

Section name references in L^AT_EX*

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Documentation overview for hyperref

The documentation for package `hyperref` consists of several files:

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

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

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

Options This file provides a short option summary.

Bookmark talk, slides Slides for the talk “PDF information and navigation elements with hyperref, pdfTeX and thumbpdf” at EuroT_EX 1999.

Bookmark talk, paper The paper version of the talk.

Source code documentation:

hyperref.dtx This is the source code documentation for hyperref.

backref.dtx “Back referencing from bibliographical citations”

☞ **nameref.dtx** “Section name references in L^AT_EX” (this file)

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1 Introduction

Cross-referencing to include the *name* of the section, rather than just the number or page. This works by redefining some of the inside L^AT_EX macros, so it is vulnerable to future changes.

2 History

Sebastian Rahtz, for Lou Burnard, March 15th 1994;
 SPQR CERN July 1994;
 Last mod. Sept. 3th MG;
 Sept. 19th SPQR;
 April 11th 1995 SPQR (added section formatting hook);
 April 14th 1995 SPQR (compatibility with hyperref);
 June 22 1995 SPQR (removed typeout from Sectionformat);
 September 22 1997 added varioref hacks by Corey Minyard;
 September 28th changes by David Carlisle.
 More recent changes are recorded in ChangeLog.

The versions before 2009/11/27 v2.32 did not expand the title strings (of `\section`, `\caption`, ...). Then the behaviour switched to expanding, because this allows to remove unwanted macros (`\label`, ...). Despite this method is used in package `titleref` and class `memoir`, the first feedbacks let me conclude that this is not robust enough. Therefore I wrote package `getttitlestring` that uses the non-expanding method as default. It also allows me to use this package in package `zref-titleref`. See the package documentation of package `getttitlestring` how to change the method. It also provides a hook to remove additional unwanted macros, not supported by the package. Example:

```
\usepackage{getttitlestring}
\GetTitleStringDisableCommands{%
  \let\mylabel\@gobble
  \renewcommand\myindex[2]{}%
}
```

3 Implementation

```
1 (*package)
2 \RequirePackage{refcount}[2006/02/12]
3 \RequirePackage{getttitlestring}[2009/12/18]
4 \RequirePackage{ltxcmds}[2009/12/12]
```

We redefine `\label` so that it also writes the name of the current section to the .aux file; if the name ends in a dot, we zap it. To allow for the hyperref package, also write fourth and fifth fields (empty by default; used for cross-ref name, and file).

```
5 \def\strip@period#1.\relax#2\@@@{#1}
```

3.1 `\label` stuff

Here is tested, whether package `showkeys` is loaded. But if option `final` is used, the macros of `showkeys` are not defined, so we have to check an additional test.

```

6 \newif\ifNR@showkeys
7 \NR@showkeysfalse
8 \@ifpackageloaded{showkeys}{%
9   \begingroup
10   \@ifundefined{SK@@label}{%
11     }{%
12       \global\NR@showkeystrue
13     }%
14   \endgroup
15 }{}

16 \def\label#1{%
17   \@bsphack
18   \begingroup
19   \@onelevel@sanitize\@currentlabelname
20   \edef\@currentlabelname{%
21     \expandafter\strip@period\@currentlabelname\relax.\relax\@@@%
22   }%
23   \protected@write\@auxout{}{%
24     \string\newlabel{#1}{%
25       {\@currentlabel}%
26       {\thepage}%
27       {\@currentlabelname}%
28       {\@currentHref}{}%
29     }%
30   }%
31   \endgroup
32   \@esphack
33 }%

34 \ifNR@showkeys
35 \def\label#1{%
36   \@bsphack
37   \SK@\SK@@label{#1}%
38   \begingroup
39   \@onelevel@sanitize\@currentlabelname
40   \edef\@currentlabelname{%
41     \expandafter\strip@period\@currentlabelname\relax.\relax\@@@%
42   }%
43   \protected@write\@auxout{}{%
44     \string\newlabel{#1}{%
45       {\@currentlabel}%
46       {\thepage}%
47       {\@currentlabelname}%
48       {\@currentHref}{}%
49     }%
50   }%
51   \endgroup
52   \@esphack
53 }%
54 \fi

55 \let\ltx@label\label

```

Needed for the *subeqnarray* package.

```

56 \@ifundefined{slabel}{}{}%
57 \def\slabel#1{%
58   \@bsphack
59   \if@filesw
60     {%

```

```

61 \onelevel@sanitize\@currentlabelname
62 \edef\@currentlabelname{%
63 \expandafter\strip@period\@currentlabelname\relax.\relax\@@@%
64 }%
65 \let\thepage\relax
66 \def\protect{\noexpand\noexpand\noexpand}%
67 \edef\@tempa{%
68 \write\@auxout{%
69 \string\newlabel{#1}{%
70 {\thesubequation}%
71 {\thepage}%
72 {\@currentlabelname}%
73 {\@currentHref}{}}%
74 }%
75 }%
76 }%
77 \expandafter
78 }%
79 \@tempa
80 \if@nobreak\ifvmode\nobreak\fi\fi
81 \fi
82 \@esphack
83 }%
84 }

```

Overload an AMS L^AT_EX command, which uses `\newlabel`. Sigh!

```

85 \def\@writetocindent@{%
86 \begingroup
87 \@for\@tempa:=-1,0,1,2,3\do{%
88 \immediate\write\@auxout{%
89 \string\newlabel{tocindent\@tempa}{%
90 \csname r@tocindent\@tempa\endcsname}{}}}%
91 }%
92 }%
93 }%
94 \endgroup
95 }

```

3.2 Changes of section macros

Add to the underlying section heading macros so that they note the section name for use by label.

If a section heading or the like has a `\label` in it, we need to extract it, or subsequent processing breaks.

```

96 \def\NR@getttitle#1{%
97 \GetTitleString{#1}%
98 \let\@currentlabelname\GetTitleStringResult
99 }

```

First the numbered sections. While we are about it, put in a useful section formatting macro.

```

100 \let\NR@sect\@sect
101 \newcounter{section@level}
102 \def\@sect#1#2#3#4#5#6[#7]#8{%
103 \setcounter{section@level}{#2}%
104 \NR@getttitle{#7}%
105 \NR@sect{#1}{#2}{#3}{#4}{#5}{#6}{#7}{\Sectionformat{#8}{#2}}%

```

```

106 }
and now the unnumbered ones
107 \let\NR@ssect\@ssect
108 \def\@ssect#1#2#3#4#5{%
109   \NR@gettitle{#5}%
110   \NR@ssect{#1}{#2}{#3}{#4}{\Sectionformat{#5}{#1}}%
111 }

Support for class memoir.
112 \ltx@ifundefined{ifheadnameref}{%
113 }{%
114   \ltx@ifundefined{M@ssect}{%
115   }{%
116     \let\NRorg@M@ssect\M@ssect
117     \def\M@ssect#1#2#3#4#5#6[#7][#8]{%
118       \ifheadnameref
119         \NR@gettitle{#8}%
120       \else
121         \NR@gettitle{#7}%
122       \fi
123       \NRorg@M@ssect{#1}{#2}{#3}{#4}{#5}{#6}[#7][#8]%
124     }%
125   }%
126 }

```

Parts and chapters are treated differently. sigh. \@part and \@spart are \long because of class memoir.

```

127 \let\NR@part\@part
128 \long\def\@part[#1]#2{%
129   \NR@gettitle{#1}%
130   \NR@part{#1}{#2}%
131 }
132 \let\NR@spart\@spart
133 \long\def\@spart#1{%
134   \NR@gettitle{#1}%
135   \NR@spart{#1}%
136 }
137 \let\NR@chapter\@chapter
138 \def\@chapter[#1]#2{%
139   \NR@gettitle{#1}%
140   \NR@chapter{#1}{#2}%
141 }
142 \ifclassloaded{memoir}{%
143   \ltx@ifundefined{ifheadnameref}{%
144   }{%
145     \def\@chapter[#1]#2{%
146       \ltx@ifundefined{ch@pt@c}{%
147         \NR@gettitle{#1}%
148       }{%
149         \ifx\ch@pt@c\ltx@empty
150           \NR@gettitle{#2}%
151         \else
152           \def\NR@temp{#1}%
153           \ifx\NR@temp\ltx@empty
154             \expandafter\NR@gettitle\expandafter{\ch@pt@c}%
155           \else
156             \ifheadnameref

```

```

157         \NR@gettitle{#1}%
158     \else
159         \expandafter\NR@gettitle\expandafter{\ch@pt@c}%
160     \fi
161 \fi
162 \fi
163 }%
164 \NR@chapter{#1}{#2}%
165 }%
166 }%
167 {}
168 \let\NR@schapter\@schapter
169 \def\@schapter#1{%
170     \NR@gettitle{#1}%
171     \NR@schapter{#1}%
172 }

```

Captions

```

173 \AtBeginDocument{%
174     \@ifpackageloaded{hyperref}{%
175         \@ifpackagelater{hyperref}{2009/12/05}\@gobble\@firstofone
176     }\@firstofone
177     {%
178         \let\NR@@caption\@caption
179         \long\def\@caption#1[#2]{%
180             \NR@gettitle{#2}%
181             \NR@@caption{#1}[{#2}]%
182         }%
183     }%
184     \@ifpackageloaded{longtable}{%
185         \let\NRorg@LT@c@ption\LT@c@ption
186         \def\LT@c@ption#1[#2]#3{%
187             \NRorg@LT@c@ption{#1}[{#2}]{#3}%
188             \def\@tempa{#2}%
189             \ifx\@tempa\@empty
190                 \else
191                     \NR@gettitle{#2}%
192                 \fi
193             }%
194         }%

```

Environment ‘description’.

```

195     \ltx@ifundefined{descriptionlabel}{%
196     }{%
197         \let\NRorg@descriptionlabel\descriptionlabel
198         \def\descriptionlabel#1{%
199             \NR@gettitle{#1}%
200             \NRorg@descriptionlabel{#1}%
201         }%
202     }%
203 }

```

Compatibility for package titlesec.

```

204 \AtBeginDocument{%
205     \@ifpackageloaded{titlesec}{%
206         \let\NRorg@ttl@sect@i\ttl@sect@i
207         \def\ttl@sect@i#1#2[#3]#4{%
208             \NR@gettitle{#4}%

```

```

209 \NRorg@ttl@sect@i{#1}{#2}{{#3}}{#4}%
210 }%
211 }{}%
212 }

```

3.2.1 Class beamer

```

213 \ifclassloaded{beamer}{%
214 \def\NR@PatchBeamer#1{%
215 \expandafter\let\csname NRorg@beamer@#1\expandafter\endcsname
216 \csname beamer@#1\endcsname
217 \begingroup
218 \edef\x{\endgroup
219 \long\def\expandafter\noexpand\csname beamer@#1\endcsname
220 [####{1}]{% hash-ok
221 \noexpand\NR@getttitle{####{1}}%
222 \expandafter\noexpand\csname NRorg@beamer@#1\endcsname
223 [{####{1}]}%
224 }%
225 }%
226 \x
227 }%
228 \NR@PatchBeamer{section}%
229 \NR@PatchBeamer{subsection}%
230 \NR@PatchBeamer{subsubsection}%
231 }{}

```

3.2.2 Theorems

```

232 \ltx@ifundefined{@opargbegintheorem}{}{%
233 \let\NRorg@opargbegintheorem\@opargbegintheorem
234 \def\@opargbegintheorem#1#2#3{%
235 \NR@getttitle{#3}%
236 \NRorg@opargbegintheorem{#1}{#2}{#3}%
237 }%
238 }
239 \AtBeginDocument{%
240 \ifpackageloaded{amsthm}{%
241 \let\NRorg@begintheorem\@begintheorem
242 \begingroup
243 \edef\x{macro:\string#1\string#2[\string#3]}%
244 \@onelevel@sanitize\x
245 \def\y#1->#2\@nil{#1}%
246 \edef\z{\expandafter\y\meaning\@begintheorem->\@nil}%
247 \@onelevel@sanitize\z
248 \expandafter\endgroup
249 \ifx\x\z
250 \def\@begintheorem#1#2[#3]{%
251 \NR@getttitle{#3}%
252 \NRorg@begintheorem{#1}{#2}{#3}%
253 }%
254 \fi
255 }{}%
256 }

```

3.3 Referencing stuff

We default the label and hypertext reference to be empty.

```

257 \providecommand*{\@currentlabelname}{}

```

```
258 \providecommand*{\@currentHref}{}
```

Since the second part of the preserved reference now has five parts (number, page, name, hypertext reference and file), we need extra utility macros:

```
259 \long\def\@firstoffive#1#2#3#4#5{#1}
260 \long\def\@secondoffive#1#2#3#4#5{#2}
261 \long\def\@thirdoffive#1#2#3#4#5{#3}
262 \long\def\@fourthoffive#1#2#3#4#5{#4}
263 \long\def\@fifthoffive#1#2#3#4#5{#5}
```

We have to redefine `\ref` and `\pageref` to know about extra reference elements. Make them robust, and compatible with Babel. The Babel switch is mimicked if not already defined. Some support for package `showkeys` is implemented. If option `notref` of that package is set, `\SK@ref` has the meaning of `\@empty`.

```
264 \providecommand*\@safe@activestruet{}%
265 \providecommand*\@safe@activesfalse{}%
266 \def\NR@setref#1{%
267   \begingroup
268     \@safe@activestruet
269     \expandafter
270     \endgroup
271   \expandafter\NR@@setref\csname r@#1\endcsname
272 }
273 \def\NR@@setref#1{%
274   \ifx\@undefined#1%
275     \let#1\relax
276   \fi
277   \@setref#1%
278 }
279 \def\T@ref#1{%
280   \NR@setref{#1}\@firstoffive{#1}%
281 }%
282 \def\T@pageref#1{%
283   \NR@setref{#1}\@secondoffive{#1}%
284 }%
285 \ifNR@showkeys
286   \ifx\SK@ref\@empty
287     \else
288       \def\T@ref#1{%
289         \@safe@activestruet
290         \SK@\SK@@ref{#1}%
291         \@safe@activesfalse
292         \NR@setref{#1}\@firstoffive{#1}%
293       }%
294       \def\T@pageref#1{%
295         \@safe@activestruet
296         \SK@\SK@@ref{#1}%
297         \@safe@activesfalse
298         \NR@setref{#1}\@secondoffive{#1}%
299       }%
300     \fi
301   \fi
```

Package `hyperref` uses its own definitions of `\ref` and `\pageref` because it extends the syntax by the star form. `\DeclareRobustCommand` is used by `hyperref`. Package `nameref` can be loaded before, after `hyperref` or after `hyperref`'s definitions in `\AtBeginDocument`.

```
302 \@ifpackageloaded{hyperref}{%
```



```

303 }{%
304   \DeclareRobustCommand{\ref}{\T@ref}%
305   \DeclareRobustCommand{\pageref}{\T@pageref}%
306 }

```

3.4 Usage and frontend

Access the (third) name part with `\nameref`;

```

307 \def\T@nameref#1{%
308   \begingroup
309   \let\label\@gobble
310   \NR@setref{#1}\@thirdoffive{#1}%
311   \endgroup
312 }%
313 \ifNR@showkeys
314   \ifx\SK@ref\@empty
315   \else
316     \def\T@nameref#1{%
317       \@safe@activetrue
318       \SK@\SK@@ref{#1}%
319       \@safe@activesfalse
320       \begingroup
321       \let\label\@gobble
322       \NR@setref{#1}\@thirdoffive{#1}%
323       \endgroup
324     }%
325   \fi
326 \fi
327 %\@ifclassloaded{memoir}{%
328 %  \ltx@ifundefined{@mem@titlerefno link}\ltx@secondoftwo{%
329 %    \ltx@ifundefined{@mem@titleref}\ltx@secondoftwo\ltx@firstoftwo
330 %  }%
331 %}\ltx@secondoftwo
332 %}%
333 % \DeclareRobustCommand*{\nameref}{%
334 %   \@ifstar{@mem@titlerefno link@mem@titleref
335 % }%
336 %}%
337 \DeclareRobustCommand*{\nameref}{%
338   \@ifstar\T@nameref\T@nameref
339 }%
340 %}

```

An extended form which gives title and page number.

```

341 \def\Nameref#1{'\nameref{#1}' on page~\pageref{#1}}

```

The default for `\Sectionformat`

```

342 \providecommand\Sectionformat[2]{#1}

```

3.5 Package ifthen support

Package `ifthen`'s `\isodd` does not work with `\pageref` because of the extra link and the star form. Therefore we need an expandable variant.

Unfortunately there is no hook in `\ifthenelse` in order to provide expandable versions without link of `\ref` and `\pageref`. As possible target I could only find `\begingroup`:

```

343 \@ifpackageloaded{ifthen}{%

```

```

344 \let\NROrg@ifthenelse\ifthenelse
345 \def@ifthenelse{%
346   \let\beginpgroup\NR@TE@beginpgroup
347   \NROrg@ifthenelse
348 }%
349 \let\NROrg@beginpgroup\beginpgroup
350 \def\NR@TE@beginpgroup{%
351   \let\beginpgroup\NROrg@beginpgroup
352   \beginpgroup
353   \def\ref##1{\getrefbykeydefault{##1}{-}{??}}%
354   \def\pageref##1{\getrefbykeydefault{##1}{page}{0}}%
355 }%
356 }{}

```

3.6 Compatibility with varioref

[This section was derived by Corey Minyard minyard@acm.org from the varioref package]

```

357 \AtBeginDocument{%
358   \ifx\csname @@vpageref\endcsname\relax
359   \else
360     \def\@@vpageref#1[#2]#3{%
361       \beginpgroup
362         \csname @safe@activetrue\endcsname
363         \edef\x{#3}%
364         \@onelevel@sanitize\x
365         \toks@{%
366           \NR@@vpageref{#1}{#2}}%
367        }%
368         \edef\x{\endgroup
369           \the\toks@{\x}%
370        }%
371       \x
372     }%
373     \def\NR@@vpageref#1[#2]#3{%
374       \leavevmode\unskip
375       \global\advance\c@vrcnt\@ne
376       \@ifundefined{r@\the\c@vrcnt @vr}%
377       {\@namedef{r@\the\c@vrcnt @vr}{??}{??}{-}{-}}{}%
378       \edef\@tempa{%
379         \expandafter\expandafter\expandafter
380         \@secondoffive\csname r@\the\c@vrcnt @vr\endcsname
381       }%
382       \@ifundefined{r@\the\c@vrcnt @xvr}%
383       {\@namedef{r@\the\c@vrcnt @xvr}{??}{??}{-}{-}}{}%
384       \edef\@tempb{%
385         \expandafter\expandafter\expandafter
386         \@secondoffive\csname r@\the\c@vrcnt @xvr\endcsname
387       }%
388       {%
389         \let\@currentlabel\@empty
390         \expandafter\label\expandafter{\the\c@vrcnt @xvr}%
391       }%
392       \ifx\@tempa\@tempb
393       \else
394         \vref@err{%
395           \noexpand\vref at page boundary %

```

```

396     \@tempb-\@tempa\space (may loop)%
397   }%
398 \fi
399 \@ifundefined{r@#3}{\@namedef{r@#3}{{??}{??}{-}{-}}}{}%
400 \edef\thepagerefnum{%
401   \expandafter\expandafter\expandafter
402   \@secondoffive\csname r@#3\endcsname
403 }%
404 \ifx\vref@space\@undefined
405   \space
406 \else
407   \vref@space
408 \fi
409 \ifx\@tempa\thepagerefnum
410   #1%
411 \else
412   #2%
413   \is@pos@number\thepagerefnum{%
414     \is@pos@number\@tempa{%
415       \@tempcnta\@tempa
416       \advance\@tempcnta\@ne
417     }{%
418       \@tempcnta\maxdimen
419     }%
420     \ifnum \thepagerefnum =\@tempcnta
421       \ifodd\@tempcnta
422         \if@twoside
423           \reftextfaceafter
424         \else
425           \reftextafter
426         \fi
427       \else
428         \reftextafter
429       \fi
430     \else
431       \advance\@tempcnta-2 %
432       \ifnum \thepagerefnum =\@tempcnta
433         \ifodd\@tempcnta
434           \reftextbefore
435         \else
436           \if@twoside
437             \reftextfacebefore
438           \else
439             \reftextbefore
440           \fi
441         \fi
442       \else
443         \reftextfaraway{#3}%
444       \fi
445     \fi
446   }{%
447     \reftextfaraway{#3}%
448   }%
449 \fi
450 {%
451   \let\@currentlabel\@empty
452   \expandafter\label\expandafter{\the\c@vrcnt \@vr}%

```

```

453 }%
454 }%
455 \DeclareRobustCommand\vnameref[1]{%
456   \unskip~\nameref{#1}%
457   \@vpageref[\unskip]{#1}%
458 }%
459 \fi
460 }

461 \@ifundefined{@Refstar}{%
462   \def\T@Ref#1{%
463     \NR@setref{#1}\NR@MakeUppercaseFirstOfFive{#1}%
464   }%
465   \def\NR@MakeUppercaseFirstOfFive#1#2#3#4#5{%
466     \MakeUppercase#1%
467   }%
468 }{}%
469 \AtBeginDocument{%
470   \@ifpackageloaded{varioref}{%
471     \@ifundefined{@Refstar}{%
472       \DeclareRobustCommand*\Ref}[1]{%
473         \T@Ref{#1}%
474       }%
475     }{}%
476   }{}%
477 }%

```

3.7 Support for listings

```

478 \AtBeginDocument{%
479   \@ifpackageloaded{listings}{%
480     \let\NROrg@lst@MakeCaption\lst@MakeCaption
481     \def\lst@MakeCaption{%
482       \ifx\lst@label\@empty
483       \else
484         \let\@currentlabelname\lst@@caption
485       \fi
486       \NROrg@lst@MakeCaption
487     }%
488   }{}%
489 }
490 </package>

```

4 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			
\@@@	5, 21, 41, 63	\@caption	178, 179
\@@vpageref	360	\@chapter	137, 138, 145
\@auxout	23, 43, 68, 88	\@currentHref	41, 47, 61, 62,
\@begintheorem	63, 72, 98, 257, 484
.	241, 246, 250	\@currentlabel	\@empty
\@bsphack	17, 36, 58	189, 286,
		\@currentlabelname	314, 389, 451, 482
		\@esphack	32, 52, 82

<code>\@fifthoffive</code>	263	<code>\AtBeginDocument</code> .		<code>\endgroup</code> . . .	14, 31,
<code>\@firstoffive</code>	259, 280, 292		173, 204,		51, 94, 218, 248,
<code>\@firstofone</code>	175, 176		239, 357, 469, 478		270, 311, 323, 368
<code>\@for</code>	87			<code>\expandafter</code>	21,
<code>\@fourthoffive</code>	262	B			41, 63, 77, 154,
<code>\@gobble</code>	175, 309, 321	<code>\begingroup</code>			159, 215, 219,
<code>\@ifclassloaded</code>			9, 18, 38, 86,		222, 246, 248,
	142, 213, 327		217, 242, 267,		269, 271, 379,
<code>\@ifpackagelater</code>	175		308, 320, 346,		385, 390, 401, 452
<code>\@ifpackageloaded</code>	8, 174,	C		F	
	184, 205, 240,	<code>\c@vrcnt</code>	375, 376,	<code>\fi</code>	54, 80, 81,
	302, 343, 470, 479		377, 380, 382,		122, 160, 161,
<code>\@ifstar</code>	334, 338		383, 386, 390, 452		162, 192, 254,
<code>\@ifundefined</code>		<code>\ch@pt@c</code>	149, 154, 159		276, 300, 301,
	10, 56, 376,	<code>\csname</code>	90,		325, 326, 398,
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