

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\@writetocindents@{%
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@getttitle{#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\NRorgM@ssect\M@ssect
117     \def\M@ssect#1#2#3#4#5#6[#7][#8]{%
118       \ifheadnameref
119         \NR@getttitle{#8}%
120       \else
121         \NR@getttitle{#7}%
122       \fi
123       \NRorgM@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@getttitle{#1}%
130   \NR@part[{#1}]{#2}%
131 }
132 \let\NR@spart\@spart
133 \long\def\@spart#1{%
134   \NR@getttitle{#1}%
135   \NR@spart{#1}%
136 }
137 \let\NR@chapter\@chapter
138 \def\@chapter[#1]#2{%
139   \NR@getttitle{#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@getttitle{#1}%
148       }{%
149         \ifx\ch@pt@c\ltx@empty
150           \NR@getttitle{#2}%
151         \else
152           \def\NR@temp{#1}%
153           \ifx\NR@temp\ltx@empty
154             \expandafter\NR@getttitle\expandafter{\ch@pt@c}%
155           \else
156             \ifheadnameref

```

```

157         \NR@getttitle{#1}%
158     \else
159         \expandafter\NR@getttitle\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@getttitle{#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@getttitle{#2}%
181             \NR@caption{#1}[{#2}]%
182         }%
183     }%
184 }

185 \AtBeginDocument{%
186     \@ifpackageloaded{longtable}{%
187         \let\NRorg@LT@caption\LT@caption
188         \def\LT@caption#1[#2]#3{%
189             \NRorg@LT@caption{#1}[{#2}]{#3}%
190             \def\@tempa{#2}%
191             \ifx\@tempa\@empty
192             \else
193                 \NR@getttitle{#2}%
194             \fi
195         }%
196     }{}%
197 }

```

Compatibility for package titlesec.

```

198 \AtBeginDocument{%
199     \@ifpackageloaded{titlesec}{%
200         \let\NRorg@ttl@sect@i\ttl@sect@i
201         \def\ttl@sect@i#1#2[#3]#4{%
202             \NR@getttitle{#4}%
203             \NRorg@ttl@sect@i{#1}{#2}[{#3}]{#4}%
204         }%
205     }{}%
206 }

```

3.2.1 Class beamer

```

207 \ifclassloaded{beamer}{%
208   \def\NR@PatchBeamer#1{%
209     \expandafter\let\csname NRorg@beamer@#1\expandafter\endcsname
210       \csname beamer@#1\endcsname
211     \begingroup
212       \edef\x{\endgroup
213         \long\def\expandafter\noexpand\csname beamer@#1\endcsname
214           [####1]{% hash-ok
215             \noexpand\NR@getttitle{####1}%
216             \expandafter\noexpand\csname NRorg@beamer@#1\endcsname
217               [{####1}]%
218             }%
219           }%
220       \x
221     }%
222     \NR@PatchBeamer{section}%
223     \NR@PatchBeamer{subsection}%
224     \NR@PatchBeamer{subsubsection}%
225 }{}

```

3.3 Referencing stuff

We default the label and hypertext reference to be empty.

```

226 \def\@currentlabelname{}
227 \def\@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:

```

228 \long\def\@firstoffive#1#2#3#4#5{#1}
229 \long\def\@secondoffive#1#2#3#4#5{#2}
230 \long\def\@thirdoffive#1#2#3#4#5{#3}
231 \long\def\@fourthoffive#1#2#3#4#5{#4}
232 \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`.

```

233 \providecommand*\@safe@activestruel{%
234 \providecommand*\@safe@activesfalse{%
235 \def\NR@setref#1{%
236   \begingroup
237     \@safe@activestruel
238     \expandafter
239   \endgroup
240   \expandafter\NR@@setref\csname r@#1\endcsname
241 }
242 \def\NR@@setref#1{%
243   \ifx\@undefined#1%
244     \let#1\relax
245   \fi
246   \@setref#1%
247 }
248 \def\T@ref#1{%
249   \NR@setref{#1}\@firstoffive{#1}%
250 }%
251 \def\T@pageref#1{%
252   \NR@setref{#1}\@secondoffive{#1}%

```

```

253 }%
254 \ifNR@showkeys
255   \ifx\SK@ref\@empty
256   \else
257     \def\T@ref#1{%
258       \@safe@activetrue
259       \SK@\SK@@ref{#1}%
260       \@safe@activesfalse
261       \NR@setref{#1}\@firstoffive{#1}%
262     }%
263     \def\T@pageref#1{%
264       \@safe@activetrue
265       \SK@\SK@@ref{#1}%
266       \@safe@activesfalse
267       \NR@setref{#1}\@secondoffive{#1}%
268     }%
269   \fi
270 \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`.

```

271 \@ifpackageloaded{hyperref}{%
272 }{%
273   \DeclareRobustCommand{\ref}{\T@ref}%
274   \DeclareRobustCommand{\pageref}{\T@pageref}%
275 }

```

3.4 Usage and frontend

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

```

276 \def\T@nameref#1{%
277   \begingroup
278     \let\label\@gobble
279     \NR@setref{#1}\@thirdoffive{#1}%
280   \endgroup
281 }%
282 \ifNR@showkeys
283   \ifx\SK@ref\@empty
284   \else
285     \def\T@nameref#1{%
286       \@safe@activetrue
287       \SK@\SK@@ref{#1}%
288       \@safe@activesfalse
289       \begingroup
290         \let\label\@gobble
291         \NR@setref{#1}\@thirdoffive{#1}%
292       \endgroup
293     }%
294   \fi
295 \fi
296 \def\nameref{\protect\T@nameref}

```

An extended form which gives title and page number.

```

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

```

The default for `\Sectionformat`

298 \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:

```

299 \@ifpackageloaded{ifthen}{%
300   \let\NR@Org@ifthenelse\ifthenelse
301   \def\ifthenelse{%
302     \let\begingroup\NR@TE@begingroup
303     \NR@Org@ifthenelse
304   }%
305   \let\NR@Org@begingroup\begingroup
306   \def\NR@TE@begingroup{%
307     \let\begingroup\NR@Org@begingroup
308     \begingroup
309     \def\ref##1{\getrefbykeydefault{##1}{}{??}}%
310     \def\pageref##1{\getrefbykeydefault{##1}{page}{0}}%
311   }%
312 }{}

```

3.6 Compatibility with varioref

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

```

313 \AtBeginDocument{%
314   \ifx\csname @vppageref\endcsname\relax
315   \else
316     \def\@vppageref#1[#2]#3{%
317       \begingroup
318         \csname @safe@activetrue\endcsname
319         \edef\x{#3}%
320         \@onelevel@sanitize\x
321         \toks@{%
322           \NR@vppageref{#1}[#2]}%
323         }%
324         \edef\x{\endgroup
325           \the\toks@}%
326       }%
327     \x
328   }%
329   \def\NR@vppageref#1[#2]#3{%
330     \leavevmode\unskip
331     \global\advance\c@vrcnt\@ne
332     \@ifundefined{r@the\c@vrcnt @vr}%
333       {\@namedef{r@the\c@vrcnt @vr}{??}{??}{-}{-}}{}%
334     \edef\@tempa{%
335       \expandafter\expandafter\expandafter
336       \@secondoffive\csname r@the\c@vrcnt @vr\endcsname
337     }%
338     \@ifundefined{r@the\c@vrcnt @xvr}%
339       {\@namedef{r@the\c@vrcnt @xvr}{??}{??}{-}{-}}{}%
340     \edef\@tempb{%

```

```

341     \expandafter\expandafter\expandafter
342     \@secondoffive\csname r@\the\c@vrcnt @xvr\endcsname
343 }%
344 {%
345     \let\@currentlabel\@empty
346     \expandafter\label\expandafter{\the\c@vrcnt @xvr}%
347 }%
348 \ifx\@tempa\@tempb
349 \else
350     \vref@err{%
351         \noexpand\vref at page boundary %
352         \@tempb-\@tempa\space (may loop)%
353     }%
354 \fi
355 \@ifundefined{r@#3}{\@namedef{r@#3}{\{??\}{??\}{-}{-}{-}}{}}{}%
356 \edef\thevpagerefnum{%
357     \expandafter\expandafter\expandafter
358     \@secondoffive\csname r@#3\endcsname
359 }%
360 \ifx\vref@space\@undefined
361     \space
362 \else
363     \vref@space
364 \fi
365 \ifx\@tempa\thevpagerefnum
366     #1%
367 \else
368     #2%
369     \is@pos@number\thevpagerefnum{%
370         \is@pos@number\@tempa{%
371             \@tempcnta\@tempa
372             \advance\@tempcnta\@ne
373         }{%
374             \@tempcnta\maxdimen
375         }%
376         \ifnum \thevpagerefnum =\@tempcnta
377             \ifodd\@tempcnta
378                 \if@twoside
379                     \reftextfaceafter
380                 \else
381                     \reftextafter
382                 \fi
383             \else
384                 \reftextafter
385             \fi
386         \else
387             \advance\@tempcnta-2 %
388             \ifnum \thevpagerefnum =\@tempcnta
389                 \ifodd\@tempcnta
390                     \reftextbefore
391                 \else
392                     \if@twoside
393                         \reftextfacebefore
394                     \else
395                         \reftextbefore
396                     \fi
397                 \fi

```

```

398         \else
399             \reftextfaraway{#3}%
400         \fi
401     \fi
402 }{%
403     \reftextfaraway{#3}%
404 }%
405 \fi
406 {%
407     \let\@currentlabel\@empty
408     \expandafter\label\expandafter{\the\c@vrcnt @vr}%
409 }%
410 }%
411 \DeclareRobustCommand\vnameref[1]{%
412     \unskip~\nameref{#1}%
413     \@vpageref[\unskip]{#1}%
414 }%
415 \fi
416 }

417 \ifundefined{@Refstar}{%
418     \def\T@Ref#1{%
419         \NR@setref{#1}\NR@MakeUppercaseFirstOfFive{#1}%
420     }%
421     \def\NR@MakeUppercaseFirstOfFive#1#2#3#4#5{%
422         \MakeUppercase#1%
423     }%
424 }{}%
425 \AtBeginDocument{%
426     \@ifpackageloaded{varioref}{%
427         \ifundefined{@Refstar}{%
428             \DeclareRobustCommand*\Ref}[1]{%
429                 \T@Ref{#1}%
430             }%
431         }{}%
432     }{}%
433 }%

```

3.7 Support for listings

```

434 \AtBeginDocument{%
435     \@ifpackageloaded{listings}{%
436         \let\NR@Org@lst@MakeCaption\lst@MakeCaption
437         \def\lst@MakeCaption{%
438             \ifx\lst@label\@empty
439             \else
440                 \let\@currentlabelname\lst@@caption
441             \fi
442             \NR@Org@lst@MakeCaption
443         }%
444     }{}%
445 }
446 </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.

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