

# Section name references in L<sup>A</sup>T<sub>E</sub>X<sup>\*</sup>

Sebastian Rahtz (deceased)  
Heiko Oberdiek (inactive)  
The L<sup>A</sup>T<sub>E</sub>X Project  
<https://github.com/latex3/hyperref/issues>

2022-05-13

## 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 EuroT<sub>E</sub>X 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<sup>A</sup>T<sub>E</sub>X” (this file)

## Contents

<b>1</b>	<b>Introduction</b>	<b>2</b>
<b>2</b>	<b>Background and advice for package and class authors</b>	<b>2</b>
<b>3</b>	<b>History</b>	<b>3</b>

---

<sup>\*</sup>This file has version number v2.48, last revised 2022-05-13.

<b>4</b>	<b>Implementation</b>	<b>4</b>
4.1	<code>\label</code> stuff	4
4.2	Changes of section macros	6
4.2.1	Class beamer	9
4.2.2	Theorems	10
4.3	Referencing stuff	11
4.4	Usage and frontend	13
4.5	Package ifthen support	14
4.6	Compatibility with <code>varioref</code>	14
4.7	Support for package <code>listings</code>	15
<b>5</b>	<b>Index</b>	<b>15</b>

## 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  $\text{\LaTeX}$  macros, so it is vulnerable to future changes.

## 2 Background and advice for package and class authors

The package redefines the `\label` command to write additionally `\@currentlabelname` to the `.aux` file. This can then be referenced with `\nameref`. Package authors who want to support `nameref` should define this command (locally) in a suitable way. The content should be so that it can be safely written to the `.aux` file. `nameref` itself uses the package `getttitlestring` but this is not required.

`nameref` patches a number of commands (mostly sectioning commands) and environments so that they store `\@currentlabelname`. A class or a package that want to provide native support instead can suppress this patches by defining commands described below. The commands must be defined before the patch is made, in most cases before `nameref` is loaded, sometimes only before begin document.

**sectioning commands** Redefined are

- `\@sect`: beside adding a command that stores the title of a sectioning command (if present the optional argument is used) `nameref` also stores the level number in a counter `section@level` (reason is unknown, only two packages, `e-french` and `pdfscreen` seem to use it), and surrounds the text with `\Sectionformat` (only used by `acmart`, `memoir`, `pdfscreen`, `pdfslide`), a command which takes two argument: the first the text, the second the level.
- `\@ssect`: command to store the title added, `\Sectionformat` is added.
- `\M@sect` (`memoir` class): command to store the title added
- `\@part`, `\@spart`, `\@chapter`, `\@schapter`: command to store the title added
- `\ttl@sect@i` (from the `titlesec` package): command to store the title added

All the patches excepted the last are disabled if the command `\NR@nopatch@sectioning` is defined (the actual definition is irrelevant, only existence is tested. The titlesec patch is disabled if `\NR@nopatch@titlesec` is defined. This currently only suppress the actual patches, the counter, `\Sectionformat` and also the internal copies `\NR@sect` etc are still defined.

**captions** The following commands are patched

- `\@caption`: command to store the title added. This is done at begin document, but only if `hyperref` is not detected. With `hyperref` the patch is done there (and must be disabled in `hyperref`).  
This patch can be disabled by defining `\NR@nopatch@caption`
- `\LT@caption` (from the `longtable` package): command to store the title added.  
This patch can be disabled by defining `\NR@nopatch@longtable`
- `\lst@MakeCaption` (from the `listings` package)  
This patch can be disabled by defining `\NR@nopatch@listings`

**lists** The following command is patched

- `\descriptionlabel`: command to store the label text added. To reference this text the `\label` must be put *inside* the label. This is not compatible with the `enumitem` package as internal formatting commands are written to the `.aux` file too.  
This patch can be disabled by defining `\NR@nopatch@lists`

**theorems** • `\@opargbegintheorem`: command to store the title added.  
This patch can be disabled by defining `\NR@nopatch@theorem`

- `\@begintheorem` (if `amsthm` is loaded and if the command has a tested meaning): command to store the title added.  
This patch can be disabled by defining `\NR@nopatch@amsthm`

**beamer** In the `beamer` class the following commands are patched: `\beamer@section`, `\beamer@subsection`, `\beamer@subsubsection`, `\beamer@descriptionitem` and the template `theorem begin`. If `\NR@nopatch@beamer` is defined nothing is done.

### 3 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]{}%
}
```

## 4 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).

`\NR@strip@period`

```
5 \def\NR@strip@period#1.\ltx@empty#2\@nil{#1}
```

`\strip@period` Macro `\strip@period` was removed in `nameref` 2012/07/28 v2.41 and reinserted in 2012/07/31 v2.42 for compatibility reasons with package `subfig`.

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

7 \def\NR@sanitize@labelname{%
8   \@onelevel@sanitize\@currentlabelname
9   \edef\@currentlabelname{%
10     \expandafter\NR@strip@period\@currentlabelname
11     \ltx@empty.\ltx@empty\@nil
12   }%
13 }
```

### 4.1 `\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.

`\ifNR@showkeys`

```
14 \newif\ifNR@showkeys
15 \NR@showkeysfalse
16 \@ifpackageloaded{showkeys}{%
17   \begingroup
```

```

18   \ifundefined{SK@@label}{%
19   }{%
20     \global\NR@showkeystrue
21   }%
22 \endgroup
23 }{}

\label@hook

24 \providecommand*\label@hook{}
25 \ltx@GlobalAppendToMacro{\label@hook}{%
26   \NR@sanitize@labelname
27 }

\label

28 \def\label#1{%
29   \@bsphack
30   \begingroup
31     \def\label@name{#1}%
32     \label@hook
33     \protected@write\@auxout{}{%
34       \string\newlabel{#1}{%
35         {\@currentlabel}%
36         {\thepage}%
37         {\@currentlabelname}%
38         {\@currentHref}{}}%
39     }%
40   }%
41 \endgroup
42 \@esphack
43 }%
44 \ifNR@showkeys
45   \def\label#1{%
46     \@bsphack
47     \SK@\SK@@label{#1}%
48     \begingroup
49       \def\label@name{#1}%
50       \label@hook
51       \protected@write\@auxout{}{%
52         \string\newlabel{#1}{%
53           {\@currentlabel}%
54           {\thepage}%
55           {\@currentlabelname}%
56           {\@currentHref}{}}%
57       }%
58     }%
59   \endgroup
60   \@esphack
61 }%
62 \fi

\ltx@label

63 \let\ltx@label\label

```

Needed for the *subeqnarray* package.

`\slabel`

```

64 \ifundefined{slabel}{-}{%
65   \def\slabel#1{%
66     \bsphack
67     \if@filesw
68       \begingroup
69         \def\label@name{#1}%
70         \label@hook
71         \let\thepage\relax
72         \def\protect{\noexpand\noexpand\noexpand}%
73         \edef\@tempa{%
74           \write\@auxout{%
75             \string\newlabel{#1}{%
76               {\thesubequation}%
77               {\thepage}%
78               {\@currentlabelname}%
79               {\@currentHref}{-}}%
80           }%
81         }%
82       }%
83     \expandafter\endgroup
84     \@tempa
85     \if@nobreak\ifvmode\nobreak\fi\fi
86   \fi
87   \esphack
88 }%
89 }

```

Overload an AMS L<sup>A</sup>T<sub>E</sub>X command, which uses `\newlabel`. Sigh!

`\@writetocindents@`

```

90 \def\@writetocindents@{%
91   \begingroup
92   \@for\@tempa:=-1,0,1,2,3\do{%
93     \immediate\write\@auxout{%
94       \string\newlabel{tocindent\@tempa}{%
95         \csname r@tocindent\@tempa\endcsname}{-}{-}{-}}%
96     }%
97   }%
98 }%
99 \endgroup
100 }

```

## 4.2 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.

`\NR@getttitle`

```

101 \def\NR@getttitle#1{%
102   \GetTitleString{#1}%
103   \let\@currentlabelname\GetTitleStringResult

```

104 }

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

`\NR@sect`

105 `\let\NR@sect\@sect`

106 `\newcounter{section@level}`

`\@sect`

107 `\@ifundefined{NR@nopatch@sectioning}`

108 `{\def\@sect#1#2#3#4#5#6[#7]#8{%`

109 `\setcounter{section@level}{#2}%`

110 `\NR@getttitle{#7}%`

111 `\NR@sect{#1}{#2}{#3}{#4}{#5}{#6}[[#7]]{\Sectionformat{#8}{#2}}%`

112 `}}{}`

and now the unnumbered ones

`\NR@ssect`

113 `\let\NR@ssect\@ssect`

`\@ssect`

114 `\@ifundefined{NR@nopatch@sectioning}`

115 `{\def\@ssect#1#2#3#4#5{%`

116 `\NR@getttitle{#5}%`

117 `\NR@ssect{#1}{#2}{#3}{#4}{\Sectionformat{#5}{#1}}%`

118 `}}{}`

Support for class memoir.

119 `\@ifundefined{NR@nopatch@sectioning}`

120 `{\ltx@ifundefined{ifheadnameref}{%`

121 `}{%`

122 `\ltx@ifundefined{M@sect}{%`

123 `}{%`

124 `\let\NRorg@M@sect\M@sect`

125 `\def\M@sect#1#2#3#4#5#6[#7][#8]{%`

126 `\ifheadnameref`

127 `\NR@getttitle{#8}%`

128 `\else`

129 `\NR@getttitle{#7}%`

130 `\fi`

131 `\NRorg@M@sect{#1}{#2}{#3}{#4}{#5}{#6}[[#7]][#8]]%`

132 `}%`

133 `}%`

134 `}}{}`

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

135 `\let\NR@part\@part`

136 `\let\NR@spart\@spart`

137 `\let\NR@chapter\@chapter`

138 `\let\NR@schapter\@schapter`

```

139 \@ifundefined{NR@nopatch@sectioning}
140 {%
141   \long\def\@part[#1]#2{%
142     \NR@getttitle{#1}%
143     \NR@part[{#1}]{#2}%
144   }
145   \long\def\@spart#1{%
146     \NR@getttitle{#1}%
147     \NR@spart{#1}%
148   }
149   \def\@chapter[#1]#2{%
150     \NR@getttitle{#1}%
151     \NR@chapter[{#1}]{#2}%
152   }
153   \@ifclassloaded{memoir}{%
154     \ltx@ifundefined{ifheadnameref}{%
155       {%
156         \def\@chapter[#1]#2{%
157           \ltx@ifundefined{ch@pt@c}{%
158             \NR@getttitle{#1}%
159           }{%
160             \ifx\ch@pt@c\ltx@empty
161               \NR@getttitle{#2}%
162             \else
163               \def\NR@temp{#1}%
164               \ifx\NR@temp\ltx@empty
165                 \expandafter\NR@getttitle\expandafter{\ch@pt@c}%
166               \else
167                 \ifheadnameref
168                   \NR@getttitle{#1}%
169                 \else
170                   \expandafter\NR@getttitle\expandafter{\ch@pt@c}%
171                 \fi
172               \fi
173             \fi
174           }%
175           \NR@chapter[{#1}]{#2}%
176         }%
177       }%
178     }{}
179     \def\@schapter#1{%
180       \NR@getttitle{#1}%
181       \NR@schapter{#1}%
182     }{}

```

#### Captions

```

183 \AtBeginDocument{%
184   \@ifpackageloaded{hyperref}{}
185   {%
186     \@ifundefined{NR@nopatch@caption}
187     {\let\NR@@caption\@caption
188      \long\def\@caption#1[#2]{%
189        \NR@getttitle{#2}%
190        \NR@@caption{#1}[{#2}]}%

```



```

191     }}%
192     {}%
193 }%
194 \@ifpackageloaded{longtable}{%
195   \@ifundefined{NR@nopatch@longtable}
196   {%
197     \let\NRorg@LT@caption\LT@caption
198     \def\LT@caption#1[#2]#3{%
199       \NRorg@LT@caption{#1}[{#2}]{#3}%
200       \def\@tempa{#2}%
201       \ifx\@tempa\@empty
202         \else
203           \NR@getttitle{#2}%
204         \fi
205       }%
206     }{}%
207   }{}%

```

Environment ‘description’.

```

208   \ltx@ifundefined{descriptionlabel}{%
209   }{%
210     \@ifundefined{NR@nopatch@longtable}
211     {\let\NRorg@descriptionlabel\descriptionlabel
212      \def\descriptionlabel#1{%
213        \NR@getttitle{#1}%
214        \NRorg@descriptionlabel{#1}%
215      }%
216     }{}%
217   }%
218 }

```

Compatibility for package titlesec.

```

219 \AtBeginDocument{%
220   \@ifpackageloaded{titlesec}{%
221     \let\NRorg@ttl@sect@i\ttl@sect@i
222     \@ifundefined{NR@nopatch@titlesec}
223     {%
224       \def\ttl@sect@i#1#2[#3]#4{%
225         \NR@getttitle{#4}%
226         \NRorg@ttl@sect@i{#1}{#2}[{#3}]{#4}%
227       }%
228     }{}%
229   }{}%
230 }

```

#### 4.2.1 Class beamer

```

231 \@ifclassloaded{beamer}{%
232   \@ifundefined{NR@nopatch@beamer}
233   {%
234     \def\NR@PatchBeamer#1{%
235       \expandafter\let\csname NRorg@beamer@#1\expandafter\endcsname
236       \csname beamer@#1\endcsname
237     }

```

```

238     \edef\x{\endgroup
239     \long\def\expandafter\noexpand\csname beamer@#1\endcsname
240     [####1]{% hash-ok
241     \noexpand\NR@getttitle{####1}%
242     \expandafter\noexpand\csname NRorg@beamer@#1\endcsname
243     [{####1}]%
244     }%
245     }%
246     \x
247     }%
248     \NR@PatchBeamer{section}%
249     \NR@PatchBeamer{subsection}%
250     \NR@PatchBeamer{subsubsection}%

```

Theorem names.

```

251     \addtobeamertemplate{theorem begin}{%
252     \expandafter\NR@getttitle\expandafter{\inserttheoremaddition}%
253     }{}%
254     \ifdefinable{\NRorg@beamer@descriptionitem}{%
255     \let\NRorg@beamer@descriptionitem\beamer@descriptionitem
256     \renewcommand{\beamer@descriptionitem}[1]{%
257     \NR@getttitle{#1}%
258     \NRorg@beamer@descriptionitem{#1}%
259     }%
260     }%
261     }{}%
262 }{}

```

#### 4.2.2 Theorems

```

263 \ltx@ifundefined{@opargbegintheorem}{}{%
264 \let\NRorg@opargbegintheorem\@opargbegintheorem
265 \def\@opargbegintheorem#1#2#3{%
266 \NR@getttitle{#3}%
267 \NRorg@opargbegintheorem{#1}{#2}{#3}%
268 }%
269 }
270 \AtBeginDocument{%
271 \ifpackageloaded{amsthm}{%
272 \let\NRorg@begintheorem\@begintheorem
273 \begingroup
274 \edef\x{\macro:\string#1\string#2[\string#3]}%
275 \@onelevel@sanitize\x
276 \def\y#1->#2\@nil{#1}%
277 \edef\z{\expandafter\y\meaning\@begintheorem->\@nil}%
278 \@onelevel@sanitize\z
279 \expandafter\endgroup
280 \ifx\x\z
281 \def\@begintheorem#1#2[#3]{%
282 \NR@getttitle{#3}%
283 \NRorg@begintheorem{#1}{#2}[\string#3}%
284 }%
285 \fi
286 }{}%
287 }

```

### 4.3 Referencing stuff

We default the label and hypertext reference to be empty.

```
288 \providecommand*\@currentlabelname{}
289 \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:

```
\@firstoffive
290 \long\def\@firstoffive#1#2#3#4#5{#1}

\@secondoffive
291 \long\def\@secondoffive#1#2#3#4#5{#2}

\@thirdoffive
292 \long\def\@thirdoffive#1#2#3#4#5{#3}

\@fourthoffive
293 \long\def\@fourthoffive#1#2#3#4#5{#4}

\@fifthoffive
294 \long\def\@fifthoffive#1#2#3#4#5{#5}
```

We have to redefine `\ref`, `\Ref` and `\pageref` to know about extra reference elements. Make them robust, and compatible with Babel. We also define starred versions so that it doesn't depend on `hyperref` if they are defined or not. We use the same internal names as `hyperref`. 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`.

```
\@safe@activetrue
295 \providecommand*\@safe@activetrue{}%

\@safe@activesfalse
296 \providecommand*\@safe@activesfalse{}%

\NR@ref@showkeys
297 \newcommand\NR@ref@showkeys[1]{}%

\NR@setref
298 \def\NR@setref#1{%
299   \begingroup
300     \@safe@activetrue
301     \expandafter
302   \endgroup
303   \expandafter\NR@@setref\csname r@#1\endcsname
304 }

\NR@@setref
305 \def\NR@@setref#1{%
306   \ifx\@undefined#1%
307     \let#1\relax
308   \fi
309   \@setref#1%
310 }
```

```

\T@ref
311 \def\T@ref#1{%
312   \NR@ref@showkeys{#1}%
313   \NR@setref{#1}\@firstoffive{#1}%
314 }%

\@refstar
315 \def\@refstar#1{%
316   \NR@ref@showkeys{#1}%
317   \NR@setref{#1}\@firstoffive{#1}%
318 }%

\T@pageref
319 \def\T@pageref#1{%
320   \NR@ref@showkeys{#1}%
321   \NR@setref{#1}\@secondoffive{#1}%
322 }%

\@pagerefstar
323 \def\@pagerefstar#1{%
324   \NR@ref@showkeys{#1}%
325   \NR@setref{#1}\@secondoffive{#1}%
326 }%

\T@Ref
327 \def\T@Ref#1{%
328   \NR@ref@showkeys{#1}%
329   \NR@setref{#1}\NR@MakeUppercaseFirstOfFive{#1}%
330 }%
331 \def\NR@MakeUppercaseFirstOfFive#1#2#3#4#5{%
332   \MakeUppercase#1%
333 }%

\@Refstar
334 \def\@Refstar#1{%
335   \NR@ref@showkeys{#1}%
336   \NR@setref{#1}\NR@MakeUppercaseFirstOfFive{#1}%
337 }%

338 \ifNR@showkeys
339   \ifx\SK@ref\@empty
340   \else
341     \renewcommand\NR@ref@showkeys[1]{%
342       \@safe@activetrue
343       \SK@\SK@@ref{#1}%
344       \@safe@activesfalse}
345   \fi
346 \fi

Package hyperref uses the same definitions of \ref, \Ref and \pageref but has to
redefine the non-starred command to add the hyperlink support. \DeclareRobustCommand
is used by hyperref. Package nameref can be loaded before, after hyperref or after
hyperref's definitions in \AtBeginDocument. We have to postpone the definition
to \AtBeginDocument to avoid that showkeys overwrites them again.
347 \AddToHook{begindocument}{%

```

```

\ref
348 \DeclareDocumentCommand\ref{s}
349 {\IfBooleanTF{#1}{\@refstar}{\T@ref}}%

\pageref
350 \DeclareDocumentCommand\pageref{s}
351 {\IfBooleanTF{#1}{\@pagerefstar}{\T@pageref}}%

\Ref
352 \DeclareDocumentCommand\Ref{s}
353 {\IfBooleanTF{#1}{\@Refstar}{\T@Ref}}%

354 }

355 \DeclareHookRule{begindocument}{showkeys}{before}{nameref}

```

## 4.4 Usage and frontend

Access the (third) name part with \nameref;

```

\T@nameref
356 \def\T@nameref#1{%
357 \NR@ref@showkeys{#1}%
358 \begingroup
359 \let\label\@gobble
360 \NR@setref{#1}\@thirdoffive{#1}%
361 \endgroup
362 }%

\@namerefstar
363 \def\@namerefstar#1{%
364 \NR@ref@showkeys{#1}%
365 \begingroup
366 \let\label\@gobble
367 \NR@setref{#1}\@thirdoffive{#1}%
368 \endgroup
369 }%

\nameref
370 \NewDocumentCommand\nameref{s}
371 {\IfBooleanTF{#1}{\@namerefstar}{\T@nameref}}

\Nameref An extended form which gives title and page number. Not really useful, quotes
are english, and no starred version. varioref can do that better. Remove??
372 \def\Nameref#1{\` \nameref{#1}' on page~\pageref{#1}}

\Sectionformat The default for \Sectionformat
373 \providecommand\Sectionformat[2]{#1}

```

## 4.5 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`: Changed/disabled 2022-04-13: ifthen takes care itself to change `\pageref` to an expandable version.

```

374 \ifundefined{@kernel@pageref@exp}
375   {\ifpackageloaded{ifthen}{%
376     \let\NR@Org@ifthenelse@ifthenelse
377     \def@ifthenelse{%
378       \let\begingroup\NR@TE@begingroup
379       \NR@Org@ifthenelse
380     }%
381     \let\NR@Org@begingroup\begingroup
382     \def\NR@TE@begingroup{%
383       \let\begingroup\NR@Org@begingroup
384       \begingroup
385       \def\ref##1{\getrefbykeydefault{##1}{}{??}}%
386       \def\pageref##1{\getrefbykeydefault{##1}{page}{0}}%
387     }%
388   }{}{}}
```

## 4.6 Compatibility with varioref

[This section was derived by Corey Minyard [minyard@acm.org](mailto:minyard@acm.org) from the `varioref` package] Changed in 2019-09-12 by Frank Mittelbach to adapt to changes in `varioref`

```

389 \AtBeginDocument{%
390   \ifx\csname @@vpageref\endcsname\relax
391     \else
This requires a varioref newer than 2019-09-12
392     \let\NR@@vpageref\@@vpageref
393     \def\@@vpageref#1[#2]#3{%
394       \begingroup
395         \csname @safe@activetrue\endcsname
396         \edef\x{#3}%
397         \@onelevel@sanitize\x
398         \toks@{%
399           \NR@@vpageref{#1}[{#2}]%
400         }%
401         \edef\x{\endgroup
402           \the\toks@{\x}%
403         }%
404       \x
405     }%
406     \DeclareRobustCommand\vnameref[1]{%
407       \unskip~\nameref{#1} %
408       \@@vpageref[\unskip]{#1}%
409     }%
410   \fi
411 }
```

## 4.7 Support for package listings

```

412 \AtBeginDocument{%
413   \ifpackageloaded{listings}{%
414     \ifundefined{NR@nopatch@listings}
415       {%
416         \let\NR@org@lst@MakeCaption\lst@MakeCaption
417         \def\lst@MakeCaption{%
418           \ifx\lst@label\@empty
419             \else
420               \let\@currentlabelname\lst@@caption
421             \fi
422             \NR@org@lst@MakeCaption
423           }%
424         }{}%
425       }{}%
426   }
427 \end{package}

```

## 5 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		
\@@@ . . . . . 6	\ifpackageloaded . . . 16, 184, 194,	\@tempa . . . . . 73, 84,
\@vpageref . . 392, 393	220, 271, 375, 413	92, 94, 95, 200, 201
\@Refstar . . . 334, 353	\ifundefined . . . . .	\@thirdoffive . . . . .
\@auxout . . 33, 51, 74, 93	. . . 18, 64, 107,	. . . . . 292, 360, 367
\@begintheorem . . . . .	114, 119, 139,	\@undefined . . . . . 306
. . . . . 272, 277, 281	186, 195, 210,	\@vpageref . . . . . 408
\@bsphack . . . 29, 46, 66	222, 232, 374, 414	\@writetocindents@ . . 90
\@caption . . . 187, 188	\@namerefstar . 363, 371	
\@chapter . 137, 149, 156	\@nil . . . . 5, 11, 276, 277	<b>A</b>
\@currentHref . . . . .	\@onelevel@sanitize . . . 8, 275, 278, 397	\addtobeamer-template . . . . . 251
. . . 38, 56, 79, 289	\@opargbegintheorem . . . . . 264, 265	\AddToHook . . . . . 347
\@currentlabel . . 35, 53	\@pagerefstar . 323, 351	\AtBeginDocument 183,
\@currentlabelname . . . 8, 9, 10, 37,	\@part . . . . . 135, 141	219, 270, 389, 412
55, 78, 103, 288, 420	\@refstar . . . . 315, 349	
\@empty . . . 201, 339, 418	\@safe@activesfalse . . . . . 296, 344	<b>B</b>
\@esphack . . . 42, 60, 87	\@safe@activetrue . . . . . 295, 300, 342	\beamer@descriptionitem . . . . . 255, 256
\@fifthoffive . . . . . 294	\@schapter . . . 138, 179	\begingroup . . . . 17,
\@firstoffive . . . . .	\@secondoffive . . . . . 291, 321, 325	30, 48, 68, 91,
. . . . . 290, 313, 317	\@sect . . . . . 105, 107	237, 273, 299,
\@for . . . . . 92	\@setref . . . . . 309	358, 365, 378,
\@fourthoffive . . . . . 293	\@spart . . . . . 136, 145	381, 383, 384, 394
\@gobble . . . . . 359, 366	\@sssect . . . . . 113, 114	
\@ifclassloaded 153, 231		<b>C</b>
\@ifdefinable . . . . . 254		\ch@pt@c . . 160, 165, 170
		\csname . . . . . 95,
		235, 236, 239,
		242, 303, 390, 395

D		\GetTitleStringResult		N	
\DeclareDocumentCommand	..... 348, 350, 352	.....	103	\Nameref .....	372
\DeclareHookRule ..	355	\global .....	20	\nameref ..	370, 372, 407
\DeclareRobustCommand	..... 406	I		\newcommand .....	297
\def .....	5, 6, 7, 28, 31, 45, 49, 65, 69, 72, 90, 101, 108, 115, 125, 141, 145, 149, 156, 163, 179, 188, 198, 200, 212, 224, 234, 239, 265, 276, 281, 290, 291, 292, 293, 294, 298, 305, 311, 315, 319, 323, 327, 331, 334, 356, 363, 372, 377, 382, 385, 386, 393, 417	\if@filesw .....	67	\newcounter .....	106
\descriptionlabel ..	211, 212	\if@nobreak .....	85	\NewDocumentCommand	370
\do .....	92	\IfBooleanTF .....	349, 351, 353, 371	\newif .....	14
E		\ifheadnameref .....	126, 167	\newlabel ..	34, 52, 75, 94
\edef .....	9, 73, 238, 274, 277, 396, 401	\ifNR@showkeys .....	14, 44, 338	\nobreak .....	85
\else .....	128, 162, 166, 169, 202, 340, 391, 419	\ifthenelse ..	376, 377	\noexpand .....	
\endcsname .....	95, 235, 236, 239, 242, 303, 390, 395	\ifvmode .....	85	\NR@@caption ..	187, 190
\endgroup .....	22, 41, 59, 83, 99, 238, 279, 302, 361, 368, 401	\ifx 160, 164, 201, 280, 306, 339, 390, 418		\NR@@setref ..	303, 305
\expandafter .....	10, 83, 165, 170, 235, 239, 242, 252, 277, 279, 301, 303	\immediate .....	93	\NR@@vpageref ..	392, 399
F		\inserttheoremaddition	..... 252	\NR@chapter 137, 151, 175	
\fi ..	62, 85, 86, 130, 171, 172, 173, 204, 285, 308, 345, 346, 410, 421	L		\NR@gettitle ..	101, 110, 116, 127, 129, 142, 146, 150, 158, 161, 165, 168, 170, 180, 189, 203, 213, 225, 241, 252, 257, 266, 282
G		\label ..	28, 63, 359, 366	\NR@MakeUppercaseFirstOfFive	..... 329, 331, 336
\getrefbykeydefault	..... 385, 386	\label@hook 24, 32, 50, 70		\NR@part .....	135, 143
\GetTitleString ...	102	\label@name ..	31, 49, 69	\NR@PatchBeamer ...	234, 248, 249, 250
G		\let ...	63, 71, 103, 105, 113, 124, 135, 136, 137, 138, 187, 197, 211, 221, 235, 255, 264, 272, 307, 359, 366, 376, 378, 381, 383, 392, 416, 420	\NR@ref@showkeys ..	297, 312, 316, 320, 324, 328, 335, 341, 357, 364
G		\long .....	141, 145, 188, 239, 290, 291, 292, 293, 294	\NR@sanitize@labelname	..... 7, 26
G		\lst@@caption .....	420	\NR@schapter ..	138, 181
G		\lst@label .....	418	\NR@ssect .....	105, 111
G		\lst@MakeCaption ..	416, 417	\NR@setref 298, 313, 317, 321, 325, 329, 336, 360, 367	
G		\LT@c@option ..	197, 198	\NR@showkeysfalse ..	15
G		\ltx@empty 5, 11, 160, 164		\NR@showkeystrue ...	20
G		\ltx@GlobalAppendToMacro	..... 25	\NR@spart ....	136, 147
G		\ltx@ifUndefined ..	120, 122, 154, 157, 208, 263	\NR@ssect .....	113, 117
G		\ltx@label .....	63	\NR@strip@period ..	5, 10
G		M		\NR@TE@begingroup ..	378, 382
G		\M@ssect .....	124, 125	\NR@temp .....	163, 164
G		\MakeUppercase ....	332	\NR@org@beamer@descriptionitem	..... 254, 255, 258
G		\meaning .....	277	\NR@org@begingroup ..	381, 383
G		M		\NR@org@begintheorem	..... 272, 283



<code>\NRorg@descriptionlabel</code>	<code>\ref</code> . . . . .	<code>\thepage</code> . .
. . . . .	348, 385	36, 54, 71, 77
<code>\NRorg@ifthenelse</code> .	<code>\relax</code> . . .	<code>\thesubequation</code> . . . .
. . . . .	6, 71, 307, 390	76
<code>\NRorg@lst@MakeCaption</code>	<code>\renewcommand</code> .	<code>\toks@</code> . . . . .
. . . . .	256, 341	398, 402
<code>\NRorg@LT@c@ption</code> .	<code>\RequirePackage</code> .	<code>\ttl@sect@i</code> . .
. . . . .	2, 3, 4	221, 224
	<b>S</b>	<b>U</b>
<code>\NRorg@LT@c@ption</code> .	<code>\Sectionformat</code> . . . .	<code>\unskip</code> . . . . .
. . . . .	111, 117, 373	407, 408
<code>\NRorg@M@sect</code> .	<code>\setcounter</code> . . . . .	<b>V</b>
<code>\NRorg@opargbegintheorem</code>	<code>\SK@</code> . . . . .	<code>\vnameref</code> . . . . .
. . . . .	47, 343	406
<code>\NRorg@ttl@sect@i</code> .	<code>\SK@@label</code> . . . . .	<b>W</b>
. . . . .	47	<code>\write</code> . . . . .
	<code>\SK@ref</code> . . . . .	74, 93
	<code>\SK@ref</code> . . . . .	
	<code>\slabel</code> . . . . .	<b>X</b>
<b>P</b>	<code>\string</code> 34, 52, 75, 94, 274	<code>\x</code> . . . .
<code>\pageref</code> . .	<code>\strip@period</code> . . . . .	238, 246, 274,
<code>\protect</code> . . . . .		275, 280, 396,
<code>\protected@write</code> 33, 51		397, 401, 402, 404
<code>\providecommand</code> . . .	<b>T</b>	
. . . . .	<code>\T@nameref</code> . . .	<b>Y</b>
24, 288,	<code>\T@pageref</code> . . .	<code>\y</code> . . . . .
289, 295, 296, 373	<code>\T@Ref</code> . . . . .	276, 277
	<code>\T@Ref</code> . . . . .	
<b>R</b>	<code>\T@ref</code> . . . . .	<b>Z</b>
<code>\Ref</code> . . . . .	<code>\the</code> . . . . .	<code>\z</code> . . . . .
	402	277, 278, 280