{\9036\141}% U+1E61
% U+1E62 LATIN CAPITAL LETTER S WITH DOT BELOW; Sdotbelow
\DeclareTextCompositeCommand{\d}{PU}{S}{\9036\142}% U+1E62
% U+1E63 LATIN SMALL LETTER S WITH DOT BELOW; sdotbelow
\DeclareTextCompositeCommand{\d}{PU}{s}{\9036\143}% U+1E63
% U+1E6A LATIN CAPITAL LETTER T WITH DOT ABOVE; Tdotaccent
```

```
\DeclareTextCompositeCommand{\.}{PU}{T}{\9036\152}% U+1E6A
% U+1E6B LATIN SMALL LETTER T WITH DOT ABOVE; tdotaccent
\DeclareTextCompositeCommand{\.}{PU}{t}{\9036\153}% U+1E6B
% U+1E6C LATIN CAPITAL LETTER T WITH DOT BELOW; Tdotbelow
\DeclareTextCompositeCommand{\d}{PU}{T}{\9036\154}% U+1E6C
% U+1E6D LATIN SMALL LETTER T WITH DOT BELOW; tdotbelow
\DeclareTextCompositeCommand{\d}{PU}{t}{\9036\155}% U+1E6D
% U+1E6E LATIN CAPITAL LETTER T WITH LINE BELOW; Tlinebelow
\DeclareTextCompositeCommand{\b}{PU}{T}{\9036\156}% U+1E6E
% U+1E6F LATIN SMALL LETTER T WITH LINE BELOW; tlinebelow
\DeclareTextCompositeCommand{\b}{PU}{t}{\9036\157}% U+1E6F
% U+1E70 LATIN CAPITAL LETTER T WITH CIRCUMFLEX BELOW; Tcir-
    cumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{T}{\9036\160}% U+1E70
% U+1E71 LATIN SMALL LETTER T WITH CIRCUMFLEX BELOW; tcir-
    cumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{t}{\9036\161}% U+1E71
% U+1E72 LATIN CAPITAL LETTER U WITH DIAERESIS BELOW; Udiere-
    sisbelow
\DeclareTextCompositeCommand{\textsubumlaut}{PU}{U}{\9036\162}% U+1E72
% U+1E73 LATIN SMALL LETTER U WITH DIAERESIS BELOW; udieresis-
    below
\DeclareTextCompositeCommand{\textsubumlaut}{PU}{u}{\9036\163}% U+1E73
% U+1E74 LATIN CAPITAL LETTER U WITH TILDE BELOW; Utildebelow
\DeclareTextCompositeCommand{\textsubtilde}{PU}{U}{\9036\164}% U+1E74
% U+1E75 LATIN SMALL LETTER U WITH TILDE BELOW; utildebelow
\DeclareTextCompositeCommand{\textsubtilde}{PU}{u}{\9036\165}% U+1E75
% U+1E76 LATIN CAPITAL LETTER U WITH CIRCUMFLEX BELOW; Ucir-
    cumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{U}{\9036\166}% U+1E76
% U+1E77 LATIN SMALL LETTER U WITH CIRCUMFLEX BELOW; ucir-
    cumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{u}{\9036\167}% U+1E77
% U+1E7C LATIN CAPITAL LETTER V WITH TILDE; Vtilde
\DeclareTextCompositeCommand{\~}{PU}{V}{\9036\174}% U+1E7C
% U+1E7D LATIN SMALL LETTER V WITH TILDE; vtilde
\DeclareTextCompositeCommand{\~}{PU}{v}{\9036\175}% U+1E7D
% U+1E7E LATIN CAPITAL LETTER V WITH DOT BELOW; Vdotbelow
\DeclareTextCompositeCommand{\d}{PU}{V}{\9036\176}% U+1E7E
% U+1E7F LATIN SMALL LETTER V WITH DOT BELOW; vdotbelow
\DeclareTextCompositeCommand{\d}{PU}{v}{\9036\177}% U+1E7F
% U+1E80 LATIN CAPITAL LETTER W WITH GRAVE; Wgrave
\DeclareTextCompositeCommand{\`}{PU}{W}{\9036\200}% U+1E80
% U+1E81 LATIN SMALL LETTER W WITH GRAVE; wgrave
\DeclareTextCompositeCommand{\`}{PU}{w}{\9036\201}% U+1E81
% U+1E82 LATIN CAPITAL LETTER W WITH ACUTE; Wacute
\DeclareTextCompositeCommand{\'}{PU}{W}{\9036\202}% U+1E82
% U+1E83 LATIN SMALL LETTER W WITH ACUTE; wacute
\DeclareTextCompositeCommand{\'}{PU}{w}{\9036\203}% U+1E83
% U+1E84 LATIN CAPITAL LETTER W WITH DIAERESIS; Wdieresis
\DeclareTextCompositeCommand{\"}{PU}{W}{\9036\204}% U+1E84
% U+1E85 LATIN SMALL LETTER W WITH DIAERESIS; wdieresis
\DeclareTextCompositeCommand{\"}{PU}{w}{\9036\205}% U+1E85
% U+1E86 LATIN CAPITAL LETTER W WITH DOT ABOVE; Wdotaccent
\DeclareTextCompositeCommand{\.}{PU}{W}{\9036\206}% U+1E86
% U+1E87 LATIN SMALL LETTER W WITH DOT ABOVE; wdotaccent
\DeclareTextCompositeCommand{\.}{PU}{w}{\9036\207}% U+1E87
```

```
% U+1E88 LATIN CAPITAL LETTER W WITH DOT BELOW; wdotbelow
\DeclareTextCompositeCommand{\d}{PU}{W}{\9036\210}% U+1E88
% U+1E89 LATIN SMALL LETTER W WITH DOT BELOW; wdotbelow
\DeclareTextCompositeCommand{\d}{PU}{w}{\9036\211}% U+1E89
% U+1E8A LATIN CAPITAL LETTER X WITH DOT ABOVE; Xdotaccent
\DeclareTextCompositeCommand{\.}{PU}{X}{\9036\212}% U+1E8A
% U+1E8B LATIN SMALL LETTER X WITH DOT ABOVE; xdotaccent
\DeclareTextCompositeCommand{\.}{PU}{x}{\9036\213}% U+1E8B
% U+1E8C LATIN CAPITAL LETTER X WITH DIAERESIS; Xdieresis
\DeclareTextCompositeCommand{\"}{PU}{X}{\9036\214}% U+1E8C
% U+1E8D LATIN SMALL LETTER X WITH DIAERESIS; xdieresis
\DeclareTextCompositeCommand{\"}{PU}{x}{\9036\215}% U+1E8D
% U+1E8E LATIN CAPITAL LETTER Y WITH DOT ABOVE; Ydotaccent
\DeclareTextCompositeCommand{\.}{PU}{Y}{\9036\216}% U+1E8E
% U+1E8F LATIN SMALL LETTER Y WITH DOT ABOVE; ydotaccent
\DeclareTextCompositeCommand{\.}{PU}{y}{\9036\217}% U+1E8F
% U+1E90 LATIN CAPITAL LETTER Z WITH CIRCUMFLEX; Zcircumflex
\DeclareTextCompositeCommand{\^}{PU}{Z}{\9036\220}% U+1E90
% U+1E91 LATIN SMALL LETTER Z WITH CIRCUMFLEX; zcircumflex
\DeclareTextCompositeCommand{\^}{PU}{z}{\9036\221}% U+1E91
% U+1E92 LATIN CAPITAL LETTER Z WITH DOT BELOW; Zdotbelow
\DeclareTextCompositeCommand{\d}{PU}{Z}{\9036\222}% U+1E92
% U+1E93 LATIN SMALL LETTER Z WITH DOT BELOW; zdotbelow
\DeclareTextCompositeCommand{\d}{PU}{z}{\9036\223}% U+1E93
% U+1E94 LATIN CAPITAL LETTER Z WITH LINE BELOW; Zlinebelow
\DeclareTextCompositeCommand{\b}{PU}{Z}{\9036\224}% U+1E94
% U+1E95 LATIN SMALL LETTER Z WITH LINE BELOW; zlinebelow
\DeclareTextCompositeCommand{\b}{PU}{z}{\9036\225}% U+1E95
% U+1E96 LATIN SMALL LETTER H WITH LINE BELOW; hlinebelow
\DeclareTextCompositeCommand{\b}{PU}{h}{\9036\226}% U+1E96
% U+1E97 LATIN SMALL LETTER T WITH DIAERESIS; tdieresis
\DeclareTextCompositeCommand{\"}{PU}{t}{\9036\227}% U+1E97
% U+1E98 LATIN SMALL LETTER W WITH RING ABOVE; wring
\DeclareTextCompositeCommand{\r}{PU}{w}{\9036\230}% U+1E98
% U+1E99 LATIN SMALL LETTER Y WITH RING ABOVE; yring
\DeclareTextCompositeCommand{\r}{PU}{y}{\9036\231}% U+1E99
% U+1E9B LATIN SMALL LETTER LONG S WITH DOT ABOVE; slongdo-
    taccent
\DeclareTextCompositeCommand{\.}{PU}{\textlongs}{\9036\233}% U+1E9B
% U+1EA0 LATIN CAPITAL LETTER A WITH DOT BELOW; Adotbelow
\DeclareTextCompositeCommand{\d}{PU}{A}{\9036\240}% U+1EA0
% U+1EA1 LATIN SMALL LETTER A WITH DOT BELOW; adotbelow
\DeclareTextCompositeCommand{\d}{PU}{a}{\9036\241}% U+1EA1
% U+1EB8 LATIN CAPITAL LETTER E WITH DOT BELOW; Edotbelow
\DeclareTextCompositeCommand{\d}{PU}{E}{\9036\270}% U+1EB8
% U+1EB9 LATIN SMALL LETTER E WITH DOT BELOW; edotbelow
\DeclareTextCompositeCommand{\d}{PU}{e}{\9036\271}% U+1EB9
% U+1EBC LATIN CAPITAL LETTER E WITH TILDE; Etilde
\DeclareTextCompositeCommand{\~}{PU}{E}{\9036\274}% U+1EBC
% U+1EBD LATIN SMALL LETTER E WITH TILDE; etilde
\DeclareTextCompositeCommand{\~}{PU}{e}{\9036\275}% U+1EBD
% U+1ECA LATIN CAPITAL LETTER I WITH DOT BELOW; Idotbelow
\DeclareTextCompositeCommand{\d}{PU}{I}{\9036\312}% U+1ECA
% U+1ECB LATIN SMALL LETTER I WITH DOT BELOW; idotbelow
\DeclareTextCompositeCommand{\d}{PU}{i}{\9036\313}% U+1ECB
% U+1ECC LATIN CAPITAL LETTER O WITH DOT BELOW; Odotbelow
\DeclareTextCompositeCommand{\d}{PU}{O}{\9036\314}% U+1ECC
```

```
% U+1ECD LATIN SMALL LETTER O WITH DOT BELOW; odotbelow
\DeclareTextCompositeCommand{\d}{PU}{o}{\9036\315}% U+1ECD
% U+1EE4 LATIN CAPITAL LETTER U WITH DOT BELOW; Udotbelow
\DeclareTextCompositeCommand{\d}{PU}{U}{\9036\344}% U+1EE4
% U+1EE5 LATIN SMALL LETTER U WITH DOT BELOW; udotbelow
\DeclareTextCompositeCommand{\d}{PU}{u}{\9036\345}% U+1EE5
% U+1EF2 LATIN CAPITAL LETTER Y WITH GRAVE; Ygrave
\DeclareTextCompositeCommand{\`}{PU}{Y}{\9036\362}% U+1EF2
% U+1EF3 LATIN SMALL LETTER Y WITH GRAVE; ygrave
\DeclareTextCompositeCommand{\`}{PU}{y}{\9036\363}% U+1EF3
% U+1EF4 LATIN CAPITAL LETTER Y WITH DOT BELOW; Ydotbelow
\DeclareTextCompositeCommand{\d}{PU}{Y}{\9036\364}% U+1EF4
% U+1EF5 LATIN SMALL LETTER Y WITH DOT BELOW; ydotbelow
\DeclareTextCompositeCommand{\d}{PU}{y}{\9036\365}% U+1EF5
% U+1EF8 LATIN CAPITAL LETTER Y WITH TILDE; Ytilde
\DeclareTextCompositeCommand{\~}{PU}{Y}{\9036\370}% U+1EF8
% U+1EF9 LATIN SMALL LETTER Y WITH TILDE; ytilde
\DeclareTextCompositeCommand{\~}{PU}{y}{\9036\371}% U+1EF9
```

51.2.16 General Punctuation: U+2000 to U+206F

```
% U+200C ZERO WIDTH NON-JOINER; *afii61664, zerowidthnonjoiner
\DeclareTextCommand{\textcompwordmark}{PU}{\9040\014}% U+200C
% U+2013 EN DASH; endash
\DeclareTextCommand{\textendash}{PU}{\9040\023}% U+2013
% U+2014 EM DASH; emdash
\DeclareTextCommand{\textemdash}{PU}{\9040\024}% U+2014
% U+2016 DOUBLE VERTICAL LINE; dblverticalbar
\DeclareTextCommand{\textbardbl}{PU}{\9040\026}% U+2016
%* \textbardbl -> \textdoublevertline (tipa)
% U+2018 LEFT SINGLE QUOTATION MARK; quoteleft
\DeclareTextCommand{\textquoteleft}{PU}{\9040\030}% U+2018
% U+2019 RIGHT SINGLE QUOTATION MARK; quoteright
\DeclareTextCommand{\textquoteright}{PU}{\9040\031}% U+2019
% U+201A SINGLE LOW-9 QUOTATION MARK; quotesinglbase
\DeclareTextCommand{\quotesinglbase}{PU}{\9040\032}% U+201A
% U+201C LEFT DOUBLE QUOTATION MARK; quotedblleft
\DeclareTextCommand{\textquotedblleft}{PU}{\9040\034}% U+201C
% U+201D RIGHT DOUBLE QUOTATION MARK; quotedblright
\DeclareTextCommand{\textquotedblright}{PU}{\9040\035}% U+201D
% U+201E DOUBLE LOW-9 QUOTATION MARK; quotedblbase
\DeclareTextCommand{\quotedblbase}{PU}{\9040\036}% U+201E
% U+2020 DAGGER; dagger
\DeclareTextCommand{\textdagger}{PU}{\9040\040}%* U+2020
%* \textdagger -> \dag (LaTeX)
% U+2021 DOUBLE DAGGER; daggerdbl; \ddagger (LaTeX)
\DeclareTextCommand{\textdaggerdbl}{PU}{\9040\041}% U+2021
%* \textdaggerdbl -> \ddagger (LaTeX)
%* \textdaggerdbl -> \ddag (LaTeX)
% U+2022 BULLET; bullet
\DeclareTextCommand{\textbullet}{PU}{\9040\042}%* U+2022
% U+2025 TWO DOT LEADER; \hdotfor (MnSymbol)
\DeclareTextCommand{\texthdotfor}{PU}{\9040\045}%* U+2025
% U+2026 HORIZONTAL ELLIPSIS; ellipsis
\DeclareTextCommand{\textellipsis}{PU}{\9040\046}% U+2026
%* \textellipsis -> \mathellipsis
% U+2030 PER MILLE SIGN; perthousand
\DeclareTextCommand{\textperthousand}{PU}{\9040\060}% U+2030
```

```
% U+2031 PER TEN THOUSAND SIGN
\DeclareTextCommand{\textpertenthousand}{PU}{\9040\061}% U+2031
% U+2032 PRIME; minute; \prime (MnSymbol)
\DeclareTextCommand{\textprime}{PU}{\9040\062}%* U+2032
% U+2033 DOUBLE PRIME; \second (mathabx)
\DeclareTextCommand{\textsecond}{PU}{\9040\063}%* U+2033
% U+2034 TRIPLE PRIME; \third (mathabx)
\DeclareTextCommand{\textthird}{PU}{\9040\064}%* U+2034
% U+2035 REVERSED PRIME; \backprime (AmS)
\DeclareTextCommand{\textbackprime}{PU}{\9040\065}%* U+2035
% U+2039 SINGLE LEFT-POINTING ANGLE QUOTATION MARK; guilsinglleft
\DeclareTextCommand{\guilsinglleft}{PU}{\9040\071}% U+2039
% U+203A SINGLE RIGHT-POINTING ANGLE QUOTATION MARK; guilsinglright
\DeclareTextCommand{\guilsinglright}{PU}{\9040\072}% U+203A
% U+203B REFERENCE MARK; referencemark
\DeclareTextCommand{\textreferencemark}{PU}{\9040\073}% U+203B
% U+203D INTERROBANG
\DeclareTextCommand{\textinterrobang}{PU}{\9040\075}% U+203D
% U+2044 FRACTION SLASH; fraction
\DeclareTextCommand{\textfractionsolidus}{PU}{\9040\104}% U+2044
% U+2045 LEFT SQUARE BRACKET WITH QUILL
\DeclareTextCommand{\textlquill}{PU}{\9040\105}% U+2045
% U+2046 RIGHT SQUARE BRACKET WITH QUILL
\DeclareTextCommand{\textrquill}{PU}{\9040\106}% U+2046
% U+2052 COMMERCIAL MINUS SIGN
\DeclareTextCommand{\textdiscount}{PU}{\9040\122}% U+2052
% U+2056 THREE DOT PUNCTUATION; \leftthereforе (MnSymbol)
\DeclareTextCommand{\textleftthereforе}{PU}{\9040\126}%* U+2056
% U+2057 QUADRUPLE PRIME; \fourth (mathabx)
\DeclareTextCommand{\textfourth}{PU}{\9040\127}%* U+2057
% U+2058 FOUR DOT PUNCTUATION; \diamonddots (MnSymbol)
\DeclareTextCommand{\textdiamonddots}{PU}{\9040\130}%* U+2058
```

51.2.17 Superscripts and Subscripts: U+2070 to U+209F

```
% U+2070 SUPERSCRIPT ZERO; zerosuperior
\DeclareTextCommand{\textzerosuperior}{PU}{\9040\160}%* U+2070
% U+2071 SUPERSCRIPT LATIN SMALL LETTER I
\DeclareTextCommand{\textisuperior}{PU}{\9040\161}%* U+2071
% U+2074 SUPERSCRIPT FOUR; foursuperior
\DeclareTextCommand{\textfoursuperior}{PU}{\9040\164}%* U+2074
% U+2075 SUPERSCRIPT FIVE; fivesuperior
\DeclareTextCommand{\textfivesuperior}{PU}{\9040\165}%* U+2075
% U+2076 SUPERSCRIPT SIX; sixsuperior
\DeclareTextCommand{\textsixsuperior}{PU}{\9040\166}%* U+2076
% U+2077 SUPERSCRIPT SEVEN; sevensuperior
\DeclareTextCommand{\textsevensuperior}{PU}{\9040\167}%* U+2077
% U+2078 SUPERSCRIPT EIGHT; eightsuperior
\DeclareTextCommand{\texteightsuperior}{PU}{\9040\170}%* U+2078
% U+2079 SUPERSCRIPT NINE; ninesuperior
\DeclareTextCommand{\textninesuperior}{PU}{\9040\171}%* U+2079
% U+207A SUPERSCRIPT PLUS SIGN; plussuperior
\DeclareTextCommand{\textplussuperior}{PU}{\9040\172}%* U+207A
% U+207B SUPERSCRIPT MINUS
\DeclareTextCommand{\textminussuperior}{PU}{\9040\173}%* U+207B
% U+207C SUPERSCRIPT EQUALS SIGN; equalsuperior
```

```
\DeclareTextCommand{\textequalsuperior}{PU}{\9040\174}%* U+207C
% U+207D SUPERSCRIPT LEFT PARENTHESIS; parenleftsuperior
\DeclareTextCommand{\textparenleftsuperior}{PU}{\9040\175}%* U+207D
% U+207E SUPERSCRIPT RIGHT PARENTHESIS; parenrightsuperior
\DeclareTextCommand{\textparenrightsuperior}{PU}{\9040\176}%* U+207E
% U+207F SUPERSCRIPT LATIN SMALL LETTER N; nsuperior
\DeclareTextCommand{\textnsuperior}{PU}{\9040\177}%* U+207F
% U+2080 SUBSCRIPT ZERO; zeroinferior
\DeclareTextCommand{\textzeroinferior}{PU}{\9040\200}%* U+2080
% U+2081 SUBSCRIPT ONE; oneinferior
\DeclareTextCommand{\textoneinferior}{PU}{\9040\201}%* U+2081
% U+2082 SUBSCRIPT TWO; twoinferior
\DeclareTextCommand{\texttwoinferior}{PU}{\9040\202}%* U+2082
% U+2083 SUBSCRIPT THREE; threeinferior
\DeclareTextCommand{\textthreeinferior}{PU}{\9040\203}%* U+2083
% U+2084 SUBSCRIPT FOUR; fourinferior
\DeclareTextCommand{\textfourinferior}{PU}{\9040\204}%* U+2084
% U+2085 SUBSCRIPT FIVE; fiveinferior
\DeclareTextCommand{\textfiveinferior}{PU}{\9040\205}%* U+2085
% U+2086 SUBSCRIPT SIX; sixinferior
\DeclareTextCommand{\textsixinferior}{PU}{\9040\206}%* U+2086
% U+2087 SUBSCRIPT SEVEN; seveninferior
\DeclareTextCommand{\textseveninferior}{PU}{\9040\207}%* U+2087
% U+2088 SUBSCRIPT EIGHT; eightinferior
\DeclareTextCommand{\texteightinferior}{PU}{\9040\210}%* U+2088
% U+2089 SUBSCRIPT NINE; nineinferior
\DeclareTextCommand{\textnineinferior}{PU}{\9040\211}%* U+2089
% U+208A SUBSCRIPT PLUS SIGN
\DeclareTextCommand{\textplusinferior}{PU}{\9040\212}%* U+208A
% U+208B SUBSCRIPT MINUS
\DeclareTextCommand{\textminusinferior}{PU}{\9040\213}%* U+208B
% U+208C SUBSCRIPT EQUALS SIGN
\DeclareTextCommand{\textequalsinferior}{PU}{\9040\214}%* U+208C
% U+208D SUBSCRIPT LEFT PARENTHESIS; parenleftinferior
\DeclareTextCommand{\textparenleftinferior}{PU}{\9040\215}%* U+208D
% U+208E SUBSCRIPT RIGHT PARENTHESIS; parenrightinferior
\DeclareTextCommand{\textparenrightinferior}{PU}{\9040\216}%* U+208E
% U+2090 LATIN SUBSCRIPT SMALL LETTER A
\DeclareTextCommand{\textainferior}{PU}{\9040\220}%* U+2090
% U+2091 LATIN SUBSCRIPT SMALL LETTER E
\DeclareTextCommand{\texteinferior}{PU}{\9040\221}%* U+2091
% U+2092 LATIN SUBSCRIPT SMALL LETTER O
\DeclareTextCommand{\textoinferior}{PU}{\9040\222}%* U+2092
% U+2093 LATIN SUBSCRIPT SMALL LETTER X
\DeclareTextCommand{\textxinferior}{PU}{\9040\223}%* U+2093
% U+2094 LATIN SUBSCRIPT SMALL LETTER SCHWA
\DeclareTextCommand{\textschwainferior}{PU}{\9040\224}%* U+2094
% U+2095 LATIN SUBSCRIPT SMALL LETTER H
\DeclareTextCommand{\texthinferior}{PU}{\9040\225}%* U+2095
% U+2096 LATIN SUBSCRIPT SMALL LETTER K
\DeclareTextCommand{\textkinferior}{PU}{\9040\226}%* U+2096
% U+2097 LATIN SUBSCRIPT SMALL LETTER L
\DeclareTextCommand{\textlinferior}{PU}{\9040\227}%* U+2097
% U+2098 LATIN SUBSCRIPT SMALL LETTER M
\DeclareTextCommand{\textminferior}{PU}{\9040\230}%* U+2098
% U+2099 LATIN SUBSCRIPT SMALL LETTER N
\DeclareTextCommand{\textninferior}{PU}{\9040\231}%* U+2099
```

```
% U+209A LATIN SUBSCRIPT SMALL LETTER P
\DeclareTextCommand{\textpinferior}{PU}{\9040\232}%* U+209A
% U+209B LATIN SUBSCRIPT SMALL LETTER S
\DeclareTextCommand{\textsinferior}{PU}{\9040\233}%* U+209B
% U+209C LATIN SUBSCRIPT SMALL LETTER T
\DeclareTextCommand{\texttinferior}{PU}{\9040\234}%* U+209C
```

51.2.18 Currency Symbols: U+20A0 to U+20CF

```
% U+20A1 COLON SIGN; *colonmonetary, colonsign
\DeclareTextCommand{\textcolonmonetary}{PU}{\9040\241}% U+20A1
% U+20A4 LIRA SIGN; afii08941, *lira
\DeclareTextCommand{\textlira}{PU}{\9040\244}% U+20A4
% U+20A6 NAIRA SIGN
\DeclareTextCommand{\textnaira}{PU}{\9040\246}% U+20A6
% U+20A7 PESETA SIGN; peseta
\DeclareTextCommand{\textpeseta}{PU}{\9040\247}% U+20A7
% U+20A9 WON SIGN; won
\DeclareTextCommand{\textwon}{PU}{\9040\251}% U+20A9
% U+20AB DONG SIGN; dong
\DeclareTextCommand{\textdong}{PU}{\9040\253}% U+20AB
% U+20AC EURO SIGN; *Euro, euro
\DeclareTextCommand{\texteuro}{PU}{\9040\254}% U+20AC
%* \texteuro -> \EurDig (marvosym)
%* \texteuro -> \EURdig (marvosym)
%* \texteuro -> \EurHv (marvosym)
%* \texteuro -> \EURhv (marvosym)
%* \texteuro -> \EurCr (marvosym)
%* \texteuro -> \EURcr (marvosym)
%* \texteuro -> \EurTm (marvosym)
%* \texteuro -> \EURtm (marvosym)
%* \texteuro -> \Eur (marvosym)
% U+20B0 GERMAN PENNY SIGN; \Deleatur (marvosym)
\DeclareTextCommand{\textDeleatur}{PU}{\9040\260}%* U+20B0
%* \textDeleatur -> \Denarius (marvosym)
% U+20B1 PESO SIGN
\DeclareTextCommand{\textpeso}{PU}{\9040\261}% U+20B1
% U+20B2 GUARANI SIGN
\DeclareTextCommand{\textguarani}{PU}{\9040\262}% U+20B2
```

51.2.19 Letterlike Symbols: U+2100 to U+214F

```
% U+2103 DEGREE CELSIUS; centigrade
\DeclareTextCommand{\textcelsius}{PU}{\9041\003}% U+2103
% U+210F PLANCK CONSTANT OVER TWO PI; \hslash (AmS)
\DeclareTextCommand{\texthslash}{PU}{\9041\017}%* U+210F
% U+2111 BLACK-LETTER CAPITAL I (=imaginary part); Ifraktur; \Im (La-
    TeX)
\DeclareTextCommand{\textIm}{PU}{\9041\021}%* U+2111
% U+2113 SCRIPT SMALL L (=ell, liter); afii61289, lsquare; \ell (LaTeX)
\DeclareTextCommand{\textell}{PU}{\9041\023}%* U+2113
% U+2116 NUMERO SIGN; *afii61352, numero
\DeclareTextCommand{\textnumero}{PU}{\9041\026}% U+2116
% U+2117 SOUND RECORDING COPYRIGHT
\DeclareTextCommand{\textcircledP}{PU}{\9041\027}% U+2117
% U+2118 SCRIPT CAPITAL P (=Weierstrass elliptic function);
%   weierstrass; \wp (LaTeX)
\DeclareTextCommand{\textwp}{PU}{\9041\030}%* U+2118
% U+211C BLACK-LETTER CAPITAL R (=real part); Rfraktur; \Re (LaTeX)
```

```
\DeclareTextCommand{\textRe}{PU}{\9041\034}%* U+211C
% U+211E PRESCRIPTION TAKE; prescription
\DeclareTextCommand{\textrecipe}{PU}{\9041\036}% U+211E
% U+2120 SERVICE MARK
\DeclareTextCommand{\textservicemark}{PU}{\9041\040}% U+2120
% U+2122 TRADE MARK SIGN; trademark
\DeclareTextCommand{\texttrademark}{PU}{\9041\042}% U+2122
% U+2126 OHM SIGN; Ohm, Omega
\DeclareTextCommand{\textohm}{PU}{\9041\046}% U+2126
% U+2127 INVERTED OHM SIGN
\DeclareTextCommand{\textmho}{PU}{\9041\047}%* U+2127
%* \textmho -> \agemO (wasysym)
% U+2129 TURNED GREEK SMALL LETTER IOTA; \riota (phonetic)
\DeclareTextCommand{\textriota}{PU}{\9041\051}%* U+2129
% U+212B ANGSTROM SIGN; angstrom
\DeclareTextCommand{\textangstrom}{PU}{\9041\053}% U+212B
% U+212E ESTIMATED SYMBOL; estimated
\DeclareTextCommand{\textestimated}{PU}{\9041\056}% U+212E
%* \textestimated -> \EstimatedSign (marvosym)
%* \textestimated -> \Ecommerce (marvosym)
% U+2132 TURNED CAPITAL F; \Finv (AmS)
\DeclareTextCommand{\textFinv}{PU}{\9041\062}%* U+2132
% U+2135 ALEF SYMBOL; aleph; \aleph (LaTeX)
\DeclareTextCommand{\textaleph}{PU}{\9041\065}%* U+2135
% U+2136 BET SYMBOL; \beth (AmS, MnSymbol)
\DeclareTextCommand{\textbeth}{PU}{\9041\066}%* U+2136
% U+2137 GIMEL SYMBOL; \gimel (AmS, MnSymbol)
\DeclareTextCommand{\textgimel}{PU}{\9041\067}%* U+2137
% U+2138 DALET SYMBOL; \daleth (AmS, MnSymbol)
\DeclareTextCommand{\textdaleth}{PU}{\9041\070}%* U+2138
% U+213B FACSIMILE SIGN; \fax (marvosym)
\DeclareTextCommand{\textfax}{PU}{\9041\073}%* U+213B
% U+2141 TURNED SANS-SERIF CAPITAL G (=game); \Game
\DeclareTextCommand{\textGame}{PU}{\9041\101}%* U+2141
% U+214B TURNED AMPERSAND; \invamp (txfonts/pxfonts)
\DeclareTextCommand{\textinvamp}{PU}{\9041\113}% U+214B
%* \textinvamp -> \bindnasrepma (stmaryrd)
%* \textinvamp -> \parr (cmll)
```

51.2.20 Number Forms: U+2150 to U+218F

```
% U+2150 VULGAR FRACTION ONE SEVENTH
\DeclareTextCommand{\textoneseventh}{PU}{\9041\120}% U+2150
% U+2151 VULGAR FRACTION ONE NINTH
\DeclareTextCommand{\textoneninth}{PU}{\9041\121}% U+2151
% U+2152 VULGAR FRACTION ONE TENTH
\DeclareTextCommand{\textonetenth}{PU}{\9041\122}% U+2152
% U+2153 VULGAR FRACTION ONE THIRD; onethird
\DeclareTextCommand{\textonethird}{PU}{\9041\123}% U+2153
% U+2154 VULGAR FRACTION TWO THIRDS; twothirds
\DeclareTextCommand{\texttwothirds}{PU}{\9041\124}% U+2154
% U+2155 VULGAR FRACTION ONE FIFTH
\DeclareTextCommand{\textonefifth}{PU}{\9041\125}% U+2155
% U+2156 VULGAR FRACTION TWO FIFTHS
\DeclareTextCommand{\texttwofifths}{PU}{\9041\126}% U+2156
% U+2157 VULGAR FRACTION THREE FIFTHS
\DeclareTextCommand{\textthreefifths}{PU}{\9041\127}% U+2157
% U+2158 VULGAR FRACTION FOUR FIFTHS
```

```
\DeclareTextCommand{\textfourfifths}{PU}{\9041\130}% U+2158
% U+2159 VULGAR FRACTION ONE SIXTH
\DeclareTextCommand{\textonesixth}{PU}{\9041\131}% U+2159
% U+215A VULGAR FRACTION FIVE SIXTHS
\DeclareTextCommand{\textfivesixths}{PU}{\9041\132}% U+215A
% U+215B VULGAR FRACTION ONE EIGHTH; oneeighth
\DeclareTextCommand{\textoneeighth}{PU}{\9041\133}% U+215B
% U+215C VULGAR FRACTION THREE EIGHTHS; threeeighths
\DeclareTextCommand{\textthreeeighths}{PU}{\9041\134}% U+215C
% U+215D VULGAR FRACTION FIVE EIGHTHS; fiveeighths
\DeclareTextCommand{\textfiveeighths}{PU}{\9041\135}% U+215D
% U+215E VULGAR FRACTION SEVEN EIGHTHS; seveneighths
\DeclareTextCommand{\textseveneighths}{PU}{\9041\136}% U+215E
% U+2184 LATIN SMALL LETTER REVERSED C
\DeclareTextCommand{\textrevc}{PU}{\9041\204}% U+2184
% U+2189 VULGAR FRACTION ZERO THIRDS
\DeclareTextCommand{\textzerothirds}{PU}{\9041\211}% U+2189
```

51.2.21 Arrows: U+2190 to U+21FF

```
% U+2190 LEFTWARDS ARROW; arrowleft
\DeclareTextCommand{\textleftarrow}{PU}{\9041\220}%* U+2190
% U+2191 UPWARDS ARROW; arrowup
\DeclareTextCommand{\textuparrow}{PU}{\9041\221}%* U+2191
% U+2192 RIGHTWARDS ARROW; arrowright
\DeclareTextCommand{\textrightarrow}{PU}{\9041\222}%* U+2192
%* \textrightarrow -> \MVRightArrow (marvosym)
%* \textrightarrow -> \MVRightarrow (marvosym)
% U+2193 DOWNWARDS ARROW; arrowdown
\DeclareTextCommand{\textdownarrow}{PU}{\9041\223}%* U+2193
%* \textdownarrow -> \MVArrowDown (marvosym)
%* \textdownarrow -> \Force (marvosym)
% U+2194 LEFT RIGHT ARROW; arrowboth; \leftrightarrow (LaTeX)
\DeclareTextCommand{\textleftrightarrow}{PU}{\9041\224}%* U+2194
% U+2195 UP DOWN ARROW; arrowupdn; \updownarrow (LaTeX)
\DeclareTextCommand{\textupdownarrow}{PU}{\9041\225}%* U+2195
% U+2196 NORTH WEST ARROW; arrowupleft; \nwarrow (LaTeX)
\DeclareTextCommand{\textnwarrow}{PU}{\9041\226}%* U+2196
% U+2197 NORTH EAST ARROW; arrowupright; \nearrow (LaTeX)
\DeclareTextCommand{\textnearrow}{PU}{\9041\227}%* U+2197
%* \textnearrow -> \textglobrise (tipa)
% U+2198 SOUTH EAST ARROW; arrowdownright; \searrow (LaTeX)
\DeclareTextCommand{\textsearrow}{PU}{\9041\230}%* U+2198
%* \textsearrow -> \textglobfall (tipa)
% U+2199 SOUTH WEST ARROW; arrowdownleft; \swarrow (LaTeX)
\DeclareTextCommand{\textswarrow}{PU}{\9041\231}%* U+2199
% U+219A LEFTWARDS ARROW WITH STROKE; \nleftarrow (AmS)
\DeclareTextCommand{\textnleftarrow}{PU}{\9041\232}%* U+219A
% U+219B RIGHTWARDS ARROW WITH STROKE; \nrightarrow (AmS)
\DeclareTextCommand{\textnrightarrow}{PU}{\9041\233}%* U+219B
% U+219E LEFTWARDS TWO HEADED ARROW; \twoheadleftarrow (AmS)
\DeclareTextCommand{\texttwoheadleftarrow}{PU}{\9041\236}%* U+219E
% \ntwoheadleftarrow (txfonts/pxfonts)
\DeclareTextCommand{\textntwoheadleftarrow}{PU}{\9041\236\83\070}%* U+219E U+0338
% U+219F UPWARDS TWO HEADED ARROW; \twoheaduparrow (MnSymbol)
\DeclareTextCommand{\texttwoheaduparrow}{PU}{\9041\237}%* U+219F
% U+21A0 RIGHTWARDS TWO HEADED ARROW;
%   \twoheadrightarrow (AmS)
```

```
\DeclareTextCommand{\texttwoheadrightarrow}{PU}{\9041\240}%* U+21A0
% \ntwoheadrightarrow (txfonts/pxfonts)
\DeclareTextCommand{\textntwoheadrightarrow}{PU}{\9041\240\83\070}%* U+21A0 U+0338
% U+21A1 DOWNWARDS TWO HEADED ARROW; \twoheaddownarrow (MnSymbol)
\DeclareTextCommand{\texttwoheaddownarrow}{PU}{\9041\241}%* U+21A1
% U+21A2 LEFTWARDS ARROW WITH TAIL; \leftarrowtail (AmS)
\DeclareTextCommand{\textleftarrowtail}{PU}{\9041\242}%* U+21A2
% U+21A3 RIGHTWARDS ARROW WITH TAIL; \rightarrowtail (AmS)
\DeclareTextCommand{\textrightarrowtail}{PU}{\9041\243}%* U+21A3
% U+21A6 RIGHTWARDS ARROW FROM BAR; \mapsto (LaTeX)
\DeclareTextCommand{\textmapsto}{PU}{\9041\246}%* U+21A6
% U+21A9 LEFTWARDS ARROW WITH HOOK; \hookleftarrow (LaTeX)
\DeclareTextCommand{\texthookleftarrow}{PU}{\9041\251}%* U+21A9
% U+21AA RIGHTWARDS ARROW WITH HOOK; \hookrightarrow (LaTeX)
\DeclareTextCommand{\texthookrightarrow}{PU}{\9041\252}%* U+21AA
% U+21AB LEFTWARDS ARROW WITH LOOP; \looparrowleft (AmS)
\DeclareTextCommand{\textlooparrowleft}{PU}{\9041\253}%* U+21AB
% U+21AC RIGHTWARDS ARROW WITH LOOP; \looparrowright (AmS)
\DeclareTextCommand{\textlooparrowright}{PU}{\9041\254}%* U+21AC
% U+21AE LEFT RIGHT ARROW WITH STROKE; \nleftrightarrow (AmS)
\DeclareTextCommand{\textnleftrightarrow}{PU}{\9041\256}%* U+21AE
% U+21AF DOWNWARDS ZIGZAG ARROW; \lightning (stmaryrd)
\DeclareTextCommand{\textlightning}{PU}{\9041\257}%* U+21AF
%* \textlightning -> \Lightning (marvosym)
% U+21B5 DOWNWARDS ARROW WITH CORNER LEFTWARDS;
%   \dlsh (mathabx)
\DeclareTextCommand{\textdlsh}{PU}{\9041\265}%* U+21B5
% U+21B6 ANTICLOCKWISE TOP SEMICIRCLE ARROW;
%   \curvearrowleft (AmS)
\DeclareTextCommand{\textcurvearrowleft}{PU}{\9041\266}%* U+21B6
% U+21B7 CLOCKWISE TOP SEMICIRCLE ARROW; \curvearrowright (AmS)
\DeclareTextCommand{\textcurvearrowright}{PU}{\9041\267}%* U+21B7
% U+21BC LEFTWARDS HARPOON WITH BARB UPWARDS; harpoonleftbarbup;
%   \leftharpoonup (LaTeX)
\DeclareTextCommand{\textleftharpoonup}{PU}{\9041\274}%* U+21BC
% U+21BD LEFTWARDS HARPOON WITH BARB DOWNWARDS;
%   \leftharpoondown (LaTeX)
\DeclareTextCommand{\textleftharpoondown}{PU}{\9041\275}%* U+21BD
% U+21BE UPWARDS HARPOON WITH BARB RIGHTWARDS;
%   \upharpoonright (AmS)
\DeclareTextCommand{\textupharpoonright}{PU}{\9041\276}%* U+21BE
% U+21BF UPWARDS HARPOON WITH BARB LEFTWARDS;
%   \upharpoonleft (AmS)
\DeclareTextCommand{\textupharpoonleft}{PU}{\9041\277}%* U+21BF
% U+21C0 RIGHTWARDS HARPOON WITH BARB UPWARDS; harpoonrightbarbup
%   \rightharpoonup (LaTeX)
\DeclareTextCommand{\textrightharpoonup}{PU}{\9041\300}%* U+21C0
% U+21C1 RIGHTWARDS HARPOON WITH BARB DOWNWARDS;
%   \rightharpoondown (LaTeX)
\DeclareTextCommand{\textrightharpoondown}{PU}{\9041\301}%* U+21C1
% U+21C2 DOWNWARDS HARPOON WITH BARB RIGHTWARDS;
%   \downharpoonright (AmS)
\DeclareTextCommand{\textdownharpoonright}{PU}{\9041\302}%* U+21C2
% U+21C3 DOWNWARDS HARPOON WITH BARB LEFTWARDS;
```

```
% \downharpoonleft (AmS)
\DeclareTextCommand{\textdownharpoonleft}{PU}{\9041\303}%* U+21C3
% U+21C4 RIGHTWARDS ARROW OVER LEFTWARDS ARROW;
% arrowrightoverleft; \rightleftarrows (MnSymbol)
\DeclareTextCommand{\textrightleftarrows}{PU}{\9041\304}%* U+21C4
% U+21C5 UPWARDS ARROW LEFTWARDS OF DOWNWARDS ARROW; arrowupleftofdown;
% \updownarrows (MnSymbol)
\DeclareTextCommand{\textupdownarrows}{PU}{\9041\305}%* U+21C5
% U+21C6 LEFTWARDS ARROW OVER RIGHTWARDS ARROW; arrowleftoverright;
% \leftrightarrows (AmS)
\DeclareTextCommand{\textleftrightarrows}{PU}{\9041\306}%* U+21C6
% U+21C7 LEFTWARDS PAIRED ARROWS; \leftleftarrows (AmS)
\DeclareTextCommand{\textleftleftarrows}{PU}{\9041\307}%* U+21C7
% U+21C8 UPWARDS PAIRED ARROWS; \upuparrows (AmS)
\DeclareTextCommand{\textupuparrows}{PU}{\9041\310}%* U+21C8
% U+21C9 RIGHTWARDS PAIRED ARROWS; \rightrightarrows (AmS)
\DeclareTextCommand{\textrightrightarrows}{PU}{\9041\311}%* U+21C9
% U+21CA DOWNWARDS PAIRED ARROWS; \downdownarrows (AmS)
\DeclareTextCommand{\textdowndownarrows}{PU}{\9041\312}%* U+21CA
% U+21CB LEFTWARDS HARPOON OVER RIGHTWARDS HARPOON;
% \leftrightharpoons (AmS);
\DeclareTextCommand{\textleftrightharpoons}{PU}{\9041\313}%* U+21CB
% U+21CC RIGHTWARDS HARPOON OVER LEFTWARDS HARPOON;
% \rightleftharpoons (LaTeX, AmS)
\DeclareTextCommand{\textrightleftharpoons}{PU}{\9041\314}%* U+21CC
% U+21CD LEFTWARDS DOUBLE ARROW WITH STROKE; arrowleftdblstroke;
% \nLeftarrow (AmS)
\DeclareTextCommand{\textnLeftarrow}{PU}{\9041\315}%* U+21CD
% U+21CE LEFT RIGHT DOUBLE ARROW WITH STROKE; \nLeftrightarrow (AmS)
\DeclareTextCommand{\textnLeftrightarrow}{PU}{\9041\316}%* U+21CE
% U+21CF RIGHTWARDS DOUBLE ARROW WITH STROKE; arrowrightdblstroke;
% \nRightarrow (AmS)
\DeclareTextCommand{\textnRightarrow}{PU}{\9041\317}%* U+21CF
% U+21D0 LEFTWARDS DOUBLE ARROW; arrowdblleft, arrowleftdbl;
% \Leftarrow (LaTeX)
\DeclareTextCommand{\textLeftarrow}{PU}{\9041\320}%* U+21D0
% U+21D1 UPWARDS DOUBLE ARROW; arrowdblup; \Uparrow (LaTeX)
\DeclareTextCommand{\textUparrow}{PU}{\9041\321}%* U+21D1
% U+21D2 RIGHTWARDS DOUBLE ARROW; arrowdblright, dblarrowright;
% \Rightarrow (LaTeX)
\DeclareTextCommand{\textRightarrow}{PU}{\9041\322}%* U+21D2
%* \textRightarrow -> \Conclusion (marvosym)
% U+21D3 DOWNWARDS DOUBLE ARROW; arrowdbldown; \Downarrow (LaTeX)
\DeclareTextCommand{\textDownarrow}{PU}{\9041\323}%* U+21D3
% U+21D4 LEFT RIGHT DOUBLE ARROW; arrowdblboth;
% \Leftrightarrow (LaTeX)
\DeclareTextCommand{\textLeftrightarrow}{PU}{\9041\324}%* U+21D4
%* textLeftrightarrow -> \Equivalence (marvosym)
% U+21D5 UP DOWN DOUBLE ARROW; \Updownarrow (LaTeX)
\DeclareTextCommand{\textUpdownarrow}{PU}{\9041\325}%* U+21D5
% U+21D6 NORTH WEST DOUBLE ARROW; \Nwarrow (MnSymbol)
```

```
\DeclareTextCommand{\textNwarrow}{PU}{\9041\326}%* U+21D6
% U+21D7 NORTH EAST DOUBLE ARROW; \Nearrow (MnSymbol)
\DeclareTextCommand{\textNearrow}{PU}{\9041\327}%* U+21D7
% U+21D8 SOUTH EAST DOUBLE ARROW; \Searrow (MnSymbol)
\DeclareTextCommand{\textSearrow}{PU}{\9041\330}%* U+21D8
% U+21D9 SOUTH WEST DOUBLE ARROW; \Swarrow (MnSymbol)
\DeclareTextCommand{\textSwarrow}{PU}{\9041\331}%* U+21D9
% U+21DA LEFTWARDS TRIPLE ARROW; \Lleftarrow (AmS)
\DeclareTextCommand{\textLleftarrow}{PU}{\9041\332}%* U+21DA
% U+21DB RIGHTWARDS TRIPLE ARROW; \Rrightarrow (MnSymbol)
\DeclareTextCommand{\textRrightarrow}{PU}{\9041\333}%* U+21DB
% U+21DC LEFTWARDS SQUIGGLE ARROW; \leftsquigarrow (mathabx)
\DeclareTextCommand{\textleftsquigarrow}{PU}{\9041\334}%* U+21DC
% U+21DD RIGHTWARDS SQUIGGLE ARROW; \rightsquigarrow (mathabx)
\DeclareTextCommand{\textrightsquigarrow}{PU}{\9041\335}%* U+21DD
% U+21E0 LEFTWARDS DASHED ARROW; arrowdashleft;
%   \dashleftarrow (AmS)
\DeclareTextCommand{\textdashleftarrow}{PU}{\9041\340}%* U+21E0
%* \textdashleftarrow -> \dashedleftarrow (MnSymbol)
% U+21E1 UPWARDS DASHED ARROW; arrowdashup; \dasheduparrow (MnSymbol)
\DeclareTextCommand{\textdasheduparrow}{PU}{\9041\341}%* U+21E1
% U+21E2 RIGHTWARDS DASHED ARROW; arrowdashright; \dashrightarrow (AmS)
\DeclareTextCommand{\textdashrightarrow}{PU}{\9041\342}%* U+21E2
%* \textdashrightarrow -> \dashedrightarrow (MnSymbol)
% U+21E3 DOWNWARDS DASHED ARROW; arrowdashdown; \dasheddownarrow (MnSymbol)
\DeclareTextCommand{\textdasheddownarrow}{PU}{\9041\343}%* U+21E3
% U+21E8 RIGHTWARDS WHITE ARROW; \pointer (wasysym)
\DeclareTextCommand{\textpointer}{PU}{\9041\350}%* U+21E8
% U+21F5 DOWNWARDS ARROW LEFTWARDS OF UPWARDS ARROW;
%   \downuparrows (MnSymbol)
\DeclareTextCommand{\textdownuparrows}{PU}{\9041\365}%* U+21F5
% U+21FD LEFTWARDS OPEN-HEADED ARROW; \leftarrowtriangle (stmaryrd)
\DeclareTextCommand{\textleftarrowtriangle}{PU}{\9041\375}%* U+21FD
% U+21FE RIGHTWARDS OPEN-HEADED ARROW; \rightarrowtriangle (stmaryrd)
\DeclareTextCommand{\textrightarrowtriangle}{PU}{\9041\376}%* U+21FE
% U+21FF LEFT RIGHT OPEN-HEADED ARROW; \leftrightarrowtriangle (stmaryrd)
\DeclareTextCommand{\textleftrightarrowtriangle}{PU}{\9041\377}%* U+21FF
```

51.2.22 Mathematical Operators: U+2200 to U+22FF

```
% U+2200 FOR ALL; forall; \forall (LaTeX)
\DeclareTextCommand{\textforall}{PU}{\9042\000}%* U+2200
% U+2201 COMPLEMENT; \complement (AmS)
\DeclareTextCommand{\textcomplement}{PU}{\9042\001}%* U+2201
% U+2202 PARTIAL DIFFERENTIAL; partialdiff; \partial (LaTeX)
\DeclareTextCommand{\textpartial}{PU}{\9042\002}%* U+2202
% U+2203 THERE EXISTS; existential; \exists (LaTeX)
\DeclareTextCommand{\textexists}{PU}{\9042\003}%* U+2203
% U+2204 THERE DOES NOT EXIST; \nexists (AmS)
\DeclareTextCommand{\textnexists}{PU}{\9042\004}%* U+2204
% U+2205 EMPTY SET; emptyset; \emptyset (LaTeX), \varnothing (AmS)
\DeclareTextCommand{\textemptyset}{PU}{\9042\005}%* U+2205
%* \textemptyset -> \varnothing (AmS)
% U+2206 INCREMENT; increment, Deta; \triangle (LaTeX)
```

```
\DeclareTextCommand{\texttriangle}{PU}{\9042\006}%* U+2206
% U+2207 NABLA; nabla, gradient; \nabla (LaTeX)
\DeclareTextCommand{\textnabla}{PU}{\9042\007}%* U+2207
% U+2208 ELEMENT OF; element; \in (LaTeX)
\DeclareTextCommand{\textin}{PU}{\9042\010}%* U+2208
% U+2209 NOT AN ELEMENT OF; notelement, notelementof; \notin (LaTeX)
\DeclareTextCommand{\textnotin}{PU}{\9042\011}%* U+2209
% U+220A SMALL ELEMENT OF; \smallin (mathdesign)
\DeclareTextCommand{\textsmallin}{PU}{\9042\012}%* U+220A
% U+220B CONTAINS AS MEMBER; suchthat; \ni (LaTeX)
\DeclareTextCommand{\textni}{PU}{\9042\013}%* U+220B
%* \textni -> \owns (mathabx)
% U+220C DOES NOT CONTAIN AS MEMBER; \notowner (mathabx)
\DeclareTextCommand{\textnotowner}{PU}{\9042\014}%* U+220C
%* \textnotowner -> \notni (txfonts/pxfonts)
% U+220D SMALL CONTAINS AS MEMBER; \smallowns (mathdesign)
\DeclareTextCommand{\textsmallowns}{PU}{\9042\015}%* U+220D
% U+220F N-ARY PRODUCT; \prod (LaTeX)
\DeclareTextCommand{\textprod}{PU}{\9042\017}%* U+220F
% U+2210 N-ARY COPRODUCT; \amalg (LaTeX)
\DeclareTextCommand{\textamalg}{PU}{\9042\020}%* U+2210
% U+2211 N-ARY SUMMATION; summation; \sum (LaTeX)
\DeclareTextCommand{\textsum}{PU}{\9042\021}%* U+2211
% U+2212 MINUS SIGN; minus
\DeclareTextCommand{\textminus}{PU}{\9042\022}% U+2212
% U+2213 MINUS-OR-PLUS SIGN; minusplus; \mp (LaTeX)
\DeclareTextCommand{\textmp}{PU}{\9042\023}%* U+2213
% U+2214 DOT PLUS; \dotplus (AmS)
\DeclareTextCommand{\textdotplus}{PU}{\9042\024}%* U+2214
% U+2215 DIVISION SLASH; divisionslash; \Divides (marvosym)
\DeclareTextCommand{\textDivides}{PU}{\9042\025}%* U+2215
% \DividesNot (marvosym)
\DeclareTextCommand{\textDividesNot}{PU}{\9042\025\9040\322}%* U+2215 U+20D2
% U+2216 SET MINUS; \setminus (LaTeX)
\DeclareTextCommand{\textsetminus}{PU}{\9042\026}%* U+2216
% U+2217 ASTERISK OPERATOR; asteriskmath; \ast (LaTeX)
\DeclareTextCommand{\textast}{PU}{\9042\027}%* U+2217
% U+2218 RING OPERATOR; \circ (LaTeX)
\DeclareTextCommand{\textcirc}{PU}{\9042\030}%* U+2218
% U+2219 BULLET OPERATOR; bulletoperator; \bullet (LaTeX)
\DeclareTextCommand{\textbulletoperator}{PU}{\9042\031}% U+2219
% U+221A SQUARE ROOT; radical
\DeclareTextCommand{\textsurd}{PU}{\9042\032}%* U+221A
% U+221D PROPORTIONAL TO; proportional; \propto (LaTeX)
\DeclareTextCommand{\textpropto}{PU}{\9042\035}%* U+221D
%* \textpropto -> \varprop (wasysym)
% U+221E INFINITY; infinity; \infty (LaTeX)
\DeclareTextCommand{\textinfty}{PU}{\9042\036}%* U+221E
% U+2220 ANGLE; angle; \angle (LaTeX)
\DeclareTextCommand{\textangle}{PU}{\9042\040}%* U+2220
% U+2221 MEASURED ANGLE; \measuredangle (mathabx, MnSymbol)
\DeclareTextCommand{\textmeasuredangle}{PU}{\9042\041}%* U+2221
% U+2222 SPHERICAL ANGLE; \sphericalangle (AmS)
\DeclareTextCommand{\textsphericalangle}{PU}{\9042\042}%* U+2222
%* \textsphericalangle -> \varangle (wasysym)
%* \textsphericalangle -> \Anglesign (marvosym)
%* \textsphericalangle -> \AngleSign (marvosym)
```

```
% U+2223 DIVIDES; divides; \mid (LaTeX)
\DeclareTextCommand{\textmid}{PU}{\9042\043}%* U+2223
% U+2224 DOES NOT DIVIDE; \nmid (AmS)
\DeclareTextCommand{\textnmid}{PU}{\9042\044}%* U+2224
%* \textnmid -> \notdivides (mathabx)
% U+2225 PARALLEL TO; parallel; \parallel (LaTeX)
\DeclareTextCommand{\textparallel}{PU}{\9042\045}%* U+2225
% U+2226 NOT PARALLEL TO; notparallel; \nparallel (AmS)
\DeclareTextCommand{\textnparallel}{PU}{\9042\046}%* U+2226
%* \textnparallel -> nUpdownline (MnSymbol)
% U+2227 LOGICAL AND; logicaland; \wedge (LaTeX)
\DeclareTextCommand{\textwedge}{PU}{\9042\047}%* U+2227
% \owedge (stmaryrd)
\DeclareTextCommand{\textowedge}{PU}{\9042\047\9040\335}%* U+2227 U+20DD
%* \textowedge -> \varowedge (stmaryrd)
% U+2228 LOGICAL OR; logicalor; \vee (LaTeX)
\DeclareTextCommand{\textvee}{PU}{\9042\050}%* U+2228
% \ovee (stmaryrd)
\DeclareTextCommand{\textovee}{PU}{\9042\050\9040\335}%* U+2228 U+20DD
%* \textovee -> \varovee (stmaryrd)
% U+2229 INTERSECTION; intersection; \cap (LaTeX)
\DeclareTextCommand{\textcap}{PU}{\9042\051}%* U+2229
% U+222A UNION; union; \cup (LaTeX)
\DeclareTextCommand{\textcup}{PU}{\9042\052}%* U+222A
% U+222B INTEGRAL; integral; \int (LaTeX)
\DeclareTextCommand{\textint}{PU}{\9042\053}%* U+222B
%* \textint -> \varint (wasysym)
% U+222C DOUBLE INTEGRAL; dblintegral; \iint (AmS)
\DeclareTextCommand{\textiint}{PU}{\9042\054}%* U+222C
% U+222D TRIPLE INTEGRAL; \iiint (AmS)
\DeclareTextCommand{\textiiint}{PU}{\9042\055}%* U+222D
% U+222E CONTOUR INTEGRAL; contourintegral; \oint (LaTeX)
\DeclareTextCommand{\textoint}{PU}{\9042\056}%* U+222E
%* \textoint -> \varoint (wasysym)
% U+222F SURFACE INTEGRAL; \oiint (wasysym)
\DeclareTextCommand{\textoiint}{PU}{\9042\057}%* U+222F
% U+2232 CLOCKWISE CONTOUR INTEGRAL;
%   \ointclockwise (txfonts/pxfonts)
\DeclareTextCommand{\textointclockwise}{PU}{\9042\062}%* U+2232
% U+2233 ANTICLOCKWISE CONTOUR INTEGRAL; \ointctrclockwise (tx-
    fonts/pxfonts)
\DeclareTextCommand{\textointctrclockwise}{PU}{\9042\063}%* U+2233
% U+2234 THEREFORE; therefore; \therefore (AmS)
\DeclareTextCommand{\textttherefore}{PU}{\9042\064}%* U+2234
%* \textttherefore -> uptherefore (MnSymbol)
% U+2235 BECAUSE; because; \because (AmS)
\DeclareTextCommand{\textbecause}{PU}{\9042\065}%* U+2235
%* \textbecause -> \downtherefore (MnSymbol)
% U+2236 RATIO; \vdotdot (MnSymbol)
\DeclareTextCommand{\textvdotdot}{PU}{\9042\066}%* U+2236
% U+2237 PROPORTION; \squaredots (MnSymbol)
\DeclareTextCommand{\textsquaredots}{PU}{\9042\067}%* U+2237
% U+2238 DOT MINUS; \dotminus (MnSymbol)
\DeclareTextCommand{\textdotminus}{PU}{\9042\070}%* U+2238
%* \textdotminus -> \textdotdiv (mathabx)
% U+2239 EXCESS; \eqcolon (txfonts/pxfonts)
\DeclareTextCommand{\texteqcolon}{PU}{\9042\071}%* U+2239
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% U+223C TILDE OPERATOR; similar; \sim (LaTeX)
\DeclareTextCommand{\textsim}{PU}{\9042\074}%* U+223C
%* \textsim -> \AC (wasysym)
% U+223D REVERSED TILDE; reversedtilde; \backsim (AmS)
\DeclareTextCommand{\textbacksim}{PU}{\9042\075}%* U+223D
% \nbacksim (txfonts/pxfonts)
\DeclareTextCommand{\textnbacksim}{PU}{\9042\075\83\070}%* U+223D U+0338
% U+2240 WREATH PRODUCT; \wr (LaTeX)
\DeclareTextCommand{\textwr}{PU}{\9042\100}%* U+2240
%* \textwr -> \wreath (MnSymbol)
% U+2241 NOT TILDE; \nsim (AmS)
\DeclareTextCommand{\textnsim}{PU}{\9042\101}%* U+2241
% U+2242 MINUS TILDE; \eqsim (MnSymbol)
\DeclareTextCommand{\texteqsim}{PU}{\9042\102}%* U+2242
% \neqsim (MnSymbol)
\DeclareTextCommand{\textneqsim}{PU}{\9042\102\83\070}%* U+2242 U+0338
% U+2243 ASYMPTOTICALLY EQUAL TO; asymptoticallyequal; \simeq (La-
    TeX)
\DeclareTextCommand{\textsimeq}{PU}{\9042\103}%* U+2243
% U+2244 NOT ASYMPTOTICALLY EQUAL TO; \nsimeq (txfonts/pxfonts)
\DeclareTextCommand{\textnsimeq}{PU}{\9042\104}%* U+2244
% U+2245 APPROXIMATELY EQUAL TO; approximatelyequal; \cong (LaTeX)
\DeclareTextCommand{\textcong}{PU}{\9042\105}%* U+2245
% U+2247 NEITHER APPROXIMATELY NOR ACTUALLY EQUAL TO;
%   \ncong (AmS)
\DeclareTextCommand{\textncong}{PU}{\9042\107}%* U+2247
% U+2248 ALMOST EQUAL TO; approxequal; \approx (LaTeX)
\DeclareTextCommand{\textapprox}{PU}{\9042\110}%* U+2248
% U+2249 NOT ALMOST EQUAL TO; \napprox (txfonts/pxfonts0
\DeclareTextCommand{\textnapprox}{PU}{\9042\111}%* U+2249
%* \textnapprox -> \nthickapprox (txfonts/pxfonts)
% U+224A ALMOST EQUAL OR EQUAL TO; \approxeq (AmS)
\DeclareTextCommand{\textapproxeq}{PU}{\9042\112}%* U+224A
% \napproxeq (txfonts/pxfonts)
\DeclareTextCommand{\textnapproxeq}{PU}{\9042\112\83\070}%* U+224A U+0338
% U+224B TRIPLE TILDE; \triplesim (MnSymbol)
\DeclareTextCommand{\texttriplesim}{PU}{\9042\113}%* U+224B
%* \texttriplesim -> \VHF (wasysym)
% \ntriplesim (MnSymbol)
\DeclareTextCommand{\textntriplesim}{PU}{\9042\113\83\070}%* U+224B U+0338
% U+224C ALL EQUAL TO; allequal; \backcong (MnSymbol)
\DeclareTextCommand{\textbackcong}{PU}{\9042\114}%* U+224C
% \nbackcong (MnSymbol)
\DeclareTextCommand{\textnbackcong}{PU}{\9042\114\83\070}%* U+224C U+0338
% U+224D EQUIVALENT TO; \asymp (LaTeX)
\DeclareTextCommand{\textasymp}{PU}{\9042\115}%* U+224D
% \nasymp (txfonts/pxfonts)
\DeclareTextCommand{\textnasymp}{PU}{\9042\115\83\070}%* U+224D U+0338
%* \textnasymp -> \notasymp (mathabx)
% U+224E GEOMETRICALLY EQUIVALENT TO; \Bumpeq (AmS)
\DeclareTextCommand{\textBumpeq}{PU}{\9042\116}%* U+224E
% \nBumpeq (txfonts/pxfonts)
\DeclareTextCommand{\textnBumpeq}{PU}{\9042\116\83\070}%* U+224E U+0338
% U+224F DIFFERENCE BETWEEN; \bumpeq (AmS)
\DeclareTextCommand{\textbumpeq}{PU}{\9042\117}%* U+224F
% \nbumpeq (txfonts/pxfonts)
\DeclareTextCommand{\textnbumpeq}{PU}{\9042\117\83\070}%* U+224F U+0338
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% U+2250 APPROACHES THE LIMIT; approaches; \doteq (LaTeX)
\DeclareTextCommand{\textdoteq}{PU}{\9042\120}%* U+2250
% \ndoteq (MnSymbol)
\DeclareTextCommand{\textndoteq}{PU}{\9042\120\83\070}%* U+2250 U+0338
% U+2251 GEOMETRICALLY EQUAL TO; geometricallyequal;
%   \doteqdot (AmS)
\DeclareTextCommand{\textdoteqdot}{PU}{\9042\121}%* U+2251
%* \textdoteqdot -> \Doteq (MnSymbol)
% \nDoteq (MnSymbol)
\DeclareTextCommand{\textnDoteq}{PU}{\9042\121\83\070}%* U+2251 U+0338
% U+2252 APPROXIMATELY EQUAL TO OR THE IMAGE OF; approxe-
    qualorimage;
%   \fallingdotseq (AmS)
\DeclareTextCommand{\textfallingdoteq}{PU}{\9042\122}%* U+2252
% \nfallingdotseq (MnSymbol)
\DeclareTextCommand{\textnfallingdoteq}{PU}{\9042\122\83\070}%* U+2252 U+0338
% U+2253 IMAGE OF OR APPROXIMATELY EQUAL TO; imageorapproxi-
    matelyequal;
%   \risingdotseq (AmS)
\DeclareTextCommand{\textrisingdoteq}{PU}{\9042\123}%* U+2253
% \nrisingdoteq (MnSymbol)
\DeclareTextCommand{\textnrisingdoteq}{PU}{\9042\123\83\070}%* U+2253 U+0338
% U+2254 COLON EQUALS; \colonequals (colonequals)
\DeclareTextCommand{\textcolonequals}{PU}{\9042\124}%* U+2254
% U+2255 EQUALS COLON; \equalscolon (colonequals)
\DeclareTextCommand{\textequalscolon}{PU}{\9042\125}%* U+2255
% U+2256 RING IN EQUAL TO; \eqcirc (AmS)
\DeclareTextCommand{\texteqcirc}{PU}{\9042\126}%* U+2256
% \neqcirc (MnSymbol)
\DeclareTextCommand{\textneqcirc}{PU}{\9042\126\83\070}%* U+2256 U+0338
% U+2257 RING EQUAL TO; \circeq (AmS)
\DeclareTextCommand{\textcirceq}{PU}{\9042\127}%* U+2257
% \ncirceq (MnSymbol)
\DeclareTextCommand{\textncirceq}{PU}{\9042\127\83\070}%* U+2257 U+0338
% U+2259 ESTIMATES; \hateq (MnSymbol)
\DeclareTextCommand{\texthateq}{PU}{\9042\131}%* U+2259
%* \texthateq -> \corresponds (mathabx)
%* \texthateq -> \Corresponds (marvosym)
% \nhateq (MnSymbol)
\DeclareTextCommand{\textnhateq}{PU}{\9042\131\83\070}%* U+2259 U+0338
% U+225C DELTA EQUAL TO; \triangleeq (AmS)
\DeclareTextCommand{\texttriangleeq}{PU}{\9042\134}%* U+225C
% U+2260 NOT EQUAL TO; notequal; \ne (LaTeX), \neq (LaTeX)
\DeclareTextCommand{\textneq}{PU}{\9042\140}%* U+2260
\DeclareTextCommand{\textne}{PU}{\9042\140}%* U+2260
%* \textneq -> \nequal (MnSymbol)
% U+2261 IDENTICAL TO; equivalence; \equiv (LaTeX)
\DeclareTextCommand{\textequiv}{PU}{\9042\141}%* U+2261
%* \textequiv -> \Congruent (marvosym)
% U+2262 NOT IDENTICAL TO; notidentical; \nequiv (txfonts/pxfonts)
\DeclareTextCommand{\textnequiv}{PU}{\9042\142}%* U+2262
%* \textnequiv -> \NotCongruent (marvosym)
%* \textnequiv -> \notequiv (mathabx)
% U+2264 LESS-THAN OR EQUAL TO; lessequal; \le (LaTeX), \leq (LaTeX)
\DeclareTextCommand{\textleq}{PU}{\9042\144}%* U+2264
\DeclareTextCommand{\textle}{PU}{\9042\144}%* U+2264
%* \textleq -> \LessOrEqual (marvosym)
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% U+2265 GREATER-THAN OR EQUAL TO; greaterequal;
%   \ge (LaTeX), \geq (LaTeX)
\DeclareTextCommand{\textgeq}{PU}{\9042\145}%* U+2265
\DeclareTextCommand{\textge}{PU}{\9042\145}%* U+2265
%* \textgeq -> \LargerOrEqual (marvosym)
% U+2266 LESS-THAN OVER EQUAL TO; lessoverequal; \leqq (AmS)
\DeclareTextCommand{\textleqq}{PU}{\9042\146}%* U+2266
% \nleqq (txfonts/pxfonts)
\DeclareTextCommand{\textnleqq}{PU}{\9042\146\83\070}%* U+2266 U+0338
% U+2267 GREATER-THAN OVER EQUAL TO; greateroverequal; \geqq (AmS)
\DeclareTextCommand{\textgeqq}{PU}{\9042\147}%* U+2267
% \ngeqq (txfonts/pxfonts)
\DeclareTextCommand{\textngeqq}{PU}{\9042\147\83\070}%* U+2267 U+0338
% U+2268 LESS-THAN BUT NOT EQUAL TO; \lneqq (AmS)
\DeclareTextCommand{\textlneqq}{PU}{\9042\150}%* U+2268
% U+2269 GREATER-THAN BUT NOT EQUAL TO; \gneqq (AmS)
\DeclareTextCommand{\textgneqq}{PU}{\9042\151}%* U+2269
% U+226A MUCH LESS-THAN; muchless; \ll (LaTeX)
\DeclareTextCommand{\textll}{PU}{\9042\152}%* U+226A
% \nll (txfonts/pxfonts)
\DeclareTextCommand{\textnll}{PU}{\9042\152\83\070}%* U+226A U+0338
% U+226B MUCH GREATER-THAN; muchgreater; \gg (LaTeX)
\DeclareTextCommand{\textgg}{PU}{\9042\153}%* U+226B
% \ngg (txfonts/pxfonts)
\DeclareTextCommand{\textngg}{PU}{\9042\153\83\070}%* U+226B U+0338
% U+226C BETWEEN; \between (AmS)
\DeclareTextCommand{\textbetween}{PU}{\9042\154}%* U+226C
% U+226E NOT LESS-THAN; notless; \nless (AmS)
\DeclareTextCommand{\textnless}{PU}{\9042\156}%* U+226E
% U+226F NOT GREATER-THAN; notgreater; \ngtr (AmS)
\DeclareTextCommand{\textngtr}{PU}{\9042\157}%* U+226F
% U+2270 NEITHER LESS-THAN NOR EQUAL TO; notlessnorequal;
%   \nleq (AmS)
\DeclareTextCommand{\textnleq}{PU}{\9042\160}%* U+2270
% U+2271 NEITHER GREATER-THAN NOR EQUAL TO; notgreaternore-
    qual; \ngeq (AmS)
\DeclareTextCommand{\textngeq}{PU}{\9042\161}%* U+2271
% U+2272 LESS-THAN OR EQUIVALENT TO; lessorequivalent; \lesssim (AmS)
\DeclareTextCommand{\textlesssim}{PU}{\9042\162}%* U+2272
%* \textlesssim -> \apprle (wasysym)
% U+2273 GREATER-THAN OR EQUIVALENT TO; greaterorequivalent; \gtr-
    sim (AmS)
\DeclareTextCommand{\textgtrsim}{PU}{\9042\163}%* U+2273
%* \textgtrsim -> \apprge (wasysym)
% U+2274 NEITHER LESS-THAN NOR EQUIVALENT TO; \nlesssim (tx-
    fonts/pxfonts)
\DeclareTextCommand{\textnlesssim}{PU}{\9042\164}%* U+2274
% U+2275 NEITHER GREATER-THAN NOR EQUIVALENT TO; \ngtrsim (tx-
    fonts/pxfonts)
\DeclareTextCommand{\textngtrsim}{PU}{\9042\165}%* U+2275
% U+2276 LESS-THAN OR GREATER-THAN; lessorgreater; \lessgtr (AmS)
\DeclareTextCommand{\textlessgtr}{PU}{\9042\166}%* U+2276
% U+2277 GREATER-THAN OR LESS-THAN; greaterorless; \gtrless (AmS)
\DeclareTextCommand{\textgtrless}{PU}{\9042\167}%* U+2277
% U+2278 NEITHER LESS-THAN NOR GREATER-THAN; \ngtrless (tx-
    fonts/pxfonts)
\DeclareTextCommand{\textngtrless}{PU}{\9042\170}%* U+2278
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% U+2279 NEITHER GREATER-THAN NOR LESS-THAN; \nlessgtr (txfonts/pxfonts)
\DeclareTextCommand{\textnlessgtr}{PU}{\9042\171}%* U+2279
% U+227A PRECEDES; precedes; \prec (LaTeX)
\DeclareTextCommand{\textprec}{PU}{\9042\172}%* U+227A
% U+227B SUCCEEDS; succeeds; \succ (LaTeX)
\DeclareTextCommand{\textsucc}{PU}{\9042\173}%* U+227B
% U+227C PRECEDES OR EQUAL TO; \preccurlyeq (AmS)
\DeclareTextCommand{\textpreccurlyeq}{PU}{\9042\174}%* U+227C
% U+227D SUCCEEDS OR EQUAL TO; \succcurlyeq (AmS)
\DeclareTextCommand{\textsucccurlyeq}{PU}{\9042\175}%* U+227D
% U+227E PRECEDES OR EQUIVALENT TO; \precsim (AmS)
\DeclareTextCommand{\textprecsim}{PU}{\9042\176}%* U+227E
% \nprecsim (txfonts/pxfonts)
\DeclareTextCommand{\textnprecsim}{PU}{\9042\176\83\070}%* U+227E U+0338
% U+227F SUCCEEDS OR EQUIVALENT TO; \succsim (AmS)
\DeclareTextCommand{\textsuccsim}{PU}{\9042\177}%* U+227F
% \nsuccsim (txfonts/pxfonts)
\DeclareTextCommand{\textnsuccsim}{PU}{\9042\177\83\070}%* U+227F U+0338
% U+2280 DOES NOT PRECEDE; notprecedes; \nprec (AmS)
\DeclareTextCommand{\textnprec}{PU}{\9042\200}%* U+2280
% U+2281 DOES NOT SUCCEED; notsucceeds; \nsucc (AmS)
\DeclareTextCommand{\textnsucc}{PU}{\9042\201}%* U+2281
% U+2282 SUBSET OF; propersubset; \subset (LaTeX)
\DeclareTextCommand{\textsubset}{PU}{\9042\202}%* U+2282
% U+2283 SUPERSET OF; propersuperset; \supset (LaTeX)
\DeclareTextCommand{\textsupset}{PU}{\9042\203}%* U+2283
% U+2284 NOT A SUBSET OF; notsubset; \nsubset (mathabx)
\DeclareTextCommand{\textnsubset}{PU}{\9042\204}%* U+2284
% U+2285 NOT A SUPERSET OF; notsuperset; \nsupset (mathabx)
\DeclareTextCommand{\textnsupset}{PU}{\9042\205}%* U+2285
% U+2286 SUBSET OF OR EQUAL TO; reflexsubset; \subseteq (LaTeX)
\DeclareTextCommand{\textsubseteq}{PU}{\9042\206}%* U+2286
% U+2287 SUPERSET OF OR EQUAL TO; reflexsuperset; \supseteq (LaTeX)
\DeclareTextCommand{\textsupseteq}{PU}{\9042\207}%* U+2287
% U+2288 NEITHER A SUBSET OF NOR EQUAL TO; \nsubseteq (AmS)
\DeclareTextCommand{\textnsubseteq}{PU}{\9042\210}%* U+2288
% U+2289 NEITHER A SUPERSET OF NOR EQUAL TO; \nsupseteq (AmS)
\DeclareTextCommand{\textnsupseteq}{PU}{\9042\211}%* U+2289
% U+228A SUBSET OF WITH NOT EQUAL TO; subsetnotequal; \subsetneq (AmS)
\DeclareTextCommand{\textsubsetneq}{PU}{\9042\212}%* U+228A
% U+228B SUPERSET OF WITH NOT EQUAL TO; supersetnotequal; \supsetneq (AmS)
\DeclareTextCommand{\textsupsetneq}{PU}{\9042\213}%* U+228B
% U+228D MULTISET MULTIPLICATION; \cupdot (MnSymbol)
\DeclareTextCommand{\textcupdot}{PU}{\9042\215}%* U+228D
% U+228E MULTISET UNION; \cupplus (MnSymbol)
\DeclareTextCommand{\textcupplus}{PU}{\9042\216}%* U+228E
% U+228F SQUARE IMAGE OF; \sqsubset (latexsym, ...)
\DeclareTextCommand{\textsqsubset}{PU}{\9042\217}%* U+228F
% \nsqsubset (txfonts/pxfonts)
\DeclareTextCommand{\textnsqsubset}{PU}{\9042\217\83\070}%* U+228F U+0338
% U+2290 SQUARE ORIGINAL OF; \sqsupset (latexsym, ...)
\DeclareTextCommand{\textsqsupset}{PU}{\9042\220}%* U+2290
% \nsqsupset (txfonts/pxfonts)
\DeclareTextCommand{\textnsqsupset}{PU}{\9042\220\83\070}%* U+2290 U+0338
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% U+2291 SQUARE IMAGE OF OR EQUAL TO; \sqsubseteq (LaTeX)
\DeclareTextCommand{\textsqsubseteq}{PU}{\9042\221}%* U+2291
% \nsqsubseteq (txfonts/pxfonts)
\DeclareTextCommand{\textnsqsubseteq}{PU}{\9042\221\83\070}%* U+2291 U+0338
% U+2292 SQUARE ORIGINAL OF OR EQUAL TO; \sqsupseteq (LaTeX)
\DeclareTextCommand{\textsqsupseteq}{PU}{\9042\222}%* U+2292
% \nsqsupseteq (txfonts/pxfonts)
\DeclareTextCommand{\textnsqsupseteq}{PU}{\9042\222\83\070}%* U+2292 U+0338
% U+2293 SQUARE CAP; \sqcap (LaTeX)
\DeclareTextCommand{\textsqcap}{PU}{\9042\223}%* U+2293
% U+2294 SQUARE CUP; \sqcup (LaTeX)
\DeclareTextCommand{\textsqcup}{PU}{\9042\224}%* U+2294
% U+2295 CIRCLED PLUS; circleplus; \oplus (LaTeX)
\DeclareTextCommand{\textoplus}{PU}{\9042\225}%* U+2295
%* \textoplus -> \varoplus (stmaryrd)
% U+2296 CIRCLED MINUS; minuscircle; \ominus (LaTeX)
\DeclareTextCommand{\textominus}{PU}{\9042\226}%* U+2296
%* \textominus -> \varominus (stmaryrd)
% U+2297 CIRCLED TIMES; circlemultiply; \otimes (LaTeX)
\DeclareTextCommand{\textotimes}{PU}{\9042\227}%* U+2297
%* \textotimes -> \varotimes (stmaryrd)
% U+2298 CIRCLED DIVISION SLASH; \oslash (LaTeX)
\DeclareTextCommand{\textoslash}{PU}{\9042\230}%* U+2298
%* \textoslash -> \varoslash (stmaryrd)
% U+2299 CIRCLED DOT OPERATOR; circle(d?)ot; \odot (LaTeX)
\DeclareTextCommand{\textodot}{PU}{\9042\231}%* U+2299
%* \textodot -> \varodot (stmaryrd)
% U+229A CIRCLED RING OPERATOR; \circledcirc (AmS)
\DeclareTextCommand{\textcircledcirc}{PU}{\9042\232}%* U+229A
%* \textcircledcirc -> \ocirc (mathabx)
%* \textcircledcirc -> \varocircle (stmaryrd)
% U+229B CIRCLED ASTERISK OPERATOR; \circledast (AmS)
\DeclareTextCommand{\textcircledast}{PU}{\9042\233}%* U+229B
%* \textcircledast -> \varoast (stmaryrd)
%* \textcircledast -> \oasterisk (mathabx)
% U+229D CIRCLED DASH; \circleddash (AmS)
\DeclareTextCommand{\textcircleddash}{PU}{\9042\235}%* U+229D
% U+229E SQUARED PLUS; \boxplus (AmS)
\DeclareTextCommand{\textboxplus}{PU}{\9042\236}%* U+229E
% U+229F SQUARED MINUS; \boxminus (AmS)
\DeclareTextCommand{\textboxminus}{PU}{\9042\237}%* U+229F
% U+22A0 SQUARED TIMES; \boxtimes (AmS)
\DeclareTextCommand{\textboxtimes}{PU}{\9042\240}%* U+22A0
% U+22A1 SQUARED DOT OPERATOR; \boxdot (AmS)
\DeclareTextCommand{\textboxdot}{PU}{\9042\241}%* U+22A1
% U+22A2 RIGHT TACK; \vdash (LaTeX)
\DeclareTextCommand{\textvdash}{PU}{\9042\242}%* U+22A2
%* \textvdash -> \rightvdash (MnSymbol)
% U+22A3 LEFT TACK; tackleft; \dashv (LaTeX)
\DeclareTextCommand{\textdashv}{PU}{\9042\243}%* U+22A3
%* \textdashv -> \leftvdash (MnSymbol)
% \ndashv (mathabx)
\DeclareTextCommand{\textndashv}{PU}{\9042\243\83\070}%* U+22A3 U+0338
%* \textndashv -> \nleftvdash (MnSymbol)
% U+22A4 DOWN TACK (=top); tackdown; \top (LaTeX)
\DeclareTextCommand{\texttop}{PU}{\9042\244}%* U+22A4
%* \texttop -> \downvdash (MnSymbol)
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% \ndownvdash (MnSymbol)
\DeclareTextCommand{\textndownvdash}{PU}{\9042\244\83\070}%* U+22A4 U+0338
% U+22A5 UP TACK (=base, bottom); \bot (LaTeX)
\DeclareTextCommand{\textbot}{PU}{\9042\245}%* U+22A5
%* \textbot -> \upvdash (MnSymbol)
% \nupvdash (MnSymbol)
\DeclareTextCommand{\textnupvdash}{PU}{\9042\245\83\070}%* U+22A5 U+0338
%* \textnupvdash -> \nperp (MnSymbol)
% U+22A8 TRUE; \vDash (AmS)
\DeclareTextCommand{\textvDash}{PU}{\9042\250}%* U+22A8
%* \textvDash -> \models (LaTeX)
%* \textvDash -> \rightmodels (MnSymbol)
% U+22A9 FORCES; \Vdash (AmS)
\DeclareTextCommand{\textVdash}{PU}{\9042\251}%* U+22A9
%* \textVdash -> \rightVdash (MnSymbol)
% U+22AA TRIPLE VERTICAL BAR RIGHT TURNSTILE; \Vvdash (AmS)
\DeclareTextCommand{\textVvdash}{PU}{\9042\252}%* U+22AA
% \nVvash (mathabx)
\DeclareTextCommand{\textnVvash}{PU}{\9042\252\83\070}%* U+22AA U+0338
% U+22AB DOUBLE VERTICAL BAR DOUBLE RIGHT TURNSTILE;
%   \VDash (mathabx)
\DeclareTextCommand{\textVDash}{PU}{\9042\253}%* U+22AB
%* \textVDash -> \rightModels (MnSymbol)
% U+22AC DOES NOT PROVE; \nvdash (AmS)
\DeclareTextCommand{\textnvdash}{PU}{\9042\254}%* U+22AC
%* \textnvdash -> \nrightvdash (MnSymbol)
% U+22AD NOT TRUE; \nvDash (AmS)
\DeclareTextCommand{\textnvDash}{PU}{\9042\255}%* U+22AD
%* \textnvDash -> \nrightmodels (MnSymbol)
%* \textnvDash -> \nmodels (MnSymbol)
% U+22AE DOES NOT FORCE; \nVdash (txfonts/pxfonts)
\DeclareTextCommand{\textnVdash}{PU}{\9042\256}%* U+22AE
%* \textnVdash -> \nrightVdash (MnSymbol)
% U+22AF NEGATED DOUBLE VERTICAL BAR DOUBLE RIGHT TURN-
    STILE; \nVDash (AmS)
\DeclareTextCommand{\textnVDash}{PU}{\9042\257}%* U+22AF
%* \textnVDash -> \nrightModels (MnSymbol)
% U+22B2 NORMAL SUBGROUP OF; \lhd (latexsym, ...)
\DeclareTextCommand{\textlhd}{PU}{\9042\262}%* U+22B2
%* \textlhd -> \lessclosed (MnSymbol)
% U+22B3 CONTAINS AS NORMAL SUBGROUP; \rhd (latexsym, ...)
\DeclareTextCommand{\textrhd}{PU}{\9042\263}%* U+22B3
%* \textrhd -> \gtrclosed (MnSymbol)
% U+22B4 NORMAL SUBGROUP OF OR EQUAL TO; \unlhd (latexsym, ...)
\DeclareTextCommand{\textunlhd}{PU}{\9042\264}%* U+22B4
%* \textunlhd -> \leqclosed (MnSymbol)
%* \textunlhd -> \trianglelefteq (MnSymbol)
% U+22B5 CONTAINS AS NORMAL SUBGROUP OR EQUAL TO; \unrhd (la-
    texsym, ...)
\DeclareTextCommand{\textunrhd}{PU}{\9042\265}%* U+22B5
%* \textunrhd -> \geqclosed (MnSymbol)
%* \textunrhd -> \trianglerighteq (MnSymbol)
% U+22B6 ORIGINAL OF; \multimapdotbothA (txfonts/pxfonts)
\DeclareTextCommand{\textmultimapdotbothA}{PU}{\9042\266}%* U+22B6
% U+22B7 IMAGE OF; \multimapdotbothB (txfonts/pxfonts)
\DeclareTextCommand{\textmultimapdotbothB}{PU}{\9042\267}%* U+22B7
% U+22B8 MULTIMAP; \multimap (AmS, txfonts/pxfonts)
```

```
\DeclareTextCommand{\textmultimap}{PU}{\9042\270}%* U+22B8
% U+22BB XOR; \veebar (AmS)
\DeclareTextCommand{\textveebar}{PU}{\9042\273}%* U+22BB
% U+22BC NAND; \barwedge (mathabx)
\DeclareTextCommand{\textbarwedge}{PU}{\9042\274}%* U+22BC
% U+22C6 STAR OPERATOR; \star (LaTeX)
\DeclareTextCommand{\textstar}{PU}{\9042\306}%* U+22C6
% U+22C7 DIVISION TIMES; \divideontimes (AmS)
\DeclareTextCommand{\textdivideontimes}{PU}{\9042\307}%* U+22C7
% U+22C8 BOWTIE; \bowtie (LaTeX)
\DeclareTextCommand{\textbowtie}{PU}{\9042\310}%* U+22C8
%* \textbowtie -> \Bowtie (wasysym)
% U+22C9 LEFT NORMAL FACTOR SEMIDIRECT PRODUCT; \ltimes (AmS)
\DeclareTextCommand{\textltimes}{PU}{\9042\311}%* U+22C9
% U+22CA RIGHT NORMAL FACTOR SEMIDIRECT PRODUCT;
%   \rtimes (AmS)
\DeclareTextCommand{\textrtimes}{PU}{\9042\312}%* U+22CA
% U+22CB LEFT SEMIDIRECT PRODUCT; \leftthreetimes (AmS)
\DeclareTextCommand{\textleftthreetimes}{PU}{\9042\313}%* U+22CB
% U+22CC RIGHT SEMIDIRECT PRODUCT; \rightthreetimes (AmS)
\DeclareTextCommand{\textrightthreetimes}{PU}{\9042\314}%* U+22CC
% U+22CD REVERSED TILDE EQUALS; \backsimeq (AmS)
\DeclareTextCommand{\textbacksimeq}{PU}{\9042\315}%* U+22CD
% \nbacksimeq (txfonts/pxfonts)
\DeclareTextCommand{\textnbacksimeq}{PU}{\9042\315\83\070}%* U+22CD U+0338
% U+22CE CURLY LOGICAL OR; curlyor; \curlyvee (AmS)
\DeclareTextCommand{\textcurlyvee}{PU}{\9042\316}%* U+22CE
%* \textcurlyvee -> \varcurlyvee (stmaryrd)
% U+22CF CURLY LOGICAL AND; curlyand; \curlywedge (AmS)
\DeclareTextCommand{\textcurlywedge}{PU}{\9042\317}%* U+22CF
%* \textcurlywedge -> \varcurlywedge (stmaryrd)
% U+22D0 DOUBLE SUBSET; \Subset (AmS)
\DeclareTextCommand{\textSubset}{PU}{\9042\320}%* U+22D0
% \nSubset (txfonts/pxfonts)
\DeclareTextCommand{\textnSubset}{PU}{\9042\320\83\070}%* U+22D0 U+0338
% U+22D1 DOUBLE SUPERSET; \Supset (AmS)
\DeclareTextCommand{\textSupset}{PU}{\9042\321}%* U+22D1
% \nSupset (txfonts/pxfonts)
\DeclareTextCommand{\textnSupset}{PU}{\9042\321\83\070}%* U+22D1 U+0338
% U+22D2 DOUBLE INTERSECTION; \Cap (AmS)
\DeclareTextCommand{\textCap}{PU}{\9042\322}%* U+22D2
%* \textCap -> \doublecap (mathabx)
% U+22D3 DOUBLE UNION; \Cup (AmS)
\DeclareTextCommand{\textCup}{PU}{\9042\323}%* U+22D3
%* \textCup -> \doublecup (mathabx)
% U+22D4 PITCHFORK; \pitchfork (mathabx)
\DeclareTextCommand{\textpitchfork}{PU}{\9042\324}%* U+22D4
% U+22D6 LESS-THAN WITH DOT; \lessdot (AmS)
\DeclareTextCommand{\textlessdot}{PU}{\9042\326}%* U+22D6
% U+22D7 GREATER-THAN WITH DOT; \gtrdot (AmS)
\DeclareTextCommand{\textgtrdot}{PU}{\9042\327}%* U+22D7
% U+22D8 VERY MUCH LESS-THAN; \lll (AmS)
\DeclareTextCommand{\textlll}{PU}{\9042\330}%* U+22D8
% U+22D9 VERY MUCH GREATER-THAN; \ggg (AmS)
\DeclareTextCommand{\textggg}{PU}{\9042\331}%* U+22D9
% U+22DA LESS-THAN EQUAL TO OR GREATER-THAN; lessequalorgreater;
%   \lesseqgtr (AmS)
```

```
\DeclareTextCommand{\textlesseqgtr}{PU}{\9042\332}%* U+22DA
% U+22DB GREATER-THAN EQUAL TO OR LESS-THAN; greaterequalorless;
%   \gtreqless (AmS)
\DeclareTextCommand{\textgtreqless}{PU}{\9042\333}%* U+22DB
% U+22DE EQUAL TO OR PRECEDES; \curlyeqprec (MnSymbol)
\DeclareTextCommand{\textcurlyeqprec}{PU}{\9042\336}%* U+22DE
% \ncurlyeqprec (mathabx)
\DeclareTextCommand{\textncurlyeqprec}{PU}{\9042\336\83\070}%* U+22DE U+0338
% U+22DF EQUAL TO OR SUCCEEDS; \curlyeqsucc (MnSymbol)
\DeclareTextCommand{\textcurlyeqsucc}{PU}{\9042\337}%* U+22DF
% \ncurlyeqsucc (mathabx)
\DeclareTextCommand{\textncurlyeqsucc}{PU}{\9042\337\83\070}%* U+22DF U+0338
% U+22E0 DOES NOT PRECEDE OR EQUAL; \npreccurlyeq (txfonts/pxfonts)
\DeclareTextCommand{\textnpreccurlyeq}{PU}{\9042\340}%* U+22E0
% U+22E1 DOES NOT SUCCEED OR EQUAL; \nsucccurlyeq (txfonts/pxfonts)
\DeclareTextCommand{\textnsucccurlyeq}{PU}{\9042\341}%* U+22E1
% U+22E2 NOT SQUARE IMAGE OF OR EQUAL TO; \nsqsubseteq (tx-
    fonts/pxfonts)
\DeclareTextCommand{\textnqsubseteq}{PU}{\9042\342}%* U+22E2
% U+22E3 NOT SQUARE ORIGINAL OF OR EQUAL TO; \nsqsupseteq (tx-
    fonts/pxfonts)
\DeclareTextCommand{\textnqsupseteq}{PU}{\9042\343}%* U+22E3
% U+22E4 SQUARE IMAGE OF OR NOT EQUAL TO; \sqsubsetneq (mathabx)
\DeclareTextCommand{\textsqsubsetneq}{PU}{\9042\344}%* U+22E4
%* \textsqsubsetneq -> \varsqsubsetneq (mathabx)
% U+22E5 SQUARE ORIGINAL OF OR NOT EQUAL TO; \sqsupsetneq (math-
    abx)
\DeclareTextCommand{\textsqsupsetneq}{PU}{\9042\345}%* U+22E5
%* \textsqsupsetneq -> \varsqsupsetneq (mathabx)
% U+22E6 LESS-THAN BUT NOT EQUIVALENT TO; \lnsim (AmS)
\DeclareTextCommand{\textlnsim}{PU}{\9042\346}%* U+22E6
% U+22E7 GREATER-THAN BUT NOT EQUIVALENT TO; \gnsim (AmS)
\DeclareTextCommand{\textgnsim}{PU}{\9042\347}%* U+22E7
% U+22E8 PRECEDES BUT NOT EQUIVALENT TO; \precnsim (AmS)
\DeclareTextCommand{\textprecnsim}{PU}{\9042\350}%* U+22E8
% U+22E9 SUCCEEDS BUT NOT EQUIVALENT TO; \succnsim (AmS)
\DeclareTextCommand{\textsuccnsim}{PU}{\9042\351}%* U+22E9
% U+22EA NOT NORMAL SUBGROUP OF; \ntriangleleft (AmS)
\DeclareTextCommand{\textntriangleleft}{PU}{\9042\352}%* U+22EA
%* \textntriangleleft -> \nlessclosed (MnSymbol)
% U+22EB DOES NOT CONTAIN AS NORMAL SUBGROUP; \ntriang-
    leright (AmS)
\DeclareTextCommand{\textntriangleright}{PU}{\9042\353}%* U+22EB
%* \textntriangleright -> \ngtrclosed (MnSymbol)
% U+22EC NOT NORMAL SUBGROUP OF OR EQUAL TO;
%   \ntrianglelefteq (AmS)
\DeclareTextCommand{\textntrianglelefteq}{PU}{\9042\354}%* U+22EC
% U+22ED DOES NOT CONTAIN AS NORMAL SUBGROUP OR EQUAL;
%   \ntrianglerighteq (AmS)
\DeclareTextCommand{\textntrianglerighteq}{PU}{\9042\355}%* U+22ED
%* \textntrianglerighteq -> textngeqclosed
% U+22EE VERTICAL ELLIPSIS; ellipsisvertical; \vdots (LaTeX)
\DeclareTextCommand{\textvdots}{PU}{\9042\356}%* U+22EE
% U+22EF MIDLINE HORIZONTAL ELLIPSIS; \cdots (LaTeX)
\DeclareTextCommand{\textcdots}{PU}{\9042\357}%* U+22EF
% U+22F0 UP RIGHT DIAGONAL ELLIPSIS; \udots (MnSymbol)
\DeclareTextCommand{\textudots}{PU}{\9042\360}%* U+22F0
```

```
% U+22F1 DOWN RIGHT DIAGONAL ELLIPSIS; \ddots (LaTeX)
\DeclareTextCommand{\textddots}{PU}{\9042\361}%* U+22F1
% U+22F6 ELEMENT OF WITH OVERBAR; \barin (mathabx)
\DeclareTextCommand{\textbarin}{PU}{\9042\366}%* U+22F6
```

51.2.23 Miscellaneous Technical: U+2300 to U+23FF

```
% U+2300 DIAMETER SIGN; \diameter (mathabx,wasysym)
\DeclareTextCommand{\textdiameter}{PU}{\9043\000}%* U+2300
% U+2310 REVERSED NOT SIGN; \backneg (MnSymbol)
\DeclareTextCommand{\textbackneg}{PU}{\9043\020}%* U+2310
% U+2311 SQUARE LOZENGE; \wasylozenge (wasysym)
\DeclareTextCommand{\textwasylozenge}{PU}{\9043\021}%* U+2311
% U+2319 TURNED NOT SIGN; \invbackneg (MnSymbol)
\DeclareTextCommand{\textinvbackneg}{PU}{\9043\031}%* U+2319
% U+231A WATCH; \clock (wasysym)
\DeclareTextCommand{\textclock}{PU}{\9043\032}%* U+231A
%* \textclock -> \Clocklogo (marvosym)
%* \textclock -> \ClockLogo (marvosym)
% U+231C TOP LEFT CORNER; \ulcorner (AmS)
\DeclareTextCommand{\textulcorner}{PU}{\9043\034}%* U+231C
% U+231D TOP RIGHT CORNER; \urcorner (AmS)
\DeclareTextCommand{\texturcorner}{PU}{\9043\035}%* U+231D
% U+231E BOTTOM LEFT CORNER; \llcorner (AmS)
\DeclareTextCommand{\textllcorner}{PU}{\9043\036}%* U+231E
% U+231F BOTTOM RIGHT CORNER; \lrcorner (AmS)
\DeclareTextCommand{\textlrcorner}{PU}{\9043\037}%* U+231F
% U+2322 FROWN; \frown (LaTeX)
\DeclareTextCommand{\textfrown}{PU}{\9043\042}%* U+2322
% U+2323 SMILE; \smile (LaTeX)
\DeclareTextCommand{\textsmile}{PU}{\9043\043}%* U+2323
% U+2328 KEYBOARD; \Keyboard (marvosym)
\DeclareTextCommand{\textKeyboard}{PU}{\9043\050}%* U+2328
% U+2329 LEFT-POINTING ANGLE BRACKET; angleleft; \langle (LaTeX)
\DeclareTextCommand{\textlangle}{PU}{\9043\051}%* U+2329
% U+232A RIGHT-POINTING ANGLE BRACKET; angleright; \rangle (LaTeX)
\DeclareTextCommand{\textrangle}{PU}{\9043\052}%* U+232A
% U+2339 APL FUNCTIONAL SYMBOL QUAD DIVIDE; \APLinv (wasysym)
\DeclareTextCommand{\textAPLinv}{PU}{\9043\071}%* U+2339
% U+233C APL FUNCTIONAL SYMBOL QUAD CIRCLE; \Tumbler (marvosym)
\DeclareTextCommand{\textTumbler}{PU}{\9043\074}%* U+233C
% U+233D APL FUNCTIONAL SYMBOL CIRCLE STILE; \baro (stmaryrd)
\DeclareTextCommand{\textstmaryrdbaro}{PU}{\9043\075}% U+233D
%* \textstmaryrdbaro -> \baro (stmaryrd)
% U+233F APL FUNCTIONAL SYMBOL SLASH BAR; \notslash (wasysym)
\DeclareTextCommand{\textnotslash}{PU}{\9043\077}%* U+233F
% U+2340 APL FUNCTIONAL SYMBOL BACKSLASH BAR;
%   \notbackslash (wasysym)
\DeclareTextCommand{\textnotbackslash}{PU}{\9043\100}%* U+2340
% U+2342 APL FUNCTIONAL SYMBOL QUAD BACKSLASH; \boxbackslash (mathabx)
\DeclareTextCommand{\textboxbackslash}{PU}{\9043\102}%* U+2342
% U+2347 APL FUNCTIONAL SYMBOL QUAD LEFTWARDS ARROW;
%   \APLleftarrowbox (wasysym)
\DeclareTextCommand{\textAPLleftarrowbox}{PU}{\9043\107}%* U+2347
% U+2348 APL FUNCTIONAL SYMBOL QUAD RIGHTWARDS ARROW;
%   \APLrightarrowbox (wasysym)
```

```
\DeclareTextCommand{\textAPLrightarrowbox}{PU}{\9043\110}%* U+2348
% U+2350 APL FUNCTIONAL SYMBOL QUAD UPWARDS ARROW; \APLuparrowbox (wasysym)
\DeclareTextCommand{\textAPLuparrowbox}{PU}{\9043\120}%* U+2350
% U+2357 APL FUNCTIONAL SYMBOL QUAD DOWNWARDS ARROW;
%   \APLdownarrowbox (wasysym)
\DeclareTextCommand{\textAPLdownarrowbox}{PU}{\9043\127}%* U+2357
% U+235E APL FUNCTIONAL SYMBOL QUOTE QUAD;
%   \APLinput (wasysym)
\DeclareTextCommand{\textAPLinput}{PU}{\9043\136}%* U+235E
% U+2370 APL FUNCTIONAL SYMBOL QUAD QUESTION; \Request (china2e)
\DeclareTextCommand{\textRequest}{PU}{\9043\160}%* U+2370
% U+2393 DIRECT CURRENT SYMBOL FORM TWO; \Beam (marvosym)
\DeclareTextCommand{\textBeam}{PU}{\9043\223}%* U+2393
% U+2394 SOFTWARE-FUNCTION SYMBOL; \hexagon (wasysym)
\DeclareTextCommand{\texthexagon}{PU}{\9043\224}%* U+2394
% U+2395 APL FUNCTIONAL SYMBOL QUAD; \APLbox (wasysym)
\DeclareTextCommand{\textAPLbox}{PU}{\9043\225}%* U+2395
% U+23ED BLACK RIGHT-POINTING DOUBLE TRIANGLE WITH VERTICAL BAR;
%   \ForwardToIndex (marvosym)
\DeclareTextCommand{\textForwardToIndex}{PU}{\9043\355}%* U+23ED
% U+23EE BLACK LEFT-POINTING DOUBLE TRIANGLE WITH VERTICAL BAR;
%   \RewindToIndex (marvosym)
\DeclareTextCommand{\textRewindToIndex}{PU}{\9043\356}%* U+23EE
```

51.2.24 Control Pictures: U+2400 to U+243F

```
% U+2422 BLANK SYMBOL
\DeclareTextCommand{\textblank}{PU}{\9044\042}% U+2422
% U+2423 OPEN BOX; blank
\DeclareTextCommand{\textvisiblespace}{PU}{\9044\043}% U+2423
```

51.2.25 Optical Character Recognition: U+2440 to U+245F

```
% U+244A OCR DOUBLE BACKSLASH; \bbslash (stmaryrd)
\DeclareTextCommand{\textbbslash}{PU}{\9044\112}%* U+244A
%* \textbbslash -> \varparallelinv (txfonts/pxfonts)
```

51.2.26 Enclosed Alphanumerics: U+2460 to U+24FF

```
% U+2460 CIRCLED DIGIT ONE; onecircle
\DeclareTextCompositeCommand{\textcircled}{PU}{1}{\9044\140}% U+2460
% U+2461 CIRCLED DIGIT TWO; twocircle
\DeclareTextCompositeCommand{\textcircled}{PU}{2}{\9044\141}% U+2461
% U+2462 CIRCLED DIGIT THREE; threecircle
\DeclareTextCompositeCommand{\textcircled}{PU}{3}{\9044\142}% U+2462
% U+2463 CIRCLED DIGIT FOUR; fourcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{4}{\9044\143}% U+2463
% U+2464 CIRCLED DIGIT FIVE; fivecircle
\DeclareTextCompositeCommand{\textcircled}{PU}{5}{\9044\144}% U+2464
% U+2465 CIRCLED DIGIT SIX; sixcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{6}{\9044\145}% U+2465
% U+2466 CIRCLED DIGIT SEVEN; sevencircle
\DeclareTextCompositeCommand{\textcircled}{PU}{7}{\9044\146}% U+2466
% U+2467 CIRCLED DIGIT EIGHT; eightcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{8}{\9044\147}% U+2467
% U+2468 CIRCLED DIGIT NINE; ninecircle
\DeclareTextCompositeCommand{\textcircled}{PU}{9}{\9044\150}% U+2468
```

```
% U+2469 CIRCLED NUMBER TEN; tencircle
\DeclareTextCompositeCommand{\textcircled}{PU}{10}{\9044\151}% U+2469
% U+246A CIRCLED NUMBER ELEVEN; elevencircle
\DeclareTextCompositeCommand{\textcircled}{PU}{11}{\9044\152}% U+246A
% U+246B CIRCLED NUMBER TWELVE; twelvecircle
\DeclareTextCompositeCommand{\textcircled}{PU}{12}{\9044\153}% U+246B
% U+246C CIRCLED NUMBER THIRTEEN; thirteencircle
\DeclareTextCompositeCommand{\textcircled}{PU}{13}{\9044\154}% U+246C
% U+246D CIRCLED NUMBER FOURTEEN; fourteencircle
\DeclareTextCompositeCommand{\textcircled}{PU}{14}{\9044\155}% U+246D
% U+246E CIRCLED NUMBER FIFTEEN; fifteencircle
\DeclareTextCompositeCommand{\textcircled}{PU}{15}{\9044\156}% U+246E
% U+246F CIRCLED NUMBER SIXTEEN; sixteencircle
\DeclareTextCompositeCommand{\textcircled}{PU}{16}{\9044\157}% U+246F
% U+2470 CIRCLED NUMBER SEVENTEEN; seventeencircle
\DeclareTextCompositeCommand{\textcircled}{PU}{17}{\9044\160}% U+2470
% U+2471 CIRCLED NUMBER EIGHTEEN; eighteencircle
\DeclareTextCompositeCommand{\textcircled}{PU}{18}{\9044\161}% U+2471
% U+2472 CIRCLED NUMBER NINETEEN; nineteencircle
\DeclareTextCompositeCommand{\textcircled}{PU}{19}{\9044\162}% U+2472
% U+2473 CIRCLED NUMBER TWENTY; twentycircle
\DeclareTextCompositeCommand{\textcircled}{PU}{20}{\9044\163}% U+2473
% U+24B6 CIRCLED LATIN CAPITAL LETTER A; Acircle
\DeclareTextCompositeCommand{\textcircled}{PU}{A}{\9044\266}% U+24B6
% \CircledA (marvosym)
\DeclareTextCommand{\textCircledA}{PU}{\9044\266}%* U+24B6
%* \textCircledA -> \CleaningA
% U+24B7 CIRCLED LATIN CAPITAL LETTER B; Bcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{B}{\9044\267}% U+24B7
% U+24B8 CIRCLED LATIN CAPITAL LETTER C; Ccircle
\DeclareTextCompositeCommand{\textcircled}{PU}{C}{\9044\270}% U+24B8
% U+24B9 CIRCLED LATIN CAPITAL LETTER D; Dcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{D}{\9044\271}% U+24B9
% U+24BA CIRCLED LATIN CAPITAL LETTER E; Ecircle
\DeclareTextCompositeCommand{\textcircled}{PU}{E}{\9044\272}% U+24BA
% U+24BB CIRCLED LATIN CAPITAL LETTER F; Fcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{F}{\9044\273}% U+24BB
% \CleaningF (marvosym)
\DeclareTextCommand{\textCleaningF}{PU}{\9044\273}%* U+24BB
% \CleaningFF (marvosym)
\DeclareTextCommand{\textCleaningFF}{PU}{\9044\273\83\062}%* U+24BB U+0332
% U+24BC CIRCLED LATIN CAPITAL LETTER G; Gcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{G}{\9044\274}% U+24BC
% U+24BD CIRCLED LATIN CAPITAL LETTER H; Hcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{H}{\9044\275}% U+24BD
% U+24BE CIRCLED LATIN CAPITAL LETTER I; Icircle
\DeclareTextCompositeCommand{\textcircled}{PU}{I}{\9044\276}% U+24BE
% U+24BF CIRCLED LATIN CAPITAL LETTER J; Jcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{J}{\9044\277}% U+24BF
% U+24C0 CIRCLED LATIN CAPITAL LETTER K; Kcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{K}{\9044\300}% U+24C0
% U+24C1 CIRCLED LATIN CAPITAL LETTER L; Lcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{L}{\9044\301}% U+24C1
% U+24C2 CIRCLED LATIN CAPITAL LETTER M; Mcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{M}{\9044\302}% U+24C2
% U+24C3 CIRCLED LATIN CAPITAL LETTER N; Ncircle
\DeclareTextCompositeCommand{\textcircled}{PU}{N}{\9044\303}% U+24C3
```

```
% U+24C4 CIRCLED LATIN CAPITAL LETTER O; Ocircle
\DeclareTextCompositeCommand{\textcircled}{PU}{O}{\9044\304}% U+24C4
% U+24C5 CIRCLED LATIN CAPITAL LETTER P; Pcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{P}{\9044\305}% U+24C5
% \CleaningP (marvosym)
\DeclareTextCommand{\textCleaningP}{PU}{\9044\305}%* U+24C5
% \CleaningPP (marvosym)
\DeclareTextCommand{\textCleaningPP}{PU}{\9044\305\83\062}%* U+24C5 U+0332
% U+24C6 CIRCLED LATIN CAPITAL LETTER Q; Qcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{Q}{\9044\306}% U+24C6
% U+24C7 CIRCLED LATIN CAPITAL LETTER R; Rcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{R}{\9044\307}% U+24C7
% U+24C8 CIRCLED LATIN CAPITAL LETTER S; Scircle
\DeclareTextCompositeCommand{\textcircled}{PU}{S}{\9044\310}% U+24C8
% U+24C9 CIRCLED LATIN CAPITAL LETTER T; Tcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{T}{\9044\311}% U+24C9
% U+24CA CIRCLED LATIN CAPITAL LETTER U; Ucircle
\DeclareTextCompositeCommand{\textcircled}{PU}{U}{\9044\312}% U+24CA
% U+24CB CIRCLED LATIN CAPITAL LETTER V; Vcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{V}{\9044\313}% U+24CB
% U+24CC CIRCLED LATIN CAPITAL LETTER W; Wcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{W}{\9044\314}% U+24CC
% U+24CD CIRCLED LATIN CAPITAL LETTER X; Xcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{X}{\9044\315}% U+24CD
% U+24CE CIRCLED LATIN CAPITAL LETTER Y; Ycircle
\DeclareTextCompositeCommand{\textcircled}{PU}{Y}{\9044\316}% U+24CE
% U+24CF CIRCLED LATIN CAPITAL LETTER Z; Zcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{Z}{\9044\317}% U+24CF
% U+24D0 CIRCLED LATIN SMALL LETTER A; acircle
\DeclareTextCompositeCommand{\textcircled}{PU}{a}{\9044\320}% U+24D0
% U+24D1 CIRCLED LATIN SMALL LETTER B; bcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{b}{\9044\321}% U+24D1
% U+24D2 CIRCLED LATIN SMALL LETTER C; ccircle
\DeclareTextCompositeCommand{\textcircled}{PU}{c}{\9044\322}% U+24D2
% U+24D3 CIRCLED LATIN SMALL LETTER D; dcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{d}{\9044\323}% U+24D3
% U+24D4 CIRCLED LATIN SMALL LETTER E; ecircle
\DeclareTextCompositeCommand{\textcircled}{PU}{e}{\9044\324}% U+24D4
% U+24D5 CIRCLED LATIN SMALL LETTER F; fcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{f}{\9044\325}% U+24D5
% U+24D6 CIRCLED LATIN SMALL LETTER G; gcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{g}{\9044\326}% U+24D6
% U+24D7 CIRCLED LATIN SMALL LETTER H; hcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{h}{\9044\327}% U+24D7
% U+24D8 CIRCLED LATIN SMALL LETTER I; icircle
\DeclareTextCompositeCommand{\textcircled}{PU}{i}{\9044\330}% U+24D8
% U+24D9 CIRCLED LATIN SMALL LETTER J; jcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{j}{\9044\331}% U+24D9
% U+24DA CIRCLED LATIN SMALL LETTER K; kcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{k}{\9044\332}% U+24DA
% U+24DB CIRCLED LATIN SMALL LETTER L; lcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{l}{\9044\333}% U+24DB
% U+24DC CIRCLED LATIN SMALL LETTER M; mcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{m}{\9044\334}% U+24DC
% U+24DD CIRCLED LATIN SMALL LETTER N; ncircle
\DeclareTextCompositeCommand{\textcircled}{PU}{n}{\9044\335}% U+24DD
% U+24DE CIRCLED LATIN SMALL LETTER O; ocircle
```

```
\DeclareTextCompositeCommand{\textcircled}{PU}{o}{\9044\336}% U+24DE
% U+24DF CIRCLED LATIN SMALL LETTER P; pcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{p}{\9044\337}% U+24DF
% U+24E0 CIRCLED LATIN SMALL LETTER Q; qcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{q}{\9044\340}% U+24E0
% U+24E1 CIRCLED LATIN SMALL LETTER R; rcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{r}{\9044\341}% U+24E1
% U+24E2 CIRCLED LATIN SMALL LETTER S; scircle
\DeclareTextCompositeCommand{\textcircled}{PU}{s}{\9044\342}% U+24E2
% U+24E3 CIRCLED LATIN SMALL LETTER T; tcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{t}{\9044\343}% U+24E3
% U+24E4 CIRCLED LATIN SMALL LETTER U; ucircle
\DeclareTextCompositeCommand{\textcircled}{PU}{u}{\9044\344}% U+24E4
% U+24E5 CIRCLED LATIN SMALL LETTER V; vcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{v}{\9044\345}% U+24E5
% U+24E6 CIRCLED LATIN SMALL LETTER W; wcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{w}{\9044\346}% U+24E6
% U+24E7 CIRCLED LATIN SMALL LETTER X; xcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{x}{\9044\347}% U+24E7
% U+24E8 CIRCLED LATIN SMALL LETTER Y; ycircle
\DeclareTextCompositeCommand{\textcircled}{PU}{y}{\9044\350}% U+24E8
% U+24E9 CIRCLED LATIN SMALL LETTER Z; zcircle
\DeclareTextCompositeCommand{\textcircled}{PU}{z}{\9044\351}% U+24E9
% U+24EA CIRCLED DIGIT ZERO
\DeclareTextCompositeCommand{\textcircled}{PU}{0}{\9044\352}% U+24EA
```

51.2.27 Box Drawing: U+2500 to 257F

```
% U+2504 BOX DRAWINGS LIGHT TRIPLE DASH HORIZONTAL; \CuttingLine (marvosym)
\DeclareTextCommand{\textCuttingLine}{PU}{\9045\004}%* U+2504
%* \textCuttingLine -> \Kutline (marvosym)
%* \textCuttingLine -> \CutLine (marvosym)
%* \textCuttingLine -> \Cutline (marvosym)
```

51.2.28 Geometric Shapes: U+25A0 to U+25FF

```
% U+25B2 BLACK UP-POINTING TRIANGLE; \UParrow (wasysym)
\DeclareTextCommand{\textUParrow}{PU}{\9045\262}%* U+25B2
%* \textUParrow -> \MoveUp (marvosym)
% U+25B3 WHITE UP-POINTING TRIANGLE; whiteuppointingtriangle;
%   \bigtriangleup (LaTeX)
\DeclareTextCommand{\textbigtriangleup}{PU}{\9045\263}%* U+25B3
%* \textbigtriangleup -> \APLup (wasysym)
%* \textbigtriangleup -> \Bleech (marvosym)
% U+25B6 BLACK RIGHT-POINTING TRIANGLE; \Forward (marvosym)
\DeclareTextCommand{\textForward}{PU}{\9045\266}%* U+25B6
% U+25B7 WHITE RIGHT-POINTING TRIANGLE (= z notation range restriction);
%   whiterightpointingtriangle; \triangleright (LaTeX)
\DeclareTextCommand{\texttriangleright}{PU}{\9045\267}%* U+25B7
% U+25BA BLACK RIGHT-POINTING POINTER; \RHD (wasysym)
\DeclareTextCommand{\textRHD}{PU}{\9045\272}%* U+25BA
% U+25BC BLACK DOWN-POINTING TRIANGLE; \DOWNarrow (wasysym)
\DeclareTextCommand{\textDOWNarrow}{PU}{\9045\274}%* U+25BC
%* \textDOWNarrow -> \MoveDown (marvosym)
% U+25BD WHITE DOWN-POINTING TRIANGLE; whitedownpointingtriangle;
%   \bigtriangledown (LaTeX)
```

```
\DeclareTextCommand{\textbigtriangledown}{PU}{\9045\275}%* U+25BD
%* \textbigtriangledown -> \APLdown (wasysym)
% U+25C0 BLACK LEFT-POINTING TRIANGLE; \Rewind (marvosym)
\DeclareTextCommand{\textRewind}{PU}{\9045\300}%* U+25C0
% U+25C1 WHITE RIGHT-POINTING TRIANGLE (= z notation domain restriction);
%   whiteleftpointingtriangle; \triangleleft (LaTeX)
\DeclareTextCommand{\texttriangleleft}{PU}{\9045\301}%* U+25C1
% U+25C4 BLACK LEFT-POINTING POINTER; \LHD (wasysym)
\DeclareTextCommand{\textLHD}{PU}{\9045\304}%* U+25C4
% U+25C7 WHITE DIAMOND; whitediamond; \diamond (LaTeX)
\DeclareTextCommand{\textdiamond}{PU}{\9045\307}%* U+25C7
%* \textdiamond -> \Diamond (wasysym)
% U+25CA LOZENGE; lozenge; \lozenge (AmS)
\DeclareTextCommand{\textlozenge}{PU}{\9045\312}%* U+25CA
% U+25D6 LEFT HALF BLACK CIRCLE; \LEFTCIRCLE (wasysym)
\DeclareTextCommand{\textLEFTCIRCLE}{PU}{\9045\326}%* U+25D6
% U+25D7 RIGHT HALF BLACK CIRCLE; \RIGHTCIRCLE (wasysym)
\DeclareTextCommand{\textRIGHTCIRCLE}{PU}{\9045\327}%* U+25D7
% U+25E6 WHITE BULLET; *openbullet, whitebullet
\DeclareTextCommand{\textopenbullet}{PU}{\9045\346}%* U+25E6
% U+25EB WHITE SQUARE WITH VERTICAL BISECTING LINE;
%   \boxbar (stmaryrd)
\DeclareTextCommand{\textboxbar}{PU}{\9045\353}%* U+25EB
% U+25EF LARGE CIRCLE; largecircle
\DeclareTextCommand{\textbigcircle}{PU}{\9045\357}%* U+25EF
%* \textbigcircle -> \varbigcirc (stmaryrd)
%
```

51.2.29 Miscellaneous Symbols: U+2600 to U+26FF

```
% U+2601 CLOUD; \Cloud (ifsym)
\DeclareTextCommand{\textCloud}{PU}{\9046\001}%* U+2601
% U+2605 BLACK STAR; \FiveStar (bbding)
\DeclareTextCommand{\textFiveStar}{PU}{\9046\005}%* U+2605
% U+2606 WHITE STAR; \FiveStarOpen (bbding)
\DeclareTextCommand{\textFiveStarOpen}{PU}{\9046\006}%* U+2606
% U+260E BLACK TELEPHONE; telephoneblack; \Phone (bbding)
\DeclareTextCommand{\textPhone}{PU}{\9046\016}%* U+260E
%* \textPhone -> \Telefon (marvosym)
% U+2610 BALLOT BOX; \boxempty (stmaryrd)
\DeclareTextCommand{\textboxempty}{PU}{\9046\020}%* U+2610
%* \textboxempty -> \Box (wasysym)
% U+2611 BALLOT BOX WITH CHECK; \Checkedbox (marvosym)
\DeclareTextCommand{\textCheckedbox}{PU}{\9046\021}%* U+2611
%* \textCheckedbox -> \CheckedBox (marvosym)
% U+2612 BALLOT BOX WITH X; \Crossedbox (marvosym)
\DeclareTextCommand{\textCrossedbox}{PU}{\9046\022}%* U+2612
%* \textCrossedbox -> \XBox (wasysym)
%* \textCrossedbox -> \CrossedBox (marvosym)
% U+2615 HOT BEVERAGE; \Coffeecup (marvosym)
\DeclareTextCommand{\textCoffeecup}{PU}{\9046\025}%* U+2615
% U+261A BLACK LEFT POINTING INDEX; \HandCuffLeft (bbding)
\DeclareTextCommand{\textHandCuffLeft}{PU}{\9046\032}%* U+261A
% U+261B BLACK RIGHT POINTING INDEX; \HandCuffRight (bbding)
\DeclareTextCommand{\textHandCuffRight}{PU}{\9046\033}%* U+261B
% U+261C WHITE LEFT POINTING INDEX; \HandLeft (bbding)
\DeclareTextCommand{\textHandLeft}{PU}{\9046\034}%* U+261C
```

```
%* \textHandLeft -> \rightpointleft (fourier)
% U+261E WHITE RIGHT POINTING INDEX; \HandRight (bbding)
\DeclareTextCommand{\textHandRight}{PU}{\9046\036}%* U+261E
%* \textHandRight -> \leftpointright (fourier)
%* \textHandRight -> \PointingHand (marvosym)
%* \textHandRight -> \Pointinghand (marvosym)
% U+2622 RADIOACTIVE SIGN; \Radioactivity (marvosym)
\DeclareTextCommand{\textRadioactivity}{PU}{\9046\042}%* U+2622
%* \textRadioactivity -> \Radiation (ifsym)
% U+2623 BIOHAZARD SIGN; \Biohazard (marvosym)
\DeclareTextCommand{\textBiohazard}{PU}{\9046\043}%* U+2623
% U+2625 ANKH; \Ankh (marvosym)
\DeclareTextCommand{\textAnkh}{PU}{\9046\045}%* U+2625
% U+262F YIN YANG; \YinYang (marvosym)
\DeclareTextCommand{\textYinYang}{PU}{\9046\057}%* U+262F
%* \textYinYang -> \Yinyang (marvosym)
%* \textYinYang -> \YingYang (marvosym)
%* \textYinYang -> \Yingyang (marvosym)
% U+2639 WHITE FROWNING FACE; \frownie (wasysym)
\DeclareTextCommand{\textfrownie}{PU}{\9046\071}%* U+2639
%* \textfrownie -> \Frowny (marvosym)
% U+263A WHITE SMILING FACE; \smiley (wasysym)
\DeclareTextCommand{\textsmiley}{PU}{\9046\072}%* U+263A
%* \textsmiley -> \Smiley (marvosym)
% U+263B BLACK SMILING FACE; \blacksmiley (wasysym)
\DeclareTextCommand{\textblacksmiley}{PU}{\9046\073}%* U+263B
% U+263C WHITE SUN WITH RAYS; \sun (wasysym)
\DeclareTextCommand{\textsun}{PU}{\9046\074}%* U+263C
%* \textsun -> \Sun (marvosym)
% U+263D FIRST QUARTER MOON; \leftmoon (wasysym, mathabx)
\DeclareTextCommand{\textleftmoon}{PU}{\9046\075}%* U+263D
% U+263E LAST QUARTER MOON; \rightmoon (wasysym, mathabx)
\DeclareTextCommand{\textrightmoon}{PU}{\9046\076}%* U+263E
% U+263F MERCURY; \mercury (wasysym)
\DeclareTextCommand{\textmercury}{PU}{\9046\077}%* U+263F
%* \textmercury -> \Mercury (marvosym)
% U+2640 FEMALE SIGN; female; \female (wasysym)
\DeclareTextCommand{\textPUfemale}{PU}{\9046\100}% U+2640
%* \textPUfemale -> \textfemale (tipx)
%* \textPUfemale -> \female (wasysym)
%* \textPUfemale -> \venus (wasysym)
%* \textPUfemale -> \Venus (marvosym)
%* \textPUfemale -> \Female (marvosym)
% U+2641 EARTH; \earth (wasysym)
\DeclareTextCommand{\textearth}{PU}{\9046\101}%* U+2641
%* \textearth -> \Earth (marvosym)
% U+2642 MALE SIGN; male, mars; \male (wasysym)
\DeclareTextCommand{\textmale}{PU}{\9046\102}%* U+2642
%* \textmale -> \mars (wasysym)
%* \textmale -> \Mars (marvosym)
%* \textmale -> \Male (marvosym)
% U+2643 JUPITER; \jupiter (wasysym)
\DeclareTextCommand{\textjupiter}{PU}{\9046\103}%* U+2643
%* \textjupiter -> \Jupiter (marvosym)
% U+2644 SATURN; \saturn (wasysym)
\DeclareTextCommand{\textsaturn}{PU}{\9046\104}%* U+2644
%* \textsaturn -> \Saturn (marvosym)
```

```
% U+2645 URANUS; \uranus (wasysym)
\DeclareTextCommand{\texturanus}{PU}{\9046\105}%* U+2645
%* \texturanus -> \Uranus (marvosym)
% U+2646 NEPTUNE; \neptune (wasysym)
\DeclareTextCommand{\textneptune}{PU}{\9046\106}%* U+2646
%* \textneptune -> \Neptune (marvosym)
% U+2647 PLUTO; \pluto (wasysym)
\DeclareTextCommand{\textpluto}{PU}{\9046\107}%* U+2647
%* \textpluto -> \Pluto (marvosym)
% U+2648 ARIES; \aries (wasysym)
\DeclareTextCommand{\textaries}{PU}{\9046\110}%* U+2648
%* \textaries -> \Aries (marvosym)
% U+2649 TAURUS; \taurus (wasysym)
\DeclareTextCommand{\texttaurus}{PU}{\9046\111}%* U+2649
%* \texttaurus -> \Taurus (marvosym)
% U+264A GEMINI; \gemini (wasysym)
\DeclareTextCommand{\textgemini}{PU}{\9046\112}%* U+264A
%* \textgemini -> \Gemini (marvosym)
% U+264B CANCER; \cancer (wasysym)
\DeclareTextCommand{\textcancer}{PU}{\9046\113}%* U+264B
%* \textcancer -> \Cancer (marvosym)
% U+264C LEO; \leo (wasysym)
\DeclareTextCommand{\textleo}{PU}{\9046\114}%* U+264C
%* \textleo -> \Leo (marvosym)
% U+264D VIRGO; \virgo (wasysym)
\DeclareTextCommand{\textvirgo}{PU}{\9046\115}%* U+264D
%* \textvirgo -> \Virgo (marvosym)
% U+264E LIBRA; \libra (wasysym)
\DeclareTextCommand{\textlibra}{PU}{\9046\116}%* U+264E
%* \textlibra -> \Libra (marvosym)
% U+264F SCORPIO; \scorpio (wasysym)
\DeclareTextCommand{\textscorpio}{PU}{\9046\117}%* U+264F
%* \textscorpio -> \Scorpio (marvosym)
% U+2650 SAGITTARIUS; \sagittarius (wasysym)
\DeclareTextCommand{\textsagittarius}{PU}{\9046\120}%* U+2650
%* \textsagittarius -> \Sagittarius (marvosym)
% U+2651 CAPRICORN; \capricornus (wasysym)
\DeclareTextCommand{\textcapricornus}{PU}{\9046\121}%* U+2651
%* \textcapricornus -> \Capricorn (marvosym)
% U+2652 AQUARIUS; \aquarius (wasysym)
\DeclareTextCommand{\textaquarius}{PU}{\9046\122}%* U+2652
%* \textaquarius -> \Aquarius (marvosym)
% U+2653 PISCES; \pisces (wasysym)
\DeclareTextCommand{\textpisces}{PU}{\9046\123}%* U+2653
%* \textpisces -> \Pisces (marvosym)
% U+2660 BLACK SPADE SUIT; spade, spadesuitblack; \spadesuit (LaTeX)
\DeclareTextCommand{\textspadesuitblack}{PU}{\9046\140}% U+2660
%* \textspadesuitblack -> \spadesuit (MnSymbol)
% U+2661 WHITE HEART SUIT; heartsuitwhite; \heartsuit (LaTeX)
\DeclareTextCommand{\textheartsuitwhite}{PU}{\9046\141}% U+2661
%* \textheartsuitwhite -> \Heart (marvosym)
%* \textheartsuitwhite -> \heartsuit (MnSymbol)
% U+2662 WHITE DIAMOND SUIT; diamondsuitwhite; \diamondsuit (LaTeX)
\DeclareTextCommand{\textdiamondsuitwhite}{PU}{\9046\142}% U+2662
%* \textdiamondsuitwhite -> \diamondsuit (MnSymbol)
% U+2663 BLACK CLUB SUIT; club, clubsuitblack; \clubsuit (LaTeX)
\DeclareTextCommand{\textclubsuitblack}{PU}{\9046\143}% U+2663
```

```
%* \textclubsuitblack -> \clubsuit (MnSymbol)
% U+2664 WHITE SPADE SUIT; spadesuitwhite
\DeclareTextCommand{\textspadesuitwhite}{PU}{\9046\144}% U+2664
% U+2665 BLACK HEART SUIT; heartsuitblack, heart
\DeclareTextCommand{\textheartsuitblack}{PU}{\9046\145}% U+2665
% U+2666 BLACK DIAMOND SUIT; diamond
\DeclareTextCommand{\textdiamondsuitblack}{PU}{\9046\146}% U+2666
% U+2667 WHITE CLUB SUIT; clubsuitwhite
\DeclareTextCommand{\textclubsuitwhite}{PU}{\9046\147}% U+2667
% U+2669 QUARTER NOTE; quarternote; \quarternote (wasysym, arev)
\DeclareTextCommand{\textquarternote}{PU}{\9046\151}%* U+2669
% U+266A EIGHTH NOTE; musicalnote; \textmusicalnote (textcomp)
\DeclareTextCommand{\textmusicalnote}{PU}{\9046\152}% U+266A
%* \textmusicalnote -> \eighthnote (wasysym, arev)
% U+266B BEAMED EIGHTH NOTES; eighthnotebeamed; \twonotes (wasysym)
\DeclareTextCommand{\texttwonotes}{PU}{\9046\153}%* U+266B
% U+266C BEAMED SIXTEENTH NOTES; beamedsixteenthnotes; \sixteenth-
    note (arev)
\DeclareTextCommand{\textsixteenthnote}{PU}{\9046\154}%* U+266C
% U+266D MUSIC FLAT SIGN; musicflatsign; \flat (LaTeX)
\DeclareTextCommand{\textflat}{PU}{\9046\155}%* U+266D
% U+266E MUSIC NATURAL SIGN; \natural (LaTeX)
\DeclareTextCommand{\textnatural}{PU}{\9046\156}%* U+266E
% U+266F MUSIC SHARP SIGN; musicsharpsign; \sharp (LaTeX)
\DeclareTextCommand{\textsharp}{PU}{\9046\157}%* U+266F
% U+2672 UNIVERSAL RECYCLING SYMBOL; \recycle (recycle)
\DeclareTextCommand{\textrecycle}{PU}{\9046\162}%* U+2672
%* \textrecycle -> \Recycling (marvosym)
% U+267F WHEELCHAIR SYMBOL; \Wheelchair (marvosym)
\DeclareTextCommand{\textWheelchair}{PU}{\9046\177}%* U+267F
% U+2691 BLACK FLAG; \Flag (ifsym)
\DeclareTextCommand{\textFlag}{PU}{\9046\221}%* U+2691
%* \textFlag -> \VarFlag (ifsym)
% U+2692 HAMMER AND PICK; \MineSign (marvosym)
\DeclareTextCommand{\textMineSign}{PU}{\9046\222}%* U+2692
% U+2694 CROSSED SWORDS; \dsmilitary (dictsym)
\DeclareTextCommand{\textdsmilitary}{PU}{\9046\224}%* U+2694
%* \textdsmilitary -> \textxswup (fourier)
% U+2695 STAFF OF AESCULAPIUS; \dsmedical (dictsym)
\DeclareTextCommand{\textdsmedical}{PU}{\9046\225}%* U+2695
% U+2696 SCALES; \dsjuridical (dictsym)
\DeclareTextCommand{\textdsjuridical}{PU}{\9046\226}%* U+2696
% U+2697 ALEMBIC; \dschemical (dictsym)
\DeclareTextCommand{\textdschemical}{PU}{\9046\227}%* U+2697
% U+2698 FLOWER; \dsbiological (dictsym)
\DeclareTextCommand{\textdsbiological}{PU}{\9046\230}%* U+2698
% U+269A STAFF OF HERMES; \dscommercial (dictsym)
\DeclareTextCommand{\textdscommercial}{PU}{\9046\232}%* U+269A
% U+269D OUTLINED WHITE STAR; \manstar (manfnt)
\DeclareTextCommand{\textmanstar}{PU}{\9046\235}%* U+269D
% U+26A0 WARNING SIGN; \danger (fourier)
\DeclareTextCommand{\textdanger}{PU}{\9046\240}%* U+26A0
% U+26A2 DOUBLED FEMALE SIGN; \FemaleFemale (marvosym)
\DeclareTextCommand{\textFemaleFemale}{PU}{\9046\242}%* U+26A2
% U+26A3 DOUBLED MALE SIGN; \MaleMale (marvosym)
\DeclareTextCommand{\textMaleMale}{PU}{\9046\243}%* U+26A3
% U+26A4 INTERLOCKED FEMALE AND MALE SIGN; \FemaleMale (mar-
```

```
vosym)
\DeclareTextCommand{\textFemaleMale}{PU}{\9046\244}%* U+26A4
% U+26A5 MALE AND FEMALE SIGN; \Hermaphrodite (marvosym)
\DeclareTextCommand{\textHermaphrodite}{PU}{\9046\245}%* U+26A5
% U+26AA MEDIUM WHITE CIRCLE; \Neural (marvosym)
\DeclareTextCommand{\textNeutral}{PU}{\9046\252}%* U+26AA
% U+26AD MARRIAGE SYMBOL
\DeclareTextCommand{\textmarried}{PU}{\9046\255}% U+26AD
% U+26AE DIVORCE SYMBOL
\DeclareTextCommand{\textdivorced}{PU}{\9046\256}% U+26AE
% U+26B2 NEUTER; \textuncrfemale (tipx)
\DeclareTextCommand{\textPUuncrfemale}{PU}{\9046\262}% U+26B2
%* \textPUuncrfemale -> \textuncrfemale (tipx)
% U+26B9 SEXTILE; \hexstar (wasysym)
\DeclareTextCommand{\texthexstar}{PU}{\9046\271}%* U+26B9
% U+26BD SOCCER BALL; \Football (marvosym)
\DeclareTextCommand{\textSoccerBall}{PU}{\9046\275}% U+26BD
%* \textSoccerBall -> \Football (marvosym)
% U+26C5 SUN BEHIND CLOUD; \SunCloud (ifsym)
\DeclareTextCommand{\textSunCload}{PU}{\9046\305}%* U+26C5
% U+26C6 RAIN; \Rain (ifsym)
\DeclareTextCommand{\textRain}{PU}{\9046\306}%* U+26C6
% U+26D4 NO ENTRY; \noway (fourier)
\DeclareTextCommand{\textnoway}{PU}{\9046\324}%* U+26D4
% U+26F0 MOUNTAIN; \Mountain (ifsym)
\DeclareTextCommand{\textMountain}{PU}{\9046\360}%* U+26F0
% U+26FA TENT; \Tent (ifsym)
\DeclareTextCommand{\textTent}{PU}{\9046\372}%* U+26FA
```

51.2.30 Dingbats: U+2700 to U+27BF

```
% U+2701 UPPER BLADE SCISSORS; \ScissorRightBrokenBottom (bbding)
\DeclareTextCommand{\textScissorRightBrokenBottom}{PU}{\9047\001}% U+2701
%* \textScissorRightBrokenBottom -> \CutLeft (marvosym)
%* \textScissorRightBrokenBottom -> \Cutright (marvosym)
% U+2702 BLACK SCISSORS; \ScissorRight (bbding)
\DeclareTextCommand{\textScissorRight}{PU}{\9047\002}%* U+2702
%* \textScissorRight -> \RightScissors (marvosym)
%* \textScissorRight -> \Leftscissors (marvosym)
% U+2703 LOWER BLADE SCISSORS; \ScissorRightBrokenTop (bbding)
\DeclareTextCommand{\textScissorRightBrokenTop}{PU}{\9047\003}%* U+2703
% U+2704 WHITE SCISSORS; \ScissorHollowRight (bbding)
\DeclareTextCommand{\textScissorHollowRight}{PU}{\9047\004}%* U+2704
% U+2706 TELEPHONE LOCATION SIGN; \PhoneHandset (bbding)
\DeclareTextCommand{\textPhoneHandset}{PU}{\9047\006}%* U+2706
% U+2707 TAPE DRIVE; \Tape (bbding)
\DeclareTextCommand{\textTape}{PU}{\9047\007}%* U+2707
% U+2708 AIRPLANE; \Plane (bbding)
\DeclareTextCommand{\textPlane}{PU}{\9047\010}%* U+2708
% U+2709 ENVELOPE; \Envelope (bbding),
\DeclareTextCommand{\textEnvelope}{PU}{\9047\011}%* U+2709
%* \textEnvelope -> \Letter (marvosym)
% U+270C VICTORY HAND; \Peace (bbding)
\DeclareTextCommand{\textPeace}{PU}{\9047\014}%* U+270C
% U+270D WRITING HAND; \WritingHand (marvosym)
\DeclareTextCommand{\textWritingHand}{PU}{\9047\015}%* U+270D
%* \textWritingHand -> \Writinghand (marvosym)
% U+270E LOWER RIGHT PENCIL; \PencilRightDown (bbding)
```

```
\DeclareTextCommand{\textPencilRightDown}{PU}{\9047\016}%* U+270E
% U+270F PENCIL; \PencilRight (bbding)
\DeclareTextCommand{\textPencilRight}{PU}{\9047\017}%* U+270F
% U+2710 UPPER RIGHT PENCIL; \PencilRightUp (bbding)
\DeclareTextCommand{\textPencilRightUp}{PU}{\9047\020}%* U+2710
% U+2711 WHITE NIB; \NibRight (bbding)
\DeclareTextCommand{\textNibRight}{PU}{\9047\021}%* U+2711
% U+2712 BLACK NIB; \NibSolidRight (bbding)
\DeclareTextCommand{\textNibSolidRight}{PU}{\9047\022}%* U+2712
% U+2713 CHECK MARK; checkmark; \Checkmark (bbding)
\DeclareTextCommand{\textCheckmark}{PU}{\9047\023}%* U+2713
%* \textCheckmark -> \checkmark (MnSymbol)
% U+2714 HEAVY CHECK MARK; \CheckmarkBold (bbding)
\DeclareTextCommand{\textCheckmarkBold}{PU}{\9047\024}%* U+2714
% U+2715 MULTIPLICATION X; \XSolid (bbding)
\DeclareTextCommand{\textXSolid}{PU}{\9047\025}%* U+2715
% U+2716 HEAVY MULTIPLICATION X; \XSolidBold (bbding)
\DeclareTextCommand{\textXSolidBold}{PU}{\9047\026}%* U+2716
% U+2717 BALLOT X; \XSolidBrush (bbding)
\DeclareTextCommand{\textXSolidBrush}{PU}{\9047\027}%* U+2717
% U+2719 OUTLINED GREEK CROSS; \PlusOutline (bbding)
\DeclareTextCommand{\textPlusOutline}{PU}{\9047\031}%* U+2719
% U+271A HEAVY GREEK CROSS; \Plus (bbding)
\DeclareTextCommand{\textPlus}{PU}{\9047\032}%* U+271A
% U+271B OPEN CENTRE CROSS; \PlusThinCenterOpen (bbding)
\DeclareTextCommand{\textPlusThinCenterOpen}{PU}{\9047\033}%* U+271B
% U+271C HEAVY OPEN CENTRE CROSS; \PlusCenterOpen (bbding)
\DeclareTextCommand{\textPlusCenterOpen}{PU}{\9047\034}%* U+271C
% U+271D LATIN CROSS; \Cross (bbding)
\DeclareTextCommand{\textCross}{PU}{\9047\035}%* U+271D
% U+271E SHADOWED WHITE LATIN CROSS; \CrossOpenShadow (bbding)
\DeclareTextCommand{\textCrossOpenShadow}{PU}{\9047\036}%* U+271E
% U+271F OUTLINED LATIN CROSS; \CrossOutline (bbding)
\DeclareTextCommand{\textCrossOutline}{PU}{\9047\037}%* U+271F
% U+2720 MALTESE CROSS; \CrossMaltese (bbding)
\DeclareTextCommand{\textCrossMaltese}{PU}{\9047\040}%* U+2720
% U+2721 STAR OF DAVID; \DavidStar (bbding)
\DeclareTextCommand{\textDavidStar}{PU}{\9047\041}%* U+2721
%* \textDavidStar -> \davidstar (wasysym)
% U+2722 FOUR TEARDROP-SPOKED ASTERISK; \FourAsterisk (bbding)
\DeclareTextCommand{\textFourAsterisk}{PU}{\9047\042}%* U+2722
% U+2723 FOUR BALLOON-SPOKED ASTERISK; \JackStar (bbding)
\DeclareTextCommand{\textJackStar}{PU}{\9047\043}%* U+2723
% U+2724 HEAVY FOUR BALLOON-SPOKED ASTERISK; \JackStarBold (bb-
  ding)
\DeclareTextCommand{\textJackStarBold}{PU}{\9047\044}%* U+2724
% U+2725 FOUR CLUB-SPOKED ASTERISK; \CrossClowerTips (bbding)
\DeclareTextCommand{\textClowerTips}{PU}{\9047\045}%* U+2725
% U+2726 BLACK FOUR POINTED STAR; \FourStar (bbding)
\DeclareTextCommand{\textFourStar}{PU}{\9047\046}%* U+2726
% U+2727 WHITE FOUR POINTED STAR; \FourStarOpen (bbding)
\DeclareTextCommand{\textFourStarOpen}{PU}{\9047\047}%* U+2727
% U+272A CIRCLED WHITE STAR; \FiveStarOpenCircled (bbding)
\DeclareTextCommand{\textFiveStarOpenCircled}{PU}{\9047\052}%* U+272A
% U+272B OPEN CENTRE BLACK STAR; \FiveStarCenterOpen (bbding)
\DeclareTextCommand{\textFiveStarCenterOpen}{PU}{\9047\053}%* U+272B
% U+272C BLACK CENTRE WHITE STAR; \FiveStarOpenDotted (bbding)
```

```
\DeclareTextCommand{\textFiveStarOpenDotted}{PU}{\9047\054}%* U+272C
% U+272D OUTLINED BLACK STAR; \FiveStarOutline (bbding)
\DeclareTextCommand{\textFiveStarOutline}{PU}{\9047\055}%* U+272D
% U+272E HEAVY OUTLINED BLACK STAR; \FiveStarOutlineHeavy (bbding)
\DeclareTextCommand{\textFiveStarOutlineHeavy}{PU}{\9047\056}%* U+272E
% U+272F PINWHEEL STAR; \FiveStarConvex (bbding)
\DeclareTextCommand{\textFiveStarConvex}{PU}{\9047\057}%* U+272F
% U+2730 SHADOWED WHITE STAR; \FiveStarShadow (bbding)
\DeclareTextCommand{\textFiveStarShadow}{PU}{\9047\060}%* U+2730
% U+2731 HEAVY ASTERISK; \AsteriskBold (bbding)
\DeclareTextCommand{\textAsteriskBold}{PU}{\9047\061}%* U+2731
% U+2732 OPEN CENTRE ASTERISK; \AsteriskCenterOpen (bbding)
\DeclareTextCommand{\textAsteriskCenterOpen}{PU}{\9047\062}%* U+2732
% U+2734 EIGHT POINTED BLACK STAR; \EightStarTaper (bbding)
\DeclareTextCommand{\textEightStarTaper}{PU}{\9047\064}%* U+2734
% U+2735 EIGHT POINTED PINWHEEL STAR; \EightStarConvex (bbding)
\DeclareTextCommand{\textEightStarConvex}{PU}{\9047\065}%* U+2735
% U+2736 SIX POINTED BLACK STAR; \SixStar (bbding)
\DeclareTextCommand{\textSixStar}{PU}{\9047\066}%* U+2736
% U+2737 EIGHT POINTED RECTILINEAR BLACK STAR; \EightStar (bbd-
  ing)
\DeclareTextCommand{\textEightStar}{PU}{\9047\067}%* U+2737
% U+2738 HEAVY EIGHT POINTED RECTILINEAR BLACK STAR; \Eight-
  StarBold (bbding)
\DeclareTextCommand{\textEightStarBold}{PU}{\9047\070}%* U+2738
% U+2739 TWELVE POINTED BLACK STAR; \TwelveStar (bbding)
\DeclareTextCommand{\textTwelveStar}{PU}{\9047\071}%* U+2739
% U+273A SIXTEEN POINTED ASTERISK; \SixteenStarLight (bbding)
\DeclareTextCommand{\textSixteenStarLight}{PU}{\9047\072}%* U+273A
% U+273B TEARDROP-SPOKED ASTERISK; \SixFlowerPetalRemoved (bbd-
  ing)
\DeclareTextCommand{\textSixFlowerPetalRemoved}{PU}{\9047\073}%* U+273B
% U+273C OPEN CENTRE TEARDROP-SPOKED ASTERISK;
%   \SixFlowerOpenCenter (bbding)
\DeclareTextCommand{\textSixFlowerOpenCenter}{PU}{\9047\074}%* U+273C
% U+273D HEAVY TEARDROP-SPOKED ASTERISK; \Asterisk (bbding)
\DeclareTextCommand{\textAsterisk}{PU}{\9047\075}%* U+273D
% U+273E SIX PETALLED BLACK AND WHITE FLORETTE; \SixFlowerAl-
  ternate (bbding)
\DeclareTextCommand{\textSixFlowerAlternate}{PU}{\9047\076}%* U+273E
% U+273F BLACK FLORETTE; \FiveFlowerPetal (bbding)
\DeclareTextCommand{\textFiveFlowerPetal}{PU}{\9047\077}%* U+273F
% U+2740 WHITE FLORETTE; \FiveFlowerOpen (bbding)
\DeclareTextCommand{\textFiveFlowerOpen}{PU}{\9047\100}%* U+2740
% U+2741 EIGHT PETALLED OUTLINED BLACK FLORETTE; \EightFlow-
  erPetal (bbding)
\DeclareTextCommand{\textEightFlowerPetal}{PU}{\9047\101}%* U+2741
% U+2742 CIRCLED OPEN CENTRE EIGHT POINTED STAR; \Sunshi-
  neOpenCircled (bbding)
\DeclareTextCommand{\textSunshineOpenCircled}{PU}{\9047\102}%* U+2742
% U+2743 HEAVY TEARDROP-SPOKED PINWHEEL ASTERISK; \SixFlow-
  erAltPetal (bbding)
\DeclareTextCommand{\textSixFlowerAltPetal}{PU}{\9047\103}%* U+2743
% U+2744 SNOWFLAKE; \SnowflakeChevron (bbding)
\DeclareTextCommand{\textSnowflakeChevron}{PU}{\9047\104}%* U+2744
% U+2745 TIGHT TRIFOLIATE SNOWFLAKE; \Snowflake (bbding)
\DeclareTextCommand{\textSnowflake}{PU}{\9047\105}%* U+2745
```

```
% U+2746 HEAVY CHEVRON SNOWFLAKE; \SnowflakeChevronBold (bbding)
\DeclareTextCommand{\textSnowflakeChevronBold}{PU}{\9047\106}%* U+2746
% U+2747 SPARKLE; \Sparkle (bbding)
\DeclareTextCommand{\textSparkle}{PU}{\9047\107}%* U+2747
% U+2748 HEAVY SPARKLE; \SparkleBold (bbding)
\DeclareTextCommand{\textSparkleBold}{PU}{\9047\110}%* U+2748
% U+2749 BALLOON-SPOKED ASTERISK; \AsteriskRoundedEnds (bbding)
\DeclareTextCommand{\textAsteriskRoundedEnds}{PU}{\9047\111}%* U+2749
% U+274A EIGHT TEARDROP-SPOKED PROPELLER ASTERISK;
%   \EightFlowerPetalRemoved (bbding)
\DeclareTextCommand{\textEightFlowerPetalRemoved}{PU}{\9047\112}%* U+274A
% U+274B HEAVY EIGHT TEARDROP-SPOKED PROPELLER ASTERISK;
%   \EightAsterisk (bbding)
\DeclareTextCommand{\textEightAsterisk}{PU}{\9047\113}%* U+274B
% U+274D SHADOWED WHITE CIRCLE; \CircleShadow (bbding)
\DeclareTextCommand{\textCircleShadow}{PU}{\9047\115}%* U+274D
% U+274F LOWER RIGHT DROP-SHADOWED WHITE SQUARE;
%   \SquareShadowBottomRight (bbding)
\DeclareTextCommand{\textSquareShadowBottomRight}{PU}{\9047\117}%* U+274F
% U+2750 UPPER RIGHT DROP-SHADOWED WHITE SQUARE;
%   \SquareShadowTopRight (bbding)
\DeclareTextCommand{\textSquareTopRight}{PU}{\9047\120}%* U+2750
% U+2751 LOWER RIGHT SHADOWED WHITE SQUARE;
%   \SquareCastShadowBottomRight (bbding)
\DeclareTextCommand{\textSquareCastShadowBottomRight}{PU}{\9047\121}%* U+2751
% U+2752 UPPER RIGHT SHADOWED WHITE SQUARE;
%   \SquareCastShadowTopRight (bbding)
\DeclareTextCommand{\textSquareCastShadowTopRight}{PU}{\9047\122}%* U+2752
% U+2756 BLACK DIAMOND MINUS WHITE X; \OrnamentDiamandSolid (bb-
  ding)
\DeclareTextCommand{\textDiamandSolid}{PU}{\9047\126}%* U+2756
% U+2758 LIGHT VERTICAL BAR; \RectangleThin (bbding)
\DeclareTextCommand{\textRectangleThin}{PU}{\9047\130}%* U+2758
% U+2759 MEDIUM VERTICAL BAR; \Rectangle (bbding)
\DeclareTextCommand{\textRectangle}{PU}{\9047\131}%* U+2759
% U+275A HEAVY VERTICAL BAR; \RectangleBold (bbding)
\DeclareTextCommand{\textRectangleBold}{PU}{\9047\132}%* U+275A
```

51.2.31 Miscellaneous Mathematical Symbols-A: U+27C0 to U+27EF

```
% U+27C2 PERPENDICULAR; perpendicular; \perp (LaTeX)
\DeclareTextCommand{\textperp}{PU}{\9047\302}%* U+27C2
% \notperp (mathabx)
\DeclareTextCommand{\textnotperp}{PU}{\9047\302\83\070}%* U+27C2 U+0338
% U+27C7 OR WITH DOT INSIDE; \veedot (MnSymbol)
\DeclareTextCommand{\textveedot}{PU}{\9047\307}%* U+27C7
% U+27D1 AND WITH DOT; \wedgedot (MnSymbol)
\DeclareTextCommand{\textwedgedot}{PU}{\9047\321}%* U+27D1
% U+27DC LEFT MULTIMAP; \leftspoon (MnSymbol)
\DeclareTextCommand{\textleftspoon}{PU}{\9047\334}%* U+27DC
% U+27E6 MATHEMATICAL LEFT WHITE SQUARE BRACKET
\DeclareTextCommand{\textlbrackdbl}{PU}{\9047\346}%* U+27E6
%* \textlbrackdbl -> \llbracket (stmaryrd)
% U+27E7 MATHEMATICAL RIGHT WHITE SQUARE BRACKET
\DeclareTextCommand{\textrbrackdbl}{PU}{\9047\347}%* U+27E7
%* \textrbrackdbl -> \rrbracket (stmaryrd)
```

51.2.32 Supplemental Arrows-A: U+27F0 to U+27FF

```
% U+27F2 ANTICLOCKWISE GAPPED CIRCLE ARROW;
%   \circlearrowleft (AmS)
\DeclareTextCommand{\textcirclearrowleft}{PU}{\9047\362}%* U+27F2
% U+27F3 CLOCKWISE GAPPED CIRCLE ARROW; \circlearrowright (AmS)
\DeclareTextCommand{\textcirclearrowright}{PU}{\9047\363}%* U+27F3
% U+27F5 LONG LEFTWARDS ARROW; \longleftarrow (AmS)
\DeclareTextCommand{\textlongleftarrow}{PU}{\9047\365}%* U+27F5
% U+27F6 LONG RIGHTWARDS ARROW; \longrightarrow (AmS)
\DeclareTextCommand{\textlongrightarrow}{PU}{\9047\366}%* U+27F6
% U+27F7 LONG LEFT RIGHT ARROW; \longleftrightarrow (AmS)
\DeclareTextCommand{\textlongleftrightarrow}{PU}{\9047\367}%* U+27F7
% U+27F8 LONG LEFTWARDS DOUBLE ARROW; \Longleftarrow (AmS)
\DeclareTextCommand{\textLongleftarrow}{PU}{\9047\370}%* U+27F8
% U+27F9 LONG RIGHTWARDS DOUBLE ARROW; \Longrightarrow (AmS)
\DeclareTextCommand{\textLongrightarrow}{PU}{\9047\371}%* U+27F9
% U+27FA LONG LEFT RIGHT DOUBLE ARROW; \Longleftrightarrow (AmS)
\DeclareTextCommand{\textLongleftrightarrow}{PU}{\9047\372}%* U+27FA
% U+27FC LONG RIGHTWARDS ARROW FROM BAR; \longmapsto (AmS)
\DeclareTextCommand{\textlongmapsto}{PU}{\9047\374}%* U+27FC
% U+27FD LONG LEFTWARDS DOUBLE ARROW FROM BAR; \Longmapsfrom (stmaryrd)
\DeclareTextCommand{\textLongmapsfrom}{PU}{\9047\375}%* U+27FD
% U+27FE LONG RIGHTWARDS DOUBLE ARROW FROM BAR; \Longmapsto (stmaryrd)
\DeclareTextCommand{\textLongmapsto}{PU}{\9047\376}%* U+27FE
```

51.2.33 Supplemental Arrows-B: U+2900 to U+297F

```
% U+2921 NORTH WEST AND SOUTH EAST ARROW; \nwsearrow (MnSymbol)
\DeclareTextCommand{\textnwsearrow}{PU}{\9051\041}%* U+2921
% U+2922 NORTH EAST AND SOUTH WEST ARROW; \neswarrow (MnSymbol)
\DeclareTextCommand{\textneswarrow}{PU}{\9051\042}%* U+2922
% U+2923 NORTH WEST ARROW WITH HOOK; \lhooknwarrow (MnSymbol)
\DeclareTextCommand{\textlhooknwarrow}{PU}{\9051\043}%* U+2923
% U+2924 NORTH EAST ARROW WITH HOOK; \rhooknearrow (MnSymbol)
\DeclareTextCommand{\textrhooknearrow}{PU}{\9051\044}%* U+2924
% U+2925 SOUTH EAST ARROW WITH HOOK; \lhooksearrow (MnSymbol)
\DeclareTextCommand{\textlhooksearrow}{PU}{\9051\045}%* U+2925
% U+2926 SOUTH WEST ARROW WITH HOOK; \rhookswarrow (MnSymbol)
\DeclareTextCommand{\textrhookswarrow}{PU}{\9051\046}%* U+2926
% U+2933 WAVE ARROW POINTING DIRECTLY RIGHT; \leadsto (wasysym)
\DeclareTextCommand{\textleadsto}{PU}{\9051\063}%* U+2933
% U+2934 ARROW POINTING RIGHTWARDS THEN CURVING UPWARDS;
%   \rcurvearrowne (MnSymbol)
\DeclareTextCommand{\textrcurvearrowne}{PU}{\9051\064}%* U+2934
% U+2935 ARROW POINTING RIGHTWARDS THEN CURVING DOWNWARDS;
%   \lcurvearrowse (MnSymbol)
\DeclareTextCommand{\textlcurvearrowse}{PU}{\9051\065}%* U+2935
% U+2936 ARROW POINTING DOWNWARDS THEN CURVING LEFTWARDS;
%   \lcurvearrowsw (MnSymbol)
\DeclareTextCommand{\textlcurvearrowsw}{PU}{\9051\066}%* U+2936
% U+2937 ARROW POINTING DOWNWARDS THEN CURVING RIGHTWARDS;
%   \rcurvearrowse (MnSymbol)
```

```
\DeclareTextCommand{\textrcurvearrowse}{PU}{\9051\067}%* U+2937
% U+2938 RIGHT-SIDE ARC CLOCKWISE ARROW; \lcurvearrowdown (MnSymbol)
\DeclareTextCommand{\textlcurvearrowdown}{PU}{\9051\070}%* U+2938
%* \textlcurvearrowdown -> \RightTorque (marvosym)
%* \textlcurvearrowdown -> \Righttorque (marvosym)
% U+2939 LEFT-SIDE ARC ANTICLOCKWISE ARROW;
%   \rcurvearrowdown (MnSymbol)
\DeclareTextCommand{\textrcurvearrowdown}{PU}{\9051\071}%* U+2939
%* \textrcurvearrowdown -> \LeftTorque (marvosym)
%* \textrcurvearrowdown -> \Lefttorque (marvosym)
% U+293A TOP ARC ANTICLOCKWISE ARROW; \rcurvearrowleft (MnSymbol)
\DeclareTextCommand{\textrcurvearrowleft}{PU}{\9051\072}%* U+293A
% U+293B BOTTOM ARC ANTICLOCKWISE ARROW;
%   \rcurvearrowright (MnSymbol)
\DeclareTextCommand{\textrcurvearrowright}{PU}{\9051\073}%* U+293B
% U+294A LEFT BARB UP RIGHT BARB DOWN HARPOON; \leftrightharpoon (mathabx)
\DeclareTextCommand{\textleftrightharpoon}{PU}{\9051\112}%* U+294A
% U+294B LEFT BARB DOWN RIGHT BARB UP HARPOON; \rightleftharpoon (mathabx)
\DeclareTextCommand{\textrightleftharpoon}{PU}{\9051\113}%* U+294B
% U+294C UP BARB RIGHT DOWN BARB LEFT HARPOON;
%   \updownharpoonrightleft (MnSymbol)
\DeclareTextCommand{\textupdownharpoonrightleft}{PU}{\9051\114}%* U+294C
% U+294D UP BARB LEFT DOWN BARB RIGHT HARPOON;
%   \updownharpoonleftright (MnSymbol)
\DeclareTextCommand{\textupdownharpoonleftright}{PU}{\9051\115}%* U+294D
% U+2962 LEFTWARDS HARPOON WITH BARB UP ABOVE LEFTWARDS
%   HARPOON WITH BARB DOWN; \leftleftharpoons (mathabx)
\DeclareTextCommand{\textleftleftharpoons}{PU}{\9051\142}%* U+2962
% U+2963 UPWARDS HARPOON WITH BARB LEFT BESIDE UPWARDS
%   HARPOON WITH BARB RIGHT; \upupharpoons (mathabx)
\DeclareTextCommand{\textupupharpoons}{PU}{\9051\143}%* U+2963
% U+2964 RIGHTWARDS HARPOON WITH BARB UP ABOVE RIGHTWARDS HARPOON
%   WITH BARB DOWN; \rightrightharpoons (mathabx)
\DeclareTextCommand{\textrightrightharpoons}{PU}{\9051\144}%* U+2964
% U+2965 DOWNWARDS HARPOON WITH BARB LEFT BESIDE DOWNWARDS HARPOON
%   WITH BARB RIGHT; \downdownharpoons (mathabx)
\DeclareTextCommand{\textdowndownharpoons}{PU}{\9051\145}%* U+2965
% U+296A LEFTWARDS HARPOON WITH BARB UP ABOVE LONG DASH;
%   \leftbarharpoon (mathabx)
\DeclareTextCommand{\textleftbarharpoon}{PU}{\9051\152}%* U+296A
% U+296B LEFTWARDS HARPOON WITH BARB DOWN BELOW
%   LONG DASH; \barleftharpoon (mathabx)
\DeclareTextCommand{\textbarleftharpoon}{PU}{\9051\153}%* U+296B
% U+296C RIGHTWARDS HARPOON WITH BARB UP ABOVE
%   LONG DASH; \rightbarharpoon (mathabx)
\DeclareTextCommand{\textrightbarharpoon}{PU}{\9051\154}%* U+296C
% U+296D RIGHTWARDS HARPOON WITH BARB DOWN BELOW
%   LONG DASH; \barrightharpoon (mathabx)
\DeclareTextCommand{\textbarrightharpoon}{PU}{\9051\155}%* U+296D
% U+296E UPWARDS HARPOON WITH BARB LEFT BESIDE DOWNWARDS HARPOON
```

```
% WITH BARB RIGHT; \updownharpoons (mathabx)
\DeclareTextCommand{\textupdownharpoons}{PU}{\9051\156}%* U+296E
% U+296F DOWNWARDS HARPOON WITH BARB LEFT BESIDE UPWARDS HARPOON
% WITH BARB RIGHT; \downupharpoons (mathabx)
\DeclareTextCommand{\textdownupharpoons}{PU}{\9051\157}%* U+296F
% U+297F DOWN FISH TAIL
\DeclareTextCommand{\textmoo}{PU}{\9051\177\83\066}%* U+297F U+0336
```

51.2.34 Miscellaneous Mathematical Symbols-B: U+2980 to U+29FF

```
% U+2987 Z NOTATION LEFT IMAGE BRACKET; \llparenthesis (stmaryrd)
\DeclareTextCommand{\textllparenthesis}{PU}{\9051\207}%* U+2987
% U+2988 Z NOTATION RIGHT IMAGE BRACKET; \rrparenthesis (stmaryrd)
\DeclareTextCommand{\textrrparenthesis}{PU}{\9051\210}%* U+2988
% U+29B0 REVERSED EMPTY SET; \invdiameter (wasysym)
\DeclareTextCommand{\textinvdiameter}{PU}{\9051\260}%* U+29B0
% U+29B6 CIRCLED VERTICAL BAR; \obar (stmaryrd)
\DeclareTextCommand{\textobar}{PU}{\9051\266}%* U+29B6
%* \textobar -> \textvarobar (stmaryrd)
% U+29B8 CIRCLED REVERSE SOLIDUS; \obslash (stmaryrd)
\DeclareTextCommand{\textobslash}{PU}{\9051\270}%* U+29B8
%* \textobslash -> \circledbslash (txfonts/pxfonts)
%* \textobslash -> \obackslash (mathabx)
%* \textobslash -> \varobslash (stmaryrd)
% U+29BA CIRCLE DIVIDED BY HORIZONTAL BAR AND TOP HALF
% DIVIDED BY VERTICAL BAR; \obot (mathabx)
\DeclareTextCommand{\textobot}{PU}{\9051\272}%* U+29BA
%* \textobot -> \odplus (ulsy)
% U+29BB CIRCLE WITH SUPERIMPOSED X; \NoChemicalCleaning (marvosym)
\DeclareTextCommand{\textNoChemicalCleaning}{PU}{\9051\273}%* U+29BB
% U+29C0 CIRCLED LESS-THAN; \olessthan (stmaryrd)
\DeclareTextCommand{\textolessthan}{PU}{\9051\300}%* U+29C0
%* \textolessthan -> \varolessthan (stmaryrd)
% U+29C1 CIRCLED GREATER-THAN; \ogreaterthan (stmaryrd)
\DeclareTextCommand{\textogreaterthan}{PU}{\9051\301}%* U+29C1
%* \textogreaterthan -> \varogreaterthan (stmaryrd)
% U+29C4 SQUARED RISING DIAGONAL SLASH; \boxslash (mathabx, stmaryrd)
\DeclareTextCommand{\textboxslash}{PU}{\9051\304}%* U+29C4
% U+29C5 SQUARED FALLING DIAGONAL SLASH; \boxbslash (stmaryrd)
\DeclareTextCommand{\textboxbslash}{PU}{\9051\305}%* U+29C5
% U+29C6 SQUARED ASTERISK; \boxast (stmaryrd)
\DeclareTextCommand{\textboxast}{PU}{\9051\306}%* U+29C6
% U+29C7 SQUARED SMALL CIRCLE; \boxcircle (stmaryrd)
\DeclareTextCommand{\textboxcircle}{PU}{\9051\307}%* U+29C7
% U+29C8 SQUARED SQUARE; \boxbox (stmaryrd)
\DeclareTextCommand{\textboxbox}{PU}{\9051\310}%* U+29C8
% U+29D3 BLACK BOWTIE; \Valve (marvosym)
\DeclareTextCommand{\textValve}{PU}{\9051\323}%* U+29D3
% U+29DF DOUBLE-ENDED MULTIMAP; \multimapboth (txfonts/pxfonts)
\DeclareTextCommand{\textmultimapboth}{PU}{\9051\337}%* U+29DF
% U+29E2 SHUFFLE PRODUCT; \shuffle (shuffle)
\DeclareTextCommand{\textshuffle}{PU}{\9051\342}%* U+29E2
```

51.2.35 Supplemental Mathematical Operators: U+2A00 to U+2AFF

```
% U+2A04 N-ARY UNION OPERATOR WITH PLUS; \uplus (LaTeX)
\DeclareTextCommand{\textuplus}{PU}{\9052\004}%* U+2A04
```

```
% U+2A07 TWO LOGICAL AND OPERATOR; \bigdoublewedge (MnSymbol)
\DeclareTextCommand{\textbigdoublewedge}{PU}{\9052\007}%* U+2A07
% U+2A08 TWO LOGICAL OR OPERATOR; \bigdoublevee (MnSymbol)
\DeclareTextCommand{\textbigdoublevee}{PU}{\9052\010}%* U+2A08
% U+2A1D JOIN; \Join (latexsym, amsfonts, amssymb, mathabx, txfonts,
%   pxfonts, wasysym)
\DeclareTextCommand{\textJoin}{PU}{\9052\035}%* U+2A1D
% U+2A1F Z NOTATION SCHEMA COMPOSITION; \fatsemi (stmaryrd)
\DeclareTextCommand{\textfatsemi}{PU}{\9052\037}%* U+2A1F
% U+2A22 PLUS SIGN WITH SMALL CIRCLE ABOVE; \circplus (mathabx)
\DeclareTextCommand{\textcircplus}{PU}{\9052\042}%* U+2A22
% U+2A2A MINUS SIGN WITH DOT BELOW; \minusdot (MnSymbol)
\DeclareTextCommand{\textminusdot}{PU}{\9052\052}%* U+2A2A
%* \textminusdot -> \divdot (mathabx)
% U+2A30 MULTIPLICATION SIGN WITH DOT ABOVE; \dottimes (mathabx)
\DeclareTextCommand{\textdottimes}{PU}{\9052\060}%* U+2A30
% U+2A32 SEMIDIRECT PRODUCT WITH BOTTOM CLOSED;
%   \dtimes (mathdesign)
\DeclareTextCommand{\textdtimes}{PU}{\9052\062}%* U+2A32
% U+2A38 CIRCLED DIVISION SIGN; \odiv (mathabx)
\DeclareTextCommand{\textodiv}{PU}{\9052\070}%* U+2A38
% U+2A3C INTERIOR PRODUCT; \invneg (MnSymbol)
\DeclareTextCommand{\textinvneg}{PU}{\9052\074}%* U+2A3C
% U+2A4E DOUBLE SQUARE INTERSECTION; \sqdoublecap (mathabx)
\DeclareTextCommand{\textsqdoublecap}{PU}{\9052\116}%* U+2A4E
%* \textsqdoublecap -> \doublesqcap (MnSymbol)
% U+2A40 INTERSECTION WITH DOT; \capdot (MnSymbol)
\DeclareTextCommand{\textcapdot}{PU}{\9052\100}%* U+2A40
% U+2A4F DOUBLE SQUARE UNION; \sqdoublecup (mathabx)
\DeclareTextCommand{\textsqdoublecup}{PU}{\9052\117}%* U+2A4F
%* \textsqdoublecup -> \doublesqcup (MnSymbol)
% U+2A55 TWO INTERSECTING LOGICAL AND; \doublewedge (MnSymbol)
\DeclareTextCommand{\textdoublewedge}{PU}{\9052\125}%* U+2A55
% U+2A56 TWO INTERSECTING LOGICAL OR; \doublevee (MnSymbol
\DeclareTextCommand{\textdoublevee}{PU}{\9052\126}%* U+2A56
%* \textdoublevee -> \merge (stmaryrd)
% U+2A5E LOGICAL AND WITH DOUBLE OVERBAR;
%   \doublebarwedge (AmS)
\DeclareTextCommand{\textdoublebarwedge}{PU}{\9052\136}%* U+2A5E
% U+2A63 LOGICAL OR WITH DOUBLE UNDERBAR;
%   \veedoublebar (mahtabx)
\DeclareTextCommand{\textveedoublebar}{PU}{\9052\143}%* U+2A63
% U+2A66 EQUALS SIGN WITH DOT BELOW; \eqdot (MnSymbol)
\DeclareTextCommand{\texteqdot}{PU}{\9052\146}%* U+2A66
% \neqdot (MnSymbol)
\DeclareTextCommand{\textneqdot}{PU}{\9052\146\83\070}%* U+2A66 U+0338
% U+2A74 DOUBLE COLON EQUAL; \coloncolonequals (colonequals)
\DeclareTextCommand{\textcoloncolonequals}{PU}{\9052\164}%* U+2A74
% U+2A7D LESS-THAN OR SLANTED EQUAL TO; \leqslant (AmS)
\DeclareTextCommand{\textleqslant}{PU}{\9052\175}%* U+2A7D
% \nleqslant (txfonts/pxfonts)
\DeclareTextCommand{\textnleqslant}{PU}{\9052\175\83\070}%* U+2A7D U+0338
% U+2A7E GREATER-THAN OR SLANTED EQUAL TO; \geqslant (AmS)
\DeclareTextCommand{\textgeqslant}{PU}{\9052\176}%* U+2A7E
% \ngeqslang (txfonts/pxfonts)
\DeclareTextCommand{\textngeqslant}{PU}{\9052\176\83\070}%* U+2A7E U+0338
% U+2A85 LESS-THAN OR APPROXIMATE; \lessapprox (AmS)
```

```
\DeclareTextCommand{\textlessapprox}{PU}{\9052\205}%* U+2A85
% \nlessapprox (txfonts/pxfonts)
\DeclareTextCommand{\textnlessapprox}{PU}{\9052\205\83\070}%* U+2A85 U+0338
% U+2A86 GREATER-THAN OR APPROXIMATE; \gtrapprox (AmS)
\DeclareTextCommand{\textgtrapprox}{PU}{\9052\206}%* U+2A86
% \ngtrapprox (txfonts/pxfonts)
\DeclareTextCommand{\textngtrapprox}{PU}{\9052\206\83\070}%* U+2A86 U+0338
% U+2A87 LESS-THAN AND SINGLE-LINE NOT EQUAL TO; \lneq (AmS)
\DeclareTextCommand{\textlneq}{PU}{\9052\207}%* U+2A87
% U+2A88 GREATER-THAN AND SINGLE-LINE NOT EQUAL TO;
%   \gneq (AmS)
\DeclareTextCommand{\textgneq}{PU}{\9052\210}%* U+2A88
% U+2A89 LESS-THAN AND NOT APPROXIMATE; \lnapprox (AmS)
\DeclareTextCommand{\textlnapprox}{PU}{\9052\211}%* U+2A89
% U+2A8A GREATER-THAN AND NOT APPROXIMATE; \gnapprox (AmS)
\DeclareTextCommand{\textgnapprox}{PU}{\9052\212}%* U+2A8A
% U+2A8B LESS-THAN ABOVE DOUBLE-LINE EQUAL ABOVE GREATER-
    THAN;
%   \lesseqqgtr (AmS)
\DeclareTextCommand{\textlesseqqgtr}{PU}{\9052\213}%* U+2A8B
% U+2A8C GREATER-THAN ABOVE DOUBLE-LINE EQUAL ABOVE LESS-
    THAN;
%   \gtreqqless (AmS)
\DeclareTextCommand{\textgtreqqless}{PU}{\9052\214}%* U+2A8C
% U+2A95 SLANTED EQUAL TO OR LESS-THAN; \eqslantless (AmS)
\DeclareTextCommand{\texteqslantless}{PU}{\9052\225}%* U+2A95
% U+2A96 SLANTED EQUAL TO OR GREATER-THAN; \eqslantgtr (AmS)
\DeclareTextCommand{\texteqslantgtr}{PU}{\9052\226}%* U+2A96
% U+2AA6 LESS-THAN CLOSED BY CURVE; \leftslice (stmaryrd)
\DeclareTextCommand{\textleftslice}{PU}{\9052\246}%* U+2AA6
% U+2AA7 GREATER-THAN CLOSED BY CURVE; \rightslice (stmaryrd)
\DeclareTextCommand{\textrightslice}{PU}{\9052\247}%* U+2AA7
% U+2AAF PRECEDES ABOVE SINGLE-LINE EQUALS SIGN; \preceq (Mn-
    Symbol)
\DeclareTextCommand{\textpreceq}{PU}{\9052\257}%* U+2AAF
% \npreceq (txfonts/pxfonts)
\DeclareTextCommand{\textnpreceq}{PU}{\9052\257\83\070}%* U+2AAF U+0338
% U+2AB0 SUCCEEDS ABOVE SINGLE-LINE EQUALS SIGN; \succeq (Mn-
    Symbol)
\DeclareTextCommand{\textsucceq}{PU}{\9052\260}%* U+2AB0
% \nsucceq (txfonts/pxfonts)
\DeclareTextCommand{\textnsucceq}{PU}{\9052\260\83\070}%* U+2AB0 U+0338
% U+2AB1 PRECEDES ABOVE SINGLE-LINE NOT EQUAL TO; \prec-
    neq (mathabx)
\DeclareTextCommand{\textprecneq}{PU}{\9052\261}%* U+2AB1
% U+2AB2 SUCCEEDS ABOVE SINGLE-LINE NOT EQUAL TO; \succ-
    neq (mathabx)
\DeclareTextCommand{\textsuccneq}{PU}{\9052\262}%* U+2AB2
% U+2AB3 PRECEDES ABOVE EQUALS SIGN; \preceqq (txfonts/pxfonts)
\DeclareTextCommand{\textpreceqq}{PU}{\9052\263}%* U+2AB3
% \npreceqq (txfonts/pxfonts)
\DeclareTextCommand{\textnpreceqq}{PU}{\9052\263\83\070}%* U+2AB3 U+0338
% U+2AB4 SUCCEEDS ABOVE EQUALS SIGN; \succeqq (txfonts/pxfonts)
\DeclareTextCommand{\textsucceqq}{PU}{\9052\264}%* U+2AB4
% \nsucceqq (txfonts/pxfonts)
\DeclareTextCommand{\textnsucceqq}{PU}{\9052\264\83\070}%* U+2AB4 U+0338
% U+2AB5 PRECEDES ABOVE NOT EQUAL TO; \precneqq (txfonts/pxfonts)
```

```
\DeclareTextCommand{\textprecneqq}{PU}{\9052\265}%* U+2AB5
% U+2AB6 SUCCEEDS ABOVE NOT EQUAL TO; \succneqq (txfonts/pxfonts)
\DeclareTextCommand{\textsuccneqq}{PU}{\9052\266}%* U+2AB6
% U+2AB7 PRECEDES ABOVE ALMOST EQUAL TO; \precapprox (AmS)
\DeclareTextCommand{\textprecapprox}{PU}{\9052\267}%* U+2AB7
% \nprecapprox (txfonts/pxfonts)
\DeclareTextCommand{\textnprecapprox}{PU}{\9052\267\83\070}%* U+2AB7 U+0338
% U+2AB8 SUCCEEDS ABOVE ALMOST EQUAL TO; \succapprox (AmS)
\DeclareTextCommand{\textsuccapprox}{PU}{\9052\270}%* U+2AB8
% \nsuccapprox (txfonts/pxfonts)
\DeclareTextCommand{\textnsuccapprox}{PU}{\9052\270\83\070}%* U+2AB8 U+0338
% U+2AB9 PRECEDES ABOVE NOT ALMOST EQUAL TO; \precnapprox (AmS)
\DeclareTextCommand{\textprecnapprox}{PU}{\9052\271}%* U+2AB9
% U+2ABA SUCCEEDS ABOVE NOT ALMOST EQUAL TO; \succnapprox (AmS)
\DeclareTextCommand{\textsuccnapprox}{PU}{\9052\272}%* U+2ABA
% U+2AC5 SUBSET OF ABOVE EQUALS SIGN; \subseteqq (AmS)
\DeclareTextCommand{\textsubseteqq}{PU}{\9052\305}%* U+2AC5
% \nsubseteqq (txfonts/pxfonts, mathabx)
\DeclareTextCommand{\textnsubseteqq}{PU}{\9052\305\83\070}%* U+2AC5 U+0338
% U+2AC6 SUPERSET OF ABOVE EQUALS SIGN; \supseteqq (AmS)
\DeclareTextCommand{\textsupseteqq}{PU}{\9052\306}%* U+2AC6
% \nsupseteqq (mathabx)
\DeclareTextCommand{\textnsupseteqq}{PU}{\9052\306\83\070}%* U+2AC6 U+0338
% U+2AE3 DOUBLE VERTICAL BAR LEFT TURNSTILE
\DeclareTextCommand{\textdashV}{PU}{\9052\343}%* U+2AE3
%* \textdashV -> \leftVdash (MnSymbol)
% \ndashV (mathabx)
\DeclareTextCommand{\textndashV}{PU}{\9052\343\83\070}%* U+2AE3 U+0338
%* \textndashV -> \nleftVdash (MnSymbol)
% U+2AE4 VERTICAL BAR DOUBLE LEFT TURNSTILE; \Dashv (mathabx)
\DeclareTextCommand{\textDashv}{PU}{\9052\344}%* U+2AE4
%* \textDashv -> \leftmodels (MnSymbol)
% \nDashv (mathabx)
\DeclareTextCommand{\textnDashv}{PU}{\9052\344\83\070}%* U+2AE4 U+0338
%* \textnDashv -> \nleftmodels (MnSymbol)
% U+2AE5 DOUBLE VERTICAL BAR DOUBLE LEFT TURNSTILE;
%   \DashV (mathabx)
\DeclareTextCommand{\textDashV}{PU}{\9052\345}%* U+2AE5
%* \textDashV -> \leftModels (MnSymbol)
% \nDashV (mathabx)
\DeclareTextCommand{\textnDashV}{PU}{\9052\345\83\070}%* U+2AE5 U+0338
%* \textnDashV -> \nleftModels (MnSymbol)
% U+2AEA DOUBLE DOWN TACK; \downmodels (MnSymbol)
\DeclareTextCommand{\textdownmodels}{PU}{\9052\352}%* U+2AEA
% \ndownmodels (MnSymbol)
\DeclareTextCommand{\textndownmodels}{PU}{\9052\352\83\070}%* U+2AEA U+0338
% U+2AEB DOUBLE UP TACK; \upmodels (MnSymbol)
\DeclareTextCommand{\textupmodels}{PU}{\9052\353}%* U+2AEB
% \nupmodels (MnSymbol)
\DeclareTextCommand{\textnupmodels}{PU}{\9052\353\83\070}%* U+2AEB U+0338
% U+2AEF VERTICAL LINE WITH CIRCLE ABOVE; \upspoon (MnSymbol)
\DeclareTextCommand{\textupspoon}{PU}{\9052\357}%* U+2AEF
% U+2AF4 TRIPLE VERTICAL BAR BINARY RELATION;
%   \interleave (stmaryrd)
\DeclareTextCommand{\textinterleave}{PU}{\9052\364}%* U+2AF4
```

```
% U+2AFD DOUBLE SOLIDUS OPERATOR; \sslash (stmaryrd)
\DeclareTextCommand{\textsslash}{PU}{\9052\375}%* U+2AFD
%* \textsslash -> \varparallel (txfonts\pxfonts)
```

51.2.36 Miscellaneous Symbols and Arrows: U+2B00 to U+2BFF

```
% U+2B20 WHITE PENTAGON; \pentagon (wasysym)
\DeclareTextCommand{\textpentagon}{PU}{\9053\040}%* U+2B20
% U+2B21 WHITE HEXAGON; \varhexagon (wasysym)
\DeclareTextCommand{\textvarhexagon}{PU}{\9053\041}%* U+2B21
```

51.2.37 Latin Extended-C: U+2C60 to U+2C7F

```
% U+2C7C LATIN SUBSCRIPT SMALL LETTER J
\DeclareTextCommand{\textjinferior}{PU}{\9054\174}%* U+2C7C
```

51.2.38 Supplemental Punctuation: U+2E00 to U+2E7F

```
% U+2E13 DOTTED OBELOS; \slashdiv (MnSymbol)
\DeclareTextCommand{\textslashdiv}{PU}{\9056\023}%* U+2E13
% U+2E18 INVERTED INTERROBANG; \textinterrobangdown (textcomp)
\DeclareTextCommand{\textinterrobangdown}{PU}{\9056\030}% U+2E18
% U+2E2D FIVE DOT MARK; \fivedots (MnSymbol)
\DeclareTextCommand{\textfivedots}{PU}{\9056\055}%* U+2E2D
```

51.2.39 Modifier Tone Letters: U+A700 to U+A71F

```
% U+A71B MODIFIER LETTER RAISED UP ARROW; \textupstep (tipa)
\DeclareTextCommand{\textupstep}{PU}{\9247\033}% U+A71B
% U+A71C MODIFIER LETTER RAISED DOWN ARROW;
%   \textdownstep (tipa)
\DeclareTextCommand{\textdownstep}{PU}{\9247\034}% U+A71C
```

51.2.40 Latin Extended-D: U+A720 to U+A7FF

```
% U+A727 LATIN SMALL LETTER HENG; \textheng (tipx)
\DeclareTextCommand{\textPUheng}{PU}{\9247\047}% U+A727
%* \textPUheng -> \textheng (tipx)
% U+A72C LATIN CAPITAL LETTER CUATRILLO; \textlhookfour (tipx)
\DeclareTextCommand{\textPUlhookfour}{PU}{\9247\054}% U+A72C
%* \textPUlhookfour -> \textlhookfour (tipx)
% U+A730 LATIN LETTER SMALL CAPITAL F; \textscf (tipx)
\DeclareTextCommand{\textPUscf}{PU}{\9247\060}% U+A730
%* \textPUscf -> \textscf (tipx)
% U+A735 LATIN SMALL LETTER AO; \textaolig (tipx)
\DeclareTextCommand{\textPUaolig}{PU}{\9247\065}% U+A735
%* \textPUaolig -> \textaolig (tipx)
% U+A74F LATIN SMALL LETTER OO; \oo (wsuipa)
\DeclareTextCommand{\textoo}{PU}{\9247\117}%* U+A74F
% U+A788 MODIFIER LETTER LOW CIRCUMFLEX ACCENT
\DeclareTextCommand{\textcircumlow}{PU}{\9247\210}% U+A788
```

51.2.41 Alphabetic Presentation Forms: U+FB00 to U+FB4F

```
% U+FB01 LATIN SMALL LIGATURE FI; fi
\DeclareTextCommand{\textfi}{PU}{\9373\001}% U+FB01
% U+FB02 LATIN SMALL LIGATURE FL; fl
\DeclareTextCommand{\textfl}{PU}{\9373\002}% U+FB02
```

51.2.42 Musical Symbols: U+1D100 to U+1D1FF

```
% U+1D13B MUSICAL SYMBOL WHOLE REST; \GaPa (harmony)
\DeclareTextCommand{\textGaPa}{PU}{\9330\064\9335\073}%* U+1D13B
% U+1D13C MUSICAL SYMBOL HALF REST; \HaPa (harmony)
```

```
\DeclareTextCommand{\textHaPa}{PU}{\9330\064\9335\074}%* U+1D13C
% U+1D13D MUSICAL SYMBOL QUARTER REST; \ViPa (harmony)
\DeclareTextCommand{\textViPa}{PU}{\9330\064\9335\075}%* U+1D13D
% U+1D13E MUSICAL SYMBOL EIGHTH REST; \AcPa (harmony)
\DeclareTextCommand{\textAcPa}{PU}{\9330\064\9335\076}%* U+1D13E
% U+1D13F MUSICAL SYMBOL SIXTEENTH REST; \SePa (harmony)
\DeclareTextCommand{\textSePa}{PU}{\9330\064\9335\077}%* U+1D13F
% U+1D140 MUSICAL SYMBOL THIRTY-SECOND REST; \ZwPa (harmony)
\DeclareTextCommand{\textZwPa}{PU}{\9330\064\9335\100}%* U+1D140
% U+1D15D MUSICAL SYMBOL WHOLE NOTE; \fullnote (wasysym)
\DeclareTextCommand{\textfullnote}{PU}{\9330\064\9335\135}%* U+1D15D
%* \textfullnote -> \Ganz (harmony)
% U+1D15E MUSICAL SYMBOL HALF NOTE; \halfnote (wasysym)
\DeclareTextCommand{\texthalfnote}{PU}{\9330\064\9335\136}%* U+1D15E
%* \texthalfnote -> \Halb (harmony)
% U+1D15F MUSICAL SYMBOL QUARTER NOTE; \Vier (harmony)
\DeclareTextCommand{\textVier}{PU}{\9330\064\9335\137}%* U+1D15F
% U+1D160 MUSICAL SYMBOL EIGHTH NOTE; \Acht (harmony)
\DeclareTextCommand{\textAcht}{PU}{\9330\064\9335\140}%* U+1D160
% U+1D161 MUSICAL SYMBOL SIXTEENTH NOTE; \Sech (harmony)
\DeclareTextCommand{\textSech}{PU}{\9330\064\9335\141}%* U+1D161
% U+1D162 MUSICAL SYMBOL THIRTY-SECOND NOTE; \Zwdr (harmony)
\DeclareTextCommand{\textZwdr}{PU}{\9330\064\9335\142}%* U+1D162
```

51.2.43 Miscellaneous Symbols and Pictographs: U+1F300 to U+1F5FF

```
% U+1F30D EARTH GLOBE EUROPE-AFRICA; \Mundus (marvosym)
\DeclareTextCommand{\textMundus}{PU}{\9330\074\9337\015}%* U+1F30D
% U+1F319 CRESCENT MOON; \Moon (marvosym)
\DeclareTextCommand{\textMoon}{PU}{\9330\074\9337\031}%* U+1F319
% U+1F468 MAN; \ManFace (marvosym)
\DeclareTextCommand{\textManFace}{PU}{\9330\075\9334\150}%* U+1F468
% U+1F469 WOMAN; \WomanFace (marvosym)
\DeclareTextCommand{\textWomanFace}{PU}{\9330\075\9334\151}%* U+1F469
%* \textWomanFace -> \Womanface (marvosym)
% U+1F4E0 FAX MACHINE; \Fax (marvosym)
\DeclareTextCommand{\textFax}{PU}{\9330\075\9334\340}%* U+1F4E0
%* \textFax -> \Faxmachine (marvosym)
% U+1F525 FIRE; \Fire (ifsym)
\DeclareTextCommand{\textFire}{PU}{\9330\075\9335\045}%* U+1F525
```

51.2.44 Transport and Map Symbols: U+1F680 to U+1F6FF

```
% U+1F6B2 BICYCLE; \Bicycle (marvosym)
\DeclareTextCommand{\textBicycle}{PU}{\9330\075\9336\262}%* U+1F6B2
% U+1F6B9 MENS SYMBOL; \Gentsroom (marvosym)
\DeclareTextCommand{\textGentsroom}{PU}{\9330\075\9336\271}%* U+1F6B9
% U+1F6BA WOMENS SYMBOL; \Ladiesroom (marvosym)
\DeclareTextCommand{\textLadiesroom}{PU}{\9330\075\9336\272}%* U+1F6BA
```

51.2.45 Miscellaneous

```
\DeclareTextCommand{\SS}{PU}{SS}%
% \textcopyleft (textcomp)
\DeclareTextCommand{\textcopyleft}{PU}{\9041\204\9040\335}% U+2184 U+20DD
% \ccnc (cclicenses)
\DeclareTextCommand{\textccnc}{PU}{\80\044\9040\340}%* U+0024 U+20E0
% \ccnd (cclicenses)
\DeclareTextCommand{\textccnd}{PU}{=\9040\335}%* U+003D U+20DD
% \ccsa (cclicenses)
```

```
\DeclareTextCommand{\textccsa}{PU}{\9047\362\9040\335}%* U+27F2 U+20DD
% \Info (marvosym, china2e)
\DeclareTextCommand{\textInfo}{PU}{\9330\065\9334\042\9040\336}%* U+1D422 U+20DE
% \CESign (marvosym)
\DeclareTextCommand{\textCESign}{PU}{\80\103\80\105}%* U+0043 U+0045
%* \textCESign -> \CEsign (marvosym)
```

51.2.46 Aliases

Aliases (german.sty)

```
\DeclareTextCommand{\textglqq}{PU}{\quotedblbase}%
\DeclareTextCommand{\textgrqq}{PU}{\textquotedblleft}%
\DeclareTextCommand{\textglq}{PU}{\quotesinglbase}%
\DeclareTextCommand{\textgrq}{PU}{\textquoteleft}%
\DeclareTextCommand{\textflqq}{PU}{\guillemotleft}%
\DeclareTextCommand{\textfrqq}{PU}{\guillemotright}%
\DeclareTextCommand{\textflq}{PU}{\guilsinglleft}%
\DeclareTextCommand{\textfrq}{PU}{\guilsinglright}%
```

Aliases (math names)

```
\DeclareTextCommand{\textneg}{PU}{\textlogicalnot}%*
\DeclareTextCommand{\texttimes}{PU}{\textmultiply}%*
\DeclareTextCommand{\textdiv}{PU}{\textdivide}%*
\DeclareTextCommand{\textpm}{PU}{\textplusminus}%*
\DeclareTextCommand{\textcdot}{PU}{\textperiodcentered}%*
```

⟨/puenc⟩

51.3 PU encoding, additions for VnTEX

This file is provided by Han The Thanh.

⟨*puvnenc⟩

```
\DeclareTextCommand{\abreve}{PU}{\81\003}% U+0103
\DeclareTextCommand{\acircumflex}{PU}{\80\342}% U+00E2
\DeclareTextCommand{\ecircumflex}{PU}{\80\352}% U+00EA
\DeclareTextCommand{\ocircumflex}{PU}{\80\364}% U+00F4
\DeclareTextCommand{\ohorn}{PU}{\81\241}% U+01A1
\DeclareTextCommand{\uhorn}{PU}{\81\260}% U+01B0
\DeclareTextCommand{\ABREVE}{PU}{\81\002}% U+0102
\DeclareTextCommand{\ACIRCUMFLEX}{PU}{\80\302}% U+00C2
\DeclareTextCommand{\ECIRCUMFLEX}{PU}{\80\312}% U+00CA
\DeclareTextCommand{\OCIRCUMFLEX}{PU}{\80\324}% U+00D4
\DeclareTextCommand{\OHORN}{PU}{\81\240}% U+01A0
\DeclareTextCommand{\UHORN}{PU}{\81\257}% U+01AF
```

```
\DeclareTextCompositeCommand{\'}{PU}{a}{\80\341}% U+00E1
\DeclareTextCompositeCommand{\d}{PU}{a}{\9036\241}% U+1EA1
\DeclareTextCompositeCommand{\`}{PU}{a}{\80\340}% U+00E0
\DeclareTextCompositeCommand{\h}{PU}{a}{\9036\243}% U+1EA3
\DeclareTextCompositeCommand{\~}{PU}{a}{\80\343}% U+00E3
\DeclareTextCompositeCommand{\'}{PU}{\abreve}{\9036\257}% U+1EAF
\DeclareTextCompositeCommand{\d}{PU}{\abreve}{\9036\267}% U+1EB7
\DeclareTextCompositeCommand{\`}{PU}{\abreve}{\9036\261}% U+1EB1
\DeclareTextCompositeCommand{\h}{PU}{\abreve}{\9036\263}% U+1EB3
\DeclareTextCompositeCommand{\~}{PU}{\abreve}{\9036\265}% U+1EB5
\DeclareTextCompositeCommand{\'}{PU}{\acircumflex}{\9036\245}% U+1EA5
\DeclareTextCompositeCommand{\d}{PU}{\acircumflex}{\9036\255}% U+1EAD
\DeclareTextCompositeCommand{\`}{PU}{\acircumflex}{\9036\247}% U+1EA7
```

```
\DeclareTextCompositeCommand{\h}{PU}{\acircumflex}{\9036\251}% U+1EA9
\DeclareTextCompositeCommand{\~}{PU}{\acircumflex}{\9036\253}% U+1EAB
\DeclareTextCompositeCommand{\'}{PU}{e}{\80\351}% U+00E9
\DeclareTextCompositeCommand{\d}{PU}{e}{\9036\271}% U+1EB9
\DeclareTextCompositeCommand{\`}{PU}{e}{\80\350}% U+00E8
\DeclareTextCompositeCommand{\h}{PU}{e}{\9036\273}% U+1EBB
\DeclareTextCompositeCommand{\~}{PU}{e}{\9036\275}% U+1EBD
\DeclareTextCompositeCommand{\'}{PU}{\ecircumflex}{\9036\277}% U+1EBF
\DeclareTextCompositeCommand{\d}{PU}{\ecircumflex}{\9036\307}% U+1EC7
\DeclareTextCompositeCommand{\`}{PU}{\ecircumflex}{\9036\301}% U+1EC1
\DeclareTextCompositeCommand{\h}{PU}{\ecircumflex}{\9036\303}% U+1EC3
\DeclareTextCompositeCommand{\~}{PU}{\ecircumflex}{\9036\305}% U+1EC5
\DeclareTextCompositeCommand{\'}{PU}{i}{\80\355}% U+00ED
\DeclareTextCompositeCommand{\d}{PU}{i}{\9036\313}% U+1ECB
\DeclareTextCompositeCommand{\`}{PU}{i}{\80\354}% U+00EC
\DeclareTextCompositeCommand{\h}{PU}{i}{\9036\311}% U+1EC9
\DeclareTextCompositeCommand{\~}{PU}{i}{\81\051}% U+0129
\DeclareTextCompositeCommand{\'}{PU}{o}{\80\363}% U+00F3
\DeclareTextCompositeCommand{\d}{PU}{o}{\9036\315}% U+1ECD
\DeclareTextCompositeCommand{\`}{PU}{o}{\80\362}% U+00F2
\DeclareTextCompositeCommand{\h}{PU}{o}{\9036\317}% U+1ECF
\DeclareTextCompositeCommand{\~}{PU}{o}{\80\365}% U+00F5
\DeclareTextCompositeCommand{\'}{PU}{\ocircumflex}{\9036\321}% U+1ED1
\DeclareTextCompositeCommand{\d}{PU}{\ocircumflex}{\9036\331}% U+1ED9
\DeclareTextCompositeCommand{\`}{PU}{\ocircumflex}{\9036\323}% U+1ED3
\DeclareTextCompositeCommand{\h}{PU}{\ocircumflex}{\9036\325}% U+1ED5
\DeclareTextCompositeCommand{\~}{PU}{\ocircumflex}{\9036\327}% U+1ED7
\DeclareTextCompositeCommand{\'}{PU}{\ohorn}{\9036\333}% U+1EDB
\DeclareTextCompositeCommand{\d}{PU}{\ohorn}{\9036\343}% U+1EE3
\DeclareTextCompositeCommand{\`}{PU}{\ohorn}{\9036\335}% U+1EDD
\DeclareTextCompositeCommand{\h}{PU}{\ohorn}{\9036\337}% U+1EDF
\DeclareTextCompositeCommand{\~}{PU}{\ohorn}{\9036\341}% U+1EE1
\DeclareTextCompositeCommand{\'}{PU}{u}{\80\372}% U+00FA
\DeclareTextCompositeCommand{\d}{PU}{u}{\9036\345}% U+1EE5
\DeclareTextCompositeCommand{\`}{PU}{u}{\80\371}% U+00F9
\DeclareTextCompositeCommand{\h}{PU}{u}{\9036\347}% U+1EE7
\DeclareTextCompositeCommand{\~}{PU}{u}{\81\151}% U+0169
\DeclareTextCompositeCommand{\'}{PU}{\uhorn}{\9036\351}% U+1EE9
\DeclareTextCompositeCommand{\d}{PU}{\uhorn}{\9036\361}% U+1EF1
\DeclareTextCompositeCommand{\`}{PU}{\uhorn}{\9036\353}% U+1EEB
\DeclareTextCompositeCommand{\h}{PU}{\uhorn}{\9036\355}% U+1EED
\DeclareTextCompositeCommand{\~}{PU}{\uhorn}{\9036\357}% U+1EEF
\DeclareTextCompositeCommand{\'}{PU}{y}{\80\375}% U+00FD
\DeclareTextCompositeCommand{\d}{PU}{y}{\9036\365}% U+1EF5
\DeclareTextCompositeCommand{\`}{PU}{y}{\9036\363}% U+1EF3
\DeclareTextCompositeCommand{\h}{PU}{y}{\9036\367}% U+1EF7
\DeclareTextCompositeCommand{\~}{PU}{y}{\9036\371}% U+1EF9
\DeclareTextCompositeCommand{\'}{PU}{A}{\80\301}% U+00C1
\DeclareTextCompositeCommand{\d}{PU}{A}{\9036\240}% U+1EA0
\DeclareTextCompositeCommand{\`}{PU}{A}{\80\300}% U+00C0
\DeclareTextCompositeCommand{\h}{PU}{A}{\9036\242}% U+1EA2
\DeclareTextCompositeCommand{\~}{PU}{A}{\80\303}% U+00C3
\DeclareTextCompositeCommand{\'}{PU}{\ABREVE}{\9036\256}% U+1EAE
\DeclareTextCompositeCommand{\d}{PU}{\ABREVE}{\9036\266}% U+1EB6
\DeclareTextCompositeCommand{\`}{PU}{\ABREVE}{\9036\260}% U+1EB0
\DeclareTextCompositeCommand{\h}{PU}{\ABREVE}{\9036\262}% U+1EB2
\DeclareTextCompositeCommand{\~}{PU}{\ABREVE}{\9036\264}% U+1EB4
```

```
\DeclareTextCompositeCommand{\'}{PU}{\ACIRCUMFLEX}{\9036\244}% U+1EA4
\DeclareTextCompositeCommand{\d}{PU}{\ACIRCUMFLEX}{\9036\254}% U+1EAC
\DeclareTextCompositeCommand{\`}{PU}{\ACIRCUMFLEX}{\9036\246}% U+1EA6
\DeclareTextCompositeCommand{\h}{PU}{\ACIRCUMFLEX}{\9036\250}% U+1EA8
\DeclareTextCompositeCommand{\~}{PU}{\ACIRCUMFLEX}{\9036\252}% U+1EAA
\DeclareTextCompositeCommand{\'}{PU}{E}{\80\311}% U+00C9
\DeclareTextCompositeCommand{\d}{PU}{E}{\9036\270}% U+1EB8
\DeclareTextCompositeCommand{\`}{PU}{E}{\80\310}% U+00C8
\DeclareTextCompositeCommand{\h}{PU}{E}{\9036\272}% U+1EBA
\DeclareTextCompositeCommand{\~}{PU}{E}{\9036\274}% U+1EBC
\DeclareTextCompositeCommand{\'}{PU}{\ECIRCUMFLEX}{\9036\276}% U+1EBE
\DeclareTextCompositeCommand{\d}{PU}{\ECIRCUMFLEX}{\9036\306}% U+1EC6
\DeclareTextCompositeCommand{\`}{PU}{\ECIRCUMFLEX}{\9036\300}% U+1EC0
\DeclareTextCompositeCommand{\h}{PU}{\ECIRCUMFLEX}{\9036\302}% U+1EC2
\DeclareTextCompositeCommand{\~}{PU}{\ECIRCUMFLEX}{\9036\304}% U+1EC4
\DeclareTextCompositeCommand{\'}{PU}{I}{\80\315}% U+00CD
\DeclareTextCompositeCommand{\d}{PU}{I}{\9036\312}% U+1ECA
\DeclareTextCompositeCommand{\`}{PU}{I}{\80\314}% U+00CC
\DeclareTextCompositeCommand{\h}{PU}{I}{\9036\310}% U+1EC8
\DeclareTextCompositeCommand{\~}{PU}{I}{\81\050}% U+0128
\DeclareTextCompositeCommand{\'}{PU}{O}{\80\323}% U+00D3
\DeclareTextCompositeCommand{\d}{PU}{O}{\9036\314}% U+1ECC
\DeclareTextCompositeCommand{\`}{PU}{O}{\80\322}% U+00D2
\DeclareTextCompositeCommand{\h}{PU}{O}{\9036\316}% U+1ECE
\DeclareTextCompositeCommand{\~}{PU}{O}{\80\325}% U+00D5
\DeclareTextCompositeCommand{\'}{PU}{\OCIRCUMFLEX}{\9036\320}% U+1ED0
\DeclareTextCompositeCommand{\d}{PU}{\OCIRCUMFLEX}{\9036\330}% U+1ED8
\DeclareTextCompositeCommand{\`}{PU}{\OCIRCUMFLEX}{\9036\322}% U+1ED2
\DeclareTextCompositeCommand{\h}{PU}{\OCIRCUMFLEX}{\9036\324}% U+1ED4
\DeclareTextCompositeCommand{\~}{PU}{\OCIRCUMFLEX}{\9036\326}% U+1ED6
\DeclareTextCompositeCommand{\'}{PU}{\OHORN}{\9036\332}% U+1EDA
\DeclareTextCompositeCommand{\d}{PU}{\OHORN}{\9036\342}% U+1EE2
\DeclareTextCompositeCommand{\`}{PU}{\OHORN}{\9036\334}% U+1EDC
\DeclareTextCompositeCommand{\h}{PU}{\OHORN}{\9036\336}% U+1EDE
\DeclareTextCompositeCommand{\~}{PU}{\OHORN}{\9036\340}% U+1EE0
\DeclareTextCompositeCommand{\'}{PU}{U}{\80\332}% U+00DA
\DeclareTextCompositeCommand{\d}{PU}{U}{\9036\344}% U+1EE4
\DeclareTextCompositeCommand{\`}{PU}{U}{\80\331}% U+00D9
\DeclareTextCompositeCommand{\h}{PU}{U}{\9036\346}% U+1EE6
\DeclareTextCompositeCommand{\~}{PU}{U}{\81\150}% U+0168
\DeclareTextCompositeCommand{\'}{PU}{\UHORN}{\9036\350}% U+1EE8
\DeclareTextCompositeCommand{\d}{PU}{\UHORN}{\9036\360}% U+1EF0
\DeclareTextCompositeCommand{\`}{PU}{\UHORN}{\9036\352}% U+1EEA
\DeclareTextCompositeCommand{\h}{PU}{\UHORN}{\9036\354}% U+1EEC
\DeclareTextCompositeCommand{\~}{PU}{\UHORN}{\9036\356}% U+1EEE
\DeclareTextCompositeCommand{\'}{PU}{Y}{\80\335}% U+00DD
\DeclareTextCompositeCommand{\d}{PU}{Y}{\9036\364}% U+1EF4
\DeclareTextCompositeCommand{\`}{PU}{Y}{\9036\362}% U+1EF2
\DeclareTextCompositeCommand{\h}{PU}{Y}{\9036\366}% U+1EF6
\DeclareTextCompositeCommand{\~}{PU}{Y}{\9036\370}% U+1EF8
```

⟨/puvnenc⟩

51.4 PU encoding, additions for Arabi

This file is provided and maintained by Youssef Jabri.

⟨*puarenc⟩

```
% U+0621;afii57409;ARABIC LETTER HAMZA
\DeclareTextCommand{\hamza}{PU}{\86\041}% U+0621
% U+0622;afii57410;ARABIC LETTER ALEF WITH MADDA ABOVE
\DeclareTextCommand{\alefmadda}{PU}{\86\042}% U+0622
% U+0623;afii57411;ARABIC LETTER ALEF WITH HAMZA ABOVE
\DeclareTextCommand{\alefhamza}{PU}{\86\043}% U+0623
% U+0624;afii57412;ARABIC LETTER WAW WITH HAMZA ABOVE
\DeclareTextCommand{\wawhamza}{PU}{\86\044}% U+0624
% U+0625;afii57413;ARABIC LETTER ALEF WITH HAMZA BELOW
\DeclareTextCommand{\aleflowerhamza}{PU}{\86\045}% U+0625
% U+0626;afii57414;ARABIC LETTER YEH WITH HAMZA ABOVE
\DeclareTextCommand{\yahamza}{PU}{\86\046}% U+0626
% U+0627;afii57415;ARABIC LETTER ALEF
\DeclareTextCommand{\alef}{PU}{\86\047}% U+0627
% U+0628;afii57416;ARABIC LETTER BEH
\DeclareTextCommand{\baa}{PU}{\86\050}% U+0628
% U+0629;afii57417;ARABIC LETTER TEH MARBUTA
\DeclareTextCommand{\T}{PU}{\86\051}% U+0629
% U+062A;afii57418;ARABIC LETTER TEH
\DeclareTextCommand{\taa}{PU}{\86\052}% U+062A
% U+062B;afii57419;ARABIC LETTER THEH
\DeclareTextCommand{\thaa}{PU}{\86\053}% U+062B
% U+062C;afii57420;ARABIC LETTER JEEM
\DeclareTextCommand{\jeem}{PU}{\86\054}% U+062C
% U+062D;afii57421;ARABIC LETTER HAH
\DeclareTextCommand{\Haa}{PU}{\86\055}% U+062D
% U+062E;afii57422;ARABIC LETTER KHAH
\DeclareTextCommand{\kha}{PU}{\86\056}% U+062E
% U+062F;afii57423;ARABIC LETTER DAL
\DeclareTextCommand{\dal}{PU}{\86\057}% U+062F
% U+0630;afii57424;ARABIC LETTER THAL
\DeclareTextCommand{\dhal}{PU}{\86\060}% U+0630
% U+0631;afii57425;ARABIC LETTER REH
\DeclareTextCommand{\ra}{PU}{\86\061}% U+0631
% U+0632;afii57426;ARABIC LETTER ZAIN
\DeclareTextCommand{\zay}{PU}{\86\062}% U+0632
% U+0633;afii57427;ARABIC LETTER SEEN
\DeclareTextCommand{\seen}{PU}{\86\063}% U+0633
% U+0634;afii57428;ARABIC LETTER SHEEN
\DeclareTextCommand{\sheen}{PU}{\86\064}% U+0634
% U+0635;afii57429;ARABIC LETTER SAD
\DeclareTextCommand{\sad}{PU}{\86\065}% U+0635
% U+0636;afii57430;ARABIC LETTER DAD
\DeclareTextCommand{\dad}{PU}{\86\066}% U+0636
% U+0637;afii57431;ARABIC LETTER TAH
\DeclareTextCommand{\Ta}{PU}{\86\067}% U+0637
% U+0638;afii57432;ARABIC LETTER ZAH
\DeclareTextCommand{\za}{PU}{\86\070}% U+0638
% U+0639;afii57433;ARABIC LETTER AIN
\DeclareTextCommand{\ayn}{PU}{\86\071}% U+0639
% U+063A;afii57434;ARABIC LETTER GHAIN
\DeclareTextCommand{\ghayn}{PU}{\86\072}% U+063A
% U+0640;afii57440;ARABIC TATWEEL
\DeclareTextCommand{\tatweel}{PU}{\86\100}% U+0640
% U+0641;afii57441;ARABIC LETTER FEH
\DeclareTextCommand{\fa}{PU}{\86\101}% U+0641
% U+0642;afii57442;ARABIC LETTER QAF
```

```
\DeclareTextCommand{\qaf}{PU}{\86\102}% U+0642
% U+0643;afii57443;ARABIC LETTER KAF
\DeclareTextCommand{\kaf}{PU}{\86\103}% U+0643
% U+0644;afii57444;ARABIC LETTER LAM
\DeclareTextCommand{\lam}{PU}{\86\104}% U+0644
% U+0645;afii57445;ARABIC LETTER MEEM
\DeclareTextCommand{\meem}{PU}{\86\105}% U+0645
% U+0646;afii57446;ARABIC LETTER NOON
\DeclareTextCommand{\nun}{PU}{\86\106}% U+0646
% U+0647;afii57470;ARABIC LETTER HEH
\DeclareTextCommand{\ha}{PU}{\86\107}% U+0647
% U+0648;afii57448;ARABIC LETTER WAW
\DeclareTextCommand{\waw}{PU}{\86\110}% U+0648
% U+0649;afii57449;ARABIC LETTER ALEF MAKSURA
\DeclareTextCommand{\alefmaqsura}{PU}{\86\111}% U+0649
% U+064A;afii57450;ARABIC LETTER YEH
\DeclareTextCommand{\ya}{PU}{\86\112}% U+064A

% U+064B;afii57451;ARABIC FATHATAN
\DeclareTextCommand{\nasb}{PU}{\86\113}% U+064B
% U+064C;afii57452;ARABIC DAMMATAN
\DeclareTextCommand{\raff}{PU}{\86\114}% U+064C
% U+064D;afii57453;ARABIC KASRATAN
\DeclareTextCommand{\jarr}{PU}{\86\115}% U+064D
% U+064E;afii57454;ARABIC FATHA
\DeclareTextCommand{\fatha}{PU}{\86\116}% U+064E
% U+064F;afii57455;ARABIC DAMMA
\DeclareTextCommand{\damma}{PU}{\86\117}% U+064F
% U+0650;afii57456;ARABIC KASRA
\DeclareTextCommand{\kasra}{PU}{\86\120}% U+0650
% U+0651;afii57457;ARABIC SHADDA
\DeclareTextCommand{\shadda}{PU}{\86\121}% U+0651
% U+0652;afii57458;ARABIC SUKUN
\DeclareTextCommand{\sukun}{PU}{\86\122}% U+0652
```

Farsi

```
% U+067E ARABIC LETTER PEH; afii57506
\DeclareTextCommand{\peh}{PU}{\86\176}% U+067E
% U+0686 ARABIC LETTER TCHEH; afii57507
\DeclareTextCommand{\tcheh}{PU}{\86\206}% U+0686
% U+0698 ARABIC LETTER JEH; afii57508
\DeclareTextCommand{\jeh}{PU}{\86\230}% U+0698
% U+06A9 ARABIC LETTER KEHEH
\DeclareTextCommand{\farsikaf}{PU}{\86\251}% U+06A9
% U+06AF ARABIC LETTER GAF; afii57509
\DeclareTextCommand{\gaf}{PU}{\86\257}% U+06AF
% U+06CC ARABIC LETTER FARSI YEH
\DeclareTextCommand{\farsiya}{PU}{\86\314}% U+06CC

% U+200C ZERO WIDTH NON-JOINER; afii61664
\DeclareTextCommand{\ZWNJ}{PU}{\9040\014}% U+200C
% U+200D ZERO WIDTH JOINER; afii301
\DeclareTextCommand{\textEncodingNoboundary}{PU}{\9040\015}% U+200D

⟨/puarenc⟩

⟨*psdextra⟩
\Hy@VersionCheck{psdextra.def}
\newcommand*{\psdmapshortnames}{%
  \let\MVPlus\textMVPlus
```

```
\let\MVComma\textMVComma
\let\MVMinus\textMVMinus
\let\MVPeriod\textMVPeriod
\let\MVDivision\textMVDivision
\let\MVZero\textMVZero
\let\MVOne\textMVOne
\let\MVTwo\textMVTwo
\let\MVThree\textMVThree
\let\MVFour\textMVFour
\let\MVFive\textMVFive
\let\MVSix\textMVSix
\let\MVSeven\textMVSeven
\let\MVEight\textMVEight
\let\MVNine\textMVNine
\let\MVAt\textMVAt
\let\copyright\textcopyright
\let\twosuperior\texttwosuperior
\let\threesuperior\textthreesuperior
\let\onesuperior\textonesuperior
\let\Thorn\textThorn
\let\thorn\textthorn
\let\hbar\texthbar
\let\hausaB\texthausaB
\let\hausaD\texthausaD
\let\hausaK\texthausaK
\let\barl\textbarl
\let\inve\textinve
\let\slashc\textslashc
\let\scripta\textscripta
\let\openo\textopeno
\let\rtaild\textrtaild
\let\reve\textreve
\let\schwa\textschwa
\let\niepsilon\textniepsilon
\let\revepsilon\textrevepsilon
\let\rhookrevepsilon\textrhookrevepsilon
\let\scriptg\textscriptg
\let\scg\textscg
\let\ipagamma\textipagamma
\let\babygamma\textbabygamma
\let\bari\textbari
\let\niiota\textniiota
\let\sci\textsci
\let\scn\textscn
\let\niphi\textniphi
\let\longlegr\textlonglegr
\let\scr\textscr
\let\invscr\textinvscr
\let\esh\textesh
\let\baru\textbaru
\let\niupsilon\textniupsilon
\let\scriptv\textscriptv
\let\turnv\textturnv
\let\turnw\textturnw
\let\turny\textturny
\let\scy\textscy
\let\yogh\textyogh
```

```
\let\glotstop\textglotstop
\let\revglotstop\textrevglotstop
\let\invglotstop\textinvglotstop
\let\Gamma\textGamma
\let\Delta\textDelta
\let\Theta\textTheta
\let\Lambda\textLambda
\let\Xi\textXi
\let\Pi\textPi
\let\Sigma\textSigma
\let\Upsilon\textUpsilon
\let\Phi\textPhi
\let\Psi\textPsi
\let\Omega\textOmega
\let\alpha\textalpha
\let\beta\textbeta
\let\gamma\textgamma
\let\delta\textdelta
\let\epsilon\textepsilon
\let\zeta\textzeta
\let\eta\texteta
\let\theta\texttheta
\let\iota\textiota
\let\kappa\textkappa
\let\lambda\textlambda
\let\mugreek\textmugreek
\let\nu\textnu
\let\xi\textxi
\let\pi\textpi
\let\rho\textrho
\let\varsigma\textvarsigma
\let\sigma\textsigma
\let\tau\texttau
\let\upsilon\textupsilon
\let\phi\textphi
\let\chi\textchi
\let\psi\textpsi
\let\omega\textomega
\let\scd\textscd
\let\scu\textscu
\let\iinferior\textiinferior
\let\rinferior\textrinferior
\let\uinferior\textuinferior
\let\vinferior\textvinferior
\let\betainferior\textbetainferior
\let\gammainferior\textgammainferior
\let\rhoinferior\textrhoinferior
\let\phiinferior\textphiinferior
\let\chiinferior\textchiinferior
\let\barsci\textbarsci
\let\barp\textbarp
\let\barscu\textbarscu
\let\htrtaild\texthtrtaild
\let\dagger\textdagger
\let\bullet\textbullet
\let\hdotfor\texthdotfor
\let\prime\textprime
```

```
\let\second\textsecond
\let\third\textthird
\let\backprime\textbackprime
\let\leftthereforе\textleftthereforе
\let\fourth\textfourth
\let\diamonddots\textdiamonddots
\let\zerosuperior\textzerosuperior
\let\isuperior\textisuperior
\let\foursuperior\textfoursuperior
\let\fivesuperior\textfivesuperior
\let\sixsuperior\textsixsuperior
\let\sevensuperior\textsevensuperior
\let\eightsuperior\texteightsuperior
\let\ninesuperior\textninesuperior
\let\plussuperior\textplussuperior
\let\minussuperior\textminussuperior
\let\equalsuperior\textequalsuperior
\let\parenleftsuperior\textparenleftsuperior
\let\parenrightsuperior\textparenrightsuperior
\let\nsuperior\textnsuperior
\let\zeroinferior\textzeroinferior
\let\oneinferior\textoneinferior
\let\twoinferior\texttwoinferior
\let\threeinferior\textthreeinferior
\let\fourinferior\textfourinferior
\let\fiveinferior\textfiveinferior
\let\sixinferior\textsixinferior
\let\seveninferior\textseveninferior
\let\eightinferior\texteightinferior
\let\nineinferior\textnineinferior
\let\plusinferior\textplusinferior
\let\minusinferior\textminusinferior
\let\equalsinferior\textequalsinferior
\let\parenleftinferior\textparenleftinferior
\let\parenrightinferior\textparenrightinferior
\let\ainferior\textainferior
\let\einferior\texteinferior
\let\oinferior\textoinferior
\let\xinferior\textxinferior
\let\schwainferior\textschwainferior
\let\hinferior\texthinferior
\let\kinferior\textkinferior
\let\linferior\textlinferior
\let\minferior\textminferior
\let\ninferior\textninferior
\let\pinferior\textpinferior
\let\sinferior\textsinferior
\let\tinferior\texttinferior
\let\Deleatur\textDeleatur
\let\hslash\texthslash
\let\Im\textIm
\let\ell\textell
\let\wp\textwp
\let\Re\textRe
\let\mho\textmho
\let\riota\textriota
\let\Finv\textFinv
```

```
\let\aleph\textaleph
\let\beth\textbeth
\let\gimel\textgimel
\let\daleth\textdaleth
\let\fax\textfax
\let\Game\textGame
\let\leftarrow\textleftarrow
\let\uparrow\textuparrow
\let\rightarrow\textrightarrow
\let\downarrow\textdownarrow
\let\leftrightarrow\textleftrightarrow
\let\updownarrow\textupdownarrow
\let\nwarrow\textnwarrow
\let\nearrow\textnearrow
\let\searrow\textsearrow
\let\swarrow\textswarrow
\let\nleftarrow\textnleftarrow
\let\nrightarrow\textnrightarrow
\let\twoheadleftarrow\texttwoheadleftarrow
\let\ntwoheadleftarrow\textntwoheadleftarrow
\let\twoheaduparrow\texttwoheaduparrow
\let\twoheadrightarrow\texttwoheadrightarrow
\let\ntwoheadrightarrow\textntwoheadrightarrow
\let\twoheaddownarrow\texttwoheaddownarrow
\let\leftarrowtail\textleftarrowtail
\let\rightarrowtail\textrightarrowtail
\let\mapsto\textmapsto
\let\hookleftarrow\texthookleftarrow
\let\hookrightarrow\texthookrightarrow
\let\looparrowleft\textlooparrowleft
\let\looparrowright\textlooparrowright
\let\nleftrightarrow\textnleftrightarrow
\let\lightning\textlightning
\let\dlsh\textdlsh
\let\curvearrowleft\textcurvearrowleft
\let\curvearrowright\textcurvearrowright
\let\leftharpoonup\textleftharpoonup
\let\leftharpoondown\textleftharpoondown
\let\upharpoonright\textupharpoonright
\let\upharpoonleft\textupharpoonleft
\let\rightharpoonup\textrightharpoonup
\let\rightharpoondown\textrightharpoondown
\let\downharpoonright\textdownharpoonright
\let\downharpoonleft\textdownharpoonleft
\let\rightleftarrows\textrightleftarrows
\let\updownarrows\textupdownarrows
\let\leftrightarrows\textleftrightarrows
\let\leftleftarrows\textleftleftarrows
\let\upuparrows\textupuparrows
\let\rightrightarrows\textrightrightarrows
\let\downdownarrows\textdowndownarrows
\let\leftrightharpoons\textleftrightharpoons
\let\rightleftharpoons\textrightleftharpoons
\let\nLeftarrow\textnLeftarrow
\let\nLeftrightarrow\textnLeftrightarrow
\let\nRightarrow\textnRightarrow
\let\Leftarrow\textLeftarrow
```

```
\let\Uparrow\textUparrow
\let\Rightarrow\textRightarrow
\let\Downarrow\textDownarrow
\let\Leftrightarrow\textLeftrightarrow
\let\Updownarrow\textUpdownarrow
\let\Nwarrow\textNwarrow
\let\Nearrow\textNearrow
\let\Searrow\textSearrow
\let\Swarrow\textSwarrow
\let\Lleftarrow\textLleftarrow
\let\Rrightarrow\textRrightarrow
\let\leftsquigarrow\textleftsquigarrow
\let\rightsquigarrow\textrightsquigarrow
\let\dashleftarrow\textdashleftarrow
\let\dasheduparrow\textdasheduparrow
\let\dashrightarrow\textdashrightarrow
\let\dasheddownarrow\textdasheddownarrow
\let\pointer\textpointer
\let\downuparrows\textdownuparrows
\let\leftarrowtriangle\textleftarrowtriangle
\let\rightarrowtriangle\textrightarrowtriangle
\let\leftrightarrowtriangle\textleftrightarrowtriangle
\let\forall\textforall
\let\complement\textcomplement
\let\partial\textpartial
\let\exists\textexists
\let\nexists\textnexists
\let\emptyset\textemptyset
\let\triangle\texttriangle
\let\nabla\textnabla
\let\in\textin
\let\notin\textnotin
\let\smallin\textsmallin
\let\ni\textni
\let\notowner\textnotowner
\let\smallowns\textsmallowns
\let\prod\textprod
\let\amalg\textamalg
\let\sum\textsum
\let\mp\textmp
\let\dotplus\textdotplus
\let\Divides\textDivides
\let\DividesNot\textDividesNot
\let\setminus\textsetminus
\let\ast\textast
\let\circ\textcirc
\let\surd\textsurd
\let\propto\textpropto
\let\infty\textinfty
\let\angle\textangle
\let\measuredangle\textmeasuredangle
\let\sphericalangle\textsphericalangle
\let\mid\textmid
\let\nmid\textnmid
\let\parallel\textparallel
\let\nparallel\textnparallel
\let\wedge\textwedge
```

```
\let\owedge\textowedge
\let\vee\textvee
\let\ovee\textovee
\let\cap\textcap
\let\cup\textcup
\let\int\textint
\let\iint\textiint
\let\iiint\textiiint
\let\oint\textoint
\let\oiint\textoiint
\let\ointclockwise\textointclockwise
\let\ointctrclockwise\textointctrclockwise
\let\therefore\textttherefore
\let\because\textbecause
\let\vdotdot\textvdotdot
\let\squaredots\textsquaredots
\let\dotminus\textdotminus
\let\eqcolon\texteqcolon
\let\sim\textsim
\let\backsim\textbacksim
\let\nbacksim\textnbacksim
\let\wr\textwr
\let\nsim\textnsim
\let\eqsim\texteqsim
\let\neqsim\textneqsim
\let\simeq\textsimeq
\let\nsimeq\textnsimeq
\let\cong\textcong
\let\ncong\textncong
\let\approx\textapprox
\let\napprox\textnapprox
\let\approxeq\textapproxeq
\let\napproxeq\textnapproxeq
\let\triplesim\texttriplesim
\let\ntriplesim\textntriplesim
\let\backcong\textbackcong
\let\nbackcong\textnbackcong
\let\asymp\textasymp
\let\nasymp\textnasymp
\let\Bumpeq\textBumpeq
\let\nBumpeq\textnBumpeq
\let\bumpeq\textbumpeq
\let\nbumpeq\textnbumpeq
\let\doteq\textdoteq
\let\ndoteq\textndoteq
\let\doteqdot\textdoteqdot
\let\nDoteq\textnDoteq
\let\fallingdoteq\textfallingdoteq
\let\nfallingdoteq\textnfallingdoteq
\let\risingdoteq\textrisingdoteq
\let\nrisingdoteq\textnrisingdoteq
\let\colonequals\textcolonequals
\let\equalscolon\textequalscolon
\let\eqcirc\texteqcirc
\let\neqcirc\textneqcirc
\let\circeq\textcirceq
\let\ncirceq\textncirceq
```

```
\let\hateq\texthateq
\let\nhateq\textnhateq
\let\triangleeq\texttriangleeq
\let\neq\textneq
\let\ne\textne
\let\equiv\textequiv
\let\nequiv\textnequiv
\let\leq\textleq
\let\le\textle
\let\geq\textgeq
\let\ge\textge
\let\leqq\textleqq
\let\nleqq\textnleqq
\let\geqq\textgeqq
\let\ngeqq\textngeqq
\let\lneqq\textlneqq
\let\gneqq\textgneqq
\let\ll\textll
\let\nll\textnll
\let\gg\textgg
\let\ngg\textngg
\let\between\textbetween
\let\nless\textnless
\let\ngtr\textngtr
\let\nleq\textnleq
\let\ngeq\textngeq
\let\lesssim\textlesssim
\let\gtrsim\textgtrsim
\let\nlesssim\textnlesssim
\let\ngtrsim\textngtrsim
\let\lessgtr\textlessgtr
\let\gtrless\textgtrless
\let\ngtrless\textngtrless
\let\nlessgtr\textnlessgtr
\let\prec\textprec
\let\succ\textsucc
\let\preccurlyeq\textpreccurlyeq
\let\succcurlyeq\textsucccurlyeq
\let\precsim\textprecsim
\let\nprecsim\textnprecsim
\let\succsim\textsuccsim
\let\nsuccsim\textnsuccsim
\let\nprec\textnprec
\let\nsucc\textnsucc
\let\subset\textsubset
\let\supset\textsupset
\let\nsubset\textnsubset
\let\nsupset\textnsupset
\let\subseteq\textsubseteq
\let\supseteq\textsupseteq
\let\nsubseteq\textnsubseteq
\let\nsupseteq\textnsupseteq
\let\subsetneq\textsubsetneq
\let\supsetneq\textsupsetneq
\let\cupdot\textcupdot
\let\cupplus\textcupplus
\let\sqsubset\textsqsubset
```

```
\let\nsqsubset\textnsqsubset
\let\sqsupset\textsqsupset
\let\nsqsupset\textnsqsupset
\let\sqsubseteq\textsqsubseteq
\let\nsqsubseteq\textnsqsubseteq
\let\sqsupseteq\textsqsupseteq
\let\nsqsupseteq\textnsqsupseteq
\let\sqcap\textsqcap
\let\sqcup\textsqcup
\let\oplus\textoplus
\let\ominus\textominus
\let\otimes\textotimes
\let\oslash\textoslash
\let\odot\textodot
\let\circledcirc\textcircledcirc
\let\circledast\textcircledast
\let\circleddash\textcircleddash
\let\boxplus\textboxplus
\let\boxminus\textboxminus
\let\boxtimes\textboxtimes
\let\boxdot\textboxdot
\let\vdash\textvdash
\let\dashv\textdashv
\let\ndashv\textndashv
\let\top\texttop
\let\ndownvdash\textndownvdash
\let\bot\textbot
\let\nupvdash\textnupvdash
\let\vDash\textvDash
\let\Vdash\textVdash
\let\Vvdash\textVvdash
\let\nVvash\textnVvash
\let\VDash\textVDash
\let\nvdash\textnvdash
\let\nvDash\textnvDash
\let\nVdash\textnVdash
\let\nVDash\textnVDash
\let\lhd\textlhd
\let\rhd\textrhd
\let\unlhd\textunlhd
\let\unrhd\textunrhd
\let\multimapdotbothA\textmultimapdotbothA
\let\multimapdotbothB\textmultimapdotbothB
\let\multimap\textmultimap
\let\veebar\textveebar
\let\barwedge\textbarwedge
\let\star\textstar
\let\divideontimes\textdivideontimes
\let\bowtie\textbowtie
\let\ltimes\textltimes
\let\rtimes\textrtimes
\let\leftthreetimes\textleftthreetimes
\let\rightthreetimes\textrightthreetimes
\let\backsimeq\textbacksimeq
\let\nbacksimeq\textnbacksimeq
\let\curlyvee\textcurlyvee
\let\curlywedge\textcurlywedge
```

```
\let\Subset\textSubset
\let\nSubset\textnSubset
\let\Supset\textSupset
\let\nSupset\textnSupset
\let\Cap\textCap
\let\Cup\textCup
\let\pitchfork\textpitchfork
\let\lessdot\textlessdot
\let\gtrdot\textgtrdot
\let\lll\textlll
\let\ggg\textggg
\let\lesseqgtr\textlesseqgtr
\let\gtreqless\textgtreqless
\let\curlyeqprec\textcurlyeqprec
\let\ncurlyeqprec\textncurlyeqprec
\let\curlyeqsucc\textcurlyeqsucc
\let\ncurlyeqsucc\textncurlyeqsucc
\let\npreccurlyeq\textnpreccurlyeq
\let\nsucccurlyeq\textnsucccurlyeq
\let\nqsubseteq\textnqsubseteq
\let\nqsupseteq\textnqsupseteq
\let\sqsubsetneq\textsqsubsetneq
\let\sqsupsetneq\textsqsupsetneq
\let\lnsim\textlnsim
\let\gnsim\textgnsim
\let\precnsim\textprecnsim
\let\succnsim\textsuccnsim
\let\ntriangleleft\textntriangleleft
\let\ntriangleright\textntriangleright
\let\ntrianglelefteq\textntrianglelefteq
\let\ntrianglerighteq\textntrianglerighteq
\let\vdots\textvdots
\let\cdots\textcdots
\let\udots\textudots
\let\ddots\textddots
\let\barin\textbarin
\let\diameter\textdiameter
\let\backneg\textbackneg
\let\wasylozenge\textwasylozenge
\let\invbackneg\textinvbackneg
\let\clock\textclock
\let\ulcorner\textulcorner
\let\urcorner\texturcorner
\let\llcorner\textllcorner
\let\lrcorner\textlrcorner
\let\frown\textfrown
\let\smile\textsmile
\let\Keyboard\textKeyboard
\let\langle\textlangle
\let\rangle\textrangle
\let\APLinv\textAPLinv
\let\Tumbler\textTumbler
\let\notslash\textnotslash
\let\notbackslash\textnotbackslash
\let\boxbackslash\textboxbackslash
\let\APLleftarrowbox\textAPLleftarrowbox
\let\APLrightarrowbox\textAPLrightarrowbox
```

```
\let\APLuparrowbox\textAPLuparrowbox
\let\APLdownarrowbox\textAPLdownarrowbox
\let\APLinput\textAPLinput
\let\Request\textRequest
\let\Beam\textBeam
\let\hexagon\texthexagon
\let\APLbox\textAPLbox
\let\ForwardToIndex\textForwardToIndex
\let\RewindToIndex\textRewindToIndex
\let\bbslash\textbbslash
\let\CircledA\textCircledA
\let\CleaningF\textCleaningF
\let\CleaningFF\textCleaningFF
\let\CleaningP\textCleaningP
\let\CleaningPP\textCleaningPP
\let\CuttingLine\textCuttingLine
\let\UParrow\textUParrow
\let\bigtriangleup\textbigtriangleup
\let\Forward\textForward
\let\triangleright\texttriangleright
\let\RHD\textRHD
\let\DOWNarrow\textDOWNarrow
\let\bigtriangledown\textbigtriangledown
\let\Rewind\textRewind
\let\triangleleft\texttriangleleft
\let\LHD\textLHD
\let\diamond\textdiamond
\let\lozenge\textlozenge
\let\LEFTCIRCLE\textLEFTCIRCLE
\let\RIGHTCIRCLE\textRIGHTCIRCLE
\let\openbullet\textopenbullet
\let\boxbar\textboxbar
\let\bigcircle\textbigcircle
\let\Cloud\textCloud
\let\FiveStar\textFiveStar
\let\FiveStarOpen\textFiveStarOpen
\let\Phone\textPhone
\let\boxempty\textboxempty
\let\Checkedbox\textCheckedbox
\let\Crossedbox\textCrossedbox
\let\Coffeecup\textCoffeecup
\let\HandCuffLeft\textHandCuffLeft
\let\HandCuffRight\textHandCuffRight
\let\HandLeft\textHandLeft
\let\HandRight\textHandRight
\let\Radioactivity\textRadioactivity
\let\Biohazard\textBiohazard
\let\Ankh\textAnkh
\let\YinYang\textYinYang
\let\frownie\textfrownie
\let\smiley\textsmiley
\let\blacksmiley\textblacksmiley
\let\sun\textsun
\let\leftmoon\textleftmoon
\let\rightmoon\textrightmoon
\let\mercury\textmercury
\let\earth\textearth
```

```
\let\male\textmale
\let\jupiter\textjupiter
\let\saturn\textsaturn
\let\uranus\texturanus
\let\neptune\textneptune
\let\pluto\textpluto
\let\aries\textaries
\let\taurus\texttaurus
\let\gemini\textgemini
\let\cancer\textcancer
\let\leo\textleo
\let\virgo\textvirgo
\let\libra\textlibra
\let\scorpio\textscorpio
\let\sagittarius\textsagittarius
\let\capricornus\textcapricornus
\let\aquarius\textaquarius
\let\pisces\textpisces
\let\quarternote\textquarternote
\let\twonotes\texttwonotes
\let\sixteenthnote\textsixteenthnote
\let\flat\textflat
\let\natural\textnatural
\let\sharp\textsharp
\let\recycle\textrecycle
\let\Wheelchair\textWheelchair
\let\Flag\textFlag
\let\MineSign\textMineSign
\let\dsmilitary\textdsmilitary
\let\dsmedical\textdsmedical
\let\dsjuridical\textdsjuridical
\let\dschemical\textdschemical
\let\dsbiological\textdsbiological
\let\dscommercial\textdscommercial
\let\manstar\textmanstar
\let\danger\textdanger
\let\FemaleFemale\textFemaleFemale
\let\MaleMale\textMaleMale
\let\FemaleMale\textFemaleMale
\let\Hermaphrodite\textHermaphrodite
\let\Neutral\textNeutral
\let\hexstar\texthexstar
\let\SunCload\textSunCload
\let\Rain\textRain
\let\noway\textnoway
\let\Mountain\textMountain
\let\Tent\textTent
\let\ScissorRight\textScissorRight
\let\ScissorRightBrokenTop\textScissorRightBrokenTop
\let\ScissorHollowRight\textScissorHollowRight
\let\PhoneHandset\textPhoneHandset
\let\Tape\textTape
\let\Plane\textPlane
\let\Envelope\textEnvelope
\let\Peace\textPeace
\let\WritingHand\textWritingHand
\let\PencilRightDown\textPencilRightDown
```

```
\let\PencilRight\textPencilRight
\let\PencilRightUp\textPencilRightUp
\let\NibRight\textNibRight
\let\NibSolidRight\textNibSolidRight
\let\Checkmark\textCheckmark
\let\CheckmarkBold\textCheckmarkBold
\let\XSolid\textXSolid
\let\XSolidBold\textXSolidBold
\let\XSolidBrush\textXSolidBrush
\let\PlusOutline\textPlusOutline
\let\Plus\textPlus
\let\PlusThinCenterOpen\textPlusThinCenterOpen
\let\PlusCenterOpen\textPlusCenterOpen
\let\Cross\textCross
\let\CrossOpenShadow\textCrossOpenShadow
\let\CrossOutline\textCrossOutline
\let\CrossMaltese\textCrossMaltese
\let\DavidStar\textDavidStar
\let\FourAsterisk\textFourAsterisk
\let\JackStar\textJackStar
\let\JackStarBold\textJackStarBold
\let\ClowerTips\textClowerTips
\let\FourStar\textFourStar
\let\FourStarOpen\textFourStarOpen
\let\FiveStarOpenCircled\textFiveStarOpenCircled
\let\FiveStarCenterOpen\textFiveStarCenterOpen
\let\FiveStarOpenDotted\textFiveStarOpenDotted
\let\FiveStarOutline\textFiveStarOutline
\let\FiveStarOutlineHeavy\textFiveStarOutlineHeavy
\let\FiveStarConvex\textFiveStarConvex
\let\FiveStarShadow\textFiveStarShadow
\let\AsteriskBold\textAsteriskBold
\let\AsteriskCenterOpen\textAsteriskCenterOpen
\let\EightStarTaper\textEightStarTaper
\let\EightStarConvex\textEightStarConvex
\let\SixStar\textSixStar
\let\EightStar\textEightStar
\let\EightStarBold\textEightStarBold
\let\TwelveStar\textTwelveStar
\let\SixteenStarLight\textSixteenStarLight
\let\SixFlowerPetalRemoved\textSixFlowerPetalRemoved
\let\SixFlowerOpenCenter\textSixFlowerOpenCenter
\let\Asterisk\textAsterisk
\let\SixFlowerAlternate\textSixFlowerAlternate
\let\FiveFlowerPetal\textFiveFlowerPetal
\let\FiveFlowerOpen\textFiveFlowerOpen
\let\EightFlowerPetal\textEightFlowerPetal
\let\SunshineOpenCircled\textSunshineOpenCircled
\let\SixFlowerAltPetal\textSixFlowerAltPetal
\let\SnowflakeChevron\textSnowflakeChevron
\let\Snowflake\textSnowflake
\let\SnowflakeChevronBold\textSnowflakeChevronBold
\let\Sparkle\textSparkle
\let\SparkleBold\textSparkleBold
\let\AsteriskRoundedEnds\textAsteriskRoundedEnds
\let\EightFlowerPetalRemoved\textEightFlowerPetalRemoved
\let\EightAsterisk\textEightAsterisk
```

```
\let\CircleShadow\textCircleShadow
\let\SquareShadowBottomRight\textSquareShadowBottomRight
\let\SquareTopRight\textSquareTopRight
\let\SquareCastShadowBottomRight\textSquareCastShadowBottomRight
\let\SquareCastShadowTopRight\textSquareCastShadowTopRight
\let\DiamandSolid\textDiamandSolid
\let\RectangleThin\textRectangleThin
\let\Rectangle\textRectangle
\let\RectangleBold\textRectangleBold
\let\perp\textperp
\let\notperp\textnotperp
\let\veedot\textveedot
\let\wedgedot\textwedgedot
\let\leftspoon\textleftspoon
\let\lbrackdbl\textlbrackdbl
\let\rbrackdbl\textrbrackdbl
\let\circlearrowleft\textcirclearrowleft
\let\circlearrowright\textcirclearrowright
\let\longleftarrow\textlongleftarrow
\let\longrightarrow\textlongrightarrow
\let\longleftrightarrow\textlongleftrightarrow
\let\Longleftarrow\textLongleftarrow
\let\Longrightarrow\textLongrightarrow
\let\Longleftrightarrow\textLongleftrightarrow
\let\longmapsto\textlongmapsto
\let\Longmapsfrom\textLongmapsfrom
\let\Longmapsto\textLongmapsto
\let\nwsearrow\textnwsearrow
\let\neswarrow\textneswarrow
\let\lhooknwarrow\textlhooknwarrow
\let\rhooknearrow\textrhooknearrow
\let\lhooksearrow\textlhooksearrow
\let\rhookswarrow\textrhookswarrow
\let\leadsto\textleadsto
\let\rcurvearrowne\textrcurvearrowne
\let\lcurvearrowse\textlcurvearrowse
\let\lcurvearrowsw\textlcurvearrowsw
\let\rcurvearrowse\textrcurvearrowse
\let\lcurvearrowdown\textlcurvearrowdown
\let\rcurvearrowdown\textrcurvearrowdown
\let\rcurvearrowleft\textrcurvearrowleft
\let\rcurvearrowright\textrcurvearrowright
\let\leftrightharpoon\textleftrightharpoon
\let\rightleftharpoon\textrightleftharpoon
\let\updownharpoonrightleft\textupdownharpoonrightleft
\let\updownharpoonleftright\textupdownharpoonleftright
\let\leftleftharpoons\textleftleftharpoons
\let\upupharpoons\textupupharpoons
\let\rightrightharpoons\textrightrightharpoons
\let\downdownharpoons\textdowndownharpoons
\let\leftbarharpoon\textleftbarharpoon
\let\barleftharpoon\textbarleftharpoon
\let\rightbarharpoon\textrightbarharpoon
\let\barrightharpoon\textbarrightharpoon
\let\updownharpoons\textupdownharpoons
\let\downupharpoons\textdownupharpoons
\let\moo\textmoo
```

```
\let\llparenthesis\textllparenthesis
\let\rrparenthesis\textrrparenthesis
\let\invdiameter\textinvdiameter
\let\obar\textobar
\let\obslash\textobslash
\let\obot\textobot
\let\NoChemicalCleaning\textNoChemicalCleaning
\let\olessthan\textolessthan
\let\ogreaterthan\textogreaterthan
\let\boxslash\textboxslash
\let\boxbslash\textboxbslash
\let\boxast\textboxast
\let\boxcircle\textboxcircle
\let\boxbox\textboxbox
\let\Valve\textValve
\let\multimapboth\textmultimapboth
\let\shuffle\textshuffle
\let\uplus\textuplus
\let\bigdoublewedge\textbigdoublewedge
\let\bigdoublevee\textbigdoublevee
\let\Join\textJoin
\let\fatsemi\textfatsemi
\let\circplus\textcircplus
\let\minusdot\textminusdot
\let\dottimes\textdottimes
\let\dtimes\textdtimes
\let\odiv\textodiv
\let\invneg\textinvneg
\let\sqdoublecap\textsqdoublecap
\let\capdot\textcapdot
\let\sqdoublecup\textsqdoublecup
\let\doublewedge\textdoublewedge
\let\doublevee\textdoublevee
\let\doublebarwedge\textdoublebarwedge
\let\veedoublebar\textveedoublebar
\let\eqdot\texteqdot
\let\neqdot\textneqdot
\let\coloncolonequals\textcoloncolonequals
\let\leqslant\textleqslant
\let\nleqslant\textnleqslant
\let\geqslant\textgeqslant
\let\ngeqslant\textngeqslant
\let\lessapprox\textlessapprox
\let\nlessapprox\textnlessapprox
\let\gtrapprox\textgtrapprox
\let\ngtrapprox\textngtrapprox
\let\lneq\textlneq
\let\gneq\textgneq
\let\lnapprox\textlnapprox
\let\gnapprox\textgnapprox
\let\lesseqqgtr\textlesseqqgtr
\let\gtreqqless\textgtreqqless
\let\eqslantless\texteqslantless
\let\eqslantgtr\texteqslantgtr
\let\leftslice\textleftslice
\let\rightslice\textrightslice
\let\preceq\textpreceq
```

```
\let\npreceq\textnpreceq
\let\succeq\textsucceq
\let\nsucceq\textnsucceq
\let\precneq\textprecneq
\let\succneq\textsuccneq
\let\preceqq\textpreceqq
\let\npreceqq\textnpreceqq
\let\succeqq\textsucceqq
\let\nsucceqq\textnsucceqq
\let\precneqq\textprecneqq
\let\succneqq\textsuccneqq
\let\precapprox\textprecapprox
\let\nprecapprox\textnprecapprox
\let\succapprox\textsuccapprox
\let\nsuccapprox\textnsuccapprox
\let\precnapprox\textprecnapprox
\let\succnapprox\textsuccnapprox
\let\subseteqq\textsubseteqq
\let\nsubseteqq\textnsubseteqq
\let\supseteqq\textsupseteqq
\let\nsupseteqq\textnsupseteqq
\let\dashV\textdashV
\let\ndashV\textndashV
\let\Dashv\textDashv
\let\nDashv\textnDashv
\let\DashV\textDashV
\let\nDashV\textnDashV
\let\downmodels\textdownmodels
\let\ndownmodels\textndownmodels
\let\upmodels\textupmodels
\let\nupmodels\textnupmodels
\let\upspoon\textupspoon
\let\interleave\textinterleave
\let\sslash\textsslash
\let\pentagon\textpentagon
\let\varhexagon\textvarhexagon
\let\jinferior\textjinferior
\let\slashdiv\textslashdiv
\let\fivedots\textfivedots
\let\oo\textoo
\let\GaPa\textGaPa
\let\HaPa\textHaPa
\let\ViPa\textViPa
\let\AcPa\textAcPa
\let\SePa\textSePa
\let\ZwPa\textZwPa
\let\fullnote\textfullnote
\let\halfnote\texthalfnote
\let\Vier\textVier
\let\Acht\textAcht
\let\Sech\textSech
\let\Zwdr\textZwdr
\let\Mundus\textMundus
\let\Moon\textMoon
\let\ManFace\textManFace
\let\WomanFace\textWomanFace
\let\Fax\textFax
```

```
  \let\Fire\textFire
  \let\Bicycle\textBicycle
  \let\Gentsroom\textGentsroom
  \let\Ladiesroom\textLadiesroom
  \let\ccnc\textccnc
  \let\ccsa\textccsa
  \let\Info\textInfo
  \let\CESign\textCESign
  \let\neg\textneg
  \let\times\texttimes
  \let\div\textdiv
  \let\pm\textpm
  \let\cdot\textcdot
}% \psdmapshortnames
\newcommand*{\psdaliasnames}{%
  \let\epsdice\HyPsd@DieFace
  \let\fcdice\HyPsd@DieFace
  \let\MoonPha\HyPsd@MoonPha
  \let\mathdollar\textdollar
  \let\EyesDollar\textdollar
  \let\binampersand\textampersand
  \let\with\textampersand
  \let\mathunderscore\textunderscore
  \let\textvertline\textbar
  \let\mathsterling\textsterling
  \let\pounds\textsterling
  \let\brokenvert\textbrokenbar
  \let\mathsection\textsection
  \let\S\textsection
  \let\mathparagraph\textparagraph
  \let\MultiplicationDot\textperiodcentered
  \let\Squaredot\textperiodcentered
  \let\vartimes\textmultiply
  \let\MVMultiplication\textmultiply
  \let\eth\dh
  \let\crossd\textcrd
  \let\textbard\textcrd
  \let\bard\textcrd
  \let\textcrh\texthbar
  \let\crossh\texthbar
  \let\planck\texthbar
  \let\eng\ng
  \let\engma\ng
  \let\crossb\textcrb
  \let\textbarb\textcrb
  \let\barb\textcrb
  \let\Florin\textflorin
  \let\hv\texthvlig
  \let\hausak\texthtk
  \let\crossnilambda\textcrlambda
  \let\barlambda\textcrlambda
  \let\lambdabar\textcrlambda
  \let\lambdaslash\textcrlambda
  \let\textnrleg\textPUnrleg
  \let\textpipevar\textpipe
  \let\textdoublepipevar\textdoublepipe
  \let\textdoublebarpipevar\textdoublebarpipe
```

```
\let\textcrg\textgslash
\let\textdblig\textPUdblig
\let\textqplig\textPUqplig
\let\textcentoldstyle\textslashc
\let\textbarc\textslashc
\let\inva\textturna
\let\vara\textscripta
\let\invscripta\textturnscripta
\let\rotvara\textturnscripta
\let\hookb\texthtb
\let\hausab\texthtb
\let\varopeno\textopeno
\let\curlyc\textctc
\let\taild\textrtaild
\let\hookd\texthtd
\let\hausad\texthtd
\let\er\textrhookschwa
\let\epsi\textniepsilon
\let\hookrevepsilon\textrhookrevepsilon
\let\closedrevepsilon\textcloserevepsilon
\let\barj\textbardotlessj
\let\hookg\texthtg
\let\varg\textscriptg
\let\vod\textipagamma
\let\invh\textturnh
\let\udesc\textturnh
\let\hookh\texthth
\let\voicedh\texthth
\let\hookheng\texththeng
\let\ibar\textbari
\let\vari\textniiota
\let\tildel\textltilde
\let\latfric\textbeltl
\let\taill\textrtaill
\let\lz\textlyoghlig
\let\invm\textturnm
\let\rotm\textturnm
\let\legm\textturnmrleg
\let\labdentalnas\textltailm
\let\emgma\textltailm
\let\nj\textltailn
\let\enya\textltailn
\let\tailn\textrtailn
\let\closedniomega\textcloseomega
\let\varomega\textcloseomega
\let\invr\textturnr
\let\rotr\textturnr
\let\invlegr\textturnlonglegr
\let\tailinvr\textturnrrtail
\let\legr\textlonglegr
\let\tailr\textrtailr
\let\flapr\textfishhookr
\let\flap\textfishhookr
\let\tails\textrtails
\let\curlyesh\textctesh
\let\clickt\textturnt
\let\tailt\textrtailt
```

```
\let\ubar\textbaru
\let\rotOmega\textniupsilon
\let\invv\textturnv
\let\pwedge\textturnv
\let\invw\textturnw
\let\rotw\textturnw
\let\invy\textturny
\let\roty\textturny
\let\tailz\textrtailz
\let\curlyz\textctz
\let\curlyyogh\textctyogh
\let\ejective\textglotstop
\let\glottal\textglotstop
\let\reveject\textrevglotstop
\let\clickc\textstretchc
\let\textstretchcvar\textstretchc
\let\clickb\textbullseye
\let\textObullseye\textbullseye
\let\textctjvar\textctj
\let\textturnsck\textturnk
\let\dz\textdzlig
\let\tesh\textteshlig
\let\digamma\textdigammagreek
\let\hardsign\cyrhrdsn
\let\softsign\cyrsftsn
\let\hebsin\hebshin
\let\textsck\textPUsck
\let\textscm\textPUscm
\let\textscp\textPUscp
\let\textrevscr\textPUrevscr
\let\textrhooka\textPUrhooka
\let\textrhooke\textPUrhooke
\let\textrhookepsilon\textPUrhookepsilon
\let\textrhookopeno\textPUrhookopeno
\let\textdoublevertline\textbardbl
\let\dag\textdagger
\let\ddagger\textdaggerdbl
\let\ddag\textdaggerdbl
\let\mathellipsis\textellipsis
\let\EurDig\texteuro
\let\EURdig\texteuro
\let\EurHv\texteuro
\let\EURhv\texteuro
\let\EurCr\texteuro
\let\EURcr\texteuro
\let\EurTm\texteuro
\let\EURtm\texteuro
\let\Eur\texteuro
\let\Denarius\textDeleatur
\let\agemO\textmho
\let\EstimatedSign\textestimated
\let\Ecommerce\textestimated
\let\bindnasrepma\textinvamp
\let\parr\textinvamp
\let\MVRightArrow\textrightarrow
\let\MVRightarrow\textrightarrow
\let\MVArrowDown\textdownarrow
```

```
\let\Force\textdownarrow
\let\textglobrise\textnearrow
\let\textglobfall\textsearrow
\let\Lightning\textlightning
\let\Conclusion\textRightarrow
\let\dashedleftarrow\textdashleftarrow
\let\dashedrightarrow\textdashrightarrow
\let\varnothing\textemptyset
\let\owns\textni
\let\notni\textnotowner
\let\varprop\textpropto
\let\varangle\textsphericalangle
\let\Anglesign\textsphericalangle
\let\AngleSign\textsphericalangle
\let\notdivides\textnmid
\let\varowedge\textowedge
\let\varovee\textovee
\let\varint\textint
\let\varoint\textoint
\let\downtherefore\textbecause
\let\textdotdiv\textdotminus
\let\AC\textsim
\let\wreath\textwr
\let\nthickapprox\textnapprox
\let\VHF\texttriplesim
\let\notasymp\textnasymp
\let\Doteq\textdoteqdot
\let\corresponds\texthateq
\let\Corresponds\texthateq
\let\nequal\textneq
\let\Congruent\textequiv
\let\NotCongruent\textnequiv
\let\notequiv\textnequiv
\let\LessOrEqual\textleq
\let\LargerOrEqual\textgeq
\let\apprle\textlesssim
\let\apprge\textgtrsim
\let\varoplus\textoplus
\let\varominus\textominus
\let\varotimes\textotimes
\let\varoslash\textoslash
\let\varodot\textodot
\let\ocirc\textcircledcirc
\let\varocircle\textcircledcirc
\let\varoast\textcircledast
\let\oasterisk\textcircledast
\let\rightvdash\textvdash
\let\leftvdash\textdashv
\let\nleftvdash\textndashv
\let\downvdash\texttop
\let\upvdash\textbot
\let\nperp\textnupvdash
\let\models\textvDash
\let\rightmodels\textvDash
\let\rightVdash\textVdash
\let\rightModels\textVDash
\let\nrightvdash\textnvdash
```

```
\let\nrightmodels\textnvDash
\let\nmodels\textnvDash
\let\nrightVdash\textnVdash
\let\nrightModels\textnVDash
\let\lessclosed\textlhd
\let\gtrclosed\textrhd
\let\leqclosed\textunlhd
\let\trianglelefteq\textunlhd
\let\geqclosed\textunrhd
\let\trianglerighteq\textunrhd
\let\Bowtie\textbowtie
\let\varcurlyvee\textcurlyvee
\let\varcurlywedge\textcurlywedge
\let\doublecap\textCap
\let\doublecup\textCup
\let\varsqsubsetneq\textsqsubsetneq
\let\varsqsupsetneq\textsqsupsetneq
\let\nlessclosed\textntriangleleft
\let\ngtrclosed\textntriangleright
\let\Clocklogo\textclock
\let\ClockLogo\textclock
\let\baro\textstmaryrdbaro
\let\varparallelinv\textbbslash
\let\CleaningA\textCircledA
\let\Kutline\textCuttingLine
\let\CutLine\textCuttingLine
\let\Cutline\textCuttingLine
\let\MoveUp\textUParrow
\let\APLup\textbigtriangleup
\let\Bleech\textbigtriangleup
\let\MoveDown\textDOWNarrow
\let\APLdown\textbigtriangledown
\let\Diamond\textdiamond
\let\varbigcirc\textbigcircle
\let\Telefon\textPhone
\let\Box\textboxempty
\let\CheckedBox\textCheckedbox
\let\XBox\textCrossedbox
\let\CrossedBox\textCrossedbox
\let\rightpointleft\textHandLeft
\let\leftpointright\textHandRight
\let\PointingHand\textHandRight
\let\Pointinghand\textHandRight
\let\Radiation\textRadioactivity
\let\Yinyang\textYinYang
\let\YingYang\textYinYang
\let\Yingyang\textYinYang
\let\Frowny\textfrownie
\let\Smiley\textsmiley
\let\Sun\textsun
\let\Mercury\textmercury
\let\textfemale\textPUfemale
\let\female\textPUfemale
\let\venus\textPUfemale
\let\Venus\textPUfemale
\let\Female\textPUfemale
\let\Earth\textearth
```

```
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\let\Mars\textmale
\let\Male\textmale
\let\Jupiter\textjupiter
\let\Saturn\textsaturn
\let\Uranus\texturanus
\let\Neptune\textneptune
\let\Pluto\textpluto
\let\Aries\textaries
\let\Taurus\texttaurus
\let\Gemini\textgemini
\let\Cancer\textcancer
\let\Leo\textleo
\let\Virgo\textvirgo
\let\Libra\textlibra
\let\Scorpio\textscorpio
\let\Sagittarius\textsagittarius
\let\Capricorn\textcapricornus
\let\Aquarius\textaquarius
\let\Pisces\textpisces
\let\spadesuit\textspadesuitblack
\let\Heart\textheartsuitwhite
\let\heartsuit\textheartsuitwhite
\let\diamondsuit\textdiamondsuitwhite
\let\clubsuit\textclubsuitblack
\let\eighthnote\textmusicalnote
\let\Recycling\textrecycle
\let\VarFlag\textFlag
\let\textxswup\textdsmilitary
\let\textuncrfemale\textPUuncrfemale
\let\Football\textSoccerBall
\let\CutLeft\textScissorRightBrokenBottom
\let\Cutright\textScissorRightBrokenBottom
\let\RightScissors\textScissorRight
\let\Leftscissors\textScissorRight
\let\Letter\textEnvelope
\let\Writinghand\textWritingHand
\let\checkmark\textCheckmark
\let\davidstar\textDavidStar
\let\llbracket\textlbrackdbl
\let\rrbracket\textrbrackdbl
\let\RightTorque\textlcurvearrowdown
\let\Righttorque\textlcurvearrowdown
\let\LeftTorque\textrcurvearrowdown
\let\Lefttorque\textrcurvearrowdown
\let\textvarobar\textobar
\let\circledbslash\textobslash
\let\obackslash\textobslash
\let\varobslash\textobslash
\let\odplus\textobot
\let\varolessthan\textolessthan
\let\varogreaterthan\textogreaterthan
\let\divdot\textminusdot
\let\doublesqcap\textsqdoublecap
\let\doublesqcup\textsqdoublecup
\let\merge\textdoublevee
\let\leftVdash\textdashV
```

```
  \let\nleftVdash\textndashV
  \let\leftmodels\textDashv
  \let\nleftmodels\textnDashv
  \let\leftModels\textDashV
  \let\nleftModels\textnDashV
  \let\varparallel\textsslash
  \let\textheng\textPUheng
  \let\textlhookfour\textPUlhookfour
  \let\textscf\textPUscf
  \let\textaolig\textPUaolig
  \let\Ganz\textfullnote
  \let\Halb\texthalfnote
  \let\Womanface\textWomanFace
  \let\Faxmachine\textFax
  \let\CEsign\textCESign
}% \psdaliasnames
⟨/psdextra⟩
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52 End of file hycheck.tex

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⟨*check⟩
\typeout{}
\begin{document}
\end{document}
⟨/check⟩
```

53 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

\! 195, 220, 2177
\" 202, 227, 3448, 15197, 15557, 15569, 15581, 15707, 15793, 15807, 15815, 15830, 15842, 15859, 15873, 15884, 15885, 15899, 15911, 15918, 15969, 16011, 16038, 16067, 16240, 16254, 16262, 16276, 16290, 16307, 16321, 16332, 16333, 16348, 16360, 16368, 16626, 17288, 17290, 17301, 17353, 17355, 17387, 17401, 17557, 17571, 17815, 17817, 17832, 17835, 17837, 17839, 17841, 17843, 17853, 17855, 17857, 17859, 17866, 17869, 17871, 17873, 17879, 17881, 17887, 17889, 17895, 17897, 18104, 18106, 18256, 18258, 18272, 18274, 18294
\# . 563, 2262, 2263, 5094, 5105, 5107, 5123, 5155, 5215, 9414, 9416, 10259, 10268, 10303, 11149, 12791, 12802, 12838, 13077, 13086, 13126, 15117
\$ 184, 209, 333, 564, 5096, 5214
\% . 565, 2177, 2237, 2238, 5093, 5102, 5104, 5156, 9416
\& . . . 185, 210, 566, 5097, 5108, 5110, 12848
\' 203, 228, 3388, 3402, 3443, 3445, 3446, 3447, 3448, 3453, 3454, 3456, 3461, 3467, 3471, 3472, 3475, 3518, 3519, 3524, 3525, 3526, 3527, 3528, 3529, 3530, 3531, 3533, 3536, 3543, 3544, 3545, 3546, 3549, 3555, 3568, 15195, 15554, 15566, 15578, 15787, 15803, 15811, 15824, 15838, 15844, 15853, 15869, 15878, 15879, 15893, 15907, 15913, 15937, 15939, 15940, 15941, 15944, 15946, 15947, 15948, 15956, 16008, 16035, 16064, 16234, 16250, 16258, 16270, 16286, 16292, 16301, 16317, 16326, 16327, 16342, 16356, 16362, 16382, 16384, 16498, 16500, 16518, 16520, 16554, 16556, 16566, 16568, 16628, 16630, 16751, 16753, 16759, 16761, 16764, 16767, 17221, 17223, 17225, 17227, 17229, 17231, 17233, 17236, 17292, 17294, 17296, 17298, 17357, 17360, 17362, 17391, 17411, 17561, 17581, 18120, 18122, 18144, 18146, 18184, 18186, 18252, 18254, 20494, 20499, 20504, 20509, 20514, 20519, 20524, 20529, 20534, 20539, 20544, 20549, 20554, 20559, 20564, 20569, 20574, 20579, 20584, 20589, 20594, 20599, 20604, 20609
\(. 190, 215, 334, 786, 789, 791, 2179, 15263, 15627
\) . 191, 216, 335, 758, 764, 767, 2180, 15264, 15629
* 337
\+ 200, 225, 338
\- 201, 226
\. 198, 223, 331, 1322, 3809, 4249, 15560, 15572, 15584, 15648, 15942, 15949, 15967, 16014, 16041, 16073, 16150, 16151, 16390, 16392, 16420, 16422, 16440, 16442, 16479, 16510, 16512, 16632, 16634, 16819, 16821, 16827, 16829, 18036, 18038, 18048, 18050, 18088, 18090, 18096, 18098, 18148, 18150, 18156, 18158, 18188, 18190, 18192, 18194, 18204, 18206, 18212, 18214, 18260, 18262, 18268, 18270, 18276, 18278, 18300
\/ . 194, 219, 699, 700, 701, 769, 1946, 8785
\: 189, 214
\; 199, 224, 9108
\< 196, 221
\= . . . 167, 173, 180, 183, 15562, 15574, 15586, 15962, 16018, 16045, 16072, 16370, 16372, 16412, 16414, 16464, 16466, 16467, 16538, 16540, 16598, 16600, 16831, 16833, 17849, 17851, 17875, 17877, 18092, 18094
\> 197, 222
\? 339
\@ 3439
\@@@ 2618
\@@BOOKMARK 15178, 15181, 15239, 15307, 15314
\@@Listbox 13480, 13511, 14082, 14116, 14437, 14478
\@@Menu 13721, 13729
\@@PasswordField . 13670, 13676
\@@Radio . 13465, 13486, 13719, 13743, 14067, 14088, 14422, 14443
\@@TextField 13672, 13687
\@@commahyperpage 8919, 8920
\@@hyper@@readexternallink 5470, 5472
\@@hyperref 5317, 5318
\@@latextohtmlX . . . 3251, 5687
\@@wrindex 8820, 8821
\@@writetorep 15038, 15044
\@Alph 7386, 7388
\@BIBLABEL . 8240, 8246, 8252
\@BOOKMARK . . 15178, 15180
\@CITE 8317, 8325
\@CITEX 8319
\@CheckBox 6488, 11214, 13600, 13636, 13774, 14204, 14580
\@ChoiceMenu 6485, 11217, 13418, 13639, 13709, 14019, 14374
\@Form 6145, 11204, 13171, 13626, 13653, 13908, 14288
\@Gauge . . . 6494, 11208, 13355, 13630, 13658, 13795, 14285
\@Localurlfalse 11157
\@Localurltrue 11154
\@M . . . 1228, 2675, 5201, 7846
\@MM 8002
\@PackageError 265
\@PackageInfo 268
\@PackageInfoNoLine 269
\@PackageWarning 266
\@PackageWarningNoLine . . 267
\@PushButton 6491, 11220, 13522, 13642, 13755, 14126, 14494
\@Refstar 9223, 9230
\@Reset 6500, 11223, 13573, 13645, 13771, 14179, 14551
\@Roman 660

\@SCTR 8967, 9019
\@SetMaxRnhefLabel 8314
\@Submit . . 6497, 11226, 13553, 13648, 13768, 14156, 14528
\@TextField . 6482, 11211, 13386, 13633, 13661, 13989, 14337
\@addchap 15514
\@addtoreset . 8714, 8715, 8729, 8964
\@afterheading 15531
\@alph 7382, 7384
\@anchorcolor 3788, 10228, 10323, 11271, 12759, 13047
\@arabic 1198, 1203, 1207, 7294, 7310, 7381
\@auxout 2612, 5364, 5634, 6708, 6710, 7471, 7499, 8260, 8275, 8291, 8301, 8331, 8354, 8380, 8386, 8410
\@backslashchar 883, 886, 889, 1452, 2139, 2143, 2146, 2284, 2301, 2307, 2311, 2319, 5118, 9429, 9439
\@baseurl 3795, 3797, 5528, 9943, 9946, 10213, 10215, 10501, 10503, 11026, 11036, 11122, 11124, 11660, 11662, 12052, 12066, 12744, 12746, 12945, 12959, 13033, 13035
\@begintheorem 7748, 7752, 7778, 7785, 7809, 7816
\@bibitem 8267, 8298
\@biblabel 8240, 8287
\@bookmarkopenstatus . . 4918, 4935, 15099
\@bookmarksopenlevel . . 3749, 3751, 4921
\@bsphack 2605, 5357, 8384
\@capstartfalse 8133
\@caption 8098, 8110, 8153, 8190, 8192
\@captype 2614, 8093, 8097, 8101, 8108, 8115, 8169, 8183, 8187, 8190
\@car . . . 1734, 1750, 1768, 1788, 3728, 5763, 9895, 9906
\@cdr 9896, 9907
\@chapter 15438, 15439
\@cite . . 8317, 8348, 8445, 8451
\@cite@opt 8446, 8452, 8456, 8466
\@citea . 8320, 8327, 8328, 8347, 8350, 8351
\@citeb . 8326, 8329, 8331, 8333, 8337, 8340, 8349, 8352, 8354, 8356, 8360, 8363
\@citebordercolor . . 3851, 4463
\@citecolor 3789
\@citedata@opt 8447, 8453, 8455
\@citedatax 8462, 8467
\@citedatax@opt . . . 8459, 8465
\@citeseppen 8444, 8450
\@citex 8346
\@clubpenalty 7848
\@commahyperpage . 8914, 8919
\@ctrerr 7359, 7368
\@currDisplay 6233, 13430, 13493, 13738, 13752, 14031, 14095, 14386, 14453
\@currValue . . 6235, 6237, 13491, 13502, 13738, 13749, 14093, 14103, 14451, 14468
\@currentHlabel 7432
\@currentHref 2620, 5663, 6590, 7275, 7412, 7414, 7423, 7425, 7432, 7513, 7515, 7525, 7576, 7587, 7589, 7628, 7647, 7651, 7660, 7686, 7783, 7814, 7839, 7918, 7928, 7930, 7931, 7987, 8015, 8113, 8139, 8143, 8170, 8172, 8389, 8573, 8596, 8609, 8616, 8684, 8708, 8710, 15028, 15419, 15432, 15443, 15473, 15490, 15525
\@currentlabel 7555, 8005, 8382, 8389, 8689, 8696, 8973, 9025
\@currentlabelname . 2610, 7919, 7988, 8016, 8118
\@currentlabstr 2609, 2617
\@curropt . 13427, 13428, 13489, 13490, 13727, 13734, 13735, 13737, 13744, 13745, 13747, 14028, 14029, 14091, 14092, 14383, 14384, 14449, 14450
\@dblarg 8108, 8190
\@definecounter 8669, 8670
\@documentclasshook 4544
\@ehc . . 2973, 3088, 3114, 3130, 3165, 3204, 3211, 3222, 3228, 4628, 5263, 5492, 5857, 5981, 6177, 6210, 6420, 6473, 13531, 13584, 14136, 14190, 14504, 14562
\@ehd . . 63, 284, 290, 314, 8094, 8184
\@elt . . . 7282, 7284, 7285, 7290
\@endFrom . 6146, 11207, 13354, 13629, 13657, 13962, 14315
\@endparenv . . 7746, 7774, 7805
\@eqncr 7670
\@eqnstarfalse 7642, 7673
\@eqnstartrue 7670
\@eqnswtrue 7603, 7612
\@esphack 2626, 5368, 8394, 8832
\@extra@b@citeb 8225, 8228, 8245, 8250, 8270, 8318, 8340, 8356, 8363
\@extra@binfo . 8224, 8227, 8231
\@fifthoffive . . 4585, 5033, 5351, 9174, 9293
\@filebordercolor 3852, 4461, 9813, 9815, 10835, 10837, 11357, 11359, 12437
\@filecolor . . . 3778, 3790, 9834, 10442, 10459, 10853, 11363
\@firstoffive . . 5029, 5038, 9213, 9298
\@firstofone 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 649, 686, 843, 1064, 1075, 1308, 1312, 1316, 1654, 4227, 4920, 6111, 6117, 6383, 7190, 7379, 7391, 7458, 8106, 8188, 8329, 8352, 8534, 8775, 10119, 13862, 14666, 14683, 14701
\@firstoftwo . . . 669, 1016, 1190, 1862, 6678, 15480
\@fnsymbol 7380
\@footnotemark 7861, 7924, 7942, 8024, 8036, 8038, 8050, 8051, 8081, 8083
\@footnotetext 7860, 7867, 7901, 7941, 8037, 8039, 8053, 8054, 8074
\@for . . . 3828, 5753, 8326, 8349, 13427, 13489, 13727, 13734, 13744, 14028, 14091, 14383, 14449
\@fourthoffive 5032, 5352, 9288, 9295
\@gobble 49, 56, 117, 589, 590, 591, 592, 629, 630, 631, 632, 672, 673, 674, 683, 685, 847, 1023, 1062, 1073, 1214, 1218, 1221, 1591, 1652, 1671, 1684, 1688, 1751, 1814, 1815, 1822, 1827, 1841, 1846, 2465, 2647, 2920, 2932, 4215, 4536, 4573, 4630, 5084, 6096, 6373, 6643, 6647, 6664, 6666, 6682, 6683, 6686, 6687, 6689, 7164, 7184, 7188, 7737, 7765, 7798, 8095, 8185, 8572, 9353, 10121, 11540, 11543, 13909, 14289, 15085, 15086,

15087, 15088
\@gobblefour . . . 595, 709, 1348, 1349, 1350, 4011, 9088
\@gobbleopt 6689, 6691
\@gobbletwo 593, 676, 702, 710, 711, 860, 1347, 1769, 1846, 1850, 2805, 4009, 4010, 4577, 6042, 6668, 6677, 6685, 6689, 9276, 15429
\@harvarditem 8399, 8401
\@hyper@@anchor . . 5578, 5579
\@hyper@itemfalse . . 7220, 7238, 7252
\@hyper@itemtrue 7221
\@hyper@launch . . . 5498, 5507, 9838, 10858, 11432, 12455
\@hyper@linkfile . . . 5479, 5482, 5486, 5518
\@hyper@readexternallink 5473, 5477
\@hyperdef 5325, 5326
\@hyperpage 8911, 8912
\@hyperref 5306, 5317
\@ifclasslater 15537, 15542
\@ifclassloaded 2597, 5060, 7443, 7480, 8309, 8947, 8951, 10124, 15536, 15541
\@ifnextchar . . 12, 88, 103, 123, 703, 5208, 5306, 5325, 5426, 6145, 6482, 6485, 6488, 6491, 6494, 6497, 6500, 6689, 6762, 6771, 8040, 8058, 8399, 8457, 12077, 12366, 12380, 15178, 15181
\@ifpackagelater 238, 1084, 2628, 7434, 8739
\@ifpackageloaded 516, 913, 1083, 2600, 3025, 3705, 3709, 4521, 4733, 7261, 7433, 7446, 7508, 7541, 7545, 7565, 7599, 7727, 7731, 7938, 7954, 7994, 8166, 8369, 8442, 8681, 8738, 8780, 8781, 8782, 8957, 9222, 9366, 9370, 13025
\@ifpackagewith 3586, 4519, 8704
\@ifstar . . . 66, 5055, 5058, 5067, 5071, 6625, 6629, 6695, 6699, 9230, 9256, 9276
\@ifundefined 34, 373, 980, 990, 1019, 1022, 1036, 2894, 3043, 3604, 3641, 3649, 3656, 3678, 3726, 4487, 5852, 6172, 7117, 7230, 7265, 7280, 7547, 7568, 7569, 7622, 7653, 7681, 7718, 8099, 8117, 8234, 8317, 8333, 8356, 8678, 8719, 8727, 8728, 8741, 8742, 8749, 9472, 11098, 11740, 11741, 12550, 13909, 14289, 14675, 15095
\@indexfile . . . 8824, 8839, 8854, 8858, 8868
\@inlabelfalse 7827
\@inmathwarn 557, 558
\@inpenc@undefined@ 2339
\@labels 7843
\@latex@ 6793, 6794
\@latex@error 8094, 8184
\@latex@warning . . . 5344, 8336, 8359, 9149, 9169, 9186, 9304
\@lbibitem 8241, 8286
\@linkbordercolor . . 3853, 4458, 9768, 11261
\@linkcolor 3787, 12105
\@linkdim . . . 485, 10277, 10278, 10286, 10287, 10288, 10357, 10358, 10370, 10371, 10372, 10394, 10395, 10408, 10409, 10410, 10434, 10435, 10448, 10449, 10450, 12812, 12813, 12821, 12822, 12823, 13095, 13096, 13109, 13110, 13111
\@listctr 8276, 8302
\@m . . . 1211, 8328, 8351, 11587
\@mainaux 6706, 6707, 7147, 7155, 13855, 13858, 13886, 13901
\@makecaption 8134, 8136, 8203
\@makefnmark 7933, 8086
\@makefntext 8006
\@makeother 166, 167, 179, 180, 182, 183, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 5108, 9401, 15267, 15270, 15297, 15300
\@makeschapterhead 15528, 15530
\@mem@titleref 5067
\@mem@titlerefnolink 5067
\@menubordercolor . 3854, 4460, 10178, 10180, 10932, 10934, 11470, 11472, 12359
\@menucolor 3792, 10193, 10943, 11476
\@minipagefalse 7823
\@mkboth . . . 676, 9070, 15429, 15517, 15519
\@mpfn 7864, 8059, 8071
\@mpfootnotetext . . 7867, 7880, 7881, 7943
\@mycount 15243, 15253
\@namedef 1328, 2568, 2570, 2572, 2574, 2576, 2578, 2580, 2582, 2584, 2586, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2742, 3053, 3054, 3055, 3056, 3057, 3058, 3059, 3060, 3595, 3607, 5863, 5864, 5865, 5866, 6188, 6189, 7444, 7669, 7672, 8374, 8375, 8376, 8377
\@namerefstar 5071, 9218
\@nameuse 2614, 3050, 5869, 6180
\@ne 1197, 2992, 3153, 4906, 5233, 10764, 10765, 10770, 11639, 12583, 13361, 14324
\@newctr 8674, 8675
\@newl@bel . . . 5617, 6756, 8227
\@newlistfalse 7824
\@nil 295, 322, 502, 506, 511, 515, 530, 1646, 1649, 1657, 1734, 1752, 1770, 1786, 1788, 1791, 1794, 1797, 2348, 2350, 2366, 2368, 3728, 5140, 5144, 5149, 5545, 5553, 5559, 5561, 5763, 6364, 6367, 6386, 6781, 6784, 6791, 6793, 6794, 6907, 6955, 6956, 6958, 6981, 6998, 7052, 7054, 7571, 7580, 7582, 7594, 8898, 8900, 8907, 8930, 8933, 8943, 9153, 9156, 9312, 9343, 9425, 9431, 9435, 9441, 9895, 9896, 9906, 9907, 11505, 11507, 14673, 14686, 14692, 15127, 15130, 15133, 15142, 15145, 15154
\@nobreakfalse 6753, 7846
\@nocnterr 8728, 8742
\@nocounterr 8727, 8741
\@noparitemfalse 7825
\@number 7379, 7458, 8534
\@nx . . . 8731, 8745, 8748, 8750
\@onelevel@sanitize . 2798, 2802, 3007, 3727, 4605, 4635, 4656, 5174, 5540, 5543, 5556, 5570, 5853, 6089, 6173, 7008, 7010, 7419, 8602, 9199, 10622, 15124
\@oparg . 7748, 7752, 7778, 7785, 7809, 7816
\@outlinefile 15097, 15186, 15281, 15283, 15285, 15363, 15365, 15367
\@pagerefstar . . 5058, 9215, 9246

\@pagesetref 9165
\@parboxrestore 8004, 8126, 8198
\@parcount 15245, 15253
\@part 15456, 15463
\@pdfauthor . 4027, 4466, 10003, 10483, 10973, 11713, 11978, 12876
\@pdfborder 3670, 3872, 3873, 3874, 3881, 3885, 3908, 3910, 5001, 9701, 10640, 11259, 11844, 11939, 12357, 12370, 12385, 12406, 12434, 12465, 12494, 12589, 12685, 12853
\@pdfborderstyle 3671, 3889, 3890, 3891, 3900, 3904, 3912, 3914, 5002, 6335, 9702, 10641, 11260, 11845, 11940, 12358, 12371, 12386, 12407, 12435, 12466, 12495, 12590, 12686, 12854
\@pdfcreationdate . . 4060, 4469, 10007, 10009, 10475, 10477, 10965, 10967, 11953, 11955, 12868, 12870
\@pdfcreator . 4055, 4468, 10006, 10474, 10964, 11716, 11977, 12867
\@pdfdirection 9966, 10539, 11006, 11672, 12032, 12925
\@pdfduplex 9972, 10545, 11012, 11678, 12038, 12931
\@pdfhighlight 3858, 3866, 3868, 4464, 11843, 11938, 12356, 12405, 12433, 12464
\@pdfkeywords 4079, 4472, 10019, 10472, 10978, 11721, 11979, 12865
\@pdflang 4339, 4341, 4342, 4344, 4346, 4348, 4354, 4384, 4385, 4387, 4408, 4412, 4414, 4431, 4440, 4447, 4479, 9992, 9994, 10567, 10569, 11046, 11048, 12062, 12064, 12955, 12957
\@pdfm@dest 10584, 10643, 10647
\@pdfm@mark 7135, 10583, 10635, 10655, 10669, 10671, 10685, 10687, 10692, 10693, 10723, 10747, 10749, 10754, 10772, 10795, 10828, 10863, 10895, 10925, 10960, 11027, 11054, 14292, 14293, 14294, 14313, 14331, 14334, 14364, 14459, 14486, 14517, 14542, 14570, 14599, 14610, 14642, 14650, 15334
\@pdfmoddate 4066, 4470, 10011, 10013, 10479, 10481, 10969, 10971, 11957, 11961, 12872, 12874
\@pdfnonfullscreenpagemode . . . 9965, 10538, 11005, 11671, 12031, 12924
\@pdfnumcopies . . . 9981, 9983, 10554, 10556, 11021, 11023, 11687, 11689, 12047, 12049, 12940, 12942
\@pdfpageduration 3805, 10063, 10067, 10072, 11071, 11073, 11076, 11596, 11598, 11601, 11883, 11885, 11893
\@pdfpagelayout . . 9991, 10566, 11045, 11692, 11694, 12061, 12954
\@pdfpagemode 4721, 4722, 4931, 4932, 4941, 4942, 9945, 10522, 11040, 11659, 12015, 12908
\@pdfpagescrop 4293, 4474, 9930, 9934, 10505, 10506, 10527, 10529, 11052, 11054, 11648, 11650, 12020, 12022, 12913, 12915
\@pdfpagetransition 3801, 10039, 10043, 10048, 11060, 11062, 11065, 11485, 11487, 11489, 11866, 11868, 11876
\@pdfpicktraybypdfsize . . 9973, 9975, 10546, 10548, 11013, 11015, 11679, 11681, 12039, 12041, 12932, 12934
\@pdfprintarea . . . 9969, 10542, 11009, 11675, 12035, 12928
\@pdfprintclip 9970, 10543, 11010, 11676, 12036, 12929
\@pdfprintpagerange 3979, 4478, 9977, 9979, 10550, 10552, 11017, 11019, 11683, 11685, 12043, 12045, 12936, 12938
\@pdfprintscaling . 9971, 10544, 11011, 11677, 12037, 12930
\@pdfproducer 4033, 4467, 9871, 10015, 10017, 10465, 10466, 10484, 10486, 10949, 10950, 10954, 10974, 10976, 11616, 11617, 11621, 11624, 11625, 11717, 11719, 11964, 11968, 12491, 12492, 12582, 12584, 12586, 12682, 12683, 12858, 12859, 12877, 12879
\@pdfremotestartview 4253, 4255, 4256, 4257, 4280, 4284, 4286, 4287, 4289, 4476, 9826, 10844, 12445
\@pdfstartpage 4236, 4238, 4477, 9951, 9955, 10509, 10514, 11029, 11033, 11652, 11656, 12002, 12007, 12895, 12900
\@pdfstartview 4243, 4245, 4475, 9953, 9955, 10511, 10515, 11031, 11033, 11654, 12004, 12008, 12897, 12901
\@pdfsubject . 4073, 4471, 10005, 10488, 10963, 11715, 11976, 12881
\@pdftempa . . . 5484, 5485, 5488
\@pdftempwordfile . . 5475, 5485
\@pdftempwordrun . 5476, 5488
\@pdftitle . . . 4021, 4465, 10004, 10473, 10962, 11714, 11975, 12866
\@pdftrapped 4084, 4087, 4090, 4099, 4108, 4473, 10020, 10022, 10979, 10981, 11980
\@pdfview . . . 4217, 9683, 9691, 10590, 10594, 10598, 10602, 10606, 10610, 10611, 10614, 10615, 10618, 10622, 10624, 10639, 11258, 11268, 11280, 11781, 11801, 12496, 12591, 12687, 12967
\@pdfviewarea 9967, 10540, 11007, 11673, 12033, 12926
\@pdfviewclip 9968, 10541, 11008, 11674, 12034, 12927
\@pdfviewparams . . 4219, 4221, 11781, 11801, 12497, 12592, 12688, 12968
\@percentchar 5103, 5104, 5156, 15101
\@processme . 6221, 6222, 10045, 10051, 10069, 10075, 10091, 10097, 12080, 12081, 12203, 12204, 12207, 12208
\@protected@testopt 706
\@protected@testopt@xargs . 707
\@refstar 5055, 9212
\@runbordercolor . . . 3855, 4462, 9847, 9849, 10870, 10872, 11451, 11453, 12468
\@runcolor . . . 3793, 9867, 10886, 11457
\@safe@activesfalse . . 658, 5035
\@safe@activestrue . . . 657, 5034
\@savsf 9686, 9694
\@schapter 15426, 15427

\@secondoffive 4586, 5030, 5043, 9175, 9176, 9216
\@secondoftwo 639, 648, 1014, 1193, 1720, 1860, 4585, 4586, 15482
\@sect 15477, 15478
\@seqncr 7670
\@serial@counter . 15193, 15241, 15243, 15244
\@seteqlabel 8705, 8706
\@setminipage 8128, 8200
\@setref . 5038, 5043, 9144, 9145, 9182
\@sharp 7571, 7577
\@skiphyperreffalse . 7239, 8256, 8268
\@skiphyperreftrue . 8242, 8268
\@spaces 272
\@spart 15469, 15470
\@ssect 15412, 15413
\@startlos 9082, 9089, 9138
\@starttoc 6740
\@tempa 7747, 7748, 7751, 7755, 7777, 7784, 7788, 7808, 7815, 7819, 7956, 7960, 7963, 7975
\@tempb 7698, 7702
\@tempboxa 10275, 10277, 10286, 10355, 10357, 10360, 10361, 10370, 10376, 10377, 10392, 10394, 10397, 10398, 10408, 10414, 10415, 10432, 10434, 10437, 10438, 10448, 10454, 10455, 12810, 12812, 12821, 13093, 13095, 13109
\@tempcnta 15050, 15051, 15052, 15053, 15054, 15056, 15059, 15060, 15061, 15067, 15069, 15071, 15162, 15163, 15164, 15167, 15168, 15169, 15170, 15171, 15385, 15386, 15387
\@tempdima 2678, 6522, 6523, 6524, 6525, 6526, 6527, 6528, 6529, 9676, 13426, 13431, 13433, 13469, 13470, 13471, 13475, 13476, 13477, 13478, 14027, 14032, 14034, 14071, 14072, 14073, 14077, 14078, 14079, 14080, 14382, 14387, 14389, 14426, 14427, 14428, 14432, 14433, 14434, 14435
\@tempdimb 13430, 13431, 14031, 14032, 14386, 14387
\@tempswafalse 8461
\@tempswatrue 8431, 8434, 8437, 8458
\@temptokena 3573, 3578, 3581, 3583
\@tfor 7699
\@the@H@page 8501, 8537, 8539, 8540
\@thefnmark 7865, 7876, 7967, 8005, 8022, 8029, 8060, 8072, 8079
\@thirdoffive 5031, 9219
\@thm . . 7728, 7729, 7757, 7758, 7791, 7853, 7854
\@topnewpage 15528
\@topsep 7745, 7773, 7804
\@topsepadd . . 7746, 7774, 7805
\@typeset@protect 15398
\@undefined 386, 389, 712, 3119, 3577, 4739, 4813, 6679, 6714, 6727, 6739, 6970, 6988, 7033, 8093, 8157, 8162, 8168, 8183, 9207, 9674, 9875, 9884, 11231, 11627, 11641
\@undottedtocline 9134
\@unexpandable@protect . . 8885
\@unprocessedoptions 4879
\@urlbordercolor 3856, 4459, 9778, 9780, 10902, 10904, 11383, 11385, 12408
\@urlcolor . . . 3791, 9797, 10282, 10295, 10402, 10419, 10916, 11389, 12817, 12830, 13104, 13117
\@urltype . 10248, 10253, 11127, 11153, 11288, 11302, 12779, 12784, 13066, 13071
\@vpageref 9240
\@whilenum 1364
\@wrindex 8788, 8789, 8820
\@writefile 8387
\@x@sf . . 7926, 7935, 8085, 8087
\@xfootnote 8058
\@xfootnotemark . . . 7873, 8076
\@xfootnotenext . . . 7862, 8069
\@xp . . . 8695, 8730, 8731, 8744, 8745, 8747, 8748
\@xxxii 5382
\[192, 217, 332, 3878, 3896, 5275
\{ . . 340, 362, 560, 2179, 11772, 15119
\} . . 341, 367, 561, 2180, 11772, 15120
\] 193, 218
\^ 186, 211, 330, 2277, 2278, 3466, 5091, 5092, 5100, 15555, 15567, 15579, 15789, 15805, 15813, 15826, 15840, 15855, 15871, 15881, 15882, 15895, 15909, 15958, 16009, 16036, 16065, 16236, 16252, 16260, 16272, 16288, 16303, 16319, 16329, 16330, 16344, 16358, 16386, 16388, 16432, 16434, 16448, 16450, 16487, 16489, 16490, 16570, 16572, 16618, 16620, 16622, 16624, 18280, 18282
_ 187, 212, 568, 5095, 5112, 5113
\` 166, 172, 179, 182, 3402, 3537, 3542, 3547, 3548, 3551, 3554, 3557, 3559, 3567, 15118, 15553, 15565, 15577, 15785, 15801, 15809, 15822, 15836, 15851, 15867, 15875, 15876, 15891, 15905, 15954, 16007, 16034, 16063, 16232, 16248, 16256, 16268, 16284, 16299, 16315, 16323, 16324, 16340, 16354, 16755, 16757, 17384, 17413, 17554, 17583, 18248, 18250, 18326, 18328, 20496, 20501, 20506, 20511, 20516, 20521, 20526, 20531, 20536, 20541, 20546, 20551, 20556, 20561, 20566, 20571, 20576, 20581, 20586, 20591, 20596, 20601, 20606, 20611
\| 188, 213, 336, 2085, 2178, 2219, 3348, 4502, 8784, 9400, 9410
\~ 567, 1366, 2327, 3460, 3468, 3469, 3470, 4649, 5116, 15556, 15568, 15580, 15791, 15820, 15828, 15857, 15889, 15897, 15960, 16010, 16037, 16066, 16238, 16266, 16274, 16305, 16338, 16346, 16459, 16461, 16462, 16594, 16596, 18240, 18242, 18310, 18312, 18334, 18336, 20498, 20503, 20508, 20513, 20518, 20523, 20528, 20533, 20538, 20543, 20548, 20553, 20558, 20563, 20568, 20573, 20578, 20583, 20588, 20593, 20598, 20603, 20608, 20613

Numbers

\3 . . . . . 544, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 2441, 2578, 2586, 2588, 15262, 15785, 15787, 15789, 15791, 15793, 15795,

15797, 15799, 15801, 15803, 15805, 15807, 15809, 15811, 15813, 15815, 15817, 15818, 15820, 15822, 15824, 15826, 15828, 15830, 15832, 15834, 15836, 15838, 15840, 15842, 15844, 15846, 15847, 15849, 15851, 15853, 15855, 15857, 15859, 15861, 15863, 15865, 15867, 15869, 15871, 15873, 15875, 15876, 15878, 15879, 15881, 15882, 15884, 15885, 15887, 15889, 15891, 15893, 15895, 15897, 15899, 15901, 15903, 15905, 15907, 15909, 15911, 15913, 15915, 15916, 15918, 16004, 16232, 16234, 16236, 16238, 16240, 16242, 16244, 16246, 16248, 16250, 16252, 16254, 16256, 16258, 16260, 16262, 16264, 16266, 16268, 16270, 16272, 16274, 16276, 16278, 16282, 16284, 16286, 16288, 16290, 16292, 16294, 16295, 16297, 16299, 16301, 16303, 16305, 16307, 16309, 16311, 16313, 16315, 16317, 16319, 16321, 16323, 16324, 16326, 16327, 16329, 16330, 16332, 16333, 16335, 16338, 16340, 16342, 16344, 16346, 16348, 16350, 16352, 16354, 16356, 16358, 16360, 16362, 16365, 16366, 16368, 16701, 16705, 16709, 16712, 16714, 16716, 16718, 16719, 16721, 16723, 16725, 16727, 16729, 16731, 16733, 16736, 16738, 16740, 16742, 16744, 16746, 16748, 16749, 16751, 16753, 16755, 16757, 16759, 16761, 16764, 16767, 17162, 17165, 17168, 17170, 17173, 17176, 17179, 17182, 17184, 17186, 17188, 17190, 17192, 17194, 17195, 17197, 17199, 17201, 17203, 17205, 17333, 17335, 17337, 17339, 17341, 17343, 17345, 17347, 17349, 17351, 17353, 17355, 17357, 17359, 17360, 17362, 17364, 17366, 17368, 17370, 17373, 17375, 17377, 17379, 17382, 17785, 17787, 17789, 17791, 17793, 17795, 17797, 17799, 17801, 17803, 17805, 17807, 17809, 17811, 17813, 17815, 17817, 17819, 17821, 17823, 17825, 17827, 17829, 17832, 17835, 17837, 17839, 17841, 17843, 17845, 17847, 17849, 17851, 17853, 17855, 17857, 17859, 17861, 17863, 17866, 17869, 17871, 17873, 17875, 17877, 17879, 17881, 17883, 17885, 17887, 17889, 17891, 17893, 17895, 17897, 17899, 17901, 17903, 17905, 17907, 17909, 17911, 17913, 17915, 17917, 17919, 17921, 17923, 17925, 17927, 17929, 17931, 17933, 17935, 17937, 17939, 17941, 17943, 17945, 17947, 17949, 17951, 17953, 17955, 17958, 17960, 17962, 17964, 18314, 18316, 18318, 18320, 18322, 18324, 18326, 18328, 18330, 18332, 18334, 18336, 18692, 18695, 18698, 18701, 18704, 18707, 18710, 18712, 18714, 18716, 18718, 18721, 18724, 18727, 18729, 18732, 18735, 18737, 18740, 18743, 18746, 18749, 18751, 18753, 18755, 18757, 18759, 18761, 18763, 18765, 18768, 18771, 18773, 18776, 18778, 18781, 18783, 18785, 18787, 18834, 18872, 18877, 19250, 19252, 19254, 19257, 19260, 19262, 19264, 19266, 19268, 19270, 19273, 19276, 19278, 19280, 19282, 19284, 19287, 19290, 19292, 19294, 19296, 19298, 19301, 19304, 19306, 19308, 19310, 19312, 19314, 19316, 19318, 19320, 19322, 19325, 19328, 19330, 19332, 19334, 19336, 19339, 19343, 19346, 19349, 19351, 19353, 19355, 19357, 19426, 19429, 19505, 19507, 19509, 19511, 19513, 19515, 19517, 19519, 19521, 19523, 19525, 19527, 19529, 19531, 19533, 19535, 19537, 19539, 19541, 19543, 19545, 19547, 19549, 19551, 19553, 19555, 19557, 19559, 19561, 19563, 19565, 19567, 19569, 19571, 19573, 19575, 19577, 19579, 19581, 19583, 19585, 19587, 19589, 19591, 19593, 19622, 19625, 19627, 19629, 19632, 19634, 19636, 19638, 19641, 19643, 19861, 19863, 19865, 19867, 19869, 20040, 20042, 20044, 20046, 20048, 20050, 20053, 20057, 20059, 20061, 20063, 20065, 20067, 20069, 20071, 20073, 20075, 20077, 20181, 20184, 20187, 20189, 20191, 20193, 20195, 20197, 20199, 20201, 20328, 20330, 20332, 20334, 20336, 20339, 20342, 20345, 20349, 20352, 20355, 20357, 20359, 20361, 20363, 20366, 20368, 20443, 20455, 20457, 20459, 20461, 20463, 20483, 20484, 20485, 20489, 20490, 20491, 20494, 20496, 20498, 20509, 20511, 20515, 20516, 20517, 20518, 20519, 20520, 20521, 20522, 20524, 20525, 20526, 20527, 20528, 20529, 20530, 20531, 20532, 20533, 20534, 20535, 20536, 20537, 20538, 20539, 20540, 20541, 20542, 20544, 20545, 20546, 20547, 20548, 20549, 20550, 20551, 20552, 20553, 20554, 20556, 20558, 20569, 20571, 20575, 20576, 20577, 20578, 20579, 20580, 20581, 20582, 20584, 20585, 20586, 20587, 20588, 20589, 20590, 20591, 20592, 20593, 20594, 20595, 20596, 20597, 20598, 20599, 20600, 20601, 20602, 20604, 20605, 20606, 20607, 20608, 20609, 20610, 20611, 20612, 20613, 20717

\9 . 547, 1430, 1433, 1464, 2369, 2384, 2393, 2421, 2441, 2478, 2482, 2496, 2500, 2508, 2513, 2516, 2550, 2554, 2557, 2560, 2570, 2572, 2574, 2576, 2578, 2580, 2582, 2584, 2586, 2588, 16004, 17966, 17968, 17970, 17972, 17974, 17976, 17979, 17982, 17985, 17988, 17990, 17992, 17994, 17996, 17998, 18000, 18002, 18004, 18006, 18009, 18011, 18014, 18016, 18019, 18021, 18025, 18029, 18032, 18034, 18036, 18038, 18040, 18042, 18044, 18046, 18048, 18050, 18052, 18054, 18056, 18058, 18060, 18062, 18064, 18066, 18069,

18072, 18075, 18078, 18080,
18082, 18084, 18086, 18088,
18090, 18092, 18094, 18096,
18098, 18100, 18102, 18104,
18106, 18108, 18110, 18112,
18114, 18116, 18118, 18120,
18122, 18124, 18126, 18128,
18130, 18132, 18134, 18136,
18138, 18140, 18142, 18144,
18146, 18148, 18150, 18152,
18154, 18156, 18158, 18160,
18162, 18164, 18166, 18168,
18170, 18173, 18176, 18179,
18182, 18184, 18186, 18188,
18190, 18192, 18194, 18196,
18198, 18200, 18202, 18204,
18206, 18208, 18210, 18212,
18214, 18216, 18218, 18220,
18222, 18224, 18226, 18228,
18230, 18232, 18234, 18236,
18238, 18240, 18242, 18244,
18246, 18248, 18250, 18252,
18254, 18256, 18258, 18260,
18262, 18264, 18266, 18268,
18270, 18272, 18274, 18276,
18278, 18280, 18282, 18284,
18286, 18288, 18290, 18292,
18294, 18296, 18298, 18300,
18302, 18304, 18306, 18308,
18310, 18312, 18314, 18316,
18318, 18320, 18322, 18324,
18326, 18328, 18330, 18332,
18334, 18336, 18338, 18340,
18342, 18344, 18347, 18349,
18351, 18353, 18355, 18357,
18359, 18362, 18366, 18368,
18370, 18373, 18375, 18377,
18379, 18381, 18383, 18385,
18387, 18389, 18391, 18393,
18395, 18397, 18399, 18401,
18403, 18405, 18407, 18409,
18411, 18413, 18415, 18417,
18419, 18421, 18423, 18425,
18427, 18429, 18431, 18433,
18435, 18437, 18439, 18441,
18443, 18445, 18447, 18449,
18451, 18453, 18455, 18457,
18459, 18461, 18463, 18465,
18467, 18469, 18471, 18473,
18475, 18477, 18479, 18481,
18483, 18485, 18487, 18489,
18491, 18493, 18495, 18497,
18499, 18501, 18503, 18514,
18517, 18519, 18521, 18523,
18525, 18527, 18529, 18531,
18534, 18536, 18538, 18540,
18542, 18544, 18546, 18549,
18551, 18553, 18557, 18559,
18561, 18563, 18565, 18567,
18569, 18571, 18575, 18577,
18579, 18581, 18583, 18585,
18587, 18589, 18591, 18593,
18595, 18597, 18599, 18601,
18603, 18605, 18607, 18609,
18611, 18613, 18617, 18621,
18623, 18625, 18627, 18630,
18633, 18635, 18637, 18639,
18641, 18643, 18646, 18648,
18650, 18652, 18654, 18656,
18658, 18660, 18662, 18664,
18666, 18668, 18672, 18675,
18677, 18680, 18683, 18686,
18689, 18692, 18695, 18698,
18701, 18704, 18707, 18710,
18712, 18714, 18716, 18718,
18721, 18724, 18727, 18729,
18732, 18735, 18737, 18740,
18743, 18746, 18749, 18751,
18753, 18755, 18757, 18759,
18761, 18763, 18765, 18768,
18771, 18773, 18776, 18778,
18781, 18783, 18785, 18787,
18789, 18791, 18793, 18795,
18797, 18799, 18802, 18804,
18806, 18808, 18810, 18812,
18815, 18818, 18820, 18822,
18824, 18826, 18828, 18830,
18832, 18834, 18836, 18838,
18840, 18842, 18844, 18846,
18849, 18851, 18853, 18855,
18860, 18862, 18865, 18867,
18870, 18872, 18875, 18877,
18880, 18882, 18884, 18887,
18889, 18891, 18894, 18897,
18899, 18901, 18904, 18907,
18909, 18911, 18914, 18916,
18919, 18921, 18923, 18926,
18928, 18930, 18932, 18934,
18936, 18939, 18941, 18943,
18946, 18948, 18950, 18953,
18955, 18957, 18959, 18961,
18964, 18966, 18968, 18970,
18972, 18974, 18977, 18980,
18983, 18985, 18988, 18990,
18992, 18994, 18996, 18998,
19000, 19002, 19004, 19008,
19010, 19012, 19013, 19016,
19019, 19023, 19024, 19028,
19029, 19032, 19034, 19036,
19038, 19040, 19042, 19044,
19046, 19048, 19050, 19052,
19054, 19056, 19059, 19061,
19063, 19066, 19069, 19071,
19073, 19075, 19077, 19079,
19081, 19083, 19085, 19087,
19089, 19091, 19093, 19095,
19097, 19099, 19101, 19103,
19105, 19107, 19109, 19111,
19113, 19115, 19117, 19119,
19121, 19123, 19125, 19127,
19129, 19131, 19133, 19135,
19137, 19139, 19141, 19143,
19145, 19148, 19151, 19154,
19157, 19160, 19164, 19168,
19170, 19172, 19174, 19176,
19178, 19181, 19184, 19187,
19190, 19192, 19195, 19198,
19202, 19205, 19207, 19210,
19213, 19216, 19220, 19223,
19226, 19229, 19232, 19236,
19240, 19242, 19244, 19246,
19248, 19250, 19252, 19254,
19257, 19260, 19262, 19264,
19266, 19268, 19270, 19273,
19276, 19278, 19280, 19282,
19284, 19287, 19290, 19292,
19294, 19296, 19298, 19301,
19304, 19306, 19308, 19310,
19312, 19314, 19316, 19318,
19320, 19322, 19325, 19328,
19330, 19332, 19334, 19336,
19339, 19343, 19346, 19349,
19351, 19353, 19355, 19357,
19359, 19361, 19363, 19365,
19367, 19371, 19373, 19375,
19377, 19379, 19381, 19383,
19385, 19387, 19389, 19391,
19393, 19396, 19399, 19401,
19404, 19407, 19409, 19412,
19415, 19417, 19419, 19421,
19423, 19426, 19429, 19431,
19433, 19435, 19438, 19440,
19442, 19444, 19446, 19448,
19450, 19452, 19454, 19456,
19458, 19460, 19462, 19464,
19466, 19468, 19470, 19472,
19474, 19476, 19478, 19480,
19483, 19485, 19487, 19489,
19491, 19493, 19495, 19497,
19499, 19501, 19503, 19505,
19507, 19509, 19511, 19513,
19515, 19517, 19519, 19521,
19523, 19525, 19527, 19529,
19531, 19533, 19535, 19537,
19539, 19541, 19543, 19545,
19547, 19549, 19551, 19553,
19555, 19557, 19559, 19561,
19563, 19565, 19567, 19569,
19571, 19573, 19575, 19577,
19579, 19581, 19583, 19585,
19587, 19589, 19591, 19593,

19595, 19600, 19604, 19608, 19611, 19613, 19615, 19619, 19622, 19625, 19627, 19629, 19632, 19634, 19636, 19638, 19641, 19643, 19647, 19649, 19651, 19653, 19656, 19659, 19662, 19666, 19668, 19670, 19672, 19675, 19680, 19683, 19685, 19687, 19692, 19695, 19698, 19700, 19703, 19705, 19707, 19710, 19717, 19720, 19725, 19728, 19731, 19734, 19737, 19740, 19743, 19746, 19749, 19752, 19755, 19758, 19761, 19764, 19767, 19770, 19773, 19776, 19779, 19783, 19786, 19789, 19791, 19793, 19795, 19797, 19799, 19802, 19804, 19806, 19808, 19810, 19812, 19815, 19817, 19820, 19822, 19825, 19827, 19829, 19831, 19833, 19835, 19837, 19839, 19841, 19843, 19845, 19847, 19849, 19851, 19853, 19856, 19858, 19861, 19863, 19865, 19867, 19869, 19871, 19875, 19879, 19881, 19883, 19885, 19887, 19889, 19892, 19894, 19897, 19899, 19901, 19903, 19905, 19907, 19910, 19912, 19914, 19916, 19918, 19920, 19922, 19924, 19926, 19928, 19930, 19932, 19934, 19937, 19939, 19941, 19943, 19945, 19947, 19949, 19951, 19953, 19955, 19957, 19959, 19961, 19963, 19965, 19967, 19969, 19971, 19973, 19975, 19977, 19979, 19981, 19984, 19986, 19988, 19990, 19992, 19994, 19996, 19998, 20000, 20002, 20004, 20006, 20008, 20010, 20013, 20016, 20018, 20021, 20024, 20027, 20030, 20032, 20034, 20036, 20038, 20040, 20042, 20044, 20046, 20048, 20050, 20053, 20057, 20059, 20061, 20063, 20065, 20067, 20069, 20071, 20073, 20075, 20077, 20079, 20081, 20083, 20085, 20087, 20089, 20091, 20094, 20097, 20100, 20103, 20105, 20110, 20114, 20117, 20119, 20121, 20124, 20127, 20130, 20133, 20136, 20139, 20142, 20145, 20148, 20151, 20154, 20157, 20159, 20161, 20163, 20165, 20167, 20170, 20176, 20179, 20181, 20184, 20187, 20189, 20191, 20193, 20195, 20197, 20199, 20201, 20203, 20205, 20207, 20210, 20212, 20214, 20216, 20219, 20222, 20224, 20226, 20228, 20231, 20233, 20236, 20238, 20242, 20245, 20247, 20249, 20251, 20253, 20255, 20257, 20259, 20261, 20263, 20265, 20267, 20269, 20272, 20274, 20276, 20279, 20282, 20284, 20286, 20288, 20290, 20292, 20294, 20296, 20298, 20300, 20302, 20304, 20306, 20308, 20310, 20312, 20314, 20316, 20318, 20320, 20322, 20324, 20326, 20328, 20330, 20332, 20334, 20336, 20339, 20342, 20345, 20349, 20352, 20355, 20357, 20359, 20361, 20363, 20366, 20368, 20371, 20373, 20375, 20377, 20379, 20381, 20383, 20386, 20388, 20391, 20394, 20397, 20400, 20402, 20404, 20406, 20408, 20410, 20412, 20414, 20416, 20418, 20420, 20423, 20426, 20428, 20430, 20432, 20434, 20436, 20438, 20440, 20443, 20446, 20448, 20450, 20452, 20455, 20457, 20459, 20461, 20463, 20495, 20497, 20499, 20500, 20501, 20502, 20503, 20504, 20505, 20506, 20507, 20508, 20510, 20512, 20513, 20514, 20515, 20516, 20517, 20518, 20520, 20522, 20525, 20527, 20529, 20530, 20531, 20532, 20533, 20534, 20535, 20536, 20537, 20538, 20540, 20542, 20544, 20545, 20546, 20547, 20548, 20550, 20551, 20552, 20553, 20555, 20557, 20559, 20560, 20561, 20562, 20563, 20564, 20565, 20566, 20567, 20568, 20570, 20572, 20573, 20574, 20575, 20576, 20577, 20578, 20580, 20582, 20585, 20587, 20589, 20590, 20591, 20592, 20593, 20594, 20595, 20596, 20597, 20598, 20600, 20602, 20604, 20605, 20606, 20607, 20608, 20610, 20611, 20612, 20613, 20719, 20721

\␣ 343, 691, 949, 969, 3483, 3486, 4249, 8328, 8351, 15577, 15578, 15579, 15580, 15581, 15582, 15583, 15584, 15585, 15586, 15587, 15588, 16034, 16035, 16036, 16037, 16038, 16039, 16040, 16041, 16042, 16043, 16044, 16045, 16046, 16047, 16048, 16049, 16050, 16051, 16052, 16053, 16054, 16055, 16056, 16057, 16058, 16059, 16060

A

\a 301, 303, 307, 313
\ABREVE . 20488, 20559, 20560, 20561, 20562, 20563
\abreve . . . 20482, 20499, 20500, 20501, 20502, 20503
\AC 18917, 21774
\AccFancyVerbLineautorefname 3510
\Accfootnoteautorefname . . 3490
\Acctheoremautorefname . . 3514
\Acht 20427, 21574
\ACIRCUMFLEX 20489, 20564, 20565, 20566, 20567, 20568
\acircumflex 3559, 20483, 20504, 20505, 20506, 20507, 20508
\AcPa 20413, 21568
\Acrobatmenu 2649, 4582, 6676, 10170, 10921, 11462, 12350
\active . . 1344, 1351, 1956, 5092, 5093, 5094, 5095, 5096, 5097, 5100, 5102, 5105, 5113, 15266, 15296
\add@accent 559
\addcontentsline . . . 8122, 8194, 8570, 8575, 8663, 15533
\AddLineBeginAux 5678
\addtocontents 8615, 8664, 8965, 9017, 15521, 15522
\addtocounter 7455, 7478, 7487, 7498, 7502, 7720
\addvspace 15521, 15522
\adl@LT@array 7569
\advance 483, 484, 1365, 5241, 5391, 5404, 5713, 6041, 6087, 6523, 6524, 6527, 6528, 6880, 6888, 6925, 8473, 8483, 8486, 8500, 9920, 10287, 10371, 10409, 10449, 10764, 10774, 11623, 12822, 13110, 13361, 13433, 13476, 13477, 13971, 14034, 14078, 14079, 14324, 14389, 14433, 14434,

15051, 15053, 15054, 15060, 15069, 15170, 15386
\AE 15797, 16244, 16759
\ae 15863, 16311, 16761
\afterassignment . . . 1965, 1971, 1977, 6296
\AfterBeginDocument . 373, 387
\aftergroup 8009
\agemO 18547, 21745
\ainferior 20876
\alef 20629
\alefhamza 20621
\aleflowerhamza 20625
\alefmadda 20619
\alefmaqsura 20687
\aleph 18558, 20898
\Alph 6974, 7339
\alph 6975, 7691, 7722
\alpha 17302, 20798
\amalg 18821, 20992
\AMSautorefname 9375
\anchor@spot 5583, 5596, 5603, 5609, 5611, 9738, 10228, 10323, 11199, 11271, 11778, 12135, 12138, 12759, 13047
\and 6805
\angle 18850, 21004
\AngleSign 18858, 21766
\Anglesign 18857, 21765
\Ankh 19684, 21287
\APLbox 19422, 21246
\APLdown 19620, 21841
\APLdownarrowbox 19411, 21241
\APLinput 19414, 21242
\APLinv 19388, 21233
\APLleftarrowbox . 19403, 21238
\APLrightarrowbox 19406, 21239
\APLup 19605, 21838
\APLuparrowbox . . 19408, 21240
\appendix 7331, 7343
\appendixautorefname 3358, 3376, 3394, 3412, 3430, 3448, 3466, 3498, 3499, 3524, 3542, 3560, 9385
\apprge 19067, 21789
\apprle 19064, 21788
\approx 18940, 21041
\approxeq 18945, 21043
\Aquarius 19771, 21885
\aquarius 19769, 21313
\arabic . 6971, 7195, 7198, 7201, 7202, 7203, 7205, 7206, 7207, 7208, 7210, 7211, 7212, 7213, 7214, 7215, 7218, 7228, 7229, 7462, 8672, 8678, 8726, 8740, 8953, 8958, 8960
\Aries 19741, 21875
\aries 19739, 21303
\ast 18837, 20999
\Asterisk 19985, 21396
\AsteriskBold 19962, 21385
\AsteriskCenterOpen 19964, 21386
\AsteriskRoundedEnds . . 20009, 21408
\asymp 18958, 21049
\AtBeginDocument 374, 1035, 5646, 5650, 6712, 7559, 13139
\AtBeginShipout . . . 6826, 6838, 10206, 10720
\AtBeginShipoutBox 6830, 6833, 10199, 10200, 10721, 10722
\AtBeginShipoutFirst . . . 6843, 11095, 12547, 12678
\AtEndDocument 6726
\AtEndOfPackage 384
\AtVeryEndDocument . . . 7073, 13918
\author 6761, 6771
\autopageref 4720, 9255
\autoref . 680, 4719, 9274, 13134
\ayn 20665

B

\b 302, 303, 914, 918, 924, 15563, 15575, 15587, 16000, 16027, 16054, 18044, 18046, 18056, 18058, 18128, 18130, 18136, 18138, 18164, 18166, 18200, 18202, 18220, 18222, 18288, 18290, 18292
\baa 20631
\babygamma 16924, 20766
\back@none . . . 3293, 3303, 3316
\back@page 3295, 3308
\back@section 3294, 3300, 3306, 3312
\back@slide 3296, 3305
\backcite 8388
\backcong 18954, 21047
\backepsilon 17381
\backneg 19360, 21220
\backprime 18382, 20843
\backref 8419, 13138
\backsim 18918, 21031
\backsimeq 19265, 21179
\barb 16646, 21627
\bard 16410, 21619
\bari 16938, 20767
\barin 19356, 21218
\barj 16909, 21659
\barl 16668, 20752
\barlambda 16675, 21632
\barleftharpoon . . . 20144, 21462
\baro 16984, 16985, 19392, 19394, 21831
\barp 18010, 20834
\barrightharpoon . . 20150, 21464
\barsci 18008, 20833
\barscu 18013, 20835
\baru 17049, 20776
\barwedge 19247, 21171
\baselineskip 2652, 6536, 6537, 6538, 6539, 6540, 6541, 10342, 11797, 11829, 12530
\bbl@cite@choice 8235
\bbslash 19434, 21249
\Beam 19418, 21244
\because 18903, 21025
\BeforeTeXIVht 3095
\begin 637, 13160, 21943
\belowpdfbookmark 15166
\beta 17304, 20799
\betainferior 20828
\beth 18560, 20899
\between 19051, 21090
\bfseries . 611, 8334, 8357, 9148, 9168, 9185, 9303
\bgroup . . 700, 5208, 7996, 8008, 9643, 10738, 11199, 11818, 13665, 13757, 13778
\bibcite . 8226, 8232, 8236, 8261, 8276, 8292, 8302
\Bicycle 20447, 21583
\bigcirc 21272
\bigdoublevee 20206, 21487
\bigdoublewedge . . 20204, 21486
\bigtriangledown . . 19618, 21262
\bigtriangleup 19603, 21257
\binampersand . . . 16094, 21602
\bindnasrepma . . . 18572, 21748
\Biohazard 19682, 21286
\bitsetGetDec 5765, 5898, 5916, 5930, 5943, 5959, 5991, 6016
\bitsetGetHex 5766
\bitsetGetSetBitList 5754
\bitsetIsEmpty 5895, 5913, 5927, 5940, 5956, 5988, 6013
\bitsetReset . . 5868, 5902, 5921, 5935, 5948, 5964, 5996
\bitsetSetValue 5734, 5744
\blacksmiley 19697, 21291
\Bleech 19606, 21839
\BOOKMARK . . . 15098, 15177
\booknumberline . . 15081, 15086
\bot 19191, 21152

\Bowtie 19255, 21820
\bowtie 19253, 21174
\Box 19657, 21845
\box . . 6530, 6833, 9657, 10752, 12182, 12185
\boxast 20190, 21479
\boxbackslash 19400, 21237
\boxbar 19640, 21271
\boxbox 20194, 21481
\boxbslash 20188, 21478
\boxcircle 20192, 21480
\boxdot 19175, 21146
\boxempty 19655, 21277
\boxminus 19171, 21144
\boxplus 19169, 21143
\boxslash 20186, 21477
\boxtimes 19173, 21145
\brokenvert 16175, 21608
\bullet . . 9100, 9108, 9118, 9126, 18841, 20838
\Bumpeq 18963, 21051
\bumpeq 18967, 21053

C

\C 15978, 17635, 17638
\c 915, 919, 925, 3460, 3468, 3469, 3470, 6784, 6791, 15561, 15573, 15585, 15799, 15865, 15989, 16015, 16042, 16061, 16246, 16313, 16444, 16446, 16492, 16494, 16502, 16504, 16522, 16524, 16558, 16560, 16574, 16576, 16582, 16584, 16823, 16825, 17695, 17698, 18060, 18062, 18108, 18110
\c@footnote . . 7875, 7958, 7966, 8078
\c@Hy@AnnotLevel 10764, 10765, 10774
\c@Hy@tempcnt . . . 5226, 5227, 5233, 5241
\c@note 8476
\c@overlay 8476
\c@page . 6880, 6888, 6905, 6925, 6926, 6930, 6942, 6944, 6949, 6956, 6958, 6960, 6989, 8473, 8477, 8479, 8483, 8486, 8487, 8500, 8530
\c@secnumdepth . 15446, 15464, 15479
\c@slide 8476
\c@slidesection 8966, 9094, 9095
\c@slidesubsection 9018
\c@tocdepth 3719, 3724
\calc@bm@number . 15308, 15384
\calculate@pdfview . 4213, 4216
\Cancer 19750, 21878
\cancer 19748, 21306
\Cap 19283, 21187
\cap 18879, 21015
\capdot 20230, 21497
\capitalacute 16064
\capitalbreve 16071
\capitalcaron 16070
\capitalcedilla 16061
\capitalcircumflex 16065
\capitaldieresis 16067
\capitaldotaccent 16073
\capitalgrave 16063
\capitalhungarumlaut . . . 16068
\capitalmacron 16072
\capitalnewtie 16075
\capitalogonek 16062
\capitalring 16069
\capitaltie 16074
\capitaltilde 16066
\Capricorn 19768, 21884
\capricornus 19766, 21312
\caption 8092, 8094, 8182, 8184
\catcode 172, 173, 184, 185, 186, 187, 206, 840, 841, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 1044, 1344, 1351, 1956, 2085, 2086, 2219, 2220, 2276, 2277, 2278, 4951, 4953, 5091, 5092, 5093, 5094, 5095, 5096, 5097, 5100, 5102, 5105, 5113, 5123, 5214, 5215, 9400, 11859, 11860, 15195, 15197, 15266, 15269, 15296, 15299
\ccnc 20456, 21586
\ccnd 20458
\ccsa 20460, 21587
\cdot 21594
\cdots 19350, 21215
\CESign 20464, 21589
\CEsign 20466, 21938
\cf@encoding 1669
\chapterautorefname 3359, 3377, 3395, 3413, 3431, 3449, 3467, 3496, 3525, 3543, 3561, 9386
\chapternumberline 15083, 15088
\char 13952, 15199, 15236
\chardef 277, 320, 2884, 2885, 2886, 2887, 3153, 3155, 4874, 4906, 12130, 12133, 12139
\check@bm@number 15319, 15327, 15377, 15385
\CheckBox 6487
\CheckCommand 7955
\checkcommand 42, 7497, 8069, 8076, 8083, 8182, 8192, 8286, 8298, 8663, 8666, 8726, 9182
\CheckedBox 19660, 21846
\Checkedbox 19658, 21278
\checklatex . 4, 8068, 8181, 8285, 8662, 9181
\Checkmark 19906, 21358
\checkmark 19908, 21904
\CheckmarkBold . . 19909, 21359
\checkpackage . . . 9, 7496, 8725
\chi 17346, 20819
\chiinferior 20832
\ChoiceBox 6091
\ChoiceMenu 6484
\circ 18839, 21000
\circeq 18999, 21067
\circlearrowleft . . . 20056, 21427
\circlearrowright . . 20058, 21428
\CircledA 19479, 21250
\circledast 19163, 21141
\circledbslash 20171, 21913
\circledcirc 19159, 21140
\circleddash 19167, 21142
\CircleShadow 20017, 21411
\circplus 20213, 21490
\citation 8331, 8354, 8380
\citeauthoryear 8446, 8452
\citeN 8443
\CJK@char 1347
\CJK@charx 1348
\CJK@CJK 1336
\CJK@eight . . . 1547, 1550, 1664
\CJK@five 1547, 1549, 1664
\CJK@four . . . 1546, 1549, 1663
\CJK@hundred 1613
\CJK@hundredmillion 1576
\CJK@ignorespaces 1346
\CJK@kern 1334
\CJK@minus 1538
\CJK@nine . . . 1547, 1551, 1664
\CJK@null 1640
\CJK@one 1546, 1548, 1663
\CJK@punctchar 1349
\CJK@punctcharx 1350
\CJK@seven . . 1547, 1550, 1664
\CJK@six 1547, 1550, 1664
\CJK@ten 1548, 1549, 1550, 1551, 1628
\CJK@tenthousand . 1561, 1582

\CJK@thousand 1598
\CJK@three . . . 1546, 1549, 1663
\CJK@two 1546, 1548, 1663
\CJK@zero . . 1546, 1564, 1581, 1585, 1601, 1616, 1638
\CJKdigits 1423
\CJKkern 1335
\CJKnumber 1422
\cl@@ckpt 7289
\CleaningA 19481, 21833
\CleaningF 19492, 21251
\CleaningFF 19494, 21252
\CleaningP 19516, 21253
\CleaningPP 19518, 21254
\clickb 17106, 21712
\clickc 17101, 21710
\clickt 17043, 21694
\clock 19366, 21223
\ClockLogo 19369, 21830
\Clocklogo 19368, 21829
\close@pdflink 9732, 9757, 9766, 9798, 9835, 9868, 10194
\closedniomega . . . 16992, 21682
\closedrevepsilon . . 16905, 21658
\closeout 6706, 15186
\Cloud 19646, 21273
\ClowerTips 21375
\clubpenalty 7846, 7848
\clubsuit . . 19785, 19787, 21891
\codeof 8410
\Coffeecup 19665, 21280
\coloncolonequals . 20250, 21505
\colonequals 18991, 21063
\color@begingroup . . 9643, 10738
\color@endgroup . . . 9650, 10745
\columnwidth 8003
\comma@entry 6082, 6089, 6091
\comma@parse 6081
\complement 18790, 20978
\Conclusion 18741, 21757
\cong 18935, 21039
\Congruent 19017, 21783
\contentsline . 6715, 6716, 6728, 8616, 8620, 8664, 8666
\copy . . . 5400, 5402, 5413, 5421, 9653, 10200, 10722, 10748
\copyright 20742
\Corresponds 19006, 21781
\corresponds 19005, 21780
\count@ . 879, 881, 882, 885, 888, 891, 894, 1363, 1364, 1365, 1366, 1966, 3735, 3736, 3741, 3742, 5712, 5713, 5728, 6024, 6039, 6041, 6065, 6087, 6103, 9915, 9916, 9917, 9918, 9919, 9920, 9923, 11619, 11620, 11621, 11622, 11623, 11626
\Cross 19925, 21367
\crossb 16643, 21625
\CrossClowerTips 19942
\crossd 16407, 21617
\CrossedBox 19664, 21848
\Crossedbox 19661, 21279
\crossh 16456, 21621
\CrossMaltese 19931, 21370
\crossnilambda . . . 16674, 21631
\CrossOpenShadow 19927, 21368
\CrossOutline 19929, 21369
\Cube 634
\Cup 19286, 21188
\cup 18881, 21016
\cupdot 19120, 21123
\cupplus 19122, 21124
\curlyc 16873, 21651
\curlyeqprec 19305, 21196
\curlyeqsucc 19309, 21198
\curlyesh 17040, 21693
\curlyvee 19269, 21181
\curlywedge 19272, 21182
\curlyyogh 17085, 21706
\curlyz 17078, 21705
\CurrentBorderColor 9722, 9724, 9751, 9753, 9761, 9763, 9768, 11261, 11295, 11297, 11313, 11315, 11334, 11336, 11398, 11400, 11417, 11419
\currentpdfbookmark . . . 15158
\curu 17586
\curvearrowleft . . . 18674, 20932
\curvearrowright . . 18676, 20933
\CutLeft 19872, 21898
\CutLine 19597, 21835
\Cutline 19598, 21836
\Cutright 19873, 21899
\CuttingLine 19594, 21255
\cyr 659, 3478, 3480, 3483, 3486, 3489, 3490, 3491, 3492, 3493, 3494, 3495, 3496, 3497, 3498, 3500, 3502, 3503, 3504, 3505, 3506, 3507, 3508, 3509, 3510, 3511, 3512, 3513, 3514, 3515
\CYRA . . . 17420, 17811, 17815
\cyra . . . 3480, 3487, 3489, 3494, 3497, 3502, 3503, 3509, 3513, 17487, 17813, 17817
\CYRABHCH 17775, 17780
\cyrabhch 17777, 17783
\CYRABHCHDSC 17779
\cyrabhchdsc 17782
\CYRABHDZE 17845
\cyrabhdze 17847
\CYRABHHA 17730
\cyrabhha 17732
\CYRAE 17819
\cyrae 17821
\CYRB 17422
\cyrb 3494, 17489
\CYRBYUS 17610
\cyrbyus 17612
\CYRC 17465
\cyrc 17532
\CYRCH 17467, 17887
\cyrch . 3486, 3487, 3495, 17534, 17889
\CYRCHLDSC 17803
\cyrchldsc 17805
\CYRCHRDSC 17761
\cyrchrdsc 17763
\CYRCHVCRS 17766
\cyrchvcrs 17769
\CYRD 17428
\cyrd . . . 3483, 3486, 3497, 3502, 3503, 17495
\CYRDJE 17389
\cyrdje 17559
\CYRDZE 17395
\cyrdze 17565
\CYRDZHE 17418
\cyrdzhe 17588
\CYRE . . . 17384, 17387, 17430, 17823
\cyre 3480, 3486, 3487, 3500, 3512, 3513, 3514, 17497, 17554, 17557, 17825
\cyreref 17873
\CYREREV 17481, 17871
\cyrerev 17548
\CYRERY 17476, 17895
\cyrery 3478, 3480, 17543, 17897
\CYRF 17461
\cyrf 17528
\CYRFITA 17626
\cyrfita 17628
\CYRG 17391, 17426
\cyrg 3496, 17493, 17561
\CYRGDSC 17891
\cyrgdsc 17893
\CYRGHCRS 17678
\cyrghcrs 17680
\CYRGHK 17683
\cyrghk 17686
\CYRGUP 17674
\cyrgup 17676
\CYRH 17463
\cyrh 17530
\CYRHDSC 17752
\cyrhdsc 17754

\CYRHHK 17899
\cyrhhk 17901
\CYRHRDSN 17474
\cyrhrdsn . 17540, 17541, 21719
\CYRI 17413, 17436, 17439, 17849, 17853
\cyri 3480, 3483, 3487, 3493, 3498, 3500, 17503, 17506, 17583, 17851, 17855
\CYRIE 17393
\cyrie 17563
\CYRII 17398, 17401
\cyrii 17568, 17571
\CYRIOTBYUS 17614
\cyriotbyus 17616
\CYRIOTE 17598
\cyriote 17600
\CYRIOTLYUS 17606
\cyriotlyus 17608
\CYRISHRT 17438
\cyrishrt 17505
\CYRISHRTDSC 17662
\cyrishrtdsc 17664
\CYRIZH 17630, 17635
\cyrizh 17632, 17638
\CYRJE 17403
\cyrje 17573
\CYRK 17411, 17441
\cyrk 3489, 3490, 3492, 3506, 3507, 3509, 3510, 3511, 17508, 17581
\CYRKBEAK 17714
\cyrkbeak 17716
\CYRKDSC 17700
\cyrkdsc 17702
\CYRKHCRS 17710
\cyrkhcrs 17712
\CYRKHK 17791
\cyrkhk 17793
\CYRKOPPA 17656
\cyrkoppa 17658
\CYRKSI 17618
\cyrksi 17620
\CYRKVCRS 17705
\cyrkvcrs 17708
\CYRL 17443
\cyrl . . . 3494, 3496, 3498, 3500, 17510
\CYRLDSC 17795
\cyrldsc 17797
\CYRLJE 17405
\cyrlje 17575
\CYRLYUS 17602
\cyrlyus 17604
\CYRM 17445
\cyrm . . 3483, 3487, 3513, 3514, 17512
\CYRMDSC 17807
\cyrmdsc 17809
\CYRN 17447
\cyrn . . . 3480, 3486, 3487, 3489, 3490, 3492, 3500, 3506, 3507, 17514
\CYRNDSC 17718
\cyrndsc 17720
\CYRNG 17722
\cyrng 17724
\CYRNHK 17799
\cyrnhk 17801
\CYRNJE 17407
\cyrnje 17577
\CYRO 17449, 17857
\cyro . . . 3483, 3486, 3489, 3490, 3500, 3509, 3510, 3512, 3513, 3514, 17516, 17859
\CYROMEGA 17590
\cyromega 17592
\CYROMEGARND 17644
\cyromegarnd 17646
\CYROMEGATITLO . . . 17648
\cyromegatitlo 17650
\CYROT 17652
\cyrot 17654
\CYROTLD 17861, 17866
\cyrotld 17863, 17869
\CYRP 17451
\cyrp . . . 3483, 3486, 3487, 3491, 3492, 3498, 3500, 3504, 3505, 3506, 3507, 17518
\CYRpalochka 17785
\CYRPHK 17726
\cyrphk 17728
\CYRPSI 17622
\cyrpsi 17624
\CYRR 17453
\cyrr . . . 3478, 3480, 3483, 3486, 3487, 3493, 3497, 3498, 3500, 3502, 3503, 3508, 3509, 3510, 3511, 3512, 3513, 3514, 17520
\CYRRTICK 17670
\cyrrtick 17672
\CYRS 17455, 17735
\cyrs . . . 3483, 3486, 3489, 3490, 3493, 3508, 3509, 3510, 3511, 3515, 17522, 17738
\CYRSCHWA 17827, 17832
\cyrschwa 17829, 17835
\CYRSDSC 17734, 17735
\cyrsdsc 17737
\CYRSEMISFTSN 17666
\cyrsemisftsn 17668
\CYRSFTSN 17479
\cyrsftsn . . 17545, 17546, 21720
\CYRSH 17469
\cyrsh 17536
\CYRSHCH 17471
\cyrshch 17538
\CYRSHHA 17771
\cyrshha 17773
\CYRT 17457
\cyrt . . . 3483, 3486, 3492, 3494, 3506, 3507, 3508, 3509, 3510, 3511, 3512, 3513, 3514, 17524
\CYRTDSC 17740
\cyrtdsc 17742
\CYRTETSE 17756
\cyrtetse 17758
\cyrthousands 17660
\CYRTSHE 17409
\cyrtshe 17579
\CYRU . . . 17416, 17459, 17875, 17879, 17883
\cyru 3490, 3492, 3506, 3507, 3510, 3514, 17526, 17877, 17881, 17885
\CYRUK 17640
\cyruk 17642
\CYRUSHRT 17415
\cyrushrt 17585
\CYRV 17424
\cyrv 3478, 3480, 17491
\CYRY 17744
\cyry 17746
\CYRYA 17485
\cyrya 17552
\CYRYAT 17594
\cyryat 17596
\CYRYHCRS 17748
\cyryhcrs 17750
\CYRYI 17400
\cyryi 17570
\CYRYO 17386
\cyryo 17556
\CYRYU 17483
\cyryu 17550
\CYRZ . . . 17434, 17695, 17841
\cyrz . . 3497, 3502, 3503, 17501, 17698, 17843
\CYRZDSC 17694
\cyrzdsc 17697
\CYRZH . . 17432, 17787, 17837
\cyrzh 3480, 3500, 17499, 17789, 17839
\CYRZHDSC 17689
\cyrzhdsc 17692

D

\d 916, 920, 926, 3556, 3560, 3562, 3563, 3564, 3565, 3566,

3568, 15564, 15576, 15588, 15983, 16028, 16055, 18040, 18042, 18052, 18054, 18100, 18102, 18124, 18126, 18132, 18134, 18152, 18154, 18160, 18162, 18196, 18198, 18208, 18210, 18216, 18218, 18244, 18246, 18264, 18266, 18284, 18286, 18302, 18304, 18306, 18308, 18314, 18316, 18318, 18320, 18322, 18324, 18330, 18332, 20495, 20500, 20505, 20510, 20515, 20520, 20525, 20530, 20535, 20540, 20545, 20550, 20555, 20560, 20565, 20570, 20575, 20580, 20585, 20590, 20595, 20600, 20605, 20610
\dad 20659
\dag 18360, 21731
\dagger 20837
\dal 20645
\daleth 18564, 20901
\damma 20699
\danger 19836, 21332
\dasheddownarrow 18775, 20971
\dashedleftarrow . . 18769, 21758
\dashedrightarrow . 18774, 21759
\dasheduparrow . . . 18770, 20969
\dashleftarrow 18767, 20968
\dashrightarrow . . . 18772, 20970
\DashV 20348, 21550
\Dashv 20341, 21548
\dashV 21546
\dashv 19180, 21148
\DavidStar 19933, 21371
\davidstar 19935, 21905
\ddag 18364, 21733
\ddagger . . 15661, 18361, 18363, 21732
\ddots 19354, 21217
\declare@shorthand 1098, 1099, 1104, 1105, 1110, 1120, 1121, 1122, 1127, 1128, 1133, 1134, 1139, 1144, 1145, 1150, 1155, 1156, 1157, 1158, 1159, 1160, 1165, 1166, 1171, 1172, 1177, 1178
\DeclareFontEncoding . . . 15552, 15952
\DeclareFontFamily . . . 986, 996
\DeclareFontShape . . . 987, 997
\DeclareFontSubstitution . . 988, 998
\DeclareLocalOptions 4516
\DeclareRobustCommand 5054, 5057, 5066, 5070, 5205, 5292, 5294, 5296, 5305, 6481, 6484, 6487, 6490, 6493, 6496, 6499, 6624, 6628, 6694, 6698, 9229, 9255, 9274, 15402
\DeclareTextAccent 15553, 15554, 15555, 15556, 15557, 15558, 15559, 15560, 15561, 15562, 15563, 15564
\DeclareVoidOption 3092, 3106, 3117, 3133, 3139, 3144, 3158, 3168, 3173, 3179, 3185, 3214, 3231, 3238, 3244, 3249, 3254, 3638, 3646, 3654, 3664
\DefaultHeightofCheckBox 6536, 13605, 14209, 14585
\DefaultHeightofChoiceMenu . . . 6538, 13423, 14024, 14379
\DefaultHeightofReset . . . 6534, 13575, 14181, 14553
\DefaultHeightofSubmit . 6532, 13555, 14158, 14530
\DefaultHeightofText 6540, 13395, 13998, 14346
\DefaultHeightofTextMultiline . . 6541, 13393, 13996, 14344
\DefaultOptionsofCheckBox 6546, 13607, 14211, 14587
\DefaultOptionsofComboBox 6549
\DefaultOptionsofListBox . 6548
\DefaultOptionsofPopdownBox 6550
\DefaultOptionsofPushButton . . 6545, 13526, 14130, 14498
\DefaultOptionsofRadio . . . 6551
\DefaultOptionsofReset . . 6544, 13578, 14184, 14556
\DefaultOptionsofSubmit 6543, 13558, 14161, 14533
\DefaultOptionsofText . . 6547, 13400, 14003, 14351
\DefaultWidthofCheckBox 6537, 13604, 14208, 14584
\DefaultWidthofChoiceMenu . . . 6539, 13422, 14023, 14378
\DefaultWidthofReset . . . 6535, 13574, 14180, 14552
\DefaultWidthofSubmit . . 6533, 13554, 14157, 14529
\DefaultWidthofText 6542, 13390, 13993, 14341
\define@key . . 2783, 2785, 2828, 2843, 2846, 2849, 2857, 2860, 2870, 2873, 2876, 2893, 2905, 2907, 2910, 2913, 2930, 2934, 2937, 2940, 2943, 2946, 2949, 2952, 2955, 2980, 3036, 3042, 3150, 3261, 3277, 3287, 3290, 3297, 3326, 3345, 3348, 3603, 3661, 3673, 3688, 3713, 3716, 3720, 3748, 3753, 3757, 3760, 3767, 3779, 3786, 3796, 3799, 3802, 3806, 3821, 3830, 3840, 3847, 3858, 3871, 3888, 3978, 3987, 4017, 4023, 4029, 4051, 4057, 4063, 4069, 4075, 4081, 4114, 4121, 4213, 4214, 4234, 4241, 4251, 4293, 4294, 4297, 4300, 4303, 4306, 4309, 4312, 4315, 4338, 4452, 4455, 5222, 5251, 5257, 5269, 5706, 5794, 5850, 6152, 6157, 6170, 6198, 6240, 6243, 6246, 6250, 6253, 6257, 6260, 6264, 6268, 6272, 6275, 6279, 6282, 6285, 6288, 6291, 6328, 6344, 6347, 6350, 6353, 6356, 6359, 6389, 6392, 6395, 6398, 6417, 6423, 6437, 6442, 6448, 6465, 6470, 6476, 7086, 7097, 11698, 11704, 12214, 12216, 12219, 12222, 12224, 12226, 12235, 12243, 12250, 12252, 12254, 12256, 12258, 12260, 12269, 12279, 12281, 12283, 12284, 12290, 12299, 12301, 12303, 12305, 12307, 12309, 12311, 12313, 12315, 12317, 12319, 12321, 12323, 12325, 12327, 12329, 12330, 12331, 12332, 12333, 12334, 12335, 12336, 12337, 12338, 12339, 12340
\Deleatur 18513, 20889
\Delta 17243, 20788
\delta 17308, 20801
\Denarius 18515, 21744
\dest@name 5626
\df@tag 8687, 8693
\DH 15817, 16264
\dh . 15887, 16335, 16336, 21616
\dhal 20647
\DiamandSolid 21416
\diameter 19358, 21219

\Diamond 19630, 21842
\diamond 19628, 21266
\diamonddots 18404, 20846
\diamondsuit 19782, 19784, 21890
\digamma 17371, 21718
\dimen@ 522, 523, 527, 1972, 2049, 2050, 2053, 2055, 4488, 4489, 4491, 4498, 4499, 5390, 5391, 5394, 5403, 5404, 5408, 6297, 6306, 6309, 6322, 9670, 9672, 11586, 11587, 11589, 12172, 12187, 12190, 12569, 12571, 12636, 12638, 12730, 12732, 13015, 13017
\dimexpr . 534, 2345, 2347, 2355, 2360, 2363, 2365, 2379, 2381, 2384, 2385, 2392, 2395, 2398, 2399, 2400, 2401, 2411, 2416, 2424, 2428, 2433, 2443, 2446, 2451, 2454, 2459, 2460, 6322
\ding 633, 6364, 6367
\DingObject 14103
\discretionary 702
\div 21592
\divdot 20217, 21919
\divide 9916, 11620
\divideontimes 19251, 21173
\Divides 18831, 20996
\DividesNot 18833, 20997
\DJ 3568, 15818, 16402
\dj 3565, 3566, 16405
\dlsh 18671, 20931
\do 1364, 2800, 2805, 2810, 3828, 3860, 3861, 3862, 3863, 3918, 3919, 3920, 3921, 3922, 3923, 3926, 3927, 3928, 3929, 3930, 3931, 3934, 3935, 3938, 3939, 3940, 3941, 3942, 3945, 3946, 3947, 3948, 3949, 3952, 3953, 3954, 3955, 3956, 3959, 3960, 3961, 3962, 3963, 3966, 3967, 3970, 3971, 3972, 3975, 3976, 3982, 3983, 3984, 3985, 4331, 4332, 4333, 4334, 4335, 4336, 5754, 7702, 8326, 8349, 13427, 13489, 13727, 13734, 13744, 14028, 14091, 14383, 14449, 15265, 15295
\documentclass 2, 9529
\dospecials 15274, 15304
\Doteq 18978, 21779
\doteq 18971, 21055
\doteqdot 18976, 21057
\dotminus 18910, 21028
\dotplus 18829, 20995
\dots 571
\dottimes 20218, 21492
\doublebarwedge . . 20241, 21501
\doublecap 19285, 21823
\doublecup 19288, 21824
\doublesqcap 20229, 21920
\doublesqcup 20234, 21921
\doublevav 17960
\doublevee 20237, 21500
\doublewedge 20235, 21499
\doubleyod 17964
\DOWNarrow 19614, 21261
\Downarrow 18742, 20957
\downarrow 20907
\downdownarrows . 18717, 20948
\downdownharpoons 20138, 21460
\downharpoonleft . 18700, 20941
\downharpoonright 18697, 20940
\downmodels 20354, 21552
\downtherefore . . . 18905, 21772
\downuparrows . . . 18780, 20973
\downupharpoons . 20156, 21466
\downvdash 19188, 21802
\dp 5390, 5398, 5411, 6526, 6529, 8001, 10277, 10357, 10394, 10434, 12173, 12176, 12812, 13095, 14319
\dsbiological 19830, 21329
\dschemical 19828, 21328
\dscommercial 19832, 21330
\dsjuridical 19826, 21327
\dsmedical 19824, 21326
\dsmilitary 19821, 21325
\dth@counter . 7775, 7776, 7806, 7807, 7834
\dth@everypar 7822
\dtimes 20221, 21493
\dvipdfm@setdim 14316, 14366, 14465, 14488, 14519, 14544, 14572, 14601
\dz 17137, 21716

E

\Earth 19718, 21866
\earth 19716, 21296
\ECIRCUMFLEX 20490, 20574, 20575, 20576, 20577, 20578
\ecircumflex 20484, 20514, 20515, 20516, 20517, 20518
\Ecommerce 18555, 21747
\EdefEscapeHex 859
\EdefEscapeName . . 4145, 4196, 10173, 10924, 11463, 12351, 13488, 13491, 14090, 14093, 14445, 14451
\EdefEscapeString 812, 823
\EdefUnescapeName 4146
\EdefUnescapeString . 807, 8539
\egroup 701, 9650, 10745, 11199, 11854, 13674, 13766, 13791
\EightAsterisk 20015, 21410
\EightFlowerPetal . 19993, 21400
\EightFlowerPetalRemoved 20012, 21409
\eighthnote 19800, 21892
\eightinferior 20869
\EightStar 19972, 21390
\EightStarBold . . . 19974, 21391
\EightStarConvex . 19968, 21388
\EightStarTaper . . 19966, 21387
\eightsuperior 20853
\einferior 20877
\ejective 17089, 21707
\ell 18526, 20892
\em 617
\emgma 16971, 21678
\emph 596
\empty 1346, 3723
\emptyset 18798, 20982
\enc@@html 6156, 6159
\enc@update 556
\END . . 1694, 1695, 1721, 1722, 1737, 1738, 1755, 1756, 1773, 1774, 2158, 2164, 2169, 2271, 2273, 10042, 10055, 10059, 10066, 10079, 10083, 10089, 10101, 10105
\end 638, 21944
\endeqnarray . . 7644, 7666, 7673
\endequation 7598, 7632
\endForm 6146
\endinput . 64, 3103, 3198, 4716, 4830, 9142, 11787, 13158, 15392
\endlinechar 934, 955, 5090
\endNoHyper 6658
\EndPreamble 13161
\endsubeqnarray . . . 7677, 7688
\eng 16535, 21623
\engma 16536, 21624
\ensuremath 686
\Envelope 19888, 21350
\enya 16975, 21680
\epsdice 635, 21597
\epsi 16894, 21656
\epsilon 17310, 20802
\eqcirc 18995, 21065
\eqcolon 18913, 21029
\eqdot 20246, 21503
\eqnarray 7643, 7645, 7670

\eqsim 18927, 21035
\eqslantgtr 20285, 21521
\eqslantless 20283, 21520
\equal 8407
\equalscolon 18993, 21064
\equalsinferior 20873
\equalsuperior 20857
\equation 7597, 7606, 7610, 7619
\equationautorefname 3352, 3370, 3388, 3406, 3424, 3442, 3460, 3478, 3479, 3518, 3536, 3554, 9375, 9379
\equiv 19015, 21074
\Equivalence 18747
\er 16890, 21655
\errmessage 3600
\es@roman 660
\es@save@dot 1322
\escapechar 540, 864, 4663, 7695, 15125, 15306, 15357
\esh 17030, 20775
\EstimatedSign . . . 18554, 21746
\eta 17314, 20804
\eTeX 582, 13166
\etex@unexpanded . . 1897, 1904
\eTeXversion . . 9875, 9877, 9879
\eth 16336, 21616
\Eur 18512, 21743
\EURcr 18509, 21740
\EurCr 18508, 21739
\EURdig 18505, 21736
\EurDig 18504, 21735
\EURhv 18507, 21738
\EurHv 18506, 21737
\EURtm 18511, 21742
\EurTm 18510, 21741
\evensidemargin 8557
\everypar 7848
\ExecuteOptions 4503, 4504, 4508
\exists 18794, 20980
\ext@figure 8949
\ext@table 8948
\extra@b@citeb 8333
\extrasvietnam 3647
\extrasvietnamese 3639
\EyesDollar 16089, 21601

F

\fa 20671
\fallingdoteq 21059
\fallingdotseq 18982
\FancyVerbLineautorefname 3365, 3383, 3401, 3419, 3437, 3455, 3473, 3508, 3511, 3531, 3549, 3567, 9392
\farsikaf 20713
\farsiya 20717
\fatha 20697
\fatsemi 20211, 21489
\Fax 20442, 21581
\fax 18566, 20902
\Faxmachine 20444, 21937
\fbox 13956, 13959
\fcdice 636, 21598
\Female 19715, 21865
\female . . . 19709, 19712, 21862
\FemaleFemale . . . 19838, 21333
\FemaleMale 19842, 21335
\Field@addtoks 6220, 6251, 6254, 6443, 6466
\Field@boolkey 5707, 5795, 6214, 6244, 6247
\Field@toks . . 6218, 6219, 6221, 13666, 13683, 13694, 13705, 13715, 13732, 13750, 13758, 13763, 13779, 13788
\Field@Width 6131, 6277
\figureautorefname 3355, 3373, 3391, 3409, 3427, 3445, 3463, 3493, 3521, 3539, 3557, 9382
\filename@area 5524
\filename@base 5524
\filename@ext 5521, 5522, 5524, 5525
\filename@parse 5520
\find@pdflink . . 9704, 9755, 9765
\Finv 18556, 20897
\Fire 20445, 21582
\fivedots 20380, 21563
\FiveFlowerOpen . . 19991, 21399
\FiveFlowerPetal . . 19989, 21398
\fiveinferior 20866
\FiveStar 19648, 21274
\FiveStarCenterOpen . . . 19950, 21379
\FiveStarConvex . . 19958, 21383
\FiveStarOpen . . . 19650, 21275
\FiveStarOpenCircled . . . 19948, 21378
\FiveStarOpenDotted . . . 19952, 21380
\FiveStarOutline . . 19954, 21381
\FiveStarOutlineHeavy . . 19956, 21382
\FiveStarShadow . . 19960, 21384
\fivesuperior 20850
\Flag 19816, 21323
\flap 17018, 21691
\flapr 17017, 21690
\flat 19805, 21318
\Fld@@additionalactions . 14729, 14772, 14776
\Fld@@DingDef 6364, 6367, 6386
\Fld@additionalactions . . 14729, 14820, 14849, 14884, 14919, 14954, 14989, 15021
\Fld@align . . . 6135, 6351, 14798, 14859, 14928
\Fld@altname 6267, 6269, 14708, 14710, 14782, 14784
\Fld@annotflags 5914, 5916, 14793, 14826, 14854, 14888, 14923, 14959, 14995
\Fld@annotnames 14780, 14795, 14828, 14856, 14890, 14925, 14961, 14997
\Fld@bcolor . . 6137, 6393, 14810, 14812, 14875, 14877, 14904, 14906, 14932, 14944, 14946
\fld@bcolor 14863
\Fld@bordercolor . . . 6138, 6396, 14806, 14808, 14834, 14842, 14844, 14862, 14871, 14873, 14900, 14902, 14931, 14940, 14942, 14967, 14975, 14977, 15003, 15011, 15013
\Fld@bordersep 6139, 6345
\Fld@borderstyle 6141, 6329, 6330, 6331, 6341, 14799, 14832, 14860, 14894, 14929, 14965, 15019
\Fld@borderwidth 6140, 6292, 6520, 6523, 6524, 6527, 6528, 13476, 13477, 14078, 14079, 14433, 14434, 14799, 14832, 14860, 14894, 14929, 14965, 15019
\Fld@calculate@code 6404, 13375, 13879, 14332, 14742, 14744
\Fld@calculate@sortkey . . 6436, 6438, 13888
\Fld@cbsymbol 6142, 6357, 14814
\Fld@charsize 6132, 6133, 6289, 13475, 14077, 14432, 14816, 14881, 14910, 14950, 15001
\Fld@checkedfalse 6128
\Fld@checkequals . . 6232, 13428, 13490, 13735, 13745, 14029, 14092, 14384, 14450
\Fld@choices 6021, 6029, 6031, 6035, 6044, 6052, 6057, 6105, 6107, 6115, 6116, 14883
\Fld@color . . . 6136, 6399, 14817, 14882, 14911, 14951
\Fld@default . 6046, 6049, 6051, 6348, 13388, 13404, 13420, 13460, 13488, 13602, 13664, 13682, 13696, 13704, 13711, 13737, 13747, 13777, 13787,

13991, 14008, 14021, 14062, 14090, 14206, 14339, 14356, 14376, 14417, 14445, 14582, 14912, 14916, 14917, 14952
\Fld@DingDef . 6357, 6360, 6362
\Fld@disabledfalse 6129
\Fld@export . 5859, 5862, 5869, 6161
\Fld@findlength . . . 13714, 13725
\Fld@flags 5928, 5930, 5941, 5943, 5957, 5959, 5989, 5991, 6014, 6016, 14797, 14830, 14858, 14892, 14927, 14963, 14999
\Fld@format@code . 6402, 14734, 14736
\Fld@getmethodfalse 6181
\Fld@getmethodtrue 6183
\Fld@height . 6286, 13391, 13409, 13423, 13478, 13498, 13515, 13555, 13575, 13605, 13615, 13994, 14014, 14024, 14080, 14108, 14122, 14158, 14181, 14209, 14221, 14342, 14358, 14379, 14435, 14447, 14481, 14530, 14553, 14585, 14593
\Fld@hiddenfalse 5817
\Fld@hiddentrue 5818
\Fld@invisiblefalse 5813
\Fld@invisibletrue 5814
\Fld@keystroke@code 6405, 14730, 14732
\Fld@listcount . . . 13487, 13492, 13495, 13500, 13505, 13510, 14089, 14094, 14109, 14115, 14444, 14452, 14456, 14461, 14472, 14477
\Fld@loc 6241
\Fld@mappingname . 6271, 6273, 14712, 14714, 14786, 14788
\Fld@maxlen . 6134, 6280, 14955
\Fld@menulength . . 6130, 6283, 13425, 13429, 13475, 13726, 13727, 13730, 14026, 14030, 14077, 14381, 14385, 14432
\Fld@name . 6265, 13387, 13419, 13523, 13601, 13663, 13668, 13679, 13680, 13691, 13692, 13701, 13702, 13710, 13731, 13748, 13756, 13761, 13776, 13785, 13990, 14020, 14127, 14205, 14338, 14375, 14495, 14581, 14707, 14781
\Fld@norotatefalse 5830
\Fld@norotatetrue 5829
\Fld@noviewfalse 5833
\Fld@noviewtrue 5834
\Fld@nozoomfalse 5826
\Fld@nozoomtrue 5825
\Fld@onblur@code . 6407, 14750, 14752
\Fld@onclick@code . 6401, 6477, 14848
\Fld@onenter@code 6410, 14762, 14764
\Fld@onexit@code . 6411, 14766, 14768
\Fld@onfocus@code 6406, 14746, 14748
\Fld@onmousedown@code 6408, 14754, 14756
\Fld@onmouseup@code . . 6409, 14758, 14760
\Fld@pageobjref . 13366, 13964, 13975, 14329, 14663, 14794, 14827, 14855, 14889, 14924, 14960, 14996
\Fld@printfalse 5822
\Fld@printtrue 5821
\Fld@radiosymbol . . 6143, 6360, 14908
\Fld@rotation 6144, 6390, 14802, 14804, 14833, 14838, 14840, 14861, 14867, 14869, 14896, 14898, 14930, 14936, 14938, 14966, 14971, 14973, 15002, 15007, 15009
\Fld@submitflags . . . 5896, 5898, 14987
\Fld@temp . . 6363, 6365, 6368, 6369, 6378, 6379
\Fld@validate@code 6403, 14738, 14740
\Fld@value 6047, 6054, 6056, 6354, 13389, 13404, 13421, 13459, 13460, 13992, 14008, 14022, 14061, 14062, 14340, 14356, 14377, 14416, 14417, 14953
\Fld@width . 6276, 13390, 13403, 13409, 13422, 13458, 13469, 13471, 13498, 13515, 13538, 13554, 13562, 13574, 13588, 13604, 13610, 13615, 13993, 14007, 14014, 14023, 14060, 14071, 14073, 14108, 14122, 14143, 14157, 14165, 14180, 14194, 14208, 14215, 14221, 14341, 14355, 14358, 14378, 14415, 14426, 14428, 14447, 14481, 14512, 14529, 14537, 14552, 14566, 14584, 14591, 14593
\float@caption 8102, 8174
\float@makebox 8176, 8177
\floatingpenalty 8002
\Florin 16658, 21628
\flq 667
\flqq 665
\fmtname 7
\fmtversion 7
\font 5378
\fontencoding . . . 548, 552, 589, 13948
\fontfamily 590, 13947
\fontseries 591, 7740, 7768, 7799, 13949
\fontshape 592, 5017, 13950
\fontsize 593
\Football . . 19857, 19859, 21897
\footins 7996
\footnote 5683
\footnoteautorefname 3353, 3371, 3389, 3407, 3425, 3443, 3461, 3482, 3485, 3519, 3537, 3555, 9376, 9380
\footnotesep 8000, 8007
\footnotesize 622, 7998
\footnotetext 7958
\footref 8026, 8027
\forall 18788, 20977
\Force 18619, 21753
\foreignlanguage 648
\Form 6145
\Form@action 6155, 13655, 14985
\Form@boolkey 6149
\Form@htmlfalse . . . 6148, 6167
\Form@htmltrue 6160
\Form@method 6179, 6187, 13655
\Forward 19607, 21258
\ForwardToIndex . . 19425, 21247
\FourAsterisk 19936, 21372
\fourinferior 20865
\FourStar 19944, 21376
\FourStarOpen . . . 19946, 21377
\foursuperior 20849
\fourth 18402, 20845
\frown 19378, 21228
\frownie 19691, 21289
\Frowny 19693, 21857
\frq 668
\frqq 666
\fullnote 20419, 21571
\futurelet 721, 1688
\FV@SetLineNo 7436
\FV@StepLineNo . . . 7435, 7437, 7438

G

\G . . 15977, 16017, 16044, 16769, 16771, 16773, 16775, 16781, 16783, 16784, 16791, 16793, 16799, 16801, 16803, 16805

\g@addto@macro 6847, 7019, 8235, 8512, 8515, 8518, 8567, 10109, 11088, 11610, 11910, 12499, 12593, 12663, 12973, 13172
\G@refundefinedtrue 5343, 8335, 8358, 9147, 9167, 9184, 9302
\gaf 20715
\Game 18568, 20903
\Gamma 17241, 20787
\gamma 17306, 20800
\gammainferior 20829
\Ganz 20421, 21934
\GaPa 20407, 21565
\Gauge 6493
\ge 19027, 21079
\Gemini 19747, 21877
\gemini 19745, 21305
\GenericError 709, 4011
\GenericInfo 711, 4009
\GenericWarning . 271, 710, 4010
\Gentsroom 20449, 21584
\geq 19027, 21078
\geqclosed 19237, 21818
\geqq 19035, 21082
\geqslant 20256, 21508
\getpagerefnumber 7550
\getrefbykeydefault . 7506, 7507
\gexmode . 11641, 11642, 11742
\gg 19047, 21088
\ggg 19297, 21193
\ghayn 20667
\gimel 18562, 20900
\Gin@setfile 8764, 8765
\glossary 674
\glotstop 17087, 20784
\glottal 17090, 21708
\glq 663
\glqq 661
\gnapprox 20275, 21517
\gneq 20271, 21515
\gneqq 19041, 21085
\gnsim 19329, 21207
\Greeknumeral 1186
\greeknumeral 1185
\grq 664
\grqq 662
\gtrapprox 20264, 21512
\gtrclosed 19230, 21815
\gtrdot 19293, 21191
\gtreqless 19303, 21195
\gtreqqless 20281, 21519
\gtrless 19074, 21100
\gtrsim 19065, 21096
\guill@spacing 1115
\guillemotleft 1155, 15744, 15926, 16187, 20471
\guillemotright . . . 1156, 15775, 15927, 16222, 20472
\guilsinglleft 15675, 15928, 18385, 20473
\guilsinglright . . . 15677, 15929, 18387, 20474

H

\H . . 15973, 16019, 16046, 16068, 16546, 16548, 16610, 16612, 17883, 17885
\h . . 3558, 20497, 20502, 20507, 20512, 20517, 20522, 20527, 20532, 20537, 20542, 20547, 20552, 20557, 20562, 20567, 20572, 20577, 20582, 20587, 20592, 20597, 20602, 20607, 20612
\H@@footnotemark . 7861, 7878, 7942, 8031, 8038, 8050, 8061
\H@@footnotetext 7860, 7870, 7902, 7941, 7980, 8039, 8053, 8061
\H@@mpfootnotetext 7868, 7880, 7882, 7943
\H@definecounter . . 8669, 8671
\H@endeqnarray . . . 7644, 7667
\H@endequation . . . 7598, 7638
\H@endsubeqnarray . 7677, 7689
\H@eqnarray 7643, 7648
\H@equation 7597, 7621
\H@item 7216, 7222, 8243, 8268
\H@newctr 8674, 8676
\H@old@part 15456, 15467
\H@old@schapter . . 15426, 15435
\H@old@sect 15477, 15488, 15497
\H@old@spart 15469, 15475
\H@old@ssect 15412, 15417
\H@refstepcounter . . 7233, 7243, 7437, 7561, 7574, 7620, 7781, 7812, 8097, 8963, 9016
\H@seteqlabel 8705, 8707
\H@subeqnarray . . . 7676, 7680
\ha 20683
\Haa 20641
\Halb 20424, 21935
\halfnote 20422, 21572
\halign 683
\hamza 20617
\HandCuffLeft 19667, 21281
\HandCuffRight . . . 19669, 21282
\HandLeft 19671, 21283
\HandRight 19674, 21284
\HaPa 20409, 21566
\HAR@checkcitations 8423
\HAR@citetoaux 8379
\HAR@tempa 8424, 8425, 8426, 8427, 8428, 8429
\hardsign 17541, 21719
\harvardcite 8373, 8410
\harvarditem 8398
\hateq 19003, 21069
\hausaB 16647, 20749
\hausab 16866, 21649
\hausaD 16651, 20750
\hausad 16880, 21654
\hausaK 16662, 20751
\hausak 16666, 21630
\hb@xt@ 5393, 5406
\hbar 16453, 20748
\hbox . . 1964, 1970, 1976, 2682, 3734, 3740, 5394, 5408, 5559, 5561, 6277, 6514, 6515, 6516, 6517, 8363, 8552, 9643, 10199, 10278, 10288, 10358, 10372, 10395, 10410, 10435, 10450, 10721, 10738, 11818, 12176, 12190, 12813, 12823, 13096, 13111, 13803, 14357, 14446, 14480, 14510, 14538, 14567, 14592, 15404
\hc@currentHref 8113
\HCode . . . 13655, 13657, 13668, 13677, 13689, 13697, 13699, 13730, 13736, 13741, 13746, 13760, 13765, 13769, 13772, 13781
\hdotfor 18367, 20839
\headerps@out 7120, 12489, 12500, 12580, 12594, 12655, 12664, 12677, 12691, 12738, 12856, 12974, 13173
\Heart 19780, 21888
\heartsuit . 19778, 19781, 21889
\hebalef 17905
\hebayin 17941
\hebbet 17907
\hebdalet 17911
\hebfinalkaf 17925
\hebfinalmem 17931
\hebfinalnun 17935
\hebfinalpe 17943
\hebfinaltsadi 17947
\hebgimel 17909
\hebhe 17913
\hebhet 17919
\hebkaf 17927
\heblamed 17929
\hebmem 17933
\hebnun 17937
\hebpe 17945
\hebqof 17951
\hebresh 17953
\hebsamekh 17939

\hebshin . . 17955, 17956, 21721
\hebsin 17956, 21721
\hebtav 17958
\hebtet 17921
\hebtsadi 17949
\hebvav 17915
\hebyod 17923
\hebzayin 17917
\Hermaphrodite . . . 19844, 21336
\hexagon 19420, 21245
\hexstar 19855, 21338
\hfill . . . 6514, 6515, 6516, 6517, 8254, 8287
\Hfootnoteautorefname . . . 9376
\hhyperref 5688
\hinferior 20881
\hoffset 8553
\hookb 16865, 21648
\hookd 16879, 21653
\hookg 16912, 21660
\hookh 16932, 21665
\hookheng 16936, 21667
\hookleftarrow 18657, 20925
\hookrevepsilon . . . 16901, 21657
\hookrightarrow . . 18659, 20926
\hphantom 632
\href 675, 5205, 5682, 5683, 6684
\href@ 5208, 5211, 5216
\href@split 5216, 5217
\hsize 8003
\hskip . . 1975, 2062, 2723, 2724, 5202, 6520, 13803
\hslash 18522, 20890
\hspace 671, 8413, 8414
\hss 5395, 5407, 8561, 15409
\ht 5399, 5403, 5412, 6522, 6525, 10286, 10361, 10370, 10377, 10398, 10408, 10415, 10438, 10448, 10455, 12172, 12821, 13109, 14317
\htmladdimg 5681
\htmladdnormallink 5682
\htmladdnormallinkfoot . . . 5683
\htmlref 5684
\htrtaild 20836
\Huge 619
\huge 623
\Hurl 5291, 5293, 5295
\hv 16661, 21629
\hv@pdf@char . . . 15194, 15259, 15260, 15261, 15262
\hvtex@buffer . . . 11505, 11509, 11517, 11520, 11529, 11533, 11549
\hvtex@gettoken . 11504, 11518, 11522, 11531, 11535
\hvtex@gettoken@ . 11505, 11507
\hvtex@par@dimension . . 11500, 11541
\hvtex@par@direction . . . 11501, 11544
\hvtex@par@duration 11502, 11536
\hvtex@par@motion 11503, 11538
\hvtex@param@dimension 11513, 11542, 11560, 11563
\hvtex@param@direction . 11514, 11545, 11571, 11579
\hvtex@param@duration . 11515, 11537, 11584, 11586
\hvtex@param@motion . . 11516, 11539, 11560, 11567
\hvtex@parse@trans 11489, 11511
\hvtex@produce@trans . . . 11550, 11556
\hvtex@token . . . 11508, 11519, 11525, 11532, 11537, 11540, 11543, 11545
\hvtex@trans@code 11493, 11494, 11495, 11496, 11497, 11498, 11499, 11512, 11558, 11559, 11561, 11563, 11565, 11567, 11569, 11571, 11573, 11574, 11575, 11576, 11577, 11579
\hvtex@trans@effect@Blinds 11493
\hvtex@trans@effect@Box 11494
\hvtex@trans@effect@Dissolve 11495
\hvtex@trans@effect@Glitter 11496
\hvtex@trans@effect@R . . 11499
\hvtex@trans@effect@Split 11497
\hvtex@trans@effect@Wipe 11498
\hvtex@trans@par 11532, 11536, 11538, 11541, 11544
\hvtex@trans@params . . . 11526, 11528, 11552
\Hy@@CleanupFile . 5559, 5561
\Hy@@DefNameKey . 2825, 2827
\Hy@@escapeform 14673, 14686, 14692
\Hy@@SectionAnchor 15399, 15402
\Hy@@temp . . 3764, 3766, 6413, 6415
\Hy@@VersionCheck . . 293, 322
\Hy@abspage . 6867, 6953, 7069, 7146
\Hy@Acrobatmenu . . 4601, 4642, 10171, 10922, 11464, 12352
\Hy@activeanchorfalse 5088, 9746, 10230, 10245, 10324, 10334, 10650, 11184, 11201, 11272, 11285, 11804, 12761, 12776, 13049, 13063
\Hy@activeanchortrue . . . 9742, 10227, 10241, 10322, 10331, 10646, 11180, 11198, 11270, 11282, 11794, 12758, 12772, 13046, 13059
\Hy@ActiveCarriageReturn 5124, 5127
\Hy@AllowHyphens 5198, 11792, 11824, 12159
\Hy@AlphNoErr 7332, 7345, 7347
\Hy@AnchorName 5328, 5330, 5333, 5335, 5359, 5361, 5365, 5370, 5372
\Hy@appendixstring 7327, 7349
\Hy@AtBeginDocument 376, 1094, 2964, 3024, 3099, 3194, 3251, 3676, 4485, 4554, 4571, 4712, 4718, 4826, 4985, 5075, 6592, 6703, 7153, 7442, 7726, 8370, 9221, 9369, 9638, 10117, 10733, 11253, 12690, 12736, 13820, 13853
\Hy@AtBeginDocumentHook 377, 382, 388, 389
\Hy@AtEndOfPackage 379, 922, 2598, 3640, 3648, 3655, 4700, 4726, 4732, 4937
\Hy@AtEndOfPackageHook 380, 383, 385, 386
\Hy@author 6773, 6777
\Hy@babelnormalise 5306, 5308
\Hy@backout . 5084, 6643, 6647, 8209
\Hy@backreffalse 444, 3317, 3339, 4724
\Hy@backreftrue 3310, 3314, 3336
\Hy@BeginAnnot . 10763, 10780, 10822, 10860, 10893, 10923
\Hy@bibcite 8232, 8236
\Hy@bookmarksdepth . . . 3719, 3724, 3736, 3742, 15036
\Hy@bookmarksnumberedfalse 445
\Hy@bookmarksopenfalse . . 446
\Hy@bookmarkstrue 447
\Hy@bookmarkstype 3754, 3756, 8583, 15047
\Hy@boolkey . 2752, 2844, 2847, 2850, 2871, 2874, 2877, 2908, 2911, 2914, 2931, 2935, 2938, 2941, 2944, 2947, 2950, 2953, 2956, 3037, 3288, 3291, 3346, 3662, 3674, 3689, 3714,

3717, 3758, 3761, 3822, 3988, 4295, 4298, 4301, 4304, 4307, 4310, 4313, 4321, 4453, 4456, 7087
\Hy@BorderArrayPatch . . 12230, 12233, 12498, 12972
\Hy@breaklinks@unsupported 2919, 11770
\Hy@breaklinksfalse 448
\Hy@breaklinksunhbox . . 12126, 12180
\Hy@CatcodeWrapper . . . 4946, 5005, 5049, 5078
\Hy@chapapp 7328, 7349, 7376, 15430, 15441, 15523
\Hy@chapterstring . . 7323, 7325, 7328, 7375
\Hy@CheckOptionValue . . 2795, 2832
\Hy@CJKbookmarksfalse . . . 450
\Hy@cjkpu 1357, 1359, 1380
\Hy@CleanupFile . . . 5557, 9804, 10824, 11349, 12424
\Hy@colorlink 3668, 5009, 5017, 5021, 9639, 9727, 9797, 9834, 9867, 10193, 10228, 10251, 10282, 10295, 10323, 10339, 10364, 10380, 10402, 10419, 10442, 10459, 10734, 10813, 10853, 10886, 10916, 10943, 11271, 11293, 11363, 11389, 11424, 11457, 11476, 11822, 12105, 12107, 12759, 12782, 12817, 12830, 13047, 13069, 13104, 13117
\Hy@colorlinksfalse 3665
\Hy@ColorList 3827, 3828
\Hy@CounterExists . 7181, 7194, 7197
\Hy@currentbookmarklevel 15042, 15052, 15053, 15059, 15066, 15159, 15162, 15167, 15171
\Hy@debugfalse 440
\Hy@debugtrue 439
\Hy@defaultbp 6292, 6294
\Hy@defaultbpAux . 6296, 6301, 6315
\Hy@defaultdriver . . 4811, 4840, 4850, 4861
\Hy@DefFormAction 6153, 6155
\Hy@DefNameKey . . 2824, 3859, 3917, 3925, 3933, 3937, 3944, 3951, 3958, 3965, 3969, 3974, 3981, 4330
\Hy@DEST 12127, 12194
\Hy@destlabelfalse 451
\Hy@DestName 9691, 9698
\Hy@DestRename . . 5622, 5647, 5651
\Hy@DisableOption 2781, 4591, 4592, 4593, 4595, 4600, 4705, 4731, 4881, 4882, 4883, 4884, 4885, 4886, 4887, 4888, 4889, 4890, 4891, 4892, 4893, 4894, 4895, 4896, 4897, 4898, 4899, 4900, 4945, 4998, 5026, 5027, 5086, 5087, 5677, 6596, 6597, 6598, 6599, 6600, 6601, 6602, 6603, 6604, 6605, 6606, 6607, 6608, 6609, 6610, 6611, 6612, 6613, 6614, 6615, 6616, 6617, 6618, 6619, 6797, 7021, 8065, 8769, 8894, 8895, 9562, 9666, 10027, 10028, 10029, 10030, 10031, 10032, 10033, 10034, 10035, 10036, 10166, 10489, 10490, 10491, 10492, 10493, 10494, 10495, 10496, 10497, 10498, 10761, 10986, 10987, 10988, 10989, 10990, 10991, 10992, 10993, 10994, 10995, 11113, 11255, 11722, 11723, 11724, 11725, 11726, 11727, 11728, 11729, 11730, 11731, 11989, 11990, 11991, 11992, 11993, 11994, 11995, 11996, 11997, 11998, 12565, 12882, 12883, 12884, 12885, 12886, 12887, 12888, 12889, 12890, 12891
\Hy@DistillerDestFix 8526, 11735, 11737
\Hy@draftfalse 406
\Hy@drafttrue 407
\Hy@driver 486, 2924, 3096, 3108, 3120, 3123, 3135, 3141, 3146, 3160, 3170, 3175, 3181, 3188, 3191, 3217, 3233, 3240, 3246, 3256, 4042, 4734, 4737, 4745, 4748, 4752, 4755, 4757, 4761, 4767, 4771, 4774, 4778, 4783, 4787, 4790, 4794, 4797, 4799, 4803, 4809, 4814, 4816, 4820, 4823, 4834, 4837, 4840, 4849, 4850, 4861, 4863, 4871, 4873, 4875, 4877
\Hy@dth@currentHref 7783, 7814, 7839
\Hy@DviErrMsg . . . 3063, 3065, 3068, 3074, 3087
\Hy@DviModetrue . . 3072, 3077
\Hy@DvipdfmxOutlineOpentrue 4907, 4914
\Hy@EndAnnot . . 10769, 10816, 10856, 10889, 10919, 10946
\Hy@endcolorlink 3669, 5013, 5018, 5022, 9648, 9733, 10228, 10265, 10289, 10297, 10323, 10347, 10368, 10382, 10406, 10421, 10446, 10461, 10743, 10771, 11271, 11344, 11365, 11391, 11426, 11459, 11478, 11849, 12119, 12759, 12798, 12824, 12832, 13047, 13083, 13108, 13119
\Hy@EndWrap 4947, 4949, 4950, 4983
\Hy@Error 265, 281, 287, 310, 2968, 3085, 3111, 3127, 3162, 3201, 3208, 3219, 3225, 4626, 5259, 5490, 5854, 5978, 6174, 6206, 6418, 6471, 13529, 13582, 14134, 14188, 14502, 14560
\Hy@escapeform . 13408, 13494, 13513, 13542, 13563, 13589, 13614, 14012, 14098, 14120, 14147, 14168, 14196, 14219, 14363, 14455, 14484, 14516, 14540, 14568, 14598, 14667, 14697, 14704
\Hy@escapestring 14664, 14732, 14736, 14740, 14744, 14748, 14752, 14756, 14760, 14764, 14768, 14814, 14848, 14908, 14952, 14953, 14985
\Hy@EveryPageAnchor . . 8525, 8568
\Hy@EveryPageBoxHook 6824, 6828, 6832, 8567, 11088, 11610, 11910
\Hy@EveryPageHook 6823, 6827, 7019, 10109
\Hy@ExchangeLeftParenthesis 9425, 9431
\Hy@ExchangeRightParenthesis 9435, 9441
\Hy@false 2646, 2762, 3302, 3338, 6203
\Hy@finalfalse 407
\Hy@finaltrue 406
\Hy@FirstPage 4612
\Hy@FirstPageHook 6825, 6839, 6840, 6844,

6847, 7118, 7119, 12499, 12593, 12663, 12973, 13172
\Hy@FixNotFirstPage . . . 10197, 10198, 10206
\Hy@float@caption . . 8103, 8153, 8167
\Hy@float@currentHref . . 8157, 8160, 8162, 8168, 8170, 8172
\Hy@footnote@currentHref 6591, 7890, 7895, 7910, 7915, 7918, 7930, 7932, 7971, 8012, 8015
\Hy@FormObjects 13912, 14227, 14281, 14291, 14609, 14659
\Hy@frenchlinksfalse 3667
\Hy@Gin@setfile . . . 8764, 8766
\Hy@GlobalStepCount 484, 6953, 7406, 7429, 8543, 9005, 9056
\Hy@gtemp 837, 838, 4664, 4670, 4672, 6051, 6052, 6056, 6057, 6068, 6082, 7947, 7952, 9449, 9451, 14725, 14727
\Hy@href 5208, 5210
\Hy@href@nextactionraw 5245, 5268, 5270, 5271, 5273, 5278, 5282, 5284, 9793, 9830, 9863, 10189, 10809, 10849, 10882, 10912, 10939, 11308, 11378, 11446, 12449, 12478
\Hy@href@page 5223, 5225, 5229, 5230, 5232, 5239, 5242, 9826, 10844, 12445
\Hy@hyperfiguresfalse 453
\Hy@hyperfootnotestrue . . . 455
\Hy@hyperindextrue 456
\Hy@hypertexnamesfalse . . 2602
\Hy@hypertexnamestrue . . . 457
\Hy@IfStringEndsWith . . 5525, 5537
\Hy@implicittrue 458
\Hy@Info 268, 2770, 4675, 4677, 4680, 4682, 4685, 4687, 4690, 4692, 4695, 4697, 4930, 4936, 5014, 5019, 5023, 5167, 5194, 5761, 6553, 6555, 6558, 6560, 6563, 6565, 6568, 6570, 6573, 6575, 6578, 6580, 6583, 6585, 8310, 8371, 8588, 8605
\Hy@InfoNoLine 269, 4707, 4709, 4873, 9487, 13026
\Hy@IsNotEmpty . . 5629, 5630, 5653
\Hy@LastPage 4615
\Hy@level . 15048, 15050, 15061, 15066, 15067, 15068, 15099
\Hy@levelcheck . . . 15049, 15064
\Hy@linkcounter 488, 490, 7406, 7407, 7429, 7430, 8708, 9005, 9006, 9010, 9056, 9057, 9061
\Hy@linkfileprefix . . 3798, 5509, 10268, 11149, 12802, 13086
\Hy@LinkMath . . 11813, 11815, 11820, 11852, 12151, 12153, 12158, 12160, 12166, 12168
\Hy@linktoc . 2879, 2881, 2889, 2891, 2901, 8629
\Hy@linktoc@all 2887
\Hy@linktoc@none 2884
\Hy@linktoc@page . . 2879, 2886, 2889
\Hy@linktoc@section 2881, 2885, 2891
\Hy@linktocpagefalse 459
\Hy@localanchornamefalse . . 460
\Hy@LookForParentCounter 7298
\Hy@LT@currentHref 7576, 7587
\Hy@LT@footnotetext 7970, 7979
\Hy@make@anchor . 8682, 8688, 8694
\Hy@make@df@tag@@ 8686, 8701
\Hy@make@df@tag@@@ . . 8692, 8702
\Hy@MakeCurrentHref . . 7417, 7430
\Hy@MakeCurrentHrefAuto 7428, 7510, 8683, 15027, 15414, 15430, 15441, 15471, 15485, 15523
\Hy@MakeRemoteAction . 5228, 9807, 10827, 12427
\Hy@maketitle@end . 8042, 8047, 8049
\Hy@maketitle@optarg 8040, 8045
\Hy@Match 326, 328, 3264, 3808, 3874, 3891, 4257, 4348, 4354, 4384, 4385, 4388, 4399, 4414, 5273, 6331
\Hy@MaybeStopNow 3184, 4509, 4512
\Hy@Message . 270, 3098, 3193, 4711, 4825, 11205, 11209, 11212, 11215, 11218, 11221, 11224, 11227, 13356, 13627, 13631, 13634, 13637, 13640, 13643, 13646, 13649, 13659, 13796, 14286
\Hy@naturalnamesfalse 462
\Hy@nestingfalse 463
\Hy@newline@author 6817
\Hy@newline@title 6816
\Hy@next . . . 6969, 6979, 6984, 15440, 15449, 15452
\Hy@nextfalse 4644, 8779
\Hy@NextPage 4606
\Hy@nexttrue 4645, 4646, 4647, 8780, 8781, 8782
\Hy@NIL 4528, 4541, 4544
\Hy@number . . 4226, 4230, 4238
\Hy@numberline . 15043, 15080, 15081, 15082, 15083
\Hy@ObsoletePaperOption 2853, 2861
\Hy@ocgcolor 9642, 9656, 10737, 10751
\Hy@ocgcolorlinksfalse 3666, 4993
\Hy@org@chapter . 15438, 15453
\Hy@OrgMakeLabel 13141, 13148
\Hy@OutlineName . 15318, 15373
\Hy@OutlineRerunCheck . 15183, 15282, 15364
\Hy@PageAnchorSlide . . . 8485, 8523, 8536
\Hy@PageAnchorSlidesPlain 8472, 8522, 8531
\Hy@pageanchortrue 466
\Hy@pagecounter 489, 491, 7468, 8543, 8545
\Hy@pageheight . . . 4499, 12595, 12692
\Hy@param 4529, 4530, 4533, 4534, 7374, 7375, 7376, 7403, 7407
\Hy@pdfafalse 482
\Hy@pdfcenterwindowfalse . 449
\Hy@pdfdisplaydoctitlefalse . 481
\Hy@pdfencoding@pdfdoc . 3019
\Hy@pdfescapeformfalse . . . 452
\Hy@pdffitwindowfalse 454
\Hy@pdfmarkerrorfalse . . 12079
\Hy@pdfmarkerrortrue . . . 12263, 12272
\Hy@pdfmenubartrue 461
\Hy@pdfminorversion 9461, 9467, 9470, 9478, 9497, 9520, 9541, 9556, 9560
\Hy@pdfnewwindowfalse . . . 465
\Hy@pdfnewwindowsetfalse 464, 4318
\Hy@pdfnewwindowsettrue 4320, 5247
\Hy@pdfnewwindowtrue . . 5248
\Hy@pdfpagehiddenfalse . . . 468
\Hy@pdfpagelabelsfalse . . . 6854
\Hy@pdfpagelabelstrue 467
\Hy@pdfstringdef 836, 6026, 6034, 6354

\Hy@pdfstringfalse . . 469, 6621
\Hy@pdfstringtrue . . . 688, 6593
\Hy@pdftoolbartrue 475
\Hy@pdfusetitlefalse 478
\Hy@pdfversion 3050, 3061, 4597, 6028, 9483, 9491, 9497, 9520, 9523, 9541, 9543, 9557, 9560, 14719
\Hy@pdfwindowuitrue 480
\Hy@pkg 4527, 4534
\Hy@plainpagesfalse 470
\Hy@PrevPage 4609
\Hy@ProvideTheHCounter 7279
\Hy@ps@CR 12645, 12652, 12657, 12658, 12675, 12696, 12697, 12698, 12704, 12711, 12718, 12725
\Hy@psdextrafalse 474
\Hy@pstringB 9943, 9948, 11026, 11038, 12052, 12068, 12945, 12961
\Hy@pstringD 9806, 9828, 10826, 10846, 12426, 12447
\Hy@pstringdef 9396, 9690, 9714, 9771, 9805, 9806, 9840, 9841, 9943, 10588, 10789, 10825, 10826, 10861, 10862, 10894, 11026, 11292, 11370, 11433, 11434, 12052, 12261, 12270, 12399, 12425, 12426, 12457, 12458, 12945, 14690, 15317, 15333
\Hy@pstringDest . . . 9690, 9691, 10588, 10635, 12261, 12262, 12266, 12270, 12271, 12275
\Hy@pstringF 9803, 9804, 9805, 9822, 9840, 9856, 9861, 10823, 10824, 10825, 10841, 10861, 10875, 10880, 11348, 11349, 11353, 11433, 11440, 11444, 12423, 12424, 12425, 12442, 12457, 12473, 12476
\Hy@pstringName 15317, 15318, 15333, 15347
\Hy@pstringP 9841, 9861, 10862, 10880, 11434, 11444, 12458, 12476
\Hy@pstringURI . . . 9771, 9789, 10894, 10908, 11292, 11304, 11370, 11374, 12399, 12411
\Hy@PutCatalog 7015, 7023, 7135
\Hy@raisedlink 2670, 7274, 7512, 7533, 7534, 7535, 7538, 7588, 7628, 7633, 7636, 7659, 7836, 7893, 7913, 7984, 8010, 8141, 8220, 8244, 8249, 8269, 8684, 8709, 12487, 12578, 12852, 13024, 15028, 15406, 15431, 15442, 15472, 15524
\Hy@raiselinksfalse . . 471, 8372
\Hy@RemoveDurPageAttr 10066, 10079
\Hy@RemoveHidPageAttr 10089, 10101
\Hy@RemovePercentCr . . 5140, 5144, 5149
\Hy@RemoveTransPageAttr 10041, 10055
\Hy@reserved@a 5425, 7646, 7679, 13662, 13712, 13775
\Hy@RestoreCatcodes 205, 4505, 4880
\Hy@RestoreCatcodeSettings 976, 983, 993, 1007
\Hy@RestoreLastskip 2691, 9692, 10231, 10246, 10325, 10335, 10637, 11185, 11202, 11273, 11286, 11785, 11805, 12762, 12777, 13050, 13064
\Hy@RestoreSavedSpaceFactor . 2666, 10276, 10356, 10393, 10433, 12811, 13094
\Hy@RestoreSpaceFactor . 2657, 2683, 2688, 10275, 10283, 10290, 10355, 10365, 10373, 10392, 10403, 10411, 10432, 10443, 10451, 11819, 11855, 12157, 12165, 12192, 12810, 12818, 12825, 13093, 13105, 13112, 13149, 13153
\Hy@ReturnAfterElseFiFiEnd 494, 1931
\Hy@ReturnAfterFiFiEnd . 493, 1923, 1937, 2030, 2037
\Hy@ReturnEnd . 492, 493, 494, 1943, 2042
\Hy@safe@activesfalse 495, 5039, 5044, 5458, 9291
\Hy@safe@activestrue 495, 4653, 5037, 5042, 5120, 5157, 5165, 5193, 5310, 5615, 5625, 7373, 8622, 9197, 9280, 13823, 13882, 15275, 15305
\Hy@SaveCatcodeSettings . 932, 981, 991, 1005
\Hy@saved@currentHref . . 7928, 7931
\Hy@saved@footnotemark 8036, 8051
\Hy@saved@footnotetext . 8037, 8054
\Hy@saved@hook . . . 6801, 6812
\Hy@saved@refstepcounter 7260, 7562
\Hy@SavedSpaceFactor 2653, 2655, 2660, 2661, 2667, 13146
\Hy@savedthm 7728, 7729, 7853, 7854
\Hy@SaveLastskip . . 2691, 9688, 10219, 10234, 10316, 10328, 10585, 11172, 11188, 11263, 11276, 11775, 11789, 12751, 12765, 13039, 13053
\Hy@SaveSavedSpaceFactor 2665, 10274, 10354, 10391, 10431, 12809, 13092
\Hy@SaveSpaceFactor 2654, 2674, 2685, 10273, 10285, 10353, 10367, 10390, 10405, 10430, 10445, 11817, 11853, 12149, 12161, 12169, 12808, 12820, 13091, 13107, 13144, 13151
\Hy@scanauthor . . . 6771, 6776
\Hy@scanoptauthor . 6771, 6772
\Hy@scanopttitle . . . 6762, 6763
\Hy@scantitle 6762, 6767
\Hy@secnum@part 15459, 15461, 15464
\Hy@SectionAnchorHref . . 685, 15397, 15419, 15490
\Hy@SectionHShift 15396, 15405, 15415, 15486
\Hy@seminarslidesfalse . . . 8955
\Hy@seminarslidestrue 8952
\Hy@setbreaklinks . . 2916, 2920, 2932, 9457, 10578
\Hy@SetCatcodes 181, 231, 4507
\Hy@SetNewWindow 4324, 9824, 9858, 10848, 10877, 11441, 12441, 12472
\Hy@setouterhbox . 12125, 12156
\Hy@setpagesizetrue 472
\Hy@setpdfborder 3907, 9720, 9776, 9811, 9845, 10176, 10800, 10833, 10868, 10900, 10930, 11312, 11333, 11356, 11382, 11416, 11450, 11469
\Hy@setpdfhighlight 3865, 9721, 9777, 9812, 9846, 10177, 10801, 10834, 10869, 10901, 10931
\Hy@setpdfversiontrue 3049
\Hy@setref@link 9153, 9156
\Hy@SlidesFormatOptionalPage . 6883, 8471, 8490, 8494

\Hy@SlidesPage 6890, 8504, 8505, 8511, 8513, 8516, 8519
\Hy@slidetitle 8982, 8984, 8991, 8999, 9009, 9033, 9035, 9042, 9050, 9060
\Hy@StartlinkName . 9718, 9729
\Hy@StepCount 483, 6930, 13429, 13492, 13727, 14030, 14094, 14385, 14452, 15163, 15168, 15244
\Hy@stoppedearlyfalse 4514, 7180
\Hy@stoppedearlytrue 4511, 7177
\Hy@StringLocalhost 5555, 5556, 5571
\Hy@tabularx@hook 7940, 7948
\Hy@temp 716, 723, 840, 912, 1082, 1085, 1093, 1094, 2859, 2864, 2865, 2866, 2867, 2868, 2869, 3763, 3772, 3773, 3774, 3775, 3776, 3777, 3778, 3828, 3829, 3830, 3833, 3835, 3838, 3848, 3851, 3852, 3853, 3854, 3855, 3856, 3872, 3885, 3889, 3904, 4041, 4042, 4082, 4083, 4086, 4089, 4092, 4117, 4125, 4126, 4127, 4128, 4129, 4130, 4131, 4132, 4133, 4316, 4317, 4340, 4341, 4387, 4388, 4395, 4399, 4633, 4637, 4638, 4639, 4640, 4740, 4742, 4745, 4750, 4752, 4755, 4769, 4771, 4776, 4778, 4785, 4787, 4792, 4794, 4797, 4862, 4863, 5751, 5755, 5756, 5767, 5851, 5852, 5853, 5855, 5859, 6171, 6172, 6173, 6175, 6179, 6180, 6329, 6341, 6412, 6428, 6429, 6430, 6431, 6432, 6433, 6434, 6435, 6441, 6447, 6453, 6454, 6455, 6456, 6457, 6458, 6459, 6460, 6461, 6462, 6463, 6910, 6913, 6922, 6924, 6928, 6932, 6976, 6978, 7282, 7283, 7304, 7462, 7465, 7468, 7474, 7600, 7606, 7732, 7757, 8020, 8026, 8636, 8637, 8645, 8646, 8849, 8851, 8855, 8886, 8887, 8888, 8903, 8904, 9499, 9502, 9503, 9519, 9537, 9958, 9987, 9989, 10508, 10513, 10519, 10523, 10526, 10531, 10562, 10564, 10998, 11041, 11043, 11952, 11955, 11959, 11960, 11966, 11967, 11973, 12001, 12006, 12012, 12016, 12019, 12024, 12057, 12059, 12131, 12132, 12136, 12227, 12228, 12236, 12237, 12341, 12342, 12894, 12899, 12905, 12909, 12912, 12917, 12950, 12952, 13883, 13895, 14672, 14673, 15315, 15321, 15329, 15344
\Hy@temp@A 748, 749, 1915, 1917, 1928, 1930, 1935, 1936, 1939, 4118, 4120, 4528, 4541, 4544, 7299, 7302, 7303, 7304, 7305, 8798, 8799, 8800, 8807, 8835, 8836, 8837, 8846, 8873, 9500, 9511, 9512, 9513, 9514, 9517, 9522, 9525, 9551
\Hy@temp@B 1916, 1917
\Hy@temp@menu . 10173, 10188, 10924, 10938, 11463, 11466, 12351, 12360
\Hy@tempa . . 2753, 2755, 2757, 2758, 2760, 2762, 2764, 2767, 2770, 2771, 3298, 3299, 3300, 3302, 3303, 3305, 3306, 3308, 3312, 3316, 3327, 3329, 3331, 3332, 3334, 3338, 5126, 5127, 5138, 5142, 5311, 5315, 5437, 5439, 6158, 6159, 6199, 6200, 6203, 6207, 6959, 6961, 6999, 7001, 7146, 7148, 7697, 7699, 7700, 7703, 7704, 7705, 8098, 8103, 8108, 8582, 8583, 8601, 8602, 8608, 8969, 8970, 9021, 9022, 10252, 10253, 11153, 11301, 11302, 12783, 12784, 13070, 13071, 15046, 15047, 15070, 15072, 15091, 15092, 15100, 15124, 15126, 15127, 15129, 15130, 15513, 15538, 15543, 15546, 15549
\Hy@tempb 5438, 5440, 5461, 6960, 6961, 7000, 7001, 15071, 15072, 15100
\Hy@tempcolor . . 11831, 11833, 11846, 11922, 11924, 11936
\Hy@TempPageAnchor . . 8474, 8530, 8540, 8544, 8560
\Hy@Test@Alph 7362, 7386
\Hy@Test@alph 7353, 7382
\Hy@testname 9706, 9707, 9712, 9714, 9715, 9726, 10781, 10782, 10787, 10789, 10791, 10808, 11320, 11321, 11326, 11330, 11403, 11404, 11409, 11413, 11927, 11928, 11933, 11944
\Hy@texhtfalse 473
\Hy@texhttrue 3093, 4735
\Hy@TheSlideOptionalPage 8489, 8493, 8498, 8507
\Hy@title 6764, 6768
\Hy@tocdestname . . 8624, 8626, 8633, 8641, 8648, 8652, 8654
\Hy@toclevel . . 8593, 8597, 8610
\Hy@true 2645, 2758, 2760, 3332, 3334, 6200
\Hy@typexmlfalse 476
\Hy@undefinedname 9703, 9710, 9712, 10776, 10785, 10787, 11289, 11324, 11326, 11407, 11409, 11918, 11931, 11933
\Hy@unicodefalse 477, 815, 826, 2975, 2976, 2984, 4059, 4065, 7464, 8535, 14721
\Hy@unicodetrue . . . 2976, 7080, 7094
\Hy@useHidKeyfalse 3820
\Hy@useHidKeytrue 3824
\Hy@UseMaketitleInfos . . 6818, 10000, 10470, 10958, 11711, 11950, 12863
\Hy@UseMaketitleString . 6798, 6819, 6820
\Hy@UseNameKey 2837, 9965, 9966, 9967, 9968, 9969, 9970, 9971, 9972, 9991, 10538, 10539, 10540, 10541, 10542, 10543, 10544, 10545, 10566, 11005, 11006, 11007, 11008, 11009, 11010, 11011, 11012, 11045, 11671, 11672, 11673, 11674, 11675, 11676, 11677, 11678, 12031, 12032, 12033, 12034, 12035, 12036, 12037, 12038, 12061, 12924, 12925, 12926, 12927, 12928, 12929, 12930, 12931, 12954
\Hy@varioref@refstepcounter 7553, 7560
\Hy@varioref@undefined . 7544, 7548, 9286

\Hy@VerboseAnchor 5190, 9689, 10220, 10235, 10317, 10329, 10586, 11173, 11189, 11264, 11277, 11776, 11790, 12752, 12766, 13040, 13054
\Hy@verbosefalse 440, 479
\Hy@VerboseGlobalTemp 5166, 5167, 5168, 5169, 5173
\Hy@VerboseLinkInfo 5173, 5174, 5177, 5184
\Hy@VerboseLinkStart . . 5162, 9749, 9759, 10250, 10302, 10338, 10350, 10778, 11129, 11152, 11291, 11396, 11808, 11920, 12781, 12837, 13068, 13125
\Hy@VerboseLinkStop 5178, 9734
\Hy@verbosetrue 439
\Hy@VersionCheck . . 278, 4877, 20724
\Hy@VersionChecked . . 277, 320, 4874, 4876
\Hy@vt@PutCatalog 7052, 7054
\Hy@VTeXversion . . 7032, 7044, 11352, 11482, 11618, 15196
\Hy@WarnHTMLFieldOption . . . 6225, 6258, 6261, 6449
\Hy@Warning 266, 351, 517, 1855, 2775, 2790, 2815, 2895, 3003, 3008, 3268, 3281, 3680, 3732, 3811, 3880, 3899, 4035, 4043, 4094, 4141, 4149, 4279, 4402, 4425, 4435, 4443, 4989, 5234, 5277, 5434, 5441, 5581, 5808, 6163, 6226, 6334, 7090, 7105, 8574, 9266, 9316, 9708, 10619, 10623, 10783, 11322, 11405, 11699, 11705, 11929, 12264, 12273, 15055, 15073
\Hy@WarningNoLine 267, 304, 2854, 2922, 3029, 3783, 3844, 3994, 4110, 4492, 4589, 4747, 4756, 4773, 4789, 4798, 6745, 6855, 7046, 7160, 7449, 8584, 8756, 9533, 12088
\Hy@WarningPageBorderColor 3841, 3843, 3845
\Hy@WarningPageColor . 3780, 3782, 3784
\Hy@WarnOptionDisabled 2787, 2789
\Hy@WarnOptionValue . . 2768, 2774, 3319, 3341
\Hy@wrapper@babel 4651, 4669
\Hy@WrapperDef . . 4661, 9684, 10218, 10233, 10315, 10327, 10584, 11171, 11187, 11262, 11275, 11774, 11788, 12750, 12764, 13038, 13052
\Hy@writebookmark 2650, 8594, 8989, 8997, 9007, 9040, 9048, 9058, 15032, 15174
\Hy@xspace@end 4552, 4557, 4561, 4566, 4569, 4574, 4575, 4576, 4578, 4579, 4580, 4581, 4582, 6632, 6633, 6635, 6638, 6640, 6641, 6642, 6646, 6649, 6652, 6654, 6655, 6656, 9765, 9797, 9834, 9867, 10295, 10366, 10381, 10404, 10420, 10444, 10460, 10818, 10855, 10888, 10918, 10945, 11133, 11143, 11364, 11390, 11425, 11458, 11477, 12159, 12167, 12819, 12830, 13106, 13118, 13150
\HyAnn@AbsPageLabel . . 13963, 13970, 14011, 14097, 14119, 14146, 14167, 14195, 14218
\HyAnn@Count . . 13968, 13969, 13971, 13972, 13973, 13976, 13978, 13980
\HyC@@cmd 87, 109, 122
\HyC@check 68, 71, 74
\HyC@checkcommand 50, 57, 59
\HyC@checkFailed 146, 157
\HyC@checkItem . 132, 133, 134, 135, 138
\HyC@checklong 45, 53
\HyC@checkOk 144, 154
\HyC@checkPackage . 12, 16, 18
\HyC@cmd . 62, 75, 87, 95, 118, 131
\HyC@date . . . 11, 15, 23, 29, 31
\HyC@DeclareRobustCommand 114
\HyC@def 125
\HyC@defcmd 47, 54, 93
\HyC@doCheck 99, 130
\HyC@edef 125
\HyC@getDate 12, 14
\HyC@meaning 152, 160
\HyC@nc@default 103, 105
\HyC@nc@noopt 88, 91, 103, 112, 123, 127
\HyC@nc@opt 88, 101, 123
\HyC@newcommand 86
\HyC@next 48, 55, 60, 83
\HyC@noValue 80, 81, 82, 85, 139
\HyC@optcmd 107, 111
\HyC@org@cmd 76
\HyC@org@optcmd 80, 111
\HyC@org@robustcmd . . 81, 120
\HyC@org@robustoptcmd . . . 82
\HyC@package 10, 22, 28, 34, 37, 38
\HyC@param 78, 96, 102
\HyC@robustcmd 115, 120, 121, 122
\HyC@star 67, 70, 94
\HyC@string . 131, 152, 155, 158
\HyC@Toks . 79, 90, 96, 106, 126
\HyCal@do 511, 515
\HyCal@scan 502, 506, 530
\HyCnt@LookForParentCounter 7286, 7298
\HyCnt@ProvideTheHCounter 7270, 7279
\HyColor@FieldBColor . . 6393, 6396
\HyColor@FieldColor 6399
\HyColor@HyperrefBorderColor 3831, 3849
\HyColor@HyperrefColor 3768, 3787, 3788, 3789, 3790, 3791, 3792, 3793
\HyColor@UseColor . 5011, 9645, 9656, 10740, 10751
\HyField@@AddToFields . 13876, 13898
\HyField@@PDFChoices . 6046, 6047, 6062
\HyField@@SetFlag . 5741, 5743
\HyField@@UseFlag . 5731, 5733
\HyField@ABD@AuxAddToCoFields 13821, 13873
\HyField@AddCoField . . . 13831, 13844, 13847
\HyField@AddToFields . . 13367, 13415, 13506, 13520, 13549, 13570, 13596, 13621, 13809, 13875, 14015, 14110, 14124, 14151, 14176, 14200, 14223, 14330, 14370, 14473, 14492, 14524, 14548, 14576, 14605
\HyField@AdvanceAnnotCount 13360, 13405, 13496, 13514, 13539, 13564, 13590, 13611, 14323, 14360, 14457, 14485, 14513, 14541, 14569, 14595
\HyField@afields . 13805, 13864, 13865, 13867, 13921
\HyField@AfterAuxOpen . 13820, 13862, 13899

\HyField@AnnotCount . . 13358, 13359, 13361, 13364, 14321, 14324, 14327
\HyField@AuxAddToCoFields . . 13819, 13859, 13873, 13887
\HyField@AuxAddToFields 13818, 13856, 13863, 13902
\HyField@cofields 13806, 13825, 13826, 13846, 13848, 13922, 13924
\HyField@FlagsAnnot 5901, 5920, 5934, 5947, 5963, 5995
\HyField@FlagsCheckBox 5933, 13609, 14214, 14590
\HyField@FlagsChoice . . . 5994, 13468, 14070, 14425
\HyField@FlagsPushButton 5919, 13537, 13560, 13587, 14142, 14163, 14193, 14511, 14535, 14565
\HyField@FlagsRadioButton . . . 5946, 13464, 14066, 14421
\HyField@FlagsSubmit . . 5867, 13561, 14164, 14536
\HyField@FlagsText 5962, 13402, 14006, 14354
\HyField@NeedAppearancesfalse 6191, 6204
\HyField@NeedAppearancestrue . . . 6194, 6197, 6201
\HyField@NewBitsetFlag . 5699, 5702, 5710
\HyField@NewFlag . 5697, 5773, 5774, 5775, 5776, 5777, 5778, 5779, 5780, 5781, 5782, 5783, 5784, 5785, 5786, 5787, 5788, 5789, 5790, 5791, 5792, 5797, 5798, 5799, 5800, 5801, 5802, 5803, 5804, 5805, 5838, 5840, 5841, 5843, 5844, 5846, 5847, 5848, 5849
\HyField@NewFlagOnly . 5701, 5839, 5842, 5845
\HyField@NewOption 5698, 5704
\HyField@PDFAFlagWarning 5807, 5815, 5819, 5823, 5827, 5831, 5835
\HyField@PDFChoices . . 6019, 13512, 14117, 14479
\HyField@PrintFlags 5748, 5894, 5912, 5926, 5939, 5955, 5987, 6012
\HyField@SetFlag . . 5740, 5880, 5886, 5891, 5925, 5953
\HyField@SetKeys . 6123, 13399, 13435, 13438, 13457, 13525, 13557, 13577, 13606, 14002, 14036, 14039, 14058, 14129, 14160, 14183, 14210, 14350, 14391, 14394, 14413, 14497, 14532, 14555, 14586
\HyField@TheAnnotCount 13363, 13372, 13381, 13411, 13500, 13517, 13545, 13567, 13593, 13617, 14326, 14331, 14334, 14365, 14462, 14487, 14518, 14543, 14571, 14600
\HyField@UseFlag 5730, 5871, 5872, 5873, 5874, 5875, 5876, 5877, 5878, 5881, 5882, 5883, 5884, 5887, 5888, 5889, 5892, 5903, 5904, 5905, 5906, 5907, 5908, 5909, 5910, 5911, 5922, 5923, 5924, 5936, 5937, 5938, 5949, 5950, 5951, 5952, 5954, 5965, 5966, 5967, 5968, 5969, 5970, 5971, 5972, 5983, 5986, 5997, 5998, 5999, 6000, 6002, 6004, 6005, 6008, 6011
\HyInd@@@wrindex . 8794, 8797, 8828, 8834
\HyInd@@hyperpage 8901, 8911
\HyInd@@wrindex . . 8789, 8790
\HyInd@DefKey 8847, 8861, 8874, 8883
\HyInd@EncapChar . 3349, 4502, 8784
\HyInd@hyperpage . 8898, 8900, 8907
\HyInd@key . . 8848, 8852, 8863, 8876, 8888
\HyInd@org@wrindex 8788, 8792, 8802, 8808, 8810, 8813
\HyInd@pagelink . . . 8916, 8922, 8924, 8927
\HyInd@ParenLeft . . 8771, 8799, 8836, 8873
\HyInd@ParenRight . 8772, 8800, 8807, 8837, 8846
\HyInd@removespaces 8930, 8933, 8943
\HyInfo@AddonHandler . . 4136, 4139
\HyInfo@AddonList . 4170, 4171, 4205, 4212
\HyInfo@Addons . . . 4191, 4207, 10024, 10983, 11982, 11986
\HyInfo@AddonUnsupportedtrue . . 10468, 11697, 12861
\HyInfo@do . . . 4138, 4172, 4195
\HyInfo@GenerateAddons 4189, 10001, 10959, 11951
\HyInfo@Key . 4146, 4147, 4166, 4168, 4169, 4172, 4175, 4182, 4196, 4200
\HyInfo@KeyEscaped 4145, 4146
\HyInfo@tmp 4155, 4166
\HyInfo@trapped@false . . 4086, 4105
\HyInfo@trapped@true 4083, 4104
\HyInfo@trapped@unknown 4089, 4106
\HyInfo@TrappedUnsupported . . 4107, 4111, 10471, 11712, 12864
\HyInfo@Value 4160, 4163
\HyLang@addto 3571, 3587, 3605, 3639, 3647
\HyLang@afrikaans 3351
\HyLang@catalan 3535
\HyLang@DeclareLang 3585, 3614, 3615, 3616, 3617, 3618, 3619, 3620, 3621, 3622, 3623, 3624, 3625, 3626, 3627, 3628, 3629, 3630, 3631, 3632, 3633, 3634, 3635, 3636, 3637
\HyLang@english 3369
\HyLang@french 3387
\HyLang@german 3405
\HyLang@italian 3423
\HyLang@magyar 3441
\HyLang@portuges 3459
\HyLang@russian 3477
\HyLang@spanish 3517
\HyLang@vietnamese 3553, 3639, 3647
\HyLinguex@OrgB . . . 914, 918
\HyLinguex@OrgC . . . 915, 919
\HyLinguex@OrgD . . . 916, 920
\HyLinguex@Restore . . 917, 930, 984, 994
\HyNew@float@makebox . 8154, 8177
\HyOpt@CheckDvi 3081, 3134, 3140, 3145, 3169, 3174, 3180, 3232, 3239, 3245, 3250, 3255
\HyOpt@CustomDriver . . . 302, 3276, 3279, 4808, 4871
\HyOpt@DriverFallback . . 3260, 3263, 3264, 3272, 4839, 4844
\HyOpt@DriverType 4807, 4810, 4841, 4851, 4853, 4870, 4873
\HyOrg@addtoreset . 8714, 8716, 8743
\HyOrg@appendix . . 7331, 7350

\HyOrg@author 6761, 6774, 6778
\HyOrg@elt 7284, 7290
\HyOrg@float@makebox . . 8155, 8176
\HyOrg@hyperpage . 8774, 8776, 8777
\HyOrg@languageshorthands 1053, 1067, 1078, 1088
\HyOrg@make@df@tag@@ . 8699
\HyOrg@make@df@tag@@@ 8700
\HyOrg@maketitle . . 8034, 8041, 8046
\HyOrg@subequations 7714, 7721
\HyOrg@title . . 6760, 6765, 6769
\HyOrg@TX@endtabularx . 7939
\HyOrg@url 5290
\HyPat@NonNegativeReal 3875, 3876, 3877, 3878, 3894, 3896, 4248, 4260, 4261, 4262, 4269, 4272, 4273, 4274, 4275
\HyPat@ObjRef 5274, 5275, 5288, 9458, 10579, 11771
\hyper@@anchor 4573, 5300, 5302, 5333, 5335, 5370, 5372, 5578, 6633, 6648, 6664, 7889, 7894, 7909, 7914, 7982, 7985, 8011, 8139, 8142, 8159, 8475, 8530, 8540, 8545, 8988, 8996, 9006, 9039, 9047, 9057
\hyper@@link . 5160, 5218, 5323, 5351, 5425, 8228, 8374, 8375, 8376, 8424, 8426, 8428, 9158, 9173, 9276
\hyper@@normalise . 5129, 5133, 5137
\hyper@anchor 5605, 6636, 6650, 6714, 6727, 9737, 10218, 10315, 10642, 11187, 11262, 11774, 12750, 13038
\hyper@anchorend 4561, 4569, 4576, 6620, 6638, 6652, 6667, 7275, 7514, 7589, 7634, 7636, 7660, 7686, 7840, 8222, 8247, 8250, 8270, 8403, 8684, 8710, 9744, 10243, 10333, 10649, 11182, 11284, 11796, 12774, 13061, 15028, 15175, 15407, 15432, 15443, 15473, 15525
\hyper@anchorstart . 4575, 6620, 6637, 6651, 6666, 7275, 7513, 7589, 7628, 7660, 7686, 7837, 8220, 8245, 8250, 8270, 8403, 8684, 8710, 9740, 10233, 10327, 10645, 11171, 11275, 11788, 12764, 13052, 15028, 15175, 15407, 15432, 15443, 15473, 15525
\hyper@chars . 5154, 9772, 10223, 10237, 10257, 10279, 10293, 10307, 10387, 10427, 11138, 11159, 11175, 11192, 11267, 11279, 11371, 12400, 12768, 12788, 12814, 12828, 12842, 13056, 13075, 13098, 13115, 13130
\hyper@currentanchor . . . 11793, 11802, 11825, 11842
\hyper@currentlinktype . . 11826, 11830, 11834
\hyper@destlabel@hook . . 5621, 5628
\hyper@hash . 5106, 5107, 5155, 5501, 5513, 5530, 5533, 6587, 11132
\hyper@image 5296, 5297, 10305, 11429, 11915, 12840, 13128
\hyper@last 6734, 6739
\hyper@link . . 4574, 5449, 6634, 6635, 6649, 6659, 6665, 9758, 10301, 10349, 10817, 11128, 11395, 11919, 12836, 13124
\hyper@link@ . 4581, 5426, 5432, 6632, 6646, 6672
\hyper@linkend 4561, 4569, 4578, 6640, 6654, 6669, 7934, 8214, 8217, 8633, 8641, 8648, 8652, 8654, 9757, 10263, 10346, 10816, 10818, 11164, 11342, 11828, 12796, 13081
\hyper@linkfile 4580, 5526, 6642, 6656, 6671, 9801, 10267, 10425, 10820, 11148, 11346, 12421, 12800, 13085
\hyper@linkstart 4577, 6639, 6653, 6668, 7932, 8210, 8217, 8633, 8641, 8648, 8652, 8654, 9748, 10249, 10337, 10777, 10818, 11151, 11290, 11807, 12780, 13067
\hyper@linkurl 4579, 5295, 5501, 5508, 5529, 5533, 6641, 6655, 6670, 9769, 10268, 10270, 10303, 10385, 10891, 11136, 11149, 11368, 11430, 11916, 12397, 12801, 12805, 12838, 13086, 13088, 13126
\hyper@livelink 6634, 6659
\hyper@makecurrent 7271, 7371, 7575, 7626, 7657, 7685, 7782, 7813, 7929, 8115, 8169
\hyper@n@rmalise . . 5121, 5125
\hyper@nat@current 8211
\hyper@natanchorend 8222
\hyper@natanchorstart . . . 8219
\hyper@natlinkbreak 8216
\hyper@natlinkend 8213
\hyper@natlinkstart 8208
\hyper@newdestlabel 5613, 5635, 5674, 5679
\hyper@normalise . . 4503, 4508, 5098, 5208, 5211, 5292, 5294, 5296, 5317, 6153
\hyper@pageduration 10062, 10111, 11070, 11090, 11595, 11612, 11882, 11912
\hyper@pagehidden 10086, 10112, 11081, 11091, 11605, 11613, 11899, 11913
\hyper@pagetransition . . . 10038, 10110, 11059, 11089, 11484, 11611, 11865, 11911
\hyper@quote 6589, 10225, 10239, 10254, 10259, 10280, 10294, 10308, 11132, 11142, 11155, 11178, 11196, 12756, 12770, 12785, 12791, 12815, 12829, 12843, 13044, 13057, 13072, 13077, 13100, 13116, 13131
\hyper@readexternallink . 5455, 5466
\hyper@refstepcounter . . . 7251, 7254, 7262
\hyper@tilde . 5115, 5116, 5117, 6588
\hyperbaseurl . 3795, 3796, 6683
\hypercalcbp 497, 497
\hypercalcbpdef . 499, 536, 4245, 4255
\hyperdef 5325, 6685
\HyperDestLabelReplace . 5665, 5672, 5675
\HyperDestNameFilter 4484, 5194, 5672, 9690, 9715, 10225, 10239, 10259, 10303, 10588, 10790, 11132, 11142, 11160, 11178, 11196, 11268, 11280, 11329, 11412, 12261, 12270, 12756, 12770, 12791, 12838, 13044, 13057, 13077, 13126, 15253, 15317, 15333

\HyperDestRename . 5645, 5663, 5676
\HyperFirstAtBeginDocument . . . 6711, 6713, 6735, 6738
\hypergetpageref 7507
\hypergetref 7506
\HyperGlobalCurrentHref 7392, 7394, 7402, 7403, 7407, 7410, 7414, 7420, 7421, 7425
\hyperimage . . 5296, 5681, 8766
\hyperindexformat 8773
\hyperlink . . . 5159, 6686, 8939, 9078, 9086, 9101, 9109, 9119, 9127, 9134
\hyperlinkfileprefix . 3798, 3799, 3800, 13030
\HyperLocalCurrentHref 7410, 7412, 7418, 7419, 7420, 7421, 7423
\hyperpage . . 6692, 8774, 8775, 8777, 8897
\HyperRaiseLinkDefault . 2652, 2679
\HyperRaiseLinkHook 2651, 2680
\HyperRaiseLinkLength . . 2678, 2679, 2682
\hyperref 5305, 5688, 5689, 6688, 9233, 9237, 9247, 9261
\hypersetup . . 2996, 3040, 3623, 4122, 4504, 6682
\hypertarget 5298, 6687
\HyPL@@@CheckThePage 6980, 6998
\HyPL@@CheckThePage . 6956, 6958
\HyPL@Alph 6875
\HyPL@alph 6876
\HyPL@arabic 6872
\HyPL@CheckThePage . . 6907, 6955
\HyPL@Entry 7148, 7156, 7164, 7166
\HyPL@EveryPage . 6895, 7019
\HyPL@Format 6971, 6972, 6973, 6974, 6975, 6987
\HyPL@found 6970, 6977, 6981, 6988, 6998, 7000
\HyPL@Labels 6866, 7010, 7011, 7013, 7015, 7066, 7067, 7159, 7167, 7168
\HyPL@LastNumber 6870, 6926, 6949
\HyPL@LastPrefix . . 6871, 6920, 6951
\HyPL@LastType . . 6869, 6911, 6950
\HyPL@page . 6889, 6898, 6901, 6907, 6916
\HyPL@Prefix 6916, 6918, 6920, 6934, 6937, 6939, 6951, 6965, 7003
\HyPL@Roman 6873
\HyPL@roman 6874
\HyPL@SetPageLabels . . . 7009, 7074, 7162
\HyPL@SlidesOptionalPage 6882, 6886, 6891
\HyPL@SlidesSetPage 6877, 6879, 6899, 6906
\HyPL@StorePageLabel . . 6934, 6936, 7006, 7064, 7143
\HyPL@thisLabel . . 6863, 6865, 6897, 6901, 6902
\HyPL@Type . 6904, 6911, 6915, 6933, 6941, 6950, 6964, 7002
\HyPL@Useless 7007, 7013
\HyPsd@@@autoref . 1776, 1778, 1781
\HyPsd@@@CJKdigits . . . 1646, 1649, 1657
\HyPsd@@@nameref 1758, 1760, 1763
\HyPsd@@@pageref . 1740, 1742, 1745
\HyPsd@@@ref . 1724, 1726, 1729
\HyPsd@@@UTFviii@four 2394, 2397
\HyPsd@@AppendItalcorr . 1945
\HyPsd@@autoref . . 1773, 1774
\HyPsd@@autorefname . . 1794, 1797
\HyPsd@@CJKdigits 1638, 1640, 1643
\HyPsd@@CJKnumber 1539, 1541, 1544, 1597, 1612, 1625, 1627, 1631
\HyPsd@@ConvertToUnicode 2273
\HyPsd@@ding 2532, 2536, 2547
\HyPsd@@GetNextTwoTokens 2271
\HyPsd@@GlyphProcessWarning 2131, 2134
\HyPsd@@GreekNum 1201, 1210, 1309, 1313, 1317
\HyPsd@@hspace . . . 1694, 1695
\HyPsd@@LetCommand . 1818, 1839
\HyPsd@@nameref . . 1755, 1756
\HyPsd@@pageref . . 1737, 1738
\HyPsd@@ProtectSpacesFi 1867, 1871, 1889, 1895, 1900
\HyPsd@@ref 1721, 1722
\HyPsd@@RemoveBraces . . 1913
\HyPsd@@RemoveBracesFi 1910, 1913
\HyPsd@@RemoveCmdPrefix 2088, 2091
\HyPsd@@ReplaceFi 2158, 2164, 2169
\HyPsd@@UTFviii@four . . 2378, 2383
\HyPsd@add@accent . 559, 1683
\HyPsd@AfterCountRemove 1965, 2045
\HyPsd@AfterDimenRemove 1971, 2048
\HyPsd@AfterSkipRemove 1977, 2060
\HyPsd@AMSclassfix . 670, 1704, 1706
\HyPsd@AppendItalcorr . 1929, 1936, 1945
\HyPsd@autoref 680, 1773
\HyPsd@autorefname 1785, 1791
\HyPsd@babel@danish 1097
\HyPsd@babel@dutch 1103
\HyPsd@babel@finnish 1109
\HyPsd@babel@frenchb . . . 1114
\HyPsd@babel@german . . . 1119
\HyPsd@babel@macedonian 1126
\HyPsd@babel@ngerman . . 1132
\HyPsd@babel@portuges . . 1138
\HyPsd@babel@russian . . . 1143
\HyPsd@babel@slovene . . . 1149
\HyPsd@babel@spanish . . . 1154
\HyPsd@babel@swedish . . . 1164
\HyPsd@babel@ukrainian . 1170
\HyPsd@babel@usorbian . . 1176
\HyPsd@BabelPatch . 656, 1052, 1087
\HyPsd@CatcodeWarning 1981, 2005, 2008, 2011, 2014, 2072
\HyPsd@Char 2275
\HyPsd@CharOctByte . . . 2295, 2297, 2300, 2309, 2314
\HyPsd@CharSurrogate . . 2289, 2306
\HyPsd@CharTwoByte . . 2287, 2294
\HyPsd@CheckCatcodes . . 734, 1955
\HyPsd@CJK@Unicode . . 1421, 1425
\HyPsd@CJKActiveChars 1361, 1376
\HyPsd@CJKdigit . . 1650, 1660
\HyPsd@CJKdigits . 1423, 1636
\HyPsd@CJKhook . . . 687, 1332, 1343

\HyPsd@CJKhook@bookmarks 1338, 1372
\HyPsd@CJKhook@unicode 1340, 1420
\HyPsd@CJKnumber 1422, 1536
\HyPsd@CJKnumberFour 1554, 1558, 1562, 1575, 1579, 1583, 1589
\HyPsd@CJKnumberLarge 1567, 1574
\HyPsd@CJKnumberThree 1595, 1599, 1605
\HyPsd@CJKnumberTwo 1610, 1614, 1620
\HyPsd@ConvertToUnicode 803, 2221
\HyPsd@DecimalToOctal . 1353, 1384
\HyPsd@DecimalToOctalFirst 1427, 1463
\HyPsd@DecimalToOctalSecond . . 1428, 1437, 1500, 2551, 2557, 2560
\HyPsd@DefCommand 717, 718, 719, 720, 1807
\HyPsd@DieFace . 634, 635, 636, 2472, 21597, 21598
\HyPsd@DieFaceLarge 2480, 2489
\HyPsd@ding 633, 2522
\HyPsd@DisableCommands 1028, 1030
\HyPsd@DoConvert . 2223, 2233
\HyPsd@DoEscape 2247
\HyPsd@doxspace . . . 775, 2194
\HyPsd@empty . . 760, 762, 766, 767, 769, 777, 784
\HyPsd@End 734, 738, 1868, 1871, 1874, 1877, 1880, 1893, 1903, 1910, 1913, 1958, 1966, 1972, 1978, 2031, 2038, 2045, 2048, 2060
\HyPsd@EndWithElse 1673, 1682
\HyPsd@EscapeTeX . . 814, 818, 825, 2176
\HyPsd@fi 1885, 1891, 1895, 1901
\HyPsd@GetNextTwoTokens 2271
\HyPsd@GetOneBye 2266
\HyPsd@GetTwoBytes 2262
\HyPsd@GLYPHERR 740, 1670, 1684, 1691
\HyPsd@GlyphProcess 742, 2119, 2132
\HyPsd@GlyphProcessWarning 2126, 2130
\HyPsd@GobbleFiFi 1675, 1681
\HyPsd@GreekNum . 1190, 1193, 1195
\HyPsd@Greeknumeral . . 1186, 1192
\HyPsd@greeknumeral 1185, 1189
\HyPsd@GreekNumI 1213, 1239, 1282, 1308
\HyPsd@GreekNumII 1217, 1261, 1305, 1312
\HyPsd@GreekNumIII . . . 1220, 1284, 1316
\HyPsd@GreekNumIV 1229, 1307
\HyPsd@GreekNumV 1232, 1311
\HyPsd@GreekNumVI 1234, 1315
\HyPsd@GreekPatch . 653, 1182, 1184
\HyPsd@HighA 1431, 1440
\HyPsd@HighB 1441, 1446
\HyPsd@HighC 1447, 1450
\HyPsd@HighD 1443, 1455
\HyPsd@href 675, 1720
\HyPsd@hspace 671, 1694
\HyPsd@hspacetest . 1697, 1699, 1702
\HyPsd@ifnextchar 703, 704, 705, 1844
\HyPsd@ignorespaces 684, 1043
\HyPsd@inmathwarn . 558, 1667
\HyPsd@ITALCORR . . 695, 699, 1691
\HyPsd@langshort@system 1058, 1061
\HyPsd@LanguageShorthands 1054, 1059, 1071
\HyPsd@LetCommand 721, 722, 1807
\HyPsd@LetUnexpandableSpace . 690, 691, 692, 693, 1687, 1690
\HyPsd@LoadExtra . . 999, 1002, 3038
\HyPsd@LoadStringEnc . . 3000, 3020, 3022, 3026, 3028, 7085
\HyPsd@LoadUnicode 989, 2959, 2965, 2967, 2974, 7079
\HyPsd@MoonPha . . 2503, 2521, 21599
\HyPsd@nameref 679, 1755
\HyPsd@pageref 678, 1737
\HyPsd@pdfencoding 804, 2958, 2961, 2983, 2995, 2998, 2999, 3004, 3019, 7081, 7083, 7100, 7103
\HyPsd@pdfencoding@auto 804, 2989, 2999, 3016, 7083, 7102
\HyPsd@pdfencoding@pdfdoc 2982, 3004, 3017
\HyPsd@pdfencoding@unicode . . . 2986, 3018, 7081, 7099
\HyPsd@pdfstringdefDisableCommands 1034, 1037
\HyPsd@PrerenderUnicode 4004, 4020, 4026, 4032, 4054, 4072, 4078, 4159
\HyPsd@protected@testopt 706, 707, 1848
\HyPsd@ProtectSpaces 727, 1865, 1886, 1935
\HyPsd@ref 677, 1721
\HyPsd@RemoveBraces . . . 729, 1907, 1924, 1932, 1938
\HyPsd@RemoveCmdPrefix 2081, 2087
\HyPsd@RemoveMask 737, 1874, 1880, 1893, 1903
\HyPsd@RemoveSpaceWarning 2055, 2067, 2093
\HyPsd@ReplaceSpaceWarning 2050, 2062, 2106
\HyPsd@Rest 1959, 2027, 2035, 2038, 2046, 2051, 2057, 2063, 2069
\HyPsd@RussianPatch 655, 1325
\HyPsd@SanitizeForOutFile 15092, 15123
\HyPsd@SanitizeOut@BraceLeft . . 15127, 15133, 15142
\HyPsd@SanitizeOut@BraceRight . . 15130, 15145, 15154
\HyPsd@SPACEOPTI . 731, 747, 748, 750, 752, 754, 755, 794, 796, 2001, 2205
\HyPsd@spaceopti . . . 796, 2150
\HyPsd@SpanishPatch 654, 1319
\HyPsd@String 728, 730, 733, 735, 741, 743, 1918, 1919, 1929, 1989, 1991, 1995, 1996, 2000, 2001, 2016, 2017, 2049, 2061, 2120, 2121
\HyPsd@StringSubst . . 744, 746, 752, 758, 761, 764, 767, 786, 789, 791, 2173
\HyPsd@Subst 740, 749, 753, 759, 765, 769, 773, 778, 779, 780, 781, 782, 783, 787, 790, 2157, 2174, 2189, 2190, 2191
\HyPsd@temp 807, 809, 810, 812, 813, 821, 823, 824, 2981, 2982, 2983, 2986, 2989, 2995, 3007, 3011, 7098, 7099, 7100, 7102, 7103, 7108

\HyPsd@ToBigChar 865, 866, 875
\HyPsd@ToBigChars . . 817, 857
\HyPsd@tocsection 1707, 1708, 1709, 1710, 1711, 1712, 1713, 1715
\HyPsd@UnescapedString . 809, 859, 860, 866
\HyPsd@UnexpandableSpace 1690, 1876, 1900, 2051, 2063
\HyPsd@unichar . . . 2336, 2403, 2409, 2414
\HyPsd@unichar@first@byte 2422, 2442
\HyPsd@unichar@octtwo . 2444, 2452, 2458
\HyPsd@unichar@second@byte 2430, 2450
\HyPsd@UnicodeReplacementCharacter 2406, 2441, 2475, 2505, 2510, 2518, 2525, 2528, 2538, 2596
\HyPsd@utf@viii@undeferr . 555, 2464
\HyPsd@UTFviii 549, 2324, 2329
\HyPsd@UTFviii@@three . 2359, 2368
\HyPsd@UTFviii@@two . . 2344, 2350
\HyPsd@UTFviii@ccxliv@def 2334, 2340
\HyPsd@UTFviii@ccxliv@undef 2333, 2339
\HyPsd@UTFviii@four 2332, 2377
\HyPsd@UTFviii@three . . 2331, 2358
\HyPsd@UTFviii@two 2330, 2343
\HyPsd@Warning . . 1852, 2073, 2094, 2107, 2136, 2142
\HyPsd@XeTeXBigCharsfalse 832, 846, 851
\HyPsd@XeTeXBigCharstrue 845, 854, 4019, 4025, 4031, 4053, 4071, 4077, 4158, 14724, 15090
\HyPsd@XSPACE 697, 774, 1691
\HyPsd@xspace . . 772, 774, 775
\HyRef@@StarSetRef 9201, 9206
\HyRef@autopageref 9258, 9260
\HyRef@autopagerefname 9257, 9261, 9263
\HyRef@autoref 9276, 9278
\HyRef@autosetref . . 9281, 9284
\HyRef@CaseStar . . 9345, 9351
\HyRef@currentHtag 9297, 9315, 9318, 9324, 9331, 9337, 9352
\HyRef@MakeUppercaseFirstOfFive 9224, 9226
\HyRef@name 9313, 9314, 9319, 9326, 9344, 9345, 9346, 9348
\HyRef@Ref 9230, 9232
\HyRef@ShowKeysInit . . . 9354, 9367, 9371
\HyRef@ShowKeysRef 9285, 9353
\HyRef@StarSetRef . 9195, 9213, 9216, 9219, 9224
\HyRef@StripStar . . 9312, 9343
\HyRef@testreftype . 9290, 9309
\HyRef@thisref 9287, 9290
\HyTmp@found 6073, 6083, 6086
\HyTmp@key 6067, 6068
\HyTmp@optitem . . 6023, 6039, 6066, 6071, 6077, 6098, 6109
\HyTmp@optlist 6022, 6037, 6038, 6069, 6070, 6075, 6076, 6084, 6085, 6105, 6107, 6114, 6117
\HyXeTeX@CheckUnicode 3990, 4001, 4018, 4024, 4030, 4052, 4070, 4076, 4157, 7113

I

\i . . . 15712, 15876, 15879, 15882, 15885, 16150, 16324, 16327, 16330, 16333, 16462, 16467, 16472, 16477, 16481, 16718, 16783, 16789
\ibar 16940, 21668
\if 1716, 2639, 6924, 6932, 7703, 7704, 11558, 11561, 11565, 11569, 11573, 11575, 11577, 14772
\if@eqnstar 7641, 7649
\if@filesw 2607, 5363, 5633, 6704, 6749, 7144, 7154, 7456, 8257, 8272, 8288, 8300, 8330, 8353, 8380, 8385, 8404, 8822, 13854, 13885, 13900, 15093, 15280, 15362
\if@hyper@item 7236, 7249
\if@inlabel 7826
\if@Localurl 11119, 11165
\if@mid@expandable 669
\if@minipage 8127, 8199
\if@nmbrlist 7221
\if@nobreak 7845
\if@skiphyperref . . . 7237, 7247
\if@twocolumn 15527
\if@twoside 15516
\ifcase 344, 1246, 1268, 1291, 1385, 1434, 1456, 1459, 1465, 1501, 1545, 1661, 2372, 2504, 2986, 3729, 4876, 5869, 5974, 6103, 6180, 7354, 7363, 8629, 8799, 8836, 9093, 9286, 11631, 12144, 14833, 14861, 14930, 14966, 15002, 15200
\ifcat 1960, 1987, 1994, 1999, 2004, 2007, 2010, 2013, 5589, 5591
\ifdim . . 1702, 2049, 2053, 2061, 2065, 2694, 2713, 4489, 4904, 10130, 10134, 10139, 10143, 10150, 10153, 10157, 10160, 11099, 11100, 11105, 11106, 11238, 11241, 11245, 11248, 12173, 12187, 12551, 12552, 12557, 12558, 13431, 13469, 13470, 14032, 14071, 14072, 14387, 14426, 14427
\ifetex@unexpanded 1859
\iffalse 852, 6192
\IfFileExists . . 232, 3278, 6744, 9524, 13158
\ifFld@checked . . . 6126, 13782, 14819
\ifFld@comb 5973
\ifFld@combo 6001, 6006, 13444, 13473, 14045, 14075, 14400, 14430
\ifFld@disabled 6127, 13783
\ifFld@edit 6007
\ifFld@fileselect 5976
\ifFld@hidden . . . 13403, 13458, 13538, 13562, 13588, 13610, 13681, 13693, 13703, 13786, 14007, 14060, 14143, 14165, 14194, 14215, 14355, 14415, 14512, 14537, 14566, 14591
\ifFld@multiline . . . 5974, 13392, 13688, 13995, 14343
\ifFld@multiselect 6045
\ifFld@password . . . 5975, 13669
\ifFld@popdown . . 5793, 13445, 14046, 14401
\ifFld@radio 13441, 13463, 13718, 14042, 14065, 14397, 14420
\ifFld@readonly . . 13690, 13700, 13784
\ifForm@html 6147
\ifhmode 2655, 2659, 2712, 2721, 5200, 7729, 7733, 7759, 7792, 7854, 7926, 7935, 8085, 8087, 9685, 9693, 12179, 13143
\ifHy@activeanchor . . 395, 5602
\ifHy@backref . 396, 4694, 5081, 6567, 8381, 8417
\ifHy@bookmarks . . . 397, 4929

\ifHy@bookmarksnumbered 398, 8981, 9032, 15079
\ifHy@bookmarksopen 399, 4919
\ifHy@breaklinks 400, 2921, 11809, 11850, 12155, 12178
\ifHy@CJKbookmarks 402, 1337
\ifHy@colorlinks 403, 5000, 6572, 12737
\ifHy@destlabel 404, 5612
\ifHy@draft 405, 4572
\ifHy@DviMode 3062, 3082, 3262
\ifHy@DvipdfmxOutlineOpen 4902, 15335
\ifHy@frenchlinks ... 411, 5016
\ifHy@href@ismap .. 5256, 9790, 10909, 11305, 11375, 12412
\ifHy@hyperfigures .. 409, 4674, 6552, 8763
\ifHy@hyperfootnotes 412, 7858
\ifHy@hyperindex ... 413, 4684, 6562, 8770
\ifHy@hypertexnames 414, 7378, 7460, 8528, 8986, 9037
\ifHy@implicit . 415, 4706, 15390
\ifHy@linktocpage ... 416, 2878, 2888
\ifHy@localanchorname ... 417, 7411, 7422
\ifHy@naturalnames . 419, 7390, 8987, 9038
\ifHy@nesting . 420, 4679, 5299, 5332, 5369, 5587, 6557, 7883, 7903, 7981, 8138
\ifHy@next ... 1095, 4648, 8787
\ifHy@ocgcolorlinks 423, 3679, 4986, 4996, 6577, 9477, 9563, 9641, 9649, 10653, 10736, 10744
\ifHy@pageanchor ... 424, 7447, 7459, 7474, 8527
\ifHy@pdfa 443, 4596, 4988, 5489, 5806, 6416, 6469, 6582, 9719, 9785, 9820, 9854, 10185, 10799, 10832, 10867, 10899, 10929, 11311, 11332, 11355, 11381, 11415, 11449, 11468, 12285, 13337, 13528, 13581, 13933, 14133, 14187, 14305, 14501, 14559, 14774, 14822, 14991
\ifHy@pdfcenterwindow ... 401, 9963, 10536, 11003, 11669, 12029, 12922
\ifHy@pdfdisplaydoctitle .. 442, 9964, 10537, 11004, 11670, 12030, 12923
\ifHy@pdfescapeform 408, 14668, 14698
\ifHy@pdffitwindow .. 410, 9962, 10535, 11002, 11668, 12028, 12921
\ifHy@pdfmarkerror 12076, 12085
\ifHy@pdfmenubar ... 418, 9960, 10533, 11000, 11666, 12026, 12919
\ifHy@pdfnewwindow 422, 4327, 11352
\ifHy@pdfnewwindowset .. 421, 4325
\ifHy@pdfpagehidden . 426, 3823, 10090, 11084, 11607, 11905
\ifHy@pdfpagelabels . 425, 6851, 7064, 7142
\ifHy@pdfstring . 427, 1013, 7241
\ifHy@pdftoolbar 435, 9959, 10532, 10999, 11665, 12025, 12918
\ifHy@pdfusetitle 437, 6759
\ifHy@pdfwindowui .. 441, 9961, 10534, 11001, 11667, 12027, 12920
\ifHy@plainpages 428, 4689, 7461, 8529
\ifHy@psdextra .. 434, 642, 1003
\ifHy@psize 429
\ifHy@raiselinks 430, 10272, 10352, 10389, 10429, 12807, 13090
\ifHy@seminarslides 431
\ifHy@setpagesize .. 432, 10118, 11096, 11235, 12548
\ifHy@setpdfversion . 3041, 9482
\ifHy@stoppedearly 393
\ifHy@texht 433, 4765, 5028, 5076, 6217, 6249, 6440, 6464, 6620, 9141
\ifHy@typexml 394, 4699, 5003, 5047, 6705, 15284, 15366
\ifHy@unicode ... 436, 545, 580, 583, 643, 745, 757, 785, 793, 802, 1196, 1356, 2075, 2096, 2109, 2138, 2144, 2404, 2473, 2523, 2957, 2997, 3992, 7088, 14720
\ifHy@useHidKey .. 3819, 10087, 11082, 11606, 11900
\ifHy@verbose . 438, 5163, 5179, 5191, 5749, 8599, 9486
\ifHyField@NeedAppearances 6190, 6192, 6195, 13339, 13935, 14307
\ifHyInfo@AddonUnsupported 4134, 4148, 4190
\IfHyperBoolean 2743
\IfHyperBooleanExists 2737, 2744
\ifHyPsd@XeTeXBigChars . 850, 852, 855, 858
\ifin@ 7306
\ifmeasuring@ 7261, 7272
\ifmmode 11812, 12150
\ifnum .. 244, 882, 885, 888, 891, 894, 1072, 1197, 1200, 1211, 1212, 1216, 1224, 1228, 1231, 1241, 1263, 1286, 1426, 1537, 1553, 1557, 1577, 1590, 1593, 1606, 1608, 1621, 1623, 1629, 2283, 2286, 2362, 2405, 2408, 2420, 2474, 2477, 2490, 2524, 2527, 2530, 2534, 2549, 2553, 2556, 2660, 3187, 3190, 3216, 3730, 3731, 4597, 4913, 4920, 5233, 6028, 6099, 6110, 6881, 6905, 6926, 6942, 7044, 7333, 7336, 8477, 8487, 9095, 9133, 9478, 9483, 9497, 9501, 9506, 9523, 9543, 9879, 9886, 9892, 9900, 10765, 10770, 11352, 11482, 11618, 11626, 11628, 11629, 11639, 11642, 11740, 11742, 11862, 12583, 13495, 13500, 13505, 13836, 13913, 14109, 14456, 14461, 14472, 14719, 14802, 14833, 14838, 14861, 14867, 14896, 14930, 14936, 14955, 14966, 14971, 15002, 15007, 15036, 15052, 15196, 15266, 15269, 15296, 15299, 15337, 15446, 15464, 15479
\ifodd 2386, 2391, 8554
\ifpdf 242, 3064, 3107, 3118, 4744, 4812
\ifpdfstringunicode ... 550, 553
\ifportrait 10129
\ifthenelse 8407
\iftrue ... 855, 1866, 1888, 2168, 6195, 15448
\ifvmode 2671, 2693, 2702
\ifvoid 7582, 7586, 7830
\ifvtex 3070, 3186, 3215
\ifvtexdvi 3071
\ifvtexhtml 4786, 4822
\ifvtexpdf 4833
\ifvtexps 4836
\ifxetex 808, 842, 3067, 3159, 3991, 4034, 4770, 4819, 4903, 5377

\ignorespaces . . 684, 7542, 7723, 8017, 8123, 8134, 8137, 8195, 8203, 8265, 8280, 8296, 8305, 8415, 8966, 9018
\iiint 18888, 21019
\iinferior 20824
\iint 18886, 21018
\IJ 15708, 16483
\ij 15919, 16485
\Im 18524, 20891
\immediate . . 6706, 6707, 6708, 6710, 6751, 7057, 7147, 7155, 7471, 7499, 8260, 8275, 8291, 8301, 8331, 8354, 8380, 8410, 9565, 9580, 9595, 11745, 12580, 13799, 13855, 13858, 13919, 15186, 15252, 15283, 15285, 15365, 15367
\in 18805, 20985
\in@ 7304
\incr@eqnum 7601, 7614
\indent 7738, 7766
\index 673
\indexentry . . 8825, 8840, 8855, 8859, 8869
\Info 20462, 21588
\infty 18848, 21003
\input 982, 992, 1006, 3642, 3650, 3657, 4875, 12490, 12581, 12680, 12857
\InputIfFileExists . 4506, 15276, 15310, 15355, 15357
\inputlineno 5170, 5594
\insert 7996
\int 18883, 21017
\IntCalcAdd 2312
\IntCalcDec 1448, 2500
\intcalcDec 2482
\IntCalcDiv . . 1442, 1451, 1456, 1559, 1568, 1580, 1597, 1612, 1627, 2296, 2302, 2308
\intcalcDiv 1432, 2303, 2310, 2313
\IntCalcMod . 1444, 1453, 1459, 1563, 1569, 1584, 1600, 1615, 1629, 1631, 2298, 2303, 2304, 2310, 2313, 2315
\intcalcMod 1434
\intcalcNum . . 2504, 2532, 2536
\IntCalcSub . . 2498, 2551, 2554, 2557, 2560
\intcalcSub 2290, 2480
\interfootnotelinepenalty . . 7999
\interleave 20365, 21557
\interlinepenalty 7999
\inva 16853, 21644
\invamp 18570
\invbackneg 19364, 21222
\invdiameter 20164, 21470
\inve 16728, 20753
\invglotstop 17097, 20786
\invh 16928, 21663
\invlegr 17003, 21686
\invm 16962, 21674
\invneg 20225, 21495
\invr 16998, 21684
\invscr 17025, 20774
\invscripta 16861, 21646
\invv 17060, 21698
\invw 17064, 21700
\invy 17068, 21702
\iota 17318, 20806
\ipagamma 16920, 20765
\isuperior 20848
\item . . . 7216, 7219, 8287, 8299, 8402
\Itemautorefname 9377
\itemautorefname . . 3354, 3372, 3390, 3408, 3426, 3444, 3462, 3491, 3492, 3520, 3538, 3556, 9377, 9378, 9381
\itemindent 7831
\itshape 613

J

\j 16490, 16748, 16839
\JackStar 19938, 21373
\JackStarBold 19940, 21374
\jarr 20695
\jeem 20639
\jeh 20711
\jinferior 21561
\jobname 6707, 6744, 6751, 13158, 15185, 15276, 15283, 15310, 15355, 15357, 15365
\Join 20208, 21488
\Jupiter 19726, 21870
\jupiter 19724, 21298

K

\k . . 15589, 15936, 15938, 15943, 15945, 15991, 16020, 16047, 16062, 16378, 16380, 16424, 16426, 16474, 16476, 16477, 16614, 16616, 16744, 16746, 17738, 17780, 17783
\kaf 20675
\kappa 17320, 20807
\kasra 20701
\keepPDF@SetupDoc . . . 12741, 12748
\kern . . . 1969, 2050, 2055, 2067, 7831, 8549, 8550, 8551, 8553, 8554, 8559, 15405
\kernel@ifnextchar 704
\Keyboard 19382, 21230
\kha 20643
\kinferior 20882
\Kutline 19596, 21834
\kv@define@key 4156
\KV@href@pdfnewwindow . 5254
\KV@href@pdfnewwindow@default 5255
\KV@Hyp@draft 2852
\KV@Hyp@nolinks 2852
\KV@Hyp@pdfnewwindow . 5254
\KV@Hyp@pdfnewwindow@default 5255
\kv@key 4142, 4145, 4152, 6026, 6029, 6031, 6035, 6039
\kv@parse 6025
\kv@parse@normalized 4174, 4181
\kv@processor@default 4177, 4184
\kv@set@family@handler . . 4135
\kv@value 4140, 6027, 6034, 6035
\kvsetkeys 3040, 3094, 3234, 3998, 4115, 4598, 4846, 4864, 4987, 6124, 9479, 12084, 13352, 13654, 13667, 13716, 13759, 13780, 13910, 14290

L

\L 15701, 16514
\l 15714, 16516
\l@slide . 8966, 9076, 9081, 9085, 9092
\l@subslide 9018, 9081, 9088, 9132
\labdentalnas 16970, 21677
\label 672, 8572
\label@@hyperref . . . 5339, 5341
\label@hook 5662
\label@hyperdef 5325, 5355
\label@hyperref 5306, 5338, 5685
\label@name . . 5627, 5637, 5663
\labelsep 8414
\labelwidth 8413
\Ladiesroom 20451, 21585
\lam 20677
\Lambda 17257, 20790
\lambda 17322, 20808
\lambdabar 16676, 21633
\lambdaslash 16677, 21634
\langle 19384, 21231
\language@group 651
\languageshorthands 1053, 1054, 1088
\LARGE 620
\Large 621
\large 624, 9098, 9106, 9116, 9124
\LargerOrEqual . . . 19030, 21787
\lastbox 7829

\lastpage@putlabel 7442
\lastskip 2694, 2698, 2705, 2713, 2717, 2724
\LaTeX . 577, 579, 13164, 13165
\LaTeXe 578, 13165
\latfric 16952, 21671
\LayoutCheckField 6508, 13612, 14216, 14596
\LayoutChoiceField 6505, 13462, 14064, 14419
\LayoutPushButtonField . 6511, 13532, 13540, 14137, 14144, 14505, 14514
\LayoutTextField . 6502, 13406, 14009, 14361
\lbrackdbl 21425
\lccode 362, 367, 881, 1366, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2327, 6376, 8784, 8785, 15110, 15111, 15112, 15113, 15114, 15115, 15116, 15117, 15118, 15119, 15120
\lcurvearrowdown . 20104, 21449
\lcurvearrowse 20096, 21446
\lcurvearrowsw . . . 20099, 21447
\ldots 570
\le 19022, 21077
\leadsto 20090, 21444
\leavevmode 681, 2649, 4582, 4602, 4642, 5387, 5419, 5494, 6676, 7925, 8084, 8321, 9236, 9244, 9275, 9705, 9773, 9808, 9842, 10172, 10271, 10351, 10388, 10428, 10779, 10821, 10859, 10892, 11130, 11139, 11193, 11347, 11372, 11402, 11435, 11811, 12148, 12401, 12428, 12459, 12806, 13089, 13407, 13533, 13541, 13580, 13613, 14010, 14096, 14118, 14138, 14145, 14166, 14186, 14217, 14362, 14454, 14483, 14506, 14515, 14539, 14558, 14597, 15403
\Leftarrow 18734, 20954
\leftarrow 20904
\leftarrowtail 18651, 20922
\leftarrowtriangle . 18782, 20974
\leftbarharpoon . . . 20141, 21461
\LEFTCIRCLE . . . 19633, 21268
\leftharpoondown . 18682, 20935
\leftharpoonup . . . 18679, 20934
\leftleftarrows 18711, 20945
\leftleftharpoons . . 20129, 21457
\leftModels 20350, 21927
\leftmodels 20343, 21925
\leftmoon 19702, 21293
\leftpointright 19676, 21850
\Leftrightarrow . . . 18745, 20958
\leftrightarrow 18620, 20908
\leftrightarrows . . . 18709, 20944
\leftrightarrowtriangle . . . 18786, 20976
\leftrightharpoon . . 20118, 21453
\leftrightharpoons . 18720, 20949
\Leftscissors 19877, 21901
\leftslice 20287, 21522
\leftspoon 20047, 21424
\leftsquigarrow . . . 18762, 20966
\leftthereforе 18400, 20844
\leftthreetimes 19261, 21177
\LeftTorque 20111, 21910
\Lefttorque 20112, 21911
\leftVdash 20337, 21923
\leftvdash 19182, 21800
\legm 16967, 21676
\legr 17010, 21688
\Leo 19753, 21879
\leo 19751, 21307
\leq 19022, 21076
\leqclosed 19233, 21816
\leqq 19031, 21080
\leqslant 20252, 21506
\lessapprox 20260, 21510
\lessclosed 19227, 21814
\lessdot 19291, 21190
\lesseqgtr 19300, 21194
\lesseqqgtr 20278, 21518
\lessgtr 19072, 21099
\LessOrEqual 19025, 21786
\lesssim 19062, 21095
\LetLtxMacro 6623, 6627, 6693, 6697
\Letter 19890, 21902
\LHD 19626, 21265
\lhd 19225, 21163
\lhooknwarrow . . . 20082, 21440
\lhooksearrow 20086, 21442
\Libra 19759, 21881
\libra 19757, 21309
\Lightning 18669, 21756
\lightning 18667, 20930
\limits 5146
\linferior 20883
\listofslides 9067
\listslidename 9066, 9069, 9071, 9073
\literalps@out 2647, 11734, 11739, 11791, 11797, 11823, 11829, 12095, 12111, 12145, 12146, 12174, 12176, 12188, 12190, 12488, 12570, 12579, 12637, 12650, 12731, 12855, 13016
\ll 19043, 21086
\llap 5392
\llbracket 20051, 21906
\llcorner 19374, 21226
\Lleftarrow 18758, 20964
\lll 19295, 21192
\llparenthesis 20160, 21468
\lnapprox 20273, 21516
\lneq 20268, 21514
\lneqq 19039, 21084
\lnsim 19327, 21206
\Longleftarrow . . . 20066, 21432
\longleftarrow 20060, 21429
\Longleftrightarrow 20070, 21434
\longleftrightarrow 20064, 21431
\longlegr 20772
\Longmapsfrom . . . 20074, 21436
\Longmapsto 20076, 21437
\longmapsto 20072, 21435
\Longrightarrow . . 20068, 21433
\longrightarrow . . . 20062, 21430
\looparrowleft 18661, 20927
\looparrowright . . . 18663, 20928
\lower 5394, 10278, 10358, 10395, 10435, 12176, 12813, 13096
\lowercase 363, 368, 901, 1367, 2187, 2328, 2754, 3298, 3328, 4082, 4118, 5698, 5699, 5702, 5707, 5731, 5741, 5795, 5851, 6171, 6244, 6247, 6377, 8786, 11861, 15121
\lozenge 19631, 21267
\lrcorner 19376, 21227
\lslide@flag . . 9093, 9096, 9114, 9133, 9137
\LT@array 7567
\LT@foot 7582, 7586
\LT@p@ftn 7957, 7960, 7964, 7974
\LT@p@ftntext 7955, 7962
\LT@start 7584, 7594
\ltimes 19256, 21175
\ltx@backslashchar 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 342, 4400
\ltx@empty 382, 383, 486, 1957, 3063, 3260, 3272, 3276, 3671, 3816, 4212, 4236, 4243, 4346, 4465, 4466, 4469, 4470, 4471, 4472, 4473, 4474, 4478, 4530, 4807, 4808, 4839, 4849, 4947, 5439, 5440, 5611, 5632, 5655, 5896, 5914, 5928, 5941,

5957, 5989, 6014, 6021, 6022, 6363, 6401, 6402, 6403, 6404, 6405, 6406, 6407, 6408, 6409, 6410, 6411, 6436, 6823, 6824, 6825, 6828, 6840, 6849, 6866, 6871, 6877, 6886, 6906, 7633, 8626, 8637, 8646, 8849, 9499, 9519, 9522, 10211, 11120, 11207, 11815, 12083, 12097, 12113, 12132, 12153, 12220, 12487, 12578, 12852, 13024, 13031, 13354, 13375, 13388, 13629, 13664, 13711, 13805, 13806, 13825, 13832, 13848, 13879, 13922, 13962, 13963, 13964, 13991, 14315, 14332, 14339
\ltx@firstofone 3083, 4538, 5658, 5675, 6738, 15138, 15150
\ltx@firstoftwo 245, 349, 357, 2491, 2739, 2746, 5062, 5550, 7884, 7904
\ltx@GlobalAppendToMacro 1031, 5662
\ltx@gobble 274, 3089, 4531, 4558, 4567, 4935, 5654, 5656, 6636, 6637, 6648, 6650, 6651, 7025, 13138, 13818, 13834, 13839, 15136, 15148
\ltx@gobblethree 8509
\ltx@gobbletwo 5674, 6639, 6653, 13819
\ltx@ifclassloaded . . 6878, 8470
\ltx@ifempty 5433
\ltx@iffileloaded 1004, 6837
\ltx@ifpackagelater . 360, 10204
\ltx@ifpackageloaded 1333, 6743, 13967
\ltx@IfUndefined 239, 280, 286, 325, 572, 650, 694, 770, 805, 924, 925, 926, 1096, 1102, 1108, 1113, 1118, 1125, 1131, 1137, 1142, 1148, 1153, 1163, 1169, 1175, 1181, 1320, 1326, 1703, 1798, 1799, 1951, 2601, 2634, 4524, 4553, 4555, 4645, 4646, 4647, 5061, 5062, 5258, 5623, 5654, 6799, 7200, 7300, 7307, 7329, 7344, 7675, 8223, 8488, 8848, 9264, 9265, 9310, 9311, 9313, 9314, 9484, 9515, 9750, 9760, 10149, 11237, 11294, 11397, 11787, 11830, 11921, 12104, 13965, 15437, 15447
\ltx@ifundefined 2548, 2738, 2739, 2782, 5666, 7838, 8504, 9544
\ltx@leftbracechar 340, 364
\ltx@LocalAppendToMacro 377, 380, 7292, 7308, 7313
\ltx@one . 244, 6880, 6881, 6888, 8473, 8477, 8483, 8486, 8487, 8500, 9506, 13971
\ltx@onelevel@sanitize . . . 7283, 7302, 8887
\ltx@ReturnAfterElseFi . . . 5128
\ltx@ReturnAfterFi 510, 2125, 5132, 5148, 8906, 8942, 9430, 9440, 14691
\ltx@rightbracechar . . . 341, 369
\ltx@secondoftwo 240, 247, 251, 346, 2493, 2738, 2739, 2748, 2750, 5061, 5062, 5064, 5444, 5548, 7886, 7906, 13824, 13827, 13830, 13833, 13837, 13838, 13841
\ltx@space 343, 1854
\ltx@zero 2181, 2182, 2183, 2184, 2185, 2186, 9494, 9501, 13836, 13969
\luatexrevision 9923
\luatexversion 9915, 9920
\lz 16959, 21673

M

\m@ne . . 4663, 5182, 5241, 5713, 7487, 7695, 10774, 15357, 15446, 15461
\make@df@tag@@ . . . 8699, 8701
\make@df@tag@@@ . 8700, 8702
\make@stripped@name . . 7266, 7623, 7654, 7682, 7693
\makeatletter 3, 974, 1027, 6742
\MakeButtonField . 6518, 13534, 13543, 13565, 13585, 13591, 14139, 14149, 14174, 14191, 14198, 14507, 14510, 14538, 14563, 14567
\MakeCheckField . 6515, 13615, 14221, 14593
\MakeChoiceField . 6517, 13515, 14122, 14481
\MakeFieldObject 13798, 13945, 13955, 13958
\MakeLowercase 641
\MakeLowercaseUnsupportedIn-PdfStrings 641
\MakeRadioField . . 6514, 13498, 14108, 14447
\makeslideheading 8976
\makeslidesubheading 9028
\maketag@@@ 8688
\MakeTextField . . . 6516, 13409, 14014, 14358
\maketitle 8034, 8035
\MakeUppercase 640, 9071, 9073, 9227
\MakeUppercaseUnsupportedIn-PdfStrings 640
\Male 19723, 21869
\male 19719, 21297
\MaleMale 19840, 21334
\ManFace 20437, 21579
\manstar 19834, 21331
\mapsto 18655, 20924
\Mars 19722, 21868
\mars 19721, 21867
\MathBSuppress . . 11140, 11144
\mathclose 7636
\mathdisplay 7604, 7613
\mathdisplay@push . 7602, 7611
\mathdollar 16088, 21600
\mathellipsis 18371, 21734
\mathopen 7627, 7658
\mathparagraph . . 16210, 21611
\mathsection 16178, 21609
\mathsterling 16167, 21606
\mathunderscore . . 16146, 21604
\mathversion 629
\maxdimen 3751, 13803
\MaybeStopEarly 487, 3097, 3192, 4710, 4824, 7175, 7178
\mbox . . . 682, 8334, 8357, 9651, 10746
\mddefault . . . 7740, 7768, 7799
\mdseries 612
\meaning 62, 153, 159, 2610, 6783, 7403, 7700, 15321, 15329, 15344
\measuredangle . . . 18852, 21005
\measuring@false 7261
\mediaheight 11231, 11233, 11239, 11246
\mediawidth 11242, 11249
\meem 20679
\Mercury 19708, 21860
\mercury 19706, 21295
\merge 20239, 21922
\message 9094
\MessageBreak 282, 288, 305, 306, 311, 312, 352, 353, 518, 2081, 2102, 2115, 2138, 2143, 2145, 2776, 2777, 2791, 2813, 2816, 2818, 2896, 2897, 2923, 2924, 2969, 2970, 2971, 3009, 3010, 3030, 3045, 3086, 3112, 3128, 3163,

3202, 3209, 3220, 3226, 3269, 3282, 3320, 3681, 3812, 3813, 3881, 3882, 3900, 3901, 3995, 4037, 4045, 4095, 4150, 4151, 4280, 4281, 4403, 4404, 4405, 4426, 4428, 4436, 4437, 4444, 4494, 4748, 4749, 4757, 4758, 4774, 4775, 4790, 4791, 4799, 4800, 4990, 5235, 5236, 5260, 5261, 5277, 5278, 5752, 5757, 5766, 5809, 5855, 5979, 6092, 6164, 6175, 6207, 6208, 6227, 6335, 6336, 6337, 6338, 6856, 7091, 7106, 7107, 7450, 8576, 8606, 8607, 8608, 8609, 8610, 8758, 9489, 9507, 9526, 9528, 9534, 9536, 9539, 9546, 9709, 10784, 11323, 11406, 11700, 11706, 11930, 13812, 13814, 15057, 15075, 15188
\MF 587, 13167
\mho 20895
\mid 18859, 21007
\MineSign 19819, 21324
\minferior 20884
\minusdot 20215, 21491
\minusinferior 20872
\minussuperior 20856
\models 19199, 21805
\moo 21467
\Moon 20435, 21578
\MoonPha . . . 2507, 2512, 2515, 2521, 21599
\Mountain 19866, 21342
\MoveDown 19616, 21840
\MoveUp 19601, 21837
\MP 588, 13168
\mp 18827, 20994
\mu 17324
\mugreek 20809
\multimap 19243, 21169
\multimapboth . . . 20198, 21483
\multimapdotbothA 19239, 21167
\multimapdotbothB 19241, 21168
\MultiplicationDot 16213, 21612
\multiply . . . 9919, 11587, 11622
\Mundus 20433, 21577
\MVArrowDown . . 18618, 21752
\MVAt 16138, 20741
\MVComma 16106, 20727
\MVDivision 16112, 20730
\MVEight 16130, 20739
\MVFive 16124, 20736
\MVFour 16122, 20735
\MVMinus 16108, 20728
\MVMultiplication 16280, 21615
\MVNine 16132, 20740
\MVOne 16116, 20732
\MVPeriod 16110, 20729
\MVPlus 16104, 20726
\MVRightArrow . . 18614, 21750
\MVRightarrow . . . 18615, 21751
\MVSeven 16128, 20738
\MVSix 16126, 20737
\MVThree 16120, 20734
\MVTwo 16118, 20733
\MVZero 16114, 20731

N

\n 892
\nabla 18803, 20984
\name@of@eq 7234, 7264
\name@of@slide 7235, 7245
\nameref 679, 5066, 5070
\napprox 18942, 21042
\napproxeq 18947, 21044
\nasb 20691
\nasymp 18960, 21050
\natural 19807, 21319
\nbackcong 18956, 21048
\nbacksim 18920, 21032
\nbacksimeq 19267, 21180
\nBumpeq 18965, 21052
\nbumpeq 18969, 21054
\ncirceq 19001, 21068
\ncong 18938, 21040
\ncurlyeqprec 19307, 21197
\ncurlyeqsucc 19311, 21199
\nDashV 20351, 21551
\nDashv 20344, 21549
\ndashV 20338, 21547
\ndashv 19183, 21149
\nDoteq 18979, 21058
\ndoteq 18973, 21056
\ndownmodels 20356, 21553
\ndownvdash 19189, 21151
\ne 19011, 21073
\Nearrow 18752, 20961
\nearrow 18626, 20911
\neg 21590
\Neptune 19735, 21873
\neptune 19733, 21301
\neq 19011, 21072
\neqcirc 18997, 21066
\neqdot 20248, 21504
\neqsim 18929, 21036
\nequal 19014, 21782
\nequiv 19018, 21075
\neswarrow 20080, 21439
\netscape 10314
\Neural 19846
\Neutral 21337
\new@ifnextchar 705
\new@pdflink . . 9684, 9738, 9741
\new@refstepcounter 7596, 7630
\newblock 8418
\newcommand 4, 9, 42, 2648, 5379, 5385, 5417, 5622, 5645, 6680, 6684, 8154, 8726, 15158, 15161, 15166, 20725, 21596
\newcount 488, 489, 2653, 5226, 6130, 6867, 13358, 13510, 13968, 14115, 14321, 14477, 15193
\newcounter . 7217, 7859, 10652, 15108
\newdimen 485, 5375, 6131, 6132
\newif . . 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 441, 442, 443, 850, 1095, 3041, 3062, 3819, 4134, 4902, 5256, 5705, 5793, 6126, 6127, 6147, 6190, 7236, 7237, 7261, 7641, 11119, 12076
\newlabel 2613, 5365, 6720, 6721, 6729, 6756, 7472, 7500
\newlabelxx 6722, 6723
\newlength 15396
\newline 575, 6804
\newname 7267, 7624, 7655, 7683, 7696, 7705
\newsavebox 10582, 12124
\newtie . . . 15591, 15592, 15981, 16030, 16057, 16075
\newtoks 90, 6218, 11948, 12199, 12200
\newwrite . . 6750, 15281, 15363
\nexists 18796, 20981
\next . . 8408, 8409, 8410, 11550, 11552, 11554
\nfallingdoteq 21060
\nfallingdotseq 18984
\nfss@text 9148, 9168, 9185, 9303
\NG 16532
\ng . 16534, 16535, 16536, 21623, 21624
\ngeq 19060, 21094
\ngeqq 19037, 21083
\ngeqslang 20258
\ngeqslant 21509

\ngg 19049, 21089
\ngtr 19055, 21092
\ngtrapprox 20266, 21513
\ngtrclosed 19340, 21828
\ngtrless 19076, 21101
\ngtrsim 19070, 21098
\nhateq 19007, 21070
\ni 18811, 20988
\NibRight 19902, 21356
\NibSolidRight . . . 19904, 21357
\niepsilon 16892, 20760
\niiota 16941, 20768
\nineinferior 20870
\ninesuperior 20854
\ninferior 20885
\niphi 16994, 20771
\niupsilon 17052, 20777
\nj 16974, 21679
\nLeftarrow 18726, 20951
\nleftarrow 18634, 20914
\nleftModels 20353, 21928
\nleftmodels 20346, 21926
\nLeftrightarrow . . 18728, 20952
\nleftrightarrow . . . 18665, 20929
\nleftVdash 20340, 21924
\nleftvdash 19185, 21801
\nleq 19058, 21093
\nleqq 19033, 21081
\nleqslant 20254, 21507
\nless 19053, 21091
\nlessapprox 20262, 21511
\nlessclosed 19337, 21827
\nlessgtr 19078, 21102
\nlesssim 19068, 21097
\nll 19045, 21087
\nmid 18861, 21008
\nmodels 19218, 21811
\noboundary 573
\nobreak 2695, 2703, 2714, 2722, 7926, 8085
\nobreakspace . 693, 9239, 9268, 9271
\NoChemicalCleaning . . . 20178, 21474
\noexpand . 22, 93, 95, 108, 116, 169, 171, 172, 173, 176, 206, 870, 1041, 1380, 1813, 1830, 1960, 1987, 2341, 2701, 2702, 2703, 2706, 2720, 2721, 2722, 2725, 3599, 3601, 3603, 3604, 3605, 3607, 3623, 3830, 3831, 3833, 4207, 4665, 4669, 4670, 4846, 5140, 5313, 5589, 5591, 5617, 5761, 6308, 6321, 6980, 6981, 6990, 6992, 6995, 7120, 7286, 7287, 7304, 7484, 7485, 7487, 7512, 7513, 7514, 7515, 7516, 7524, 7525, 7526, 7699, 7948, 7958, 7966, 7967, 7968, 7970, 8094, 8184, 8259, 8274, 8290, 8475, 8624, 8718, 8720, 9201, 9202, 9319, 9320, 9325, 9327, 9332, 9333, 9338, 9339, 9922, 10520, 12013, 12080, 12647, 12906, 13437, 13438, 13439, 13440, 14038, 14039, 14040, 14041, 14393, 14394, 14395, 14396, 14670
\noexpandQ 1987
\nofrenchguillemets . . . 712, 714
\NoHy@OrgPageRef 6627, 6629, 6697, 6699
\NoHy@OrgRef 6623, 6625, 6693, 6695
\NoHyper 6631
\nohyperpage 6675, 8896, 8898, 8900
\nolinkurl 5292
\nolinkurl@ 5292, 5293
\NomFancyVerbLineautorefname 3509
\Nomfootnoteautorefname . 3489
\Nomtheoremautorefname . 3513
\nonumber 7670, 7673
\normalfont 607, 7734, 7762, 7795
\normalsize 625, 8130, 8202
\notasymp 18962, 21778
\notbackslash 19398, 21236
\NotCongruent . . . 19020, 21784
\notdivides 18863, 21767
\note 8518
\notequiv 19021, 21785
\notin 18807, 20986
\notni 18816, 21762
\notowner 18814, 20989
\notperp 20041, 21421
\notslash 19395, 21235
\noway 19864, 21341
\nparallel 18866, 21010
\nperp 19196, 21804
\nprec 19096, 21111
\nprecapprox 20317, 21537
\npreccurlyeq 19313, 21200
\npreceq 20293, 21525
\npreceqq 20305, 21531
\nprecsim 19090, 21108
\nqsubseteq 21202
\nqsupseteq 21203
\NR@gettitle 8120
\nRightarrow 18731, 20953
\nrightarrow 18636, 20915
\nrightModels 19224, 21813
\nrightmodels 19217, 21810
\nrightVdash 19221, 21812
\nrightvdash 19214, 21809
\nrisingdoteq 18989, 21062
\nsim 18925, 21034
\nsimeq 18933, 21038
\nsqsubset 19126, 21126
\nsqsubseteq 19134, 19317, 21130
\nsqsupset 19130, 21128
\nsqsupseteq 19138, 19319, 21132
\nSubset 19277, 21184
\nsubset 19104, 21115
\nsubseteq 19112, 21119
\nsubseteqq 20329, 21543
\nsucc 19098, 21112
\nsuccapprox 20321, 21539
\nsucccurlyeq 19315, 21201
\nsucceq 20297, 21527
\nsucceqq 20309, 21533
\nsuccsim 19094, 21110
\nsuperior 20860
\nSupset 19281, 21186
\nsupset 19106, 21116
\nsupseteq 19114, 21120
\nsupseteqq 20333, 21545
\nthickapprox 18944, 21776
\ntriangleleft 19335, 21210
\ntrianglelefteq . . . 19342, 21212
\ntriangleright 19338, 21211
\ntrianglerighteq . . 19345, 21213
\ntriplesim 18952, 21046
\ntwoheadleftarrow 18640, 20917
\ntwoheadrightarrow 18647, 20920
\nu 17326, 20810
\null . . . 8399, 8407, 9190, 9299
\number 1214, 1218, 1221, 1229, 1232, 1234, 1539, 1541, 1568, 1569, 2287, 2345, 2346, 2347, 2348, 2352, 2353, 2354, 2355, 2356, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2370, 2371, 2372, 2373, 2374, 2375, 2378, 2380, 2384, 2385, 2387, 2389, 2391, 2394, 2398, 2399, 2400, 2401, 2410, 2411, 2415, 2416, 2423, 2424, 2428, 2431, 2432, 2433, 2443, 2445, 2446, 2451, 2453, 2454, 2459, 2460, 4227, 4904, 4921, 5719, 7334, 7337, 7380, 7381, 7384, 7388, 9557, 9560, 10342,

10360, 10361, 10376, 10377, 10397, 10398, 10414, 10415, 10437, 10438, 10454, 10455
\numberline . . 8123, 8195, 15080, 15085
\numberwithin 8723
\numexpr 2352, 2353, 2354, 2356, 2362, 2370, 2371, 2372, 2373, 2374, 2375, 2379, 2381, 2385, 2387, 2389, 2391, 2395, 2398, 2399, 2401, 2410, 2415, 2432, 2446, 2454, 2460, 4231
\nun 20681
\nupmodels 20360, 21555
\nupvdash 19194, 21153
\nVDash 19222, 21162
\nVdash 19219, 21161
\nvDash 19215, 21160
\nvdash 19212, 21159
\nVvash 19206, 21157
\Nwarrow 18750, 20960
\nwarrow 18624, 20910
\nwsearrow 20078, 21438

O

\O 15834, 16282, 16764
\o 15903, 16352, 16767
\oasterisk 19166, 21798
\obackslash 20172, 21914
\obar 20166, 21471
\obeylines 12646
\OBJ@acroform . . . 13941, 13942
\OBJ@Helv 13916, 13929, 14280
\OBJ@OCG@print . . 9594, 9597, 9605, 9632, 10670, 10672, 10685, 10689, 10698, 10727
\OBJ@OCG@view . . 9579, 9597, 9631, 10654, 10656, 10669, 10689, 10726
\OBJ@OCGs . 9600, 9603, 9609, 9614, 9619, 10686, 10688, 10692, 10696, 10702, 10707, 10712
\OBJ@pdfdocencoding . . 13914, 14261, 14277
\OBJ@ZaDb 13915, 13928, 14270
\obot 20175, 21473
\obslash 20169, 21472
\ocirc 19161, 21795
\OCIRCUMFLEX 20491, 20589, 20590, 20591, 20592, 20593
\ocircumflex 20485, 20529, 20530, 20531, 20532, 20533
\oddsidemargin 8555
\odiv 20223, 21494
\odot 19156, 21139
\odplus 20177, 21916
\OE 15703, 16550
\oe 15716, 16552
\offinterlineskip 6831
\ogreaterthan 20183, 21476
\OHORN . . 20492, 20594, 20595, 20596, 20597, 20598
\ohorn 3554, 3561, 20486, 20534, 20535, 20536, 20537, 20538
\oiint 18893, 21021
\oinferior 20878
\oint 18890, 21020
\ointclockwise 18896, 21022
\ointctrclockwise . . 18898, 21023
\oldb 924
\oldc 925
\oldcontentsline 6715, 6718, 6728
\oldd 926
\oldnewlabel . . 6720, 6725, 6729
\olessthan 20180, 21475
\OMEGA 13163
\Omega 17284, 20797
\omega 17350, 20821
\ominus 19147, 21136
\on@line 8603, 8604
\oneinferior 20862
\onesuperior 20745
\oo 20399, 21564
\openbullet 21270
\openo 16868, 20756
\openout 6707, 6751, 15283, 15365
\oplus 19144, 21135
\OpMode 3187, 3190, 3203, 3216, 3221, 11639, 11742, 12583
\or 347, 1248, 1249, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1293, 1294, 1295, 1296, 1297, 1298, 1299, 1300, 1301, 1386, 1387, 1388, 1389, 1390, 1391, 1392, 1393, 1394, 1395, 1396, 1397, 1398, 1399, 1400, 1401, 1402, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1435, 1457, 1460, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1546, 1547, 1548, 1549, 1550, 1662, 1663, 1664, 2506, 2509, 2511, 2514, 5879, 5885, 5890, 6104, 7354, 7355, 7356, 7357, 7363, 7364, 7365, 7366, 8631, 8635, 9113, 9122, 11632, 15201, 15202, 15203, 15204, 15205, 15206, 15207, 15208, 15209, 15210, 15211, 15212, 15213, 15214, 15215, 15216, 15217, 15218, 15219, 15220, 15221, 15222, 15223, 15224, 15225, 15226, 15227, 15228, 15229, 15230, 15231, 15232
\OrnamentDiamandSolid . 20031
\oslash 19153, 21138
\otimes 19150, 21137
\ovee 18876, 21014
\overlay 8515
\owedge 18871, 21012
\owns 18813, 21761

P

\P 569
\p@ 2411, 2416, 6133, 6139, 7742, 7770, 7801, 10287, 10371, 10409, 10449, 11586, 12822, 13110, 13433, 14034, 14389, 15521, 15522
\p@equation 8695
\PackageError 61
\PackageInfo . 9473, 9555, 13810
\PackageWarning . . 3044, 6090
\pageautorefname 3367, 3385, 3403, 3421, 3439, 3457, 3475, 3515, 3533, 3551, 3569, 9271, 9394
\pagename 9268
\pageref 678, 4720, 5057, 6627, 6628, 6697, 6698, 7450, 9257, 9261
\paperheight 4487, 10134, 10136, 10139, 10141, 10153, 10154, 11100, 11101, 11238, 11239, 11241, 12552, 12553

\paperwidth 10130, 10132, 10143, 10145, 10150, 10151, 11099, 11101, 11242, 12551, 12553
\par 7733, 7760, 7793, 8122, 8150, 8193, 8203, 8401, 8421
\paragraphautorefname 3363, 3381, 3399, 3417, 3435, 3453, 3471, 3504, 3506, 3529, 3547, 3565, 9390
\parallel 18864, 21009
\parenleftinferior 20874
\parenleftsuperior 20858
\parenrightinferior 20875
\parenrightsuperior 20859
\parr 18573, 21749
\parskip 6743
\partautorefname 3357, 3375, 3393, 3411, 3429, 3447, 3465, 3495, 3523, 3541, 3559, 9384
\partial 18792, 20979
\partnumberline . . 15082, 15087
\PassOptionsToPackage 3109, 3121, 3124, 3136, 3147, 3176, 3235, 3241, 3257, 3309, 3313, 3335, 4522, 4535, 4546, 4865
\pdf@addtoks . . . 12202, 12224, 12230, 12239, 12246, 12250, 12252, 12254, 12256, 12258, 12266, 12275, 12279, 12281, 12283, 12286, 12295, 12299, 12301, 12303, 12305, 12307, 12309, 12311, 12313, 12315, 12317, 12319, 12321, 12323, 12325, 12327, 12329, 12330, 12331, 12332, 12333, 12334, 12335, 12336, 12337, 12338, 12339, 12344
\pdf@addtoksx . . 12196, 12206, 12222
\pdf@box . . 12124, 12156, 12164, 12172, 12173, 12176, 12180, 12182, 12185
\pdf@defaulttoks . 12080, 12200, 12201, 12211
\pdf@docset 11948
\pdf@endanchor 9697, 9738, 9745
\pdf@escapestring 9449
\PDF@FinishDoc 3100, 3101, 3195, 3196, 4481, 4584, 4713, 4714, 4827, 4828, 6674, 6848, 6849, 9998, 10211, 10469, 10957, 11120, 11710, 11949, 12862, 13031
\pdf@ifdraftmode 240, 243, 251, 7024, 9564, 9999, 10108, 13911, 15293
\pdf@linktype . . . 12104, 12108, 12216, 12217
\pdf@objdef 12083, 12097, 12099, 12113, 12115, 12219, 12220
\pdf@rect . 12091, 12110, 12128
\PDF@SetupDoc 4480, 4583, 6594, 6595, 6673, 9929, 10212, 10500, 10997, 11121, 11647, 12000, 12743, 12893, 13032
\PDF@SetupDox 9929
\pdf@strcmp 1072
\pdf@toks . 12080, 12101, 12117, 12199, 12203, 12207
\pdf@type . 12082, 12087, 12101, 12117, 12194, 12214
\pdfannotlink 9675
\pdfbookmark 2648, 6679, 6680, 15159, 15164, 15169, 15173
\pdfcatalog . . 7027, 9601, 9944, 9986, 13942
\PDFdefaults 12210
\pdfdest 9699
\pdfdraftmode 244
\pdfendlink . 9735, 14014, 14108, 14123, 14150, 14175, 14199, 14222
\pdfescapestring 14699
\pdfextension . 3119, 4739, 4813
\pdfform 9677
\PDFForm@@Name 14707, 14710, 14714, 14717
\PDFForm@Check 13614, 13618, 14219, 14220, 14598, 14602, 14791
\PDFForm@List . 13513, 13518, 14120, 14121, 14484, 14489, 14852
\PDFForm@Name 14005, 14059, 14132, 14213, 14353, 14414, 14500, 14589, 14706
\PDFForm@Push . 13542, 13546, 14147, 14148, 14516, 14520, 14822
\PDFForm@Radio 13494, 13502, 14098, 14100, 14455, 14467, 14886
\PDFForm@Reset 13589, 13594, 14196, 14197, 14568, 14573, 14991
\PDFForm@Submit 13563, 13568, 14168, 14170, 14540, 14545, 14957
\PDFForm@Text . 13408, 13412, 14012, 14013, 14363, 14366, 14921
\pdfhorigin 10126
\pdfinfo 10002
\pdflastannot 9514
\pdflastform 9678
\pdflastlink . 9517, 13877, 13890
\pdflastmatch 4396
\pdflastobj 9511, 9579, 9594, 9600, 13941, 14261, 14270, 14280
\pdflastxform 9512, 9678, 13801, 13803
\pdflastximage 9513
\pdflinkmargin 9672, 9676, 9681
\pdfliteral 9652, 9654, 9659
\pdfm@box 10582, 14317, 14318, 14319, 14357, 14369, 14446, 14471, 14480, 14491, 14510, 14523, 14538, 14547, 14567, 14575, 14592, 14604
\pdfmark . . . 7138, 10520, 10529, 10559, 11778, 11798, 11837, 11872, 11889, 11901, 11935, 11972, 11984, 12013, 12022, 12053, 12077, 12353, 12368, 12383, 12395, 12402, 12429, 12460, 12906, 12915, 12946, 13368, 13377, 13409, 13498, 13515, 13543, 13565, 13591, 13615, 15325
\pdfmark@ 12077, 12078
\pdfmatch 344
\pdfminorversion 9470
\PDFNextPage 12366
\PDFNextPage@ . . 12366, 12367
\pdfobj 9565, 9580, 9595, 13919, 14228, 14262, 14271
\pdfobjcompresslevel 9494, 9548
\PDFOpen 12394
\pdfoptionpdfminorversion 9467
\pdfoutline 15374
\pdfpageattr 10042, 10046, 10047, 10057, 10066, 10070, 10071, 10081, 10089, 10092, 10093, 10103
\pdfpageheight . . 10136, 10145, 10154, 10161
\pdfpageref 13979
\pdfpageresources . . 9628, 9629
\pdfpagesattr . 9933, 9935, 9937
\pdfpagewidth . . . 10132, 10141, 10151, 10158
\PDFPreviousPage 12379
\PDFPreviousPage@ 12380, 12382
\pdfrefform 9679

\pdfrefobj . 13914, 13915, 13916
\pdfrefxform 9679, 13803
\pdfstartlink 9674, 9675, 9730, 9774, 9809, 9843, 10174, 14013, 14099, 14121, 14148, 14169, 14197, 14220
\pdfstrcmp 13836
\pdfstringdef 538, 837, 4021, 4027, 4033, 4055, 4060, 4066, 4073, 4079, 4160, 6051, 6056, 6082, 6808, 6916, 6918, 7465, 8501, 8537, 14725, 15091
\pdfstringdefDisableCommands 923, 1025, 1034, 1037, 6677, 6802
\pdfstringdefPostHook 833, 1019
\pdfstringdefPreHook 689, 1019, 1031, 6801, 6812
\pdfstringdefWarn 574, 575, 683, 1040, 1821, 1826, 1845, 1849
\pdftexrevision 9889, 9897, 9908
\pdftexversion 9884, 9886, 9889, 9892, 9895, 9896, 9900, 9906, 9907, 13913
\pdfvorigin 10127
\pdfxform 9677, 13799
\Peace 19891, 21351
\peh 20707
\penalty 1963, 2675, 5201, 8328, 8351
\PencilRight 19898, 21354
\PencilRightDown . 19896, 21353
\PencilRightUp . . . 19900, 21355
\pentagon 20370, 21559
\perp 20039, 21420
\phantom 630
\phantomsection . . . 4482, 6681, 8578, 15026, 15077, 15465
\Phi 17277, 20795
\phi 17344, 20818
\phiinferior 20831
\Phone 19652, 21276
\PhoneHandset . . . 19882, 21347
\Pi 20792
\pi 17332, 20812
\pinferior 20886
\Pisces 19774, 21886
\pisces 19772, 21314
\pitchfork 19289, 21189
\planck 16457, 21622
\Plane 19886, 21349
\Plus 19919, 21364
\PlusCenterOpen . . 19923, 21366
\plusinferior 20871
\PlusOutline 19917, 21363
\plussuperior 20855
\PlusThinCenterOpen . . . 19921, 21365
\Pluto 19738, 21874
\pluto 19736, 21302
\pm 21593
\pointer 18777, 20972
\PointingHand 19677, 21851
\Pointinghand 19678, 21852
\pounds 16168, 21607
\Preamble 13159
\prec 19080, 21103
\precapprox 20315, 21536
\preccurlyeq 19084, 21105
\preceq 20291, 21524
\preceqq 20303, 21530
\precnapprox 20323, 21540
\precneq 20299, 21528
\precneqq 20311, 21534
\precnsim 19331, 21208
\precsim 19088, 21107
\PrerenderUnicode 4012
\prime 18376, 20840
\process@me . 6781, 6793, 6794, 9932, 9941
\ProcessKeyvalOptions . . . 4551
\prod 18819, 20991
\propto 18845, 21002
\protect 1961, 5343, 8123, 8195, 8259, 8274, 8290, 8406, 8413, 8414, 8616, 8664, 8885, 8966, 9018, 9147, 9167, 9173, 9184, 9302, 10222, 10319, 11191, 11266, 12754, 13042, 15098, 15398, 15521, 15522
\protected@edef 5437, 6882, 6976, 7555, 7697, 7717, 8489, 8493, 9706, 10781, 11320, 11403, 11927
\protected@write . . . 2612, 5364, 5634, 8386, 8824, 8839, 8854, 8858, 8868, 15097
\protected@xdef . . . 7967, 8060
\providecommand 2629, 2630, 3706, 3707, 3710, 3711, 4811, 5034, 5035, 5154, 5297, 5621, 5679, 6711, 7006, 7031, 7156, 7195, 7198, 7201, 7202, 7203, 7205, 7206, 7207, 7208, 7210, 7211, 7212, 7213, 7214, 7215, 7224, 7225, 7226, 7227, 7228, 7229, 7691, 8224, 8225, 8240, 8318, 8948, 8949, 8953, 8958, 8959, 9066, 9375, 9376, 9377, 9378, 9379, 9380, 9381, 9382, 9383, 9384, 9385, 9386, 9387, 9388, 9389, 9390, 9391, 9392, 9393, 9394, 9456, 9683, 9701, 9702, 10210, 10313, 10314, 10577, 10639, 10640, 10641, 11117, 11236, 11258, 11259, 11260, 11735, 12125, 12126, 12486, 12494, 12495, 12496, 12497, 12577, 12589, 12590, 12591, 12592, 12644, 12685, 12686, 12687, 12688, 12851, 12853, 12854, 12967, 12968, 13023, 13856, 13859, 14663
\psdaliasnames . . . 21596, 21939
\psdmapshortnames 20725, 21595
\Psi 17281, 20796
\psi 17348, 20820
\PushButton 6490
\put@me@back 5584, 5597, 5607
\pwedge 17061, 21699
\pxfonts 20369

Q

\Q 1956, 13924
\qaf 20673
\quarternote 19796, 21315
\quotedblbase . . . 15683, 15922, 18357, 20467
\quotesinglbase . . 15693, 15924, 18351, 20469

R

\r . . . 895, 15558, 15570, 15582, 15795, 15861, 15971, 16012, 16039, 16069, 16242, 16309, 16606, 16608, 18296, 18298
\ra 20649
\Radiation 19681, 21853
\Radioactivity 19679, 21285
\raff 20693
\Rain 19862, 21340
\raise . 2682, 5408, 10288, 10372, 10410, 10450, 12190, 12823, 13111
\rangle 19386, 21232
\rbrackdbl 21426
\rcurvearrowdown . 20109, 21450
\rcurvearrowleft . . . 20113, 21451
\rcurvearrowne . . . 20093, 21445
\rcurvearrowright . 20116, 21452
\rcurvearrowse 20102, 21448
\Re 18535, 20894

\ReadBookmarks 4550, 4587, 4727, 4938, 5078, 15257, 15292
\real@setref 9144, 9210
\realfootnote 8057
\Rectangle 20035, 21418
\RectangleBold . . . 20037, 21419
\RectangleThin . . . 20033, 21417
\recycle 19811, 21321
\Recycling 19813, 21893
\Ref 9229, 9233, 9238
\ref 677, 4719, 5054, 5693, 6623, 6624, 6693, 6694, 8022, 8029, 9248, 13134
\ref@one 5319, 5320
\rEfLiNK 13135, 13136
\refstepcounter 7233, 7240, 7260, 7537, 7560, 7561, 7562, 7571, 7596, 7620, 7630, 7750, 8187
\rem@ptetc 11862, 11864
\renewcommand . . . 2604, 8740, 15173
\Request 19416, 21243
\RequirePackage . . 22, 233, 235, 236, 237, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 392, 1331, 1858, 2598, 3021, 3095, 4528, 4544, 4701, 4702, 5006, 5050, 5082, 5289, 5696, 6663, 6822, 7072, 9527, 11118, 13028, 15183
\RerunFileCheck 15185
\Reset 6499
\reset@font . . 8334, 8357, 9148, 9168, 9185, 9303
\reve 16882, 20758
\reveject 17095, 21709
\revepsilon 16896, 20761
\revglotstop 17093, 20785
\revtex@checking 8311
\Rewind 19621, 21263
\RewindToIndex . . 19428, 21248
\RHD 19612, 21260
\rhd 19228, 21164
\rho 17334, 20813
\rhoinferior 20830
\rhooknearrow 20084, 21441
\rhookrevepsilon 20762
\rhookswarrow . . . 20088, 21443
\Rightarrow . 9100, 18739, 20956
\rightarrow 20906
\rightarrowtail 18653, 20923
\rightarrowtriangle 18784, 20975
\rightbarharpoon . . 20147, 21463
\RIGHTCIRCLE . . 19635, 21269
\rightharpoondown 18694, 20939
\rightharpoonup . . 18691, 20938
\rightleftarrows . . . 18703, 20942
\rightleftharpoon . . 20120, 21454
\rightleftharpoons . 18723, 20950
\rightModels 19211, 21808
\rightmodels 19200, 21806
\rightmoon 19704, 21294
\rightpointleft 19673, 21849
\rightrightarrows . . 18715, 20947
\rightrightharpoons 20135, 21459
\RightScissors 19876, 21900
\rightslice 20289, 21523
\rightsquigarrow . . 18764, 20967
\rightthreetimes . . 19263, 21178
\RightTorque 20106, 21908
\Righttorque 20107, 21909
\rightVdash 19203, 21807
\rightvdash 19179, 21799
\rinferior 20825
\riota 18548, 20896
\risingdoteq 21061
\risingdotseq 18987
\rlap 5405, 9653, 10748
\rm 618
\rmfamily 608
\Roman 6972
\roman 6973
\romannumeral 1047, 1048, 13924
\rotm 16963, 21675
\rotOmega 17054, 21697
\rotr 16999, 21685
\rotvara 16862, 21647
\rotw 17065, 21701
\roty 17069, 21703
\rrbracket 20054, 21907
\Rrightarrow 18760, 20965
\rrparenthesis 20162, 21469
\rtaild 20757
\rtimes 19259, 21176
\rule 8007

S

\S 16179, 21610
\sad 20657
\Sagittarius 19765, 21883
\sagittarius 19763, 21311
\Saturn 19729, 21871
\saturn 19727, 21299
\sbox . . . 4008, 5388, 5420, 6519, 10275, 10355, 10392, 10432, 12125, 12164, 12810, 13093, 13798
\scd 17969, 20822
\scg 16917, 20764
\schwa 16885, 20759
\schwainferior 20880
\sci 16944, 20769
\ScissorHollowRight 19880, 21346
\ScissorRight 19874, 21344
\ScissorRightBrokenBottom 19870
\ScissorRightBrokenTop . 19878, 21345
\scn 16980, 20770
\Scorpio 19762, 21882
\scorpio 19760, 21310
\scr 17022, 20773
\scr@LT@array 7570
\scripta 16855, 20755
\scriptg 16914, 20763
\scriptsize 626
\scriptstyle 8324
\scriptv 17056, 20778
\scrollmode . . 1873, 1898, 1908, 1921, 2028, 2161
\scshape 614, 7739, 7767
\scu 17987, 20823
\scy 17070, 20782
\Searrow 18754, 20962
\searrow 18629, 20912
\Sech 20429, 21575
\second 18378, 20841
\section 9068
\sectionautorefname 3360, 3378, 3396, 3414, 3432, 3450, 3468, 3497, 3526, 3544, 3562, 9387
\seen 20653
\selectfont 594, 5017, 13951
\SePa 20415, 21569
\set@display@protect 4654
\setbox . 1964, 1970, 1976, 3734, 3740, 5392, 5405, 6277, 6830, 7829, 9643, 10199, 10721, 10738, 14357, 14446, 14480, 14510, 14538, 14567, 14592
\setcounter 5232
\setkeys 5207, 5252
\setlength 522, 523, 2679, 5376, 6289, 9670, 10126, 10127, 10132, 10136, 10141, 10145, 10151, 10154, 10158, 10161, 11239, 11242, 11246, 11249, 11586, 12569, 12636, 12730, 13015, 15415, 15486
\setminus 18835, 20998
\setpdflinkmargin . . 4214, 4215, 9668, 12567, 12634, 12728, 13013
\settowidth 13430, 14031, 14386
\SetupKeyvalOptions 2733, 4515

\seveninferior 20868
\sevensuperior 20852
\sffamily 609
\shadda 20703
\sharp 19809, 21320
\sheen 20655
\shortciteN 8449
\shuffle 20200, 21484
\Sigma 17271, 20793
\sigma 17338, 20815
\sim 18915, 21030
\simeq 18931, 21037
\sinferior 20887
\SixFlowerAlternate 19987, 21397
\SixFlowerAltPetal 19997, 21402
\SixFlowerOpenCenter . . 19983, 21395
\SixFlowerPetalRemoved . 19980, 21394
\sixinferior 20867
\SixStar 19970, 21389
\sixsuperior 20851
\SixteenStarLight . 19978, 21393
\sixteenthnote 19803, 21317
\SK@ 9361
\SK@@ref 9361
\SK@ref 9358
\skip@ . . 1978, 2061, 2062, 2065, 2067, 2698, 2704, 2717, 2723
\slashc 16846, 20754
\slashdiv 20376, 21562
\slide 8512
\slide@cline . . 9086, 9099, 9107, 9117, 9125
\Slide@contents 9091
\slide@contents 9084
\slide@heading 8962
\slide@subheading 9015
\slide@undottedcline 9077
\slidenumberline . . . 9078, 9086, 9100, 9108, 9118, 9126
\SliTeX 586
\slshape 615
\small 627
\smallin 18809, 20987
\smallowns 18817, 20990
\smash 2676
\smile 19380, 21229
\Smiley 19696, 21858
\smiley 19694, 21290
\Snowflake 20001, 21404
\SnowflakeChevron 19999, 21403
\SnowflakeChevronBold . . 20003, 21405
\sofpasuq 17903
\softsign 17546, 21720
\spacefactor . . 2655, 2661, 7926, 7935, 8085, 8087, 9686, 9694
\spadesuit . 19775, 19777, 21887
\Sparkle 20005, 21406
\SparkleBold 20007, 21407
\special@paper 4483
\SpecialDvipdfmxOutlineOpen . . 3153, 3155, 4906, 4913
\sphericalangle . . . 18854, 21006
\splitmaxdepth 8001
\splittopskip 8000
\sqcap 19140, 21133
\sqcup 19142, 21134
\sqdoublecap 20227, 21496
\sqdoublecup 20232, 21498
\sqsubset 19124, 21125
\sqsubseteq 19132, 21129
\sqsubsetneq 19321, 21204
\sqsupset 19128, 21127
\sqsupseteq 19136, 21131
\sqsupsetneq 19324, 21205
\SquareCastShadowBottomRight 20026, 21414
\SquareCastShadowTopRight 20029, 21415
\Squaredot 16214, 21613
\squaredots 18908, 21027
\SquareShadowBottomRight 20020, 21412
\SquareShadowTopRight . 20023
\SquareTopRight 21413
\SS 15920, 20453
\ss . . . 3407, 15849, 15935, 16297
\sslash 20367, 21558
\st@rredfalse 7603, 7612
\star 19249, 21172
\stepcounter . 7250, 7485, 7554, 7716, 7927, 8059, 15094
\stockheight 4487, 10160, 10161, 11106, 11107, 11245, 11246, 12558, 12559
\stockwidth 10157, 10158, 11105, 11107, 11248, 11249, 12557, 12559
\stop@hyper 6645
\StringEncodingConvertTest 810, 821
\strip@period 2617
\strip@prefix 62, 2610, 4396, 6783, 7403, 7700, 15321, 15329, 15344
\strip@pt . . 527, 534, 4499, 6309, 6322, 10132, 10136, 10141, 10145, 11589, 12571, 12638, 12732, 13017, 14816, 14881, 14910, 14950, 15001
\strip@pt@and@otherjunk 11797, 11829, 11864
\strutbox 8001
\sub@label 2604
\subeqnarray 7676, 7678
\subequations 7714, 7715
\subfig@oldlabel 2606
\Submit 6496
\SubmitObject 14171
\SubmitPObject 14171
\subparagraphautorefname 3364, 3382, 3400, 3418, 3436, 3454, 3472, 3505, 3507, 3530, 3548, 3566, 9391
\subpdfbookmark 15161
\subsection 12847
\subsectionautorefname 3361, 3379, 3397, 3415, 3433, 3451, 3469, 3502, 3527, 3545, 3563, 9388
\Subset 19275, 21183
\subset 19100, 21113
\subseteq 19108, 21117
\subseteqq 20327, 21542
\subsetneq 19116, 21121
\subsubsectionautorefname 3362, 3380, 3398, 3416, 3434, 3452, 3470, 3503, 3528, 3546, 3564, 9389
\succ 19082, 21104
\succapprox 20319, 21538
\succcurlyeq 19086, 21106
\succeq 20295, 21526
\succeqq 20307, 21532
\succnapprox 20325, 21541
\succneq 20301, 21529
\succneqq 20313, 21535
\succnsim 19333, 21209
\succsim 19092, 21109
\sukun 20705
\sum 18823, 20993
\Sun 19701, 21859
\sun 19699, 21292
\SunCload 21339
\SunCloud 19860
\SunshineOpenCircled . . . 19995, 21401
\Supset 19279, 21185
\supset 19102, 21114
\supseteq 19110, 21118
\supseteqq 20331, 21544
\supsetneq 19118, 21122
\surd 9108, 21001
\Swarrow 18756, 20963
\swarrow 18632, 20913

T

\T 20633

\t . . 15590, 16002, 16029, 16056, 16074
\T@nameref 5071
\T@pageref . . . 5041, 5058, 9246
\T@ref 5036, 5055
\T@temp 8312, 8315
\Ta 20661
\taa 20635
\tableautorefname 3356, 3374, 3392, 3410, 3428, 3446, 3464, 3494, 3522, 3540, 3558, 9383
\tagform@ 8694
\taild 16876, 21652
\tailinvr 17007, 21687
\taill 16956, 21672
\tailn 16979, 21681
\tailr 17013, 21689
\tails 17029, 21692
\tailt 17047, 21695
\tailz 17075, 21704
\Tape 19884, 21348
\tatweel 20669
\tau 17340, 20816
\Taurus 19744, 21876
\taurus 19742, 21304
\tcheh 20709
\Telefon 19654, 21844
\temp@online 8603, 8606
\Tent 19868, 21343
\tesh 17147, 21717
\TeX . 576, 577, 584, 586, 13162, 13164, 13166
\texorpdfstring 1012, 6678
\textAcht 20428, 21574
\textAcPa 20414, 21568
\textacute . 15554, 15566, 15578, 15761, 16008, 16035, 16204
\textacutedbl 17195
\textacutemacron 16005, 16032, 16059, 18075, 18078, 18179, 18182
\textainferior 18465, 20876
\textaleph 18559, 20898
\textAlpha . 1248, 17221, 17238
\textalpha . . 1248, 17292, 17303, 20798
\textamalg 18822, 20992
\textampersand 566, 15625, 16093, 16094, 16095, 21602, 21603
\textangle 18851, 21004
\textangstrom 18551
\textAnkh 19685, 21287
\textaolig . 20396, 20398, 21933
\textAPLbox 19423, 21246
\textAPLdownarrowbox . 19412, 21241
\textAPLinput . . . 19415, 21242
\textAPLinv 19389, 21233
\textAPLleftarrowbox . . . 19404, 21238
\textAPLrightarrowbox . . 19407, 21239
\textAPLuparrowbox . . . 19409, 21240
\textapprox 18941, 21041
\textapproxeq 18946, 21043
\textaquarius 19770, 19771, 21313, 21885
\textaries . . 19740, 19741, 21303, 21875
\textasciiacute 16205
\textasciibreve . . . 15601, 16016, 16043, 17184
\textasciicaron . . . 15559, 15571, 15583, 15603, 16013, 16040, 17170
\textasciicircum . . 15555, 15567, 15579, 15641, 16009, 16036, 16143
\textasciidieresis . 15557, 15569, 15581, 15738, 16011, 16038, 16181
\textasciigrave . . . 15553, 15565, 15577, 15646, 16007, 16034, 16148
\textasciimacron . 15562, 15574, 15586, 15751, 16018, 16045, 16194
\textasciitilde 567, 5117, 15656, 16160
\textast 18838, 20999
\textAsterisk 19986, 21396
\textAsteriskBold . 19963, 21385
\textasteriskcentered 16103
\textAsteriskCenterOpen . 19965, 21386
\textAsteriskRoundedEnds 20010, 21408
\textasymp 18959, 21049
\textbabygamma . . 16925, 20766
\textbackcong 18955, 21047
\textbackepsilon 17382
\textbackneg 19361, 21220
\textbackprime . . . 18383, 20843
\textbacksim 18919, 21031
\textbacksimeq . . . 19266, 21179
\textbackslash . . 562, 744, 2467, 15637, 15639, 16141
\textbaht 17966
\textbar . . 15652, 16155, 16156, 21605
\textbarb 16645, 21626
\textbarc 16850, 21643
\textbard 16409, 21618
\textbardbl 18344, 18345, 21730
\textbardotlessj . . 16907, 16908, 16909, 21659
\textbarglotstop . . 17129, 17130
\textbari . . 16938, 16939, 16940, 20767, 21668
\textbarin 19357, 21218
\textbarl . . 16668, 16669, 20752
\textbarleftharpoon 20145, 21462
\textbaro 16984, 16986
\textbarp 18011, 20834
\textbarrevglotstop 17133, 17134
\textbarrightharpoon 20151, 21464
\textbarsci 18009, 20833
\textbarscu 18014, 20835
\textbaru . . 17049, 17050, 17051, 20776, 21696
\textbarwedge 19248, 21171
\textbbslash 19435, 19436, 21249, 21832
\textBeam 19419, 21244
\textbecause 18904, 18905, 21025, 21772
\textbeltl . . 16950, 16951, 16952, 21671
\textBeta 1249, 17240
\textbeta . . . 1249, 15935, 17305, 20799
\textbetainferior . . 17998, 20828
\textbeth 18561, 20899
\textbetween 19052, 21090
\textbf 601
\textBicycle 20448, 21583
\textbigcircle 16031, 16058, 19643, 19644, 21272, 21843
\textbigdoublevee . 20207, 21487
\textbigdoublewedge 20205, 21486
\textbigtriangledown 19619, 19620, 21262, 21841
\textbigtriangleup 19604, 19605, 19606, 21257, 21838, 21839
\textBiohazard . . . 19683, 21286
\textblacksmiley . . 19698, 21291
\textblank 19431
\textbot . . 19192, 19193, 21152, 21803
\textbowtie 19254, 19255, 21174, 21820
\textboxast 20191, 21479
\textboxbackslash . 19401, 21237
\textboxbar 19641, 21271
\textboxbox 20195, 21481

\textboxbslash 20189, 21478
\textboxcircle 20193, 21480
\textboxdot 19176, 21146
\textboxempty .. 19656, 19657, 21277, 21845
\textboxminus 19172, 21144
\textboxplus 19170, 21143
\textboxslash 20187, 21477
\textboxtimes 19174, 21145
\textbraceleft 560, 2468, 15650, 16153
\textbraceright 561, 2468, 15654, 16158
\textbrokenbar .. 15734, 16174, 16175, 21608
\textbullet . 15658, 18366, 20838
\textbulletoperator 18842
\textbullseye 17104, 17105, 17106, 17107, 21712, 21713
\textBumpeq 18964, 21051
\textbumpeq 18968, 21053
\textcancer 19749, 19750, 21306, 21878
\textCap .. 19284, 19285, 21187, 21823
\textcap 18880, 21015
\textcapdot 20231, 21497
\textcapricornus . 19767, 19768, 21312, 21884
\textccnc 20457, 21586
\textccnd 20459
\textccsa 20461, 21587
\textcdj 17118
\textcdot .. 15934, 20479, 21594
\textcdots 19351, 21215
\textcedilla 15561, 15573, 15585, 15769, 16015, 16042, 16216
\textcelsius 15921, 18521
\textcent 15726, 16164
\textcentoldstyle .. 16848, 21642
\textCESign 20465, 20466, 21589, 21938
\textCheckedbox . 19659, 19660, 21278, 21846
\textCheckmark . 19907, 19908, 21358, 21904
\textCheckmarkBold 19910, 21359
\textChi 1298, 17280
\textchi 1298, 17347, 20819
\textchiinferior ... 18006, 20832
\textcirc 18840, 21000
\textcirceq 19000, 21067
\textcirclearrowleft 20057, 21427
\textcirclearrowright 20059, 21428
\textcircled 16004, 16031, 16058, 19438, 19440, 19442, 19444, 19446, 19448, 19450, 19452, 19454, 19456, 19458, 19460, 19462, 19464, 19466, 19468, 19470, 19472, 19474, 19476, 19478, 19483, 19485, 19487, 19489, 19491, 19497, 19499, 19501, 19503, 19505, 19507, 19509, 19511, 19513, 19515, 19521, 19523, 19525, 19527, 19529, 19531, 19533, 19535, 19537, 19539, 19541, 19543, 19545, 19547, 19549, 19551, 19553, 19555, 19557, 19559, 19561, 19563, 19565, 19567, 19569, 19571, 19573, 19575, 19577, 19579, 19581, 19583, 19585, 19587, 19589, 19591, 19593
\textCircledA ... 19480, 19481, 21250, 21833
\textcircledast ... 19164, 19165, 19166, 21141, 21797, 21798
\textcircledcirc .. 19160, 19161, 19162, 21140, 21795, 21796
\textcircleddash ... 19168, 21142
\textcircledP 18531
\textCircleShadow . 20018, 21411
\textcircplus 20214, 21490
\textcircumflex 15605
\textcircumlow .. 16024, 16051, 20402
\textCleaningF ... 19493, 21251
\textCleaningFF .. 19495, 21252
\textCleaningP ... 19517, 21253
\textCleaningPP .. 19519, 21254
\textclock . 19367, 19368, 19369, 21223, 21829, 21830
\textcloseepsilon .. 17111, 17112
\textcloseomega .. 16990, 16991, 16992, 16993, 21682, 21683
\textcloserevepsilon 16903, 16904, 16905, 21658
\textCloud 19647, 21273
\textClowerTips .. 19943, 21375
\textclubsuitblack . 2589, 19786, 19787, 21891
\textclubsuitwhite 19795
\textCoffeecup 19666, 21280
\textcoloncolonequals ... 20251, 21505
\textcolonequals .. 18992, 21063
\textcolonmonetary 18491
\textcolor ... 639, 13909, 13956, 13959, 14289
\textcommatailz .. 16816, 16817
\textcomplement .. 18791, 20978
\textcompwordmark 18338
\textcong 18936, 21039
\textcopyleft 20454, 20455
\textcopyright ... 15740, 16183, 20742
\textcorner 17204, 17205
\textCR 15599, 16081
\textcrb ... 16641, 16642, 16643, 16645, 16646, 21625, 21626, 21627
\textcrd ... 16404, 16406, 16407, 16409, 16410, 21617, 21618, 21619
\textcrg 16734, 21639
\textcrh 16455, 21620
\textcrinvglotstop . 16695, 16696
\textcrlambda ... 16672, 16673, 16674, 16675, 16676, 16677, 21631, 21632, 21633, 21634
\textCross 19926, 21367
\textCrossedbox . 19662, 19663, 19664, 21279, 21847, 21848
\textCrossMaltese . 19932, 21370
\textCrossOpenShadow .. 19928, 21368
\textCrossOutline . 19930, 21369
\textcrtwo 16692, 16693
\textctc ... 16871, 16872, 16873, 21651
\textctd 16814, 16815
\textctesh . 17038, 17039, 17040, 21693
\textctj ... 17119, 17120, 21714
\textctjvar 17120, 21714
\textctn 16834, 16835
\textctt 16836, 16837
\textctyogh 17083, 17084, 17085, 21706
\textctz ... 17076, 17077, 17078, 21705
\textCup .. 19287, 19288, 21188, 21824
\textcup 18882, 21016
\textcupdot 19121, 21123
\textcupplus 19123, 21124
\textcurlyeqprec .. 19306, 21196
\textcurlyeqsucc .. 19310, 21198
\textcurlyvee 19270, 19271, 21181, 21821
\textcurlywedge .. 19273, 19274, 21182, 21822
\textcurrency 15730, 16170
\textcurvearrowleft 18675, 20932
\textcurvearrowright 18677, 20933

\textCuttingLine . 19595, 19596, 19597, 19598, 21255, 21834, 21835, 21836
\textdagger 15660, 18359, 18360, 20837, 21731
\textdaggerdbl . . . 15662, 18362, 18363, 18364, 21732, 21733
\textdaleth 18565, 20901
\textdanger 19837, 21332
\textdasheddownarrow . . 18776, 20971
\textdasheduparrow 18771, 20969
\textdashleftarrow 18768, 18769, 20968, 21758
\textdashrightarrow 18773, 18774, 20970, 21759
\textDashV 20349, 20350, 21550, 21927
\textDashv 20342, 20343, 21548, 21925
\textdashV 20336, 20337, 21546, 21923
\textdashv . 19181, 19182, 21148, 21800
\textDavidStar . . 19934, 19935, 21371, 21905
\textdblig . 16840, 16842, 21640
\textdctzlig 17141, 17142
\textddagger 15663
\textddots 19355, 21217
\textdegree 15753, 15921, 16196
\textDeleatur . . . 18514, 18515, 20889, 21744
\textDelta . . 1251, 17244, 20788
\textdelta . . 1251, 17309, 20801
\textDiamandSolid 20032, 21416
\textdiameter 19359, 21219
\textdiamond . . . 19629, 19630, 21266, 21842
\textdiamonddots . 18405, 20846
\textdiamondsuitblack . . . 2590, 19793
\textdiamondsuitwhite . . 19783, 19784, 21890
\textDigammagreek 17368
\textdigammagreek 17370, 17371, 21718
\textdiscount 18399
\textdiv . . . 15932, 20477, 21592
\textdivide 15901, 15932, 16350, 20477
\textdivideontimes 19252, 21173
\textDivides 18832, 20996
\textDividesNot . . . 18834, 20997
\textdivorced 19851
\textdlsh 18672, 20931
\textdollar . . . 564, 15621, 16087, 16088, 16089, 21600, 21601
\textdong 18501
\textdotaccent . . . 15560, 15572, 15584, 15607, 16014, 16041, 17186
\textdotbelow . . . 15564, 15576, 15588, 15631, 16028, 16055, 17211
\textdotdiv 18912, 21773
\textdoteq 18972, 21055
\textdoteqdot . . . 18977, 18978, 21057, 21779
\textdotminus . . . 18911, 18912, 21028, 21773
\textdotplus 18830, 20995
\textdottimes 20219, 21492
\textdoublebarpipe 16708, 16709, 16710, 21638
\textdoublebarpipevar . . . 16710, 21638
\textdoublebarwedge 20242, 21501
\textdoublegrave . 16017, 16044, 17207
\textdoublepipe . . 16704, 16705, 16706, 21637
\textdoublepipevar 16706, 21637
\textdoublevee . . . 20238, 20239, 21500, 21922
\textdoublevertline 18345, 21730
\textdoublewedge . 20236, 21499
\textDOWNarrow 19615, 19616, 21261, 21840
\textDownarrow . . 18743, 20957
\textdownarrow . . 18617, 18618, 18619, 20907, 21752, 21753
\textdowndownarrows . . . 18718, 20948
\textdowndownharpoons . 20139, 21460
\textdownharpoonleft . . . 18701, 20941
\textdownharpoonright . . 18698, 20940
\textdownmodels . . 20355, 21552
\textdownstep 20385, 20386
\textdownuparrows 18781, 20973
\textdownupharpoons . . . 20157, 21466
\textdsbiological . . 19831, 21329
\textdschemical . . . 19829, 21328
\textdscommercial . 19833, 21330
\textdsjuridical . . . 19827, 21327
\textdsmedical 19825, 21326
\textdsmilitary . . 19822, 19823, 21325, 21895
\textdtimes 20222, 21493
\textdyoghlig 17138, 17139
\textdzlig . 17135, 17136, 17137, 21716
\textearth . 19717, 19718, 21296, 21866
\textEightAsterisk . 20016, 21410
\textEightFlowerPetal . . . 19994, 21400
\textEightFlowerPetalRemoved 20013, 21409
\texteightinferior . . 18451, 20869
\textEightStar 19973, 21390
\textEightStarBold 19975, 21391
\textEightStarConvex . . . 19969, 21388
\textEightStarTaper 19967, 21387
\texteightsuperior . 18419, 20853
\texteinferior 18467, 20877
\textell 18527, 20892
\textellipsis . . . 570, 571, 15665, 18370, 18371, 21734
\textemdash . 778, 15667, 18342
\textemptyset . . . 18799, 18800, 20982, 21760
\textEncodingNoboundary 573, 20721
\textendash . . 779, 15669, 18340
\textEnvelope . . . 19889, 19890, 21350, 21902
\textEpsilon 1252, 17223, 17246
\textepsilon 580, 583, 1252, 17294, 17311, 20802
\texteqcirc 18996, 21065
\texteqcolon 18914, 21029
\texteqdot 20247, 21503
\texteqsim 18928, 21035
\texteqslantgtr . . . 20286, 21521
\texteqslantless . . . 20284, 21520
\textequalscolon . . 18994, 21064
\textequalsinferior . 18459, 20873
\textequalsuperior . 18427, 20857
\textequiv . 19016, 19017, 21074, 21783
\textEreversed 16654
\textesh . . . 17030, 17031, 20775
\textestimated . . . 18553, 18554, 18555, 21746, 21747
\textEta . . . 1255, 17225, 17250
\texteta 1255, 17296, 17315, 20804
\texteuro . . 15722, 18503, 18504, 18505, 18506, 18507, 18508, 18509, 18510, 18511, 18512, 21735, 21736, 21737, 21738, 21739, 21740, 21741, 21742, 21743

\textexclamdown 782, 1159, 15724, 16162
\textexists 18795, 20980
\textfallingdoteq .. 18983, 21059
\textfatsemi 20212, 21489
\textFax .. 20443, 20444, 21581, 21937
\textfax 18567, 20902
\textfemale 19711, 21861
\textFemaleFemale 19839, 21333
\textFemaleMale .. 19843, 21335
\textfi 780, 15697, 20404
\TextField 6481
\textFinv 18557, 20897
\textFire 20446, 21582
\textfishhookr ... 17015, 17016, 17017, 17018, 21690, 21691
\textfivedots 20381, 21563
\textfiveeighths 18601
\textFiveFlowerOpen ... 19992, 21399
\textFiveFlowerPetal 19990, 21398
\textfiveinferior ... 18445, 20866
\textfivesixths 18595
\textFiveStar 19649, 21274
\textFiveStarCenterOpen 19951, 21379
\textFiveStarConvex 19959, 21383
\textFiveStarOpen 19651, 21275
\textFiveStarOpenCircled 19949, 21378
\textFiveStarOpenDotted 19953, 21380
\textFiveStarOutline 19955, 21381
\textFiveStarOutlineHeavy 19957, 21382
\textFiveStarShadow 19961, 21384
\textfivesuperior .. 18413, 20850
\textfl 781, 15699, 20406
\textFlag .. 19817, 19818, 21323, 21894
\textflat 19806, 21318
\textflorin . 15671, 16657, 16658, 21628
\textflq 667, 15928, 20473
\textflqq 665, 15926, 20471
\textforall 18789, 20977
\textForward 19608, 21258
\textForwardToIndex 19426, 21247
\textFourAsterisk . 19937, 21372
\textfourfifths 18591
\textfourinferior .. 18443, 20865
\textFourStar 19945, 21376
\textFourStarOpen 19947, 21377
\textfoursuperior .. 18411, 20849
\textfourth 18403, 20845
\textfractionsolidus 15673, 18393
\textfrown 19379, 21228
\textfrownie 19692, 19693, 21289, 21857
\textfrq 668, 15929, 20474
\textfrqq 666, 15927, 20472
\textfullnote 20420, 20421, 21571, 21934
\textGame 18569, 20903
\textGamma 1250, 17242, 20787
\textgamma . 1250, 17307, 20800
\textgammainferior 18000, 20829
\textGaPa 20408, 21565
\textge 19029, 21079
\textgemini 19746, 19747, 21305, 21877
\textGentsroom ... 20450, 21584
\textgeq .. 19028, 19030, 21078, 21787
\textgeqq 19036, 21082
\textgeqslant 20257, 21508
\textgg 19048, 21088
\textggg 19298, 21193
\textgimel 18563, 20900
\textglobfall 18631, 21755
\textglobrise 18628, 21754
\textglotstop 17087, 17088, 17089, 17090, 20784, 21707, 21708
\textglq 663, 15924, 20469
\textglqq 661, 15922, 20467
\textgnapprox 20276, 21517
\textgneq 20272, 21515
\textgneqq 19042, 21085
\textgnsim 19330, 21207
\textgravedbl 17199
\textgravemacron 16006, 16033, 16060, 18069, 18072, 18173, 18176
\textgreater 15635, 16137
\textgrq 664, 15925, 20470
\textgrqq 662, 15923, 20468
\textGslash 16731
\textgslash 16733, 16734, 21639
\textgtrapprox 20265, 21512
\textgtrdot 19294, 21191
\textgtreqless 19304, 21195
\textgtreqqless ... 20282, 21519
\textgtrless 19075, 21100
\textgtrsim 19066, 19067, 21096, 21789
\textguarani 18519
\texthalflength ... 17181, 17182
\texthalfnote 20423, 20424, 21572, 21935
\textHandCuffLeft . 19668, 21281
\textHandCuffRight 19670, 21282
\textHandLeft ... 19672, 19673, 21283, 21849
\textHandRight .. 19675, 19676, 19677, 19678, 21284, 21850, 21851, 21852
\textHaPa 20410, 21566
\texthateq . 19004, 19005, 19006, 21069, 21780, 21781
\texthausaB 16648, 20749
\texthausaD 16652, 20750
\texthausaK 16663, 20751
\texthbar .. 16454, 16455, 16456, 16457, 20748, 21620, 21621, 21622
\texthdotfor 18368, 20839
\textheartsuitblack . 2591, 19791
\textheartsuitwhite 19779, 19780, 19781, 21888, 21889
\textheng . 20387, 20389, 21930
\textHermaphrodite 19845, 21336
\texthexagon 19421, 21245
\texthexstar 19856, 21338
\texthinferior 18475, 20881
\texthookleftarrow . 18658, 20925
\texthookrightarrow 18660, 20926
\textHslash 16452
\texthslash 18523, 20890
\textHT 15595, 16077
\texthtb .. 16863, 16864, 16865, 16866, 21648, 21649
\texthtbardotlessj . 17033, 17034
\texthtc 16649, 16650
\texthtd .. 16877, 16878, 16879, 16880, 21653, 21654
\texthtg ... 16910, 16911, 16912, 21660
\texthth .. 16930, 16931, 16932, 16933, 21665, 21666
\texththeng 16934, 16935, 16936, 21667
\texthtk .. 16664, 16665, 16666, 21630
\texthtp 16682, 16683
\texthtq 17126, 17127
\texthtrtaild 18018, 18019, 20836
\texthtscg 17114, 17115
\texthtt 16687, 16688
\texthungarumlaut 15609, 16019, 16046, 17194
\texthvlig . 16659, 16660, 16661, 21629
\textiiint 18889, 21019
\textiinferior 17990, 20824

\textiint 18887, 21018
\textIm 18525, 20891
\textin 18806, 20985
\textInfo 20463, 21588
\textinfty 18849, 21003
\textint . . . 18884, 18885, 21017, 21770
\textinterleave 20366, 21557
\textinterrobang 18391
\textinterrobangdown . . . 20378, 20379
\textinvamp 18571, 18572, 18573, 21748, 21749
\textinvbackneg . . . 19365, 21222
\textinvbreve 15980, 16021, 16048, 16777, 16779, 16786, 16788, 16789, 16795, 16797, 16807, 16809
\textinvdiameter . . 20165, 21470
\textinve 16729, 20753
\textinvglotstop . . 17097, 17098, 20786
\textinvneg 20226, 21495
\textinvscr . 17025, 17026, 20774
\textIota . . . 1270, 17227, 17254, 17288
\textiota . . . 1270, 17298, 17319, 17353, 20806
\textIotadieresis . . 17236, 17287
\textipagamma . . 16921, 16922, 20765, 21662
\textisuperior 18409, 20848
\textit 603
\textJackStar 19939, 21373
\textJackStarBold . 19941, 21374
\textjinferior 20375, 21561
\textJoin 20210, 21488
\textjupiter 19725, 19726, 21298, 21870
\textKappa 1271, 17256
\textkappa . 1271, 17321, 20807
\textKeyboard 19383, 21230
\textkinferior 18477, 20882
\textKoppagreek . . . 1278, 17373
\textkoppagreek . . . 1278, 17375
\textkra 16496
\textLadiesroom . . 20452, 21585
\textLambda 1272, 17258, 20790
\textlambda 1272, 17323, 20808
\textlangle 19385, 21231
\textlatin 649, 7391
\textlbrackdbl . . . 20050, 20051, 21425, 21906
\textlcurvearrowdown . . . 20105, 20106, 20107, 21449, 21908, 21909
\textlcurvearrowse . 20097, 21446
\textlcurvearrowsw 20100, 21447
\textle 19024, 21077
\textleadsto 20091, 21444
\textLeftarrow 18735, 20954
\textleftarrow 18609, 20904
\textleftarrowtail . . 18652, 20922
\textleftarrowtriangle . . . 18783, 20974
\textleftbarharpoon 20142, 21461
\textLEFTCIRCLE 19634, 21268
\textleftharpoondown . . . 18683, 20935
\textleftharpoonup 18680, 20934
\textleftleftarrows . 18712, 20945
\textleftleftharpoons 20130, 21457
\textleftmoon 19703, 21293
\textLeftrightarrow 18746, 20958
\textleftrightarrow . 2594, 18621, 20908
\textleftrightarrows 18710, 20944
\textleftrightarrowtriangle 18787, 20976
\textleftrightharpoon 20119, 21453
\textleftrightharpoons . . . 18721, 20949
\textleftslice 20288, 21522
\textleftspoon 20048, 21424
\textleftsquigarrow 18763, 20966
\textlefttherefore . . 18401, 20844
\textleftthreetimes . 19262, 21177
\textlengthmark . . 17178, 17179
\textleo . . . 19752, 19753, 21307, 21879
\textleq . . . 19023, 19025, 21076, 21786
\textleqq 19032, 21080
\textleqslant 20253, 21506
\textless 15633, 16135
\textlessapprox . . . 20261, 21510
\textlessdot 19292, 21190
\textlesseqgtr 19301, 21194
\textlesseqqgtr . . . 20279, 21518
\textlessgtr 19073, 21099
\textlesssim 19063, 19064, 21095, 21788
\textLF 15597, 16079
\textLHD 19627, 21265
\textlhd . . . 19226, 19227, 21163, 21814
\textlhookfour . . . 20390, 20392, 21931
\textlhooknwarrow 20083, 21440
\textlhooksearrow . 20087, 21442
\textlhookt 16685, 16686
\textlhtlongi 17020, 17021
\textlhtlongy 17152, 17153
\textlibra . . 19758, 19759, 21309, 21881
\textlightning . . . 18668, 18669, 20930, 21756
\textlinferior 18479, 20883
\textlira 18493
\textll 19044, 21086
\textllcorner 19375, 21226
\textLleftarrow . . . 18759, 20964
\textlll 19296, 21192
\textllparenthesis . . 20161, 21468
\textlnapprox 20274, 21516
\textlneq 20269, 21514
\textlneqq 19040, 21084
\textlnot 15747, 16190
\textlnsim 19328, 21206
\textlogicalnot . . . 15746, 15930, 16189, 20475
\textLongleftarrow 20067, 21432
\textlongleftarrow . 20061, 21429
\textLongleftrightarrow . . 20071, 21434
\textlongleftrightarrow . . 20065, 21431
\textlonglegr 17008, 17009, 17010, 20772, 21688
\textLongmapsfrom 20075, 21436
\textLongmapsto . . 20077, 21437
\textlongmapsto . . 20073, 21435
\textLongrightarrow 20069, 21433
\textlongrightarrow 20063, 21430
\textlongs 16640, 18300
\textlooparrowleft . 18662, 20927
\textlooparrowright 18664, 20928
\textlozenge 19632, 21267
\textlptr 17164, 17165
\textlquill 18395
\textlrcorner 19377, 21227
\textltailm . 16968, 16969, 16970, 16971, 21677, 21678
\textltailn . 16972, 16973, 16974, 16975, 21679, 21680
\textltilde . 16947, 16948, 16949, 21670
\textltimes 19257, 21175
\textlyoghlig 16957, 16958, 16959, 21673
\textmacronbelow 15563, 15575, 15587, 15644, 16027, 16054, 17213
\textmale . 19720, 19721, 19722, 19723, 21297, 21867, 21868, 21869
\textMaleMale 19841, 21334
\textManFace 20438, 21579
\textmanstar 19835, 21331

\textmapsto 18656, 20924
\textmarried 19849
\textmd 602
\textmeasuredangle 18853, 21005
\textmercury 19707, 19708, 21295, 21860
\textmho . . 18546, 18547, 20895, 21745
\textmid 18860, 21007
\textMineSign 19820, 21324
\textminferior 18481, 20884
\textminus 15679, 18826
\textminusdot . . . 20216, 20217, 21491, 21919
\textminusinferior . 18457, 20872
\textminussuperior 18425, 20856
\textmoo 20159, 21467
\textMoon 20436, 21578
\textMountain 19867, 21342
\textmp 18828, 20994
\textMu 1273, 17260
\textmu 1273, 15763, 16207
\textmugreek 17325, 20809
\textmultimap 19244, 21169
\textmultimapboth 20199, 21483
\textmultimapdotbothA . 19240, 21167
\textmultimapdotbothB . 19242, 21168
\textmultiply 15832, 15931, 16278, 16279, 16280, 20476, 21614, 21615
\textMundus 20434, 21577
\textmusicalnote . 19798, 19799, 19800, 21892
\textMVAt 16139, 20741
\textMVComma . . 16107, 20727
\textMVDivision . . 16113, 20730
\textMVEight 16131, 20739
\textMVFive 16125, 20736
\textMVFour 16123, 20735
\textMVMinus 16109, 20728
\textMVNine 16133, 20740
\textMVOne 16117, 20732
\textMVPeriod . . . 16111, 20729
\textMVPlus 16105, 20726
\textMVSeven 16129, 20738
\textMVSix 16127, 20737
\textMVThree 16121, 20734
\textMVTwo 16119, 20733
\textMVZero 16115, 20731
\textnabla 18804, 20984
\textnaira 18495
\textnapostrophe 16530
\textnapprox 18943, 18944, 21042, 21776
\textnapproxeq . . . 18948, 21044
\textnasymp 18961, 18962, 21050, 21778
\textnatural 19808, 21319
\textnbackcong . . . 18957, 21048
\textnbacksim 18921, 21032
\textnbacksimeq . . 19268, 21180
\textnBumpeq 18966, 21052
\textnbumpeq 18970, 21054
\textncirceq 19002, 21068
\textncong 18939, 21040
\textncurlyeqprec . 19308, 21197
\textncurlyeqsucc . 19312, 21199
\textnDashV 20352, 20353, 21551, 21928
\textnDashv 20345, 20346, 21549, 21926
\textndashV 20339, 20340, 21547, 21924
\textndashv 19184, 19185, 21149, 21801
\textnDoteq 18980, 21058
\textndoteq 18974, 21056
\textndownmodels . 20357, 21553
\textndownvdash . . 19190, 21151
\textne 19013, 21073
\textNearrow 18753, 20961
\textnearrow 18627, 18628, 20911, 21754
\textneg . . 15930, 20475, 21590
\textneptune 19734, 19735, 21301, 21873
\textneq . . 19012, 19014, 21072, 21782
\textneqcirc 18998, 21066
\textneqdot 20249, 21504
\textneqsim 18930, 21036
\textnequiv 19019, 19020, 19021, 21075, 21784, 21785
\textneswarrow . . . 20081, 21439
\textNeutral 19847, 21337
\textnewtie 16030, 16057, 17209
\textnexists 18797, 20981
\textnfallingdoteq . 18985, 21060
\textngeq 19061, 21094
\textngeqq 19038, 21083
\textngeqslant 20259, 21509
\textngg 19050, 21089
\textngtr 19056, 21092
\textngtrapprox . . . 20267, 21513
\textngtrless 19077, 21101
\textngtrsim 19071, 21098
\textnhateq 19008, 21070
\textni 18812, 18813, 20988, 21761
\textNibRight 19903, 21356
\textNibSolidRight 19905, 21357
\textniepsilon . . . 16893, 16894, 20760, 21656
\textniiota . 16942, 16943, 20768, 21669
\textnineinferior . . 18453, 20870
\textninesuperior . . 18421, 20854
\textninferior 18483, 20885
\textniphi 16995, 20771
\textniupsilon . . . 17053, 17054, 20777, 21697
\textnLeftarrow . . . 18727, 20951
\textnleftarrow . . . 18635, 20914
\textnLeftrightarrow 18729, 20952
\textnleftrightarrow 18666, 20929
\textnleq 19059, 21093
\textnleqq 19034, 21081
\textnleqslant 20255, 21507
\textnless 19054, 21091
\textnlessapprox . . 20263, 21511
\textnlessgtr 19079, 21102
\textnlesssim 19069, 21097
\textnll 19046, 21087
\textnmid . 18862, 18863, 21008, 21767
\textNoChemicalCleaning 20179, 21474
\textnormal 597
\textnotbackslash . 19399, 21236
\textnotin 18808, 20986
\textnotowner . . . 18815, 18816, 20989, 21762
\textnotperp 20042, 21421
\textnotslash 19396, 21235
\textnoway 19865, 21341
\textnparallel 18867, 18868, 21010
\textnprec 19097, 21111
\textnprecapprox . . 20318, 21537
\textnpreccurlyeq . 19314, 21200
\textnpreceq 20294, 21525
\textnpreceqq 20306, 21531
\textnprecsim 19091, 21108
\textnqsubseteq . . . 19318, 21202
\textnqsupseteq . . . 19320, 21203
\textnRightarrow . 18732, 20953
\textnrightarrow . . 18637, 20915
\textnrisingdoteq . . 18990, 21062
\textnrleg . 16679, 16681, 21635
\textnsim 18926, 21034
\textnsimeq 18934, 21038
\textnsqsubset 19127, 21126
\textnsqsubseteq . . 19135, 21130
\textnsqsupset 19131, 21128
\textnsqsupseteq . . 19139, 21132
\textnSubset 19278, 21184
\textnsubset 19105, 21115
\textnsubseteq 19113, 21119

\textnsubseteqq . . . 20330, 21543
\textnsucc 19099, 21112
\textnsuccapprox . . 20322, 21539
\textnsucccurlyeq . 19316, 21201
\textnsucceq 20298, 21527
\textnsucceqq 20310, 21533
\textnsuccsim 19095, 21110
\textnsuperior 18433, 20860
\textnSupset 19282, 21186
\textnsupset 19107, 21116
\textnsupseteq 19115, 21120
\textnsupseteqq . . . 20334, 21545
\textntriangleleft . 19336, 19337, 21210, 21827
\textntrianglelefteq 19343, 21212
\textntriangleright 19339, 19340, 21211, 21828
\textntrianglerighteq 19346, 19347, 21213
\textntriplesim . . . 18953, 21046
\textntwoheadleftarrow . . 18641, 20917
\textntwoheadrightarrow . 18648, 20920
\textNu 1274, 17262
\textnu 1274, 17327, 20810
\textnumbersign . . . 563, 15619, 16085
\textnumeralsigngreek . . . 1225, 17217
\textnumeralsignlowergreek 1242, 1264, 1287, 17219
\textnumero 18529
\textnupmodels . . . 20361, 21555
\textnupvdash . . . 19195, 19196, 21153, 21804
\textnVDash 19223, 19224, 21162, 21813
\textnVdash 19220, 19221, 21161, 21812
\textnvDash 19216, 19217, 19218, 21160, 21810, 21811
\textnvdash 19213, 19214, 21159, 21809
\textnVvash 19207, 21157
\textNwarrow 18751, 20960
\textnwarrow 18625, 20910
\textnwsearrow . . . 20079, 21438
\textobar . . 20167, 20168, 21471, 21912
\textobot . . 20176, 20177, 21473, 21916
\textobslash 20170, 20171, 20172, 20173, 21472, 21913, 21914, 21915
\textObullseye 17107, 21713
\textodiv 20224, 21494
\textodot . . 19157, 19158, 21139, 21794
\textogonek 15611, 16020, 16047, 17190
\textogreaterthan 20184, 20185, 21476, 21918
\textohm 18544
\textoiint 18894, 21021
\textoinferior 18469, 20878
\textoint . . 18891, 18892, 21020, 21771
\textointclockwise . 18897, 21022
\textointctrclockwise 18899, 21023
\textolessthan . . . 20181, 20182, 21475, 21917
\textOmega . 1300, 17233, 17285, 20797
\textomega . 1300, 17351, 17362, 20821
\textOmicron 1276, 17229, 17266
\textomicron 1276, 17331, 17357
\textominus 19148, 19149, 21136, 21791
\textoneeighth 18597
\textonefifth 18585
\textonehalf 15779, 16226
\textoneinferior . . . 18437, 20862
\textoneninth 18577
\textonequarter . . . 15777, 16224
\textoneseventh 18575
\textonesixth 18593
\textonesuperior . 15771, 16218, 20745
\textonetenth 18579
\textonethird 18581
\textoo 20400, 21564
\textopenbullet . . . 19638, 21270
\textopencorner . . . 17202, 17203
\textopeno 16868, 16869, 16870, 20756, 21650
\textoplus . 19145, 19146, 21135, 21790
\textordfeminine . . 15742, 16185
\textordmasculine . 15773, 16220
\textoslash 19154, 19155, 21138, 21793
\textotimes 19151, 19152, 21137, 21792
\textovee . . 18877, 18878, 21014, 21769
\textowedge 18872, 18873, 21012, 21768
\textparagraph 569, 15765, 16209, 16210, 21611
\textparallel 18865, 21009
\textparenleft . 786, 787, 15627, 16099
\textparenleftinferior 18461, 20874
\textparenleftsuperior . . . 18429, 20858
\textparenright . . . 15629, 16101
\textparenrightinferior . . . 18463, 20875
\textparenrightsuperior . . 18431, 20859
\textpartial 18793, 20979
\textPeace 19892, 21351
\textPencilRight . . 19899, 21354
\textPencilRightDown . . . 19897, 21353
\textPencilRightUp 19901, 21355
\textpentagon 20371, 21559
\textpercent . 565, 15623, 16091
\textperiodcentered 15767, 15934, 16212, 16213, 16214, 20479, 21612, 21613
\textperp 20040, 21420
\textpertenthousand 18375
\textperthousand . . 15681, 18373
\textpeseta 18497
\textpeso 18517
\textPhi . . . 1297, 17278, 20795
\textphi 1297, 17345, 20818
\textphiinferior . . . 18004, 20831
\textPhone 19653, 19654, 21276, 21844
\textPhoneHandset 19883, 21347
\textPi 1277, 17268, 20792
\textpi 1277, 17333, 20812
\textpinferior 18485, 20886
\textpipe . . 16700, 16701, 16702, 21636
\textpipevar 16702, 21636
\textpisces . 19773, 19774, 21314, 21886
\textpitchfork 19290, 21189
\textPlane 19887, 21349
\textPlus 19920, 21364
\textPlusCenterOpen . . . 19924, 21366
\textplusinferior . . 18455, 20871
\textplusminus . . 15755, 15933, 16198, 20478
\textPlusOutline . . 19918, 21363
\textplussuperior . . 18423, 20855
\textPlusThinCenterOpen 19922, 21365
\textpluto . 19737, 19738, 21302, 21874
\textpm . . . 15933, 20478, 21593
\textpointer 18778, 20972

\textprec 19081, 21103
\textprecapprox . . . 20316, 21536
\textpreccurlyeq . . 19085, 21105
\textpreceq 20292, 21524
\textpreceqq 20304, 21530
\textprecnapprox . . 20324, 21540
\textprecneq 20300, 21528
\textprecneqq 20312, 21534
\textprecnsim 19332, 21208
\textprecsim 19089, 21107
\textprime 18377, 20840
\textprimstress . . . 17172, 17173
\textprod 18820, 20991
\textpropto 18846, 18847, 21002, 21763
\textPsi 1299, 17282, 20796
\textpsi 1299, 17349, 20820
\textPUaolig 20397, 20398, 21933
\textPUdblig 16841, 16842, 21640
\textPUfemale . . . 19710, 19711, 19712, 19713, 19714, 19715, 21861, 21862, 21863, 21864, 21865
\textPUheng 20388, 20389, 21930
\textPUlhookfour 20391, 20392, 21931
\textPUnrleg 16680, 16681, 21635
\textPUqplig 16844, 16845, 21641
\textPUrevscr . . . 17985, 17986, 21725
\textPUrhooka . . 18016, 18017, 21726
\textPUrhooke . . 18021, 18022, 21727
\textPUrhookepsilon 18025, 18026, 21728
\textPUrhookopeno 18029, 18030, 21729
\textPUscf . 20394, 20395, 21932
\textPUsck 17976, 17977, 21722
\textPUscm 17979, 17980, 21723
\textPUscp 17982, 17983, 21724
\textPUuncrfemale 19853, 19854, 21896
\textqplig . 16843, 16845, 21641
\textquarternote . . 19797, 21315
\textquestiondown . . . 783, 1160, 15783, 16230
\textquotedbl 15617, 16083
\textquotedblleft . 15685, 15923, 18353, 20468
\textquotedblright . 15687, 18355
\textquoteleft . . . 15689, 15925, 18347, 20470
\textquoteright . . . 15691, 18349
\textquotesingle 16097
\textRadioactivity 19680, 19681, 21285, 21853
\textRain 19863, 21340
\textraiseglotstop . 17161, 17162
\textrangle 19387, 21232
\textrbrackdbl . . . 20053, 20054, 21426, 21907
\textrcurvearrowdown . . . 20110, 20111, 20112, 21450, 21910, 21911
\textrcurvearrowleft 20114, 21451
\textrcurvearrowne 20094, 21445
\textrcurvearrowright . . . 20117, 21452
\textrcurvearrowse 20103, 21448
\textRe 18536, 20894
\textrecipe 18538
\textRectangle 20036, 21418
\textRectangleBold 20038, 21419
\textRectangleThin 20034, 21417
\textrecycle 19812, 19813, 21321, 21893
\textreferencemark 18389
\textregistered 15749, 16192
\textRequest 19417, 21243
\textrevapostrophe 17158, 17159
\textrevc 18605
\textrevE 16655
\textreve . . 16882, 16883, 20758
\textrevepsilon . . 16896, 16897, 20761
\textrevglotstop . 17093, 17094, 17095, 20785, 21709
\textrevscr 17984, 17986, 21725
\textrevyogh 16690, 16691
\textRewind 19622, 21263
\textRewindToIndex 19429, 21248
\textRHD 19613, 21260
\textrhd . . 19229, 19230, 21164, 21815
\textRho 1293, 17270
\textrho . . . 1293, 17335, 20813
\textrhoinferior . . . 18002, 20830
\textrhooka 18015, 18017, 21726
\textrhooke 18020, 18022, 21727
\textrhookepsilon 18024, 18026, 21728
\textrhooknearrow . 20085, 21441
\textrhookopeno . 18028, 18030, 21729
\textrhookrevepsilon 16899, 16900, 16901, 20762, 21657
\textrhookschwa . 16888, 16889, 16890, 21655
\textrhookswarrow 20089, 21443
\textRightarrow . 18740, 18741, 20956, 21757
\textrightarrow . . . 2593, 18613, 18614, 18615, 20906, 21750, 21751
\textrightarrowtail . 18654, 20923
\textrightarrowtriangle . . 18785, 20975
\textrightbarharpoon 20148, 21463
\textRIGHTCIRCLE 19636, 21269
\textrightharpoondown . . 18695, 20939
\textrightharpoonup 18692, 20938
\textrightleftarrows 18704, 20942
\textrightleftharpoon 20121, 21454
\textrightleftharpoons . . . 18724, 20950
\textrightmoon . . . 19705, 21294
\textrightrightarrows 18716, 20947
\textrightrightharpoons . . 20136, 21459
\textrightslice 20290, 21523
\textrightsquigarrow 18765, 20967
\textrightthreetimes 19264, 21178
\textrinferior 17992, 20825
\textring . . 15558, 15570, 15582, 15613, 16012, 16039, 17188
\textringlow 16023, 16050, 17197
\textriota 18549, 20896
\textrisingdoteq . . . 18988, 21061
\textrm 598
\textrptr 17167, 17168
\textrquill 18397
\textRrightarrow . . 18761, 20965
\textrrparenthesis . 20163, 21469
\textrtaild . 16874, 16875, 16876, 20757, 21652
\textrtaill . 16954, 16955, 16956, 21672
\textrtailn . 16977, 16978, 16979, 21681
\textrtailr . 17011, 17012, 17013, 21689
\textrtails . 17027, 17028, 17029, 21692
\textrtailt . 17045, 17046, 17047, 21695
\textrtailz . 17073, 17074, 17075, 21704
\textrtimes 19260, 21176
\textsagittarius . . 19764, 19765, 21311, 21883

\textSampigreek . . . 1301, 17377
\textsampigreek 1301, 17379
\textsaturn 19728, 19729, 21299, 21871
\textsc 604
\textsca 17967, 17968
\textscb 17108, 17109
\textscd 17970, 20822
\textsce 17971, 17972
\textscf . . . 20393, 20395, 21932
\textscg . . . 16917, 16918, 20764
\textsch 17116, 17117
\textschwa . 16885, 16886, 20759
\textschwainferior . 18473, 20880
\textsci . . . 16944, 16945, 20769
\textScissorHollowRight . 19881, 21346
\textScissorRight . 19875, 19876, 19877, 21344, 21900, 21901
\textScissorRightBrokenBottom 19871, 19872, 19873, 21898, 21899
\textScissorRightBrokenTop 19879, 21345
\textscj 17973, 17974
\textsck . . . 17975, 17977, 21722
\textscl 17124, 17125
\textscm . . 17978, 17980, 21723
\textscn . . . 16980, 16981, 20770
\textscoelig 16987, 16988
\textscorpio 19761, 19762, 21310, 21882
\textscp . . . 17981, 17983, 21724
\textscr . . . 17022, 17023, 20773
\textscripta 16855, 16856, 16857, 20755, 21645
\textscriptg 16914, 16915, 16916, 20763, 21661
\textscriptv 17056, 17057, 20778
\textscu . . . 17987, 17988, 20823
\textscy . . . 17070, 17071, 20782
\textSearrow 18755, 20962
\textsearrow 18630, 18631, 20912, 21755
\textSech 20430, 21575
\textsecond 18379, 20841
\textsecstress 17175, 17176
\textsection 15736, 16177, 16178, 16179, 21609, 21610
\textSePa 20416, 21569
\textservicemark 18540
\textsetminus . . . 15639, 18836, 20998
\textseveneighths 18603
\textseveninferior . 18449, 20868
\textsevensuperior . 18417, 20852
\textsf 599, 13956, 13959
\textsharp 19810, 21320
\textshuffle 20201, 21484
\textSigma . 1294, 17272, 20793
\textsigma . . 1294, 17339, 20815
\textsim . . 18916, 18917, 21030, 21774
\textsimeq 18932, 21037
\textsinferior 18487, 20887
\textSixFlowerAlternate . 19988, 21397
\textSixFlowerAltPetal . . 19998, 21402
\textSixFlowerOpenCenter 19984, 21395
\textSixFlowerPetalRemoved 19981, 21394
\textsixinferior . . . 18447, 20867
\textSixStar 19971, 21389
\textsixsuperior . . . 18415, 20851
\textSixteenStarLight . . . 19979, 21393
\textsixteenthnote . 19804, 21317
\textsl 605
\textslashc . 16847, 16848, 16850, 20754, 21642, 21643
\textslashdiv 20377, 21562
\textsmallin 18810, 20987
\textsmallowns . . . 18818, 20990
\textsmile 19381, 21229
\textsmiley 19695, 19696, 21290, 21858
\textSnowflake . . . 20002, 21404
\textSnowflakeChevron . . 20000, 21403
\textSnowflakeChevronBold 20004, 21405
\textSoccerBall . . 19858, 19859, 21897
\textspadesuitblack 2592, 19776, 19777, 21887
\textspadesuitwhite 19789
\textSparkle 20006, 21406
\textSparkleBold . . 20008, 21407
\textsphericalangle 18855, 18856, 18857, 18858, 21006, 21764, 21765, 21766
\textsqcap 19141, 21133
\textsqcup 19143, 21134
\textsqdoublecap . 20228, 20229, 21496, 21920
\textsqdoublecup . 20233, 20234, 21498, 21921
\textsqsubset 19125, 21125
\textsqsubseteq . . . 19133, 21129
\textsqsubsetneq . 19322, 19323, 21204, 21825
\textsqsupset 19129, 21127
\textsqsupseteq . . . 19137, 21131
\textsqsupsetneq . 19325, 19326, 21205, 21826
\textSquareCastShadowBottomRight 20027, 21414
\textSquareCastShadowTopRight 20030, 21415
\textsquaredots . . . 18909, 21027
\textSquareShadowBottomRight 20021, 21412
\textSquareTopRight 20024, 21413
\textsslash . 20368, 20369, 21558, 21929
\textstar 19250, 21172
\textsterling 15728, 16166, 16167, 16168, 21606, 21607
\textStigmagreek . . . 1253, 17364
\textstigmagreek . . . 1253, 17366
\textstmaryrdbaro 19393, 19394, 21831
\textstretchc 17099, 17100, 17101, 17102, 21710, 21711
\textstretchcvar . . . 17102, 21711
\textsubbreve . . . 15996, 16025, 16052, 18112, 18114
\textsubcircum . . 15993, 15994, 16024, 16051, 18064, 18066, 18080, 18082, 18140, 18142, 18168, 18170, 18224, 18226, 18236, 18238
\textsubring 15986, 15987, 16023, 16050, 18032, 18034
\textSubset 19276, 21183
\textsubset 19101, 21113
\textsubseteq 19109, 21117
\textsubseteqq 20328, 21542
\textsubsetneq 19117, 21121
\textsubtilde 15997, 15998, 16026, 16053, 18084, 18086, 18116, 18118, 18232, 18234
\textsubumlaut . . 15984, 15985, 16022, 16049, 18228, 18230
\textsucc 19083, 21104
\textsuccapprox . . . 20320, 21538
\textsucccurlyeq . . 19087, 21106
\textsucceq 20296, 21526
\textsucceqq 20308, 21532
\textsuccnapprox . . 20326, 21541
\textsuccneq 20302, 21529
\textsuccneqq 20314, 21535
\textsuccnsim 19334, 21209
\textsuccsim 19093, 21109
\textsum 18824, 20993
\textsun . . 19700, 19701, 21292, 21859

\textSunCload 19861, 21339
\textSunshineOpenCircled 19996, 21401
\textSupset 19280, 21185
\textsupset 19103, 21114
\textsupseteq 19111, 21118
\textsupseteqq 20332, 21544
\textsupsetneq 19119, 21122
\textsurd 18844, 21001
\textSwarrow 18757, 20963
\textswarrow 18633, 20913
\TextSymbolUnavailable . 15589, 15590, 15592
\textTape 19885, 21348
\textTau 1295, 17274
\texttau ... 1295, 17341, 20816
\texttaurus 19743, 19744, 21304, 21876
\texttctclig 17149, 17150
\textTent 19869, 21343
\textteshlig 17145, 17146, 17147, 21717
\texttherefore ... 18901, 18902, 21024
\textTheta . 1256, 17252, 20789
\texttheta .. 1256, 17317, 20805
\textthird 18381, 20842
\textThorn 15847, 16295, 20746
\textthorn . 15916, 16364, 16366, 20747
\textthreeeighths 18599
\textthreefifths 18589
\textthreeinferior .. 18441, 20864
\textthreequarters . 15781, 16228
\textthreesuperior 15759, 16202, 20744
\texttie ... 16029, 16056, 17215
\texttilde ... 4649, 15556, 15568, 15580, 15615, 16010, 16037, 17192
\texttildelow 16026, 16053, 17201
\texttimes . 15931, 20476, 21591
\texttinferior 18489, 20888
\texttop .. 19187, 19188, 21150, 21802
\texttrademark ... 15695, 18542
\texttriangle 18802, 20983
\texttriangleeq ... 19010, 21071
\texttriangleleft ... 19625, 21264
\texttriangleright .. 19611, 21259
\texttriplesim ... 18950, 18951, 21045, 21777
\textTslash 16590
\texttslash 16592
\texttslig 17143, 17144
\texttt 600
\textTumbler 19391, 21234
\textturna . 16851, 16852, 16853, 21644
\textturnh . 16926, 16927, 16928, 16929, 21663, 21664
\textturnk . 17121, 17122, 17123, 21715
\textturnlonglegr . 17001, 17002, 17003, 21686
\textturnm 16960, 16961, 16962, 16963, 21674, 21675
\textturnmrleg .. 16965, 16966, 16967, 21676
\textturnr . 16996, 16997, 16998, 16999, 21684, 21685
\textturnrrtail ... 17005, 17006, 17007, 21687
\textturnsck 17123, 21715
\textturnscripta .. 16859, 16860, 16861, 16862, 21646, 21647
\textturnt . 17041, 17042, 17043, 21694
\textturnv . 17058, 17059, 17060, 17061, 20779, 21698, 21699
\textturnw 17062, 17063, 17064, 17065, 20780, 21700, 21701
\textturny . 17066, 17067, 17068, 17069, 20781, 21702, 21703
\textTwelveStar ... 19977, 21392
\texttwofifths 18587
\texttwoheaddownarrow . 18650, 20921
\texttwoheadleftarrow ... 18639, 20916
\texttwoheadrightarrow .. 18646, 20919
\texttwoheaduparrow ... 18643, 20918
\texttwoinferior ... 18439, 20863
\texttwonotes 19802, 21316
\texttwosuperior . 15757, 16200, 20743
\texttwothirds 18583
\textudots 19353, 21216
\textuinferior 17994, 20826
\textulcorner 19371, 21224
\textuncrfemale .. 19852, 19854, 21896
\textunderscore 568, 5111, 5112, 5114, 15643, 16145, 16146, 21604
\textunlhd . 19232, 19233, 19234, 21165, 21816, 21817
\textunrhd 19236, 19237, 19238, 21166, 21818, 21819
\textup 606
\textUParrow ... 19600, 19601, 21256, 21837
\textUparrow 18737, 20955
\textuparrow 18611, 20905
\textUpdownarrow 18749, 20959
\textupdownarrow . 2595, 18623, 20909
\textupdownarrows 18707, 20943
\textupdownharpoonleftright 20127, 21456
\textupdownharpoonrightleft 20124, 21455
\textupdownharpoons ... 20154, 21465
\textupharpoonleft 18689, 20937
\textupharpoonright 18686, 20936
\textuplus 20203, 21485
\textupmodels 20359, 21554
\textUpsilon 1296, 17231, 17276, 17290, 20794
\textupsilon . 1296, 17343, 17355, 17360, 20817
\textupsilonacute . 17301, 17359
\textupspoon 20363, 21556
\textupstep 20382, 20383
\textupuparrows .. 18714, 20946
\textupupharpoons 20133, 21458
\texturanus 19731, 19732, 21300, 21872
\texturcorner 19373, 21225
\textValve 20197, 21482
\textvarhexagon .. 20373, 21560
\textvarobar 20168, 21912
\textvarsigma 17337, 20814
\textVDash 19210, 19211, 21158, 21808
\textVdash 19202, 19203, 21155, 21807
\textvDash 19198, 19199, 19200, 21154, 21805, 21806
\textvdash . 19178, 19179, 21147, 21799
\textvdotdot 18907, 21026
\textvdots 19349, 21214
\textvee 18875, 21013
\textveebar 19246, 21170
\textveedot 20044, 21422
\textveedoublebar . 20245, 21502
\textvertline 16156, 21605
\textvibyi 17036, 17037
\textvibyy 17155, 17156
\textVier 20426, 21573
\textvinferior 17996, 20827
\textViPa 20412, 21567
\textvirgo . 19755, 19756, 21308, 21880
\textvisiblespace 19433
\textVvdash 19205, 21156

\textwasylozenge . . 19363, 21221
\textwedge 18870, 21011
\textwedgedot 20046, 21423
\textWheelchair . . . 19815, 21322
\textWomanFace . 20440, 20441, 21580, 21936
\textwon 18499
\textwp 18534, 20893
\textwr . . . 18923, 18924, 21033, 21775
\textWritingHand 19894, 19895, 21352, 21903
\textwynn 16697, 16698
\textXi 1275, 17264, 20791
\textxi 1275, 17329, 20811
\textxinferior 18471, 20879
\textXSolid 19912, 21360
\textXSolidBold . . 19914, 21361
\textXSolidBrush . 19916, 21362
\textxswup 19823, 21895
\textyen 15732, 16172
\textYinYang . . . 19687, 19688, 19689, 19690, 21288, 21854, 21855, 21856
\textyogh . 17080, 17081, 20783
\textzeroinferior . . 18435, 20861
\textzerosuperior . . 18407, 20847
\textzerothirds 18607
\textZeta 1254, 17248
\textzeta . . . 1254, 17313, 20803
\textZwdr 20432, 21576
\textZwPa 20418, 21570
\TH . 15845, 15846, 16293, 16294
\th . 15914, 15915, 16364, 16365
\thaa 20637
\thebookmark@seq@number 15101
\theequation . 7266, 7623, 7654, 7682, 7718
\thefootnote 7876, 8079
\theHchapter . 7205, 7206, 7207, 7208, 7347
\theHenumi 7224
\theHenumii 7225
\theHenumiii 7226
\theHenumiv 7227
\theHequation 7195, 7267, 7624, 7655, 7683, 7691, 7718, 7722
\theHfigure 7202, 7206
\theHHfootnote 7228, 7231
\theHHmpfootnote 7231
\theHItem . . . 7218, 7224, 7225, 7226, 7227
\theHlisting 3710
\theHlstlisting 3706
\theHmpfootnote 7229
\theHpage 8494
\theHparagraph 7212, 7213
\theHparentequation 7717, 7722
\theHpart 7198
\theHsection . 7195, 7201, 7208, 7210, 7214, 7215, 7345
\theHslide 8953
\theHslidesection . . . 8958, 8960, 8996, 9000
\theHslidesubsection 8959, 9047, 9051
\theHsubequation 7691
\theHsubparagraph 7213
\theHsubsection . . . 7210, 7211
\theHsubsubsection . 7211, 7212
\theHtable 7203, 7207
\theHtheorem 7214
\theHthm 7215
\theHy@tempcnt 5227, 5235, 5242
\thelisting 3710
\thelstlisting 3706
\thempfn 7865, 7968, 8060, 8072
\theoremautorefname 3366, 3384, 3402, 3420, 3438, 3456, 3474, 3512, 3532, 3550, 3568, 9393
\thepage 2615, 5345, 6857, 6883, 6898, 7465, 7473, 7500, 8337, 8360, 8389, 8490, 8537, 8616, 8664, 8825, 8842, 8855, 8859, 8871, 9150, 9170, 9187, 9305
\therefore 18900, 21024
\theslideheading 8979
\theslidesection 8967, 8974, 8982, 8988, 8990, 8992, 8998, 9008
\theslidesubheading . 8980, 9031
\theslidesubsection 9019, 9026, 9033, 9039, 9041, 9043, 9049, 9059
\Theta 17251, 20789
\theta 17316, 20805
\third 18380, 20842
\This@name . 7244, 7245, 7263, 7264
\thispdfpagelabel 6862
\ThisShouldNotHappen . . 14677
\thm@headfont 7739, 7767
\thm@headpunct . . . 7741, 7769, 7800
\thm@headsep . 7742, 7770, 7801
\thm@indent 7738, 7766
\thm@notefont 7740, 7768, 7799
\thm@postskip 7746, 7774, 7805
\thm@preskip . 7745, 7773, 7804
\thm@space@setup . 7743, 7771, 7802
\thm@swap . . . 7737, 7765, 7798
\thmheadnl . . . 7736, 7764, 7797
\Thorn . . . 15845, 16293, 20746
\thorn 15914, 16364, 20747
\threeinferior 20864
\threesuperior 20744
\tildel 16949, 21670
\times 21591
\tinferior 20888
\tiny 628
\title 6760, 6762
\TMP@EnsureCode 4948, 4955, 4956, 4957, 4958, 4959, 4960, 4961, 4962, 4963, 4964, 4965, 4966, 4967, 4968, 4969, 4970, 4971, 4972, 4973, 4974, 4975, 4976, 4977, 4978, 4979, 4980, 4981
\tocappendix 1709
\tocchapter 1708
\toclevel@chapter 3697
\toclevel@figure 3703
\toclevel@listing 3711
\toclevel@lstlisting 3707
\toclevel@paragraph 3701
\toclevel@part 3693, 3695
\toclevel@section 3698
\toclevel@subfigure 2629
\toclevel@subparagraph . . . 3702
\toclevel@subsection 3699
\toclevel@subsubsection . . . 3700
\toclevel@subtable 2630
\toclevel@table 3704
\tocparagraph 1713
\tocpart 1707
\tocsection 1710
\tocsubsection 1711
\tocsubsubsection 1712
\toks . . 9158, 9159, 9161, 15418, 15423, 15489, 15494
\toks@ 171, 208, 501, 504, 507, 525, 526, 863, 870, 902, 903, 1345, 1368, 1371, 1373, 1881, 1882, 3580, 3581, 3583, 4194, 4198, 4199, 4207, 4657, 4658, 4844, 4846, 5442, 5447, 5453, 5459, 5460, 5463, 5563, 5568, 5572, 5576, 6978, 6980, 7066, 7068, 7118, 7130, 7482, 7486, 7522, 7527, 7946, 7949, 8695, 8696, 8929, 8934, 8936, 8939, 15417, 15423, 15488, 15494
\top 19186, 21150
\topmargin 8550

\triangle 18801, 20983
\triangleeq 19009, 21071
\triangleleft 19624, 21264
\trianglelefteq 19234, 21817
\triangleright 19610, 21259
\trianglerighteq . . . 19238, 21819
\triplesim 18949, 21045
\trivlist 7735, 7763, 7796
\tryhyper@link 5320, 5322
\ttfamily 610
\ttl@b 7533, 7538
\ttl@gobblecontents 7542
\ttl@Hy@PatchSaveWrite . 7516, 7520
\ttl@Hy@refstepcounter . . . 7532
\ttl@Hy@saveanchor 7511, 7535
\ttl@Hy@SavedCurrentHref 7515, 7526
\ttl@Hy@steplink 7509
\ttl@savewrite 7522, 7524
\Tumbler 19390, 21234
\turnv 20779
\turnw 20780
\turny 20781
\tw@ 5392, 5398, 5399, 5400, 5405, 5411, 5412, 5413, 15418, 15423, 15489, 15494
\TwelveStar 19976, 21392
\twoheaddownarrow 18649, 20921
\twoheadleftarrow . 18638, 20916
\twoheadrightarrow 18645, 20919
\twoheaduparrow . . 18642, 20918
\twoinferior 20863
\twonotes 19801, 21316
\twosuperior 20743
\TX@endtabularx . . 7939, 7946, 7952
\typeout 5, 6, 7, 19, 26, 27, 36, 131, 155, 158, 159, 160, 5593, 15515, 21942

U

\U . . 15965, 17416, 17439, 17506, 17586, 17787, 17789, 17811, 17813, 17823, 17825
\u . . 15964, 16016, 16043, 16071, 16374, 16376, 16416, 16418, 16436, 16438, 16469, 16471, 16472, 16542, 16544, 16602, 16604
\ubar 17051, 21696
\udesc 16929, 21664
\udots 19352, 21216
\UHORN . . 20493, 20604, 20605, 20606, 20607, 20608
\uhorn 3554, 3561, 20487, 20544, 20545, 20546, 20547, 20548
\uinferior 20826
\ulcorner 19370, 21224
\UnDef 13135
\unhbox . . . 7843, 12126, 14369, 14491, 14523, 14547, 14575, 14604
\unhcopy 14471
\unichar 2336
\Unicode 1421
\unlhd 19231, 21165
\unrestored@protected@xdef 7865, 7876, 8022, 8029, 8072, 8079
\unrhd 19235, 21166
\unskip . 7729, 7733, 7760, 7793, 7854, 8322, 9236, 9240, 9244, 9249
\UParrow 19599, 21256
\Uparrow 18736, 20955
\uparrow 20905
\Updownarrow . . . 18748, 20959
\updownarrow 18622, 20909
\updownarrows . . . 18706, 20943
\updownharpoonleftright . 20126, 21456
\updownharpoonrightleft . 20123, 21455
\updownharpoons . 20153, 21465
\upharpoonleft . . . 18688, 20937
\upharpoonright . . 18685, 20936
\uplus 20202, 21485
\upmodels 20358, 21554
\upshape . 616, 7740, 7768, 7799
\Upsilon 17275, 20794
\upsilon 17342, 20817
\upspoon 20362, 21556
\upuparrows 18713, 20946
\upupharpoons . . . 20132, 21458
\upvdash 19193, 21803
\Uranus 19732, 21872
\uranus 19730, 21300
\urcorner 19372, 21225
\Url 5291
\url 5290, 5294
\url@ 5294, 5295
\use@file 5524, 5526, 5533
\usefont 595
\utf@viii@undeferr 555
\UTFviii@four@octets 2332, 2341
\UTFviii@three@octets . . . 2331
\UTFviii@two@octets 2330

V

\v . . 15559, 15571, 15583, 15705, 15710, 15718, 15720, 15975, 16013, 16040, 16070, 16394, 16396, 16398, 16400, 16428, 16430, 16506, 16508, 16526, 16528, 16562, 16564, 16578, 16580, 16586, 16588, 16636, 16638, 16712, 16714, 16716, 16718, 16719, 16721, 16723, 16725, 16727, 16736, 16738, 16740, 16742, 16748, 16749, 16811, 16813
\V@@@footnotetext 8009
\V@@footnotetext 7995
\value . . 6881, 7333, 7334, 7336, 7337, 8276, 8302, 8554, 8720, 10770
\Valve 20196, 21482
\vara 16857, 21645
\varangle 18856, 21764
\varbigcirc 19644, 21843
\varcurlyvee 19271, 21821
\varcurlywedge . . . 19274, 21822
\VarFlag 19818, 21894
\varg 16916, 21661
\varhexagon 20372, 21560
\vari 16943, 21669
\varint 18885, 21770
\varnothing 18798, 18800, 21760
\varoast 19165, 21797
\varobslash 20173, 21915
\varocircle 19162, 21796
\varodot 19158, 21794
\varogreaterthan . . 20185, 21918
\varoint 18892, 21771
\varolessthan 20182, 21917
\varomega 16993, 21683
\varominus 19149, 21791
\varopeno 16870, 21650
\varoplus 19146, 21790
\varoslash 19155, 21793
\varotimes 19152, 21792
\varovee 18878, 21769
\varowedge 18873, 21768
\varparallel 20369, 21929
\varparallelinv 19436, 21832
\varprop 18847, 21763
\varsigma 20814
\varsqsubsetneq . . . 19323, 21825
\varsqsupsetneq . . . 19326, 21826
\vartimes 16279, 21614
\vavyod 17962
\vbox . . 6514, 6515, 6516, 6517, 6830, 8548
\VDash 19209, 21158
\Vdash 19201, 21155
\vDash 19197, 21154
\vdash 19177, 21147
\vdotdot 18906, 21026
\vdots 19348, 21214
\vee 18874, 21013
\veebar 19245, 21170

\veedot 20043, 21422
\veedoublebar 20244, 21502
\Venus 19714, 21864
\venus 19713, 21863
\vfill . . . 6514, 6515, 6516, 6517
\VHF 18951, 21777
\Vier 20425, 21573
\vinferior 20827
\ViPa 20411, 21567
\Virgo 19756, 21880
\virgo 19754, 21308
\vod 16920, 16922, 21662
\voffset 8549
\voicedh 16933, 21666
\vpageref 9249
\vphantom 631
\Vr@f 9235
\vr@f 9243
\vref@pagenum 7546
\vref@space . . . 9236, 9239, 9244
\vskip 2704, 2705
\vss 8563
\vtex@trans@special 11557, 11559, 11562, 11566, 11570, 11574, 11576, 11578, 11582, 11588, 11589, 11592
\VTeXInitMediaSize 11236, 11253
\VTeXOS . 11627, 11628, 11629, 11631
\VTeXversion 7033, 7036, 7039, 11619, 11623
\Vvdash 19204, 21156

W

\wasylozenge 19362, 21221
\waw 20685
\wawhamza 20623
\wd . 10360, 10376, 10397, 10414, 10437, 10454, 14318
\wedge 18869, 21011
\wedgedot 20045, 21423
\Wheelchair 19814, 21322
\with 16095, 21603
\WomanFace 20439, 21580
\Womanface 20441, 21936
\wp 18533, 20893
\wr 18922, 21033
\wreath 18924, 21775
\write . . 5182, 6708, 6710, 7147, 7155, 7471, 7499, 8260, 8275, 8291, 8301, 8331, 8354, 8380, 8410, 13855, 13858, 13886, 13901, 15285, 15367
\WriteBookmarks . . 4588, 4728, 4917, 4939, 15034, 15278, 15311, 15312, 15354, 15360
\WritingHand 19893, 21352
\Writinghand 19895, 21903
\wwwbrowser . . . 10314, 10399, 10416

X

\x 21, 25, 92, 98, 168, 169, 176, 178, 206, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 292, 297, 298, 524, 529, 865, 868, 872, 877, 909, 1045, 1051, 1808, 1836, 2279, 2281, 2699, 2709, 2718, 2728, 2797, 2798, 2803, 2819, 3591, 3594, 3598, 3611, 3722, 3723, 3726, 3727, 3728, 3732, 3735, 3741, 4197, 4203, 4206, 4209, 4487, 4488, 4493, 4494, 4604, 4605, 4606, 4609, 4612, 4615, 4655, 4656, 4658, 4659, 4845, 4848, 5181, 5187, 5539, 5540, 5541, 5553, 5564, 5565, 5566, 5567, 5570, 5571, 5616, 5619, 5714, 5728, 5753, 5757, 5760, 5770, 6307, 6311, 6320, 6324, 6782, 6783, 6788, 7483, 7490, 7523, 7530, 7571, 7580, 7582, 7594, 8623, 8625, 8936, 8937, 9160, 9163, 9198, 9199, 9200, 9202, 9204, 9627, 9636, 9917, 9918, 9921, 9923, 9926, 10589, 10590, 10591, 10593, 10594, 10595, 10597, 10598, 10599, 10601, 10602, 10603, 10605, 10606, 10607, 10609, 10610, 10611, 10613, 10614, 10615, 10617, 10618, 10620, 10626, 10635, 11739, 11744, 11748, 12130, 12133, 12139, 12144, 12292, 12293, 13436, 13456, 14037, 14057, 14392, 14412, 15422, 15424, 15493, 15495
\XBox 19663, 21847
\XeTeXLink@font . . 5378, 5381
\XeTeXLink@space . 5379, 5394, 5408
\XeTeXLinkBox . . . 5385, 5417
\XeTeXLinkMargin . 5375, 5376, 5391, 5393, 5404, 5406
\XeTeXrevision 4904, 10954
\XeTeXversion 4904, 10954
\Xi 17263, 20791
\xi 17328, 20811
\xinferior 20879
\XR@@dURL 2636, 2637
\XR@addURL 2636
\XR@ext 2905, 2906, 5522, 5525, 7031, 9456, 10210, 10313, 10577, 11117, 12486, 12577, 12644, 12851, 13023
\XR@URL 2641
\XSolid 19911, 21360
\XSolidBold 19913, 21361
\XSolidBrush 19915, 21362
\xspace 695, 697
\xspaceaddexceptions 4560, 4569

Y

\y 297, 299, 306, 312, 880, 883, 886, 889, 892, 895, 904, 2799, 2804, 2809, 3728, 3729, 3730, 3731, 4607, 4610, 4613, 4616, 4618, 4624, 5542, 5543, 5544, 5545, 5553, 6783, 6791, 7567, 7569, 7570, 7573, 7580, 12135, 12136, 12137, 12138
\ya 20689
\yahamza 20627
\YingYang 19689, 21855
\Yingyang 19690, 21856
\YinYang 19686, 21288
\Yinyang 19688, 21854
\yogh 17080, 20783

Z

\z 298, 299, 307, 313, 2801, 2802, 2803, 5545, 5553
\z@ 841, 881, 1072, 1224, 1241, 1263, 1286, 1537, 1577, 1590, 1606, 1621, 1629, 1702, 1964, 1970, 1976, 2049, 2053, 2061, 2065, 2655, 2660, 2694, 2713, 2987, 2990, 3155, 3734, 3740, 4489, 4913, 5388, 5390, 5398, 5399, 5402, 5403, 5411, 5412, 5420, 5421, 6743, 7034, 7037, 7829, 7830, 8007, 10130, 10134, 10139, 10143, 10150, 10153, 10157, 10160, 11099, 11100, 11105, 11106, 11618, 11642, 11862, 12173, 12187, 12551, 12552, 12557, 12558, 13359, 13426, 14027, 14322, 14382, 14802, 14833, 14838, 14861,

14867, 14896, 14930, 14936, 14955, 14966, 14971, 15002, 15007, 15112, 15113, 15114, 15115, 15116, 15117, 15118, 15119, 15120, 15337, 15459
\z@skip 5202
\za 20663
\zay 20651
\zeroinferior 20861
\zerosuperior 20847
\zeta 17312, 20803
\zref@extractdefault 13980
\zref@ifrefcontainsprop . . 13978
\zref@ifrefundefined 13976
\zref@labelbyprops . . . . .
\zref@refused . . . . . .
\Zwdr 20431,
\ZWNJ . . . . . .
\ZwPa 20417,