Hypertext marks in LaTeX

Sebastian Rahtz (deceased)
Heiko Oberdiek (inactive)
The LaTeX Project
https://github.com/latex3/hyperref/issues

2023-04-22 v7.00x

1 Documentation overview for hyperref

The documentation for package hyperref consists of several files:

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

ChangeLog This file records the version history.

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 . . . 15

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 **18**
6.1 Description of PDF strings . . . 18
6.2 Definition of \pdfstringdef . . . 19
6.2.1 Preprocessing . . . 20
6.2.2 Expansion . . . 26
6.2.3 Postprocessing . . . 27
6.3 Encodings . . . 32
6.3.1 XeTeX . . . 32
6.3.2 Workaround for package linguex . . . 32
6.3.3 Catcodes saving and restoring for .def files . . . 32
6.3.4 PD1 encoding . . . 33
6.3.5 PU encoding . . . 34
6.4 Additional user commands . . . 34
6.4.1 \texorpdfstring . . . 34
6.4.2 Hooks for \pdfstringdef . . . 35
6.5 Help macros for expansion . . . 36
6.5.1 \ignorespaces . . . 36
6.5.2 Babel languages . . . 36
6.5.3 CJK patch . . . 37
6.5.4 CJK bookmarks . . . 37
6.5.5 CJK unicode . . . 39
6.5.6 \@inmathwarn-Patch . . . 43
6.5.7 Unexpandable spaces . . . 45
6.5.8 Marker for commands . . . 45
6.5.9 \hspace fix . . . 45
6.5.10 Fix for AMS classes . . . 46
6.5.11 Reference commands . . . 46
6.5.12 Redefining the defining commands . . . 48
6.5.13 \ifnextchar . . . 50
6.5.14 \@protected@testoptifnextchar . . . 50

6.6 Help macros for postprocessing . . . 50
6.6.1 Generic warning. . . . 50
6.6.2 Protecting spaces . . . 50
6.6.3 Remove grouping braces . . . 51
6.6.4 Catcode check . . . 52
6.6.5 Check for wrong glyphs . . . 56
6.6.6 Replacing tokens . . . 57
6.6.7 Support for package xspace . . . 58
6.6.8 Converting to Unicode . . . 59
6.6.9 Support for UTF-8 input encoding . . . 61
6.6.10 Support for die faces (ifsym et. al.) . . . 65
6.6.11 Support for moon phases of package china2e . . . 66
6.6.12 Support for package pifont . . . 66

7 Support of other packages 68
7.1 Package subfigure . . . 68
7.2 Package xr and xr-hyper . . . 68

8 Help macros for links 69

9 Options 71
9.1 Help macros . . . 71
9.2 Defining the options . . . 74

10 Options for different drivers 79

11 Options to add extra features 84

12 Language options 85

13 Options to change appearance of links 94

14 Bookmarking 95

15 PDF-specific options 97
15.1 Package xspace support . . . 111
15.2 Option draft . . . 112
15.3 PDF/A . . . 112
15.4 Patch for babel's \texttilde . . . 113
15.4.1 Driver loading . . . 115
15.4.2 Bookmarks . . . 119

16 User hypertext macros 122
16.1 Link box support for XeTeX . . . 129

17 Underlying basic hypertext macros 130

18 Option 'destlabel' 134

19 Forms creation **136**
19.1 Field flags . . . 136
19.1.1 Declarations of field flags . . . 138
19.1.2 Set submit flags . . . 140
19.1.3 Set annot flags in fields . . . 141
19.1.4 Pushbutton field . . . 141
19.1.5 Check box field . . . 142
19.1.6 Radio button field . . . 142
19.1.7 Text fields . . . 142
19.1.8 Choice fields . . . 143
19.2 Choice field . . . 144
19.3 Forms . . . 146

20 Setup **154**

21 Low-level utility macros **155**

22 Localized nullifying of package **156**

23 Package nohyperref **156**

24 The Mangling Of Aux and Toc Files **157**

25 Title strings **158**

26 Page numbers **160**

27 Every page **160**
27.1 PDF /PageLabels . . . 161
27.1.1 pdfTeX and VTeX . . . 165
27.1.2 xetex . . . 166
27.1.3 pdfmarkbase, dvipdfm, xetex . . . 167

28 Automated LaTeX hypertext cross-references **169**

29 Package ifthen support **175**

30 Package titlesec and titletoc support **175**

31 Package varioref support **176**

32 Package longtable support **176**

33 Equations **177**

34 Footnotes **180**

35 Float captions **185**

36 Bibliographic references **188**
36.1 Package harvard . . . 190
36.2 Package chicago . . . 192

37 Page numbers **192**

38 Table of contents **195**

39 New counters **197**

40 AMSLaTeX compatibility **197**
40.1 \@addtoreset and \numberwithin patches 198

41 Included figures **199**

42 hyperindex entries **199**

43 Configuration files **208**
43.1 PS/PDF strings 208
43.2 pdftex 210
43.2.1 Fix for problem with different nesting levels 223
43.3 hypertex 223
43.4 dviwindo 226
43.5 dvipdfm/xetex dvi to PDF converter 231
43.6 VTeX typesetting system 242
43.7 Fix for Adobe bug number 466320 255
43.8 Direct pdfmark support 256
43.9 Rokicki's dvips 270
43.10VTeX's vtexpdfmark driver 273
43.11Textures 274
43.12dvipsone 279
43.13TeX4ht 283

44 Driver-specific form support **285**
44.1 pdfmarks 285
44.2 HyperTeX 294
44.3 TeX4ht 294
44.4 pdfTeX 297
44.5 dvipdfm, xetex 306
44.6 Common forms part 314

45 Bookmarks in the PDF file **322**
45.1 Bookmarks 322
45.1.1 Rerun warning 326
45.1.2 Driver stuff 326

46 Encoding definition files for encodings of PDF strings **332**
46.1 PD1 encoding 332
46.2 PU encoding 341
46.2.1 NFSS2 accents 341
46.2.2 Basic Latin: U+0000 to U+007F 343
46.2.3 Latin-1 Supplement: U+0080 to U+00FF 345
46.2.4 Latin Extended-A: U+0080 to U+017F 349
46.2.5 Latin Extended-B: U+0180 to U+024F 355
46.2.6 IPA Extensions: U+0250 to U+02AF 359

46.2.7 Spacing Modifier Letters: U+02B0 to U+02FF 365
46.2.8 Combining Diacritical Marks: U+0300 to U+036F 366
46.2.9 Greek and Coptic: U+0370 to U+03FF 367
46.2.10 Cyrillic: U+0400 to U+04FF 370
46.2.11 Hebrew: U+0590 to U+05FF 381
46.2.12 Thai: U+0E00 to U+0E7F 383
46.2.13 Phonetic Extensions: U+1D00 to U+1D7F 383
46.2.14 Phonetic Extensions Supplement: U+1D80 to U+1DBF . . 384
46.2.15 Latin Extended Additional: U+1E00 to U+1EFF 384
46.2.16 General Punctuation: U+2000 to U+206F 390
46.2.17 Superscripts and Subscripts: U+2070 to U+209F 391
46.2.18 Currency Symbols: U+20A0 to U+20CF 393
46.2.19 Letterlike Symbols: U+2100 to U+214F 393
46.2.20 Number Forms: U+2150 to U+218F 394
46.2.21 Arrows: U+2190 to U+21FF 395
46.2.22 Mathematical Operators: U+2200 to U+22FF 399
46.2.23 Miscellaneous Technical: U+2300 to U+23FF 410
46.2.24 Control Pictures: U+2400 to U+243F 411
46.2.25 Optical Character Recognition: U+2440 to U+245F 411
46.2.26 Enclosed Alphanumerics: U+2460 to U+24FF 411
46.2.27 Box Drawing: U+2500 to 257F 414
46.2.28 Geometric Shapes: U+25A0 to U+25FF 414
46.2.29 Miscellaneous Symbols: U+2600 to U+26FF 415
46.2.30 Dingbats: U+2700 to U+27BF 420
46.2.31 Miscellaneous Mathematical Symbols-A: U+27C0 to U+27EF 423
46.2.32 Supplemental Arrows-A: U+27F0 to U+27FF 423
46.2.33 Supplemental Arrows-B: U+2900 to U+297F 424
46.2.34 Miscellaneous Mathematical Symbols-B: U+2980 to U+29FF 426
46.2.35 Supplemental Mathematical Operators: U+2A00 to U+2AFF 426
46.2.36 Miscellaneous Symbols and Arrows: U+2B00 to U+2BFF . 430
46.2.37 Latin Extended-C: U+2C60 to U+2C7F 430
46.2.38 Supplemental Punctuation: U+2E00 to U+2E7F 430
46.2.39 Modifier Tone Letters: U+A700 to U+A71F 430
46.2.40 Latin Extended-D: U+A720 to U+A7FF 430
46.2.41 Alphabetic Presentation Forms: U+FB00 to U+FB4F . . . 431
46.2.42 Musical Symbols: U+1D100 to U+1D1FF 431
46.2.43 Miscellaneous Symbols and Pictographs: U+1F300 to U+1F5FF 431
46.2.44 Transport and Map Symbols: U+1F680 to U+1F6FF . . . 431
46.2.45 Miscellaneous 432
46.2.46 Aliases 432
46.3 PU encoding, additions for VnTEX 432
46.4 PU encoding, additions for Arabi 435

47 End of file hycheck.tex **460**

48 Index **461**

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.

```
⟨*check⟩
\documentclass{article}
\makeatletter
```

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

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

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

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

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

```
\def\HyC@getDate[#1]{%
  \def\HyC@date{#1}%
  \HyC@checkPackage
}
```

`\HyC@checkPackage`

```
\def\HyC@checkPackage{%
  \typeout{}%
  \begingroup
    \edef\x{\endgroup
      \noexpand\RequirePackage{\HyC@package}%
      \ifx\HyC@date\@empty\relax\else[\HyC@date]\fi%
    }%
  \x
  \typeout{}%
  \typeout{%
    * Package `\HyC@package'%
    \ifx\HyC@date\@empty
    \else
      \space\HyC@date
    \fi
  }%
  \@ifundefined{ver@\HyC@package.sty}{%
  }{%
    \typeout{%
```

```
    \space\space Loaded: `\HyC@package' %
    \csname ver@\HyC@package.sty\endcsname
   }%
  }%
}
```

\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

change 2020-07-24: require newer pdftexcmds and remove fallback code for version older than 2010. change 2021-08-14: require expl3

```
\ifx\ExplSyntaxOn\undefined \RequirePackage{expl3}\fi
\RequirePackage{ltxcmds}[2010/11/12]
\RequirePackage{iftex}[2019/10/24]
\RequirePackage{pdftexcmds}[2018/09/10]
\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{hycolor}
\RequirePackage{letltxmacro}[2008/06/13]
\RequirePackage{auxhook}[2009/12/14]
\RequirePackage{nameref}[2012/07/28]
```

```
\RequirePackage{etoolbox}
\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
```

```
            * \y: hyperref.sty\MessageBreak
            * \z: \a
          }\@ehd
        \fi
      \fi
    }%
  }%
  \endgroup
  \chardef\Hy@VersionChecked=1 %
}
```

\Hy@@VersionCheck

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

4.3 Checks with regular expressions

```
\ltx@IfUndefined{pdfmatch}{%
  \def\Hy@Match#1#2#3#4#5{}%
}{%
  \def\Hy@Match#1#2#3{%
    \begingroup
    \edef\^{\ltx@backslashchar\string^}%
    \edef\.{\ltx@backslashchar.}%
    \edef\[{\ltx@backslashchar[}% ]]
    \edef\${\ltx@backslashchar$}%
    \edef\({\ltx@backslashchar(}%
    \edef\){\ltx@backslashchar)}%
    \edef\|{\ltx@backslashchar|}%
    \edef\*{\ltx@backslashchar*}%
    \edef\+{\ltx@backslashchar+}%
    \edef\?{\ltx@backslashchar?}%
    \edef\{{\ltx@backslashchar\ltx@leftbracechar}%
    \edef\}{\ltx@rightbracechar}%
    \edef\\{\ltx@backslashchar\ltx@backslashchar}%
    \let\ \ltx@space
    \ifcase\pdfmatch#2{#3}{#1} %
      \endgroup
      \expandafter\ltx@secondoftwo
    \or
      \endgroup
      \expandafter\ltx@firstoftwo
    \else
      \Hy@Warning{%
        Internal error: Wrong pattern!\MessageBreak
        --> #3 <--\MessageBreak
        Pattern check ignored%
      }%
      \endgroup
      \expandafter\ltx@firstoftwo
    \fi
  }%
}
```

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@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@pdfstringfalse
\Hy@plainpagesfalse
\Hy@raiselinksfalse
\Hy@setpagesizetrue
\Hy@texhtfalse
\Hy@psdextrafalse
\Hy@pdftoolbartrue
\Hy@unicodetrue
\ifx\kanjiskip\@undefined
\else
  \ifx\forcecjktoken\@undefined
   \Hy@unicodefalse
  \fi
\fi
\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 the now required e-TeX extensions an expandable implementation is very easy; `\hypercalcbp` can be used everywhere and is expanded at use.

Example (TEX):

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

\hypercalcbp

```
\def\hypercalcbp#1{%
  \strip@pt\dimexpr 0.99626401\dimexpr(#1)\relax\relax
}%
\def\hypercalcbpdef{\def}%
```

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 legal 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.

`\MakeUppercase` and `\MakeLowercase` do not work by expansion in legacy code but if the expl3 code is available we can handle them. If a current babel or polyglossia is used we can also make use of the language.

ppercaseUnsupportedInPdfStrings
owercaseUnsupportedInPdfStrings

```
\providecommand*\BCPdata[1]{}
\ExplSyntaxOn
\@ifundefined{text_uppercase:n}{}
{
  \def\MakeUppercaseUnsupportedInPdfStrings#1
      {\use:e
        {\exp_args:Ne
          \text_uppercase:nn{\BCPdata { casing }}{#1}
        }
      }
  \def\MakeLowercaseUnsupportedInPdfStrings#1
      {\use:e
        {\exp_args:Ne
          \text_lowercase:nn{\BCPdata { casing }}{#1}
        }
      }
}
\ExplSyntaxOff
```

\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/latex3/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. We use the direct PU code to avoid problems if `\textepsilon` is not defined.

```
\def\TeX{TeX}%
\def\LaTeX{La\TeX}%
\def\LaTeXe{%
  \LaTeX2%
  \ifHy@unicode\83\265\else e\fi
}%
\def\eTeX{%
  \ifHy@unicode\83\265\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}{}{%
  \let\bbl@info\@gobble
  \csname HyPsd@babel@\language@group\endcsname
}%
\let\@safe@activestrue\relax
\let\@safe@activesfalse\relax
```

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

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

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 `\guillemetright`, 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%
        \iftutex
          \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@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
```

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

change 2020-05-13: the special code for XeTeX big chars has been removed as no longer needed.

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 % (backslash)
    \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 % (backslash)
  \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. change 2020-08-14: Starting with version v7.00f the file is always loaded and unicode is the default 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}{%
      \ltx@iffileloaded{puenc-greekbasic.def}{}{%
       \Hy@SaveCatcodeSettings{pu}%
       \input{puenc-greekbasic.def}%
       \Hy@RestoreCatcodeSettings{pu}}%
      \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 ar-

guments, 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
}
```

\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

change 2020-10-10: moved language patches to its own file as a first step toward removing them completly.

```
\newif\ifHy@next
⟨/package⟩
```

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

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

As consequence the shorthands were shown in the bookmarks, and required a hyperref patch. In version 3.48 babel removed this unneeded code and so the patch could be removed.

Nothing to do for english. change 2020/07/16: removed patch for french. No longer needed. change 2020/07/21: removed patches for german, ngerman. Will be done by the language package. https://github.com/jspitz/babel-german/issues/4 change 2020/10/10: removed patches for danish, dutch, finnish, portugues, swedish, usorbian, slovene see https://github.com/latex3/babel/issues/84 change 2020/10/10: removed patch for macedonian, ukrainian; maintainers notified. change 2020/10/11: removed patch for russian, has been merged into babel-russian

see https://github.com/kia999/babel-russian/pull/3 change 2021/02/04: removed patches for greek numerals, code is now in babel-greek. spanish: Nested quoting environments are not supported (<<, >>). change 2021/07/19: removed patches for spanish, code is now in babel-spanish.

```
926 ⟨*package⟩
```

6.5.3 CJK patch

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

\HyPsd@CJKhook

```
928 \def\HyPsd@CJKhook{%
929   \ltx@ifpackageloaded{CJK}{%
930     \let\CJK@kern\relax
931     \let\CJKkern\relax
932     \let\CJK@CJK\relax
933     \ifHy@CJKbookmarks
934       \HyPsd@CJKhook@bookmarks
935     \fi
936     \HyPsd@CJKhook@unicode
937   }{}%
938 }
```

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).

```
939 \begingroup
940   \catcode"7F=\active
941   \toks@{%
942     \let\CJK@ignorespaces\empty
943     \def\CJK@char#1{\@gobbletwo}%
944     \let\CJK@charx\@gobblefour
945     \let\CJK@punctchar\@gobblefour
946     \def\CJK@punctcharx#1{\@gobblefour}%
947     \catcode"7F=\active
948     \def^^7f#1^^7f#2^^7f{%
949       \string #1\HyPsd@DecimalToOctal{#2}%
950     }%
951     % ... ?
952     \ifHy@unicode
953       \def\Hy@cjkpu{\80}%
954     \else
955       \let\Hy@cjkpu\@empty
956     \fi
957     \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{}
```

```
1278 \def\HyPsd@EndWithElse#1\else{\else}
```

\HyPsd@add@accent

```
1279 \def\HyPsd@add@accent#1#2{%
1280   \HyPsd@GLYPHERR\expandafter\@gobble\string#1+\string#2>%
1281   #2%
1282 }%
```

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.

```
1283 \def\HyPsd@LetUnexpandableSpace#1{%
1284   \expandafter\futurelet\expandafter#1\expandafter\@gobble\space\relax
1285 }
```

\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.

```
1286 \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.

```
1287 \edef\HyPsd@XSPACE{\string#\string X}
1288 \edef\HyPsd@ITALCORR{\string#\string I}
1289 \edef\HyPsd@GLYPHERR{\string#\string G}
```

6.5.9 \hspace fix

\HyPsd@hspace

```
1290 \def\HyPsd@hspace#1{\HyPsd@@hspace#1*\END}
```

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

```
1291 \def\HyPsd@@hspace#1*#2\END{%
1292   \ifx\\#2\\%
1293     \HyPsd@hspacetest{#1}%
1294   \else
1295     \expandafter\HyPsd@hspacetest
1296   \fi
1297 }
```

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

```
1298 \def\HyPsd@hspacetest#1{\ifdim\dimexpr#1\relax>\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

\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.

```
\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%
}%
```

\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@fi{%
  \fi
  \unexpanded{#1}%
  \ifx\scrollmode#2\scrollmode
  \else
    \HyPsd@@ProtectSpacesFi\HyPsd@UnexpandableSpace#2%
  \HyPsd@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{%
  \xdef#2{\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
 #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
```

change 2022-02-21 For the case that utf8 chars are protected we need to expand them. This works only is `\UTFviii@loop` is not defined in a group, which will be the case in the new latex code, so we test for it.

```
\ifcsname UTFviii@loop\endcsname
 \def\HyPsd@expand@utfvii{%
   \count@"C2
   \@tempcnta"F5
   \def\UTFviii@tmp{\expandafter\def\expandafter~\expandafter{~}}%
   \UTFviii@loop
 }
\else
 \def\HyPsd@expand@utfvii{}
\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
  \lccode`\~=`^^f4\relax
\lowercase{\endgroup
  \def\HyPsd@UTFviii{%
    \HyPsd@expand@utfvii
    \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
  }%
```

\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 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
    }%
  }%
}{}
```

7.2 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@
      \ifnum\lastnodetype=1 %
        \let\Hy@RestoreLastskip\relax
      \else
        \let\Hy@RestoreLastskip\nobreak
      \fi
    \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

Package like hyperxmp want to retrieve the value of keys like `pdfauthor`. To avoid that we have two parallel interfaces we provide the interface from the pdfmanagement/ltdocinit if it doesn't exist.

\AddToDocumentProperties
\GetDocumentProperties

```
\ExplSyntaxOn
\@ifundefined{AddToDocumentProperties}
  {
   \prop_new:N \g___hyp_documentproperties_prop
   \NewDocumentCommand\AddToDocumentProperties{O{\@currname}mm}
    {
      \exp_args:NNx
      \prop_gput:Nnn \g___hyp_documentproperties_prop
        {
          \tl_if_blank:eTF {#1}{top-level/}{#1/} #2
        }
        { #3}
    }
   \NewExpandableDocumentCommand\GetDocumentProperties{m}
     {
       \prop_item:Nn \g___hyp_documentproperties_prop {#1}
     }
  }{}
\ExplSyntaxOff
```

\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}%
}
```

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@WarningNoLine{%
      Option `localanchorname' is deprecated%
    }%
  \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}
```

change 2020-08-14, use unicode by default:

```
\let\HyPsd@pdfencoding\HyPsd@pdfencoding@unicode
\HyPsd@LoadUnicode
\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: 1.2-1.7, 2.0%
    }%
  }{%
    \Hy@setpdfversiontrue
    \@nameuse{Hy@pdfversion@#1}%
  }%
}
```

\Hy@pdfminorversion already used elsewhere to denote \pdfminorversion or \pdfvariable majorversion} so introduce new names here.

```
\@namedef{Hy@pdfversion@1.2}{\def\Hy@pdf@majorversion{1}\def\Hy@pdf@minorversion{2}}%
\@namedef{Hy@pdfversion@1.3}{\def\Hy@pdf@majorversion{1}\def\Hy@pdf@minorversion{3}}%
```

```
\@namedef{Hy@pdfversion@1.4}{\def\Hy@pdf@majorversion{1}\def\Hy@pdf@minorversion{4}}%
\@namedef{Hy@pdfversion@1.5}{\def\Hy@pdf@majorversion{1}\def\Hy@pdf@minorversion{5}}%
\@namedef{Hy@pdfversion@1.6}{\def\Hy@pdf@majorversion{1}\def\Hy@pdf@minorversion{6}}%
\@namedef{Hy@pdfversion@1.7}{\def\Hy@pdf@majorversion{1}\def\Hy@pdf@minorversion{7}}%
\@namedef{Hy@pdfversion@2.0}{\def\Hy@pdf@majorversion{2}\def\Hy@pdf@minorversion{0}}%
\def\Hy@pdf@majorversion{1}\def\Hy@pdf@minorversion{5}
```

Legacy name, earlier releases assumed 1.x

```
\let\Hy@pdfversion\Hy@pdf@minorversion
\def\Hy@pdf@majorminor@version{\numexpr100*\Hy@pdf@majorversion+\Hy@pdf@minorversion\relax}
\def\Hy@pdfmajorminor@version{\numexpr100*\Hy@pdfmajorversion+\Hy@pdfminorversion\relax}
```

if pdfminorversion is defined, make sure pdfmajorversion is too.

```
\@ifundefined{pdfminorversion}{}{%
\@ifundefined{pdfmajorversion}{%
\newcount\pdfmajorversion
\pdfmajorversion=1
}{}%
}
\ifx\pdfmajorversion\@undefined\else
\def\Hy@pdfmajorversion{\pdfmajorversion}
\fi
```

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
      \ifnum\OpMode=\z@
        \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}{%
  \Hy@Warning{Option `latex2html` is obsolete. \MessageBreak
   A current html.sty will do all necessary (re)definitions%
  }%
}
\DeclareVoidOption{hitex}{%
  \ifhint
   \IfFileExists{hhitex.def}
     {\def\Hy@driver{hhitex}}%
     {\Hy@Warning{%
      Missing driver file `hhitex.def',\MessageBreak
      ignoring hitex driver%
     }}%
  \else
    \Hy@Error{%
      Wrong driver option `hitex',\MessageBreak
      because HiTeX is not detected%
    }\@ehc
  \fi
}
```

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{annexe}%
  \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}%
}
```

Greek, see github issue 52

```
\def\HyLang@greek{%
  \def\equationautorefname{\textEpsilon\textxi\acctonos\textiota\textsigma\textomega\textsigma\texteta}%
```

```
3191        \def\footnoteautorefname{\textupsilon\textpi\textomicron\textsigma\tex-
    teta\textmu\textepsilon\acctonos\textiota\textomega\textsigma\texteta}%
3192    \def\itemautorefname{\textalpha\textnu\texttau\textiota\textkappa\texte-
    silon\acctonos\textiota\textmu\textepsilon\textnu\textomicron}%
3193      \def\figureautorefname{\textSigma\textchi\acctonos\texteta\textmu\textal-
    pha}%
3194    \def\tableautorefname{\textPi\acctonos\textiota\textnu\textalpha\textkappa\tex-
    talpha}%
3195    \def\partautorefname{\textMu\acctonos\textepsilon\textrho\textomicron\textvar-
    sigma}%
3196    \def\appendixautorefname{\textPi\textalpha\textrho\acctonos\textalpha\tex-
    trho\texttau\texteta\textmu\textalpha}%
3197        \def\chapterautorefname{\textkappa\textepsilon\textphi\acctonos\textal-
    pha\textlambda\textalpha\textiota\textomicron}%
3198    \def\sectionautorefname{\textepsilon\textnu\acctonos\textomicron\texttau\tex-
    teta\texttau\textalpha}%
3199    \def\subsectionautorefname{\textupsilon\textpi\textomicron\textepsilon\textnu\ac-
    ctonos\textomicron\texttau\texteta\texttau\textalpha}%
3200    \def\subsubsectionautorefname{\textupsilon\textpi\textomicron-\textupsilon\textpi\textomicron\tex
3201    \def\paragraphautorefname{\textpi\textalpha\textrho\acctonos\textalpha\textgamma\tex-
    trho\textalpha\textphi\textomicron\textvarsigma}%
3202      \def\subparagraphautorefname{\textupsilon\textpi\textomicron\textpi\tex-
    talpha\textrho\acctonos\textalpha\textgamma\textrho\textalpha\textphi\textomi-
    cron\textvarsigma}%
3203    \def\FancyVerbLineautorefname{\textgamma\textrho\textalpha\textmu\textmu\ac-
    ctonos\texteta}%
3204       \def\theoremautorefname{\textTheta\textepsilon\acctonos\textomega\tex-
    trho\texteta\textmu\textalpha}%
3205    \def\pageautorefname{\textsigma\textepsilon\textlambda\acctonos\textiota\textdelta\tex-
    talpha}%
3206 }

3207 \def\HyLang@dutch{%
3208     \def\equationautorefname{Vergelijking}%
3209     \def\footnoteautorefname{voetnoot}%
3210     \def\itemautorefname{punt}%
3211     \def\figureautorefname{Figuur}%
3212     \def\tableautorefname{Tabel}%
3213     \def\partautorefname{Deel}%
3214     \def\appendixautorefname{Bijlage}%
3215     \def\chapterautorefname{hoofdstuk}%
3216     \def\sectionautorefname{paragraaf}%
3217     \def\subsectionautorefname{deelparagraaf}%
3218     \def\subsubsectionautorefname{deel-deelparagraaf}%
3219     \def\paragraphautorefname{alinea}%
3220     \def\subparagraphautorefname{deelalinea}%
3221     \def\FancyVerbLineautorefname{regel}%
3222     \def\theoremautorefname{Stelling}%
3223     \def\pageautorefname{pagina}%
3224 }
3225 \def\HyLang@norsk{%
3226     \def\equationautorefname{Ligning}%
3227     \def\footnoteautorefname{fotnote}%
3228     \def\itemautorefname{element}%
3229     \def\figureautorefname{Figur}%
```

```
    \def\tableautorefname{Tabell}%
    \def\partautorefname{Del}%
    \def\appendixautorefname{Tillegg}%
    \def\chapterautorefname{kapittel}%
    \def\sectionautorefname{seksjon}%
    \def\subsectionautorefname{underseksjon}%
    \def\subsubsectionautorefname{under-underseksjon}%
    \def\paragraphautorefname{avsnitt}%
    \def\subparagraphautorefname{underavsnitt}%
    \def\FancyVerbLineautorefname{Linje}%
    \def\theoremautorefname{Teorem}%
    \def\pageautorefname{side}%
}
\def\HyLang@danish{%
  \def\equationautorefname{Ligning}%
  \def\footnoteautorefname{fodnote}%
  \def\itemautorefname{element}%
  \def\figureautorefname{Figur}%
  \def\tableautorefname{Tabel}%
  \def\partautorefname{Del}%
  \def\appendixautorefname{Bilag}%
  \def\chapterautorefname{kapitel}%
  \def\sectionautorefname{sektion}%
  \def\subsectionautorefname{under-sektion}%
  \def\subsubsectionautorefname{under-under-sektion}%
  \def\paragraphautorefname{afsnit}%
  \def\subparagraphautorefname{underafsnit}%
  \def\FancyVerbLineautorefname{linje}%
  \def\theoremautorefname{Teorem}%
  \def\pageautorefname{side}%
}
\def\HyLang@swedish{%
  \def\equationautorefname{Ekvation}%
  \def\footnoteautorefname{fotnot}%
  \def\itemautorefname{punkt}%
  \def\figureautorefname{Figur}%
  \def\tableautorefname{Tabell}%
  \def\partautorefname{Del}%
  \def\appendixautorefname{Bilaga}%
  \def\chapterautorefname{kapitel}%
  \def\sectionautorefname{avsnitt}%
  \def\subsectionautorefname{underavsnitt}%
  \def\subsubsectionautorefname{under-underavsnitt}%
  \def\paragraphautorefname{paragraf}%
  \def\subparagraphautorefname{underparagraf}%
  \def\FancyVerbLineautorefname{linje}%
  \def\theoremautorefname{Teorem}%
  \def\pageautorefname{sida}%
}
```

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{nswissgerman}{german}{}
\HyLang@DeclareLang{swissgerman}{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}{}
\HyLang@DeclareLang{greek}{greek}{}
\HyLang@DeclareLang{dutch}{dutch}{}
\HyLang@DeclareLang{norsk}{norsk}{}
\HyLang@DeclareLang{norwegian}{norsk}{}
\HyLang@DeclareLang{danish}{danish}{}
\HyLang@DeclareLang{swedish}{swedish}{}
```

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}
```

```
\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 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}{%
  \AddToDocumentProperties[hyperref]{pdftitle}{#1}%
  \HyXeTeX@CheckUnicode
  \HyPsd@PrerenderUnicode{#1}%
  \pdfstringdef\@pdftitle{#1}%
}
\define@key{Hyp}{pdfauthor}{%
  \AddToDocumentProperties[hyperref]{pdfauthor}{#1}%
  \HyXeTeX@CheckUnicode
  \HyPsd@PrerenderUnicode{#1}%
  \pdfstringdef\@pdfauthor{#1}%
}
\define@key{Hyp}{pdfproducer}{%
  \AddToDocumentProperties[hyperref]{pdfproducer}{#1}%
  \HyXeTeX@CheckUnicode
  \HyPsd@PrerenderUnicode{#1}%
  \pdfstringdef\@pdfproducer{#1}%
}
\define@key{Hyp}{pdfcreator}{%
  \AddToDocumentProperties[hyperref]{pdfcreator}{#1}%
  \HyXeTeX@CheckUnicode
  \HyPsd@PrerenderUnicode{#1}%
  \pdfstringdef\@pdfcreator{#1}%
}
\define@key{Hyp}{addtopdfcreator}{%
 \HyXeTeX@CheckUnicode
 \HyPsd@PrerenderUnicode{#1}%
 \pdfstringdef\@pdfcreator{\@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}{%
  \AddToDocumentProperties[hyperref]{pdfsubject}{#1}%
  \HyXeTeX@CheckUnicode
  \HyPsd@PrerenderUnicode{#1}%
  \pdfstringdef\@pdfsubject{#1}%
}
\define@key{Hyp}{pdfkeywords}{%
  \AddToDocumentProperties[hyperref]{pdfkeywords}{#1}%
  \HyXeTeX@CheckUnicode
  \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@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}%
        }%
        \expandafter\kv@parse@normalized\expandafter{%
          \HyInfo@Key={#2}%
        }{%
          \kv@processor@default{pdfinfo}%
        }%
      \fi
    \else
      \expandafter\kv@parse@normalized\expandafter{%
        \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
}
\def\Hy@number#1{%
  \the\numexpr#1\relax
  }%
\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
    \def\@pdfstartview{/#1}%
  \fi
}
\def\HyPat@NonNegativeReal/{%
  \ *([0-9]+\.?[0-9]*|[0-9]*\.?[0-9]+) *%
}
```

```
\define@key{Hyp}{pdfremotestartview}{%
  \ifx\\#1\\%
    \def\@pdfremotestartview{/Fit}%
  \else
    \edef\@pdfremotestartview{#1}%
    \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}
\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{\ifdim\stockheight>\z@ \stockheight\else\paperheight\fi}%
    \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\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@pdf@majorminor@version< 104
  \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.

change 2020-10-10: no trace of \texttilde can be found in the three languages spanish, galician and estonian so the patch has been removed as outdated.

```
\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@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

Ensure that `\stockwidth` and `\stockheight` are defined

```
\@ifundefined{stockwidth}{\newdimen\stockwidth}{}
\@ifundefined{stockheight}{\newdimen\stockheight}{}
```

```
\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{hhitex}%
 \ifhint
   \ifx\Hy@driver\Hy@temp
   \else
     \Hy@WarningNoLine{%
       Wrong driver `\Hy@driver.def';\MessageBreak
       hitex is running.\MessageBreak
       Forcing driver `\Hy@temp.def'%
     }%
     \let\Hy@driver\Hy@temp
   \fi
  \fi
\fi
\ifx\Hy@driver\@empty
\else
  \def\Hy@temp{hvtexhtm}%
  \ifnum\ifvtex\OpMode\else\m@ne\fi=10 %
    \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}{hdvips}%
    \ifpdf
      \ifx\pdfextension\@undefined
        \def\Hy@driver{hpdftex}%
      \else
        \def\Hy@driver{hluatex}%
      \fi
    \else
      \ifxetex
        \def\Hy@driver{hxetex}%
      \else
        \ifnum\ifvtex\OpMode\else\m@ne\fi=10 %
          \def\Hy@driver{hvtexhtm}%
          \def\MaybeStopEarly{%
            \Hy@Message{Stopped early}%
            \Hy@AtBeginDocument{%
              \PDF@FinishDoc
              \gdef\PDF@FinishDoc{}%
            }%
            \endinput
          }%
        \else
          \ifhint
            \def\Hy@driver{hhitex}
          \else
            \ifnum\ifvtex\OpMode\else\m@ne\fi=\@ne
              \def\Hy@driver{hvtex}%
            \else
              \ifnum\ifvtex\OpMode\else\m@ne\fi=\tw@
                \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
    \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
    \Hy@CatcodeWrapper{%
      \RequirePackage{color}%
     }%
    \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{\scdefault}\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
  \else
```

With active links we have to redefine the starred versions to avoid that they get links from the include **\@setref**:

```
    \ifHy@implicit
      \let \T@Ref\HyRef@Ref
      \def\@refstar#1{%
        \NR@ref@showkeys{#1}%
        \HyRef@StarSetRef{#1}\@firstoffive
      }
      \def\@pagerefstar#1{%
        \NR@ref@showkeys{#1}%
        \HyRef@StarSetRef{#1}\@secondoffive
      }
      \def\@namerefstar#1{%
        \NR@ref@showkeys{#1}%
        \HyRef@StarSetRef{#1}\@thirdoffive
      }
      \def\@Refstar#1{%
        \NR@ref@showkeys{#1}%
        \HyRef@StarSetRef{#1}\HyRef@MakeUppercaseFirstOfFive
      }%
     \else
      \fi
  \fi
}
\Hy@AtBeginDocument{%
  \ifx\ReadBookmarks\relax
  \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
    \let\protect\@unexpandable@protect
    \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. `\hyperrefundefinedlink` may be redefined by a user to add colour or other formatting.

```
\let\hyperrefundefinedlink\@firstofone
\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
      \hyperrefundefinedlink{#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
}
```

\hyperget To create manually bookmarks one need the destination name. If there is a label, the name can be retrieved with commands from refcount. Such a destination name must take \HyperDestNameFilter into account

```
\HyperDestNameFilter{\getrefbykeydefault{label}{anchor}{Doc-Start}}
```

To make this easier, we define \hyperget

```
\ExplSyntaxOn
\cs_new:Npn \hyperget #1 #2
  {
    \use:c { ___hyp_get_#1:n } { #2}
  }

\cs_new:Npn \___hyp_get_anchor:n  #1
  {
    \HyperDestNameFilter
     {
       \cs_if_exist:cTF {r@#1}
        {
          \tl_item:cn {r@#1}{4}
        }
        {
          Doc-Start
        }
     }
  }
\cs_new:Npn \___hyp_get_pageanchor:n  #1
  {
    \HyperDestNameFilter
     {
       \cs_if_exist:cTF {r@#1}
        {
          page. \tl_item:cn {r@#1}{2}
        }
        {
          Doc-Start
        }
     }
  }
```

```
\cs_new:Npn \___hyp__get__currentanchor:n  #1
 {
   \HyperDestNameFilter { \@currentHref }
 }
\ExplSyntaxOff
```

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

```
\let\HyperDestRename\ltx@gobbletwo
\fi
\Hy@DisableOption{destlabel}
```

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

```
\AddToHook{include/before}
 {\immediate\write\@partaux{\string\providecommand\string\hyper@newdestlabel[2]{}}}
\AddToHook{begindocument}
 {\immediate\write\@mainaux{\string\providecommand\string\hyper@newdestlabel[2]{}}}
```

19 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.

19.1 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
}
```

19.1.1 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}%
```

19.1.2 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}}%
  }%
}
```

19.1.3 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}}%
  }%
}
```

19.1.4 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}}%
  }%
}
```

19.1.5 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}}%
  }%
}
```

19.1.6 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}}%
  }%
}
```

19.1.7 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}}%
  }%
}
```

19.1.8 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}}%
  }%
}
```

19.2 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@pdf@majorminor@version<103 % 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
}
```

19.3 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
 \expandafter\Hy@pdfstringdef\expandafter\@currValue\expandafter{\@currValue}%
}
\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}%
}
\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
}%
\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}{%
  \Hy@pdfstringdef\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
  \def\Hy@temp{#1}%
  \ifx\Hy@temp\@empty
    #2%
  \else
    #1 #2%
  \fi
}
\def\LayoutChoiceField#1#2{% label, field
  \def\Hy@temp{#1}%
  \ifx\Hy@temp\@empty
    #2%
  \else
    #1 #2%
  \fi
}
\def\LayoutCheckField#1#2{% label, field
  \def\Hy@temp{#1}%
  \ifx\Hy@temp\@empty
    #2%
  \else
    #1 #2%
  \fi
}
\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{\normalbaselineskip}
\def\DefaultWidthofCheckBox{\normalbaselineskip}
```

```
\def\DefaultHeightofChoiceMenu{\normalbaselineskip}
\def\DefaultWidthofChoiceMenu{\normalbaselineskip}
\def\DefaultHeightofText{\normalbaselineskip}
\def\DefaultHeightofTextMultiline{4\normalbaselineskip}
\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}
```

20 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
```

21 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: This is only needed if LaTeX doesn't define the starred variants itself.

```
\@ifundefined{@kernel@ref}
 {\LetLtxMacro\NoHy@OrgRef\ref
  \DeclareRobustCommand*{\ref}{%
  \@ifstar\NoHy@OrgRef\NoHy@OrgRef
  }
```

```
  \LetLtxMacro\NoHy@OrgPageRef\pageref
  \DeclareRobustCommand*{\pageref}{%
  \@ifstar\NoHy@OrgPageRef\NoHy@OrgPageRef
 }}{}
```

22 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⟩

23 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. This is only needed in older formats.

```
\@ifl@t@r\fmtversion{2022-06-01}
 {}%
 {%
   \LetLtxMacro\NoHy@OrgRef\ref
   \DeclareRobustCommand*{\ref}{%
     \@ifstar\NoHy@OrgRef\NoHy@OrgRef
   }
   \LetLtxMacro\NoHy@OrgPageRef\pageref
   \DeclareRobustCommand*{\pageref}{%
     \@ifstar\NoHy@OrgPageRef\NoHy@OrgPageRef
   }%
 }
⟨/nohyperref⟩
```

24 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 `\newlabel` is defined to cope with the extra arguments. change 2022-03-28: removed the code for `\contentsline`, it is no longer needed as `\contentsline` has now always four arguments.

```
  \if@filesw
    \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\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\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. change 2022-03-28: removed the test for an old toc. `\contentsline` has now always four arguments.

```
  \ifx\hyper@last\@undefined
    \def\newlabel#1#2{\@newl@bel r{#1}{#2{}{}{}{}}}%
  \fi
}
```

25 Title strings

If options `pdftitle` and `pdfauthor` are not used, these informations for the pdf information dictionary can be extracted by the `\title` and `\author`.

```
\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 `\title`, or `\author` are 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.

A possible [1]emoves its argument.

```
\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{; }%
        \let\thanks\@gobble%
      }%
      \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}%
}
```

26 Page numbers

This stuff is done by Heiko Oberdiek.

27 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
}
```

27.1 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⟩

27.1.1 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⟩
```

27.1.2 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
```

Since 2016 (x)dvipdfmx has a special to control the spacing of annotation borders. So let's make use of it:

```
\def\setpdflinkmargin#1{%
  \begingroup
    \setlength{\dimen@}{#1}%
    \special{dvipdfmx:config g \strip@pt\dimen@}%
  \endgroup}
⟨/xetex⟩
```

set the pdf version

```
⟨*dvipdfm | xetex⟩
\special{pdf:majorversion \Hy@pdf@majorversion}
\special{pdf:minorversion \Hy@pdf@minorversion}
⟨/dvipdfm | xetex⟩
```

27.1.3 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⟩

⟨*packageEnd⟩

\ifx\MaybeStopEarly\relax
\else
```

```
  \Hy@stoppedearlytrue
  \expandafter\MaybeStopEarly
\fi
\Hy@stoppedearlyfalse
```

28 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}}%
}
\providecommand\theHequation{\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}%
```

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. change 2022-04-22: removed test for the slide counter and for the equation name. change 2022-05-02: added the new boolean set by `\LinkTargetOn/\LinkTargetOff`

```
\newif\if@hyper@item
\newif\if@skiphyperref
\@hyper@itemfalse
\@skiphyperreffalse
\ExplSyntaxOn
\def\refstepcounter#1{%
  \legacy_if:nF {Hy@pdfstring}
   {
    \H@refstepcounter{#1}%
    \bool_lazy_and:nnT
      { \l__hyp_target_create_bool }
```

```
    { ! \legacy_if_p:n{@skiphyperref} }
    {
      \legacy_if:nTF {@hyper@item}
        {
          \stepcounter{Item}%
          \hyper@refstepcounter{Item}%
          \@hyper@itemfalse
        }
        {
          \hyper@refstepcounter{#1}%
        }
    }
  }
}
\ExplSyntaxOff
\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{%
  \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 `\@elt`s. 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
}
```

We define a hook to allow to overwrite the next destination name.

```
\NewHook{___hyp/target/setname }
\define@key{Hyp}{next-anchor}{%
    \AddToHookNext{___hyp/target/setname}%
      {\Hy@MakeCurrentHref{#1}}%
  }
```

\hyper@makecurrent Because of Babel mucking around, nullify **\textlatin** when making names. And **\@number** because of babel's lrbabel.def. change 2021-08-15: For new formats we add a hook which allows to overwrite the name of the next destination.

```
\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
  \UseHook{___hyp/target/setname}%
}
```

\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 This command is e.g. used to create destinations for unnumbered sections and chapters. For new formats we add a hook which allows to overwrite the name of the next destination.

```
  \def\Hy@MakeCurrentHrefAuto#1{%
  \Hy@GlobalStepCount\Hy@linkcounter
  \Hy@MakeCurrentHref{#1.\the\Hy@linkcounter}%
  \UseHook{___hyp/target/setname}}
```

\@currentHlabel \@currrentHlabel is only defined for compatibility with package 'hypdvips'.

```
\def\@currentHlabel{\@currentHref}
```

29 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}}
```

30 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
  }%
}{}
```

31 Package varioref support

Package nameref uses five arguments for the ref system. Fix provided by Felix Neubauer (felix.neubauer@gmx.net). This fix will no longer be needed with latex 2021-11-15.

```
\@ifl@t@r\fmtversion{2021-11-15}
{}%
{
  \AtBeginDocument{%
  \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}}%
    }%
  }{}
  }
}
```

32 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}{%
\@ifundefined{hyper@nopatch@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
}{}
}{}
```

33 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 40). The exception is that we move the equation incrementation inside the math environment to avoid specials outside and a wrong vertical spacing of equation environments. This and more math related patches can be suppressed with `\hyper@nopatch@mathenv`

```
\let\new@refstepcounter\refstepcounter
\let\H@equation\equation
\let\H@endequation\endequation
\@ifundefined{hyper@nopatch@mathenv}{%
  \@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
    \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
\@ifundefined{hyper@nopatch@mathenv}{%
  \def\eqnarray{%
    \let\Hy@reserved@a\relax
    \def\@currentHref{}%
    \H@eqnarray
    \if@eqnstar
    \else
      \ifx\\\@currentHref\\%
      \else
        \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*}{%
  \protected\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
    \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`:

```
\ifcsname subequations\endcsname
  \let\HyOrg@subequations\subequations
```

```
  \def\subequations{%
    \stepcounter{equation}%
    \protected@edef\theHparentequation{\theHequation}%
    \addtocounter{equation}{-1}%
    \HyOrg@subequations
    \def\theHequation{\theHparentequation\alph{equation}}%
    \ignorespaces
  }%
\fi
```

Support for theorems. We move the target into the para hook to avoid spacing problem. The patch will not apply to cleveref but hopefully it does the right thing anyway. \@currentHref is updated directly for labels set before the actual start of the paragraph. The target can be behind a target created from a following list, so we restore \@currentHref just in case

```
\newcommand\Hy@theorem@refstepcounter[1]
  {%
    \H@refstepcounter{#1}%
    \hyper@makecurrent{#1}%
    \global\let\Hy@dth@currentHref\@currentHref
    \AddToHookNext{para/begin}
      {\let\Hy@tempa\@currentHref
       \MakeLinkTarget*{\Hy@dth@currentHref}%
       \global\let\@currentHref\Hy@tempa
      }%
  }
\@ifundefined{hyper@nopatch@thm}{%
\AtBeginDocument{%
 \@ifpackageloaded{cleveref}
  {\AddToHook{cmd/@thm/before}{\ifhmode\unskip\fi}}
  {%
    \ifpatchable\@thm{\refstepcounter}
      {\patchcmd\@thm{\refstepcounter}{\Hy@theorem@refstepcounter}{}{}}
      {}%
  }}}{}
```

34 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. If \hyper@nopatch@footnote is defined we don't patch but assume that addings links to footnotes is handled elsewhere.

```
\@ifundefined{hyper@nopatch@footnote}{%
\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
       }{\ignorespaces #1}%
    }{%
      \Hy@raisedlink{%
        \expandafter\hyper@@anchor\expandafter{%
          \Hy@footnote@currentHref
        }{\relax}%
      }\ignorespaces #1%
    }%
  }%
}%
\long\def\@footnotetext#1{%
  \H@@footnotetext{%
    \ifHy@nesting
      \expandafter\ltx@firstoftwo
    \else
      \expandafter\ltx@secondoftwo
    \fi
    {%
      \expandafter\hyper@@anchor\expandafter{%
        \Hy@footnote@currentHref
      }{\ignorespaces #1}%
    }{%
      \Hy@raisedlink{%
        \expandafter\hyper@@anchor\expandafter{%
          \Hy@footnote@currentHref
        }{\relax}%
      }%
      \let\@currentHref\Hy@footnote@currentHref
```

```
      \let\@currentlabelname\@empty
      \ignorespaces #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
    \def\@currentcounter{footnote}%
      \protected@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 or newer LaTeX 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}
```

```
⟨/packageEnd⟩
⟨*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⟩
⟨*packageEnd⟩
```

35 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.

```
\@ifundefined{hyper@nopatch@caption}{%
\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
}}{}%end no patch
```

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
}{}
⟨/packageEnd⟩
⟨*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⟩
⟨*packageEnd⟩
```

36 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 that's 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
}%
}{}
```

```
⟨/packageEnd⟩
⟨*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⟩
⟨*packageEnd⟩
```

36.1 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
   }%
  }%
}{}
```

36.2 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}]%
 }%
}{}
```

37 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
}
```

38 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. In newer LaTeX releases this is defined to put a % at the end of the line in the tocfile.

```
\providecommand\protected@file@percent{}
\@ifundefined{hyper@nopatch@toc}{%
 \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}\protected@file@per-
    cent
      }%
    \endgroup
  }
}{}
```

\contentsline The page number might be empty. In this case the link for the page number is suppressed to avoid little link boxes.

change 2022-11-13: To avoid problems if MakeUppercase is used around the entry we use special protected commands:

```
\protected\def\Hy@toclinkstart{\hyper@linkstart{link}{\Hy@tocdestname}}
\protected\def\Hy@toclinkend{\hyper@linkend}

\@ifundefined{hyper@nopatch@toc}{%
  \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{%
          \Hy@toclinkstart{#2}\Hy@toclinkend
        }{#3}%
      \or % page
        \def\Hy@temp{#3}%
        \ifx\Hy@temp\ltx@empty
          \csname l@#1\endcsname{#2}{#3}%
        \else
          \csname l@#1\endcsname{{#2}}{%
            \Hy@toclinkstart{#3}\Hy@toclinkend
          }%
        \fi
      \else % all
        \def\Hy@temp{#3}%
        \ifx\Hy@temp\ltx@empty
          \csname l@#1\endcsname{%
            \Hy@toclinkstart{#2}\Hy@toclinkend
          }{}%
        \else
          \csname l@#1\endcsname{%
            \Hy@toclinkstart{#2}\Hy@toclinkend
          }{%
            \Hy@toclinkstart{#3}\Hy@toclinkend
          }%
        \fi
```

```
    \fi
   \fi
  }
}{}
```

```
⟨/packageEnd⟩
⟨*check⟩
\checklatex
\checkcommand\def\addcontentsline#1#2#3{%
  \addtocontents{#1}{\protect\contentsline{#2}{#3}{\thepage}}%
}
\checkcommand\def\contentsline#1{\csname l@#1\endcsname}
⟨/check⟩
⟨*packageEnd⟩
```

39 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.

```
\@ifundefined{hyper@nopatch@counter}
 {
  \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.

```
\@ifundefined{hyper@nopatch@counter}
 {
   \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}%
     }%
   }
 }{}
```

40 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.

If `\hyper@nopatch@amsmath@tag` is defined we don't patch but assume that kernel code adds anchors to equations.

```
\@ifundefined{hyper@nopatch@amsmath@tag}
 {%
  \@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@@@
  }{}
}{}
```

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}}}}
```

40.1 \@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.

```
\@ifundefined{hyper@nopatch@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 appropriate definition of hyperref's companion counter (\theH...) is added for correct link names.

```
⟨/packageEnd⟩
⟨*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⟩
⟨*packageEnd⟩
\@ifundefined{hyper@nopatch@counter}
  {
   \@ifpackageloaded{amsmath}{%
     \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}%
           }%
         }%
       }%
     }%
   }{}
  }{}
```

41 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}
```

42 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}%
```

```
8233          }%
8234        \fi
8235      \fi
8236    }%
8237  \else
8238    \def\@wrindex#1{\@@wrindex#1||\\}%
8239    \def\@@wrindex#1|#2|#3\\{%
8240      \if@filesw
8241        \ifx\\#2\\%
8242          \protected@write\@indexfile{}{%
8243            \string\indexentry{#1|hyperpage}{\thepage}%
8244          }%
8245        \else
8246          \HyInd@@@wrindex{#1}#2\\%
8247        \fi
8248      \fi
8249      \endgroup
8250      \@esphack
8251    }%
8252    \def\HyInd@@@wrindex#1#2#3\\{%
8253      \def\Hy@temp@A{#2}%
8254      \ifcase0\ifx\Hy@temp@A\HyInd@ParenLeft 1\fi
8255            \ifx\Hy@temp@A\HyInd@ParenRight 1\fi
8256            \relax
8257        \protected@write\@indexfile{}{%
8258          \string\indexentry{%
8259            #1|hyperindexformat{/#2#3}%
8260          }{\thepage}%
8261        }%
8262      \else
8263        \ifx\\#3\\%
8264          \ifx\Hy@temp@A\HyInd@ParenRight
8265            \HyInd@DefKey{#1}%
8266            \ltx@IfUndefined{HyInd@(\HyInd@key)}{%
8267              \let\Hy@temp\ltx@empty
8268            }{%
8269              \expandafter\let\expandafter\Hy@temp
8270              \csname HyInd@(\HyInd@key)\endcsname
8271            }%
8272            \protected@write\@indexfile{}{%
8273              \string\indexentry{#1|#2\Hy@temp}{\thepage}%
8274            }%
8275          \else
8276            \protected@write\@indexfile{}{%
8277              \string\indexentry{#1|#2hyperpage}{\thepage}%
8278            }%
8279            \HyInd@DefKey{#1}%
8280            \expandafter
8281            \gdef\csname HyInd@(\HyInd@key)\endcsname{%
8282              hyperpage%
8283            }%
8284          \fi
8285        \else
8286          \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
}
```

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.)

change 2022-11-13: added an `\@empty` for issue#261.

```
\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\@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
}
```

```
⟨/packageEnd⟩
⟨*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⟩
⟨*packageEnd⟩
```

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
    \let\protect\@unexpandable@protect
    \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
}
\def\@Refstar#1{%
  \HyRef@StarSetRef{#1}\HyRef@MakeUppercaseFirstOfFive
}%
\def\HyRef@MakeUppercaseFirstOfFive#1#2#3#4#5{%
  \MakeUppercase#1%
}%
\def\HyRef@Ref#1{%
  \hyperref[{#1}]{\Ref*{#1}}%
}%
\Hy@AtBeginDocument{%
  \@ifpackageloaded{varioref}{%
```

This are the patches for a varioref newer after 2019-09 Older versions are no longer supported. If `\hyper@nopatch@varioref` is defined we don't patch but assume that varioref handles the hyperlinks.

```
  \@ifundefined{hyper@nopatch@varioref}
  {
  \renewcommand\Vref@star[2][]{%
    \begingroup
      \let\T@pageref\@pagerefstar
      \Ref*{#2}
      \vpageref[#1]{#2}%
    \endgroup
  }%
  \renewcommand\Vr@f[2][]{%
    \begingroup
      \let\T@pageref\@pagerefstar
      \hyperref[{#2}]{%
        \Ref*{#2}
        \vpageref[#1]{#2}%
      }%
    \endgroup
  }%
   \renewcommand\vr@f[2][]{%
     \begingroup
       \let\T@pageref\@pagerefstar
       \hyperref[{#2}]{%
         \ref*{#2}
```

```
        \vpageref[#1]{#2}%
      }%
    \endgroup
  }%
  \renewcommand\vref@star[2][]{%
    \begingroup
      \let\T@pageref\@pagerefstar
      \ref*{#2}
      \vpageref[#1]{#2}%
    \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.

```
\NewDocumentCommand\autoref{s}
  {\leavevmode
  \IfBooleanTF{#1}{\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{%
  \ifcsname SK@@label\endcsname
    \ifx\SK@ref\@empty
    \else
      \def\HyRef@ShowKeysRef{%
        \SK@\SK@@ref
      }%
    \fi
  \fi
}
\AddToHook{package/showkeys/after}{\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}
```

⟨/packageEnd⟩

43 Configuration files

43.1 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.

```
8624 ⟨*pdftex | dvipdfm | xetex | vtex | pdfmarkbase | dviwindo⟩
8625 \begingroup\expandafter\expandafter\expandafter\endgroup
8626 \expandafter\ifx\csname pdf@escapestring\endcsname\relax
8627   \begingroup
8628     \catcode`\|=0 %
8629     \@makeother\\%
8630   |@firstofone{|endgroup
8631     |def|Hy@pstringdef#1#2{%
8632       |begingroup
8633         |edef~{|string~}%
8634         |xdef|Hy@gtemp{#2}%
8635       |endgroup
8636       |let#1|Hy@gtemp
8637       |@onelevel@sanitize#1%
8638       |edef#1{|expandafter|Hy@ExchangeBackslash#1\|@nil}%
8639       |edef#1{|expandafter|Hy@ExchangeLeftParenthesis#1(|@nil}%
8640       |edef#1{|expandafter|Hy@ExchangeRightParenthesis#1)|@nil}%
8641     }%
8642     |def|Hy@ExchangeBackslash#1\#2|@nil{%
8643       #1%
8644       |ifx|\#2|\%%
8645       |else
8646         \\%
8647         |ltx@ReturnAfterFi{%
8648           |Hy@ExchangeBackslash#2|@nil
8649         }%
8650       |fi
8651     }%
8652   }%
8653   \def\Hy@ExchangeLeftParenthesis#1(#2\@nil{%
8654     #1%
8655     \ifx\\#2\\%
8656     \else
8657       \@backslashchar(%
8658       \ltx@ReturnAfterFi{%
8659         \Hy@ExchangeLeftParenthesis#2\@nil
8660       }%
8661     \fi
8662   }%
8663   \def\Hy@ExchangeRightParenthesis#1)#2\@nil{%
8664     #1%
8665     \ifx\\#2\\%
8666     \else
8667       \@backslashchar)%
8668       \ltx@ReturnAfterFi{%
8669         \Hy@ExchangeRightParenthesis#2\@nil
8670       }%
8671     \fi
8672   }%
8673 \else
8674   \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⟩
```

43.2 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

```
\def\Hy@pdfminorversion{\pdfoptionpdfminorversion}%
\def\Hy@pdfminorversion{\pdfminorversion}%
\ifHy@ocgcolorlinks
  \ifnum\Hy@pdfmajorminor@version<105 %
    \kvsetkeys{Hyp}{pdfversion=1.5}%
  \fi
\fi
\ifHy@setpdfversion
  \ifnum\Hy@pdf@majorminor@version<105 %
    \ltx@IfUndefined{pdfobjcompresslevel}{%
    }{%
      \ifHy@verbose
        \Hy@InfoNoLine{%
          PDF object streams are disabled, because they are%
          \MessageBreak
          not supported in requested PDF version %
          \Hy@pdf@majorversion.\Hy@pdf@minorversion
        }%
      \fi
      \pdfobjcompresslevel=\ltx@zero
    }%
  \fi
  \ifnum\Hy@pdfmajorminor@version=\Hy@pdf@majorminor@version\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@pdfmajorversion=\Hy@pdf@majorversion\relax
  \Hy@pdfminorversion=\Hy@pdf@minorversion\relax
\else
  \let\Hy@temp@A\ltx@empty
  \ifnum\Hy@pdf@majorminor@version=104 %
    \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@pdfmajorversion=\Hy@pdf@majorversion, %
    \expandafter\string\Hy@pdfminorversion=\Hy@pdf@minorversion
    \string\relax
    \ifnum\Hy@pdf@majorminor@version<105 %
      \ltx@ifundefined{pdfobjcompresslevel}{%
      }{%
        \MessageBreak
        \space\space
        \string\pdfobjcompresslevel=0\string\relax
      }%
    \fi
    \Hy@temp@A
  }%
 \fi
\fi
\PackageInfo{hyperref}{%
```

```
    \expandafter\string\Hy@pdfmajorversion.%
    \expandafter\string\Hy@pdfminorversion
    :=\number\Hy@pdf@majorversion.\number\Hy@pdf@minorversion\space
  }%
\fi
\edef\Hy@pdf@majorversion{\number\Hy@pdfmajorversion}%
\edef\Hy@pdf@minorversion{\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
}
\pdflinkmargin1pt %
```

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
}
```

\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{addtopdfcreator}%
\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
}

\pdf@ifdraftmode{}{%
  \g@addto@macro\Hy@EveryPageHook{%
    \hyper@pagetransition
    \hyper@pageduration
  }%
}
```

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
  }{%
    \ifnum\mag=\@m
      \ifdim\stockwidth>\z@
        \ifdim\stockheight>\z@
         \setlength{\pdfpagewidth}{\stockwidth}%
         \setlength{\pdfpageheight}{\stockheight}%
        \else
          \ifdim\paperwidth>\z@
            \ifdim\paperheight>\z@
              \setlength{\pdfpagewidth}{\paperwidth}%
              \setlength{\pdfpageheight}{\paperheight}%
            \fi
          \fi
        \fi
      \else
        \ifdim\stockwidth=\z@
          \ifdim\paperwidth>\z@
            \ifdim\paperheight>\z@
              \setlength{\pdfpagewidth}{\paperwidth}%
              \setlength{\pdfpageheight}{\paperheight}%
            \fi
          \fi
        \fi
      \fi
    \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
  }%
}
```

43.2.1 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.

change 2020-10-01: the code has been removed as outdated.

```
⟨/pdftex⟩
```

43.3 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⟩
```

43.4 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%
      }%
      \expandafter\Hy@colorlink\csname @#1color\endcsname
      \Hy@RestoreSpaceFactor
      #3\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
      #2%
    }%
```

```
    \expandafter\Hy@colorlink\csname @#1color\endcsname
    #3\Hy@xspace@end
    \Hy@endcolorlink
  \fi
}
\def\hyper@linkurl#1#2{%
  \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
          launch: \wwwbrowser\space
          #2%
        }%
        \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{}%
      \Hy@RestoreSpaceFactor
    \else
      \special{button: %
        \number\wd\@tempboxa\space
        \number\ht\@tempboxa\space
        launch: \wwwbrowser\space
        #2%
      }%
      \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
}
\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{addtopdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \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⟩
```

43.5 dvipdfm/xetex dvi to PDF converter

Provided by Mark Wicks (mwicks@kettering.edu)

(x)dvipdfmx replaces destination names by numbers. This makes it impossible to link from an external document with xr-hyper, so from version 7.00j on this is suppressed with a config special.

```
\special{dvipdfmx:config C 0x0010}
\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
 }%
}

\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{addtopdfcreator}%
 \Hy@DisableOption{pdfcreationdate}%
 \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
}

\g@addto@macro\Hy@EveryPageBoxHook{%
  \hyper@pagetransition
  \hyper@pageduration
}
```

⟨/dvipdfm | xetex⟩

XeTEX uses pdfTEX's method \pdfpagewidth and \pdfpageheight for setting the paper size.

```
⟨*dvipdfm⟩
\AtBeginShipoutFirst{%
  \ifHy@setpagesize
    \begingroup
     \ifnum\mag=\@m
      \ifdim\stockwidth>\z@
        \ifdim\stockheight>\z@
         \special{papersize=\the\stockwidth,\the\stockheight}%
        \else
          \ifdim\paperwidth>\z@
            \ifdim\paperheight>\z@
              \special{papersize=\the\paperwidth,\the\paperheight}%
            \fi
          \fi
        \fi
      \else
        \ifdim\stockwidth=\z@
          \ifdim\paperwidth>\z@
            \ifdim\paperheight>\z@
              \special{papersize=\the\paperwidth,\the\paperheight}%
            \fi
          \fi
        \fi
      \fi
    \fi
    \endgroup
  \fi
  \Hy@DisableOption{setpagesize}%
}
⟨/dvipdfm⟩
```

43.6 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.

```
\ifcsname mediaheight\endcsname
  \ifHy@setpagesize
    \providecommand*{\VTeXInitMediaSize}{%
      \ifnum\mag=\@m
       \ifdim\stockwidth>\z@
         \ifdim\stockheight>\z@
          \setlength\mediaheight\stockheight
          \setlength\mediawidth\stockwidth
         \else
           \ifdim\paperwidth>\z@
             \ifdim\paperheight>\z@
               \setlength\mediaheight\paperheight
               \setlength\mediawidth\paperwidth
             \fi
           \fi
         \fi
       \else
         \ifdim\stockwidth=\z@
           \ifdim\paperwidth>\z@
             \ifdim\paperheight>\z@
               \setlength\mediaheight\paperheight
               \setlength\mediawidth\paperwidth
             \fi
           \fi
         \fi
       \fi
      \fi
    }%
    \Hy@AtBeginDocument{\VTeXInitMediaSize}%
  \fi
  \Hy@DisableOption{setpagesize}%
\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
}%
\g@addto@macro\Hy@EveryPageBoxHook{%
  \hyper@pagetransition
  \hyper@pageduration
}%
\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{addtopdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@DisableOption{pdfcreationdate}%
  \Hy@DisableOption{pdfmoddate}%
  \Hy@DisableOption{pdfproducer}%
  \Hy@DisableOption{pdfkeywords}%
  \Hy@DisableOption{pdftrapped}%
  \Hy@DisableOption{pdfinfo}%
}
⟨/vtex⟩
```

43.7 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}}%
⟨packageEnd⟩\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⟩
```

43.8 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
}
```

```
\g@addto@macro\Hy@EveryPageBoxHook{%
  \hyper@pagetransition
  \hyper@pageduration
}
\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{addtopdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \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.

43.9 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.

```
/DvipsToPDF{72.27 mul Resolution div} def%
/PDFToDvips{72.27 div Resolution mul} def%
/BPToDvips{72 div Resolution mul}def
```

The values inside the /Border 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.

Note GhostScript changed its behaviour here and later versions do not need this scaling, so test the PostScript interpreter is GhostScript and if so check its version.

If using gs and release > 9.27 no-op, otherwise patch.

```
product (Ghostscript) search {pop pop pop revision 927 gt}%
{pop false} ifelse%
{%
  /BorderArrayPatch{} def%
}%
{%
  /BorderArrayPatch{%
    [exch{%
      dup dup type/integertype eq exch type/realtype eq or%
      {BPToDvips}if%
    }forall]%
  }def%
} ifelse
```

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 PDFToDvips} 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

```
/H.S {%
  currentpoint %
  HyperBorder add /pdf@lly exch def %
  dup DvipsToPDF 72 add /pdf@hoff exch def %
  HyperBorder sub /pdf@llx exch def%
} 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

```
/H.L {%
```

```
    2 sub dup%
    /HyperBasePt exch def %
    PDFToDvips /HyperBaseDvips exch def %
    currentpoint %
    HyperBaseDvips sub /pdf@ury exch def%
    /pdf@urx exch def%
   } def%
   /H.A {%
    H.L %
% |/pdf@voff| = the distance from the top of the page to a point
% |\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
   \ifnum\mag=\@m
    \ifdim\stockwidth>\z@
     \ifdim\stockheight>\z@
      \special{papersize=\the\stockwidth,\the\stockheight}%
     \else
      \ifdim\paperwidth>\z@
       \ifdim\paperheight>\z@
        \special{papersize=\the\paperwidth,\the\paperheight}%
       \fi
      \fi
     \fi
    \else
     \ifdim\stockwidth=\z@
      \ifdim\paperwidth>\z@
       \ifdim\paperheight>\z@
        \special{papersize=\the\paperwidth,\the\paperheight}%
       \fi
      \fi
     \fi
    \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⟩

43.10 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⟩
```

43.11 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⟩
```

43.12 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}%
\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{addtopdfcreator}%
  \Hy@DisableOption{pdfcreationdate}%
  \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⟩

43.13 TeX4ht

```
⟨*tex4ht⟩
\providecommand*{\XR@ext}{html}
\let\Hy@raisedlink\ltx@empty
\@ifpackageloaded{tex4ht}{%
  \Hy@InfoNoLine{tex4ht is already loaded}%
}{%
  \RequirePackage[htex4ht]{tex4ht}%
}
\hyperlinkfileprefix{}
\let\PDF@FinishDoc\ltx@empty
\def\PDF@SetupDoc{%
  \ifx\@baseurl\@empty
  \else
    \special{t4ht=<base href="\@baseurl">}%
  \fi
}
\Hy@WrapperDef\hyper@anchor#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \begingroup
    \let\protect=\string
    \special{t4ht=<a name=%
       \hyper@quote\HyperDestNameFilter{#1}\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
  \Hy@colorlink\@anchorcolor\anchor@spot\Hy@endcolorlink
  \special{t4ht=</a>}%
  \Hy@activeanchorfalse
  \Hy@RestoreLastskip
}
\Hy@WrapperDef\hyper@anchorstart#1{%
  \Hy@SaveLastskip
  \Hy@VerboseAnchor{#1}%
  \begingroup
    \hyper@chars\special{t4ht=<a name=%
       \hyper@quote\HyperDestNameFilter{#1}\hyper@quote>}%
  \endgroup
  \Hy@activeanchortrue
}
\def\hyper@anchorend{%
  \special{t4ht=</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{t4ht=<a href=\hyper@quote#2\hyper@quote>}%
  \else
```

```
    \begingroup
      \hyper@chars
      \special{t4ht=<a href=%
          \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⟩
```

44 Driver-specific form support

44.1 pdfmarks

change 2020-06-20: added /Euro to encoding

```
⟨*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 %
      160/Euro %
      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{%
    \DefaultOptionsofPushButton,#1%
  }%
  \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
    \HyField@AdvanceAnnotCount
    \LayoutPushButtonField{%
      \leavevmode
      \Hy@escapeform\PDFForm@Push
      \pdfmark[\MakeButtonField{#2}]{%
        pdfmark=/ANN,%
        objdef=push\HyField@TheAnnotCount,%
        Raw={\PDFForm@Push}%
      }%
    }%
    \HyField@AddToFields{push}%
```

```
    \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
    \Hy@escapeform\PDFForm@Submit
    \HyField@AdvanceAnnotCount
    \pdfmark[\MakeButtonField{#2}]{%
      pdfmark=/ANN,%
      objdef=submit\HyField@TheAnnotCount,%
      Raw={\PDFForm@Submit /AP<</N{Submit}/D{SubmitP}>>}%
    }%
    \HyField@AddToFields{submit}%
  \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
      \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⟩
```

44.2 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⟩
```

44.3 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⟩
```

44.4 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
\@ifundefined{pdflastlink}
 {%
  \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%
  }}%
 {%
  \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
  }%
}%
}
\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 %
```

```
13208           \edef\Fld@height{\the\@tempdima}%
13209         \fi
13210         \@@Listbox{#3}%
13211       \endgroup
13212     \fi
13213   }%
13214  \endgroup
13215 }
13216 \def\@@Radio#1{%
13217  \Fld@listcount=0 %
13218  \EdefEscapeName\Fld@default{\Fld@default}%
13219  \@for\@curropt:=#1\do{%
13220   \expandafter\Fld@checkequals\@curropt==\\%
13221   \EdefEscapeName\@currValue{\@currValue}%
13222   \Hy@StepCount\Fld@listcount
13223   \@currDisplay\space
13224   \leavevmode
13225   \HyAnn@AbsPageLabel
13226   \Hy@escapeform\PDFForm@Radio
13227   \pdfstartlink user {%
13228    \PDFForm@Radio
13229    /AP<<%
13230     /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.

```
13231       /\@currValue\space \DingObject
13232      >>%
13233    >>%
13234   }%
13235   \relax
13236   \MakeRadioField{\Fld@width}{\Fld@height}\pdfendlink
13237   \ifnum\Fld@listcount=1 %
13238    \HyField@AddToFields
13239   \fi
13240   \space % deliberate space between radio buttons
13241  }%
13242 }
13243 \newcount\Fld@listcount
13244 \def\@@Listbox#1{%
13245  \HyField@PDFChoices{#1}%
13246  \leavevmode
13247  \HyAnn@AbsPageLabel
13248  \Hy@escapeform\PDFForm@List
13249  \pdfstartlink user {\PDFForm@List}\relax
13250  \MakeChoiceField{\Fld@width}{\Fld@height}%
13251  \pdfendlink
13252  \HyField@AddToFields
13253 }
13254 \def\@PushButton[#1]#2{% parameters, label
13255  \def\Fld@name{#2}%
13256  \begingroup
13257   \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 %
    160/Euro %
    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⟩
```

44.5 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
      \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
    \setbox\pdfm@box=\hbox{%
      \MakeTextField{\Fld@width}{\Fld@height}%
    }%
    \HyField@AdvanceAnnotCount
    \LayoutTextField{#2}{%
      \leavevmode
      \Hy@escapeform\PDFForm@Text
      \@pdfm@mark{%
        ann @text\HyField@TheAnnotCount\space
        \dvipdfm@setdim << \PDFForm@Text >>%
      }%
    }%
    \unhbox\pdfm@box
    \HyField@AddToFields{text}%
    % record in @afields array
  \endgroup
```

```
}
```

\@ChoiceMenu

```
\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
}
```

\@@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
```

```
13655   \endgroup
13656 }
```

\@Submit

```
13657 \def\@Submit[#1]#2{%
13658   \def\Fld@width{\DefaultWidthofSubmit}%
13659   \def\Fld@height{\DefaultHeightofSubmit}%
13660   \begingroup
13661     \expandafter\HyField@SetKeys\expandafter{%
13662       \DefaultOptionsofSubmit,#1%
13663     }%
13664     \HyField@FlagsPushButton
13665     \HyField@FlagsSubmit
13666     \ifFld@hidden\def\Fld@width{1sp}\fi
13667     \setbox\pdfm@box=\hbox{\MakeButtonField{#2}}%
13668     \leavevmode
13669     \Hy@escapeform\PDFForm@Submit
13670     \HyField@AdvanceAnnotCount
13671     \@pdfm@mark{%
13672       ann @submit\HyField@TheAnnotCount\space
13673       \dvipdfm@setdim
13674       <<\PDFForm@Submit>>%
13675     }%
13676     \unhbox\pdfm@box%
13677     \HyField@AddToFields{submit}%
13678   \endgroup
13679 }
```

\@Reset

```
13680 \def\@Reset[#1]#2{%
13681   \def\Fld@width{\DefaultWidthofReset}%
13682   \def\Fld@height{\DefaultHeightofReset}%
13683   \begingroup
13684     \expandafter\HyField@SetKeys\expandafter{%
13685       \DefaultOptionsofReset,#1%
13686     }%
13687     \leavevmode
13688     \ifHy@pdfa
13689       \Hy@Error{%
13690         PDF/A: Reset action is prohibited%
13691       }\@ehc
13692       \MakeButtonField{#2}%
13693     \else
13694       \HyField@FlagsPushButton
13695       \ifFld@hidden\def\Fld@width{1sp}\fi
13696       \setbox\pdfm@box=\hbox{\MakeButtonField{#2}}%
13697       \Hy@escapeform\PDFForm@Reset
13698       \HyField@AdvanceAnnotCount
13699       \@pdfm@mark{%
13700         ann @reset\HyField@TheAnnotCount\space
13701         \dvipdfm@setdim
13702         <<\PDFForm@Reset>>%
13703       }%
13704       \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 %
    160/Euro %
    164/currency %
    166/brokenbar %
    168/dieresis/copyright/ordfeminine %
    172/logicalnot/.notdef/registered/macron/degree/plusminus%
```

```
13756         /twosuperior/threesuperior/acute/mu %
13757       183/periodcentered/cedilla/onesuperior/ordmasculine %
13758       188/onequarter/onehalf/threequarters %
13759       192/Agrave/Aacute/Acircumflex/Atilde/Adieresis/Aring/AE%
13760         /Ccedilla/Egrave/Eacute/Ecircumflex/Edieresis/Igrave/Iacute%
13761         /Icircumflex/Idieresis/Eth/Ntilde/Ograve/Oacute/Ocircumflex%
13762         /Otilde/Odieresis/multiply/Oslash/Ugrave/Uacute/Ucircumflex%
13763         /Udieresis/Yacute/Thorn/germandbls/agrave/aacute/acircumflex%
13764         /atilde/adieresis/aring/ae/ccedilla/egrave/eacute%
13765         /ecircumflex/edieresis/igrave/iacute/icircumflex/idieresis%
13766         /eth/ntilde/ograve/oacute/ocircumflex/otilde/odieresis%
13767         /divide/oslash/ugrave/uacute/ucircumflex/udieresis/yacute%
13768         /thorn/ydieresis%
13769     ]%
13770    >>%
13771  }%
13772  \@pdfm@mark{obj @OBJZaDb%
13773    <<%
13774      /Type/Font%
13775      /Subtype/Type1%
13776      /Name/ZaDb%
13777      /BaseFont/ZapfDingbats%
13778    >>%
13779  }%
13780  \@pdfm@mark{obj @OBJHelv%
13781    <<%
13782      /Type/Font%
13783      /Subtype/Type1%
13784      /Name/Helv%
13785      /BaseFont/Helvetica%
13786      /Encoding @OBJpdfdocencoding%
13787    >>%
13788  }%
13789  \global\let\Hy@FormObjects\relax
13790 }
13791 ⟨/dvipdfm | xetex⟩
```

44.6 Common forms part

```
13792 ⟨*pdfform⟩
```

\Fld@pageobjref

```
13793 \providecommand*{\Fld@pageobjref}{}
```

\Hy@escapestring

```
13794 \@ifundefined{pdf@escapestring}
13795 {%
13796  \let\Hy@escapestring\@firstofone
13797  \def\Hy@escapeform#1{%
13798    \ifHy@pdfescapeform
13799      \def\Hy@escapestring##1{%
13800        \noexpand\Hy@escapestring{\noexpand##1}%
13801      }%
13802      \edef\Hy@temp{#1}%
```

```
13803     \expandafter\Hy@@escapeform\Hy@temp\Hy@escapestring{}\@nil
13804     \def\Hy@escapestring##1{%
13805       \@ifundefined{Hy@esc@\string##1}{%
13806         ##1%
13807         \ThisShouldNotHappen
13808       }{%
13809         \csname Hy@esc@\string##1\endcsname
13810       }%
13811     }%
13812   \else
13813     \let\Hy@escapestring\@firstofone
13814   \fi
13815  }%
13816  \def\Hy@@escapeform#1\Hy@escapestring#2#3\@nil{%
13817   \ifx\\#3\\%
13818   \else
13819     \expandafter
13820     \Hy@pstringdef\csname Hy@esc@\string#2\endcsname{#2}%
13821     \ltx@ReturnAfterFi{%
13822       \Hy@@escapeform#3\@nil
13823     }%
13824   \fi
13825  }%
13826 }{%
13827  \def\Hy@escapeform#1{%
13828   \ifHy@pdfescapeform
13829     \let\Hy@escapestring\pdfescapestring
13830   \else
13831     \let\Hy@escapestring\@firstofone
13832   \fi
13833  }%
13834  \Hy@escapeform{}%
13835 }
```

\PDFForm@Name

```
13836 \def\PDFForm@Name{%
13837  \PDFForm@@Name\Fld@name
13838  \ifx\Fld@altname\relax
13839  \else
13840    \PDFForm@@Name\Fld@altname
13841  \fi
13842  \ifx\Fld@mappingname\relax
13843  \else
13844    \PDFForm@@Name\Fld@mappingname
13845  \fi
13846 }
```

\PDFForm@@Name

```
13847 \def\PDFForm@@Name#1{%
13848  \begingroup
13849  \ifnum\Hy@pdf@majorminor@version<105 % implementation note 117, PDF spec 1.7
13850     \ifHy@unicode
13851       \Hy@unicodefalse
13852     \fi
```

```
    \fi
    \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
      /BG[\Fld@bcolor]%
    \fi
    /CA(\Hy@escapestring{\Fld@cbsymbol})%
  >>%
  /DA(/ZaDb \strip@pt\Fld@charsize\space Tf%
     \ifx\Fld@color\@empty\else\space\Fld@color\fi)%
  /H/P%
  \ifFld@checked /V/Yes/AS/Yes\else /V/Off/AS/Off\fi
  \Fld@additionalactions
}
```

\PDFForm@Push

```
\ifHy@pdfa
\else
  \def\PDFForm@Push{%
    /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/JavaScript/JS(\Hy@escapestring{\Fld@onclick@code})>>%
    \Fld@additionalactions
  }%
\fi
```

\PDFForm@List

```
\def\PDFForm@List{%
  /Subtype/Widget%
  \Fld@annotflags
  \Fld@pageobjref
  \Fld@annotnames
  /FT/Ch%
  \Fld@flags
```

```
  /Q \Fld@align
  /BS<</W \Fld@borderwidth/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)%
  \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⟩
⟨*packageEnd⟩

45 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}%
}
```

⟨/packageEnd⟩

45.1 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
    \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.

45.1.1 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'%
  }%
}
```

45.1.2 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
    \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}},%
```

```
14453         Dest={##3},%
14454         Title=\expandafter\strip@prefix\meaning\Hy@temp
14455       }%
14456 ⟨/pdfmark⟩
14457 ⟨*dvipdfm | xetex⟩
14458       \Hy@pstringdef\Hy@pstringName{\HyperDestNameFilter{##3}}%
14459       \@pdfm@mark{%
14460         outline \ifHy@DvipdfmxOutlineOpen
14461                 [%
14462                 \ifnum##21>\z@
14463                 \else
14464                   -%
14465                 \fi
14466                 ] %
14467               \fi
14468               ##1<<%
14469           /Title(\expandafter\strip@prefix\meaning\Hy@temp)%
14470           /A<<%
14471             /S/GoTo%
14472             /D(\Hy@pstringName)%
14473           >>%
14474         >>%
14475       }%
14476 ⟨/dvipdfm | xetex⟩
14477     }%
14478     \begingroup
14479       \def\WriteBookmarks{0}%
14480       \InputIfFileExists{\jobname.out}{}{}%
14481     \endgroup
14482     %{\escapechar\m@ne\InputIfFileExists{\jobname.out}{}{}}%
14483   \endgroup
14484 }%
14485 \ifx\WriteBookmarks\relax
14486 \else
14487   \if@filesw
14488     \newwrite\@outlinefile
14489     \Hy@OutlineRerunCheck
14490     \immediate\openout\@outlinefile=\jobname.out\relax
14491   \fi
14492 \fi
14493 }
14494 ⟨*pdftex⟩
14495 \def\Hy@OutlineName#1#2#3#4{%
14496   \pdfoutline goto name{#2}count#3{#4}%
14497 }
14498 ⟨/pdftex⟩
14499 \def\check@bm@number#1{%
14500   \expandafter\ifx\csname B_#1\endcsname\relax
14501     0%
14502   \else
14503     \csname B_#1\endcsname
14504   \fi
14505 }
14506 \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
  }%
}
\@ifundefined{hyper@nopatch@sectioning}
{
\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
\@ifundefined{chapter}
  {\let\Hy@secnum@part\z@}
  {\let\Hy@secnum@part\m@ne}
\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⟩

46 Encoding definition files for encodings of PDF strings

This was contributed by Heiko Oberdiek.

46.1 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; guillemetleft
\DeclareTextCommand{\guillemotleft}{PD1}{\253}% U+00AB
\DeclareTextCommand{\guillemetleft}{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; guillemetright
\DeclareTextCommand{\guillemotright}{PD1}{\273}% U+00BB
\DeclareTextCommand{\guillemetright}{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}{\guillemetleft}%
\DeclareTextCommand{\textfrqq}{PD1}{\guillemetright}%
\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⟩

46.2 PU encoding

⟨*puenc⟩

```
\DeclareFontEncoding{PU}{}{}
```

46.2.1 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
\ifx\CYRDZE\@undefined \else
\DeclareTextCommand{\U}{PU}[1]{#1\83\006}% U+0306
\fi
% 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
```

⟨/puenc⟩

```
% U+030F COMBINING DOUBLE GRAVE ACCENT; dblgravecmb
```

⟨puextra⟩`\DeclareTextCommand{\G}{PU}[1]{#1\83\017}% U+030F`

⟨*puenc⟩

```
\ifx\CYRDZE\@undefined \else
\DeclareTextCommand{\C}{PU}[1]{#1\83\017}% U+030F
\fi
% 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; breveinverteddoublecmb
\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}%
⟨/puenc⟩
⟨puextra⟩\DeclareTextCompositeCommand{\G}{PU}{\@empty}{\textdoublegrave}%
⟨*puenc⟩
\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}{\textcircumlow}%
\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}%
⟨/puenc⟩
⟨puextra⟩\DeclareTextCompositeCommand{\G}{PU}{\ }{\textdoublegrave}%
⟨*puenc⟩
\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}}%
```

46.2.2 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
```

46.2.3 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; guillemetleft
\DeclareTextCommand{\guillemotleft}{PU}{\80\253}% U+00AB
\DeclareTextCommand{\guillemetleft}{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; guillemetright
\DeclareTextCommand{\guillemotright}{PU}{\80\273}% U+00BB
\DeclareTextCommand{\guillemetright}{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
```

46.2.4 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; Udblacute, Uhungarumlaut
\DeclareTextCompositeCommand{\H}{PU}{U}{\81\160}% U+0170
% U+0171 LATIN SMALL LETTER U WITH DOUBLE ACUTE; udblacute, 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
```

46.2.5 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
⟨/puenc⟩
⟨*puextra⟩
% 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
⟨/puextra⟩
⟨*puenc⟩
% U+0206 LATIN CAPITAL LETTER E WITH INVERTED BREVE; Einvertedbreve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{E}{\82\006}% U+0206
% U+0207 LATIN SMALL LETTER E WITH INVERTED BREVE; einvertedbreve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{e}{\82\007}% U+0207
⟨/puenc⟩
⟨*puextra⟩
% 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
⟨/puextra⟩
⟨*puenc⟩
% U+020A LATIN CAPITAL LETTER I WITH INVERTED BREVE; Iinvertedbreve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{I}{\82\012}% U+020A
% U+020B LATIN SMALL LETTER I WITH INVERTED BREVE; iinvertedbreve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{i}{\82\013}% U+020B
\DeclareTextCompositeCommand{\textinvbreve}{PU}{\i}{\82\013}% U+020B
⟨/puenc⟩
⟨*puextra⟩
% 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
⟨/puextra⟩
⟨*puenc⟩
% U+020E LATIN CAPITAL LETTER O WITH INVERTED BREVE; Oinvertedbreve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{O}{\82\016}% U+020E
% U+020F LATIN SMALL LETTER O WITH INVERTED BREVE; oinvertedbreve
\DeclareTextCompositeCommand{\textinvbreve}{PU}{o}{\82\017}% U+020F
⟨/puenc⟩
⟨*puextra⟩
% 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
⟨/puextra⟩
⟨*puenc⟩
% 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; uinverted-
    breve
\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)
```

46.2.6 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; mlonglegturned;
%   \textturnmrleg (tipa)
\DeclareTextCommand{\textturnmrleg}{PU}{\82\160}% U+0270
%* \textturnmrleg -> \legm (wsuipa)
% U+0271 LATIN SMALL LETTER M WITH HOOK; mhook; \textltailm (tipa)
\DeclareTextCommand{\textltailm}{PU}{\82\161}% U+0271
%* \textltailm -> \labdentalnas (wsuipa)
%* \textltailm -> \emgma (phonetic)
% U+0272 LATIN SMALL LETTER N WITH LEFT HOOK; nhookleft; \textltailn (tipa)
\DeclareTextCommand{\textltailn}{PU}{\82\162}% U+0272
%* \textltailn -> \nj (wsuipa)
%* \textltailn -> \enya (phonetic)
% U+0273 LATIN SMALL LETTER N WITH RETROFLEX HOOK;
%   nhookretroflex; \textrtailn (tipa)
\DeclareTextCommand{\textrtailn}{PU}{\82\163}% U+0273
%* \textrtailn -> \tailn (wsuipa)
% U+0274 LATIN LETTER SMALL CAPITAL N; \textscn (tipa), \scn (wsuipa)
\DeclareTextCommand{\textscn}{PU}{\82\164}%* U+0274
% U+0275 LATIN CAPITAL LETTER O WITH MIDDLE TILDE/
%   LATIN CAPITAL LETTER BARRED O; obarred;
%   \textbaro (tipa), \baro (wsuipa)
% But \baro from stmaryrd is different!
\DeclareTextCommand{\textbaro}{PU}{\82\165}% U+0275
% U+0276 LATIN LETTER SMALL CAPITAL OE; \textscoelig (tipa)
\DeclareTextCommand{\textscoelig}{PU}{\82\166}% U+0276
% U+0277 LATIN SMALL LETTER CLOSED OMEGA; omegalatinclosed;
%   \textcloseomega (tipa)
\DeclareTextCommand{\textcloseomega}{PU}{\82\167}% U+0277
%* \textcloseomega -> \closedniomega (wsuipa)
%* \textcloseomega -> \varomega (phonetic)
% U+0278 LATIN SMALL LETTER PHI; philatin; \niphi (wsuipa)
\DeclareTextCommand{\textniphi}{PU}{\82\170}%* U+0278
% U+0279 LATIN SMALL LETTER TURNED R; rturned; \textturnr (tipa)
\DeclareTextCommand{\textturnr}{PU}{\82\171}% U+0279
%* \textturnr -> \invr (wsuipa)
%* \textturnr -> \rotr (phonetic)
% U+027A LATIN SMALL LETTER TURNED R WITH LONG LEG;
%   rlonglegturned; \textturnlonglegr (tipa)
\DeclareTextCommand{\textturnlonglegr}{PU}{\82\172}% U+027A
%* \textturnlonglegr -> \invlegr (wsuipa)
% U+027B LATIN SMALL LETTER TURNED R WITH HOOK; rhookturned;
%   \textturnrrtail (tipa)
\DeclareTextCommand{\textturnrrtail}{PU}{\82\173}% U+027B
%* \textturnrrtail -> \tailinvr (wsuipa)
% U+027C LATIN SMALL LETTER R WITH LONG LEG; rlongleg; \textlonglegr (tipa)
\DeclareTextCommand{\textlonglegr}{PU}{\82\174}%* U+027C
%* \textlonglegr -> \legr (wsuipa)
% U+027D LATIN SMALL LETTER R WITH TAIL; rhook; \textrtailr (tipa)
\DeclareTextCommand{\textrtailr}{PU}{\82\175}% U+027D
```

```
%* \textrtailr -> \tailr (wsuipa)
% U+027E LATIN SMALL LETTER R WITH FISHHOOK; rfishhook;
%   \textfishhookr (tipa)
\DeclareTextCommand{\textfishhookr}{PU}{\82\176}% U+027E
%* \textfishhookr -> \flapr (wsuipa)
%* \textfishhookr -> \flap (phonetic)
% U+027F LATIN SMALL LETTER REVERSED R WITH FISHHOOK; rfishhookreversed;
%   \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; eshsquatreversed;
%   \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; tretroflexhook;
%   \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 LETTER 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; zretroflexhook;
%   \textrtailz (tipa)
\DeclareTextCommand{\textrtailz}{PU}{\82\220}% U+0290
%* \textrtailz -> \tailz (wsuipa)
% U+0291 LATIN SMALL LETTER Z WITH CURL; zcurl; \textctz (tipa)
\DeclareTextCommand{\textctz}{PU}{\82\221}% U+0291
%* \textctz -> \curlyz (wsuipa)
% U+0292 LATIN SMALL LETTER EZH/LATIN SMALL LETTER YOGH; ezh;
%   \textyogh (tipa), \yogh (wsuipa)
\DeclareTextCommand{\textyogh}{PU}{\82\222}%* U+0292
% U+0293 LATIN SMALL LETTER EZH WITH CURL/LATIN SMALL LETTER YOGH CURL;
%   ezhcurl; \textctyogh (tipa)
\DeclareTextCommand{\textctyogh}{PU}{\82\223}% U+0293
%* \textctyogh -> \curlyyogh (wsuipa)
% U+0294 LATIN LETTER GLOTTAL STOP; glottalstop;
%   \textglotstop (tipa), \glotstop (wsuipa)
\DeclareTextCommand{\textglotstop}{PU}{\82\224}%* U+0294
%* \textglotstop -> \ejective (wsuipa)
%* \textglotstop -> \glottal (phonetic)
% U+0295 LATIN LETTER PHARYNGEAL VOICED FRICATIVE/
%   LATIN LETTER REVERSED GLOTTAL STOP; glottalstopreversed;
%   \textrevglotstop (tipa), \revglotstop (wsuipa)
\DeclareTextCommand{\textrevglotstop}{PU}{\82\225}%* U+0295
%* \textrevglotstop -> \reveject (wsuipa)
% U+0296 LATIN LETTER INVERTED GLOTTAL STOP; glottalstopinverted;
%   \textinvglotstop (tipa), \invglotstop (wsuipa)
\DeclareTextCommand{\textinvglotstop}{PU}{\82\226}%* U+0296
% U+0297 LATIN LETTER STRETCHED C; cstretched; \textstretchc (tipa)
\DeclareTextCommand{\textstretchc}{PU}{\82\227}% U+0297
%* \textstretchc -> \clickc (wsuipa)
%* \textstretchc -> \textstretchcvar (tipx)
% U+0298 LATIN LETTER BILABIAL CLICK; bilabialclick;
%   \textbullseye (tipa)
\DeclareTextCommand{\textbullseye}{PU}{\82\230}% U+0298
%* \textbullseye -> \clickb (wsuipa)
%* \textbullseye -> \textObullseye (tipx)
% U+0299 LATIN LETTER SMALL CAPITAL B; \textscb (tipa)
\DeclareTextCommand{\textscb}{PU}{\82\231}% U+0299
% U+029A LATIN SMALL LETTER CLOSED OPEN E; eopenclosed;
%   \textcloseepsilon (tipa)
\DeclareTextCommand{\textcloseepsilon}{PU}{\82\232}% U+029A
% U+029B LATIN LETTER SMALL CAPITAL G WITH HOOK; Gsmallhook;
%   \texthtscg (tipa)
```

```
\DeclareTextCommand{\texthtscg}{PU}{\82\233}% U+029B
% U+029C LATIN LETTER SMALL CAPITAL H; \textsch (tipa)
\DeclareTextCommand{\textsch}{PU}{\82\234}% U+029C
% U+029D LATIN SMALL LETTER J WITH CROSSED-TAIL; jcrossed-tail; \textcdj (tipa)
\DeclareTextCommand{\textctj}{PU}{\82\235}% U+029D
%* \textctj -> \textctjvar (tipx)
% U+029E LATIN SMALL LETTER TURNED K; kturned; \textturnk (tipa)
\DeclareTextCommand{\textturnk}{PU}{\82\236}% U+029E
%* \textturnk -> \textturnsck (tipx)
% U+029F LATIN LETTER SMALL CAPITAL L; \textscl (tipa)
\DeclareTextCommand{\textscl}{PU}{\82\237}% U+029F
% 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; glottalstop-stroke;
%   \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
```

46.2.7 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
```

46.2.8 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
```

46.2.9 Greek and Coptic: U+0370 to U+03FF

Greek is only loaded if \textBeta is defined.

```
\ifx\textBeta\@undefined \else
\input{puenc-greekbasic.def}
\fi
⟨/puenc⟩
⟨*pugreek⟩
% U+0374 GREEK NUMERAL SIGN; numeralsigngreek
\DeclareTextCommand{\textnumeralsigngreek}{PU}{\83\164}% U+0374
\DeclareTextCommand{\textdexiakeraia}{PU}{\83\164}% U+0374
% U+0375 GREEK LOWER NUMERAL SIGN; numeralsignlowergreek
\DeclareTextCommand{\textnumeralsignlowergreek}{PU}{\83\165}% U+0375
\DeclareTextCommand{\textaristerikeraia}{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 (LaTeX)
\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+03D8 GREEK LETTER ARCHAIC KOPPA;
\DeclareTextCommand{\textQoppa}{PU}{\83\330}% U+03D8
% U+03D9 GREEK SMALL LETTER ARCHAIC KOPPA;
\DeclareTextCommand{\textqoppa}{PU}{\83\331}% U+03D9
% U+03DA GREEK LETTER STIGMA; Stigmagreek
\DeclareTextCommand{\textStigmagreek}{PU}{\83\332}% U+03DA
\DeclareTextCommand{\textStigma}{PU}{\83\332}% U+03DA
% U+03DB GREEK SMALL LETTER STIGMA
\DeclareTextCommand{\textstigmagreek}{PU}{\83\333}% U+03DB
\DeclareTextCommand{\textstigma}{PU}{\83\333}% U+03DB
% U+03DC GREEK LETTER DIGAMMA; Digammagreek
\DeclareTextCommand{\textDigammagreek}{PU}{\83\334}% U+03DC
\DeclareTextCommand{\textDigamma}{PU}{\83\334}% U+03DC
% U+03DD GREEK SMALL LETTER DIGAMMA
\DeclareTextCommand{\textdigammagreek}{PU}{\83\335}% U+03DD
\DeclareTextCommand{\textdigamma}{PU}{\83\335}% U+03DD
%* \textdigammagreek -> \digamma (AmS)
% U+03DE GREEK LETTER KOPPA; Koppagreek
\DeclareTextCommand{\textKoppa}{PU}{\83\336}% U+03DE
\DeclareTextCommand{\textKoppagreek}{PU}{\83\336}% U+03DE
% U+03DF GREEK SMALL LETTER KOPPA
\DeclareTextCommand{\textkoppa}{PU}{\83\337}% U+03DF
\DeclareTextCommand{\textkoppagreek}{PU}{\83\337}% U+03DF
% U+03E0 GREEK LETTER SAMPI; Sampigreek
\DeclareTextCommand{\textSampigreek}{PU}{\83\340}% U+03E0
\DeclareTextCommand{\textSampi}{PU}{\83\340}% U+03E0
% U+03E1 GREEK SMALL LETTER SAMPI
\DeclareTextCommand{\textsampigreek}{PU}{\83\341}% U+03E1
\DeclareTextCommand{\textsampi}{PU}{\83\341}% U+03E1
% U+03F6 GREEK REVERSED LUNATE EPSILON SYMBOL;
%   \backepsilon (AmS)
\DeclareTextCommand{\textbackepsilon}{PU}{\83\366}% U+03F6
⟨/pugreek⟩
```

46.2.10 Cyrillic: U+0400 to U+04FF

Thanks to Vladimir Volovich (vvv@vvv.vsu.ru) for the help with the Cyrillic glyph names. Cyrillic only loaded if \CYRDZE is defined.

```
⟨*puenc⟩
\ifx\CYRDZE\@undefined \else
% 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, hardsigncyrillic
\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
\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; yuslittleioti-
    fiedcyrillic
```

```
\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
\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; Omegaroundcyril-
    lic
\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; Omegatit-
    locyrillic
\DeclareTextCommand{\CYROMEGATITLO}{PU}{\84\174}% U+047C
% U+047D CYRILLIC SMALL LETTER OMEGA WITH TITLO; omegatitlo-
    cyrillic
\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
```

\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

```
% 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
% 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; Tedescen-
```

dercyrillic
\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; hadescendercyrillic
\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; Chekhakas-
    siancyrillic
\DeclareTextCommand{\CYRCHLDSC}{PU}{\84\313}% U+04CB
% 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
```

\84\317: U+04CF CYRILLIC SMALL LETTER PALOCHKA

```
% 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; Zhedieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\CYRZH}{\84\334}% U+04DC
% U+04DD CYRILLIC SMALL LETTER ZHE WITH DIAERESIS; zhedieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\cyrzh}{\84\335}% U+04DD
% U+04DE CYRILLIC CAPITAL LETTER ZE WITH DIAERESIS; Zedieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\CYRZ}{\84\336}% U+04DE
% U+04DF CYRILLIC SMALL LETTER ZE WITH DIAERESIS; zedieresiscyrillic
\DeclareTextCompositeCommand{\"}{PU}{\cyrz}{\84\337}% U+04DF
% U+04E0 CYRILLIC CAPITAL LETTER ABKHASIAN DZE; Dzeabkhasiancyrillic
\DeclareTextCommand{\CYRABHDZE}{PU}{\84\340}% U+04E0
% U+04E1 CYRILLIC SMALL LETTER ABKHASIAN DZE; dzeabkhasiancyrillic
\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
\fi
```

\84\376: U+04FE CYRILLIC CAPITAL LETTER HA WITH STROKE
\84\377: U+04FF CYRILLIC SMALL LETTER HA WITH STROKE

46.2.11 Hebrew: U+0590 to U+05FF

Macro names are taken from `he8enc.def`. hebrew is only loaded if `\hebdalet` is defined

```
\ifx\hebdalet\@undefined\else
% 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
\fi
```

46.2.12 Thai: U+0E00 to U+0E7F

```
% U+0E3F THAI CURRENCY SYMBOL BAHT; bahtthai
\DeclareTextCommand{\textbaht}{PU}{\9016\077}% U+0E3F
```

46.2.13 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
```

46.2.14 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)
```

46.2.15 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; Dcircumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{D}{\9036\022}% U+1E12
% U+1E13 LATIN SMALL LETTER D WITH CIRCUMFLEX BELOW; dcircumflexbelow
\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; Ecircumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{E}{\9036\030}% U+1E18
% U+1E19 LATIN SMALL LETTER E WITH CIRCUMFLEX BELOW; ecircumflexbelow
\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; Tcircumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{T}{\9036\160}% U+1E70
% U+1E71 LATIN SMALL LETTER T WITH CIRCUMFLEX BELOW; tcircumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{t}{\9036\161}% U+1E71
% U+1E72 LATIN CAPITAL LETTER U WITH DIAERESIS BELOW; Udieresisbelow
\DeclareTextCompositeCommand{\textsubumlaut}{PU}{U}{\9036\162}% U+1E72
% U+1E73 LATIN SMALL LETTER U WITH DIAERESIS BELOW; udieresisbelow
\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; Ucircumflexbelow
\DeclareTextCompositeCommand{\textsubcircum}{PU}{U}{\9036\166}% U+1E76
% U+1E77 LATIN SMALL LETTER U WITH CIRCUMFLEX BELOW; ucircumflexbelow
\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
```

46.2.16 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
```

46.2.17 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
```

46.2.18 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
```

46.2.19 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 (LaTeX)
\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)
```

46.2.20 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
```

46.2.21 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 (Mn-
    Symbol)
\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; harpoonleft-
```

```
barbup;
%   \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; harpoonright-
barbup
%   \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; ar-
rowupleftofdown;
%   \updownarrows (MnSymbol)
\DeclareTextCommand{\textupdownarrows}{PU}{\9041\305}%* U+21C5
% U+21C6 LEFTWARDS ARROW OVER RIGHTWARDS ARROW; arrowleft-
overright;
%   \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; arrowleftd-
blstroke;
%   \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; \leftrightarrowtrian-
    gle (stmaryrd)
\DeclareTextCommand{\textleftrightarrowtriangle}{PU}{\9041\377}%* U+21FF
```

46.2.22 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 (txfonts/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
% 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 (LaTeX)
\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
% 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; imageorapproximatelyequal;
%   \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)
% 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; notgreaternorequal; \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; \gtrsim (AmS)
\DeclareTextCommand{\textgtrsim}{PU}{\9042\163}%* U+2273
%* \textgtrsim -> \apprge (wasysym)
% U+2274 NEITHER LESS-THAN NOR EQUIVALENT TO; \nlesssim (txfonts/pxfonts)
\DeclareTextCommand{\textnlesssim}{PU}{\9042\164}%* U+2274
% U+2275 NEITHER GREATER-THAN NOR EQUIVALENT TO; \ngtrsim (txfonts/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 (txfonts/pxfonts)
\DeclareTextCommand{\textngtrless}{PU}{\9042\170}%* U+2278
% 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; \subset-
    neq (AmS)
\DeclareTextCommand{\textsubsetneq}{PU}{\9042\212}%* U+228A
% U+228B SUPERSET OF WITH NOT EQUAL TO; supersetnotequal; \supset-
    neq (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
% 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)
% \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 (txfonts/pxfonts)
\DeclareTextCommand{\textnqsubseteq}{PU}{\9042\342}%* U+22E2
% U+22E3 NOT SQUARE ORIGINAL OF OR EQUAL TO; \nsqsupseteq (txfonts/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 (mathabx)
\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; \ntriangleright (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
```

46.2.23 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
```

46.2.24 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
```

46.2.25 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)
```

46.2.26 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
```

46.2.27 Box Drawing: U+2500 to 257F

```
% U+2504 BOX DRAWINGS LIGHT TRIPLE DASH HORIZONTAL; \Cutting-
    Line (marvosym)
\DeclareTextCommand{\textCuttingLine}{PU}{\9045\004}%* U+2504
%* \textCuttingLine -> \Kutline (marvosym)
%* \textCuttingLine -> \CutLine (marvosym)
%* \textCuttingLine -> \Cutline (marvosym)
```

46.2.28 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)
%
```

46.2.29 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 (marvosym)
\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
```

46.2.30 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 (bbding)
\DeclareTextCommand{\textEightStar}{PU}{\9047\067}%* U+2737
% U+2738 HEAVY EIGHT POINTED RECTILINEAR BLACK STAR; \EightStarBold (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 (bbding)
\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; \SixFlowerAlternate (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; \EightFlowerPetal (bbding)
\DeclareTextCommand{\textEightFlowerPetal}{PU}{\9047\101}%* U+2741
% U+2742 CIRCLED OPEN CENTRE EIGHT POINTED STAR; \SunshineOpenCircled (bbding)
\DeclareTextCommand{\textSunshineOpenCircled}{PU}{\9047\102}%* U+2742
% U+2743 HEAVY TEARDROP-SPOKED PINWHEEL ASTERISK; \SixFlowerAltPetal (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
```

46.2.31 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)
```

46.2.32 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
```

46.2.33 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
```

46.2.34 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 (mar-
    vosym)
\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
```

46.2.35 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)
```

46.2.36 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
```

46.2.37 Latin Extended-C: U+2C60 to U+2C7F

```
% U+2C7C LATIN SUBSCRIPT SMALL LETTER J
\DeclareTextCommand{\textjinferior}{PU}{\9054\174}%* U+2C7C
```

46.2.38 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
```

46.2.39 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
```

46.2.40 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
```

46.2.41 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
```

46.2.42 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
```

46.2.43 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
```

46.2.44 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
```

46.2.45 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)
```

46.2.46 Aliases

Aliases (german.sty)

```
\DeclareTextCommand{\textglqq}{PU}{\quotedblbase}%
\DeclareTextCommand{\textgrqq}{PU}{\textquotedblleft}%
\DeclareTextCommand{\textglq}{PU}{\quotesinglbase}%
\DeclareTextCommand{\textgrq}{PU}{\textquoteleft}%
\DeclareTextCommand{\textflqq}{PU}{\guillemetleft}%
\DeclareTextCommand{\textfrqq}{PU}{\guillemetright}%
\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⟩

46.3 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⟩

46.4 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\mu\textmu
\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\SunCloud\textSunCloud
\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
\let\mars\textmale
\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⟩
```

47 End of file hycheck.tex

```
⟨*check⟩
\typeout{}
\begin{document}
\end{document}
⟨/check⟩
```

48 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, 1745
\" 202, 227, 3066, 14325, 14640, 14652, 14664, 14790, 14878, 14892, 14900, 14915, 14927, 14944, 14958, 14969, 14970, 14984, 14996, 15003, 15056, 15102, 15131, 15162, 15337, 15351, 15359, 15373, 15387, 15404, 15418, 15429, 15430, 15445, 15457, 15465, 15723, 16408, 16410, 16421, 16473, 16475, 16522, 16536, 16692, 16706, 16950, 16952, 16967, 16970, 16972, 16974, 16976, 16978, 16988, 16990, 16992, 16994, 17001, 17004, 17006, 17008, 17014, 17016, 17022, 17024, 17030, 17032, 17242, 17244, 17394, 17396, 17410, 17412, 17432
\# . 516, 1830, 1831, 4753, 4764, 4766, 4782, 4814, 4874, 8642, 8644, 9386, 9395, 9430, 10271, 11919, 11930, 11966, 12204, 12213, 12253, 14245
\$ 184, 209, 314, 517, 4755, 4873
\% . 518, 1745, 1805, 1806, 4752, 4761, 4763, 4815, 8644
\& . . . 185, 210, 519, 4756, 4767, 4769, 11976
\' 203, 228, 3006, 3020, 3061, 3063, 3064, 3065, 3066, 3071, 3072, 3074, 3079, 3085, 3089, 3090, 3093, 3136, 3137, 3142, 3143, 3144, 3145, 3146, 3147, 3148, 3149, 3151, 3154, 3161, 3162, 3163, 3164, 3167, 3173, 3186, 14323, 14637, 14649, 14661, 14872, 14888, 14896, 14909, 14923, 14929, 14938, 14954, 14963, 14964, 14978, 14992, 14998, 15022, 15024, 15025, 15026, 15029, 15031, 15032, 15033, 15041, 15099, 15128, 15159, 15331, 15347, 15355, 15367, 15383, 15389, 15398, 15414, 15423, 15424, 15439, 15453, 15459, 15479, 15481, 15595, 15597, 15615, 15617, 15651, 15653, 15663, 15665, 15725, 15727, 15848, 15850, 15856, 15858, 15861, 15864, 16341, 16343, 16345, 16347, 16349, 16351, 16353, 16356, 16412, 16414, 16416, 16418, 16477, 16480, 16482, 16526, 16546, 16696, 16716, 17258, 17260, 17282, 17284, 17322, 17324, 17390, 17392, 19632, 19637, 19642, 19647, 19652, 19657, 19662, 19667, 19672, 19677, 19682, 19687, 19692, 19697, 19702, 19707, 19712, 19717, 19722, 19727, 19732, 19737, 19742, 19747
\(. 190, 215, 315, 735, 738, 740, 1747, 14391, 14710
\) . 191, 216, 316, 707, 713, 716, 1748, 14392, 14712
* 318
\+ 200, 225, 319
\- 201, 226
\. 198, 223, 312, 3517, 3930, 14643, 14655, 14667, 14731, 15027, 15034, 15054, 15105, 15134, 15168, 15245, 15246, 15487, 15489, 15517, 15519, 15537, 15539, 15576, 15607, 15609, 15729, 15731, 15932, 15934, 15940, 15942, 17174, 17176, 17186, 17188, 17226, 17228, 17234, 17236, 17286, 17288, 17294, 17296, 17326, 17328, 17330, 17332, 17342, 17344, 17350, 17352, 17398, 17400, 17406, 17408, 17414, 17416, 17438
\/ . 194, 219, 648, 649, 650, 718, 1514, 8203
\: 189, 214
\; 199, 224
\< 196, 221
\= . . . 167, 173, 180, 183, 14645, 14657, 14669, 15047, 15111, 15140, 15167, 15467, 15469, 15509, 15511, 15561, 15563, 15564, 15635, 15637, 15695, 15697, 15944, 15946, 16984, 16986, 17010, 17012, 17230, 17232
\> 197, 222
\? 320
\@ 3057
\@@@ 2189
\@@BOOKMARK 14306, 14309, 14367, 14432, 14439
\@@Listbox 12608, 12639, 13210, 13244, 13566, 13607
\@@Menu 12849, 12857
\@@PasswordField 12798, 12804
\@@Radio 12593, 12614, 12847, 12871, 13195, 13216, 13551, 13572
\@@TextField . . . 12800, 12815
\@@commahyperpage 8337, 8338
\@@hyper@@readexternallink 5168, 5170
\@@hyperref 4977, 4978
\@@wrindex 8238, 8239
\@@writetorep . . . 14167, 14173
\@Alph 7058, 7060
\@BIBLABEL . 7713, 7719, 7725
\@BOOKMARK . 14306, 14308
\@CheckBox 6157, 10336, 12728, 12764, 12902, 13332, 13709
\@ChoiceMenu 6154, 10339, 12546, 12767, 12837, 13147, 13503
\@Form . . . 5830, 10326, 12298, 12754, 12781, 13036, 13417
\@Gauge . . 6163, 10330, 12483, 12758, 12786, 12923, 13414
\@Localurlfalse 10279
\@Localurltrue 10276
\@M 2242, 4860
\@MM 7472
\@PackageError 246
\@PackageInfo 249
\@PackageInfoNoLine 250
\@PackageWarning 247
\@PackageWarningNoLine . 248

\@PushButton 6160, 10342, 12650, 12770, 12883, 13254, 13623
\@Refstar 4726, 8446
\@Reset . . . 6169, 10345, 12701, 12773, 12899, 13307, 13680
\@Submit . 6166, 10348, 12681, 12776, 12896, 13284, 13657
\@TextField 6151, 10333, 12514, 12761, 12789, 13117, 13466
\@addtoreset . . 8136, 8137, 8152
\@alph 7054, 7056
\@anchorcolor 3496, 9355, 9450, 10398, 11887, 12174
\@arabic 6961, 6977, 7053
\@auxout 2183, 5025, 5332, 6394, 7733, 7748, 7764, 7774, 7793, 7799, 7823
\@backslashchar 1048, 1707, 1711, 1714, 1852, 1869, 1875, 1879, 1887, 4777, 8657, 8667
\@baseurl 3503, 3505, 5226, 9094, 9097, 9340, 9342, 9627, 9629, 10148, 10158, 10244, 10246, 10781, 10783, 11165, 11179, 11872, 11874, 12072, 12086, 12160, 12162
\@bibitem 7740, 7771
\@biblabel 7713, 7760
\@bookmarkopenstatus . . 4603, 4620, 14227
\@bookmarksopenlevel . . 3457, 3459, 4606
\@bsphack 2176, 5018, 7797
\@capstartfalse 7606
\@caption 7571, 7583, 7626, 7663, 7665
\@captype . . . 2185, 7566, 7570, 7574, 7581, 7588, 7642, 7656, 7660, 7663
\@car . . . 1330, 1346, 1364, 1384, 3436, 5448
\@chapter 14562, 14563
\@cite 7858, 7864
\@cite@opt . . 7859, 7865, 7869, 7879
\@citebordercolor . . 3551, 4143
\@citecolor 3497
\@citedata@opt 7860, 7866, 7868
\@citedatax 7875, 7880
\@citedatax@opt . . . 7872, 7878
\@citeseppen 7857, 7863
\@commahyperpage . 8332, 8337
\@ctrerr 7026, 7035
\@currDisplay 5918, 12558, 12621, 12866, 12880, 13159, 13223, 13515, 13582
\@currValue . . 5920, 5922, 5924, 12619, 12630, 12866, 12877, 13221, 13231, 13580, 13597
\@currentHlabel 7105
\@currentHref 2191, 5070, 5361, 6274, 6942, 7084, 7086, 7096, 7098, 7105, 7113, 7115, 7125, 7168, 7179, 7181, 7218, 7239, 7243, 7248, 7271, 7311, 7313, 7315, 7388, 7398, 7400, 7401, 7457, 7486, 7586, 7612, 7616, 7643, 7645, 7802, 7988, 8011, 8024, 8031, 8113, 14157, 14543, 14556, 14567, 14594, 14611
\@currentcounter 7475
\@currentlabel 7476, 7795, 7802, 8118, 8125
\@currentlabelname . 2181, 7389, 7458, 7487, 7591
\@currentlabstr 2180, 2188
\@currname 2312
\@curropt 12555, 12556, 12617, 12618, 12855, 12862, 12863, 12865, 12872, 12873, 12875, 13156, 13157, 13219, 13220, 13512, 13513, 13578, 13579
\@dblarg 7581, 7663
\@definecounter 8092, 8093
\@documentclasshook . . . 4224
\@ehc . . 2564, 2691, 2717, 2733, 2768, 2807, 2814, 2825, 2831, 2869, 4306, 4922, 5190, 5542, 5666, 5862, 5895, 6089, 6142, 12659, 12712, 13264, 13318, 13633, 13691
\@ehd . 63, 265, 271, 295, 7567, 7657
\@elt . . . 6949, 6951, 6952, 6957
\@endForm 5831, 10329, 12482, 12757, 12785, 13090, 13444
\@eqncr 7259
\@eqnstarfalse 7233, 7262
\@eqnstartrue 7259
\@eqnswtrue 7197, 7206
\@esphack 2197, 5029, 7807, 8250
\@extra@b@citeb . . . 7698, 7701, 7718, 7723, 7743
\@extra@binfo . 7697, 7700, 7704
\@fifthoffive . . . 5012, 8398, 8531
\@filebordercolor 3552, 4141, 9022, 9024, 9962, 9964, 10484, 10486, 11550
\@filecolor . . . 3486, 3498, 9043, 9569, 9586, 9980, 10490
\@firstoffive . . . 4716, 8438, 8536
\@firstofone 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 602, 635, 1250, 4605, 4998, 5796, 5802, 6052, 6862, 7051, 7063, 7579, 7661, 7947, 8193, 9248, 12990, 13796, 13813, 13831
\@firstoftwo 618, 894, 6363, 14601
\@fnsymbol 7052
\@footnotemark 7331, 7394, 7412, 7495, 7507, 7509, 7521, 7522, 7553, 7555
\@footnotetext 7330, 7337, 7371, 7411, 7508, 7510, 7524, 7525, 7546
\@for . 3528, 5438, 12555, 12617, 12855, 12862, 12872, 13156, 13219, 13512, 13578
\@fourthoffive . 5013, 8526, 8533
\@gobble . 49, 56, 117, 542, 543, 544, 545, 582, 583, 584, 585, 604, 621, 622, 623, 632, 634, 901, 1187, 1248, 1267, 1280, 1284, 1347, 1410, 1411, 1418, 1423, 1437, 1442, 2039, 2214, 2508, 2520, 3903, 4216, 4253, 4308, 4743, 5781, 6042, 6328, 6332, 6349, 6351, 6367, 6368, 6371, 6372, 6374, 6468, 6836, 6856, 6860, 7568, 7658, 7987, 8591, 9250, 10667, 10670, 13037, 13418, 14214, 14215, 14216, 14217
\@gobblefour 548, 658, 944, 945, 946, 3711
\@gobbleopt 6374, 6376
\@gobbletwo 546, 625, 651, 659, 660, 943, 1365, 1442, 1446, 2396, 3709, 3710, 4257, 5727, 6353, 6362, 6370, 6374, 8515, 14553

\@harvarditem 7812, 7814
\@hyper@@anchor . . 5276, 5277
\@hyper@itemfalse . . 6893, 6910, 6925
\@hyper@itemtrue 6894
\@hyper@launch . . . 5196, 5205, 9047, 9985, 10559, 11568
\@hyper@linkfile . . . 5177, 5180, 5184, 5216
\@hyper@readexternallink 5171, 5175
\@hyperdef 4985, 4986
\@hyperpage 8329, 8330
\@hyperref 4965, 4977
\@ifclassloaded 9253
\@ifl@t@r 6378, 7141
\@ifnextchar . . 12, 88, 103, 123, 652, 4867, 4965, 4985, 5124, 5830, 6151, 6154, 6157, 6160, 6163, 6166, 6169, 6374, 6424, 6433, 7511, 7529, 7812, 7870, 11190, 11479, 11493, 14306, 14309
\@ifpackageloaded 787, 2171, 2617, 4201, 4399, 6935, 7108, 7146, 7156, 7193, 7320, 7408, 7424, 7464, 7639, 7782, 7855, 8110, 8163, 8198, 8199, 8200, 8456, 12152
\@ifpackagewith . . . 3294, 4199
\@ifstar . . 66, 6310, 6314, 6383, 6387, 8495
\@ifundefined 34, 342, 475, 854, 864, 897, 900, 2309, 2485, 2635, 2656, 2657, 3312, 3357, 3365, 3372, 3394, 3434, 4396, 4397, 5537, 5857, 6307, 6789, 6903, 6947, 7148, 7157, 7160, 7161, 7192, 7236, 7318, 7327, 7564, 7572, 7590, 7707, 7984, 8039, 8090, 8098, 8104, 8108, 8134, 8141, 8150, 8151, 8161, 8165, 8166, 8173, 8457, 10863, 10864, 12935, 13037, 13418, 13794, 13805, 14223, 14534, 14581
\@indexfile . . . 8242, 8257, 8272, 8276, 8286
\@inmathwarn 510, 511
\@inpenc@undefined@ . . . 1914
\@latex@ 6455, 6456
\@latex@error 7567, 7657
\@latex@warning . . . 5005, 8373, 8393, 8410, 8542
\@lbibitem 7714, 7759
\@linkbordercolor . . 3553, 4138, 8977, 10388
\@linkcolor 3495, 11218
\@linkdim 457, 9404, 9405, 9413, 9414, 9415, 9484, 9485, 9497, 9498, 9499, 9521, 9522, 9535, 9536, 9537, 9561, 9562, 9575, 9576, 9577, 11940, 11941, 11949, 11950, 11951, 12222, 12223, 12236, 12237, 12238
\@listctr 7749, 7775
\@m 9278, 10212, 10356, 10714, 11670
\@mainaux . . 5380, 6819, 6827, 12983, 12986, 13014, 13029
\@makecaption 7607, 7609, 7676
\@makefnmark 7403, 7558
\@makefntext 7477
\@makeother 166, 167, 179, 180, 182, 183, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 4767, 8629, 14395, 14398, 14422, 14425
\@menubordercolor . 3554, 4140, 9316, 9318, 10059, 10061, 10597, 10599, 11472
\@menucolor 3500, 9331, 10070, 10603
\@mkboth 625, 14553
\@mpfn 7334, 7530, 7543
\@mpfootnotetext . . 7337, 7350, 7351, 7413
\@mycount 14371, 14381
\@namedef . . . 2142, 2144, 2146, 2148, 2150, 2152, 2154, 2156, 2158, 2160, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2332, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 3303, 3315, 5548, 5549, 5550, 5551, 5873, 5874, 7258, 7261, 7787, 7788, 7789, 7790
\@namerefstar 4722, 8443
\@nameuse . . 2185, 2642, 5554, 5865
\@ne 2583, 2756, 4517, 4591, 4892, 9891, 9892, 9897, 10760, 11711, 12489, 13453
\@newctr 8100, 8101
\@newl@bel . . . 5315, 6418, 7700
\@nil 276, 303, 1242, 1245, 1253, 1330, 1348, 1366, 1382, 1384, 1387, 1390, 1393, 1923, 1925, 1941, 1943, 3436, 4799, 4803, 4808, 5243, 5251, 5257, 5259, 5448, 6033, 6036, 6055, 6443, 6446, 6453, 6455, 6456, 6570, 6618, 6619, 6621, 6644, 6661, 6715, 6717, 7163, 7172, 7174, 7186, 8316, 8318, 8325, 8348, 8351, 8361, 8377, 8380, 8550, 8581, 8653, 8659, 8663, 8669, 10632, 10634, 13803, 13816, 13822, 14255, 14258, 14261, 14270, 14273, 14282
\@nocnterr 8151, 8166
\@nocounterr 8150, 8165
\@number 7051, 7947
\@nx . . . 8154, 8169, 8172, 8174
\@onelevel@sanitize . 2389, 2393, 2598, 3435, 4283, 4313, 4327, 4833, 5238, 5241, 5254, 5268, 5538, 5774, 5858, 6671, 6673, 7092, 8017, 8424, 9749, 14252
\@outlinefile 14225, 14314, 14409, 14411, 14488, 14490
\@pagerefstar . 4718, 8440, 8461, 8468, 8477, 8486
\@pagesetref 8389
\@parboxrestore 7474, 7599, 7671
\@parcount 14373, 14381
\@part 14580, 14584
\@partaux 5378
\@pdfauthor . 3727, 4146, 9154, 9607, 10093, 10834, 11089, 12001
\@pdfborder 3386, 3572, 3573, 3574, 3581, 3585, 3608, 3610, 4686, 8910, 9767, 10386, 10967, 11050, 11470, 11483, 11498, 11519, 11547, 11578, 11607, 11717, 11813, 11981

\@pdfborderstyle . . . 3387, 3589, 3590, 3591, 3600, 3604, 3612, 3614, 4687, 6004, 8911, 9768, 10387, 10968, 11051, 11471, 11484, 11499, 11520, 11548, 11579, 11608, 11718, 11814, 11982
\@pdfcreationdate 3749, 4149, 9158, 9160, 9599, 9601, 10085, 10087, 11064, 11066, 11993, 11995
\@pdfcreator . 3739, 3744, 4148, 9157, 9598, 10084, 10837, 11088, 11992
\@pdfdirection 9117, 9665, 10128, 10793, 11145, 12052
\@pdfduplex 9123, 9671, 10134, 10799, 11151, 12058
\@pdfhighlight 3558, 3566, 3568, 4144, 10966, 11049, 11469, 11518, 11546, 11577
\@pdfkeywords 3768, 4152, 9170, 9596, 10098, 10842, 11090, 11990
\@pdflang 4019, 4021, 4022, 4024, 4026, 4028, 4034, 4064, 4065, 4067, 4088, 4092, 4094, 4111, 4120, 4127, 4159, 9143, 9145, 9693, 9695, 10168, 10170, 11175, 11177, 12082, 12084
\@pdfm@dest . . 9711, 9770, 9774
\@pdfm@mark 6807, 9710, 9762, 9782, 9796, 9798, 9812, 9814, 9819, 9820, 9850, 9874, 9876, 9881, 9899, 9922, 9955, 9990, 10022, 10052, 10080, 10149, 10176, 13421, 13422, 13423, 13442, 13460, 13463, 13493, 13588, 13615, 13646, 13671, 13699, 13728, 13739, 13772, 13780, 14459
\@pdfmoddate 3755, 4150, 9162, 9164, 9603, 9605, 10089, 10091, 11068, 11072, 11997, 11999
\@pdfnonfullscreenpagemode . . 9116, 9664, 10127, 10792, 11144, 12051
\@pdfnumcopies 9132, 9134, 9680, 9682, 10143, 10145, 10808, 10810, 11160, 11162, 12067, 12069
\@pdfpageduration . 3513, 9215, 9219, 9224, 10193, 10195, 10198, 10723, 10725, 10728, 11006, 11008, 11016
\@pdfpagelayout 9142, 9692, 10167, 10813, 10815, 11174, 12081
\@pdfpagemode 4385, 4386, 4616, 4617, 4626, 4627, 9096, 9648, 10162, 10780, 11128, 12035
\@pdfpagescrop 3973, 4154, 9081, 9085, 9631, 9632, 9653, 9655, 10174, 10176, 10769, 10771, 11133, 11135, 12040, 12042
\@pdfpagetransition . 3509, 9191, 9195, 9200, 10182, 10184, 10187, 10612, 10614, 10616, 10989, 10991, 10999
\@pdfpicktraybypdfsize 9124, 9126, 9672, 9674, 10135, 10137, 10800, 10802, 11152, 11154, 12059, 12061
\@pdfprintarea 9120, 9668, 10131, 10796, 11148, 12055
\@pdfprintclip 9121, 9669, 10132, 10797, 11149, 12056
\@pdfprintpagerange 3679, 4158, 9128, 9130, 9676, 9678, 10139, 10141, 10804, 10806, 11156, 11158, 12063, 12065
\@pdfprintscaling . . 9122, 9670, 10133, 10798, 11150, 12057
\@pdfproducer 3733, 4147, 9166, 9168, 9608, 9610, 10094, 10096, 10737, 10738, 10742, 10745, 10746, 10838, 10840, 11075, 11079, 11604, 11605, 11710, 11712, 11714, 11810, 11811, 12002, 12004
\@pdfremotestartview 3934, 3936, 3937, 3960, 3964, 3966, 3967, 3969, 4156, 9035, 9971, 11558
\@pdfstartpage 3917, 3919, 4157, 9102, 9106, 9635, 9640, 10151, 10155, 10773, 10777, 11115, 11120, 12022, 12027
\@pdfstartview 3924, 3926, 4155, 9104, 9106, 9637, 9641, 10153, 10155, 10775, 11117, 11121, 12024, 12028
\@pdfsubject . 3762, 4151, 9156, 9612, 10083, 10836, 11087, 12006
\@pdftempa . . . 5182, 5183, 5186
\@pdftempwordfile . . 5173, 5183
\@pdftempwordrun . 5174, 5186
\@pdftitle 3721, 4145, 9155, 9597, 10082, 10835, 11086, 11991
\@pdftrapped 3773, 3776, 3779, 3788, 3797, 4153, 9171, 9173, 10099, 10101, 11091
\@pdfview . . . 3905, 8892, 8900, 9717, 9721, 9725, 9729, 9733, 9737, 9738, 9741, 9742, 9745, 9749, 9751, 9766, 10385, 10395, 10407, 10904, 10924, 11609, 11719, 11815, 12094
\@pdfviewarea 9118, 9666, 10129, 10794, 11146, 12053
\@pdfviewclip 9119, 9667, 10130, 10795, 11147, 12054
\@pdfviewparams 3907, 3909, 10904, 10924, 11610, 11720, 11816, 12095
\@percentchar 4762, 4763, 4815, 14229
\@processme 5906, 5907, 9197, 9203, 9221, 9227, 11193, 11194, 11316, 11317, 11320, 11321
\@protected@testopt 655
\@protected@testopt@xargs 656
\@refstar 4714, 8437
\@runbordercolor 3555, 4142, 9056, 9058, 9997, 9999, 10578, 10580, 11581
\@runcolor . . 3501, 9076, 10013, 10584
\@safe@activesfalse 608
\@safe@activestrue 607
\@savsf 8895, 8903
\@schapter 14550, 14551
\@secondoffive 4720, 8399, 8400, 8441
\@secondoftwo . . . 592, 601, 892, 1316, 14603
\@sect 14598, 14599
\@seqncr 7259

\@serial@counter . 14321, 14369, 14371, 14372
\@setminipage 7601, 7673
\@setref 8368, 8369, 8406
\@sharp 7163, 7169
\@skiphyperreffalse . 6911, 7729, 7741
\@skiphyperreftrue . 7715, 7741
\@spaces 253
\@spart 14590, 14591
\@ssect 14536, 14537
\@tempa 7426, 7430, 7433, 7445
\@tempb 7283, 7287
\@tempboxa . 9402, 9404, 9413, 9482, 9484, 9487, 9488, 9497, 9503, 9504, 9519, 9521, 9524, 9525, 9535, 9541, 9542, 9559, 9561, 9564, 9565, 9575, 9581, 9582, 11938, 11940, 11949, 12220, 12222, 12236
\@tempcnta 1893, 14179, 14180, 14181, 14182, 14183, 14185, 14188, 14189, 14190, 14196, 14198, 14200, 14290, 14291, 14292, 14295, 14296, 14297, 14298, 14299, 14507, 14508, 14509
\@tempdima . 2245, 6206, 6207, 6208, 6209, 6210, 6211, 6212, 6213, 12554, 12559, 12561, 12597, 12598, 12599, 12603, 12604, 12605, 12606, 13155, 13160, 13162, 13199, 13200, 13201, 13205, 13206, 13207, 13208, 13511, 13516, 13518, 13555, 13556, 13557, 13561, 13562, 13563, 13564
\@tempdimb 12558, 12559, 13159, 13160, 13515, 13516
\@tempswafalse 7874
\@tempswatrue 7844, 7847, 7850, 7871
\@temptokena 3281, 3286, 3289, 3291
\@tfor 7284
\@the@H@page 7914, 7950, 7952, 7953
\@thefnmark . 7335, 7346, 7437, 7476, 7493, 7500, 7531, 7544, 7551
\@thirdoffive 4724, 8444
\@thm 7323, 7324
\@typeset@protect 14520
\@undefined . 355, 358, 444, 446, 661, 2662, 2722, 3285, 4405, 4494, 6364, 6398, 6406, 6417, 6633, 6651, 6696, 7566, 7630, 7635, 7641, 7656, 8432, 10748, 10762, 15050, 15067, 16329, 16517, 17038
\@unexpandable@protect . 4970, 8303, 8422
\@unprocessedoptions . . . 4564
\@urlbordercolor . . . 3556, 4139, 8987, 8989, 10029, 10031, 10510, 10512, 11521
\@urlcolor 3499, 9006, 9409, 9422, 9529, 9546, 10043, 10516, 11945, 11958, 12231, 12244
\@urltype . . 9375, 9380, 10249, 10275, 10415, 10429, 11907, 11912, 12193, 12198
\@whilenum 960
\@wrindex 8206, 8207, 8238
\@writefile 7800
\@x@sf . . 7396, 7405, 7557, 7559
\@xfootnote 7529
\@xfootnotemark . . . 7343, 7548
\@xfootnotenext . . . 7332, 7541
\@xp . . . 8124, 8153, 8154, 8168, 8169, 8171, 8172
\@xxxii 5080
\[192, 217, 313, 3578, 3596, 4934
\{ . 321, 513, 1747, 10895, 14247
\} . 322, 514, 1748, 10895, 14248
\␣ 324, 640, 3101, 3104, 3930, 14660, 14661, 14662, 14663, 14664, 14665, 14666, 14667, 14668, 14669, 14670, 14671, 15127, 15128, 15129, 15130, 15131, 15132, 15133, 15134, 15135, 15136, 15138, 15140, 15141, 15142, 15143, 15144, 15145, 15146, 15147, 15148, 15149, 15150, 15151, 15152, 15153, 15154, 15155
\] 193, 218
\^ 186, 211, 311, 1845, 1846, 3084, 4750, 4751, 4759, 14638, 14650, 14662, 14874, 14890, 14898, 14911, 14925, 14940, 14956, 14966, 14967, 14980, 14994, 15043, 15100, 15129, 15160, 15333, 15349, 15357, 15369, 15385, 15400, 15416, 15426, 15427, 15441, 15455, 15483, 15485, 15529, 15531, 15545, 15547, 15584, 15586, 15587, 15667, 15669, 15715, 15717, 15719, 15721, 17418, 17420
_ . . . 187, 212, 521, 4754, 4771, 4772, 5042, 5055, 5068
\` 166, 172, 179, 182, 3020, 3155, 3160, 3165, 3166, 3169, 3172, 3175, 3177, 3185, 14246, 14636, 14648, 14660, 14870, 14886, 14894, 14907, 14921, 14936, 14952, 14960, 14961, 14976, 14990, 15039, 15098, 15127, 15158, 15329, 15345, 15353, 15365, 15381, 15396, 15412, 15420, 15421, 15437, 15451, 15852, 15854, 16519, 16548, 16689, 16718, 17386, 17388, 17464, 17466, 19634, 19639, 19644, 19649, 19654, 19659, 19664, 19669, 19674, 19679, 19684, 19689, 19694, 19699, 19704, 19709, 19714, 19719, 19724, 19729, 19734, 19739, 19744, 19749
\| 188, 213, 317, 1653, 1746, 1787, 2966, 4182, 8202, 8628, 8638
\~ 520, 962, 1901, 3078, 3086, 3087, 3088, 4775, 14639, 14651, 14663, 14876, 14905, 14913, 14942, 14974, 14982, 15045, 15101, 15130, 15161, 15335, 15363, 15371, 15402, 15435, 15443, 15556, 15558, 15559, 15691, 15693, 17378, 17380, 17448, 17450, 17472, 17474, 19636, 19641, 19646, 19651, 19656, 19661, 19666, 19671, 19676, 19681, 19686, 19691, 19696, 19701, 19706, 19711, 19716, 19721, 19726, 19731, 19736, 19741, 19746, 19751

Numbers

\3 . . . . . 497, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 2016, 2152, 2160, 2162, 14390, 14870, 14872,

14874, 14876, 14878, 14880, 14882, 14884, 14886, 14888, 14890, 14892, 14894, 14896, 14898, 14900, 14902, 14903, 14905, 14907, 14909, 14911, 14913, 14915, 14917, 14919, 14921, 14923, 14925, 14927, 14929, 14931, 14932, 14934, 14936, 14938, 14940, 14942, 14944, 14946, 14948, 14950, 14952, 14954, 14956, 14958, 14960, 14961, 14963, 14964, 14966, 14967, 14969, 14970, 14972, 14974, 14976, 14978, 14980, 14982, 14984, 14986, 14988, 14990, 14992, 14994, 14996, 14998, 15000, 15001, 15003, 15095, 15329, 15331, 15333, 15335, 15337, 15339, 15341, 15343, 15345, 15347, 15349, 15351, 15353, 15355, 15357, 15359, 15361, 15363, 15365, 15367, 15369, 15371, 15373, 15375, 15379, 15381, 15383, 15385, 15387, 15389, 15391, 15392, 15394, 15396, 15398, 15400, 15402, 15404, 15406, 15408, 15410, 15412, 15414, 15416, 15418, 15420, 15421, 15423, 15424, 15426, 15427, 15429, 15430, 15432, 15435, 15437, 15439, 15441, 15443, 15445, 15447, 15449, 15451, 15453, 15455, 15457, 15459, 15462, 15463, 15465, 15798, 15802, 15806, 15809, 15811, 15813, 15815, 15816, 15818, 15820, 15822, 15824, 15826, 15828, 15830, 15833, 15835, 15837, 15839, 15841, 15843, 15845, 15846, 15848, 15850, 15852, 15854, 15856, 15858, 15861, 15864, 16275, 16278, 16281, 16283, 16286, 16289, 16292, 16295, 16297, 16299, 16301, 16303, 16305, 16307, 16308, 16310, 16312, 16314, 16316, 16318, 16453, 16455, 16457, 16459, 16461, 16463, 16465, 16467, 16469, 16471, 16473, 16475, 16477, 16479, 16480, 16482, 16484, 16486, 16488, 16489, 16491, 16492, 16494, 16495, 16497, 16498, 16501, 16502, 16504, 16505, 16507, 16508, 16510, 16511, 16514, 16920, 16922, 16924, 16926, 16928, 16930, 16932, 16934, 16936, 16938, 16940, 16942, 16944, 16946, 16948, 16950, 16952, 16954, 16956, 16958, 16960, 16962, 16964, 16967, 16970, 16972, 16974, 16976, 16978, 16980, 16982, 16984, 16986, 16988, 16990, 16992, 16994, 16996, 16998, 17001, 17004, 17006, 17008, 17010, 17012, 17014, 17016, 17018, 17020, 17022, 17024, 17026, 17028, 17030, 17032, 17034, 17036, 17040, 17042, 17044, 17046, 17048, 17050, 17052, 17054, 17056, 17058, 17060, 17062, 17064, 17066, 17068, 17070, 17072, 17074, 17076, 17078, 17080, 17082, 17084, 17086, 17088, 17090, 17092, 17095, 17097, 17099, 17101, 17452, 17454, 17456, 17458, 17460, 17462, 17464, 17466, 17468, 17470, 17472, 17474, 17830, 17833, 17836, 17839, 17842, 17845, 17848, 17850, 17852, 17854, 17856, 17859, 17862, 17865, 17867, 17870, 17873, 17875, 17878, 17881, 17884, 17887, 17889, 17891, 17893, 17895, 17897, 17899, 17901, 17903, 17906, 17909, 17911, 17914, 17916, 17919, 17921, 17923, 17925, 17972, 18010, 18015, 18388, 18390, 18392, 18395, 18398, 18400, 18402, 18404, 18406, 18408, 18411, 18414, 18416, 18418, 18420, 18422, 18425, 18428, 18430, 18432, 18434, 18436, 18439, 18442, 18444, 18446, 18448, 18450, 18452, 18454, 18456, 18458, 18460, 18463, 18466, 18468, 18470, 18472, 18474, 18477, 18481, 18484, 18487, 18489, 18491, 18493, 18495, 18564, 18567, 18643, 18645, 18647, 18649, 18651, 18653, 18655, 18657, 18659, 18661, 18663, 18665, 18667, 18669, 18671, 18673, 18675, 18677, 18679, 18681, 18683, 18685, 18687, 18689, 18691, 18693, 18695, 18697, 18699, 18701, 18703, 18705, 18707, 18709, 18711, 18713, 18715, 18717, 18719, 18721, 18723, 18725, 18727, 18729, 18731, 18760, 18763, 18765, 18767, 18770, 18772, 18774, 18776, 18779, 18781, 18999, 19001, 19003, 19005, 19007, 19178, 19180, 19182, 19184, 19186, 19188, 19191, 19195, 19197, 19199, 19201, 19203, 19205, 19207, 19209, 19211, 19213, 19215, 19319, 19322, 19325, 19327, 19329, 19331, 19333, 19335, 19337, 19339, 19466, 19468, 19470, 19472, 19474, 19477, 19480, 19483, 19487, 19490, 19493, 19495, 19497, 19499, 19501, 19504, 19506, 19581, 19593, 19595, 19597, 19599, 19601, 19621, 19622, 19623, 19627, 19628, 19629, 19632, 19634, 19636, 19647, 19649, 19653, 19654, 19655, 19656, 19657, 19658, 19659, 19660, 19662, 19663, 19664, 19665, 19666, 19667, 19668, 19669, 19670, 19671, 19672, 19673, 19674, 19675, 19676, 19677, 19678, 19679, 19680, 19682, 19683, 19684, 19685, 19686, 19687, 19688, 19689, 19690, 19691, 19692, 19694, 19696, 19707, 19709, 19713, 19714, 19715, 19716, 19717, 19718, 19719, 19720, 19722, 19723, 19724, 19725, 19726, 19727, 19728, 19729, 19730, 19731, 19732, 19733, 19734, 19735, 19736, 19737, 19738, 19739, 19740, 19742, 19743, 19744, 19745, 19746, 19747, 19748, 19749, 19750, 19751, 19855

\9 . 500, 1026, 1029, 1060, 1944, 1959, 1968, 1996, 2016, 2052, 2056, 2070, 2074, 2082, 2087, 2090, 2124, 2128, 2131, 2134, 2144, 2146, 2148, 2150, 2152, 2154, 2156, 2158, 2160,

2162, 15095, 17104, 17106, 17108, 17110, 17112, 17114, 17117, 17120, 17123, 17126, 17128, 17130, 17132, 17134, 17136, 17138, 17140, 17142, 17144, 17147, 17149, 17152, 17154, 17157, 17159, 17163, 17167, 17170, 17172, 17174, 17176, 17178, 17180, 17182, 17184, 17186, 17188, 17190, 17192, 17194, 17196, 17198, 17200, 17202, 17204, 17207, 17210, 17213, 17216, 17218, 17220, 17222, 17224, 17226, 17228, 17230, 17232, 17234, 17236, 17238, 17240, 17242, 17244, 17246, 17248, 17250, 17252, 17254, 17256, 17258, 17260, 17262, 17264, 17266, 17268, 17270, 17272, 17274, 17276, 17278, 17280, 17282, 17284, 17286, 17288, 17290, 17292, 17294, 17296, 17298, 17300, 17302, 17304, 17306, 17308, 17311, 17314, 17317, 17320, 17322, 17324, 17326, 17328, 17330, 17332, 17334, 17336, 17338, 17340, 17342, 17344, 17346, 17348, 17350, 17352, 17354, 17356, 17358, 17360, 17362, 17364, 17366, 17368, 17370, 17372, 17374, 17376, 17378, 17380, 17382, 17384, 17386, 17388, 17390, 17392, 17394, 17396, 17398, 17400, 17402, 17404, 17406, 17408, 17410, 17412, 17414, 17416, 17418, 17420, 17422, 17424, 17426, 17428, 17430, 17432, 17434, 17436, 17438, 17440, 17442, 17444, 17446, 17448, 17450, 17452, 17454, 17456, 17458, 17460, 17462, 17464, 17466, 17468, 17470, 17472, 17474, 17476, 17478, 17480, 17482, 17485, 17487, 17489, 17491, 17493, 17495, 17497, 17500, 17504, 17506, 17508, 17511, 17513, 17515, 17517, 17519, 17521, 17523, 17525, 17527, 17529, 17531, 17533, 17535, 17537, 17539, 17541, 17543, 17545, 17547, 17549, 17551, 17553, 17555, 17557, 17559, 17561, 17563, 17565, 17567, 17569, 17571, 17573, 17575, 17577, 17579, 17581, 17583, 17585, 17587, 17589, 17591, 17593, 17595, 17597, 17599, 17601, 17603, 17605, 17607, 17609, 17611, 17613, 17615, 17617, 17619, 17621, 17623, 17625, 17627, 17629, 17631, 17633, 17635, 17637, 17639, 17641, 17652, 17655, 17657, 17659, 17661, 17663, 17665, 17667, 17669, 17672, 17674, 17676, 17678, 17680, 17682, 17684, 17687, 17689, 17691, 17695, 17697, 17699, 17701, 17703, 17705, 17707, 17709, 17713, 17715, 17717, 17719, 17721, 17723, 17725, 17727, 17729, 17731, 17733, 17735, 17737, 17739, 17741, 17743, 17745, 17747, 17749, 17751, 17755, 17759, 17761, 17763, 17765, 17768, 17771, 17773, 17775, 17777, 17779, 17781, 17784, 17786, 17788, 17790, 17792, 17794, 17796, 17798, 17800, 17802, 17804, 17806, 17810, 17813, 17815, 17818, 17821, 17824, 17827, 17830, 17833, 17836, 17839, 17842, 17845, 17848, 17850, 17852, 17854, 17856, 17859, 17862, 17865, 17867, 17870, 17873, 17875, 17878, 17881, 17884, 17887, 17889, 17891, 17893, 17895, 17897, 17899, 17901, 17903, 17906, 17909, 17911, 17914, 17916, 17919, 17921, 17923, 17925, 17927, 17929, 17931, 17933, 17935, 17937, 17940, 17942, 17944, 17946, 17948, 17950, 17953, 17956, 17958, 17960, 17962, 17964, 17966, 17968, 17970, 17972, 17974, 17976, 17978, 17980, 17982, 17984, 17987, 17989, 17991, 17993, 17998, 18000, 18003, 18005, 18008, 18010, 18013, 18015, 18018, 18020, 18022, 18025, 18027, 18029, 18032, 18035, 18037, 18039, 18042, 18045, 18047, 18049, 18052, 18054, 18057, 18059, 18061, 18064, 18066, 18068, 18070, 18072, 18074, 18077, 18079, 18081, 18084, 18086, 18088, 18091, 18093, 18095, 18097, 18099, 18102, 18104, 18106, 18108, 18110, 18112, 18115, 18118, 18121, 18123, 18126, 18128, 18130, 18132, 18134, 18136, 18138, 18140, 18142, 18146, 18148, 18150, 18151, 18154, 18157, 18161, 18162, 18166, 18167, 18170, 18172, 18174, 18176, 18178, 18180, 18182, 18184, 18186, 18188, 18190, 18192, 18194, 18197, 18199, 18201, 18204, 18207, 18209, 18211, 18213, 18215, 18217, 18219, 18221, 18223, 18225, 18227, 18229, 18231, 18233, 18235, 18237, 18239, 18241, 18243, 18245, 18247, 18249, 18251, 18253, 18255, 18257, 18259, 18261, 18263, 18265, 18267, 18269, 18271, 18273, 18275, 18277, 18279, 18281, 18283, 18286, 18289, 18292, 18295, 18298, 18302, 18306, 18308, 18310, 18312, 18314, 18316, 18319, 18322, 18325, 18328, 18330, 18333, 18336, 18340, 18343, 18345, 18348, 18351, 18354, 18358, 18361, 18364, 18367, 18370, 18374, 18378, 18380, 18382, 18384, 18386, 18388, 18390, 18392, 18395, 18398, 18400, 18402, 18404, 18406, 18408, 18411, 18414, 18416, 18418, 18420, 18422, 18425, 18428, 18430, 18432, 18434, 18436, 18439, 18442, 18444, 18446, 18448, 18450, 18452, 18454, 18456, 18458, 18460, 18463, 18466, 18468, 18470, 18472, 18474, 18477, 18481, 18484, 18487, 18489, 18491, 18493, 18495, 18497, 18499, 18501, 18503, 18505, 18509, 18511, 18513, 18515, 18517, 18519, 18521, 18523, 18525, 18527, 18529, 18531, 18534, 18537, 18539, 18542, 18545, 18547, 18550, 18553, 18555, 18557, 18559,

18561, 18564, 18567, 18569, 18571, 18573, 18576, 18578, 18580, 18582, 18584, 18586, 18588, 18590, 18592, 18594, 18596, 18598, 18600, 18602, 18604, 18606, 18608, 18610, 18612, 18614, 18616, 18618, 18621, 18623, 18625, 18627, 18629, 18631, 18633, 18635, 18637, 18639, 18641, 18643, 18645, 18647, 18649, 18651, 18653, 18655, 18657, 18659, 18661, 18663, 18665, 18667, 18669, 18671, 18673, 18675, 18677, 18679, 18681, 18683, 18685, 18687, 18689, 18691, 18693, 18695, 18697, 18699, 18701, 18703, 18705, 18707, 18709, 18711, 18713, 18715, 18717, 18719, 18721, 18723, 18725, 18727, 18729, 18731, 18733, 18738, 18742, 18746, 18749, 18751, 18753, 18757, 18760, 18763, 18765, 18767, 18770, 18772, 18774, 18776, 18779, 18781, 18785, 18787, 18789, 18791, 18794, 18797, 18800, 18804, 18806, 18808, 18810, 18813, 18818, 18821, 18823, 18825, 18830, 18833, 18836, 18838, 18841, 18843, 18845, 18848, 18855, 18858, 18863, 18866, 18869, 18872, 18875, 18878, 18881, 18884, 18887, 18890, 18893, 18896, 18899, 18902, 18905, 18908, 18911, 18914, 18917, 18921, 18924, 18927, 18929, 18931, 18933, 18935, 18937, 18940, 18942, 18944, 18946, 18948, 18950, 18953, 18955, 18958, 18960, 18963, 18965, 18967, 18969, 18971, 18973, 18975, 18977, 18979, 18981, 18983, 18985, 18987, 18989, 18991, 18994, 18996, 18999, 19001, 19003, 19005, 19007, 19009, 19013, 19017, 19019, 19021, 19023, 19025, 19027, 19030, 19032, 19035, 19037, 19039, 19041, 19043, 19045, 19048, 19050, 19052, 19054, 19056, 19058, 19060, 19062, 19064, 19066, 19068, 19070, 19072, 19075, 19077, 19079, 19081, 19083, 19085, 19087, 19089, 19091, 19093, 19095, 19097, 19099, 19101, 19103, 19105, 19107, 19109, 19111, 19113, 19115, 19117, 19119, 19122, 19124, 19126, 19128, 19130, 19132, 19134, 19136, 19138, 19140, 19142, 19144, 19146, 19148, 19151, 19154, 19156, 19159, 19162, 19165, 19168, 19170, 19172, 19174, 19176, 19178, 19180, 19182, 19184, 19186, 19188, 19191, 19195, 19197, 19199, 19201, 19203, 19205, 19207, 19209, 19211, 19213, 19215, 19217, 19219, 19221, 19223, 19225, 19227, 19229, 19232, 19235, 19238, 19241, 19243, 19248, 19252, 19255, 19257, 19259, 19262, 19265, 19268, 19271, 19274, 19277, 19280, 19283, 19286, 19289, 19292, 19295, 19297, 19299, 19301, 19303, 19305, 19308, 19314, 19317, 19319, 19322, 19325, 19327, 19329, 19331, 19333, 19335, 19337, 19339, 19341, 19343, 19345, 19348, 19350, 19352, 19354, 19357, 19360, 19362, 19364, 19366, 19369, 19371, 19374, 19376, 19380, 19383, 19385, 19387, 19389, 19391, 19393, 19395, 19397, 19399, 19401, 19403, 19405, 19407, 19410, 19412, 19414, 19417, 19420, 19422, 19424, 19426, 19428, 19430, 19432, 19434, 19436, 19438, 19440, 19442, 19444, 19446, 19448, 19450, 19452, 19454, 19456, 19458, 19460, 19462, 19464, 19466, 19468, 19470, 19472, 19474, 19477, 19480, 19483, 19487, 19490, 19493, 19495, 19497, 19499, 19501, 19504, 19506, 19509, 19511, 19513, 19515, 19517, 19519, 19521, 19524, 19526, 19529, 19532, 19535, 19538, 19540, 19542, 19544, 19546, 19548, 19550, 19552, 19554, 19556, 19558, 19561, 19564, 19566, 19568, 19570, 19572, 19574, 19576, 19578, 19581, 19584, 19586, 19588, 19590, 19593, 19595, 19597, 19599, 19601, 19633, 19635, 19637, 19638, 19639, 19640, 19641, 19642, 19643, 19644, 19645, 19646, 19648, 19650, 19651, 19652, 19653, 19654, 19655, 19656, 19658, 19660, 19663, 19665, 19667, 19668, 19669, 19670, 19671, 19672, 19673, 19674, 19675, 19676, 19678, 19680, 19682, 19683, 19684, 19685, 19686, 19688, 19689, 19690, 19691, 19693, 19695, 19697, 19698, 19699, 19700, 19701, 19702, 19703, 19704, 19705, 19706, 19708, 19710, 19711, 19712, 19713, 19714, 19715, 19716, 19718, 19720, 19723, 19725, 19727, 19728, 19729, 19730, 19731, 19732, 19733, 19734, 19735, 19736, 19738, 19740, 19742, 19743, 19744, 19745, 19746, 19748, 19749, 19750, 19751, 19857, 19859

A

\a 282, 284, 288, 294
\ABREVE 19626, 19697, 19698, 19699, 19700, 19701
\abreve . . 19620, 19637, 19638, 19639, 19640, 19641
\AC 18055, 20913
\AccFancyVerbLineautorefname 3128
\Accfootnoteautorefname . 3108
\Acctheoremautorefname . 3132
\acctonos 3190, 3191, 3192, 3193, 3194, 3195, 3196, 3197, 3198, 3199, 3200, 3201, 3202, 3203, 3204, 3205
\Acht 19565, 20713
\ACIRCUMFLEX 19627, 19702, 19703, 19704, 19705, 19706
\acircumflex 3177, 19621, 19642, 19643, 19644, 19645, 19646
\AcPa 19551, 20707
\Acrobatmenu 2216, 4262, 6361, 9308, 10048, 10589, 11463
\active 940, 947, 1524, 4751, 4752, 4753, 4754, 4755, 4756, 4759,

4761, 4764, 4772, 14394, 14421
\add@accent 512
\addcontentsline . . . 7595, 7667, 7985, 7990, 8084
\addtocontents 8030, 8085
\addtocounter 7301
\AddToDocumentProperties 2308, 3718, 3724, 3730, 3736, 3759, 3765
\AddToHook . 5377, 5379, 7321, 8602
\AddToHookNext . . 7040, 7312
\adl@LT@array 7161
\advance 455, 456, 961, 4900, 5089, 5102, 5398, 5726, 5772, 6207, 6208, 6211, 6212, 6543, 6551, 6588, 7886, 7896, 7899, 7913, 9414, 9498, 9536, 9576, 9891, 9901, 10744, 11950, 12237, 12489, 12561, 12604, 12605, 13099, 13162, 13206, 13207, 13453, 13518, 13562, 13563, 14180, 14182, 14183, 14189, 14198, 14298, 14508
\AE 14882, 15341, 15856
\ae 14948, 15408, 15858
\afterassignment . . . 1533, 1539, 1545, 5982
\AfterBeginDocument . 342, 356
\aftergroup 7480
\agemO 17685, 20884
\ainferior 20015
\alef 19767
\alefhamza 19759
\aleflowerhamza 19763
\alefmadda 19757
\alefmaqsura 19825
\aleph 17696, 20037
\Alph 6637, 7006
\alph 6638, 7276, 7303
\alpha 16422, 19936
\amalg 17959, 20131
\AMSautorefname 8603
\anchor@spot . 5281, 5294, 5301, 5307, 5309, 8947, 9355, 9450, 10321, 10398, 10901, 11248, 11251, 11887, 12174
\and 6467
\angle 17988, 20143
\AngleSign 17996, 20905
\Anglesign 17995, 20904
\Ankh 18822, 20426
\APLbox 18560, 20385
\APLdown 18758, 20980
\APLdownarrowbox . . . 18549, 20380
\APLinput 18552, 20381
\APLinv 18526, 20372
\APLleftarrowbox 18541, 20377
\APLrightarrowbox 18544, 20378
\APLup 18743, 20977
\APLuparrowbox . 18546, 20379
\appendix 6998, 7010
\appendixautorefname 2976, 2994, 3012, 3030, 3048, 3066, 3084, 3116, 3117, 3142, 3160, 3178, 3196, 3214, 3232, 3250, 3268, 8613
\apprge 18205, 20928
\apprle 18202, 20927
\approx 18078, 20180
\approxeq 18083, 20182
\Aquarius 18909, 21024
\aquarius 18907, 20452
\arabic . 6634, 6867, 6869, 6871, 6874, 6875, 6876, 6878, 6879, 6880, 6881, 6883, 6884, 6885, 6886, 6887, 6888, 6891, 6901, 6902, 8095, 8104, 8149, 8164
\Aries 18879, 21014
\aries 18877, 20442
\ast 17975, 20138
\Asterisk 19123, 20535
\AsteriskBold . . . 19100, 20524
\AsteriskCenterOpen . . . 19102, 20525
\AsteriskRoundedEnds . 19147, 20547
\asymp 18096, 20188
\AtBeginDocument 343, 5344, 5348, 6396, 7144, 7319, 12266
\AtBeginShipout . . . 6489, 6501, 9847
\AtBeginShipoutBox 6493, 6496, 9848, 9849
\AtBeginShipoutFirst . . . 6506, 10209, 11667, 11806
\AtEndDocument 6405
\AtEndOfPackage 353
\AtVeryEndDocument . . . 6736, 13046
\author 6423, 6433
\autopageref 4384, 8494
\autoref . 629, 4383, 8513, 12261
\ayn 19803

B

\b 283, 284, 788, 792, 798, 14646, 14658, 14670, 15091, 15120, 15149, 17182, 17184, 17194, 17196, 17266, 17268, 17274, 17276, 17302, 17304, 17338, 17340, 17358, 17360, 17426, 17428, 17430
\baa 19769
\babygamma 16037, 19904
\back@none . . . 2911, 2921, 2934
\back@page 2913, 2926
\back@section 2912, 2918, 2924, 2930
\back@slide 2914, 2923
\backcite 7801
\backcong 18092, 20186
\backepsilon 16513
\backneg 18498, 20359
\backprime 17520, 19982
\backref 7832, 12265
\backsim 18056, 20170
\backsimeq 18403, 20318
\barb 15743, 20766
\bard 15507, 20758
\bari 16051, 19905
\barin 18494, 20357
\barj 16022, 20798
\barl 15765, 19890
\barlambda 15772, 20771
\barleftharpoon . . 19282, 20601
\baro 16097, 16098, 18530, 18532, 20970
\barp 17148, 19973
\barrightharpoon . 19288, 20603
\barsci 17146, 19972
\barscu 17151, 19974
\baru 16162, 19914
\barwedge 18385, 20310
\baselineskip 2219, 9469, 10920, 10952, 11650
\bbl@cite@choice 7708
\bbl@info 604
\bbslash 18572, 20388
\BCPdata 473, 480, 486
\Beam 18556, 20383
\because 18041, 20164
\BeforeTeXIVht 2698
\begin 590, 12287, 21082
\belowpdfbookmark 14294

\beta 16424, 19937
\betainferior 19967
\beth 17698, 20038
\between 18189, 20229
\bfseries 564, 8372, 8392, 8409, 8541
\bgroup . 649, 4867, 7466, 7479, 8860, 9865, 10321, 10941, 12793, 12885, 12906
\bibcite . 7699, 7705, 7709, 7734, 7749, 7765, 7775
\Bicycle 19585, 20722
\bigcircle 20411
\bigdoublevee . . . 19344, 20626
\bigdoublewedge . 19342, 20625
\bigtriangledown . 18756, 20401
\bigtriangleup . . . 18741, 20396
\binampersand . . 15189, 20741
\bindnasrepma . . 17710, 20887
\Biohazard 18820, 20425
\bitsetGetDec 5450, 5583, 5601, 5615, 5628, 5644, 5676, 5701
\bitsetGetHex 5451
\bitsetGetSetBitList 5439
\bitsetIsEmpty 5580, 5598, 5612, 5625, 5641, 5673, 5698
\bitsetReset . . 5553, 5587, 5606, 5620, 5633, 5649, 5681
\bitsetSetValue 5419, 5429
\blacksmiley 18835, 20430
\Bleech 18744, 20978
\BOOKMARK . . 14226, 14305
\booknumberline . 14210, 14215
\bool 6917
\bot 18329, 20291
\Bowtie 18393, 20959
\bowtie 18391, 20313
\Box 18795, 20984
\box . . . 6214, 6496, 8874, 9879, 11295, 11298
\boxast 19328, 20618
\boxbackslash . . . 18538, 20376
\boxbar 18778, 20410
\boxbox 19332, 20620
\boxbslash 19326, 20617
\boxcircle 19330, 20619
\boxdot 18313, 20285
\boxempty 18793, 20416
\boxminus 18309, 20283
\boxplus 18307, 20282
\boxslash 19324, 20616
\boxtimes 18311, 20284
\brokenvert 15270, 20747
\bullet 17979, 19977
\Bumpeq 18101, 20190
\bumpeq 18105, 20192

C

\C 15068, 16770, 16773
\c 789, 793, 799, 3078, 3086, 3087, 3088, 6446, 6453, 14644, 14656, 14668, 14884, 14950, 15080, 15106, 15135, 15156, 15343, 15410, 15541, 15543, 15589, 15591, 15599, 15601, 15619, 15621, 15655, 15657, 15671, 15673, 15679, 15681, 15936, 15938, 16830, 16833, 17198, 17200, 17246, 17248
\c@footnote . . 7345, 7428, 7436, 7550
\c@Hy@AnnotLevel . 9891, 9892, 9901
\c@Hy@tempcnt . . . 4885, 4886, 4892, 4900
\c@note 7889
\c@overlay 7889
\c@page . 6543, 6551, 6568, 6588, 6589, 6593, 6605, 6607, 6612, 6619, 6621, 6623, 6652, 7886, 7890, 7892, 7896, 7899, 7900, 7913, 7943
\c@secnumdepth . 14570, 14585, 14600
\c@slide 7889
\c@tocdepth 3427, 3432
\calc@bm@number 14433, 14506
\calculate@pdfview . 3901, 3904
\Cancer 18888, 21017
\cancer 18886, 20445
\Cap 18421, 20326
\cap 18017, 20154
\capdot 19368, 20636
\capitalacute 15159
\capitalbreve 15166
\capitalcaron 15165
\capitalcedilla 15156
\capitalcircumflex 15160
\capitaldieresis 15162
\capitaldotaccent 15168
\capitalgrave 15158
\capitalhungarumlaut . . . 15163
\capitalmacron 15167
\capitalnewtie 15170
\capitalogonek 15157
\capitalring 15164
\capitaltie 15169
\capitaltilde 15161
\Capricorn 18906, 21023
\capricornus 18904, 20451
\caption 7565, 7567, 7655, 7657
\catcode . . . 172, 173, 184, 185, 186, 187, 206, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 916, 940, 947, 1524, 1653, 1654, 1787, 1788, 1844, 1845, 1846, 4636, 4638, 4750, 4751, 4752, 4753, 4754, 4755, 4756, 4759, 4761, 4764, 4772, 4782, 4873, 4874, 8628, 10982, 10983, 14323, 14325, 14394, 14397, 14421, 14424
\ccnc 19594, 20725
\ccnd 19596
\ccsa 19598, 20726
\cdot 20733
\cdots 18488, 20354
\CESign 19602, 20728
\CEsign 19604, 21077
\cf@encoding 1265
\chapterautorefname 2977, 2995, 3013, 3031, 3049, 3067, 3085, 3114, 3143, 3161, 3179, 3197, 3215, 3233, 3251, 3269, 8614
\chapternumberline 14212, 14217
\char 13080, 14327, 14364
\chardef 258, 301, 2475, 2476, 2477, 2478, 2756, 2758, 4559, 4591, 11243, 11246, 11252
\check@bm@number . . . 14444, 14452, 14499, 14507
\CheckBox 6156
\CheckCommand 7425
\checkcommand 42, 7541, 7548, 7555, 7655, 7665, 7759, 7771, 8084, 8087, 8149, 8406
\CheckedBox 18798, 20985
\Checkedbox 18796, 20417
\checklatex 4, 7540, 7654, 7758, 8083, 8405

\Checkmark 19044, 20497
\checkmark 19046, 21043
\CheckmarkBold . 19047, 20498
\checkpackage 9, 8148
\chi 16466, 19958
\chiinferior 19971
\ChoiceBox 5776
\ChoiceMenu 6153
\circ 17977, 20139
\circeq 18137, 20206
\circlearrowleft . . 19194, 20566
\circlearrowright . 19196, 20567
\CircledA 18617, 20389
\circledast 18301, 20280
\circledbslash . . . 19309, 21052
\circledcirc 18297, 20279
\circleddash 18305, 20281
\CircleShadow . . . 19155, 20550
\circplus 19351, 20629
\citation 7793
\citeauthoryear 7859, 7865
\citeN 7856
\CJK@char 943
\CJK@charx 944
\CJK@CJK 932
\CJK@eight . . . 1143, 1146, 1260
\CJK@five 1143, 1145, 1260
\CJK@four . . . 1142, 1145, 1259
\CJK@hundred 1209
\CJK@hundredmillion . . . 1172
\CJK@ignorespaces 942
\CJK@kern 930
\CJK@minus 1134
\CJK@nine . . . 1143, 1147, 1260
\CJK@null 1236
\CJK@one 1142, 1144, 1259
\CJK@punctchar 945
\CJK@punctcharx 946
\CJK@seven . . 1143, 1146, 1260
\CJK@six 1143, 1146, 1260
\CJK@ten . . . 1144, 1145, 1146, 1147, 1224
\CJK@tenthousand . 1157, 1178
\CJK@thousand 1194
\CJK@three . . . 1142, 1145, 1259
\CJK@two 1142, 1144, 1259
\CJK@zero . . 1142, 1160, 1177, 1181, 1197, 1212, 1234
\CJKdigits 1019
\CJKkern 931
\CJKnumber 1018
\cl@@ckpt 6956
\CleaningA 18619, 20972
\CleaningF 18630, 20390
\CleaningFF 18632, 20391
\CleaningP 18654, 20392
\CleaningPP 18656, 20393
\clickb 16219, 20851
\clickc 16214, 20849
\clickt 16156, 20833
\clock 18504, 20362
\ClockLogo 18507, 20969
\Clocklogo 18506, 20968
\close@pdflink 8941, 8966, 8975, 9007, 9044, 9077, 9332
\closedniomega . . 16105, 20821
\closedrevepsilon . 16018, 20797
\closeout 14314
\Cloud 18784, 20412
\ClowerTips 20514
\clubsuit . . 18923, 18925, 21030
\codeof 7823
\Coffeecup 18803, 20419
\coloncolonequals 19388, 20644
\colonequals 18129, 20202
\color@begingroup . . 8860, 9865
\color@endgroup . . . 8867, 9872
\columnwidth 7473
\comma@entry 5767, 5774, 5776
\comma@parse 5766
\complement 17928, 20117
\Conclusion 17879, 20896
\cong 18073, 20178
\Congruent 18155, 20922
\contentsline . 8031, 8036, 8085, 8087
\copy . . . 5098, 5100, 5111, 5119, 8870, 9849, 9875
\copyright 19880
\Corresponds 18144, 20920
\corresponds 18143, 20919
\count@ 959, 960, 961, 962, 1534, 1892, 3443, 3444, 3449, 3450, 5397, 5398, 5413, 5709, 5724, 5726, 5750, 5772, 5788, 10740, 10741, 10742, 10743, 10744, 10747
\Cross 19063, 20506
\crossb 15740, 20764
\CrossClowerTips 19080
\crossd 15504, 20756
\CrossedBox 18802, 20987
\Crossedbox 18799, 20418
\crossh 15553, 20760
\CrossMaltese . . . 19069, 20509
\crossnilambda . . 15771, 20770
\CrossOpenShadow 19065, 20507
\CrossOutline . . . 19067, 20508
\cs 5037, 5042, 5046, 5055, 5059, 5068
\Cube 587
\Cup 18424, 20327
\cup 18019, 20155
\cupdot 18258, 20262
\cupplus 18260, 20263
\curlyc 15986, 20790
\curlyeqprec 18443, 20335
\curlyeqsucc 18447, 20337
\curlyesh 16153, 20832
\curlyvee 18407, 20320
\curlywedge 18410, 20321
\curlyyogh 16198, 20845
\curlyz 16191, 20844
\CurrentBorderColor 8931, 8933, 8960, 8962, 8970, 8972, 8977, 10388, 10422, 10424, 10440, 10442, 10461, 10463, 10525, 10527, 10544, 10546
\currentpdfbookmark . . . 14286
\curu 16721
\curvearrowleft . . 17812, 20071
\curvearrowright . 17814, 20072
\CutLeft 19010, 21037
\CutLine 18735, 20974
\Cutline 18736, 20975
\Cutright 19011, 21038
\CuttingLine 18732, 20394
\cyr 609, 3096, 3098, 3101, 3104, 3107, 3108, 3109, 3110, 3111, 3112, 3113, 3114, 3115, 3116, 3118, 3120, 3121, 3122, 3123, 3124, 3125, 3126, 3127, 3128, 3129, 3130, 3131, 3132, 3133
\CYRA . . . 16555, 16946, 16950
\cyra . . . 3098, 3105, 3107, 3112, 3115, 3120, 3121, 3127, 3131, 16622, 16948, 16952
\CYRABHCH . . . 16910, 16915
\cyrabhch 16912, 16918
\CYRABHCHDSC 16914
\cyrabhchdsc 16917
\CYRABHDZE 16980
\cyrabhdze 16982
\CYRABHHA 16865
\cyrabhha 16867
\CYRAE 16954
\cyrae 16956
\CYRB 16557

\cyrb 3112, 16624
\CYRBYUS 16745
\cyrbyus 16747
\CYRC 16600
\cyrc 16667
\CYRCH 16602, 17022
\cyrch . 3104, 3105, 3113, 16669, 17024
\CYRCHLDSC 16938
\cyrchldsc 16940
\CYRCHRDSC 16896
\cyrchrdsc 16898
\CYRCHVCRS 16901
\cyrchvcrs 16904
\CYRD 16563
\cyrd . . . 3101, 3104, 3115, 3120, 3121, 16630
\CYRDJE 16524
\cyrdje 16694
\CYRDZE 15050, 15067, 16517, 16530
\cyrdze 16700
\CYRDZHE 16553
\cyrdzhe 16723
\CYRE . . 16519, 16522, 16565, 16958
\cyre . . . 3098, 3104, 3105, 3118, 3130, 3131, 3132, 16632, 16689, 16692, 16960
\cyreref 17008
\CYREREV 16616, 17006
\cyrerev 16683
\CYRERY 16611, 17030
\cyrery 3096, 3098, 16678, 17032
\CYRF 16596
\cyrf 16663
\CYRFITA 16761
\cyrfita 16763
\CYRG 16526, 16561
\cyrg 3114, 16628, 16696
\CYRGDSC 17026
\cyrgdsc 17028
\CYRGHCRS 16813
\cyrghcrs 16815
\CYRGHK 16818
\cyrghk 16821
\CYRGUP 16809
\cyrgup 16811
\CYRH 16598
\cyrh 16665
\CYRHDSC 16887
\cyrhdsc 16889
\CYRHHK 17034
\cyrhhk 17036
\CYRHRDSN 16609
\cyrhrdsn . 16675, 16676, 20858
\CYRI . . . 16548, 16571, 16574, 16984, 16988
\cyri 3098, 3101, 3105, 3111, 3116, 3118, 16638, 16641, 16718, 16986, 16990
\CYRIE 16528
\cyrie 16698
\CYRII 16533, 16536
\cyrii 16703, 16706
\CYRIOTBYUS 16749
\cyriotbyus 16751
\CYRIOTE 16733
\cyriote 16735
\CYRIOTLYUS 16741
\cyriotlyus 16743
\CYRISHRT 16573
\cyrishrt 16640
\CYRISHRTDSC 16797
\cyrishrtdsc 16799
\CYRIZH 16765, 16770
\cyrizh 16767, 16773
\CYRJE 16538
\cyrje 16708
\CYRK 16546, 16576
\cyrk . . . 3107, 3108, 3110, 3124, 3125, 3127, 3128, 3129, 16643, 16716
\CYRKBEAK 16849
\cyrkbeak 16851
\CYRKDSC 16835
\cyrkdsc 16837
\CYRKHCRS 16845
\cyrkhcrs 16847
\CYRKHK 16926
\cyrkhk 16928
\CYRKOPPA 16791
\cyrkoppa 16793
\CYRKSI 16753
\cyrksi 16755
\CYRKVCRS 16840
\cyrkvcrs 16843
\CYRL 16578
\cyrl . . . 3112, 3114, 3116, 3118, 16645
\CYRLDSC 16930
\cyrldsc 16932
\CYRLJE 16540
\cyrlje 16710
\CYRLYUS 16737
\cyrlyus 16739
\CYRM 16580
\cyrm . . 3101, 3105, 3131, 3132, 16647
\CYRMDSC 16942
\cyrmdsc 16944
\CYRN 16582
\cyrn . . . 3098, 3104, 3105, 3107, 3108, 3110, 3118, 3124, 3125, 16649
\CYRNDSC 16853
\cyrndsc 16855
\CYRNG 16857
\cyrng 16859
\CYRNHK 16934
\cyrnhk 16936
\CYRNJE 16542
\cyrnje 16712
\CYRO 16584, 16992
\cyro . . . 3101, 3104, 3107, 3108, 3118, 3127, 3128, 3130, 3131, 3132, 16651, 16994
\CYROMEGA 16725
\cyromega 16727
\CYROMEGARND 16779
\cyromegarnd 16781
\CYROMEGATITLO . . . 16783
\cyromegatitlo 16785
\CYROT 16787
\cyrot 16789
\CYROTLD 16996, 17001
\cyrotld 16998, 17004
\CYRP 16586
\cyrp . . . 3101, 3104, 3105, 3109, 3110, 3116, 3118, 3122, 3123, 3124, 3125, 16653
\CYRpalochka 16920
\CYRPHK 16861
\cyrphk 16863
\CYRPSI 16757
\cyrpsi 16759
\CYRR 16588
\cyrr . . . 3096, 3098, 3101, 3104, 3105, 3111, 3115, 3116, 3118, 3120, 3121, 3126, 3127, 3128, 3129, 3130, 3131, 3132, 16655
\CYRRTICK 16805
\cyrrtick 16807
\CYRS 16590, 16870
\cyrs . . . 3101, 3104, 3107, 3108, 3111, 3126, 3127, 3128, 3129, 3133, 16657, 16873
\CYRSCHWA . . . 16962, 16967
\cyrschwa 16964, 16970
\CYRSDSC 16869, 16870

\cyrsdsc 16872
\CYRSEMISFTSN 16801
\cyrsemisftsn 16803
\CYRSFTSN 16614
\cyrsftsn . . 16680, 16681, 20859
\CYRSH 16604
\cyrsh 16671
\CYRSHCH 16606
\cyrshch 16673
\CYRSHHA 16906
\cyrshha 16908
\CYRT 16592
\cyrt . . . 3101, 3104, 3110, 3112, 3124, 3125, 3126, 3127, 3128, 3129, 3130, 3131, 3132, 16659
\CYRTDSC 16875
\cyrtdsc 16877
\CYRTETSE 16891
\cyrtetse 16893
\cyrthousands 16795
\CYRTSHE 16544
\cyrtshe 16714
\CYRU . . 16551, 16594, 17010, 17014, 17018
\cyru . . . 3108, 3110, 3124, 3125, 3128, 3132, 16661, 17012, 17016, 17020
\CYRUK 16775
\cyruk 16777
\CYRUSHRT 16550
\cyrushrt 16720
\CYRV 16559
\cyrv 3096, 3098, 16626
\CYRY 16879
\cyry 16881
\CYRYA 16620
\cyrya 16687
\CYRYAT 16729
\cyryat 16731
\CYRYHCRS 16883
\cyryhcrs 16885
\CYRYI 16535
\cyryi 16705
\CYRYO 16521
\cyryo 16691
\CYRYU 16618
\cyryu 16685
\CYRZ . . . 16569, 16830, 16976
\cyrz . . 3115, 3120, 3121, 16636, 16833, 16978
\CYRZDSC 16829
\cyrzdsc 16832
\CYRZH . . 16567, 16922, 16972
\cyrzh 3098, 3118, 16634, 16924, 16974
\CYRZHDSC 16824
\cyrzhdsc 16827

D

\d 790, 794, 800, 3174, 3178, 3180, 3181, 3182, 3183, 3184, 3186, 14647, 14659, 14671, 15074, 15121, 15150, 17178, 17180, 17190, 17192, 17238, 17240, 17262, 17264, 17270, 17272, 17290, 17292, 17298, 17300, 17334, 17336, 17346, 17348, 17354, 17356, 17382, 17384, 17402, 17404, 17422, 17424, 17440, 17442, 17444, 17446, 17452, 17454, 17456, 17458, 17460, 17462, 17468, 17470, 19633, 19638, 19643, 19648, 19653, 19658, 19663, 19668, 19673, 19678, 19683, 19688, 19693, 19698, 19703, 19708, 19713, 19718, 19723, 19728, 19733, 19738, 19743, 19748
\dad 19797
\dag 17498, 20870
\dagger 19976
\dal 19783
\daleth 17702, 20040
\damma 19837
\danger 18974, 20471
\dasheddownarrow 17913, 20110
\dashedleftarrow . 17907, 20897
\dashedrightarrow 17912, 20898
\dasheduparrow . . 17908, 20108
\dashleftarrow . . . 17905, 20107
\dashrightarrow . . 17910, 20109
\DashV 19486, 20689
\Dashv 19479, 20687
\dashV 20685
\dashv 18318, 20287
\DavidStar 19071, 20510
\davidstar 19073, 21044
\ddag 17502, 20872
\ddagger . 14744, 17499, 17501, 20871
\ddots 18492, 20356
\DeclareFontEncoding . . 14635, 15037
\DeclareFontFamily . . . 860, 870
\DeclareFontShape . . . 861, 871
\DeclareFontSubstitution . . 862, 872
\DeclareLocalOptions . . . 4196
\DeclareRobustCommand 4864, 4951, 4953, 4955, 4964, 6150, 6153, 6156, 6159, 6162, 6165, 6168, 6309, 6313, 6382, 6386, 8494, 14524
\DeclareTextAccent 14636, 14637, 14638, 14639, 14640, 14641, 14642, 14643, 14644, 14645, 14646, 14647
\DeclareVoidOption . 2695, 2709, 2720, 2736, 2742, 2747, 2761, 2771, 2776, 2782, 2788, 2817, 2834, 2841, 2847, 2852, 2857, 2872, 3354, 3362, 3370, 3380
\DefaultHeightofCheckBox 6220, 12733, 13337, 13714
\DefaultHeightofChoiceMenu . . 6222, 12551, 13152, 13508
\DefaultHeightofReset . . . 6218, 12703, 13309, 13682
\DefaultHeightofSubmit . 6216, 12683, 13286, 13659
\DefaultHeightofText 6224, 12523, 13126, 13475
\DefaultHeightofTextMultiline . 6225, 12521, 13124, 13473
\DefaultOptionsofCheckBox . . 6230, 12735, 13339, 13716
\DefaultOptionsofComboBox 6233
\DefaultOptionsofListBox 6232
\DefaultOptionsofPopdownBox 6234
\DefaultOptionsofPushButton . 6229, 12654, 13258, 13627
\DefaultOptionsofRadio . . 6235
\DefaultOptionsofReset . . 6228, 12706, 13312, 13685
\DefaultOptionsofSubmit 6227, 12686, 13289, 13662
\DefaultOptionsofText . . 6231, 12528, 13131, 13480
\DefaultWidthofCheckBox 6221, 12732, 13336, 13713
\DefaultWidthofChoiceMenu . . 6223, 12550, 13151, 13507
\DefaultWidthofReset . . . 6219, 12702, 13308, 13681

\DefaultWidthofSubmit . . 6217, 12682, 13285, 13658
\DefaultWidthofText 6226, 12518, 13121, 13470
\define@key . . 2373, 2375, 2419, 2434, 2437, 2440, 2448, 2451, 2461, 2464, 2467, 2484, 2496, 2498, 2501, 2518, 2522, 2528, 2531, 2534, 2537, 2540, 2543, 2546, 2571, 2628, 2634, 2753, 2879, 2895, 2905, 2908, 2915, 2944, 2963, 2966, 3311, 3377, 3389, 3404, 3421, 3424, 3428, 3456, 3461, 3465, 3468, 3475, 3487, 3494, 3504, 3507, 3510, 3514, 3530, 3540, 3547, 3558, 3571, 3588, 3678, 3687, 3717, 3723, 3729, 3735, 3741, 3746, 3752, 3758, 3764, 3770, 3803, 3810, 3901, 3902, 3915, 3922, 3932, 3973, 3974, 3977, 3980, 3983, 3986, 3989, 3992, 3995, 4018, 4132, 4135, 4881, 4910, 4916, 4928, 5391, 5479, 5535, 5837, 5842, 5855, 5883, 5926, 5929, 5932, 5936, 5939, 5943, 5946, 5950, 5954, 5958, 5961, 5965, 5968, 5971, 5974, 5977, 5997, 6013, 6016, 6019, 6022, 6025, 6028, 6058, 6061, 6064, 6067, 6086, 6092, 6106, 6111, 6117, 6134, 6139, 6145, 6749, 6760, 7039, 10819, 10825, 11327, 11329, 11332, 11335, 11337, 11339, 11348, 11356, 11363, 11365, 11367, 11369, 11371, 11373, 11382, 11392, 11394, 11396, 11397, 11403, 11412, 11414, 11416, 11418, 11420, 11422, 11424, 11426, 11428, 11430, 11432, 11434, 11436, 11438, 11440, 11442, 11443, 11444, 11445, 11446, 11447, 11448, 11449, 11450, 11451, 11452, 11453
\Deleatur 17651, 20028
\Delta 16363, 19926
\delta 16428, 19939
\Denarius 17653, 20883
\dest@name 5324
\df@tag 8116, 8122
\DH 14902, 15361
\dh . 14972, 15432, 15433, 20755
\dhal 19785
\DiamandSolid 20555
\diameter 18496, 20358
\Diamond 18768, 20981
\diamond 18766, 20405
\diamonddots . . . 17542, 19985
\diamondsuit 18920, 18922, 21029
\digamma 16499, 20857
\dimen@ 1540, 1617, 1618, 1621, 1623, 4168, 4169, 4171, 4178, 4179, 5088, 5089, 5092, 5101, 5102, 5106, 5983, 5992, 6779, 6780, 8887, 8889, 10713, 10714, 10716, 11285, 11300, 11303, 11697, 11699, 11764, 11766, 11858, 11860, 12142, 12144
\dimexpr 470, 1298, 1920, 1922, 1930, 1935, 1938, 1940, 1954, 1956, 1959, 1960, 1967, 1970, 1973, 1974, 1975, 1976, 1986, 1991, 1999, 2003, 2008, 2018, 2021, 2026, 2029, 2034, 2035, 5992
\ding 586, 6033, 6036
\DingObject 13231
\discretionary 651
\div 20731
\divdot 19355, 21058
\divide 10741
\divideontimes . . . 18389, 20312
\Divides 17969, 20135
\DividesNot 17971, 20136
\DJ 3186, 14903, 15499
\dj 3183, 3184, 15502
\dlsh 17809, 20070
\do 960, 2391, 2396, 2401, 3528, 3560, 3561, 3562, 3563, 3618, 3619, 3620, 3621, 3622, 3623, 3626, 3627, 3628, 3629, 3630, 3631, 3634, 3635, 3638, 3639, 3640, 3641, 3642, 3645, 3646, 3647, 3648, 3649, 3652, 3653, 3654, 3655, 3656, 3659, 3660, 3661, 3662, 3663, 3666, 3667, 3670, 3671, 3672, 3675, 3676, 3682, 3683, 3684, 3685, 4011, 4012, 4013, 4014, 4015, 4016, 5439, 7287, 12555, 12617, 12855, 12862, 12872, 13156, 13219, 13512, 13578, 14393, 14420
\documentclass 2, 8744
\dospecials 14402, 14429
\Doteq 18116, 20918
\doteq 18109, 20194
\doteqdot 18114, 20196
\dotminus 18048, 20167
\dotplus 17967, 20134
\dots 524
\dottimes 19356, 20631
\doublebarwedge . 19379, 20640
\doublecap 18423, 20962
\doublecup 18426, 20963
\doublesqcap 19367, 21059
\doublesqcup 19372, 21060
\doublevav 17097
\doublevee 19375, 20639
\doublewedge . . . 19373, 20638
\doubleyod 17101
\DOWNarrow . . . 18752, 20400
\Downarrow 17880, 20096
\downarrow 20046
\downdownarrows 17855, 20087
\downdownharpoons . . . 19276, 20599
\downharpoonleft 17838, 20080
\downharpoonright 17835, 20079
\downmodels 19492, 20691
\downtherefore . . 18043, 20911
\downuparrows . . 17918, 20112
\downupharpoons 19294, 20605
\downvdash 18326, 20941
\dp 5088, 5096, 5109, 6210, 6213, 7471, 9404, 9484, 9521, 9561, 11286, 11289, 11940, 12222, 13448
\dsbiological 18968, 20468
\dschemical 18966, 20467
\dscommercial . . . 18970, 20469
\dsjuridical 18964, 20466
\dsmedical 18962, 20465
\dsmilitary 18959, 20464
\dtimes 19359, 20632
\dvipdfm@setdim 13445, 13495, 13594, 13617, 13648, 13673, 13701, 13730
\dz 16250, 20855

E

\Earth 18856, 21005
\earth 18854, 20435
\ECIRCUMFLEX 19628, 19712, 19713, 19714, 19715, 19716
\ecircumflex 19622, 19652, 19653, 19654, 19655, 19656
\Ecommerce 17693, 20886
\EdefEscapeName . . 3834, 3884, 9311, 10051, 10590, 11464, 12616, 12619, 13218, 13221, 13574, 13580
\EdefEscapeString 761, 771
\EdefUnescapeName 3835
\EdefUnescapeString . 756, 7952
\egroup . 650, 8867, 9872, 10321, 10977, 12802, 12894, 12919
\EightAsterisk . . . 19153, 20549
\EightFlowerPetal 19131, 20539
\EightFlowerPetalRemoved 19150, 20548
\eighthnote 18938, 21031
\eightinferior 20008
\EightStar 19110, 20529
\EightStarBold . . 19112, 20530
\EightStarConvex 19106, 20527
\EightStarTaper . 19104, 20526
\eightsuperior 19992
\einferior 20016
\ejective 16202, 20846
\ell 17664, 20031
\em 570
\emgma 16084, 20817
\emph 549
\empty 942, 3431
\emptyset 17936, 20121
\enc@@html 5841, 5844
\enc@update 509
\END . . 1290, 1291, 1317, 1318, 1333, 1334, 1351, 1352, 1369, 1370, 1726, 1732, 1737, 1839, 1841, 9194, 9207, 9211, 9218, 9231, 9235
\end 591, 21083
\endeqnarray . . 7235, 7254, 7262
\endequation 7191, 7222
\endForm 5831
\endinput 64, 2706, 2801, 4380, 4511, 8366, 10910, 12285, 14514
\endlinechar . . . 808, 829, 4749
\endNoHyper 6343
\EndPreamble 12288
\endsubeqnarray . . . 7266, 7273
\eng 15632, 20762
\engma 15633, 20763
\ensuremath 635
\Envelope 19026, 20489
\enya 16088, 20819
\epsdice 588, 20736
\epsi 16007, 20795
\epsilon 16430, 19940
\eqcirc 18133, 20204
\eqcolon 18051, 20168
\eqdot 19384, 20642
\eqnarray 7234, 7237, 7259
\eqsim 18065, 20174
\eqslantgtr 19423, 20660
\eqslantless 19421, 20659
\equal 7820
\equalscolon 18131, 20203
\equalsinferior 20012
\equalsuperior 19996
\equation 7190, 7200, 7204, 7213
\equationautorefname 2970, 2988, 3006, 3024, 3042, 3060, 3078, 3096, 3097, 3136, 3154, 3172, 3190, 3208, 3226, 3244, 3262, 8603, 8607
\equiv 18153, 20213
\Equivalence 17885
\er 16003, 20794
\errmessage 3308
\escapechar . . . 493, 4334, 7280, 14253, 14431, 14482
\esh 16143, 19913
\EstimatedSign . . 17692, 20885
\eta 16434, 19942
\eTeX 535, 12293
\eth 15433, 20755
\Eur 17650, 20882
\EURcr 17647, 20879
\EurCr 17646, 20878
\EURdig 17643, 20875
\EurDig 17642, 20874
\EURhv 17645, 20877
\EurHv 17644, 20876
\EURtm 17649, 20881
\EurTm 17648, 20880
\evensidemargin 7970
\ExecuteOptions . . . 4183, 4184, 4188
\exists 17932, 20119
\exp 479, 485, 2314
\ExplSyntaxOff 490, 2326, 5072, 6933
\ExplSyntaxOn . 232, 474, 2308, 5036, 6912
\extrasvietnam 3363
\extrasvietnamese 3355
\EyesDollar 15184, 20740

F

\fa 19809
\fallingdoteq 20198
\fallingdotseq 18120
\FancyVerbLineautorefname 2983, 3001, 3019, 3037, 3055, 3073, 3091, 3126, 3129, 3149, 3167, 3185, 3203, 3221, 3239, 3257, 3275, 8620
\farsikaf 19851
\farsiya 19855
\fatha 19835
\fatsemi 19349, 20628
\Fax 19580, 20720
\fax 17704, 20041
\Faxmachine 19582, 21076
\fbox 13084, 13087
\fcdice 589, 20737
\Female 18853, 21004
\female . . . 18847, 18850, 21001
\FemaleFemale . . 18976, 20472
\FemaleMale 18980, 20474
\Field@addtoks 5905, 5937, 5940, 6112, 6135
\Field@boolkey 5392, 5480, 5899, 5930, 5933
\Field@toks 5903, 5904, 5906, 12794, 12811, 12822, 12833, 12843, 12860, 12878, 12886, 12891, 12907, 12916
\Field@Width 5816, 5963
\figureautorefname . 2973, 2991, 3009, 3027, 3045, 3063, 3081, 3111, 3139, 3157, 3175, 3193, 3211, 3229, 3247, 3265, 8610
\filename@area 5222
\filename@base 5222
\filename@ext 5219, 5220, 5222, 5223
\filename@parse 5218
\find@pdflink . . 8913, 8964, 8974
\Finv 17694, 20036
\Fire 19583, 20721
\fivedots 19518, 20702
\FiveFlowerOpen . 19129, 20538
\FiveFlowerPetal . 19127, 20537

\fiveinferior 20005
\FiveStar 18786, 20413
\FiveStarCenterOpen . . 19088, 20518
\FiveStarConvex . 19096, 20522
\FiveStarOpen . . 18788, 20414
\FiveStarOpenCircled . . 19086, 20517
\FiveStarOpenDotted . . 19090, 20519
\FiveStarOutline . 19092, 20520
\FiveStarOutlineHeavy . 19094, 20521
\FiveStarShadow . 19098, 20523
\fivesuperior 19989
\Flag 18954, 20462
\flap 16131, 20830
\flapr 16130, 20829
\flat 18943, 20457
\Fld@@additionalactions 13858, 13901, 13905
\Fld@@DingDef 6033, 6036, 6055
\Fld@additionalactions . 13858, 13949, 13978, 14013, 14048, 14083, 14118, 14150
\Fld@align . . 5820, 6020, 13927, 13988, 14057
\Fld@altname 5953, 5955, 13838, 13840, 13911, 13913
\Fld@annotflags 5599, 5601, 13922, 13955, 13983, 14017, 14052, 14088, 14124
\Fld@annotnames 13909, 13924, 13957, 13985, 14019, 14054, 14090, 14126
\Fld@bcolor . 5822, 6062, 13939, 13941, 14004, 14006, 14033, 14035, 14061, 14073, 14075
\fld@bcolor 13992
\Fld@bordercolor 5823, 6065, 13935, 13937, 13963, 13971, 13973, 13991, 14000, 14002, 14029, 14031, 14060, 14069, 14071, 14096, 14104, 14106, 14132, 14140, 14142
\Fld@bordersep 5824, 6014
\Fld@borderstyle 5826, 5998, 5999, 6000, 6010, 13928, 13961, 13989, 14023, 14058, 14094, 14148
\Fld@borderwidth 5825, 5978, 6204, 6207, 6208, 6211, 6212, 12604, 12605, 13206, 13207, 13562, 13563, 13928, 13961, 13989, 14023, 14058, 14094, 14148
\Fld@calculate@code 6073, 12503, 13007, 13461, 13871, 13873
\Fld@calculate@sortkey . . 6105, 6107, 13016
\Fld@cbsymbol 5827, 6026, 13943
\Fld@charsize 5817, 5818, 5975, 12603, 13205, 13561, 13945, 14010, 14039, 14079, 14130
\Fld@checkedfalse 5813
\Fld@checkequals . . 5917, 12556, 12618, 12863, 12873, 13157, 13220, 13513, 13579
\Fld@choices 5706, 5714, 5716, 5720, 5729, 5737, 5742, 5790, 5792, 5800, 5801, 14012
\Fld@color . . 5821, 6068, 13946, 14011, 14040, 14080
\Fld@default . 5731, 5734, 5736, 6017, 12516, 12532, 12548, 12588, 12616, 12730, 12792, 12810, 12824, 12832, 12839, 12865, 12875, 12905, 12915, 13119, 13136, 13149, 13190, 13218, 13334, 13468, 13485, 13505, 13546, 13574, 13711, 14041, 14045, 14046, 14081
\Fld@DingDef . 6026, 6029, 6031
\Fld@disabledfalse 5814
\Fld@export . 5544, 5547, 5554, 5846
\Fld@findlength . . 12842, 12853
\Fld@flags 5613, 5615, 5626, 5628, 5642, 5644, 5674, 5676, 5699, 5701, 13926, 13959, 13987, 14021, 14056, 14092, 14128
\Fld@format@code . 6071, 13863, 13865
\Fld@getmethodfalse 5866
\Fld@getmethodtrue 5868
\Fld@height 5972, 12519, 12537, 12551, 12606, 12626, 12643, 12683, 12703, 12733, 12743, 13122, 13142, 13152, 13208, 13236, 13250, 13286, 13309, 13337, 13349, 13471, 13487, 13508, 13564, 13576, 13610, 13659, 13682, 13714, 13722
\Fld@hiddenfalse 5502
\Fld@hiddentrue 5503
\Fld@invisiblefalse 5498
\Fld@invisibletrue 5499
\Fld@keystroke@code 6074, 13859, 13861
\Fld@listcount . . . 12615, 12620, 12623, 12628, 12633, 12638, 13217, 13222, 13237, 13243, 13573, 13581, 13585, 13590, 13601, 13606
\Fld@loc 5927
\Fld@mappingname . 5957, 5959, 13842, 13844, 13915, 13917
\Fld@maxlen . 5819, 5966, 14084
\Fld@menulength . . 5815, 5969, 12553, 12557, 12603, 12854, 12855, 12858, 13154, 13158, 13205, 13510, 13514, 13561
\Fld@name 5951, 12515, 12547, 12651, 12729, 12791, 12796, 12807, 12808, 12819, 12820, 12829, 12830, 12838, 12859, 12876, 12884, 12889, 12904, 12913, 13118, 13148, 13255, 13333, 13467, 13504, 13624, 13710, 13837, 13910
\Fld@norotatefalse 5515
\Fld@norotatetrue 5514
\Fld@noviewfalse 5518
\Fld@noviewtrue 5519
\Fld@nozoomfalse 5511
\Fld@nozoomtrue 5510
\Fld@onblur@code . 6076, 13879, 13881
\Fld@onclick@code . 6070, 6146, 13977
\Fld@onenter@code 6079, 13891, 13893
\Fld@onexit@code . 6080, 13895, 13897
\Fld@onfocus@code 6075, 13875, 13877
\Fld@onmousedown@code 6077, 13883, 13885
\Fld@onmouseup@code . . 6078, 13887, 13889
\Fld@pageobjref . 12494, 13092, 13103, 13458, 13793, 13923, 13956, 13984, 14018, 14053, 14089, 14125
\Fld@printfalse 5507
\Fld@printtrue 5506
\Fld@radiosymbol . . 5828, 6029, 14037
\Fld@rotation 5829, 6059, 13931, 13933, 13962,

13967, 13969, 13990, 13996, 13998, 14025, 14027, 14059, 14065, 14067, 14095, 14100, 14102, 14131, 14136, 14138
\Fld@submitflags . . . 5581, 5583, 14116
\Fld@temp . . 6032, 6034, 6037, 6038, 6047, 6048
\Fld@validate@code 6072, 13867, 13869
\Fld@value . . 5732, 5739, 5741, 6023, 12517, 12532, 12549, 12587, 12588, 13120, 13136, 13150, 13189, 13190, 13469, 13485, 13506, 13545, 13546, 14082
\Fld@width 5962, 12518, 12531, 12537, 12550, 12586, 12597, 12599, 12626, 12643, 12666, 12682, 12690, 12702, 12716, 12732, 12738, 12743, 13121, 13135, 13142, 13151, 13188, 13199, 13201, 13236, 13250, 13271, 13285, 13293, 13308, 13322, 13336, 13343, 13349, 13470, 13484, 13487, 13507, 13544, 13555, 13557, 13576, 13610, 13641, 13658, 13666, 13681, 13695, 13713, 13720, 13722
\float@caption 7575, 7647
\float@makebox 7649, 7650
\floatingpenalty 7472
\Florin 15755, 20767
\flq 616
\flqq 614
\fmtname 7
\fmtversion 7, 6378, 7141
\font 5076
\fontencoding . . . 501, 505, 542, 13076
\fontfamily 543, 13075
\fontseries 544, 13077
\fontshape 545, 4699, 13078
\fontsize 546
\Football . . 18995, 18997, 21036
\footins 7466
\footnoteautorefname 2971, 2989, 3007, 3025, 3043, 3061, 3079, 3100, 3103, 3137, 3155, 3173, 3191, 3209, 3227, 3245, 3263, 8604, 8608
\footnotesep 7470, 7478
\footnotesize 575, 7468
\footnotetext 7428
\footref 7497, 7498
\forall 17926, 20116
\Force 17757, 20892
\forcecjktoken 446
\foreignlanguage 601
\Form 5830
\Form@action 5840, 12783, 14114
\Form@boolkey 5834
\Form@htmlfalse . . . 5833, 5852
\Form@htmltrue 5845
\Form@method 5864, 5872, 12783
\Forward 18745, 20397
\ForwardToIndex . 18563, 20386
\FourAsterisk . . . 19074, 20511
\fourinferior 20004
\FourStar 19082, 20515
\FourStarOpen . . 19084, 20516
\foursuperior 19988
\fourth 17540, 19984
\frown 18516, 20367
\frownie 18829, 20428
\Frowny 18831, 20996
\frq 617
\frqq 615
\fullnote 19557, 20710
\futurelet 670, 1284

G

\G . 15065, 15109, 15138, 15868, 15870, 15872, 15874, 15884, 15886, 15887, 15898, 15900, 15910, 15912, 15914, 15916
\g 2311, 2315, 2323
\g@addto@macro . . . 6510, 6682, 7708, 7925, 7928, 7931, 7980, 9239, 10203, 10732, 11022, 11612, 11721, 11791, 12100, 12299
\G@refundefinedtrue 5004, 8371, 8391, 8408, 8540
\gaf 19853
\Game 17706, 20042
\Gamma 16361, 19925
\gamma 16426, 19938
\gammainferior 19968
\Ganz 19559, 21073
\GaPa 19545, 20704
\Gauge 6162
\ge 18165, 20218
\Gemini 18885, 21016
\gemini 18883, 20444
\GenericError 658, 3711
\GenericInfo 660, 3709
\GenericWarning 252, 659, 3710
\Gentsroom 19587, 20723
\geq 18165, 20217
\geqclosed 18375, 20957
\geqq 18173, 20221
\geqslant 19394, 20647
\GetDocumentProperties . 2308
\getpagerefnumber 7151
\getrefbykeydefault . 7106, 7107
\gexmode . 10762, 10763, 10865
\gg 18185, 20227
\ggg 18435, 20332
\ghayn 19805
\gimel 17700, 20039
\Gin@setfile 8182, 8183
\glossary 623
\glotstop 16200, 19922
\glottal 16203, 20847
\glq 612
\glqq 610
\gnapprox 19413, 20656
\gneq 19409, 20654
\gneqq 18179, 20224
\gnsim 18467, 20346
\grq 613
\grqq 611
\gtrapprox 19402, 20651
\gtrclosed 18368, 20954
\gtrdot 18431, 20330
\gtreqless 18441, 20334
\gtreqqless 19419, 20658
\gtrless 18212, 20239
\gtrsim 18203, 20235
\guillemetleft 14828, 15011, 15283, 19609
\guillemetright . . 14860, 15012, 15319, 19610
\guillemotleft . . . 14827, 15282
\guillemotright . . 14859, 15318
\guilsinglleft 14758, 15013, 17523, 19611
\guilsinglright . . . 14760, 15014, 17525, 19612

H

\H . 15060, 15112, 15141, 15163, 15643, 15645, 15707, 15709, 17018, 17020
\h . . 3176, 19635, 19640, 19645, 19650, 19655, 19660, 19665, 19670, 19675, 19680, 19685, 19690, 19695, 19700, 19705, 19710, 19715, 19720, 19725,

19730, 19735, 19740, 19745, 19750
\H@@footnotemark 7331, 7348, 7412, 7502, 7509, 7521, 7532
\H@@footnotetext 7330, 7340, 7372, 7411, 7450, 7510, 7524, 7532
\H@@mpfootnotetext 7338, 7350, 7352, 7413
\H@definecounter . . 8092, 8094
\H@endeqnarray . . . 7235, 7255
\H@endequation . . . 7191, 7228
\H@endsubeqnarray . 7266, 7274
\H@eqnarray 7234, 7240
\H@equation 7190, 7215
\H@item 6889, 6895, 7716, 7741
\H@newctr 8100, 8102
\H@old@part 14580, 14588
\H@old@schapter . 14550, 14559
\H@old@sect 14598, 14609, 14618
\H@old@spart . . . 14590, 14596
\H@old@ssect 14536, 14541
\H@refstepcounter . . 6906, 6916, 7166, 7214, 7309, 7570
\H@subeqnarray . . . 7265, 7269
\ha 19821
\Haa 19779
\Halb 19562, 21074
\halfnote 19560, 20711
\halign 632
\hamza 19755
\HandCuffLeft . . . 18805, 20420
\HandCuffRight . . 18807, 20421
\HandLeft 18809, 20422
\HandRight 18812, 20423
\HaPa 19547, 20705
\HAR@checkcitations 7836
\HAR@citetoaux 7792
\HAR@tempa 7837, 7838, 7839, 7840, 7841, 7842
\hardsign 16676, 20858
\harvardcite 7786, 7823
\harvarditem 7811
\hateq 18141, 20208
\hausaB 15744, 19887
\hausab 15979, 20788
\hausaD 15748, 19888
\hausad 15993, 20793
\hausaK 15759, 19889
\hausak 15763, 20769
\hb@xt@ 5091, 5104
\hbar 15550, 19886
\hbox . . 1532, 1538, 1544, 2249, 3442, 3448, 5092, 5106, 5257, 5259, 5963, 6198, 6199, 6200, 6201, 7965, 8860, 9405, 9415, 9485, 9499, 9522, 9537, 9562, 9577, 9848, 9865, 10941, 11289, 11303, 11941, 11951, 12223, 12238, 12931, 13486, 13575, 13609, 13639, 13667, 13696, 13721, 14526
\hc@currentHref 7586
\HCode . . 12783, 12785, 12796, 12805, 12817, 12825, 12827, 12858, 12864, 12869, 12874, 12888, 12893, 12897, 12900, 12909
\hdotfor 17505, 19978
\headerps@out 6792, 11602, 11613, 11708, 11722, 11783, 11792, 11805, 11819, 11866, 11984, 12101, 12300
\Heart 18918, 21027
\heartsuit . 18916, 18919, 21028
\hebalef 17042
\hebayin 17078
\hebbet 17044
\hebdalet 17038, 17048
\hebfinalkaf 17062
\hebfinalmem 17068
\hebfinalnun 17072
\hebfinalpe 17080
\hebfinaltsadi 17084
\hebgimel 17046
\hebhe 17050
\hebhet 17056
\hebkaf 17064
\heblamed 17066
\hebmem 17070
\hebnun 17074
\hebpe 17082
\hebqof 17088
\hebresh 17090
\hebsamekh 17076
\hebshin . . 17092, 17093, 20860
\hebsin 17093, 20860
\hebtav 17095
\hebtet 17058
\hebtsadi 17086
\hebvav 17052
\hebyod 17060
\hebzayin 17054
\Hermaphrodite . . 18982, 20475
\hexagon 18558, 20384
\hexstar 18993, 20477
\hfill . . . 6198, 6199, 6200, 6201, 7727, 7760
\Hfootnoteautorefname . . 8604
\hinferior 20020
\hoffset 7966
\hookb 15978, 20787
\hookd 15992, 20792
\hookg 16025, 20799
\hookh 16045, 20804
\hookheng 16049, 20806
\hookleftarrow . . . 17795, 20064
\hookrevepsilon . . 16014, 20796
\hookrightarrow . 17797, 20065
\hphantom 585
\href 624, 4864, 6369
\href@ 4867, 4870, 4875
\href@split 4875, 4876
\hsize 7473
\hskip . . 1543, 1630, 2294, 2295, 4861, 6204, 12931
\hslash 17660, 20029
\hspace 620, 7826, 7827
\hss . . . 5093, 5105, 7974, 14531
\ht 5097, 5101, 5110, 6206, 6209, 9413, 9488, 9497, 9504, 9525, 9535, 9542, 9565, 9575, 9582, 11285, 11949, 12236, 13446
\htrtaild 19975
\Huge 572
\huge 576
\Hurl 4950, 4952, 4954
\hv 15758, 20768
\hv@pdf@char . . . 14322, 14387, 14388, 14389, 14390
\hvtex@buffer . . . 10632, 10636, 10644, 10647, 10656, 10660, 10676
\hvtex@gettoken . 10631, 10645, 10649, 10658, 10662
\hvtex@gettoken@ 10632, 10634
\hvtex@par@dimension . 10627, 10668
\hvtex@par@direction . . 10628, 10671
\hvtex@par@duration . . . 10629, 10663
\hvtex@par@motion 10630, 10665
\hvtex@param@dimension 10640, 10669, 10687, 10690
\hvtex@param@direction 10641, 10672, 10698, 10706

\hvtex@param@duration 10642, 10664, 10711, 10713
\hvtex@param@motion . 10643, 10666, 10687, 10694
\hvtex@parse@trans 10616, 10638
\hvtex@produce@trans . . 10677, 10683
\hvtex@token . . . 10635, 10646, 10652, 10659, 10664, 10667, 10670, 10672
\hvtex@trans@code 10620, 10621, 10622, 10623, 10624, 10625, 10626, 10639, 10685, 10686, 10688, 10690, 10692, 10694, 10696, 10698, 10700, 10701, 10702, 10703, 10704, 10706
\hvtex@trans@effect@Blinds 10620
\hvtex@trans@effect@Box 10621
\hvtex@trans@effect@Dissolve 10622
\hvtex@trans@effect@Glitter 10623
\hvtex@trans@effect@R . . 10626
\hvtex@trans@effect@Split 10624
\hvtex@trans@effect@Wipe 10625
\hvtex@trans@par 10659, 10663, 10665, 10668, 10671
\hvtex@trans@params . . 10653, 10655, 10679
\Hy@@CleanupFile . 5257, 5259
\Hy@@DefNameKey . 2416, 2418
\Hy@@escapeform 13803, 13816, 13822
\Hy@@SectionAnchor . . . 14521, 14524
\Hy@@temp . . 3472, 3474, 6082, 6084
\Hy@@VersionCheck . . 274, 303
\Hy@abspage . 6530, 6616, 6732, 6818
\Hy@Acrobatmenu . . 4279, 4320, 9309, 10049, 10591, 11465
\Hy@activeanchorfalse 4747, 8955, 9357, 9372, 9451, 9461, 9777, 10306, 10323, 10399, 10412, 10927, 11889, 11904, 12176, 12190
\Hy@activeanchortrue 8951, 9354, 9368, 9449, 9458, 9773, 10302, 10320, 10397, 10409, 10917, 11886, 11900, 12173, 12186
\Hy@ActiveCarriageReturn 4783, 4786
\Hy@AllowHyphens 4857, 10915, 10947, 11272
\Hy@AlphNoErr 6999, 7012, 7014
\Hy@AnchorName . . 4988, 4990, 4993, 4995, 5020, 5022, 5026, 5031, 5033
\Hy@appendixstring 6994, 7016
\Hy@AtBeginDocument 345, 2555, 2616, 2702, 2797, 3392, 4165, 4234, 4251, 4376, 4382, 4507, 4670, 4734, 6276, 6392, 6825, 7783, 8455, 8855, 9246, 9860, 10381, 11818, 11864, 12948, 12981
\Hy@AtBeginDocumentHook 346, 351, 357, 358
\Hy@AtEndOfPackage 348, 796, 3356, 3364, 3371, 4390, 4398, 4622
\Hy@AtEndOfPackageHook 349, 352, 354, 355
\Hy@author 6435, 6439
\Hy@babelnormalise 4965, 4967
\Hy@backout . 4743, 6328, 6332, 7682
\Hy@backreffalse . . . 412, 2935, 2957, 4388
\Hy@backreftrue . . . 2928, 2932, 2954
\Hy@BeginAnnot . . . 9890, 9907, 9949, 9987, 10020, 10050
\Hy@bibcite 7705, 7709
\Hy@bookmarksdepth . . . 3427, 3432, 3444, 3450, 14165
\Hy@bookmarksnumberedfalse 413
\Hy@bookmarksopenfalse . 414
\Hy@bookmarkstrue 415
\Hy@bookmarkstype 3462, 3464, 7998, 14176
\Hy@boolkey . 2342, 2435, 2438, 2441, 2462, 2465, 2468, 2499, 2502, 2519, 2526, 2529, 2532, 2535, 2538, 2541, 2544, 2547, 2629, 2906, 2909, 2964, 3378, 3390, 3405, 3422, 3425, 3466, 3469, 3688, 3975, 3978, 3981, 3984, 3987, 3990, 3993, 4001, 4133, 4136, 6750
\Hy@BorderArrayPatch . 11343, 11346, 11611, 12099
\Hy@breaklinks@unsupported 2507, 10893
\Hy@breaklinksfalse 416
\Hy@breaklinksunhbox . 11239, 11293
\Hy@CatcodeWrapper . . . 4631, 4688, 4737
\Hy@chapapp 6995, 7016, 7048, 14554, 14565
\Hy@chapterstring . . 6990, 6992, 6995, 7047
\Hy@CheckOptionValue . . 2386, 2423
\Hy@CJKbookmarksfalse . . 418
\Hy@cjkpu 953, 955, 976
\Hy@CleanupFile . . . 5255, 9013, 9951, 10476, 11537
\Hy@colorlink 3384, 4691, 4699, 4703, 8856, 8936, 9006, 9043, 9076, 9331, 9355, 9378, 9409, 9422, 9450, 9466, 9491, 9507, 9529, 9546, 9569, 9586, 9861, 9940, 9980, 10013, 10043, 10070, 10398, 10420, 10490, 10516, 10551, 10584, 10603, 10945, 11218, 11220, 11887, 11910, 11945, 11958, 12174, 12196, 12231, 12244
\Hy@colorlinksfalse 3381
\Hy@ColorList 3527, 3528
\Hy@CounterExists . 6853, 6866, 6870
\Hy@currentbookmarklevel 14171, 14181, 14182, 14188, 14195, 14287, 14290, 14295, 14299
\Hy@debugfalse 408
\Hy@debugtrue 407
\Hy@defaultbp 5978, 5980
\Hy@defaultbpAux . 5982, 5985
\Hy@defaultdriver . . 4492, 4524, 4534, 4546
\Hy@DefFormAction 5838, 5840
\Hy@DefNameKey . . 2415, 3559, 3617, 3625, 3633, 3637, 3644, 3651, 3658, 3665, 3669, 3674, 3681, 4010
\Hy@DEST 11240, 11307
\Hy@destlabelfalse 419
\Hy@DestName 8900, 8907

\Hy@DestRename . . 5320, 5345, 5349
\Hy@DisableOption 2371, 4269, 4270, 4271, 4273, 4278, 4395, 4566, 4567, 4568, 4569, 4570, 4571, 4572, 4573, 4574, 4575, 4576, 4577, 4578, 4579, 4580, 4581, 4582, 4583, 4584, 4585, 4630, 4683, 4708, 4709, 4745, 4746, 5376, 6280, 6281, 6282, 6283, 6284, 6285, 6286, 6287, 6288, 6289, 6290, 6291, 6292, 6293, 6294, 6295, 6296, 6297, 6298, 6299, 6300, 6301, 6302, 6303, 6459, 6684, 7537, 8187, 8312, 8313, 8779, 8883, 9178, 9179, 9180, 9181, 9182, 9183, 9184, 9185, 9186, 9187, 9188, 9304, 9613, 9614, 9615, 9616, 9617, 9618, 9619, 9620, 9621, 9622, 9623, 9624, 9888, 10106, 10107, 10108, 10109, 10110, 10111, 10112, 10113, 10114, 10115, 10116, 10117, 10235, 10383, 10843, 10844, 10845, 10846, 10847, 10848, 10849, 10850, 10851, 10852, 10853, 10854, 11100, 11101, 11102, 11103, 11104, 11105, 11106, 11107, 11108, 11109, 11110, 11111, 11693, 12007, 12008, 12009, 12010, 12011, 12012, 12013, 12014, 12015, 12016, 12017, 12018
\Hy@DistillerDestFix 7939, 10858, 10860
\Hy@draftfalse 375
\Hy@drafttrue 376
\Hy@driver . . . 458, 2512, 2699, 2711, 2723, 2726, 2738, 2744, 2749, 2763, 2773, 2778, 2784, 2791, 2794, 2820, 2836, 2843, 2849, 2860, 2874, 4400, 4403, 4411, 4414, 4418, 4421, 4423, 4427, 4433, 4437, 4440, 4444, 4449, 4453, 4456, 4460, 4464, 4468, 4471, 4475, 4478, 4480, 4484, 4490, 4495, 4497, 4501, 4504, 4515, 4518, 4521, 4524, 4533, 4534, 4546, 4548, 4556, 4558, 4560, 4562
\Hy@dth@currentHref 7311, 7314
\Hy@DviErrMsg . . . 2666, 2668, 2671, 2677, 2690
\Hy@DviModetrue . . 2675, 2680
\Hy@DvipdfmxOutlineOpentrue 4592, 4599
\Hy@EndAnnot 9896, 9943, 9983, 10016, 10046, 10073
\Hy@endcolorlink . . 3385, 4695, 4700, 4704, 8865, 8942, 9355, 9392, 9416, 9424, 9450, 9474, 9495, 9509, 9533, 9548, 9573, 9588, 9870, 9898, 10398, 10471, 10492, 10518, 10553, 10586, 10605, 10972, 11232, 11887, 11926, 11952, 11960, 12174, 12210, 12235, 12246
\Hy@EndWrap 4632, 4634, 4635, 4668
\Hy@Error 246, 262, 268, 291, 2559, 2688, 2714, 2730, 2765, 2804, 2811, 2822, 2828, 2866, 4304, 4918, 5188, 5539, 5663, 5859, 5891, 6087, 6140, 12657, 12710, 13262, 13316, 13631, 13689
\Hy@escapeform . 12536, 12622, 12641, 12670, 12691, 12717, 12742, 13140, 13226, 13248, 13275, 13296, 13324, 13347, 13492, 13584, 13613, 13645, 13669, 13697, 13727, 13797, 13827, 13834
\Hy@escapestring 13794, 13861, 13865, 13869, 13873, 13877, 13881, 13885, 13889, 13893, 13897, 13943, 13977, 14037, 14081, 14082, 14114
\Hy@EveryPageAnchor . . 7938, 7981
\Hy@EveryPageBoxHook 6487, 6491, 6495, 7980, 10203, 10732, 11022
\Hy@EveryPageHook 6486, 6490, 6682, 9239
\Hy@ExchangeLeftParenthesis 8653, 8659
\Hy@ExchangeRightParenthesis 8663, 8669
\Hy@false 2213, 2352, 2920, 2956, 5888
\Hy@finalfalse 376
\Hy@finaltrue 375
\Hy@FirstPage 4290
\Hy@FirstPageHook 6488, 6502, 6503, 6507, 6510, 6790, 6791, 11612, 11721, 11791, 12100, 12299
\Hy@float@caption . . 7576, 7626, 7640
\Hy@float@currentHref 7630, 7633, 7635, 7641, 7643, 7645
\Hy@footnote@currentHref . . . 6275, 7360, 7365, 7380, 7385, 7388, 7400, 7402, 7441, 7483, 7486
\Hy@FormObjects 13040, 13355, 13410, 13420, 13738, 13789
\Hy@frenchlinksfalse 3383
\Hy@Gin@setfile . . . 8182, 8184
\Hy@GlobalStepCount 456, 6616, 7078, 7102, 7956
\Hy@gtemp 784, 785, 4335, 4341, 4343, 5736, 5737, 5741, 5742, 5753, 5767, 7417, 7422, 8677, 8679, 13854, 13856
\Hy@href 4867, 4869
\Hy@href@nextactionraw 4904, 4927, 4929, 4930, 4932, 4937, 4941, 4943, 9002, 9039, 9072, 9327, 9936, 9976, 10009, 10039, 10066, 10435, 10505, 10573, 11562, 11591
\Hy@href@page 4882, 4884, 4888, 4889, 4891, 4898, 4901, 9035, 9971, 11558
\Hy@hyperfiguresfalse 421
\Hy@hyperfootnotestrue . . 423
\Hy@hyperindextrue 424
\Hy@hypertexnamesfalse . 2173
\Hy@hypertexnamestrue . . 425
\Hy@IfStringEndsWith . . 5223, 5235
\Hy@implicittrue 426
\Hy@Info 249, 2360, 4346, 4348, 4351, 4353, 4356, 4358, 4361, 4363, 4366, 4368, 4615, 4621, 4696, 4701,

4705, 4826, 4853, 5446, 6237, 6239, 6242, 6244, 6247, 6249, 6252, 6254, 6257, 6259, 6262, 6264, 6267, 6269, 7784, 8003, 8020
\Hy@InfoNoLine 250, 4371, 4373, 4558, 8701, 12153
\Hy@IsNotEmpty .. 5327, 5328, 5351
\Hy@LastPage 4293
\Hy@level 14177, 14179, 14190, 14195, 14196, 14197, 14227
\Hy@levelcheck .. 14178, 14193
\Hy@linkcounter 460, 462, 7078, 7079, 7102, 7103
\Hy@linkfileprefix .. 3506, 5207, 9395, 10271, 11930, 12213
\Hy@LinkMath .. 10936, 10938, 10943, 10975, 11264, 11266, 11271, 11273, 11279, 11281
\Hy@linktoc . 2470, 2472, 2480, 2482, 2492, 8049
\Hy@linktoc@all 2478
\Hy@linktoc@none 2475
\Hy@linktoc@page .. 2470, 2477, 2480
\Hy@linktoc@section 2472, 2476, 2482
\Hy@linktocpagefalse 427
\Hy@localanchornamefalse . 428
\Hy@LookForParentCounter 6965
\Hy@LT@currentHref 7168, 7179
\Hy@LT@footnotetext 7440, 7449
\Hy@make@anchor . 8111, 8117, 8123
\Hy@make@df@tag@@ 8115, 8130
\Hy@make@df@tag@@@ .. 8121, 8131
\Hy@MakeCurrentHref .. 7041, 7090, 7103
\Hy@MakeCurrentHrefAuto 7101, 7110, 8112, 14156, 14538, 14554, 14565, 14592, 14606
\Hy@MakeRemoteAction . 4887, 9016, 9954, 11540
\Hy@maketitle@end . 7513, 7518, 7520
\Hy@maketitle@optarg ... 7511, 7516
\Hy@Match 307, 309, 2882, 3516, 3574, 3591, 3937, 4028, 4034, 4064, 4065, 4068, 4079, 4094, 4932, 6000
\Hy@MaybeStopNow 2787, 4189, 4192
\Hy@Message . 251, 2701, 2796, 4375, 4506, 10327, 10331, 10334, 10337, 10340, 10343, 10346, 10349, 12484, 12755, 12759, 12762, 12765, 12768, 12771, 12774, 12777, 12787, 12924, 13415
\Hy@naturalnamesfalse ... 430
\Hy@nestingfalse 431
\Hy@newline@author 6480
\Hy@newline@title 6479
\Hy@next ... 6632, 6642, 6647, 14564, 14573, 14576
\Hy@nextfalse 8197
\Hy@NextPage 4284
\Hy@nexttrue . 8198, 8199, 8200
\Hy@NIL 4208, 4221, 4224
\Hy@number 3912, 3919
\Hy@numberline . 14172, 14209, 14210, 14211, 14212
\Hy@ObsoletePaperOption 2444, 2452
\Hy@ocgcolor 8859, 8873, 9864, 9878
\Hy@ocgcolorlinksfalse ... 3382, 4678
\Hy@org@chapter 14562, 14577
\Hy@OrgMakeLabel 12268, 12275
\Hy@OutlineName 14443, 14495
\Hy@OutlineRerunCheck 14311, 14410, 14489
\Hy@PageAnchorSlide ... 7898, 7936, 7949
\Hy@PageAnchorSlidesPlain 7885, 7935, 7944
\Hy@pageanchortrue 434
\Hy@pagecounter 461, 463, 7956, 7958
\Hy@pageheight ... 4179, 11723, 11820
\Hy@param .. 4209, 4210, 4213, 4214, 7046, 7047, 7048, 7075, 7079
\Hy@pdf@majorminor@version . .. 2654, 4275, 5713, 8697, 8711, 8738, 8759, 13849
\Hy@pdf@majorversion 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2654, 6784, 8705, 8734, 8756, 8774, 8777
\Hy@pdf@minorversion 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 6785, 8705, 8735, 8757, 8774, 8778
\Hy@pdfafalse 454
\Hy@pdfcenterwindowfalse 417
\Hy@pdfdisplaydoctitlefalse 453
\Hy@pdfescapeformfalse .. 420
\Hy@pdffitwindowfalse ... 422
\Hy@pdfmajorminor@version 2655, 8692, 8711
\Hy@pdfmajorversion 2655, 2663, 8734, 8756, 8772, 8777
\Hy@pdfmarkerrorfalse .. 11192
\Hy@pdfmarkerrortrue .. 11376, 11385
\Hy@pdfmenubartrue 429
\Hy@pdfminorversion 2655, 8689, 8690, 8735, 8757, 8773, 8778
\Hy@pdfnewwindowfalse .. 433
\Hy@pdfnewwindowsetfalse 432, 3998
\Hy@pdfnewwindowsettrue 4000, 4906
\Hy@pdfnewwindowtrue . 4907
\Hy@pdfpagelabelsfalse .. 6517
\Hy@pdfpagelabelstrue ... 435
\Hy@pdfstringdef ... 783, 5711, 5719, 5924, 6017, 6023
\Hy@pdfstringfalse .. 436, 6305
\Hy@pdfstringtrue ... 637, 6277
\Hy@pdftoolbartrue 442
\Hy@pdfusetitlefalse 450
\Hy@pdfversion 2653
\Hy@pdfwindowuitrue 452
\Hy@pkg 4207, 4214
\Hy@plainpagesfalse 437
\Hy@PrevPage 4287
\Hy@ProvideTheHCounter 6946
\Hy@ps@CR 11773, 11780, 11785, 11786, 11803, 11824, 11825, 11826, 11832, 11839, 11846, 11853
\Hy@psdextrafalse 441
\Hy@pstringB 9094, 9099, 10148, 10160, 11165, 11181, 12072, 12088
\Hy@pstringD 9015, 9037, 9953, 9973, 11539, 11560
\Hy@pstringdef 8624, 8899, 8923, 8980, 9014, 9015, 9049, 9050,

9094, 9715, 9916, 9952, 9953, 9988, 9989, 10021, 10148, 10419, 10497, 10560, 10561, 11165, 11374, 11383, 11512, 11538, 11539, 11570, 11571, 12072, 13820, 14442, 14458
\Hy@pstringDest ... 8899, 8900, 9715, 9762, 11374, 11375, 11379, 11383, 11384, 11388
\Hy@pstringF 9012, 9013, 9014, 9031, 9049, 9065, 9070, 9950, 9951, 9952, 9968, 9988, 10002, 10007, 10475, 10476, 10480, 10560, 10567, 10571, 11536, 11537, 11538, 11555, 11570, 11586, 11589
\Hy@pstringName 14442, 14443, 14458, 14472
\Hy@pstringP 9050, 9070, 9989, 10007, 10561, 10571, 11571, 11589
\Hy@pstringURI ... 8980, 8998, 10021, 10035, 10419, 10431, 10497, 10501, 11512, 11524
\Hy@PutCatalog ... 6678, 6686, 6807
\Hy@raisedlink 2237, 6941, 7112, 7133, 7134, 7135, 7138, 7180, 7218, 7223, 7226, 7247, 7363, 7383, 7454, 7481, 7614, 7693, 7717, 7722, 7742, 8113, 11600, 11706, 11980, 12151, 14157, 14528, 14555, 14566, 14593
\Hy@raiselinksfalse .. 438, 7785
\Hy@RemoveDurPageAttr 9218, 9231
\Hy@RemovePercentCr .. 4799, 4803, 4808
\Hy@RemoveTransPageAttr 9193, 9207
\Hy@reserved@a ... 5123, 7238, 7268, 12790, 12840, 12903
\Hy@RestoreCatcodes 205, 4185, 4565
\Hy@RestoreCatcodeSettings .. . 850, 857, 867, 882, 885
\Hy@RestoreLastskip 2258, 8901, 9358, 9373, 9452, 9462, 9764, 10307, 10324, 10400, 10413, 10908, 10928, 11890, 11905, 12177, 12191
\Hy@RestoreSavedSpaceFactor .. 2233, 9403, 9483, 9520, 9560, 11939, 12221
\Hy@RestoreSpaceFactor 2224, 2250, 2255, 9402, 9410, 9417, 9482, 9492, 9500, 9519, 9530, 9538, 9559, 9570, 9578, 10942, 10978, 11270, 11278, 11305, 11938, 11946, 11953, 12220, 12232, 12239, 12276, 12280
\Hy@ReturnAfterElseFiFiEnd 466, 1499
\Hy@ReturnAfterFiFiEnd . 465, 1491, 1505, 1598, 1605
\Hy@ReturnEnd . 464, 465, 466, 1511, 1610
\Hy@safe@activesfalse 467, 5156, 8529
\Hy@safe@activestrue 467, 4324, 4779, 4816, 4824, 4852, 4969, 5313, 5323, 7045, 8042, 8421, 8518, 12951, 13010, 14403, 14430
\Hy@SaveCatcodeSettings . 806, 855, 865, 880, 883
\Hy@saved@currentHref .. 7398, 7401
\Hy@saved@footnotemark 7507, 7522
\Hy@saved@footnotetext . 7508, 7525
\Hy@saved@hook ... 6463, 6475
\Hy@saved@refstepcounter 6934
\Hy@SavedSpaceFactor 2220, 2222, 2227, 2228, 2234, 12273
\Hy@SaveLastskip 2258, 8897, 9346, 9361, 9443, 9455, 9712, 10294, 10310, 10390, 10403, 10898, 10912, 11879, 11893, 12166, 12180
\Hy@SaveSavedSpaceFactor 2232, 9401, 9481, 9518, 9558, 11937, 12219
\Hy@SaveSpaceFactor 2221, 2241, 2252, 9400, 9412, 9480, 9494, 9517, 9532, 9557, 9572, 10940, 10976, 11262, 11274, 11282, 11936, 11948, 12218, 12234, 12271, 12278
\Hy@scanauthor ... 6433, 6438
\Hy@scanoptauthor . 6433, 6434
\Hy@scanopttitle ... 6424, 6425
\Hy@scantitle 6424, 6429
\Hy@secnum@part 14582, 14583, 14585
\Hy@SectionAnchorHref .. 634, 14519, 14543, 14611
\Hy@SectionHShift 14518, 14527, 14539, 14607
\Hy@setbreaklinks .. 2504, 2508, 2520, 8685, 9705
\Hy@SetCatcodes 181, 231, 4187
\Hy@SetNewWindow 4004, 9033, 9067, 9975, 10004, 10568, 11554, 11585
\Hy@setouterhbox 11238, 11269
\Hy@setpagesizetrue 439
\Hy@setpdfborder 3607, 8929, 8985, 9020, 9054, 9314, 9927, 9960, 9995, 10027, 10057, 10439, 10460, 10483, 10509, 10543, 10577, 10596
\Hy@setpdfhighlight 3565, 8930, 8986, 9021, 9055, 9315, 9928, 9961, 9996, 10028, 10058
\Hy@setpdfversiontrue ... 2641
\Hy@setref@link 8377, 8380
\Hy@SlidesFormatOptionalPage . 6546, 7884, 7903, 7907
\Hy@SlidesPage 6553, 7917, 7918, 7924, 7926, 7929, 7932
\Hy@StartlinkName . 8927, 8938
\Hy@StepCount 455, 6593, 12557, 12620, 12855, 13158, 13222, 13514, 13581, 14291, 14296, 14372
\Hy@stoppedearlyfalse ... 4194, 6852
\Hy@stoppedearlytrue 4191, 6849
\Hy@StringLocalhost 5253, 5254, 5269
\Hy@tabularx@hook 7410, 7418
\Hy@temp 665, 672, 2450, 2455, 2456, 2457, 2458, 2459, 2460, 3471, 3480, 3481, 3482, 3483, 3484, 3485, 3486, 3528, 3529, 3530, 3533, 3535, 3538, 3548, 3551, 3552,

3553, 3554, 3555, 3556, 3572, 3585, 3589, 3604, 3771, 3772, 3775, 3778, 3781, 3806, 3814, 3815, 3816, 3817, 3818, 3819, 3820, 3821, 3822, 3996, 3997, 4020, 4021, 4067, 4068, 4075, 4079, 4311, 4315, 4316, 4317, 4318, 4406, 4408, 4411, 4416, 4418, 4421, 4435, 4437, 4442, 4444, 4451, 4453, 4458, 4460, 4466, 4468, 4473, 4475, 4478, 4547, 4548, 5436, 5440, 5441, 5452, 5536, 5537, 5538, 5540, 5544, 5856, 5857, 5858, 5860, 5864, 5865, 5998, 6010, 6081, 6097, 6098, 6099, 6100, 6101, 6102, 6103, 6104, 6110, 6116, 6122, 6123, 6124, 6125, 6126, 6127, 6128, 6129, 6130, 6131, 6132, 6172, 6173, 6180, 6181, 6188, 6189, 6573, 6576, 6585, 6587, 6591, 6595, 6639, 6641, 6949, 6950, 6971, 7194, 7200, 7491, 7497, 8056, 8057, 8065, 8066, 8267, 8269, 8273, 8304, 8305, 8306, 8321, 8322, 8713, 8716, 8717, 8733, 8752, 9109, 9138, 9140, 9634, 9639, 9645, 9649, 9652, 9657, 9688, 9690, 10120, 10163, 10165, 11063, 11066, 11070, 11071, 11077, 11078, 11084, 11114, 11119, 11125, 11129, 11132, 11137, 11170, 11172, 11244, 11245, 11249, 11340, 11341, 11349, 11350, 11454, 11455, 12021, 12026, 12032, 12036, 12039, 12044, 12077, 12079, 13011, 13023, 13802, 13803, 14440, 14446, 14454, 14469

\Hy@temp@A 697, 698, 1483, 1485, 1496, 1498, 1503, 1504, 1507, 3807, 3809, 4208, 4221, 4224, 6966, 6969, 6970, 6971, 6972, 8216, 8217, 8218, 8225, 8253, 8254, 8255, 8264, 8291, 8714, 8725, 8726, 8727, 8728, 8731, 8737, 8740, 8767

\Hy@temp@B 1484, 1485

\Hy@temp@menu 9311, 9326, 10051, 10065, 10590, 10593, 11464, 11473

\Hy@tempa . . 2343, 2345, 2347, 2348, 2350, 2352, 2354, 2357, 2360, 2361, 2916, 2917, 2918, 2920, 2921, 2923, 2924, 2926, 2930, 2934, 2945, 2947, 2949, 2950, 2952, 2956, 4785, 4786, 4797, 4801, 4971, 4975, 5135, 5137, 5843, 5844, 5884, 5885, 5888, 5892, 6622, 6624, 6662, 6664, 6818, 6820, 7282, 7284, 7285, 7288, 7289, 7290, 7313, 7315, 7571, 7576, 7581, 7997, 7998, 8016, 8017, 8023, 9379, 9380, 10275, 10428, 10429, 11911, 11912, 12197, 12198, 14175, 14176, 14199, 14201, 14219, 14220, 14228, 14252, 14254, 14255, 14257, 14258

\Hy@tempb 5136, 5138, 5159, 6623, 6624, 6663, 6664, 14200, 14201, 14228

\Hy@tempcolor . . 10954, 10956, 10969, 11033, 11035, 11047

\Hy@TempPageAnchor . . 7887, 7943, 7953, 7957, 7973

\Hy@Test@Alph 7029, 7058

\Hy@Test@alph 7020, 7054

\Hy@testname 8915, 8916, 8921, 8923, 8924, 8935, 9908, 9909, 9914, 9916, 9918, 9935, 10447, 10448, 10453, 10457, 10530, 10531, 10536, 10540, 11038, 11039, 11044, 11055

\Hy@texhtfalse 440

\Hy@texhttrue 2696, 4401

\Hy@theorem@refstepcounter 7307, 7324

\Hy@TheSlideOptionalPage 7902, 7906, 7911, 7920

\Hy@title 6426, 6430

\Hy@tocdestname . . 8036, 8044, 8046

\Hy@toclevel . . 8008, 8012, 8025

\Hy@toclinkend 8037, 8053, 8061, 8068, 8072, 8074

\Hy@toclinkstart . . . 8036, 8053, 8061, 8068, 8072, 8074

\Hy@true 2212, 2348, 2350, 2950, 2952, 5885

\Hy@undefinedname 8912, 8919, 8921, 9903, 9912, 9914, 10416, 10451, 10453, 10534, 10536, 11029, 11042, 11044

\Hy@unicodefalse 447, 764, 774, 2566, 2567, 2575, 3748, 3754, 7948, 13851

\Hy@unicodetrue . . . 443, 2567, 6743, 6757

\Hy@UseMaketitleInfos . . 6481, 9151, 9594, 10078, 10832, 11061, 11988

\Hy@UseMaketitleString . 6460, 6482, 6483

\Hy@UseNameKey 2428, 9116, 9117, 9118, 9119, 9120, 9121, 9122, 9123, 9142, 9664, 9665, 9666, 9667, 9668, 9669, 9670, 9671, 9692, 10127, 10128, 10129, 10130, 10131, 10132, 10133, 10134, 10167, 10792, 10793, 10794, 10795, 10796, 10797, 10798, 10799, 11144, 11145, 11146, 11147, 11148, 11149, 11150, 11151, 11174, 12051, 12052, 12053, 12054, 12055, 12056, 12057, 12058, 12081

\Hy@varioref@undefined . 7145, 7149, 8524

\Hy@VerboseAnchor 4849, 8898, 9347, 9362, 9444, 9456, 9713, 10295, 10311, 10391, 10404, 10899, 10913, 11880, 11894, 12167, 12181

\Hy@verbosefalse 408, 451

\Hy@VerboseGlobalTemp 4825, 4826, 4827, 4828, 4832

\Hy@VerboseLinkInfo . . . 4832, 4833, 4836, 4843

\Hy@VerboseLinkStart 4821, 8958, 8968, 9377, 9429, 9465, 9477, 9905, 10251, 10274, 10418,

10523, 10931, 11031, 11909, 11965, 12195, 12252
\Hy@VerboseLinkStop 4837, 8943
\Hy@verbosetrue 407
\Hy@VersionCheck . 259, 4562, 19862
\Hy@VersionChecked . 258, 301, 4559, 4561
\Hy@vt@PutCatalog 6715, 6717
\Hy@VTeXversion . . 6695, 6707, 10479, 10609, 10739, 14324
\Hy@WarnHTMLFieldOption . . 5910, 5944, 5947, 6118
\Hy@Warning 247, 332, 1451, 2365, 2381, 2406, 2486, 2594, 2599, 2853, 2861, 2886, 2899, 3396, 3440, 3519, 3580, 3599, 3783, 3830, 3838, 3959, 4082, 4105, 4115, 4123, 4674, 4893, 4936, 5132, 5139, 5279, 5493, 5848, 5911, 6003, 6753, 6768, 7989, 8505, 8554, 8917, 9746, 9750, 9910, 10449, 10532, 10820, 10826, 11040, 11377, 11386, 14184, 14202
\Hy@WarningNoLine 248, 285, 2445, 2510, 2523, 2621, 3491, 3544, 3694, 3799, 4172, 4267, 4413, 4422, 4439, 4455, 4470, 4479, 6518, 6709, 6832, 7999, 8748, 11201
\Hy@WarningPageBorderColor . . . 3541, 3543, 3545
\Hy@WarningPageColor . 3488, 3490, 3492
\Hy@WarnOptionDisabled 2377, 2380
\Hy@WarnOptionValue . . 2358, 2364, 2937, 2959
\Hy@wrapper@babel 4322, 4340
\Hy@WrapperDef 4332, 8893, 9345, 9360, 9442, 9454, 9711, 10293, 10309, 10389, 10402, 10897, 10911, 11878, 11892, 12165, 12179
\Hy@writebookmark 2217, 8009, 14161, 14302
\Hy@xspace@end 4232, 4237, 4241, 4246, 4249, 4254, 4255, 4256, 4258, 4259, 4260, 4261, 4262, 6317, 6318, 6320, 6323, 6325, 6326, 6327, 6331, 6334, 6337, 6339, 6340, 6341, 8974, 9006, 9043, 9076, 9422, 9493, 9508, 9531, 9547, 9571, 9587, 9945, 9982, 10015, 10045, 10072, 10255, 10265, 10491, 10517, 10552, 10585, 10604, 11272, 11280, 11947, 11958, 12233, 12245, 12277
\HyAnn@AbsPageLabel . 13091, 13098, 13139, 13225, 13247, 13274, 13295, 13323, 13346
\HyAnn@Count . . 13096, 13097, 13099, 13100, 13101, 13104, 13106, 13108
\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
\HyCnt@LookForParentCounter 6953, 6965
\HyCnt@ProvideTheHCounter 6937, 6946
\HyColor@FieldBColor . . 6062, 6065
\HyColor@FieldColor . . . 6068
\HyColor@HyperrefBorderColor 3531, 3549
\HyColor@HyperrefColor 3476, 3495, 3496, 3497, 3498, 3499, 3500, 3501
\HyColor@UseColor . 4693, 8862, 8873, 9867, 9878
\HyField@@AddToFields 13004, 13026
\HyField@@PDFChoices . 5731, 5732, 5747
\HyField@@SetFlag . 5426, 5428
\HyField@@UseFlag . 5416, 5418
\HyField@ABD@AuxAddToCoFields 12949, 13001
\HyField@AddCoField . . 12959, 12972, 12975
\HyField@AddToFields . 12495, 12543, 12634, 12648, 12677, 12698, 12724, 12749, 12937, 13003, 13143, 13238, 13252, 13279, 13304, 13328, 13351, 13459, 13499, 13602, 13621, 13653, 13677, 13705, 13734
\HyField@AdvanceAnnotCount 12488, 12533, 12624, 12642, 12667, 12692, 12718, 12739, 13452, 13489, 13586, 13614, 13642, 13670, 13698, 13724
\HyField@afields . 12933, 12992, 12993, 12995, 13049
\HyField@AfterAuxOpen 12948, 12990, 13027
\HyField@AnnotCount . 12486, 12487, 12489, 12492, 13450, 13453, 13456
\HyField@AuxAddToCoFields 12947, 12987, 13001, 13015

\HyField@AuxAddToFields 12946, 12984, 12991, 13030
\HyField@cofields 12934, 12953, 12954, 12974, 12976, 13050, 13052
\HyField@FlagsAnnot 5586, 5605, 5619, 5632, 5648, 5680
\HyField@FlagsCheckBox 5618, 12737, 13342, 13719
\HyField@FlagsChoice . . . 5679, 12596, 13198, 13554
\HyField@FlagsPushButton 5604, 12665, 12688, 12715, 13270, 13291, 13321, 13640, 13664, 13694
\HyField@FlagsRadioButton . . 5631, 12592, 13194, 13550
\HyField@FlagsSubmit . . 5552, 12689, 13292, 13665
\HyField@FlagsText 5647, 12530, 13134, 13483
\HyField@NeedAppearancesfalse 5876, 5889
\HyField@NeedAppearancestrue . . . 5879, 5882, 5886
\HyField@NewBitsetFlag . 5384, 5387, 5395
\HyField@NewFlag 5382, 5458, 5459, 5460, 5461, 5462, 5463, 5464, 5465, 5466, 5467, 5468, 5469, 5470, 5471, 5472, 5473, 5474, 5475, 5476, 5477, 5482, 5483, 5484, 5485, 5486, 5487, 5488, 5489, 5490, 5523, 5525, 5526, 5528, 5529, 5531, 5532, 5533, 5534
\HyField@NewFlagOnly . 5386, 5524, 5527, 5530
\HyField@NewOption 5383, 5389
\HyField@PDFAFlagWarning . . . 5492, 5500, 5504, 5508, 5512, 5516, 5520
\HyField@PDFChoices . . 5704, 12640, 13245, 13608
\HyField@PrintFlags 5433, 5579, 5597, 5611, 5624, 5640, 5672, 5697
\HyField@SetFlag . . 5425, 5565, 5571, 5576, 5610, 5638
\HyField@SetKeys . 5808, 12527, 12563, 12566, 12585, 12653, 12685, 12705, 12734, 13130, 13164, 13167, 13186, 13257, 13288, 13311, 13338, 13479, 13520, 13523, 13542, 13626, 13661, 13684, 13715
\HyField@TheAnnotCount 12491, 12500, 12509, 12539, 12628, 12645, 12673, 12695, 12721, 12745, 13455, 13460, 13463, 13494, 13591, 13616, 13647, 13672, 13700, 13729
\HyField@UseFlag 5415, 5556, 5557, 5558, 5559, 5560, 5561, 5562, 5563, 5566, 5567, 5568, 5569, 5572, 5573, 5574, 5577, 5588, 5589, 5590, 5591, 5592, 5593, 5594, 5595, 5596, 5607, 5608, 5609, 5621, 5622, 5623, 5634, 5635, 5636, 5637, 5639, 5650, 5651, 5652, 5653, 5654, 5655, 5656, 5657, 5668, 5671, 5682, 5683, 5684, 5685, 5687, 5689, 5690, 5693, 5696
\HyInd@@@wrindex . 8212, 8215, 8246, 8252
\HyInd@@hyperpage 8319, 8329
\HyInd@@wrindex . . 8207, 8208
\HyInd@DefKey 8265, 8279, 8292, 8301
\HyInd@EncapChar . 2967, 4182, 8202
\HyInd@hyperpage . 8316, 8318, 8325
\HyInd@key . . 8266, 8270, 8281, 8294, 8306
\HyInd@org@wrindex 8206, 8210, 8220, 8226, 8228, 8231
\HyInd@pagelink . . . 8334, 8340, 8342, 8345
\HyInd@ParenLeft . . 8189, 8217, 8254, 8291
\HyInd@ParenRight . 8190, 8218, 8225, 8255, 8264
\HyInd@removespaces . . . 8348, 8351, 8361
\HyInfo@AddonHandler . . 3825, 3828
\HyInfo@AddonList . 3858, 3859, 3893, 3900
\HyInfo@Addons . . . 3879, 3895, 9175, 10103, 11093, 11097
\HyInfo@AddonUnsupportedtrue . . 9592, 10818, 11986
\HyInfo@do . . . 3827, 3860, 3883
\HyInfo@GenerateAddons 3877, 9152, 10079, 11062
\HyInfo@Key . 3835, 3836, 3854, 3856, 3857, 3860, 3863, 3870, 3884, 3888
\HyInfo@KeyEscaped 3834, 3835
\HyInfo@tmp 3844, 3854
\HyInfo@trapped@false . . 3775, 3794
\HyInfo@trapped@true . . . 3772, 3793
\HyInfo@trapped@unknown 3778, 3795
\HyInfo@TrappedUnsupported . 3796, 3800, 9595, 10833, 11989
\HyInfo@Value 3848, 3851
\HyLang@addto 3279, 3295, 3313, 3355, 3363
\HyLang@afrikaans 2969
\HyLang@catalan 3153
\HyLang@danish 3243
\HyLang@DeclareLang . . . 3293, 3322, 3323, 3324, 3325, 3326, 3327, 3328, 3329, 3330, 3331, 3332, 3333, 3334, 3335, 3336, 3337, 3338, 3339, 3340, 3341, 3342, 3343, 3344, 3345, 3346, 3347, 3348, 3349, 3350, 3351, 3352, 3353
\HyLang@dutch 3207
\HyLang@english 2987
\HyLang@french 3005
\HyLang@german 3023
\HyLang@greek 3189
\HyLang@italian 3041
\HyLang@magyar 3059
\HyLang@norsk 3225
\HyLang@portuges 3077
\HyLang@russian 3095
\HyLang@spanish 3135
\HyLang@swedish 3261
\HyLang@vietnamese 3171, 3355, 3363
\HyLinguex@OrgB . . . 788, 792
\HyLinguex@OrgC . . . 789, 793
\HyLinguex@OrgD . . . 790, 794

\HyLinguex@Restore . 791, 804, 858, 868
\HyNew@float@makebox . 7627, 7650
\HyOpt@CheckDvi 2684, 2737, 2743, 2748, 2772, 2777, 2783, 2835, 2842, 2848, 2873
\HyOpt@CustomDriver . . . 283, 2894, 2897, 4489, 4556
\HyOpt@DriverFallback 2878, 2881, 2882, 2890, 4523, 4528
\HyOpt@DriverType 4488, 4491, 4525, 4535, 4537, 4555, 4558
\HyOrg@addtoreset . 8136, 8138, 8167
\HyOrg@appendix . . 6998, 7017
\HyOrg@author 6423, 6436, 6440
\HyOrg@elt 6951, 6957
\HyOrg@float@makebox . . 7628, 7649
\HyOrg@hyperpage . 8192, 8194, 8195
\HyOrg@make@df@tag@@ 8128
\HyOrg@make@df@tag@@@ 8129
\HyOrg@maketitle . . 7505, 7512, 7517
\HyOrg@subequations 7297, 7302
\HyOrg@title . . 6422, 6427, 6431
\HyOrg@TX@endtabularx 7409
\HyOrg@url 4949
\HyPat@NonNegativeReal 3575, 3576, 3577, 3578, 3594, 3596, 3929, 3940, 3941, 3942, 3949, 3952, 3953, 3954, 3955
\HyPat@ObjRef 4933, 4934, 4947, 8686, 9706, 10894
\hyper@@anchor . . . 4253, 4959, 4961, 4993, 4995, 5031, 5033, 5276, 6318, 6333, 6349, 7359, 7364, 7379, 7384, 7452, 7455, 7482, 7612, 7615, 7632, 7888, 7943, 7953, 7958
\hyper@@link . 4819, 4877, 4983, 5012, 5123, 7701, 7787, 7788, 7789, 7837, 7839, 7841, 8382, 8397, 8515
\hyper@@normalise . 4788, 4792, 4796
\hyper@anchor 5303, 6321, 6335, 6398, 6406, 8946, 9345, 9442, 9769, 10309, 10389, 10897, 11878, 12165
\hyper@anchorend . . 4241, 4249, 4256, 6304, 6323, 6337, 6352, 6942, 7114, 7181, 7224, 7226, 7248, 7271, 7695, 7720, 7723, 7743, 7816, 8113, 8953, 9370, 9460, 9776, 10304, 10411, 10919, 11902, 12188, 14157, 14303, 14529, 14556, 14567, 14594
\hyper@anchorstart 4255, 6304, 6322, 6336, 6351, 6942, 7113, 7181, 7218, 7248, 7271, 7693, 7718, 7723, 7743, 7816, 8113, 8949, 9360, 9454, 9772, 10293, 10402, 10911, 11892, 12179, 14157, 14303, 14529, 14556, 14567, 14594
\hyper@chars 4813, 8981, 9350, 9364, 9384, 9406, 9420, 9434, 9514, 9554, 10260, 10281, 10297, 10314, 10394, 10406, 10498, 11513, 11896, 11916, 11942, 11956, 11970, 12183, 12202, 12225, 12242, 12257
\hyper@currentanchor . . 10916, 10925, 10948, 10965
\hyper@currentlinktype . 10949, 10953, 10957
\hyper@destlabel@hook . . 5319, 5326
\hyper@hash . 4765, 4766, 4814, 5199, 5211, 5228, 5231, 6271, 10254
\hyper@image 4955, 4956, 9432, 10556, 11026, 11968, 12255
\hyper@last 6412, 6417
\hyper@link 4254, 5147, 6319, 6320, 6334, 6344, 6350, 8967, 9428, 9476, 9944, 10250, 10522, 11030, 11964, 12251
\hyper@link@ . 4261, 5124, 5130, 6317, 6331, 6357
\hyper@linkend 4241, 4249, 4258, 6325, 6339, 6354, 7404, 7687, 7690, 8037, 8966, 9390, 9473, 9943, 9945, 10286, 10469, 10951, 11924, 12208
\hyper@linkfile 4260, 5224, 6327, 6341, 6356, 9010, 9394, 9552, 9947, 10270, 10473, 11534, 11928, 12212
\hyper@linkstart 4257, 6324, 6338, 6353, 7402, 7683, 7690, 8036, 8957, 9376, 9464, 9904, 9945, 10273, 10417, 10930, 11908, 12194
\hyper@linkurl 4259, 4954, 5199, 5206, 5227, 5231, 6326, 6340, 6355, 8978, 9395, 9397, 9430, 9512, 10018, 10258, 10271, 10495, 10557, 11027, 11510, 11929, 11933, 11966, 12213, 12215, 12253
\hyper@livelink 6319, 6344
\hyper@makecurrent 6938, 7043, 7167, 7216, 7245, 7270, 7310, 7399, 7588, 7642
\hyper@n@rmalise . . 4780, 4784
\hyper@nat@current 7684
\hyper@natanchorend . . . 7695
\hyper@natanchorstart . . 7692
\hyper@natlinkbreak 7689
\hyper@natlinkend 7686
\hyper@natlinkstart 7681
\hyper@newdestlabel 5311, 5333, 5372, 5378, 5380
\hyper@normalise . . 4183, 4188, 4757, 4867, 4870, 4951, 4953, 4955, 4977, 5838
\hyper@pageduration 9214, 9241, 10192, 10205, 10722, 10734, 11005, 11024
\hyper@pagetransition . . . 9190, 9240, 10181, 10204, 10611, 10733, 10988, 11023
\hyper@quote 6273, 9352, 9366, 9381, 9386, 9407, 9421, 9435, 10254, 10264, 10277, 10300, 10318, 11884, 11898, 11913, 11919, 11943, 11957, 11971, 12171, 12184, 12199, 12204, 12227, 12243, 12258
\hyper@readexternallink . 5153, 5164
\hyper@refstepcounter . . . 6924, 6928, 6936

\hyper@tilde . 4774, 4775, 4776, 6272
\hyperbaseurl . 3503, 3504, 6368
\hypercalcbp 469, 469
\hypercalcbpdef 472
\hyperdef 4985, 6370
\HyperDestLabelReplace . 5363, 5370, 5373
\HyperDestNameFilter 4164, 4853, 5044, 5057, 5070, 5370, 8899, 8924, 9352, 9366, 9386, 9430, 9715, 9917, 10254, 10264, 10282, 10300, 10318, 10395, 10407, 10456, 10539, 11374, 11383, 11884, 11898, 11919, 11966, 12171, 12184, 12204, 12253, 14381, 14442, 14458
\HyperDestRename . 5343, 5361, 5374
\HyperFirstAtBeginDocument . . 6395, 6397, 6413, 6416
\hyperget 5036
\hypergetpageref 7107
\hypergetref 7106
\HyperGlobalCurrentHref 7064, 7066, 7074, 7075, 7079, 7082, 7086, 7093, 7094, 7098
\hyperimage 4955, 8184
\hyperindexformat 8191
\hyperlink 4818, 6371, 8357
\hyperlinkfileprefix . 3506, 3507, 3508, 12157
\HyperLocalCurrentHref 7082, 7084, 7091, 7092, 7093, 7094, 7096
\hyperpage . . 6377, 8192, 8193, 8195, 8315
\HyperRaiseLinkDefault . 2219, 2246
\HyperRaiseLinkHook 2218, 2247
\HyperRaiseLinkLength . . 2245, 2246, 2249
\hyperref 4964, 6373, 8453, 8469, 8478, 8500
\hyperrefundefinedlink . . 4998, 5009
\hypersetup . . 2587, 2632, 3333, 3811, 4184, 6367
\hypertarget 4957, 6372
\HyPL@@@CheckThePage 6643, 6661
\HyPL@@CheckThePage . 6619, 6621
\HyPL@Alph 6538
\HyPL@alph 6539
\HyPL@arabic 6535
\HyPL@CheckThePage . . 6570, 6618
\HyPL@Entry 6820, 6828, 6836, 6838
\HyPL@EveryPage . 6558, 6682
\HyPL@Format 6634, 6635, 6636, 6637, 6638, 6650
\HyPL@found 6633, 6640, 6644, 6651, 6661, 6663
\HyPL@Labels 6529, 6673, 6674, 6676, 6678, 6729, 6730, 6831, 6839, 6840
\HyPL@LastNumber 6533, 6589, 6612
\HyPL@LastPrefix . . 6534, 6583, 6614
\HyPL@LastType . . 6532, 6574, 6613
\HyPL@page . 6552, 6561, 6564, 6570, 6579
\HyPL@Prefix 6579, 6581, 6583, 6597, 6600, 6602, 6614, 6628, 6666
\HyPL@Roman 6536
\HyPL@roman 6537
\HyPL@SetPageLabels . . . 6672, 6737, 6834
\HyPL@SlidesOptionalPage 6545, 6549, 6554
\HyPL@SlidesSetPage . . . 6540, 6542, 6562, 6569
\HyPL@StorePageLabel . . 6597, 6599, 6669, 6727, 6815
\HyPL@thisLabel . . 6526, 6528, 6560, 6564, 6565
\HyPL@Type 6567, 6574, 6578, 6596, 6604, 6613, 6627, 6665
\HyPL@Useless 6670, 6676
\HyPsd@@@autoref . 1372, 1374, 1377
\HyPsd@@@CJKdigits . . . 1242, 1245, 1253
\HyPsd@@@nameref 1354, 1356, 1359
\HyPsd@@@pageref . 1336, 1338, 1341
\HyPsd@@@ref . 1320, 1322, 1325
\HyPsd@@@UTFviii@four 1969, 1972
\HyPsd@@AppendItalcorr 1513
\HyPsd@@autoref . . 1369, 1370
\HyPsd@@autorefname . . 1390, 1393
\HyPsd@@CJKdigits 1234, 1236, 1239
\HyPsd@@CJKnumber 1135, 1137, 1140, 1193, 1208, 1221, 1223, 1227
\HyPsd@@ConvertToUnicode 1841
\HyPsd@@ding 2106, 2110, 2121
\HyPsd@@GetNextTwoTokens 1839
\HyPsd@@GlyphProcessWarning 1699, 1702
\HyPsd@@hspace . . . 1290, 1291
\HyPsd@@LetCommand . 1414, 1435
\HyPsd@@nameref . . 1351, 1352
\HyPsd@@pageref . . 1333, 1334
\HyPsd@@ProtectSpacesFi 1458, 1464
\HyPsd@@ref 1317, 1318
\HyPsd@@RemoveBraces . 1481
\HyPsd@@RemoveBracesFi 1478, 1481
\HyPsd@@RemoveCmdPrefix 1656, 1659
\HyPsd@@ReplaceFi 1726, 1732, 1737
\HyPsd@@UTFviii@four . . 1953, 1958
\HyPsd@add@accent . 512, 1279
\HyPsd@AfterCountRemove 1533, 1613
\HyPsd@AfterDimenRemove 1539, 1616
\HyPsd@AfterSkipRemove 1545, 1628
\HyPsd@AMSclassfix 619, 1300, 1302
\HyPsd@AppendItalcorr . 1497, 1504, 1513
\HyPsd@autoref 629, 1369
\HyPsd@autorefname 1381, 1387
\HyPsd@CatcodeWarning 1549, 1573, 1576, 1579, 1582, 1640
\HyPsd@Char 1843
\HyPsd@CharOctByte . . . 1863, 1865, 1868, 1877, 1882

\HyPsd@CharSurrogate . . 1857, 1874
\HyPsd@CharTwoByte . . 1855, 1862
\HyPsd@CheckCatcodes . . 683, 1523
\HyPsd@CJK@Unicode . . 1017, 1021
\HyPsd@CJKActiveChars . 957, 972
\HyPsd@CJKdigit . . 1246, 1256
\HyPsd@CJKdigits . 1019, 1232
\HyPsd@CJKhook 636, 928, 939
\HyPsd@CJKhook@bookmarks 934, 968
\HyPsd@CJKhook@unicode 936, 1016
\HyPsd@CJKnumber 1018, 1132
\HyPsd@CJKnumberFour 1150, 1154, 1158, 1171, 1175, 1179, 1185
\HyPsd@CJKnumberLarge 1163, 1170
\HyPsd@CJKnumberThree 1191, 1195, 1201
\HyPsd@CJKnumberTwo 1206, 1210, 1216
\HyPsd@ConvertToUnicode 752, 1789
\HyPsd@DecimalToOctal . . 949, 980
\HyPsd@DecimalToOctalFirst 1023, 1059
\HyPsd@DecimalToOctalSecond . . 1024, 1033, 1096, 2125, 2131, 2134
\HyPsd@DefCommand 666, 667, 668, 669, 1403
\HyPsd@DieFace . 587, 588, 589, 2046, 20736, 20737
\HyPsd@DieFaceLarge . . . 2054, 2063
\HyPsd@ding 586, 2096
\HyPsd@DisableCommands 906, 908
\HyPsd@DoConvert . 1791, 1801
\HyPsd@DoEscape 1815
\HyPsd@doxspace . . . 724, 1762
\HyPsd@empty . . 709, 711, 715, 716, 718, 726, 733
\HyPsd@End . . . 683, 687, 1462, 1472, 1478, 1481, 1526, 1534, 1540, 1546, 1599, 1606, 1613, 1616, 1628
\HyPsd@EndWithElse . . . 1269, 1278
\HyPsd@EscapeTeX . 763, 766, 773, 1744
\HyPsd@expand@utfvii . . 1891, 1898, 1904
\HyPsd@fi 1454, 1460, 1464, 1470
\HyPsd@GetNextTwoTokens 1839
\HyPsd@GetOneBye 1834
\HyPsd@GetTwoBytes . . . 1830
\HyPsd@GLYPHERR 689, 1266, 1280, 1287
\HyPsd@GlyphProcess . . . 691, 1687, 1700
\HyPsd@GlyphProcessWarning 1694, 1698
\HyPsd@GobbleFiFi 1271, 1277
\HyPsd@HighA 1027, 1036
\HyPsd@HighB 1037, 1042
\HyPsd@HighC 1043, 1046
\HyPsd@HighD 1039, 1051
\HyPsd@href 624, 1316
\HyPsd@hspace 620, 1290
\HyPsd@hspacetest . 1293, 1295, 1298
\HyPsd@ifnextchar 652, 653, 654, 1440
\HyPsd@ignorespaces . 633, 915
\HyPsd@inmathwarn . 511, 1263
\HyPsd@ITALCORR . 644, 648, 1287
\HyPsd@LetCommand 670, 671, 1403
\HyPsd@LetUnexpandableSpace . 639, 640, 641, 642, 1283, 1286
\HyPsd@LoadExtra . . 873, 876, 2630
\HyPsd@LoadStringEnc 2591, 2612, 2614, 2618, 2620, 6748
\HyPsd@LoadUnicode 863, 2550, 2556, 2558, 2565, 2611, 6742
\HyPsd@MoonPha . . 2077, 2095, 20738
\HyPsd@nameref 628, 1351
\HyPsd@pageref 627, 1333
\HyPsd@pdfencoding 753, 2549, 2552, 2574, 2586, 2589, 2590, 2595, 2610, 6744, 6746, 6763, 6766
\HyPsd@pdfencoding@auto 753, 2580, 2590, 2607, 6746, 6765
\HyPsd@pdfencoding@pdfdoc 2573, 2595, 2608
\HyPsd@pdfencoding@unicode . . . 2577, 2609, 2610, 6744, 6762
\HyPsd@PrerenderUnicode 3704, 3720, 3726, 3732, 3738, 3743, 3761, 3767, 3847
\HyPsd@protected@testopt 655, 656, 1444
\HyPsd@ProtectSpaces . . . 676, 1454, 1503
\HyPsd@ref 626, 1317
\HyPsd@RemoveBraces . . . 678, 1475, 1492, 1500, 1506
\HyPsd@RemoveCmdPrefix 1649, 1655
\HyPsd@RemoveMask 686, 1462, 1472
\HyPsd@RemoveSpaceWarning . . . 1623, 1635, 1661
\HyPsd@ReplaceSpaceWarning . . . 1618, 1630, 1674
\HyPsd@Rest 1527, 1595, 1603, 1606, 1614, 1619, 1625, 1631, 1637
\HyPsd@SanitizeForOutFile 14220, 14251
\HyPsd@SanitizeOut@BraceLeft . . 14255, 14261, 14270
\HyPsd@SanitizeOut@BraceRight . . . 14258, 14273, 14282
\HyPsd@SPACEOPTI 680, 696, 697, 699, 701, 703, 704, 743, 745, 1569, 1773
\HyPsd@spaceopti . . . 745, 1718
\HyPsd@String 677, 679, 682, 684, 690, 692, 1486, 1487, 1497, 1557, 1559, 1563, 1564, 1568, 1569, 1584, 1585, 1617, 1629, 1688, 1689
\HyPsd@StringSubst . 693, 695, 701, 707, 710, 713, 716, 735, 738, 740, 1741
\HyPsd@Subst 689, 698, 702, 708, 714, 718, 722, 727, 728, 729, 730, 731, 732, 736, 739, 1725, 1742, 1757, 1758, 1759

\HyPsd@temp 756, 758, 759, 761, 762, 769, 771, 772, 2572, 2573, 2574, 2577, 2580, 2586, 2598, 2602, 6761, 6762, 6763, 6765, 6766, 6771
\HyPsd@tocsection 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1311
\HyPsd@UnescapedString . 758
\HyPsd@UnexpandableSpace . . 1286, 1469, 1619, 1631
\HyPsd@unichar . . . 1911, 1978, 1984, 1989
\HyPsd@unichar@first@byte 1997, 2017
\HyPsd@unichar@octtwo . 2019, 2027, 2033
\HyPsd@unichar@second@byte 2005, 2025
\HyPsd@UnicodeReplacementCharacter . . . 1981, 2016, 2049, 2079, 2084, 2092, 2099, 2102, 2112, 2170
\HyPsd@utf@viii@undeferr . 508, 2038
\HyPsd@UTFviii 502, 1903
\HyPsd@UTFviii@@three . 1934, 1943
\HyPsd@UTFviii@@two . . 1919, 1925
\HyPsd@UTFviii@ccxliv@def 1909, 1915
\HyPsd@UTFviii@ccxliv@undef 1908, 1914
\HyPsd@UTFviii@four . . . 1907, 1952
\HyPsd@UTFviii@three . . 1906, 1933
\HyPsd@UTFviii@two 1905, 1918
\HyPsd@Warning . . 1448, 1641, 1662, 1675, 1704, 1710
\HyPsd@XSPACE 646, 723, 1287
\HyPsd@xspace . . 721, 723, 724
\HyRef@@StarSetRef 8426, 8431
\HyRef@autopageref 8497, 8499
\HyRef@autopagerefname 8496, 8500, 8502
\HyRef@autoref 8515, 8516
\HyRef@autosetref . . 8519, 8522
\HyRef@CaseStar . . 8583, 8589
\HyRef@currentHtag 8535, 8553, 8556, 8562, 8569, 8575, 8590
\HyRef@MakeUppercaseFirstOfFive 4728, 8447, 8449
\HyRef@name 8551, 8552, 8557, 8564, 8582, 8583, 8584, 8586
\HyRef@Ref 4713, 8452
\HyRef@ShowKeysInit . . . 8592, 8602
\HyRef@ShowKeysRef 8523, 8591
\HyRef@StarSetRef . 4716, 4720, 4724, 4728, 8419, 8438, 8441, 8444, 8447
\HyRef@StripStar . . 8550, 8581
\HyRef@testreftype . 8528, 8547
\HyRef@thisref 8525, 8528
\HyTmp@found 5758, 5768, 5771
\HyTmp@key 5752, 5753
\HyTmp@optitem 5708, 5724, 5751, 5756, 5762, 5783, 5794
\HyTmp@optlist . . . 5707, 5722, 5723, 5754, 5755, 5760, 5761, 5769, 5770, 5790, 5792, 5799, 5802
\HyXeTeX@CheckUnicode 3690, 3701, 3719, 3725, 3731, 3737, 3742, 3760, 3766, 3846, 6776

I

\i . . 14795, 14961, 14964, 14967, 14970, 15245, 15421, 15424, 15427, 15430, 15559, 15564, 15569, 15574, 15578, 15815, 15886, 15894
\ibar 16053, 20807
\if 1312, 2206, 6587, 6595, 7288, 7289, 10685, 10688, 10692, 10696, 10700, 10702, 10704, 13901
\if@eqnstar 7232, 7241
\if@filesw 2178, 5024, 5331, 6393, 6816, 6826, 7730, 7745, 7761, 7773, 7793, 7798, 7817, 8240, 12982, 13013, 13028, 14221, 14408, 14487
\if@hyper@item 6908
\if@Localurl 10241, 10287
\if@mid@expandable 618
\if@minipage 7600, 7672
\if@nmbrlist 6894
\if@skiphyperref 6909
\IfBooleanTF 8515
\ifcase 325, 981, 1030, 1052, 1055, 1061, 1097, 1141, 1257, 1947, 2078, 2577, 3437, 4561, 5554, 5659, 5788, 5865, 7021, 7030, 8049, 8217, 8254, 8524, 10752, 11257, 13962, 13990, 14059, 14095, 14131, 14328
\ifcat . . . 1528, 1555, 1562, 1567, 1572, 1575, 1578, 1581, 5287, 5289
\ifcsname 1890, 7296, 8593, 10353
\ifdim . . 1298, 1617, 1621, 1629, 1633, 2261, 2284, 4167, 4169, 4589, 9259, 9263, 9268, 9272, 9279, 9280, 9284, 9285, 9292, 9293, 9294, 10213, 10214, 10217, 10218, 10224, 10225, 10226, 10357, 10358, 10362, 10363, 10370, 10371, 10372, 11286, 11300, 11671, 11672, 11675, 11676, 11682, 11683, 11684, 12559, 12597, 12598, 13160, 13199, 13200, 13516, 13555, 13556
\iffalse 5877
\IfFileExists . 2859, 2896, 8739, 12285
\ifFld@checked . . . 5811, 12910, 13948
\ifFld@comb 5658
\ifFld@combo 5686, 5691, 12572, 12601, 13173, 13203, 13529, 13559
\ifFld@disabled . . . 5812, 12911
\ifFld@edit 5692
\ifFld@fileselect 5661
\ifFld@hidden . . . 12531, 12586, 12666, 12690, 12716, 12738, 12809, 12821, 12831, 12914, 13135, 13188, 13271, 13293, 13322, 13343, 13484, 13544, 13641, 13666, 13695, 13720
\ifFld@multiline . . . 5659, 12520, 12816, 13123, 13472
\ifFld@multiselect 5730
\ifFld@password . . 5660, 12797
\ifFld@popdown . . 5478, 12573, 13174, 13530

\ifFld@radio 12569, 12591, 12846, 13170, 13193, 13526, 13549
\ifFld@readonly . . 12818, 12828, 12912
\ifForm@html 5832
\ifhint 2858, 4452, 4514
\ifhmode 2222, 2226, 2283, 2292, 4859, 7321, 7396, 7405, 7557, 7559, 8894, 8902, 11292, 12270
\ifHy@activeanchor . . 364, 5300
\ifHy@backref . 365, 4365, 4740, 6251, 7794, 7830
\ifHy@bookmarks . . . 366, 4614
\ifHy@bookmarksnumbered 367, 14208
\ifHy@bookmarksopen 368, 4604
\ifHy@breaklinks . . . 369, 2509, 10932, 10973, 11268, 11291
\ifHy@CJKbookmarks . 371, 933
\ifHy@colorlinks 372, 4685, 6256, 11865
\ifHy@destlabel 373, 5310
\ifHy@draft 374, 4252
\ifHy@DviMode 2665, 2685, 2880
\ifHy@DvipdfmxOutlineOpen 4587, 14460
\ifHy@frenchlinks . . . 380, 4698
\ifHy@href@ismap . . 4915, 8999, 10036, 10432, 10502, 11525
\ifHy@hyperfigures . 378, 4345, 6236, 8181
\ifHy@hyperfootnotes 381, 7328
\ifHy@hyperindex . . 382, 4355, 6246, 8188
\ifHy@hypertexnames 383, 7050, 7941
\ifHy@implicit . 384, 4370, 4712, 14512
\ifHy@linktocpage . . 385, 2469, 2479
\ifHy@localanchorname . . . 386, 7083, 7095
\ifHy@naturalnames . 388, 7062
\ifHy@nesting . 389, 4350, 4958, 4992, 5030, 5285, 6241, 7353, 7373, 7451, 7611
\ifHy@next 924, 8205
\ifHy@ocgcolorlinks 392, 3395, 4671, 4681, 6261, 8691, 8780, 8858, 8866, 9780, 9863, 9871
\ifHy@pageanchor . . . 393, 7940
\ifHy@pdfa . . . 411, 4274, 4673, 5187, 5491, 6085, 6138, 6266, 8928, 8994, 9029, 9063, 9323, 9926, 9959, 9994, 10026, 10056, 10438, 10459, 10482, 10508, 10542, 10576, 10595, 11398, 12465, 12656, 12709, 13061, 13261, 13315, 13434, 13630, 13688, 13903, 13951, 14120
\ifHy@pdfcenterwindow . . . 370, 9114, 9662, 10125, 10790, 11142, 12049
\ifHy@pdfdisplaydoctitle . . 410, 9115, 9663, 10126, 10791, 11143, 12050
\ifHy@pdfescapeform 377, 13798, 13828
\ifHy@pdffitwindow . 379, 9113, 9661, 10124, 10789, 11141, 12048
\ifHy@pdfmarkerror 11189, 11198
\ifHy@pdfmenubar . . 387, 9111, 9659, 10122, 10787, 11139, 12046
\ifHy@pdfnewwindow 391, 4007, 10479
\ifHy@pdfnewwindowset . . 390, 4005
\ifHy@pdfpagelabels 394, 6514, 6727, 6814
\ifHy@pdfstring 395, 891
\ifHy@pdftoolbar . . . 403, 9110, 9658, 10121, 10786, 11138, 12045
\ifHy@pdfusetitle 405, 6421
\ifHy@pdfwindowui . 409, 9112, 9660, 10123, 10788, 11140, 12047
\ifHy@plainpages 396, 4360, 7942
\ifHy@psdextra . . 402, 595, 877
\ifHy@psize 397
\ifHy@raiselinks 398, 9399, 9479, 9516, 9556, 11935, 12217
\ifHy@seminarslides 399
\ifHy@setpagesize . . 400, 9247, 10210, 10354, 11668
\ifHy@setpdfversion . 2633, 8696
\ifHy@stoppedearly 362
\ifHy@texht . . . 401, 4431, 4710, 5902, 5935, 6109, 6133, 6304, 8365
\ifHy@typexml 363
\ifHy@unicode . . . 404, 498, 533, 536, 596, 694, 706, 734, 742, 751, 952, 1643, 1664, 1677, 1706, 1712, 1979, 2047, 2097, 2548, 2588, 3692, 6751, 13850
\ifHy@verbose . 406, 4822, 4838, 4850, 5434, 8014, 8700
\ifHyField@NeedAppearances . . 5875, 5877, 5880, 12467, 13063, 13436
\ifHyInfo@AddonUnsupported 3823, 3837, 3878
\IfHyperBoolean 2333
\IfHyperBooleanExists . . . 2327, 2334
\ifin@ 6973
\ifmeasuring@ 6935, 6939
\ifmmode 10935, 11263
\ifnum . . 1022, 1133, 1149, 1153, 1173, 1186, 1189, 1202, 1204, 1217, 1219, 1225, 1851, 1854, 1937, 1980, 1983, 1995, 2048, 2051, 2064, 2098, 2101, 2104, 2108, 2123, 2127, 2130, 2227, 2262, 2674, 2790, 2793, 2819, 3438, 3439, 4275, 4467, 4503, 4517, 4520, 4598, 4605, 4892, 5713, 5784, 5795, 6544, 6568, 6589, 6605, 6707, 7000, 7003, 7890, 7900, 8692, 8697, 8711, 8715, 8720, 8738, 8759, 9278, 9892, 9897, 10212, 10356, 10479, 10609, 10739, 10747, 10749, 10750, 10760, 10763, 10863, 10865, 10985, 11670, 11711, 12623, 12628, 12633, 12964, 13041, 13237, 13585, 13590, 13601, 13849, 13931, 13962, 13967, 13990, 13996, 14025, 14059, 14065, 14084, 14095, 14100, 14131, 14136, 14165, 14181, 14324, 14394, 14397, 14421, 14424, 14462, 14570, 14585, 14600
\ifodd 1961, 1966, 7967
\ifpatchable 7323
\ifpdf . . . 2667, 2710, 2721, 4410, 4493
\ifpdfstringunicode . . . 503, 506
\ifportrait 9258

\ifthenelse 7820
\iftrue . 1457, 1736, 5880, 14572
\iftutex 757
\ifvmode 2238, 2260, 2273
\ifvoid 7174, 7178
\ifvtex . . 2673, 2789, 2818, 4467, 4503, 4517, 4520
\ifxetex . 2670, 2762, 3691, 4436, 4500, 4588, 5075
\ignorespaces . . 633, 7304, 7361, 7367, 7381, 7390, 7488, 7596, 7607, 7610, 7668, 7676, 7738, 7753, 7769, 7778, 7828
\iiint 18026, 20158
\iinferior 19963
\iint 18024, 20157
\IJ 14791, 15580
\ij 15004, 15582
\Im 17662, 20030
\immediate . . . . .

\label@@hyperref . . . 5000, 5002
\label@hook 5360
\label@hyperdef 4985, 5016
\label@hyperref 4965, 4999
\label@name . . 5325, 5335, 5361
\labelsep 7827
\labelwidth 7826
\Ladiesroom 19589, 20724
\lam 19815
\Lambda 16377, 19928
\lambda 16442, 19946
\lambdabar 15773, 20772
\lambdaslash 15774, 20773
\langle 18522, 20370
\language@group 605
\LARGE 573
\Large 574
\large 577
\LargerOrEqual . . 18168, 20926
\lastnodetype 2262
\lastskip 2261, 2269, 2276, 2284, 2288, 2295
\LaTeX . 530, 532, 12291, 12292
\LaTeXe 531, 12292
\latfric 16065, 20810
\LayoutCheckField 6187, 12740, 13344, 13725
\LayoutChoiceField 6179, 12590, 13192, 13548
\LayoutPushButtonField . 6195, 12660, 12668, 13265, 13272, 13634, 13643
\LayoutTextField . 6171, 12534, 13137, 13490
\lbrackdbl 20564
\lccode . 962, 1745, 1746, 1747, 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1901, 6045, 8202, 8203, 14238, 14239, 14240, 14241, 14242, 14243, 14244, 14245, 14246, 14247, 14248
\lcurvearrowdown 19242, 20588
\lcurvearrowse . . . 19234, 20585
\lcurvearrowsw . . 19237, 20586
\ldots 523
\le 18160, 20216
\leadsto 19228, 20583
\leavevmode . . 630, 2216, 4262, 4280, 4320, 5085, 5117, 5192, 6361, 7395, 7556, 8514, 8914, 8982, 9017, 9051, 9310, 9398, 9478, 9515, 9555, 9906, 9948, 9986, 10019, 10252, 10261, 10315, 10474, 10499, 10529, 10562, 10934, 11261, 11514, 11541, 11572, 11934, 12216, 12535, 12661, 12669, 12708, 12741, 13138, 13224, 13246, 13266, 13273, 13294, 13314, 13345, 13491, 13583, 13612, 13635, 13644, 13668, 13687, 13726, 14525
\Leftarrow 17872, 20093
\leftarrow 20043
\leftarrowtail 17789, 20061
\leftarrowtriangle 17920, 20113
\leftbarharpoon . . 19279, 20600
\LEFTCIRCLE . . 18771, 20407
\leftharpoondown 17820, 20074
\leftharpoonup . . 17817, 20073
\leftleftarrows . . . 17849, 20084
\leftleftharpoons . 19267, 20596
\leftModels 19488, 21066
\leftmodels 19481, 21064
\leftmoon 18840, 20432
\leftpointright . . . 18814, 20989
\Leftrightarrow . . 17883, 20097
\leftrightarrow . . . 17758, 20047
\leftrightarrows . . 17847, 20083
\leftrightarrowtriangle . . 17924, 20115
\leftrightharpoon . 19256, 20592
\leftrightharpoons 17858, 20088
\Leftscissors 19015, 21040
\leftslice 19425, 20661
\leftspoon 19185, 20563
\leftsquigarrow . . 17900, 20105
\leftthereforе 17538, 19983
\leftthreetimes . . . 18399, 20316
\LeftTorque 19249, 21049
\Lefttorque 19250, 21050
\leftVdash 19475, 21062
\leftvdash 18320, 20939
\legacy 6914, 6919, 6921
\legm 16080, 20815
\legr 16123, 20827
\Leo 18891, 21018
\leo 18889, 20446
\leq 18160, 20215
\leqclosed 18371, 20955
\leqq 18169, 20219
\leqslant 19390, 20645
\lessapprox 19398, 20649
\lessclosed 18365, 20953
\lessdot 18429, 20329
\lesseqgtr 18438, 20333
\lesseqqgtr 19416, 20657
\lessgtr 18210, 20238
\LessOrEqual . . . 18163, 20925
\lesssim 18200, 20234
\LetLtxMacro 6308, 6312, 6381, 6385
\Letter 19028, 21041
\LHD 18764, 20404
\lhd 18363, 20302
\lhooknwarrow . . 19220, 20579
\lhooksearrow . . . 19224, 20581
\Libra 18897, 21020
\libra 18895, 20448
\Lightning 17807, 20895
\lightning 17805, 20069
\limits 4805
\linferior 20022
\literalps@out 2214, 10857, 10862, 10914, 10920, 10946, 10952, 11208, 11224, 11258, 11259, 11287, 11289, 11301, 11303, 11601, 11698, 11707, 11765, 11778, 11859, 11983, 12143
\ll 18181, 20225
\llap 5090
\llbracket 19189, 21045
\llcorner 18512, 20365
\Lleftarrow 17896, 20103
\lll 18433, 20331
\llparenthesis 19298, 20607
\lnapprox 19411, 20655
\lneq 19406, 20653
\lneqq 18177, 20223
\lnsim 18465, 20345
\Longleftarrow . . 19204, 20571
\longleftarrow . . . 19198, 20568
\Longleftrightarrow 19208, 20573
\longleftrightarrow 19202, 20570
\longlegr 19910
\Longmapsfrom . . 19212, 20575
\Longmapsto 19214, 20576
\longmapsto 19210, 20574
\Longrightarrow . 19206, 20572
\longrightarrow . . 19200, 20569
\looparrowleft . . . 17799, 20066
\looparrowright . . 17801, 20067
\lower . . 5092, 9405, 9485, 9522, 9562, 11289, 11941, 12223
\lowercase 963, 1755, 1902, 2344, 2916, 2946, 3771, 3807, 5383, 5384, 5387, 5392, 5416, 5426, 5480, 5536, 5856, 5930, 5933, 6046, 8204, 10984, 14249

\lozenge 18769, 20406
\lrcorner 18514, 20366
\LT@array 7159
\LT@foot 7174, 7178
\LT@p@ftn . . 7427, 7430, 7434, 7444
\LT@p@ftntext 7425, 7432
\LT@start 7176, 7186
\ltimes 18394, 20314
\ltx@backslashchar 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 323, 4080
\ltx@empty 351, 352, 458, 1525, 2666, 2878, 2890, 2894, 3387, 3524, 3900, 3917, 3924, 4026, 4145, 4146, 4149, 4150, 4151, 4152, 4153, 4154, 4158, 4210, 4488, 4489, 4523, 4533, 4632, 5137, 5138, 5309, 5330, 5353, 5581, 5599, 5613, 5626, 5642, 5674, 5699, 5706, 5707, 6032, 6070, 6071, 6072, 6073, 6074, 6075, 6076, 6077, 6078, 6079, 6080, 6105, 6486, 6487, 6488, 6491, 6503, 6512, 6529, 6534, 6540, 6549, 6569, 7223, 8046, 8057, 8066, 8267, 8713, 8733, 8737, 9338, 10242, 10329, 10938, 11196, 11210, 11226, 11245, 11266, 11333, 11600, 11706, 11980, 12151, 12158, 12482, 12503, 12516, 12757, 12792, 12839, 12933, 12934, 12953, 12960, 12976, 13007, 13050, 13090, 13091, 13092, 13119, 13444, 13461, 13468
\ltx@firstofone 2686, 4218, 5356, 5373, 6416, 14266, 14278
\ltx@firstoftwo 330, 338, 2065, 2329, 2336, 5248, 7354, 7374
\ltx@GlobalAppendToMacro 909, 5360
\ltx@gobble 255, 2692, 4211, 4238, 4247, 4620, 5352, 5354, 6321, 6322, 6333, 6335, 6336, 6688, 12265, 12946, 12962, 12967, 14264, 14276
\ltx@gobblethree 7922
\ltx@gobbletwo 5372, 5374, 6324, 6338, 12947
\ltx@ifclassloaded . . 6541, 7883
\ltx@ifempty 5131
\ltx@iffileloaded . 878, 879, 6500
\ltx@ifpackageloaded 929, 13095
\ltx@IfUndefined . 261, 267, 306, 525, 603, 643, 719, 754, 798, 799, 800, 1299, 1394, 1395, 1519, 2172, 2201, 4204, 4233, 4235, 4917, 5321, 5352, 6461, 6873, 6967, 6974, 6996, 7011, 7264, 7696, 7901, 8266, 8503, 8504, 8548, 8549, 8551, 8552, 8698, 8729, 8959, 8969, 10421, 10524, 10910, 10953, 11032, 11217, 13093, 14561, 14571
\ltx@ifundefined 2122, 2328, 2329, 2372, 5364, 7917, 8760
\ltx@leftbracechar 321
\ltx@LocalAppendToMacro 346, 349, 6959, 6975, 6980
\ltx@one 6543, 6544, 6551, 7886, 7890, 7896, 7899, 7900, 7913, 8720, 13099
\ltx@onelevel@sanitize . . . 6950, 6969, 8305
\ltx@ReturnAfterElseFi . . 4787
\ltx@ReturnAfterFi 1693, 4791, 4807, 8324, 8360, 8658, 8668, 13821
\ltx@rightbracechar 322
\ltx@secondoftwo 327, 2067, 2328, 2329, 2338, 2340, 5142, 5246, 7356, 7376, 12952, 12955, 12958, 12961, 12965, 12966, 12969
\ltx@space 324, 1450
\ltx@zero 1749, 1750, 1751, 1752, 1753, 1754, 8708, 8715, 12964, 13097
\lz 16072, 20812

M

\m@ne . . 4334, 4467, 4503, 4517, 4520, 4841, 4900, 5398, 7280, 9901, 14482, 14570, 14583
\mag 9278, 10212, 10356, 11670
\make@df@tag@@ . . . 8128, 8130
\make@df@tag@@@ . 8129, 8131
\make@stripped@name . . 7278
\makeatletter 3, 848, 905
\MakeButtonField . 6202, 12662, 12671, 12693, 12713, 12719, 13267, 13277, 13302, 13319, 13326, 13636, 13639, 13667, 13692, 13696
\MakeCheckField . 6199, 12743, 13349, 13722
\MakeChoiceField . 6201, 12643, 13250, 13610
\MakeFieldObject 12926, 13073, 13083, 13086
\MakeLinkTarget 7314
\MakeLowercase 594
\MakeLowercaseUnsupportedInPdfStrings 473, 594
\MakeRadioField . . 6198, 12626, 13236, 13576
\maketag@@@ 8117
\MakeTextField . . . 6200, 12537, 13142, 13487
\maketitle 7505, 7506
\MakeUppercase 593, 8450
\MakeUppercaseUnsupportedInPdfStrings 473, 593
\Male 18861, 21008
\male 18857, 20436
\MaleMale 18978, 20473
\ManFace 19575, 20718
\manstar 18972, 20470
\mapsto 17793, 20063
\Mars 18860, 21007
\mars 18859, 21006
\MathBSuppress . 10262, 10266
\mathclose 7226
\mathdisplay 7198, 7207
\mathdisplay@push . 7196, 7205
\mathdollar 15183, 20739
\mathellipsis 17509, 20873
\mathopen 7217, 7246
\mathparagraph . 15306, 20750
\mathsection 15273, 20748
\mathsterling . . . 15262, 20745
\mathunderscore . 15241, 20743
\mathversion 582
\maxdimen 3459, 12931
\MaybeStopEarly 459, 2700, 2795, 4374, 4505, 6847, 6850
\mbox 631, 8868, 9873
\mdseries 565

\meaning 62, 153, 159, 2181, 6445, 7075, 7285, 14446, 14454, 14469
\measuredangle . . 17990, 20144
\measuring@false 6935
\mediaheight 10359, 10364, 10373
\mediawidth 10360, 10365, 10374
\meem 19817
\Mercury 18846, 20999
\mercury 18844, 20434
\merge 19377, 21061
\MessageBreak 263, 269, 286, 287, 292, 293, 333, 334, 1649, 1670, 1683, 1706, 1711, 1713, 2366, 2367, 2382, 2404, 2407, 2409, 2487, 2488, 2511, 2512, 2560, 2561, 2562, 2600, 2601, 2622, 2637, 2689, 2715, 2731, 2766, 2805, 2812, 2823, 2829, 2853, 2862, 2867, 2887, 2900, 2938, 3397, 3520, 3521, 3581, 3582, 3600, 3601, 3695, 3784, 3839, 3840, 3960, 3961, 4083, 4084, 4085, 4106, 4108, 4116, 4117, 4124, 4174, 4414, 4415, 4423, 4424, 4440, 4441, 4456, 4457, 4471, 4472, 4480, 4481, 4675, 4894, 4895, 4919, 4920, 4936, 4937, 5437, 5442, 5451, 5494, 5540, 5664, 5777, 5849, 5860, 5892, 5893, 5912, 6004, 6005, 6006, 6007, 6519, 6754, 6769, 6770, 7991, 8021, 8022, 8023, 8024, 8025, 8703, 8721, 8741, 8743, 8749, 8751, 8754, 8762, 8918, 9911, 10450, 10533, 10821, 10827, 11041, 12940, 12942, 14186, 14204, 14316
\MF 540, 12294
\mho 20034
\mid 17997, 20146
\MineSign 18957, 20463
\minferior 20023
\minusdot 19353, 20630
\minusinferior 20011
\minussuperior 19995
\models 18337, 20944
\moo 20606
\Moon 19573, 20717
\MoonPha . . . 2081, 2086, 2089, 2095, 20738
\Mountain 19004, 20481
\MoveDown 18754, 20979
\MoveUp 18739, 20976
\MP 541, 12295
\mp 17965, 20133
\mu 16444, 19947
\mugreek 19948
\multimap 18381, 20308
\multimapboth . . 19336, 20622
\multimapdotbothA . . . 18377, 20306
\multimapdotbothB . . . 18379, 20307
\MultiplicationDot 15309, 20751
\multiply 10714, 10743
\Mundus 19571, 20716
\MVArrowDown . 17756, 20891
\MVAt 15233, 19879
\MVComma 15201, 19865
\MVDivision 15207, 19868
\MVEight 15225, 19877
\MVFive 15219, 19874
\MVFour 15217, 19873
\MVMinus 15203, 19866
\MVMultiplication 15377, 20754
\MVNine 15227, 19878
\MVOne 15211, 19870
\MVPeriod 15205, 19867
\MVPlus 15199, 19864
\MVRightArrow . 17752, 20889
\MVRightarrow . . 17753, 20890
\MVSeven 15223, 19876
\MVSix 15221, 19875
\MVThree 15215, 19872
\MVTwo 15213, 19871
\MVZero 15209, 19869

N

\nabla 17941, 20123
\name@of@eq 6907
\nameref 628
\napprox 18080, 20181
\napproxeq 18085, 20183
\nasb 19829
\nasymp 18098, 20189
\natural 18945, 20458
\nbackcong 18094, 20187
\nbacksim 18058, 20171
\nbacksimeq 18405, 20319
\nBumpeq 18103, 20191
\nbumpeq 18107, 20193
\ncirceq 18139, 20207
\ncong 18076, 20179
\ncurlyeqprec . . . 18445, 20336
\ncurlyeqsucc . . . 18449, 20338
\nDashV 19489, 20690
\nDashv 19482, 20688
\ndashV 19476, 20686
\ndashv 18321, 20288
\nDoteq 18117, 20197
\ndoteq 18111, 20195
\ndownmodels . . . 19494, 20692
\ndownvdash 18327, 20290
\ne 18149, 20212
\Nearrow 17890, 20100
\nearrow 17764, 20050
\neg 20729
\Neptune 18873, 21012
\neptune 18871, 20440
\neq 18149, 20211
\neqcirc 18135, 20205
\neqdot 19386, 20643
\neqsim 18067, 20175
\nequal 18152, 20921
\nequiv 18156, 20214
\neswarrow 19218, 20578
\netscape 9441
\Neural 18984
\Neutral 20476
\new@ifnextchar 654
\new@pdflink . . 8893, 8947, 8950
\new@refstepcounter 7189, 7220
\newblock 7831
\newcommand 4, 9, 42, 2215, 5077, 5083, 5115, 5320, 5343, 6365, 6369, 7307, 7627, 8149, 14286, 14289, 14294, 19863, 20735
\newcount 460, 461, 2220, 2658, 4885, 5815, 6530, 12486, 12638, 13096, 13243, 13450, 13606, 14321
\newcounter . 6890, 7329, 9779, 14236
\newdimen . . . 457, 4396, 4397, 5073, 5816, 5817
\NewDocumentCommand 2312, 8513
\NewExpandableDocumentCommand 2321
\NewHook 7038
\newif 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 377, 378, 379, 380, 381, 382, 383, 384, 385,

386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 409, 410, 411, 924, 2633, 2665, 3823, 4587, 4915, 5390, 5478, 5811, 5812, 5832, 5875, 6908, 6909, 6935, 7232, 10241, 11189
\newlabel 2184, 5026, 6399, 6400, 6407, 6418
\newlabelxx 6401, 6402
\newlength 14518
\newline 528, 6466
\newname 7281, 7290
\newsavebox 9709, 11237
\newtie . . 14674, 14675, 15072, 15123, 15152, 15170
\newtoks 90, 5903, 11059, 11312, 11313
\newwrite 14409, 14488
\nexists 17934, 20120
\next . . 7821, 7822, 7823, 10677, 10679, 10681
\nfallingdoteq 20199
\nfallingdotseq 18122
\nfss@text 8372, 8392, 8409, 8541
\NG 15629
\ng 15631, 15632, 15633, 20762, 20763
\ngeq 18198, 20233
\ngeqq 18175, 20222
\ngeqslang 19396
\ngeqslant 20648
\ngg 18187, 20228
\ngtr 18193, 20231
\ngtrapprox 19404, 20652
\ngtrclosed 18478, 20967
\ngtrless 18214, 20240
\ngtrsim 18208, 20237
\nhateq 18145, 20209
\ni 17949, 20127
\NibRight 19040, 20495
\NibSolidRight . . 19042, 20496
\niepsilon 16005, 19898
\niiota 16054, 19906
\nineinferior 20009
\ninesuperior 19993
\ninferior 20024
\niphi 16107, 19909
\niupsilon 16165, 19915
\nj 16087, 20818
\nLeftarrow 17864, 20090
\nleftarrow 17772, 20053
\nleftModels 19491, 21067
\nleftmodels 19484, 21065
\nLeftrightarrow . 17866, 20091
\nleftrightarrow . . 17803, 20068
\nleftVdash 19478, 21063
\nleftvdash 18323, 20940
\nleq 18196, 20232
\nleqq 18171, 20220
\nleqslant 19392, 20646
\nless 18191, 20230
\nlessapprox 19400, 20650
\nlessclosed 18475, 20966
\nlessgtr 18216, 20241
\nlesssim 18206, 20236
\nll 18183, 20226
\nmid 17999, 20147
\nmodels 18356, 20950
\noboundary 526
\nobreak 2265, 2274, 2285, 2293, 7396, 7557
\nobreakspace . 642, 8507, 8510
\NoChemicalCleaning . . 19316, 20613
\noexpand 22, 93, 95, 108, 116, 169, 171, 172, 173, 176, 206, 913, 976, 1409, 1426, 1528, 1555, 1916, 2272, 2273, 2274, 2277, 2291, 2292, 2293, 2296, 3307, 3309, 3311, 3312, 3313, 3315, 3333, 3530, 3531, 3533, 3895, 4336, 4340, 4341, 4530, 4799, 4973, 5287, 5289, 5315, 5446, 5991, 6643, 6644, 6653, 6655, 6658, 6792, 6953, 6954, 6971, 7112, 7113, 7114, 7115, 7116, 7124, 7125, 7126, 7284, 7418, 7428, 7436, 7437, 7438, 7440, 7567, 7657, 7732, 7747, 7763, 7888, 8044, 8140, 8142, 8426, 8427, 8557, 8558, 8563, 8565, 8570, 8571, 8576, 8577, 9646, 11126, 11193, 11775, 12033, 12565, 12566, 12567, 12568, 13166, 13167, 13168, 13169, 13522, 13523, 13524, 13525, 13800
\noexpandQ 1555
\nofrenchguillemets . . . 661, 663
\NoHy@OrgPageRef 6312, 6314, 6385, 6387
\NoHy@OrgRef 6308, 6310, 6381, 6383
\NoHyper 6316
\nohyperpage 6360, 8314, 8316, 8318
\nolinkurl 4951
\nolinkurl@ 4951, 4952
\NomFancyVerbLineautorefname 3127
\Nomfootnoteautorefname 3107
\Nomtheoremautorefname 3131
\nonumber 7259, 7262
\normalbaselineskip . 6220, 6221, 6222, 6223, 6224, 6225
\normalfont 560
\normalsize . . . 578, 7603, 7675
\notasymp 18100, 20917
\notbackslash . . . 18536, 20375
\NotCongruent . . 18158, 20923
\notdivides 18001, 20906
\note 7931
\notequiv 18159, 20924
\notin 17945, 20125
\notni 17954, 20901
\notowner 17952, 20128
\notperp 19179, 20560
\notslash 18533, 20374
\noway 19002, 20480
\nparallel 18004, 20149
\nperp 18334, 20943
\nprec 18234, 20250
\nprecapprox 19455, 20676
\npreccurlyeq . . . 18451, 20339
\npreceq 19431, 20664
\npreceqq 19443, 20670
\nprecsim 18228, 20247
\nqsubseteq 20341
\nqsupseteq 20342
\NR@gettitle 7593
\NR@ref@showkeys . 4715, 4719, 4723, 4727
\nRightarrow 17869, 20092
\nrightarrow 17774, 20054
\nrightModels . . . 18362, 20952
\nrightmodels . . . 18355, 20949
\nrightVdash 18359, 20951
\nrightvdash 18352, 20948
\nrisingdoteq 18127, 20201
\nsim 18063, 20173
\nsimeq 18071, 20177
\nsqsubset 18264, 20265
\nsqsubseteq 18272, 18455, 20269
\nsqsupset 18268, 20267
\nsqsupseteq 18276, 18457, 20271

\nSubset 18415, 20323
\nsubset 18242, 20254
\nsubseteq 18250, 20258
\nsubseteqq 19467, 20682
\nsucc 18236, 20251
\nsuccapprox 19459, 20678
\nsucccurlyeq . . . 18453, 20340
\nsucceq 19435, 20666
\nsucceqq 19447, 20672
\nsuccsim 18232, 20249
\nsuperior 19999
\nSupset 18419, 20325
\nsupset 18244, 20255
\nsupseteq 18252, 20259
\nsupseteqq 19471, 20684
\nthickapprox . . . 18082, 20915
\ntriangleleft 18473, 20349
\ntrianglelefteq . . 18480, 20351
\ntriangleright . . . 18476, 20350
\ntrianglerighteq . 18483, 20352
\ntriplesim 18090, 20185
\ntwoheadleftarrow 17778, 20056
\ntwoheadrightarrow . . . 17785, 20059
\nu 16446, 19949
\null . . . 7812, 7820, 8414, 8537
\number 1135, 1137, 1164, 1165, 1855, 1920, 1921, 1922, 1923, 1927, 1928, 1929, 1930, 1931, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1945, 1946, 1947, 1948, 1949, 1950, 1953, 1955, 1959, 1960, 1962, 1964, 1966, 1969, 1973, 1974, 1975, 1976, 1985, 1986, 1990, 1991, 1998, 1999, 2003, 2006, 2007, 2008, 2018, 2020, 2021, 2026, 2028, 2029, 2034, 2035, 4589, 4606, 5404, 7001, 7004, 7052, 7053, 7056, 7060, 8774, 8777, 8778, 9469, 9487, 9488, 9503, 9504, 9524, 9525, 9541, 9542, 9564, 9565, 9581, 9582
\numberline . 7596, 7668, 14209, 14214
\numberwithin 8146
\numexpr 1927, 1928, 1929, 1931, 1937, 1945, 1946, 1947, 1948, 1949, 1950, 1954, 1956, 1960, 1962, 1964, 1966, 1970, 1973, 1974, 1976, 1985, 1990, 2007, 2021, 2029, 2035, 2654, 2655, 3913
\nun 19819
\nupmodels 19498, 20694
\nupvdash 18332, 20292
\nVDash 18360, 20301
\nVdash 18357, 20300
\nvDash 18353, 20299
\nvdash 18350, 20298
\nVvash 18344, 20296
\Nwarrow 17888, 20099
\nwarrow 17762, 20049
\nwsearrow 19216, 20577

O

\O 14919, 15379, 15861
\o 14988, 15449, 15864
\oasterisk 18304, 20937
\obackslash 19310, 21053
\obar 19304, 20610
\obeylines 11774
\OBJ@acroform . . 13069, 13070
\OBJ@Helv 13044, 13057, 13409
\OBJ@OCG@print . . 8811, 8814, 8822, 8849, 9797, 9799, 9812, 9816, 9825, 9854
\OBJ@OCG@view 8796, 8814, 8848, 9781, 9783, 9796, 9816, 9853
\OBJ@OCGs 8817, 8820, 8826, 8831, 8836, 9813, 9815, 9819, 9823, 9829, 9834, 9839
\OBJ@pdfdocencoding . 13042, 13390, 13406
\OBJ@ZaDb 13043, 13056, 13399
\obot 19313, 20612
\obslash 19307, 20611
\ocirc 18299, 20934
\OCIRCUMFLEX 19629, 19727, 19728, 19729, 19730, 19731
\ocircumflex 19623, 19667, 19668, 19669, 19670, 19671
\oddsidemargin 7968
\odiv 19361, 20633
\odot 18294, 20278
\odplus 19315, 21055
\OE 14786, 15647
\oe 14799, 15649
\offinterlineskip 6494
\ogreaterthan . . . 19321, 20615
\OHORN . 19630, 19732, 19733, 19734, 19735, 19736
\ohorn 3172, 3179, 19624, 19672, 19673, 19674, 19675, 19676
\oiint 18031, 20160
\oinferior 20017
\oint 18028, 20159
\ointclockwise . . . 18034, 20161
\ointctrclockwise . 18036, 20162
\oldb 798
\oldc 799
\oldd 800
\oldnewlabel . . 6399, 6404, 6407
\olessthan 19318, 20614
\OMEGA 12290
\Omega 16404, 19935
\omega 16470, 19960
\ominus 18285, 20275
\on@line 8018, 8019
\oneinferior 20001
\onesuperior 19883
\oo 19537, 20703
\openbullet 20409
\openo 15981, 19894
\openout 14411, 14490
\oplus 18282, 20274
\OpMode 2674, 2790, 2793, 2806, 2819, 2824, 4467, 4503, 4517, 4520, 10760, 10865, 11711
\or 328, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1031, 1053, 1056, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 1142, 1143, 1144,

1145, 1146, 1258, 1259, 1260, 2080, 2083, 2085, 2088, 5564, 5570, 5575, 5789, 7021, 7022, 7023, 7024, 7030, 7031, 7032, 7033, 8051, 8055, 10753, 14329, 14330, 14331, 14332, 14333, 14334, 14335, 14336, 14337, 14338, 14339, 14340, 14341, 14342, 14343, 14344, 14345, 14346, 14347, 14348, 14349, 14350, 14351, 14352, 14353, 14354, 14355, 14356, 14357, 14358, 14359, 14360
\OrnamentDiamandSolid . 19169
\oslash 18291, 20277
\otimes 18288, 20276
\ovee 18014, 20153
\overlay 7928
\owedge 18009, 20151
\owns 17951, 20900

P

\P 522
\p@ 1986, 1991, 5818, 5824, 9414, 9498, 9536, 9576, 10713, 11950, 12237, 12561, 13162, 13518
\p@equation 8124
\PackageError 61
\PackageInfo 8771, 12938
\PackageWarning . . 2636, 5775
\pageautorefname . . 2985, 3003, 3021, 3039, 3057, 3075, 3093, 3133, 3151, 3169, 3187, 3205, 3223, 3241, 3259, 3277, 8510, 8622
\pagename 8507
\pageref . 627, 4384, 6312, 6313, 6385, 6386, 8496, 8500
\paperheight . 4167, 9263, 9265, 9268, 9270, 9285, 9287, 9294, 9296, 10218, 10219, 10226, 10227, 10363, 10364, 10372, 10373, 11676, 11677, 11684, 11685
\paperwidth . 9259, 9261, 9272, 9274, 9284, 9286, 9293, 9295, 10217, 10219, 10225, 10227, 10362, 10365, 10371, 10374, 11675, 11677, 11683, 11685
\par 7595, 7623, 7666, 7676, 7814, 7834
\paragraphautorefname 2981, 2999, 3017, 3035, 3053, 3071, 3089, 3122, 3124, 3147, 3165, 3183, 3201, 3219, 3237, 3255, 3273, 8618
\parallel 18002, 20148
\parenleftinferior 20013
\parenleftsuperior 19997
\parenrightinferior 20014
\parenrightsuperior 19998
\parr 17711, 20888
\partautorefname . . 2975, 2993, 3011, 3029, 3047, 3065, 3083, 3113, 3141, 3159, 3177, 3195, 3213, 3231, 3249, 3267, 8612
\partial 17930, 20118
\partnumberline . 14211, 14216
\PassOptionsToPackage 2712, 2724, 2727, 2739, 2750, 2779, 2838, 2844, 2875, 2927, 2931, 2953, 4202, 4215, 4226, 4550
\patchcmd 7324
\pdf@addtoks . . . 11315, 11337, 11343, 11352, 11359, 11363, 11365, 11367, 11369, 11371, 11379, 11388, 11392, 11394, 11396, 11399, 11408, 11412, 11414, 11416, 11418, 11420, 11422, 11424, 11426, 11428, 11430, 11432, 11434, 11436, 11438, 11440, 11442, 11443, 11444, 11445, 11446, 11447, 11448, 11449, 11450, 11451, 11452, 11457
\pdf@addtoksx . . 11309, 11319, 11335
\pdf@box . 11237, 11269, 11277, 11285, 11286, 11289, 11293, 11295, 11298
\pdf@defaulttoks . 11193, 11313, 11314, 11324
\pdf@docset 11059
\pdf@endanchor 8906, 8947, 8954
\pdf@escapestring 8677
\PDF@FinishDoc . . . 2703, 2704, 2798, 2799, 4161, 4264, 4377, 4378, 4508, 4509, 6359, 6511, 6512, 9149, 9338, 9593, 10077, 10242, 10831, 11060, 11987, 12158
\pdf@ifdraftmode . . 6687, 8781, 9150, 9238, 13039, 14418
\pdf@linktype . . . 11217, 11221, 11329, 11330
\pdf@objdef 11196, 11210, 11212, 11226, 11228, 11332, 11333
\pdf@rect . 11204, 11223, 11241
\PDF@SetupDoc . . . 4160, 4263, 6278, 6279, 6358, 9080, 9339, 9626, 10119, 10243, 10768, 11113, 11871, 12020, 12159
\PDF@SetupDox 9080
\pdf@toks 11193, 11214, 11230, 11312, 11316, 11320
\pdf@type 11195, 11200, 11214, 11230, 11307, 11327
\pdfbookmark 2215, 6364, 6365, 14287, 14292, 14297, 14301
\pdfcatalog . . 6690, 8818, 9095, 9137, 13070
\PDFdefaults 11323
\pdfdest 8908
\pdfendlink 8944, 13142, 13236, 13251, 13278, 13303, 13327, 13350
\pdfescapestring 13829
\pdfextension . 2722, 4405, 4494
\PDFForm@@Name 13837, 13840, 13844, 13847
\PDFForm@Check 12742, 12746, 13347, 13348, 13727, 13731, 13920
\PDFForm@List . 12641, 12646, 13248, 13249, 13613, 13618, 13981
\PDFForm@Name 13133, 13187, 13260, 13341, 13482, 13543, 13629, 13718, 13836
\PDFForm@Push . 12670, 12674, 13275, 13276, 13645, 13649, 13951
\PDFForm@Radio 12622, 12630, 13226, 13228, 13584, 13596, 14015
\PDFForm@Reset 12717, 12722, 13324, 13325, 13697, 13702, 14120
\PDFForm@Submit 12691, 12696, 13296, 13298, 13669, 13674, 14086
\PDFForm@Text . 12536, 12540, 13140, 13141, 13492, 13495, 14050

\pdfhorigin 9255
\pdfinfo 9153
\pdflastannot 8728
\pdflastlink . 8731, 13005, 13018
\pdflastmatch 4076
\pdflastobj . . 8725, 8796, 8811, 8817, 13069, 13390, 13399, 13409
\pdflastxform 8726, 12929, 12931
\pdflastximage 8727
\pdflinkmargin 8889, 8891
\pdfliteral 8869, 8871, 8876
\pdfm@box 9709, 13446, 13447, 13448, 13486, 13498, 13575, 13600, 13609, 13620, 13639, 13652, 13667, 13676, 13696, 13704, 13721, 13733
\pdfmajorversion . . . 2658, 2659, 2662, 2663
\pdfmark 6810, 9646, 9655, 9685, 10901, 10921, 10960, 10995, 11012, 11046, 11083, 11095, 11126, 11135, 11166, 11190, 11466, 11481, 11496, 11508, 11515, 11542, 11573, 12033, 12042, 12073, 12496, 12505, 12537, 12626, 12643, 12671, 12693, 12719, 12743, 14450
\pdfmark@ 11190, 11191
\pdfmatch 325
\pdfminorversion 8690
\PDFNextPage 11479
\PDFNextPage@ . 11479, 11480
\pdfobj 8782, 8797, 8812, 13047, 13356, 13391, 13400
\pdfobjcompresslevel 8708, 8764
\PDFOpen 11507
\pdfoptionpdfminorversion 8689
\pdfoutline 14496
\pdfpageattr 9194, 9198, 9199, 9209, 9218, 9222, 9223, 9233
\pdfpageheight 9265, 9274, 9282, 9287, 9296
\pdfpageref 13107
\pdfpageresources . . 8845, 8846
\pdfpagesattr . 9084, 9086, 9088
\pdfpagewidth 9261, 9270, 9281, 9286, 9295
\PDFPreviousPage 11492
\PDFPreviousPage@ . . . 11493, 11495
\pdfrefobj . 13042, 13043, 13044
\pdfrefxform 12931
\pdfstartlink . 8939, 8983, 9018, 9052, 9312, 13141, 13227, 13249, 13276, 13297, 13325, 13348
\pdfstrcmp 12964
\pdfstringdef 491, 784, 3721, 3727, 3733, 3739, 3744, 3749, 3755, 3762, 3768, 3848, 5736, 5741, 5767, 6471, 6579, 6581, 7914, 7950, 13854, 14219
\pdfstringdefDisableCommands . . 797, 903, 6362, 6464
\pdfstringdefPostHook . 780, 897
\pdfstringdefPreHook 638, 897, 909, 6463, 6475
\pdfstringdefWarn 527, 528, 632, 912, 1417, 1422, 1441, 1445
\pdftexversion 13041
\pdfvorigin 9256
\pdfxform 12927
\Peace 19029, 20490
\peh 19845
\penalty 1531, 2242, 4860
\PencilRight 19036, 20493
\PencilRightDown 19034, 20492
\PencilRightUp . . 19038, 20494
\pentagon 19508, 20698
\perp 19177, 20559
\phantom 583
\phantomsection . . . 4162, 6366, 7993, 14155, 14206, 14586
\Phi 16397, 19933
\phi 16464, 19957
\phiinferior 19970
\Phone 18790, 20415
\PhoneHandset . . 19020, 20486
\Pi 19930
\pi 16452, 19951
\pinferior 20025
\Pisces 18912, 21025
\pisces 18910, 20453
\pitchfork 18427, 20328
\planck 15554, 20761
\Plane 19024, 20488
\Plus 19057, 20503
\PlusCenterOpen . 19061, 20505
\plusinferior 20010
\PlusOutline 19055, 20502
\plussuperior 19994
\PlusThinCenterOpen . . 19059, 20504
\Pluto 18876, 21013
\pluto 18874, 20441
\pm 20732
\pointer 17915, 20111
\PointingHand . . . 18815, 20990
\Pointinghand . . . 18816, 20991
\pounds 15263, 20746
\Preamble 12286
\prec 18218, 20242
\precapprox 19453, 20675
\preccurlyeq 18222, 20244
\preceq 19429, 20663
\preceqq 19441, 20669
\precnapprox 19461, 20679
\precneq 19437, 20667
\precneqq 19449, 20673
\precnsim 18469, 20347
\precsim 18226, 20246
\PrerenderUnicode 3712
\prime 17514, 19979
\process@me . 6443, 6455, 6456, 9083, 9092
\ProcessKeyvalOptions . . 4231
\prod 17957, 20130
\prop 2311, 2315, 2323
\propto 17983, 20141
\protect . 1529, 4970, 5004, 7596, 7668, 7732, 7747, 7763, 7819, 7826, 7827, 8031, 8085, 8303, 8371, 8391, 8397, 8408, 8422, 8540, 9349, 9446, 10313, 10393, 11882, 12169, 14226, 14520
\protected 7259, 8036, 8037
\protected@edef 5135, 6545, 6639, 7282, 7300, 7476, 7902, 7906, 8915, 9908, 10447, 10530, 11038
\protected@file@percent . . 7983, 8031
\protected@write . . . 2183, 5025, 5332, 7799, 8242, 8257, 8272, 8276, 8286, 14225
\protected@xdef . . . 7437, 7531
\providecommand 473, 4492, 4813, 4956, 5319, 5378, 5380, 6395, 6669, 6694, 6828, 6867, 6869, 6871, 6874, 6875, 6876, 6878, 6879, 6880, 6881, 6883, 6884, 6885, 6886, 6887, 6888, 6897, 6898, 6899, 6900, 6901, 6902, 7276, 7697, 7698, 7713, 7983, 8603, 8604,

8605, 8606, 8607, 8608, 8609, 8610, 8611, 8612, 8613, 8614, 8615, 8616, 8617, 8618, 8619, 8620, 8621, 8622, 8684, 8892, 8910, 8911, 9337, 9440, 9441, 9704, 9766, 9767, 9768, 10239, 10355, 10385, 10386, 10387, 10858, 11238, 11239, 11599, 11607, 11608, 11609, 11610, 11705, 11717, 11718, 11719, 11720, 11772, 11813, 11814, 11815, 11816, 11979, 11981, 11982, 12094, 12095, 12150, 12984, 12987, 13793
\psdaliasnames . . 20735, 21078
\psdmapshortnames . . . 19863, 20734
\Psi 16401, 19934
\psi 16468, 19959
\PushButton 6159
\put@me@back 5282, 5295, 5305
\pwedge 16174, 20838
\pxfonts 19507

Q

\Q 1524, 13052
\qaf 19811
\quarternote 18934, 20454
\quotedblbase . . . 14766, 15007, 17495, 19605
\quotesinglbase . . 14776, 15009, 17489, 19607

R

\r . 14641, 14653, 14665, 14880, 14946, 15058, 15103, 15132, 15164, 15339, 15406, 15703, 15705, 17434, 17436
\ra 19787
\Radiation 18819, 20992
\Radioactivity . . . 18817, 20424
\raff 19831
\Rain 19000, 20479
\raise . . . 2249, 5106, 9415, 9499, 9537, 9577, 11303, 11951, 12238
\rangle 18524, 20371
\rbrackdbl 20565
\rcurvearrowdown 19247, 20589
\rcurvearrowleft . . 19251, 20590
\rcurvearrowne . . 19231, 20584
\rcurvearrowright 19254, 20591
\rcurvearrowse . . . 19240, 20587
\Re 17673, 20033
\ReadBookmarks 4230, 4265, 4391, 4623, 4735, 4737, 14385, 14417
\real@setref 8368, 8435
\realfootnote 7528
\Rectangle 19173, 20557
\RectangleBold . . 19175, 20558
\RectangleThin . . 19171, 20556
\recycle 18949, 20460
\Recycling 18951, 21032
\Ref 8453, 8462, 8470
\ref 626, 4383, 6308, 6309, 6381, 6382, 7493, 7500, 8479, 8487, 12261
\ref@one 4979, 4980
\rEfLiNK 12262, 12263
\refstepcounter 6906, 6913, 6934, 7137, 7163, 7189, 7214, 7220, 7323, 7324, 7660
\rem@ptetc 10985, 10987
\renewcommand 2175, 8164, 8459, 8466, 8475, 8484, 14301
\Request 18554, 20382
\RequirePackage . 22, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 361, 927, 2613, 2698, 4208, 4224, 4689, 4741, 4948, 5381, 6348, 6485, 6735, 8742, 10240, 12155, 14311
\RerunFileCheck 14313
\Reset 6168
\reset@font . . 8372, 8392, 8409, 8541
\reve 15995, 19896
\reveject 16208, 20848
\revepsilon 16009, 19899
\revglotstop 16206, 19923
\Rewind 18759, 20402
\RewindToIndex . 18566, 20387
\RHD 18750, 20399
\rhd 18366, 20303
\rho 16454, 19952
\rhoinferior 19969
\rhooknearrow . . . 19222, 20580
\rhookrevepsilon 19900
\rhookswarrow . . 19226, 20582
\Rightarrow 17877, 20095
\rightarrow 20045
\rightarrowtail . . . 17791, 20062
\rightarrowtriangle 17922, 20114
\rightbarharpoon . 19285, 20602
\RIGHTCIRCLE . 18773, 20408
\rightharpoondown 17832, 20078
\rightharpoonup . 17829, 20077
\rightleftarrows . . 17841, 20081
\rightleftharpoon . 19258, 20593
\rightleftharpoons 17861, 20089
\rightModels 18349, 20947
\rightmodels 18338, 20945
\rightmoon 18842, 20433
\rightpointleft . . . 18811, 20988
\rightrightarrows . 17853, 20086
\rightrightharpoons 19273, 20598
\RightScissors . . . 19014, 21039
\rightslice 19427, 20662
\rightsquigarrow . 17902, 20106
\rightthreetimes . 18401, 20317
\RightTorque . . . 19244, 21047
\Righttorque 19245, 21048
\rightVdash 18341, 20946
\rightvdash 18317, 20938
\rinferior 19964
\riota 17686, 20035
\risingdoteq 20200
\risingdotseq 18125
\rlap 5103, 8870, 9875
\rm 571
\rmfamily 561
\Roman 6635
\roman 6636
\romannumeral 919, 920, 13052
\rotm 16076, 20814
\rotOmega 16167, 20836
\rotr 16112, 20824
\rotvara 15975, 20786
\rotw 16178, 20840
\roty 16182, 20842
\rrbracket 19192, 21046
\Rrightarrow 17898, 20104
\rrparenthesis . . . 19300, 20608
\rtaild 19895
\rtimes 18397, 20315
\rule 7478

S

\S 15274, 20749
\sad 19795
\Sagittarius 18903, 21022
\sagittarius 18901, 20450
\Saturn 18867, 21010
\saturn 18865, 20438
\sbox 3708, 5086, 5118, 6203, 9402, 9482, 9519, 9559, 11238, 11277, 11938, 12220, 12926

\scd 17107, 19961
\scdefault 4699
\scg 16030, 19902
\schwa 15998, 19897
\schwainferior 20019
\sci 16057, 19907
\ScissorHollowRight . . . 19018, 20485
\ScissorRight 19012, 20483
\ScissorRightBrokenBottom 19008
\ScissorRightBrokenTop 19016, 20484
\scn 16093, 19908
\Scorpio 18900, 21021
\scorpio 18898, 20449
\scr 16135, 19911
\scr@LT@array 7162
\scripta 15968, 19893
\scriptg 16027, 19901
\scriptsize 579
\scriptv 16169, 19916
\scrollmode . . 1467, 1476, 1489, 1596, 1729
\scshape 567
\scu 17125, 19962
\scy 16183, 19920
\Searrow 17892, 20101
\searrow 17767, 20051
\Sech 19567, 20714
\second 17516, 19980
\sectionautorefname 2978, 2996, 3014, 3032, 3050, 3068, 3086, 3115, 3144, 3162, 3180, 3198, 3216, 3234, 3252, 3270, 8615
\seen 19791
\selectfont 547, 4699, 13079
\SePa 19553, 20708
\set@display@protect 4325
\setbox 1532, 1538, 1544, 3442, 3448, 5090, 5103, 5963, 6493, 8860, 9848, 9865, 13486, 13575, 13609, 13639, 13667, 13696, 13721
\setcounter 4891
\setkeys 4866, 4911
\setlength 2246, 5074, 5975, 6779, 8887, 9255, 9256, 9261, 9265, 9270, 9274, 9281, 9282, 9286, 9287, 9295, 9296, 10359, 10360, 10364, 10365, 10373, 10374, 10713, 11697, 11764, 11858, 12142, 14539, 14607
\setminus 17973, 20137
\setpdflinkmargin . . 3902, 3903, 6777, 8885, 11695, 11762, 11856, 12140
\settowidth 12558, 13159, 13515
\SetupKeyvalOptions 2304, 4195
\seveninferior 20007
\sevensuperior 19991
\sffamily 562
\shadda 19841
\sharp 18947, 20459
\sheen 19793
\shortciteN 7862
\shuffle 19338, 20623
\Sigma 16391, 19931
\sigma 16458, 19954
\sim 18053, 20169
\simeq 18069, 20176
\sinferior 20026
\SixFlowerAlternate . . . 19125, 20536
\SixFlowerAltPetal 19135, 20541
\SixFlowerOpenCenter . 19121, 20534
\SixFlowerPetalRemoved 19118, 20533
\sixinferior 20006
\SixStar 19108, 20528
\sixsuperior 19990
\SixteenStarLight 19116, 20532
\sixteenthnote . . . 18941, 20456
\SK@ 8597
\SK@@ref 8597
\SK@ref 8594
\skip@ . . 1546, 1629, 1630, 1633, 1635, 2269, 2275, 2288, 2294
\slashc 15959, 19892
\slashdiv 19514, 20701
\slide 7925
\SliTeX 539
\slshape 568
\small 580
\smallin 17947, 20126
\smallowns 17955, 20129
\smash 2243
\smile 18518, 20368
\Smiley 18834, 20997
\smiley 18832, 20429
\Snowflake 19139, 20543
\SnowflakeChevron 19137, 20542
\SnowflakeChevronBold . 19141, 20544
\sofpasuq 17040
\softsign 16681, 20859
\spacefactor 2222, 2228, 7396, 7405, 7557, 7559, 8895, 8903
\spadesuit . 18913, 18915, 21026
\Sparkle 19143, 20545
\SparkleBold 19145, 20546
\special@paper 4163
\SpecialDvipdfmxOutlineOpen . 2756, 2758, 4591, 4598
\sphericalangle . . 17992, 20145
\splitmaxdepth 7471
\splittopskip 7470
\sqcap 18278, 20272
\sqcup 18280, 20273
\sqdoublecap 19365, 20635
\sqdoublecup 19370, 20637
\sqsubset 18262, 20264
\sqsubseteq 18270, 20268
\sqsubsetneq 18459, 20343
\sqsupset 18266, 20266
\sqsupseteq 18274, 20270
\sqsupsetneq 18462, 20344
\SquareCastShadowBottomRight 19164, 20553
\SquareCastShadowTopRight 19167, 20554
\Squaredot 15310, 20752
\squaredots 18046, 20166
\SquareShadowBottomRight 19158, 20551
\SquareShadowTopRight . 19161
\SquareTopRight 20552
\SS 15005, 19591
\ss . . 3025, 14934, 15020, 15394
\sslash 19505, 20697
\st@rredfalse 7197, 7206
\star 18387, 20311
\stepcounter . 6923, 7299, 7397, 7530, 14222
\stockheight . 4167, 4397, 9280, 9282, 10214, 10215, 10358, 10359, 11672, 11673
\stockwidth . . 4396, 9279, 9281, 9292, 10213, 10215, 10224, 10357, 10360, 10370, 11671, 11673, 11682
\stop@hyper 6330
\StringEncodingConvertTest 759, 769
\strip@period 2188

\strip@prefix 62, 2181, 4076, 6445, 7075, 7285, 14446, 14454, 14469
\strip@pt 470, 4179, 5992, 6780, 9261, 9265, 9270, 9274, 10716, 11699, 11766, 11860, 12144, 13945, 14010, 14039, 14079, 14130
\strip@pt@and@otherjunk 10920, 10952, 10987
\strutbox 7471
\sub@label 2175
\subeqnarray 7265, 7267
\subequations 7297, 7298
\subfig@oldlabel 2177
\Submit 6165
\SubmitObject 13299
\SubmitPObject 13299
\subparagraphautorefname 2982, 3000, 3018, 3036, 3054, 3072, 3090, 3123, 3125, 3148, 3166, 3184, 3202, 3220, 3238, 3256, 3274, 8619
\subpdfbookmark 14289
\subsection 11975
\subsectionautorefname . . 2979, 2997, 3015, 3033, 3051, 3069, 3087, 3120, 3145, 3163, 3181, 3199, 3217, 3235, 3253, 3271, 8616
\Subset 18413, 20322
\subset 18238, 20252
\subseteq 18246, 20256
\subseteqq 19465, 20681
\subsetneq 18254, 20260
\subsubsectionautorefname 2980, 2998, 3016, 3034, 3052, 3070, 3088, 3121, 3146, 3164, 3182, 3200, 3218, 3236, 3254, 3272, 8617
\succ 18220, 20243
\succapprox 19457, 20677
\succcurlyeq 18224, 20245
\succeq 19433, 20665
\succeqq 19445, 20671
\succnapprox 19463, 20680
\succneq 19439, 20668
\succneqq 19451, 20674
\succnsim 18471, 20348
\succsim 18230, 20248
\sukun 19843
\sum 17961, 20132
\Sun 18839, 20998
\sun 18837, 20431
\SunCload 20478
\SunCloud 18998
\SunshineOpenCircled . . 19133, 20540
\Supset 18417, 20324
\supset 18240, 20253
\supseteq 18248, 20257
\supseteqq 19469, 20683
\supsetneq 18256, 20261
\surd 20140
\Swarrow 17894, 20102
\swarrow 17770, 20052

T

\T 19771
\t . 14673, 15093, 15122, 15151, 15169
\T@pageref . . 8461, 8468, 8477, 8486
\T@Ref 4713
\Ta 19799
\taa 19773
\tableautorefname . . 2974, 2992, 3010, 3028, 3046, 3064, 3082, 3112, 3140, 3158, 3176, 3194, 3212, 3230, 3248, 3266, 8611
\tagform@ 8123
\taild 15989, 20791
\tailinvr 16120, 20826
\taill 16069, 20811
\tailn 16092, 20820
\tailr 16126, 20828
\tails 16142, 20831
\tailt 16160, 20834
\tailz 16188, 20843
\Tape 19022, 20487
\tatweel 19807
\tau 16460, 19955
\Taurus 18882, 21015
\taurus 18880, 20443
\tcheh 19847
\Telefon 18792, 20983
\temp@online 8018, 8021
\Tent 19006, 20482
\tesh 16260, 20856
\TeX . 529, 530, 537, 539, 12289, 12291, 12293
\texorpdfstring 890, 6363
\text 480, 486
\textAcht 19566, 20713
\textAcPa 19552, 20707
\textacute 14637, 14649, 14661, 14845, 15099, 15128, 15300
\textacutedbl 16308
\textacutemacron 15096, 15125, 15154, 17213, 17216, 17317, 17320
\textainferior 17603, 20015
\textaleph 17697, 20037
\textAlpha 16341, 16358
\textalpha 3192, 3193, 3194, 3196, 3197, 3198, 3199, 3200, 3201, 3202, 3203, 3204, 3205, 16412, 16423, 19936
\textamalg 17960, 20131
\textampersand 519, 14708, 15188, 15189, 15190, 20741, 20742
\textangle 17989, 20143
\textangstrom 17689
\textAnkh 18823, 20426
\textaolig . 19534, 19536, 21072
\textAPLbox 18561, 20385
\textAPLdownarrowbox 18550, 20380
\textAPLinput . . 18553, 20381
\textAPLinv 18527, 20372
\textAPLleftarrowbox . . 18542, 20377
\textAPLrightarrowbox . 18545, 20378
\textAPLuparrowbox . . 18547, 20379
\textapprox 18079, 20180
\textapproxeq . . . 18084, 20182
\textaquarius 18908, 18909, 20452, 21024
\textaries . 18878, 18879, 20442, 21014
\textaristerikeraia 16339
\textasciiacute 15301
\textasciibreve . . . 14684, 15107, 15136, 16297
\textasciicaron . . . 14642, 14654, 14666, 14686, 15104, 15133, 16283
\textasciicircum . . 14638, 14650, 14662, 14724, 15100, 15129, 15238
\textasciidieresis . 14640, 14652, 14664, 14821, 15102, 15131, 15276
\textasciigrave . . . 14636, 14648, 14660, 14729, 15098, 15127, 15243

\textasciimacron . 14645, 14657, 14669, 14835, 15111, 15140, 15290
\textasciitilde 520, 4776, 14739, 15255
\textast 17976, 20138
\textAsterisk 19124, 20535
\textAsteriskBold 19101, 20524
\textasteriskcentered 15198
\textAsteriskCenterOpen 19103, 20525
\textAsteriskRoundedEnds 19148, 20547
\textasymp 18097, 20188
\textbabygamma . 16038, 19904
\textbackcong . . . 18093, 20186
\textbackepsilon 16514
\textbackneg 18499, 20359
\textbackprime . . 17521, 19982
\textbacksim 18057, 20170
\textbacksimeq . . 18404, 20318
\textbackslash . . 515, 693, 2041, 14720, 14722, 15236
\textbaht 17104
\textbar . 14735, 15250, 15251, 20744
\textbarb 15742, 20765
\textbarc 15963, 20782
\textbard 15506, 20757
\textbardbl 17482, 17483, 20869
\textbardotlessj . . 16020, 16021, 16022, 20798
\textbarglotstop . 16242, 16243
\textbari . 16051, 16052, 16053, 19905, 20807
\textbarin 18495, 20357
\textbarl . . 15765, 15766, 19890
\textbarleftharpoon 19283, 20601
\textbaro 16097, 16099
\textbarp 17149, 19973
\textbarrevglotstop 16246, 16247
\textbarrightharpoon . . . 19289, 20603
\textbarsci 17147, 19972
\textbarscu 17152, 19974
\textbaru . 16162, 16163, 16164, 19914, 20835
\textbarwedge . . . 18386, 20310
\textbbslash 18573, 18574, 20388, 20971
\textBeam 18557, 20383
\textbecause 18042, 18043, 20164, 20911
\textbeltl . 16063, 16064, 16065, 20810
\textBeta 16329, 16360
\textbeta . . 15020, 16425, 19937
\textbetainferior . 17136, 19967
\textbeth 17699, 20038
\textbetween 18190, 20229
\textbf 554
\textBicycle 19586, 20722
\textbigcircle 15124, 15153, 18781, 18782, 20411, 20982
\textbigdoublevee 19345, 20626
\textbigdoublewedge . . . 19343, 20625
\textbigtriangledown . . . 18757, 18758, 20401, 20980
\textbigtriangleup 18742, 18743, 18744, 20396, 20977, 20978
\textBiohazard . . 18821, 20425
\textblacksmiley . 18836, 20430
\textblank 18569
\textbot . 18330, 18331, 20291, 20942
\textbowtie 18392, 18393, 20313, 20959
\textboxast 19329, 20618
\textboxbackslash 18539, 20376
\textboxbar 18779, 20410
\textboxbox 19333, 20620
\textboxbslash . . . 19327, 20617
\textboxcircle . . . 19331, 20619
\textboxdot 18314, 20285
\textboxempty . . 18794, 18795, 20416, 20984
\textboxminus . . . 18310, 20283
\textboxplus 18308, 20282
\textboxslash 19325, 20616
\textboxtimes . . . 18312, 20284
\textbraceleft 513, 2042, 14733, 15248
\textbraceright 514, 2042, 14737, 15253
\textbrokenbar . . 14817, 15269, 15270, 20747
\textbullet . 14741, 17504, 19977
\textbulletoperator 17980
\textbullseye 16217, 16218, 16219, 16220, 20851, 20852
\textBumpeq 18102, 20190
\textbumpeq 18106, 20192
\textcancer 18887, 18888, 20445, 21017
\textCap . 18422, 18423, 20326, 20962
\textcap 18018, 20154
\textcapdot 19369, 20636
\textcapricornus . 18905, 18906, 20451, 21023
\textccnc 19595, 20725
\textccnd 19597
\textccsa 19599, 20726
\textcdj 16231
\textcdot . . 15019, 19617, 20733
\textcdots 18489, 20354
\textcedilla 14644, 14656, 14668, 14853, 15106, 15135, 15312
\textcelsius 15006, 17659
\textcent 14809, 15259
\textcentoldstyle . 15961, 20781
\textCESign 19603, 19604, 20728, 21077
\textCheckedbox . 18797, 18798, 20417, 20985
\textCheckmark . 19045, 19046, 20497, 21043
\textCheckmarkBold . . . 19048, 20498
\textChi 16400
\textchi 3193, 16467, 19958
\textchiinferior . . 17144, 19971
\textcirc 17978, 20139
\textcirceq 18138, 20206
\textcirclearrowleft 19195, 20566
\textcirclearrowright . . . 19197, 20567
\textcircled 15095, 15124, 15153, 18576, 18578, 18580, 18582, 18584, 18586, 18588, 18590, 18592, 18594, 18596, 18598, 18600, 18602, 18604, 18606, 18608, 18610, 18612, 18614, 18616, 18621, 18623, 18625, 18627, 18629, 18635, 18637, 18639, 18641, 18643, 18645, 18647, 18649, 18651, 18653, 18659, 18661, 18663, 18665, 18667, 18669, 18671, 18673, 18675, 18677, 18679, 18681, 18683, 18685, 18687, 18689, 18691, 18693, 18695, 18697, 18699, 18701, 18703, 18705, 18707, 18709, 18711, 18713, 18715, 18717, 18719, 18721, 18723, 18725, 18727, 18729, 18731
\textCircledA . . . 18618, 18619, 20389, 20972

\textcircledast . . . 18302, 18303, 18304, 20280, 20936, 20937
\textcircledcirc . . 18298, 18299, 18300, 20279, 20934, 20935
\textcircleddash . . 18306, 20281
\textcircledP 17669
\textCircleShadow 19156, 20550
\textcircplus 19352, 20629
\textcircumflex 14688
\textcircumlow . . 15117, 15146, 19540
\textCleaningF . . 18631, 20390
\textCleaningFF . 18633, 20391
\textCleaningP . . 18655, 20392
\textCleaningPP . 18657, 20393
\textclock 18505, 18506, 18507, 20362, 20968, 20969
\textcloseepsilon . 16224, 16225
\textcloseomega . . 16103, 16104, 16105, 16106, 20821, 20822
\textcloserevepsilon 16016, 16017, 16018, 20797
\textCloud 18785, 20412
\textClowerTips . 19081, 20514
\textclubsuitblack . 2163, 18924, 18925, 21030
\textclubsuitwhite 18933
\textCoffeecup . . . 18804, 20419
\textcoloncolonequals . . 19389, 20644
\textcolonequals . 18130, 20202
\textcolonmonetary 17629
\textcolor . . 592, 13037, 13084, 13087, 13418
\textcommatailz . 15929, 15930
\textcomplement . 17929, 20117
\textcompwordmark 17476
\textcong 18074, 20178
\textcopyleft 19592, 19593
\textcopyright . . . 14823, 15278, 19880
\textcorner 16317, 16318
\textCR 14682, 15176
\textcrb . . 15738, 15739, 15740, 15742, 15743, 20764, 20765, 20766
\textcrd . . 15501, 15503, 15504, 15506, 15507, 20756, 20757, 20758
\textcrg 15831, 20778
\textcrh 15552, 20759
\textcrinvglotstop 15792, 15793
\textcrlambda . . . 15769, 15770, 15771, 15772, 15773, 15774, 20770, 20771, 20772, 20773
\textCross 19064, 20506
\textCrossedbox . 18800, 18801, 18802, 20418, 20986, 20987
\textCrossMaltese 19070, 20509
\textCrossOpenShadow . 19066, 20507
\textCrossOutline 19068, 20508
\textcrtwo 15789, 15790
\textctc . . 15984, 15985, 15986, 20790
\textctd 15927, 15928
\textctesh 16151, 16152, 16153, 20832
\textctj . . . 16232, 16233, 20853
\textctjvar 16233, 20853
\textctn 15947, 15948
\textctt 15949, 15950
\textctyogh 16196, 16197, 16198, 20845
\textctz . . 16189, 16190, 16191, 20844
\textCup . 18425, 18426, 20327, 20963
\textcup 18020, 20155
\textcupdot 18259, 20262
\textcupplus 18261, 20263
\textcurlyeqprec . 18444, 20335
\textcurlyeqsucc . 18448, 20337
\textcurlyvee 18408, 18409, 20320, 20960
\textcurlywedge . . 18411, 18412, 20321, 20961
\textcurrency . . . 14813, 15265
\textcurvearrowleft 17813, 20071
\textcurvearrowright . . . 17815, 20072
\textCuttingLine . 18733, 18734, 18735, 18736, 20394, 20973, 20974, 20975
\textdagger 14743, 17497, 17498, 19976, 20870
\textdaggerdbl . . . 14745, 17500, 17501, 17502, 20871, 20872
\textdaleth 17703, 20040
\textdanger 18975, 20471
\textdasheddownarrow . 17914, 20110
\textdasheduparrow 17909, 20108
\textdashleftarrow 17906, 17907, 20107, 20897
\textdashrightarrow 17911, 17912, 20109, 20898
\textDashV 19487, 19488, 20689, 21066
\textDashv 19480, 19481, 20687, 21064
\textdashV 19474, 19475, 20685, 21062
\textdashv 18319, 18320, 20287, 20939
\textDavidStar . . 19072, 19073, 20510, 21044
\textdblig . 15953, 15955, 20779
\textdctzlig 16254, 16255
\textddagger 14746
\textddots 18493, 20356
\textdegree 14837, 15006, 15292
\textDeleatur . . . 17652, 17653, 20028, 20883
\textDelta 16364, 19926
\textdelta . . 3205, 16429, 19939
\textdexiakeraia 16336
\textDiamandSolid 19170, 20555
\textdiameter . . . 18497, 20358
\textdiamond . . . 18767, 18768, 20405, 20981
\textdiamonddots 17543, 19985
\textdiamondsuitblack . . . 2164, 18931
\textdiamondsuitwhite . 18921, 18922, 21029
\textDigamma 16495
\textdigamma 16498
\textDigammagreek 16494
\textdigammagreek 16497, 16499, 20857
\textdiscount 17537
\textdiv . . . 15017, 19615, 20731
\textdivide 14986, 15017, 15447, 19615
\textdivideontimes 18390, 20312
\textDivides 17970, 20135
\textDividesNot . . 17972, 20136
\textdivorced 18989
\textdlsh 17810, 20070
\textdollar . . 517, 14704, 15182, 15183, 15184, 20739, 20740
\textdong 17639
\textdotaccent . . . 14643, 14655, 14667, 14690, 15105, 15134, 16299
\textdotbelow . . . 14647, 14659, 14671, 14714, 15121, 15150, 16324

\textdotdiv 18050, 20912
\textdoteq 18110, 20194
\textdoteqdot . . . 18115, 18116, 20196, 20918
\textdotminus . . . 18049, 18050, 20167, 20912
\textdotplus 17968, 20134
\textdottimes . . . 19357, 20631
\textdoublebarpipe 15805, 15806, 15807, 20777
\textdoublebarpipevar . . 15807, 20777
\textdoublebarwedge . . . 19380, 20640
\textdoublegrave . 15109, 15138, 16320
\textdoublepipe . . 15801, 15802, 15803, 20776
\textdoublepipevar 15803, 20776
\textdoublevee . . . 19376, 19377, 20639, 21061
\textdoublevertline 17483, 20869
\textdoublewedge 19374, 20638
\textDOWNarrow 18753, 18754, 20400, 20979
\textDownarrow . 17881, 20096
\textdownarrow . . 17755, 17756, 17757, 20046, 20891, 20892
\textdowndownarrows . . 17856, 20087
\textdowndownharpoons 19277, 20599
\textdownharpoonleft . . 17839, 20080
\textdownharpoonright . 17836, 20079
\textdownmodels . 19493, 20691
\textdownstep . . . 19523, 19524
\textdownuparrows 17919, 20112
\textdownupharpoons . . 19295, 20605
\textdsbiological . 18969, 20468
\textdschemical . . 18967, 20467
\textdscommercial 18971, 20469
\textdsjuridical . . 18965, 20466
\textdsmedical . . . 18963, 20465
\textdsmilitary . . 18960, 18961, 20464, 21034
\textdtimes 19360, 20632
\textdyoghlig 16251, 16252
\textdzlig 16248, 16249, 16250, 20855
\textearth 18855, 18856, 20435, 21005
\textEightAsterisk 19154, 20549
\textEightFlowerPetal . . 19132, 20539
\textEightFlowerPetalRemoved 19151, 20548
\texteightinferior . 17589, 20008
\textEightStar . . . 19111, 20529
\textEightStarBold 19113, 20530
\textEightStarConvex . . 19107, 20527
\textEightStarTaper . . . 19105, 20526
\texteightsuperior 17557, 19992
\texteinferior 17605, 20016
\textell 17665, 20031
\textellipsis . . . 523, 524, 14748, 17508, 17509, 20873
\textemdash . 727, 14750, 17480
\textemptyset . . . 17937, 17938, 20121, 20899
\textEncodingNoboundary 526, 19859
\textendash . . 728, 14752, 17478
\textEnvelope . . . 19027, 19028, 20489, 21041
\textEpsilon 3190, 16343, 16366
\textepsilon . . 3191, 3192, 3195, 3197, 3198, 3199, 3200, 3204, 3205, 16414, 16431, 19940
\texteqcirc 18134, 20204
\texteqcolon 18052, 20168
\texteqdot 19385, 20642
\texteqsim 18066, 20174
\texteqslantgtr . . 19424, 20660
\texteqslantless . . 19422, 20659
\textequalscolon . 18132, 20203
\textequalsinferior 17597, 20012
\textequalsuperior 17565, 19996
\textequiv 18154, 18155, 20213, 20922
\textEreversed 15751
\textesh . . . 16143, 16144, 19913
\textestimated . . . 17691, 17692, 17693, 20885, 20886
\textEta 16345, 16370
\texteta . 3190, 3191, 3193, 3196, 3198, 3199, 3200, 3203, 3204, 16416, 16435, 19942
\texteuro . 14805, 17641, 17642, 17643, 17644, 17645, 17646, 17647, 17648, 17649, 17650, 20874, 20875, 20876, 20877, 20878, 20879, 20880, 20881, 20882
\textexclamdown . . . 731, 14807, 15257
\textexists 17933, 20119
\textfallingdoteq . 18121, 20198
\textfatsemi 19350, 20628
\textFax . 19581, 19582, 20720, 21076
\textfax 17705, 20041
\textfemale 18849, 21000
\textFemaleFemale 18977, 20472
\textFemaleMale . 18981, 20474
\textfi 729, 14780, 19542
\TextField 6150
\textFinv 17695, 20036
\textFire 19584, 20721
\textfishhookr . . . 16128, 16129, 16130, 16131, 20829, 20830
\textfivedots 19519, 20702
\textfiveeighths 17739
\textFiveFlowerOpen . . 19130, 20538
\textFiveFlowerPetal . . . 19128, 20537
\textfiveinferior . . 17583, 20005
\textfivesixths 17733
\textFiveStar 18787, 20413
\textFiveStarCenterOpen 19089, 20518
\textFiveStarConvex . . . 19097, 20522
\textFiveStarOpen 18789, 20414
\textFiveStarOpenCircled 19087, 20517
\textFiveStarOpenDotted 19091, 20519
\textFiveStarOutline . . . 19093, 20520
\textFiveStarOutlineHeavy 19095, 20521
\textFiveStarShadow . . . 19099, 20523
\textfivesuperior . 17551, 19989
\textfl 730, 14782, 19544
\textFlag . 18955, 18956, 20462, 21033
\textflat 18944, 20457
\textflorin 14754, 15754, 15755, 20767
\textflq 616, 15013, 19611
\textflqq 614, 15011, 19609
\textforall 17927, 20116
\textForward 18746, 20397

\textForwardToIndex . . . 18564, 20386
\textFourAsterisk 19075, 20511
\textfourfifths 17729
\textfourinferior . 17581, 20004
\textFourStar . . . 19083, 20515
\textFourStarOpen 19085, 20516
\textfoursuperior . 17549, 19988
\textfourth 17541, 19984
\textfractionsolidus 14756, 17531
\textfrown 18517, 20367
\textfrownie 18830, 18831, 20428, 20996
\textfrq 617, 15014, 19612
\textfrqq 615, 15012, 19610
\textfullnote 19558, 19559, 20710, 21073
\textGame 17707, 20042
\textGamma 16362, 19925
\textgamma . . 3201, 3202, 3203, 16427, 19938
\textgammainferior 17138, 19968
\textGaPa 19546, 20704
\textge 18167, 20218
\textgemini 18884, 18885, 20444, 21016
\textGentsroom . . 19588, 20723
\textgeq . 18166, 18168, 20217, 20926
\textgeqq 18174, 20221
\textgeqslant 19395, 20647
\textgg 18186, 20227
\textggg 18436, 20332
\textgimel 17701, 20039
\textglobfall 17769, 20894
\textglobrise 17766, 20893
\textglotstop 16200, 16201, 16202, 16203, 19922, 20846, 20847
\textglq 612, 15009, 19607
\textglqq 610, 15007, 19605
\textgnapprox . . . 19414, 20656
\textgneq 19410, 20654
\textgneqq 18180, 20224
\textgnsim 18468, 20346
\textgravedbl 16312
\textgravemacron 15097, 15126, 15155, 17207, 17210, 17311, 17314
\textgreater 14718, 15232
\textgrq 613, 15010, 19608
\textgrqq 611, 15008, 19606
\textGslash 15828
\textgslash 15830, 15831, 20778
\textgtrapprox . . . 19403, 20651
\textgtrdot 18432, 20330
\textgtreqless . . . 18442, 20334
\textgtreqqless . . 19420, 20658
\textgtrless 18213, 20239
\textgtrsim 18204, 18205, 20235, 20928
\textguarani 17657
\texthalflength . . 16294, 16295
\texthalfnote 19561, 19562, 20711, 21074
\textHandCuffLeft 18806, 20420
\textHandCuffRight . . . 18808, 20421
\textHandLeft . . . 18810, 18811, 20422, 20988
\textHandRight . . 18813, 18814, 18815, 18816, 20423, 20989, 20990, 20991
\textHaPa 19548, 20705
\texthateq 18142, 18143, 18144, 20208, 20919, 20920
\texthausaB 15745, 19887
\texthausaD 15749, 19888
\texthausaK 15760, 19889
\texthbar . 15551, 15552, 15553, 15554, 19886, 20759, 20760, 20761
\texthdotfor 17506, 19978
\textheartsuitblack 2165, 18929
\textheartsuitwhite 18917, 18918, 18919, 21027, 21028
\textheng . 19525, 19527, 21069
\textHermaphrodite . . . 18983, 20475
\texthexagon 18559, 20384
\texthexstar 18994, 20477
\texthinferior 17613, 20020
\texthookleftarrow 17796, 20064
\texthookrightarrow . . . 17798, 20065
\textHslash 15549
\texthslash 17661, 20029
\textHT 14678, 15172
\texthtb . 15976, 15977, 15978, 15979, 20787, 20788
\texthtbardotlessj 16146, 16147
\texthtc 15746, 15747
\texthtd . 15990, 15991, 15992, 15993, 20792, 20793
\texthtg . . 16023, 16024, 16025, 20799
\textthth . 16043, 16044, 16045, 16046, 20804, 20805
\texththeng 16047, 16048, 16049, 20806
\texthtk . 15761, 15762, 15763, 20769
\texthtp 15779, 15780
\texthtq 16239, 16240
\texthtrtaild 17156, 17157, 19975
\texthtscg 16227, 16228
\texthtt 15784, 15785
\texthungarumlaut 14692, 15112, 15141, 16307
\texthvlig 15756, 15757, 15758, 20768
\textiiint 18027, 20158
\textiinferior 17128, 19963
\textiint 18025, 20157
\textIm 17663, 20030
\textin 17944, 20124
\textInfo 19601, 20727
\textinfty 17987, 20142
\textint . . 18022, 18023, 20156, 20909
\textinterleave . . . 19504, 20696
\textinterrobang 17529
\textinterrobangdown . . 19516, 19517
\textinvamp 17709, 17710, 17711, 20887, 20888
\textinvbackneg . . 18503, 20361
\textinvbreve 15071, 15114, 15143, 15878, 15880, 15891, 15893, 15894, 15904, 15906, 15920, 15922
\textinvdiameter . 19303, 20609
\textinve 15826, 19891
\textinvglotstop . . 16210, 16211, 19924
\textinvneg 19364, 20634
\textinvscr . 16138, 16139, 19912
\textIota . . 16347, 16374, 16408
\textiota 3190, 3191, 3192, 3194, 3197, 3205, 16418, 16439, 16473, 19944
\textIotadieresis . 16356, 16407
\textipagamma . . 16034, 16035, 19903, 20801
\textisuperior . . . 17547, 19987
\textit 556
\textJackStar . . . 19077, 20512
\textJackStarBold 19079, 20513
\textjinferior 19513, 20700
\textJoin 19348, 20627
\textjupiter 18863, 18864, 20437, 21009

\textKappa 16376
\textkappa . . 3192, 3194, 3197, 16441, 19945
\textKeyboard . . . 18521, 20369
\textkinferior 17615, 20021
\textKoppa 16501
\textkoppa 16504
\textKoppagreek 16502
\textkoppagreek 16505
\textkra 15593
\textLadiesroom . 19590, 20724
\textLambda 16378, 19928
\textlambda 3197, 3205, 16443, 19946
\textlangle 18523, 20370
\textlatin 602, 7063
\textlbrackdbl . . . 19188, 19189, 20564, 21045
\textlcurvearrowdown . . 19243, 19244, 19245, 20588, 21047, 21048
\textlcurvearrowse 19235, 20585
\textlcurvearrowsw 19238, 20586
\textle 18162, 20216
\textleadsto 19229, 20583
\textLeftarrow . . . 17873, 20093
\textleftarrow . . . 17747, 20043
\textleftarrowtail . 17790, 20061
\textleftarrowtriangle . . 17921, 20113
\textleftbarharpoon 19280, 20600
\textLEFTCIRCLE 18772, 20407
\textleftharpoondown . . 17821, 20074
\textleftharpoonup 17818, 20073
\textleftleftarrows 17850, 20084
\textleftleftharpoons . . . 19268, 20596
\textleftmoon . . . 18841, 20432
\textLeftrightarrow 17884, 20097
\textleftrightarrow . 2168, 17759, 20047
\textleftrightarrows 17848, 20083
\textleftrightarrowtriangle 17925, 20115
\textleftrightharpoon . . . 19257, 20592
\textleftrightharpoons . . 17859, 20088
\textleftslice 19426, 20661
\textleftspoon . . . 19186, 20563
\textleftsquigarrow 17901, 20105
\textlefttherefore . 17539, 19983
\textleftthreetimes 18400, 20316
\textlengthmark . 16291, 16292
\textleo . . 18890, 18891, 20446, 21018
\textleq . . 18161, 18163, 20215, 20925
\textleqq 18170, 20219
\textleqslant 19391, 20645
\textless 14716, 15230
\textlessapprox . . 19399, 20649
\textlessdot 18430, 20329
\textlesseqgtr . . . 18439, 20333
\textlesseqqgtr . . 19417, 20657
\textlessgtr 18211, 20238
\textlesssim 18201, 18202, 20234, 20927
\textLF 14680, 15174
\textLHD 18765, 20404
\textlhd . . 18364, 18365, 20302, 20953
\textlhookfour . . . 19528, 19530, 21070
\textlhooknwarrow 19221, 20579
\textlhooksearrow 19225, 20581
\textlhookt 15782, 15783
\textlhtlongi 16133, 16134
\textlhtlongy 16265, 16266
\textlibra . 18896, 18897, 20448, 21020
\textlightning . . . 17806, 17807, 20069, 20895
\textlinferior 17617, 20022
\textlira 17631
\textll 18182, 20225
\textllcorner 18513, 20365
\textLleftarrow . . 17897, 20103
\textlll 18434, 20331
\textllparenthesis . 19299, 20607
\textlnapprox . . . 19412, 20655
\textlneq 19407, 20653
\textlneqq 18178, 20223
\textlnot 14831, 15286
\textlnsim 18466, 20345
\textlogicalnot . . . 14830, 15015, 15285, 19613
\textLongleftarrow 19205, 20571
\textlongleftarrow 19199, 20568
\textLongleftrightarrow . 19209, 20573
\textlongleftrightarrow . 19203, 20570
\textlonglegr 16121, 16122, 16123, 19910, 20827
\textLongmapsfrom 19213, 20575
\textLongmapsto . 19215, 20576
\textlongmapsto . 19211, 20574
\textLongrightarrow . . . 19207, 20572
\textlongrightarrow 19201, 20569
\textlongs 15737, 17438
\textlooparrowleft 17800, 20066
\textlooparrowright 17802, 20067
\textlozenge 18770, 20406
\textlptr 16277, 16278
\textlquill 17533
\textlrcorner 18515, 20366
\textltailm 16081, 16082, 16083, 16084, 20816, 20817
\textltailn 16085, 16086, 16087, 16088, 20818, 20819
\textltilde 16060, 16061, 16062, 20809
\textltimes 18395, 20314
\textlyoghlig 16070, 16071, 16072, 20812
\textmacronbelow 14646, 14658, 14670, 14727, 15120, 15149, 16326
\textmale 18858, 18859, 18860, 18861, 20436, 21006, 21007, 21008
\textMaleMale . . . 18979, 20473
\textManFace . . . 19576, 20718
\textmanstar 18973, 20470
\textmapsto 17794, 20063
\textmarried 18987
\textmd 555
\textmeasuredangle 17991, 20144
\textmercury 18845, 18846, 20434, 20999
\textmho . 17684, 17685, 20034, 20884
\textmid 17998, 20146
\textMineSign . . . 18958, 20463
\textminferior . . . 17619, 20023
\textminus 14762, 17964
\textminusdot . . . 19354, 19355, 20630, 21058
\textminusinferior 17595, 20011
\textminussuperior 17563, 19995
\textmoo 19297, 20606
\textMoon 19574, 20717
\textMountain . . . 19005, 20481
\textmp 17966, 20133
\textMu 3195, 16380
\textmu . 3191, 3192, 3193, 3196, 3203, 3204, 14847, 15303, 19947
\textmugreek 16445, 19948

\textmultimap . . . 18382, 20308
\textmultimapboth 19337, 20622
\textmultimapdotbothA 18378, 20306
\textmultimapdotbothB 18380, 20307
\textmultiply 14917, 15016, 15375, 15376, 15377, 19614, 20753, 20754
\textMundus 19572, 20716
\textmusicalnote . 18936, 18937, 18938, 21031
\textMVAt 15234, 19879
\textMVComma . 15202, 19865
\textMVDivision . 15208, 19868
\textMVEight . . . 15226, 19877
\textMVFive 15220, 19874
\textMVFour 15218, 19873
\textMVMinus . . . 15204, 19866
\textMVNine 15228, 19878
\textMVOne 15212, 19870
\textMVPeriod . . 15206, 19867
\textMVPlus 15200, 19864
\textMVSeven . . . 15224, 19876
\textMVSix 15222, 19875
\textMVThree . . . 15216, 19872
\textMVTwo 15214, 19871
\textMVZero 15210, 19869
\textnabla 17942, 20123
\textnaira 17633
\textnapostrophe 15627
\textnapprox 18081, 18082, 20181, 20915
\textnapproxeq . . 18086, 20183
\textnasymp 18099, 18100, 20189, 20917
\textnatural 18946, 20458
\textnbackcong . . 18095, 20187
\textnbacksim . . . 18059, 20171
\textnbacksimeq . 18406, 20319
\textnBumpeq . . . 18104, 20191
\textnbumpeq . . . 18108, 20193
\textncirceq 18140, 20207
\textncong 18077, 20179
\textncurlyeqprec 18446, 20336
\textncurlyeqsucc 18450, 20338
\textnDashV 19490, 19491, 20690, 21067
\textnDashv 19483, 19484, 20688, 21065
\textndashV 19477, 19478, 20686, 21063
\textndashv 18322, 18323, 20288, 20940
\textnDoteq 18118, 20197
\textndoteq 18112, 20195
\textndownmodels 19495, 20692
\textndownvdash . 18328, 20290
\textne 18151, 20212
\textNearrow 17891, 20100
\textnearrow 17765, 17766, 20050, 20893
\textneg . . 15015, 19613, 20729
\textneptune 18872, 18873, 20440, 21012
\textneq . 18150, 18152, 20211, 20921
\textneqcirc 18136, 20205
\textneqdot 19387, 20643
\textneqsim 18068, 20175
\textnequiv 18157, 18158, 18159, 20214, 20923, 20924
\textneswarrow . . 19219, 20578
\textNeutral 18985, 20476
\textnewtie 15123, 15152, 16322
\textnexists 17935, 20120
\textnfallingdoteq 18123, 20199
\textngeq 18199, 20233
\textngeqq 18176, 20222
\textngeqslant . . . 19397, 20648
\textngg 18188, 20228
\textngtr 18194, 20231
\textngtrapprox . . 19405, 20652
\textngtrless 18215, 20240
\textngtrsim 18209, 20237
\textnhateq 18146, 20209
\textni . . . 17950, 17951, 20127, 20900
\textNibRight . . . 19041, 20495
\textNibSolidRight 19043, 20496
\textniepsilon . . . 16006, 16007, 19898, 20795
\textniiota 16055, 16056, 19906, 20808
\textnineinferior . 17591, 20009
\textninesuperior . 17559, 19993
\textninferior 17621, 20024
\textniphi 16108, 19909
\textniupsilon . . . 16166, 16167, 19915, 20836
\textnLeftarrow . . 17865, 20090
\textnleftarrow . . 17773, 20053
\textnLeftrightarrow . . . 17867, 20091
\textnleftrightarrow 17804, 20068
\textnleq 18197, 20232
\textnleqq 18172, 20220
\textnleqslant . . . 19393, 20646
\textnless 18192, 20230
\textnlessapprox . 19401, 20650
\textnlessgtr 18217, 20241
\textnlesssim 18207, 20236
\textnll 18184, 20226
\textnmid 18000, 18001, 20147, 20906
\textNoChemicalCleaning 19317, 20613
\textnormal 550
\textnotbackslash 18537, 20375
\textnotin 17946, 20125
\textnotowner . . . 17953, 17954, 20128, 20901
\textnotperp 19180, 20560
\textnotslash 18534, 20374
\textnoway 19003, 20480
\textnparallel . . . 18005, 18006, 20149
\textnprec 18235, 20250
\textnprecapprox . 19456, 20676
\textnpreccurlyeq 18452, 20339
\textnpreceq 19432, 20664
\textnpreceqq . . . 19444, 20670
\textnprecsim . . . 18229, 20247
\textnqsubseteq . . 18456, 20341
\textnqsupseteq . . 18458, 20342
\textnRightarrow 17870, 20092
\textnrightarrow . 17775, 20054
\textnrisingdoteq . 18128, 20201
\textnrleg . 15776, 15778, 20774
\textnsim 18064, 20173
\textnsimeq 18072, 20177
\textnsqsubset . . . 18265, 20265
\textnsqsubseteq . 18273, 20269
\textnsqsupset . . . 18269, 20267
\textnsqsupseteq . 18277, 20271
\textnSubset 18416, 20323
\textnsubset 18243, 20254
\textnsubseteq . . . 18251, 20258
\textnsubseteqq . . 19468, 20682
\textnsucc 18237, 20251
\textnsuccapprox . 19460, 20678
\textnsucccurlyeq 18454, 20340
\textnsucceq 19436, 20666
\textnsucceqq . . . 19448, 20672
\textnsuccsim . . . 18233, 20249
\textnsuperior . . . 17571, 19999
\textnSupset 18420, 20325
\textnsupset 18245, 20255
\textnsupseteq . . . 18253, 20259
\textnsupseteqq . . 19472, 20684
\textntriangleleft . 18474, 18475, 20349, 20966

\textntrianglelefteq 18481, 20351
\textntriangleright 18477, 18478, 20350, 20967
\textntrianglerighteq . . . 18484, 18485, 20352
\textntriplesim . . 18091, 20185
\textntwoheadleftarrow . 17779, 20056
\textntwoheadrightarrow 17786, 20059
\textNu 16382
\textnu . 3192, 3194, 3198, 3199, 3200, 16447, 19949
\textnumbersign . . . 516, 14702, 15180
\textnumeralsigngreek . . . 16335
\textnumeralsignlowergreek 16338
\textnumero 17667
\textnupmodels . . 19499, 20694
\textnupvdash . . . 18333, 18334, 20292, 20943
\textnVDash 18361, 18362, 20301, 20952
\textnVdash 18358, 18359, 20300, 20951
\textnvDash 18354, 18355, 18356, 20299, 20949, 20950
\textnvdash 18351, 18352, 20298, 20948
\textnVvash 18345, 20296
\textNwarrow . . . 17889, 20099
\textnwarrow 17763, 20049
\textnwsearrow . . 19217, 20577
\textobar . 19305, 19306, 20610, 21051
\textobot . 19314, 19315, 20612, 21055
\textobslash 19308, 19309, 19310, 19311, 20611, 21052, 21053, 21054
\textObullseye . . . 16220, 20852
\textodiv 19362, 20633
\textodot . 18295, 18296, 20278, 20933
\textogonek 14694, 15113, 15142, 16303
\textogreaterthan 19322, 19323, 20615, 21057
\textohm 17682
\textoiint 18032, 20160
\textoinferior 17607, 20017
\textoint . 18029, 18030, 20159, 20910
\textointclockwise 18035, 20161
\textointctrclockwise . . . 18037, 20162
\textolessthan . . . 19319, 19320, 20614, 21056
\textOmega 16353, 16405, 19935
\textomega . . 3190, 3191, 3204, 16471, 16482, 19960
\textOmicron . . . 16349, 16386
\textomicron . 3191, 3192, 3195, 3197, 3198, 3199, 3200, 3201, 3202, 16451, 16477
\textominus 18286, 18287, 20275, 20930
\textoneeighth 17735
\textonefifth 17723
\textonehalf 14864, 15323
\textoneinferior . . 17575, 20001
\textoneninth 17715
\textonequarter . . 14862, 15321
\textoneseventh 17713
\textonesixth 17731
\textonesuperior . 14855, 15314, 19883
\textonetenth 17717
\textonethird 17719
\textoo 19538, 20703
\textopenbullet . . 18776, 20409
\textopencorner . . 16315, 16316
\textopeno 15981, 15982, 15983, 19894, 20789
\textoplus 18283, 18284, 20274, 20929
\textordfeminine . 14825, 15280
\textordmasculine 14857, 15316
\textoslash 18292, 18293, 20277, 20932
\textotimes 18289, 18290, 20276, 20931
\textovee . 18015, 18016, 20153, 20908
\textowedge 18010, 18011, 20151, 20907
\textparagraph 522, 14849, 15305, 15306, 20750
\textparallel 18003, 20148
\textparenleft . 735, 736, 14710, 15194
\textparenleftinferior . . . 17599, 20013
\textparenleftsuperior . . 17567, 19997
\textparenright . . 14712, 15196
\textparenrightinferior . . 17601, 20014
\textparenrightsuperior . 17569, 19998
\textpartial 17931, 20118
\textPeace 19030, 20490
\textPencilRight . 19037, 20493
\textPencilRightDown . . 19035, 20492
\textPencilRightUp 19039, 20494
\textpentagon . . . 19509, 20698
\textpercent . 518, 14706, 15186
\textperiodcentered 14851, 15019, 15308, 15309, 15310, 19617, 20751, 20752
\textperp 19178, 20559
\textpertenthousand 17513
\textperthousand . 14764, 17511
\textpeseta 17635
\textpeso 17655
\textPhi 16398, 19933
\textphi 3197, 3201, 3202, 16465, 19957
\textphiinferior . . 17142, 19970
\textPhone 18791, 18792, 20415, 20983
\textPhoneHandset 19021, 20486
\textPi 3194, 3196, 16388, 19930
\textpi . . 3191, 3199, 3200, 3201, 3202, 16453, 19951
\textpinferior 17623, 20025
\textpipe . 15797, 15798, 15799, 20775
\textpipevar 15799, 20775
\textpisces 18911, 18912, 20453, 21025
\textpitchfork . . . 18428, 20328
\textPlane 19025, 20488
\textPlus 19058, 20503
\textPlusCenterOpen . . 19062, 20505
\textplusinferior . 17593, 20010
\textplusminus . . 14839, 15018, 15294, 19616
\textPlusOutline . 19056, 20502
\textplussuperior . 17561, 19994
\textPlusThinCenterOpen 19060, 20504
\textpluto 18875, 18876, 20441, 21013
\textpm . . . 15018, 19616, 20732
\textpointer 17916, 20111
\textprec 18219, 20242
\textprecapprox . . 19454, 20675

\textpreccurlyeq . 18223, 20244
\textpreceq 19430, 20663
\textpreceqq 19442, 20669
\textprecnapprox . 19462, 20679
\textprecneq 19438, 20667
\textprecneqq . . . 19450, 20673
\textprecnsim . . . 18470, 20347
\textprecsim 18227, 20246
\textprime 17515, 19979
\textprimstress . . 16285, 16286
\textprod 17958, 20130
\textpropto 17984, 17985, 20141, 20902
\textPsi 16402, 19934
\textpsi 16469, 19959
\textPUaolig 19535, 19536, 21072
\textPUdblig 15954, 15955, 20779
\textPUfemale . . . 18848, 18849, 18850, 18851, 18852, 18853, 21000, 21001, 21002, 21003, 21004
\textPUheng 19526, 19527, 21069
\textPUlhookfour 19529, 19530, 21070
\textPUnrleg 15777, 15778, 20774
\textPUqplig 15957, 15958, 20780
\textPUrevscr . . . 17123, 17124, 20864
\textPUrhooka . . 17154, 17155, 20865
\textPUrhooke . . 17159, 17160, 20866
\textPUrhookepsilon . . . 17163, 17164, 20867
\textPUrhookopeno 17167, 17168, 20868
\textPUscf . 19532, 19533, 21071
\textPUsck 17114, 17115, 20861
\textPUscm 17117, 17118, 20862
\textPUscp 17120, 17121, 20863
\textPUuncrfemale 18991, 18992, 21035
\textQoppa 16484
\textqoppa 16486
\textqplig . 15956, 15958, 20780
\textquarternote . 18935, 20454
\textquestiondown . . 732, 14868, 15327
\textquotedbl . . . 14700, 15178
\textquotedblleft . 14768, 15008, 17491, 19606
\textquotedblright 14770, 17493
\textquoteleft . . . 14772, 15010, 17485, 19608
\textquoteright . . 14774, 17487
\textquotesingle 15192
\textRadioactivity 18818, 18819, 20424, 20992
\textRain 19001, 20479
\textraiseglotstop 16274, 16275
\textrangle 18525, 20371
\textrbrackdbl . . . 19191, 19192, 20565, 21046
\textrcurvearrowdown . . 19248, 19249, 19250, 20589, 21049, 21050
\textrcurvearrowleft . . . 19252, 20590
\textrcurvearrowne 19232, 20584
\textrcurvearrowright . . 19255, 20591
\textrcurvearrowse 19241, 20587
\textRe 17674, 20033
\textrecipe 17676
\textRectangle . . . 19174, 20557
\textRectangleBold 19176, 20558
\textRectangleThin 19172, 20556
\textrecycle 18950, 18951, 20460, 21032
\textreferencemark 17527
\textregistered . . . 14833, 15288
\textRequest 18555, 20382
\textrevapostrophe 16271, 16272
\textrevc 17743
\textrevE 15752
\textreve . . 15995, 15996, 19896
\textrevepsilon . . 16009, 16010, 19899
\textrevglotstop . 16206, 16207, 16208, 19923, 20848
\textrevscr 17122, 17124, 20864
\textrevyogh 15787, 15788
\textRewind 18760, 20402
\textRewindToIndex . . . 18567, 20387
\textRHD 18751, 20399
\textrhd . 18367, 18368, 20303, 20954
\textRho 16390
\textrho 3195, 3196, 3201, 3202, 3203, 3204, 16455, 19952
\textrhoinferior . . 17140, 19969
\textrhooka 17153, 17155, 20865
\textrhooke 17158, 17160, 20866
\textrhookepsilon 17162, 17164, 20867
\textrhooknearrow 19223, 20580
\textrhookopeno . 17166, 17168, 20868
\textrhookrevepsilon . . . 16012, 16013, 16014, 19900, 20796
\textrhookschwa . 16001, 16002, 16003, 20794
\textrhookswarrow 19227, 20582
\textRightarrow . 17878, 17879, 20095, 20896
\textrightarrow . . . 2167, 17751, 17752, 17753, 20045, 20889, 20890
\textrightarrowtail 17792, 20062
\textrightarrowtriangle . 17923, 20114
\textrightbarharpoon . . . 19286, 20602
\textRIGHTCIRCLE . . . 18774, 20408
\textrightharpoondown . 17833, 20078
\textrightharpoonup . . . 17830, 20077
\textrightleftarrows 17842, 20081
\textrightleftharpoon . . . 19259, 20593
\textrightleftharpoons . . 17862, 20089
\textrightmoon . . 18843, 20433
\textrightrightarrows . . . 17854, 20086
\textrightrightharpoons . 19274, 20598
\textrightslice . . . 19428, 20662
\textrightsquigarrow . . . 17903, 20106
\textrightthreetimes . . . 18402, 20317
\textrinferior 17130, 19964
\textring . 14641, 14653, 14665, 14696, 15103, 15132, 16301
\textringlow 15116, 15145, 16310
\textriota 17687, 20035
\textrisingdoteq . . 18126, 20200
\textrm 551
\textrptr 16280, 16281
\textrquill 17535
\textRrightarrow . 17899, 20104
\textrrparenthesis 19301, 20608
\textrtaild 15987, 15988, 15989, 19895, 20791
\textrtaill 16067, 16068, 16069, 20811

\textrtailn 16090, 16091, 16092, 20820
\textrtailr 16124, 16125, 16126, 20828
\textrtails 16140, 16141, 16142, 20831
\textrtailt 16158, 16159, 16160, 20834
\textrtailz 16186, 16187, 16188, 20843
\textrtimes 18398, 20315
\textsagittarius . . 18902, 18903, 20450, 21022
\textSampi 16508
\textsampi 16511
\textSampigreek 16507
\textsampigreek 16510
\textsaturn 18866, 18867, 20438, 21010
\textsc 557
\textsca 17105, 17106
\textscb 16221, 16222
\textscd 17108, 19961
\textsce 17109, 17110
\textscf . . . 19531, 19533, 21071
\textscg . . . 16030, 16031, 19902
\textsch 16229, 16230
\textschwa . 15998, 15999, 19897
\textschwainferior 17611, 20019
\textsci . . . 16057, 16058, 19907
\textScissorHollowRight 19019, 20485
\textScissorRight . 19013, 19014, 19015, 20483, 21039, 21040
\textScissorRightBrokenBottom 19009, 19010, 19011, 21037, 21038
\textScissorRightBrokenTop 19017, 20484
\textscj 17111, 17112
\textsck . . . 17113, 17115, 20861
\textscl 16237, 16238
\textscm . . 17116, 17118, 20862
\textscn . . . 16093, 16094, 19908
\textscoelig 16100, 16101
\textscorpio 18899, 18900, 20449, 21021
\textscp . . . 17119, 17121, 20863
\textscr . . . 16135, 16136, 19911
\textscripta 15968, 15969, 15970, 19893, 20784
\textscriptg 16027, 16028, 16029, 19901, 20800
\textscriptv 16169, 16170, 19916
\textscu . . . 17125, 17126, 19962
\textscy . . . 16183, 16184, 19920
\textSearrow 17893, 20101
\textsearrow 17768, 17769, 20051, 20894
\textSech 19568, 20714
\textsecond 17517, 19980
\textsecstress 16288, 16289
\textsection 14819, 15272, 15273, 15274, 20748, 20749
\textSePa 19554, 20708
\textservicemark 17678
\textsetminus . . . 14722, 17974, 20137
\textseveneighths 17741
\textseveninferior 17587, 20007
\textsevensuperior 17555, 19991
\textsf 552, 13084, 13087
\textsharp 18948, 20459
\textshuffle 19339, 20623
\textSigma . 3193, 16392, 19931
\textsigma . . . 3190, 3191, 3205, 16459, 19954
\textsim . 18054, 18055, 20169, 20913
\textsimeq 18070, 20176
\textsinferior 17625, 20026
\textSixFlowerAlternate 19126, 20536
\textSixFlowerAltPetal . 19136, 20541
\textSixFlowerOpenCenter 19122, 20534
\textSixFlowerPetalRemoved 19119, 20533
\textsixinferior . . 17585, 20006
\textSixStar 19109, 20528
\textsixsuperior . . 17553, 19990
\textSixteenStarLight . . 19117, 20532
\textsixteenthnote 18942, 20456
\textsl 558
\textslashc 15960, 15961, 15963, 19892, 20781, 20782
\textslashdiv 19515, 20701
\textsmallin 17948, 20126
\textsmallowns . . 17956, 20129
\textsmile 18519, 20368
\textsmiley 18833, 18834, 20429, 20997
\textSnowflake . . 19140, 20543
\textSnowflakeChevron . 19138, 20542
\textSnowflakeChevronBold 19142, 20544
\textSoccerBall . . 18996, 18997, 21036
\textspadesuitblack 2166, 18914, 18915, 21026
\textspadesuitwhite 18927
\textSparkle 19144, 20545
\textSparkleBold . 19146, 20546
\textsphericalangle 17993, 17994, 17995, 17996, 20145, 20903, 20904, 20905
\textsqcap 18279, 20272
\textsqcup 18281, 20273
\textsqdoublecap . 19366, 19367, 20635, 21059
\textsqdoublecup . 19371, 19372, 20637, 21060
\textsqsubset 18263, 20264
\textsqsubseteq . . 18271, 20268
\textsqsubsetneq . 18460, 18461, 20343, 20964
\textsqsupset 18267, 20266
\textsqsupseteq . . 18275, 20270
\textsqsupsetneq . 18463, 18464, 20344, 20965
\textSquareCastShadowBottomRight 19165, 20553
\textSquareCastShadowTopRight 19168, 20554
\textsquaredots . . 18047, 20166
\textSquareShadowBottomRight 19159, 20551
\textSquareTopRight . . . 19162, 20552
\textsslash 19506, 19507, 20697, 21068
\textstar 18388, 20311
\textsterling 14811, 15261, 15262, 15263, 20745, 20746
\textStigma 16489
\textstigma 16492
\textStigmagreek 16488
\textstigmagreek 16491
\textstmaryrdbaro 18531, 18532, 20970
\textstretchc 16212, 16213, 16214, 16215, 20849, 20850
\textstretchcvar . . 16215, 20850
\textsubbreve . . . 15087, 15118, 15147, 17250, 17252

\textsubcircum . . 15084, 15085, 15117, 15146, 17202, 17204, 17218, 17220, 17278, 17280, 17306, 17308, 17362, 17364, 17374, 17376
\textsubring 15077, 15078, 15116, 15145, 17170, 17172
\textSubset 18414, 20322
\textsubset 18239, 20252
\textsubseteq 18247, 20256
\textsubseteqq . . . 19466, 20681
\textsubsetneq . . . 18255, 20260
\textsubtilde 15088, 15089, 15119, 15148, 17222, 17224, 17254, 17256, 17370, 17372
\textsubumlaut . . 15075, 15076, 15115, 15144, 17366, 17368
\textsucc 18221, 20243
\textsuccapprox . . 19458, 20677
\textsucccurlyeq . 18225, 20245
\textsucceq 19434, 20665
\textsucceqq 19446, 20671
\textsuccnapprox . 19464, 20680
\textsuccneq 19440, 20668
\textsuccneqq . . . 19452, 20674
\textsuccnsim . . . 18472, 20348
\textsuccsim 18231, 20248
\textsum 17962, 20132
\textsun . 18838, 18839, 20431, 20998
\textSunCload . . . 18999, 20478
\textSunshineOpenCircled 19134, 20540
\textSupset 18418, 20324
\textsupset 18241, 20253
\textsupseteq 18249, 20257
\textsupseteqq . . . 19470, 20683
\textsupsetneq . . . 18257, 20261
\textsurd 17982, 20140
\textSwarrow 17895, 20102
\textswarrow 17771, 20052
\TextSymbolUnavailable 14672, 14673, 14675
\textTape 19023, 20487
\textTau 16394
\texttau 3192, 3196, 3198, 3199, 3200, 16461, 19955
\texttaurus 18881, 18882, 20443, 21015
\texttctclig 16262, 16263
\textTent 19007, 20482
\textteshlig 16258, 16259, 16260, 20856
\texttherefore . . . 18039, 18040, 20163
\textTheta . 3204, 16372, 19927
\texttheta 16437, 19943
\textthird 17519, 19981
\textThorn 14932, 15392, 19884
\textthorn 15001, 15461, 15463, 19885
\textthreeeighths 17737
\textthreefifths 17727
\textthreeinferior . 17579, 20003
\textthreequarters 14866, 15325
\textthreesuperior 14843, 15298, 19882
\texttie . . . 15122, 15151, 16328
\texttilde . 14639, 14651, 14663, 14698, 15101, 15130, 16305
\texttildelow 15119, 15148, 16314
\texttimes . 15016, 19614, 20730
\texttinferior 17627, 20027
\texttop . 18325, 18326, 20289, 20941
\texttrademark . . 14778, 17680
\texttriangle 17940, 20122
\texttriangleeq . . 18148, 20210
\texttriangleleft . . 18763, 20403
\texttriangleright . 18749, 20398
\texttriplesim . . . 18088, 18089, 20184, 20916
\textTslash 15687
\texttslash 15689
\texttslig 16256, 16257
\texttt 553
\textTumbler 18529, 20373
\textturna 15964, 15965, 15966, 20783
\textturnh 16039, 16040, 16041, 16042, 20802, 20803
\textturnk 16234, 16235, 16236, 20854
\textturnlonglegr . 16114, 16115, 16116, 20825
\textturnm 16073, 16074, 16075, 16076, 20813, 20814
\textturnmrleg . . 16078, 16079, 16080, 20815
\textturnr 16109, 16110, 16111, 16112, 20823, 20824
\textturnrrtail . . . 16118, 16119, 16120, 20826
\textturnsck 16236, 20854
\textturnscripta . . 15972, 15973, 15974, 15975, 20785, 20786
\textturnt 16154, 16155, 16156, 20833
\textturnv 16171, 16172, 16173, 16174, 19917, 20837, 20838
\textturnw 16175, 16176, 16177, 16178, 19918, 20839, 20840
\textturny 16179, 16180, 16181, 16182, 19919, 20841, 20842
\textTwelveStar . . 19115, 20531
\texttwofifths 17725
\texttwoheaddownarrow 17788, 20060
\texttwoheadleftarrow . . 17777, 20055
\texttwoheadrightarrow . 17784, 20058
\texttwoheaduparrow . . 17781, 20057
\texttwoinferior . . 17577, 20002
\texttwonotes . . . 18940, 20455
\texttwosuperior . 14841, 15296, 19881
\texttwothirds 17721
\textudots 18491, 20355
\textuinferior 17132, 19965
\textulcorner 18509, 20363
\textuncrfemale . . 18990, 18992, 21035
\textunderscore 521, 4770, 4771, 4773, 14726, 15240, 15241, 20743
\textunlhd 18370, 18371, 18372, 20304, 20955, 20956
\textunrhd 18374, 18375, 18376, 20305, 20957, 20958
\textup 559
\textUParrow . . . 18738, 18739, 20395, 20976
\textUparrow . . . 17875, 20094
\textuparrow 17749, 20044
\textUpdownarrow 17887, 20098
\textupdownarrow . 2169, 17761, 20048
\textupdownarrows 17845, 20082
\textupdownharpoonleftright 19265, 20595
\textupdownharpoonrightleft 19262, 20594
\textupdownharpoons . . 19292, 20604
\textupharpoonleft 17827, 20076
\textupharpoonright . . . 17824, 20075
\textuplus 19341, 20624

\textupmodels . . . 19497, 20693
\textUpsilon 16351, 16396, 16410, 19932
\textupsilon . . 3191, 3199, 3200, 3202, 16463, 16475, 16480, 19956
\textupsilonacute 16421, 16479
\textupspoon 19501, 20695
\textupstep 19520, 19521
\textupuparrows . 17852, 20085
\textupupharpoons 19271, 20597
\texturanus 18869, 18870, 20439, 21011
\texturcorner 18511, 20364
\textValve 19335, 20621
\textvarhexagon . 19511, 20699
\textvarobar 19306, 21051
\textvarsigma 3195, 3201, 3202, 16457, 19953
\textVDash 18348, 18349, 20297, 20947
\textVdash 18340, 18341, 20294, 20946
\textvDash 18336, 18337, 18338, 20293, 20944, 20945
\textvdash 18316, 18317, 20286, 20938
\textvdotdot 18045, 20165
\textvdots 18487, 20353
\textvee 18013, 20152
\textveebar 18384, 20309
\textveedot 19182, 20561
\textveedoublebar 19383, 20641
\textvertline 15251, 20744
\textvibyi 16149, 16150
\textvibyy 16268, 16269
\textVier 19564, 20712
\textvinferior 17134, 19966
\textViPa 19550, 20706
\textvirgo 18893, 18894, 20447, 21019
\textvisiblespace 18571
\textVvdash 18343, 20295
\textwasylozenge . 18501, 20360
\textwedge 18008, 20150
\textwedgedot . . . 19184, 20562
\textWheelchair . . 18953, 20461
\textWomanFace . 19578, 19579, 20719, 21075
\textwon 17637
\textwp 17672, 20032
\textwr . . 18061, 18062, 20172, 20914
\textWritingHand 19032, 19033, 20491, 21042
\textwynn 15794, 15795
\textXi 16384, 19929
\textxi 3190, 16449, 19950
\textxinferior 17609, 20018
\textXSolid 19050, 20499
\textXSolidBold . 19052, 20500
\textXSolidBrush 19054, 20501
\textxswup 18961, 21034
\textyen 14815, 15267
\textYinYang . . . 18825, 18826, 18827, 18828, 20427, 20993, 20994, 20995
\textyogh . 16193, 16194, 19921
\textzeroinferior . 17573, 20000
\textzerosuperior . 17545, 19986
\textzerothirds 17745
\textZeta 16368
\textzeta 16433, 19941
\textZwdr 19570, 20715
\textZwPa 19556, 20709
\TH . 14930, 14931, 15390, 15391
\th . 14999, 15000, 15461, 15462
\thaa 19775
\thanks 6468
\thebookmark@seq@number 14229
\thefootnote 7346, 7551
\theHchapter . 6878, 6879, 6880, 6881, 7014
\theHenumi 6897
\theHenumii 6898
\theHenumiii 6899
\theHenumiv 6900
\theHequation 6867, 6869, 7276, 7300, 7303
\theHfigure 6875, 6879
\theHHfootnote 6901, 6904
\theHHmpfootnote 6904
\theHItem . . . 6891, 6897, 6898, 6899, 6900
\theHmpfootnote 6902
\theHpage 7907
\theHparagraph 6885, 6886
\theHparentequation 7300, 7303
\theHpart 6871
\theHsection . 6867, 6874, 6881, 6883, 6887, 6888, 7012
\theHsubequation 7276
\theHsubparagraph 6886
\theHsubsection . . . 6883, 6884
\theHsubsubsection . 6884, 6885
\theHtable 6876, 6880
\theHtheorem 6887
\theHthm 6888
\theHy@tempcnt . . . 4886, 4894, 4901
\thempfn 7335, 7438, 7531, 7544
\theoremautorefname 2984, 3002, 3020, 3038, 3056, 3074, 3092, 3130, 3150, 3168, 3186, 3204, 3222, 3240, 3258, 3276, 8621
\thepage 2186, 5006, 6520, 6546, 6561, 7802, 7903, 7950, 8031, 8085, 8243, 8260, 8273, 8277, 8289, 8374, 8394, 8411, 8543
\therefore 18038, 20163
\Theta 16371, 19927
\theta 16436, 19943
\third 17518, 19981
\thispdfpagelabel 6525
\ThisShouldNotHappen . . 13807
\Thorn . . . 14930, 15390, 19884
\thorn 14999, 15461, 19885
\threeinferior 20003
\threesuperior 19882
\tildel 16062, 20809
\times 20730
\tinferior 20027
\tiny 581
\title 6422, 6424
\tl 2317, 5048, 5061
\TMP@EnsureCode 4633, 4640, 4641, 4642, 4643, 4644, 4645, 4646, 4647, 4648, 4649, 4650, 4651, 4652, 4653, 4654, 4655, 4656, 4657, 4658, 4659, 4660, 4661, 4662, 4663, 4664, 4665, 4666
\tocappendix 1305
\tocchapter 1304
\toclevel@chapter 3413
\toclevel@figure 3419
\toclevel@paragraph 3417
\toclevel@part 3409, 3411
\toclevel@section 3414
\toclevel@subparagraph . . 3418
\toclevel@subsection 3415
\toclevel@subsubsection . . 3416
\toclevel@table 3420
\tocparagraph 1309
\tocpart 1303
\tocsection 1306
\tocsubsection 1307

\tocsubsubsection 1308
\toks . . 8382, 8383, 8385, 14542, 14547, 14610, 14615
\toks@ . 171, 208, 941, 964, 967, 969, 3288, 3289, 3291, 3882, 3886, 3887, 3895, 4328, 4329, 4528, 4530, 5140, 5145, 5151, 5157, 5158, 5161, 5261, 5266, 5270, 5274, 6641, 6643, 6729, 6731, 6790, 6802, 7122, 7127, 7416, 7419, 8124, 8125, 8347, 8352, 8354, 8357, 14541, 14547, 14609, 14615
\top 18324, 20289
\topmargin 7963
\triangle 17939, 20122
\triangleeq 18147, 20210
\triangleleft 18762, 20403
\trianglelefteq . . . 18372, 20956
\triangleright 18748, 20398
\trianglerighteq . . 18376, 20958
\triplesim 18087, 20184
\tryhyper@link 4980, 4982
\ttfamily 563
\ttl@b 7133, 7138
\ttl@Hy@PatchSaveWrite . 7116, 7120
\ttl@Hy@refstepcounter . . 7132
\ttl@Hy@saveanchor 7111, 7135
\ttl@Hy@SavedCurrentHref 7115, 7126
\ttl@Hy@steplink 7109
\ttl@savewrite 7122, 7124
\Tumbler 18528, 20373
\turnv 19917
\turnw 19918
\turny 19919
\tw@ . . . 4520, 5090, 5096, 5097, 5098, 5103, 5109, 5110, 5111, 14542, 14547, 14610, 14615
\TwelveStar 19114, 20531
\twoheaddownarrow . . . 17787, 20060
\twoheadleftarrow 17776, 20055
\twoheadrightarrow 17783, 20058
\twoheaduparrow . 17780, 20057
\twoinferior 20002
\twonotes 18939, 20455
\twosuperior 19881
\TX@endtabularx . . 7409, 7416, 7422
\typeout . . . 5, 6, 7, 19, 26, 27, 36, 131, 155, 158, 159, 160, 5291, 21081

U

\U . 15051, 16551, 16574, 16641, 16721, 16922, 16924, 16946, 16948, 16958, 16960
\u . 15049, 15107, 15136, 15166, 15471, 15473, 15513, 15515, 15533, 15535, 15566, 15568, 15569, 15639, 15641, 15699, 15701
\ubar 16164, 20835
\udesc 16042, 20803
\udots 18490, 20355
\UHORN . 19631, 19742, 19743, 19744, 19745, 19746
\uhorn 3172, 3179, 19625, 19682, 19683, 19684, 19685, 19686
\uinferior 19965
\ulcorner 18508, 20363
\UnDef 12262
\undefined 232
\unexpanded 1466, 1473
\unhbox . 11239, 13498, 13620, 13652, 13676, 13704, 13733
\unhcopy 13600
\unichar 1911
\Unicode 1017
\unlhd 18369, 20304
\unrestored@protected@xdef 7335, 7346, 7493, 7500, 7544, 7551
\unrhd 18373, 20305
\unskip 7321
\UParrow 18737, 20395
\Uparrow 17874, 20094
\uparrow 20044
\Updownarrow . . 17886, 20098
\updownarrow . . . 17760, 20048
\updownarrows . . 17844, 20082
\updownharpoonleftright 19264, 20595
\updownharpoonrightleft 19261, 20594
\updownharpoons 19291, 20604
\upharpoonleft . . 17826, 20076
\upharpoonright . 17823, 20075
\uplus 19340, 20624
\upmodels 19496, 20693
\upshape 569
\Upsilon 16395, 19932
\upsilon 16462, 19956
\upspoon 19500, 20695
\upuparrows 17851, 20085
\upupharpoons . . 19270, 20597
\upvdash 18331, 20942
\Uranus 18870, 21011
\uranus 18868, 20439
\urcorner 18510, 20364
\Url 4950
\url 4949, 4953
\url@ 4953, 4954
\use 478, 484, 5039
\use@file 5222, 5224, 5231
\usefont 548
\UseHook 7088, 7104
\utf@viii@undeferr 508
\UTFviii@four@octets 1907, 1916
\UTFviii@loop 1895
\UTFviii@three@octets . . 1906
\UTFviii@tmp 1894
\UTFviii@two@octets 1905

V

\v . 14642, 14654, 14666, 14788, 14793, 14801, 14803, 15062, 15104, 15133, 15165, 15491, 15493, 15495, 15497, 15525, 15527, 15603, 15605, 15623, 15625, 15659, 15661, 15675, 15677, 15683, 15685, 15733, 15735, 15809, 15811, 15813, 15815, 15816, 15818, 15820, 15822, 15824, 15833, 15835, 15837, 15839, 15845, 15846, 15924, 15926
\V@@@footnotetext 7480
\V@@footnotetext 7465
\value . . 6544, 7000, 7001, 7003, 7004, 7749, 7775, 7967, 8142, 9897
\Valve 19334, 20621
\vara 15970, 20784
\varangle 17994, 20903
\varbigcirc 18782, 20982
\varcurlyvee 18409, 20960
\varcurlywedge . . 18412, 20961
\VarFlag 18956, 21033
\varg 16029, 20800
\varhexagon 19510, 20699
\vari 16056, 20808
\varint 18023, 20909
\varnothing 17936, 17938, 20899
\varoast 18303, 20936
\varobslash 19311, 21054
\varocircle 18300, 20935

\varodot 18296, 20933
\varogreaterthan . 19323, 21057
\varoint 18030, 20910
\varolessthan 19320, 21056
\varomega 16106, 20822
\varominus 18287, 20930
\varopeno 15983, 20789
\varoplus 18284, 20929
\varoslash 18293, 20932
\varotimes 18290, 20931
\varovee 18016, 20908
\varowedge 18011, 20907
\varparallel 19507, 21068
\varparallelinv . . . 18574, 20971
\varprop 17985, 20902
\varsigma 19953
\varsqsubsetneq . . 18461, 20964
\varsqsupsetneq . . 18464, 20965
\vartimes 15376, 20753
\vavyod 17099
\vbox . . 6198, 6199, 6200, 6201, 6493, 7961
\VDash 18347, 20297
\Vdash 18339, 20294
\vDash 18335, 20293
\vdash 18315, 20286
\vdotdot 18044, 20165
\vdots 18486, 20353
\vee 18012, 20152
\veebar 18383, 20309
\veedot 19181, 20561
\veedoublebar . . . 19382, 20641
\Venus 18852, 21003
\venus 18851, 21002
\vfill . . . 6198, 6199, 6200, 6201
\VHF 18089, 20916
\Vier 19563, 20712
\vinferior 19966
\ViPa 19549, 20706
\Virgo 18894, 21019
\virgo 18892, 20447
\vod 16033, 16035, 20801
\voffset 7962
\voicedh 16046, 20805
\vpageref 8463, 8471, 8480, 8488
\vphantom 584
\Vr@f 8466
\vr@f 8475
\vref@pagenum 7147
\Vref@star 8459
\vref@star 8484
\vskip 2275, 2276
\vss 7976
\vtex@trans@special . . . 10684, 10686, 10689, 10693, 10697, 10701, 10703, 10705, 10709, 10715, 10716, 10719
\VTeXInitMediaSize . . . 10355, 10381
\VTeXOS 10748, 10749, 10750, 10752
\VTeXversion 6696, 6699, 6702, 10740, 10744
\Vvdash 18342, 20295

W

\wasylozenge 18500, 20360
\waw 19823
\wawhamza 19761
\wd 9487, 9503, 9524, 9541, 9564, 9581, 13447
\wedge 18007, 20150
\wedgedot 19183, 20562
\Wheelchair 18952, 20461
\with 15190, 20742
\WomanFace 19577, 20719
\Womanface 19579, 21075
\wp 17671, 20032
\wr 18060, 20172
\wreath 18062, 20914
\write . . 4841, 5378, 5380, 6394, 6819, 6827, 7733, 7748, 7764, 7774, 7793, 7823, 12983, 12986, 13014, 13029
\WriteBookmarks . . 4266, 4392, 4602, 4624, 14163, 14406, 14436, 14437, 14479, 14485
\WritingHand . . . 19031, 20491
\Writinghand 19033, 21042
\wwwbrowser . 9441, 9526, 9543

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, 273, 278, 279, 917, 923, 1404, 1432, 1847, 1849, 2270, 2280, 2289, 2299, 2388, 2389, 2394, 2410, 3299, 3302, 3306, 3319, 3430, 3431, 3434, 3435, 3436, 3440, 3443, 3449, 3885, 3891, 3894, 3897, 4167, 4168, 4173, 4174, 4282, 4283, 4284, 4287, 4290, 4293, 4326, 4327, 4329, 4330, 4529, 4532, 4840, 4846, 5237, 5238, 5239, 5251, 5262, 5263, 5264, 5265, 5268, 5269, 5314, 5317, 5399, 5413, 5438, 5442, 5445, 5455, 5990, 5994, 6444, 6445, 6450, 7123, 7130, 7163, 7172, 7174, 7186, 8043, 8045, 8354, 8355, 8384, 8387, 8423, 8424, 8425, 8427, 8429, 8844, 8853, 9716, 9717, 9718, 9720, 9721, 9722, 9724, 9725, 9726, 9728, 9729, 9730, 9732, 9733, 9734, 9736, 9737, 9738, 9740, 9741, 9742, 9744, 9745, 9747, 9753, 9762, 10862, 10867, 10871, 11243, 11246, 11252, 11257, 11405, 11406, 12564, 12584, 13165, 13185, 13521, 13541, 14546, 14548, 14614, 14616
\XBox 18801, 20986
\XeTeXLink@font . . 5076, 5079
\XeTeXLink@space . 5077, 5092, 5106
\XeTeXLinkBox . . . 5083, 5115
\XeTeXLinkMargin . 5073, 5074, 5089, 5091, 5102, 5104
\XeTeXrevision 4589
\XeTeXversion 4589
\Xi 16383, 19929
\xi 16448, 19950
\xinferior 20018
\XR@@dURL 2203, 2204
\XR@addURL 2203
\XR@ext 2496, 2497, 5220, 5223, 6694, 8684, 9337, 9440, 9704, 10239, 11599, 11705, 11772, 11979, 12150
\XR@URL 2208
\XSolid 19049, 20499
\XSolidBold 19051, 20500
\XSolidBrush . . . 19053, 20501
\xspace 644, 646
\xspaceaddexceptions 4240, 4249

Y

\y 278, 280, 287, 293, 2390, 2395, 2400, 3436, 3437, 3438, 3439, 4285,

4288, 4291, 4294, 4296, 4302, 5240, 5241, 5242, 5243, 5251, 6445, 6453, 7159, 7161, 7162, 7165, 7172, 11248, 11249, 11250, 11251
\ya 19827
\yahamza 19765
\YingYang 18827, 20994
\Yingyang 18828, 20995
\YinYang 18824, 20427
\Yinyang 18826, 20993
\yogh 16193, 19921

Z

\z 279, 280, 288, 294, 2392, 2393, 2394, 5243, 5251
\z@ 1133, 1173, 1186, 1202, 1217, 1225, 1298, 1532, 1538, 1544, 1617, 1621, 1629, 1633, 2222, 2227, 2261, 2284, 2578, 2581, 2674, 2758, 3442, 3448, 4167, 4169, 4598, 5086, 5088, 5096, 5097, 5100, 5101, 5109, 5110, 5118, 5119, 6697, 6700, 7478, 9259, 9263, 9268, 9272, 9279, 9280, 9284, 9285, 9292, 9293, 9294, 10213, 10214, 10217, 10218, 10224, 10225, 10226, 10357, 10358, 10362, 10363, 10370, 10371, 10372, 10739, 10763, 10985, 11286, 11300, 11671, 11672, 11675, 11676, 11682, 11683, 11684, 12487, 12554, 13155, 13451, 13511, 13931, 13962, 13967, 13990, 13996, 14025, 14059, 14065, 14084, 14095, 14
14131, 14136, 14240, 14
14242, 14243, 14244, 14
14246, 14247, 14248, 14
14582
\z@skip . . . . . .
\za 1
\zay 1
\zeroinferior 2
\zerosuperior 1
\zeta 16432, 1
\zref@extractdefault 1
\zref@ifrefcontainsprop . . 1
\zref@ifrefundefined 1
\zref@labelbyprops 1
\zref@refused 1
\Zwdr 19569, 2
\ZWNJ 1
\ZwPa 19555, 2