

Back referencing from bibliographical citations*

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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 EuroTeX 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” (this file)

nameref.dtx “Section name references in L^AT_EX”

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1 Introduction

2 Usage

2.1 Options

2.1.1 Options for type of back references

In short the following options set the type of back references. Default is option `pageref`.

<code>ref</code>	section number
<code>pageref</code>	page number
<code>hyperref</code>	section number as hyper link
<code>hyperpageref</code>	page number as hyper link

The options that start with `hyper` are intended for the use with package `hyperref`. In this case package `backref` will be loaded automatically if the `hyperref` options `backref` or `pagebackref` are given. Package `hyperref` then loads package `backref` with the appropriate option:

hyperref option	backref option set by hyperref
<code>backref</code>	<code>hyperref</code>
<code>backref=section</code>	<code>hyperref</code>
<code>backref=slide</code>	<code>hyperref</code>
<code>backref=page</code>	<code>hyperpageref</code>
<code>pagebackref</code>	<code>hyperpageref</code>

2.1.2 Language options

Currently supported are options `english` (default), `UKenglish`, `USenglish`, `british`, `german`, `ngerman`, `austrian`, `naustrian`, `french`, `francais`, and `spanish`.

2.2 Detecting the end of a bibliography entry

Package `backref` has to be able to detect the end of an entry in the bibliography, therefore each `\bibitem` entry must be ended by an empty line (or a `\par` token).

Example:

```

\begin{thebibliography}{9}
\bibitem[bib:abc] First entry.

\bibitem[bib:foo] Second entry.

\end{thebibliography}

```

Then package `backref` can automatically add hooks for the back references list at the end of the entries.

`\backrefparscanfalse` Sometimes it is not appropriate if the entry is read as argument. For example, catcode changes for verbatim stuff do not have the desired effect. Therefore the scan for the `\par` token can be disabled by `\backrefparscanfalse` before `\bibitem` and enabled by `\backrefparscantrue` afterwards.

`\backrefprint` If the scan for the end of the entry is disabled, then package `backref` does not know where to put the back references list. The list is printed by the macro `\backrefprint`, thus just call it at the right place. Example:

```

\backrefparscanfalse % disable scan for entry ending
\bibitem[...]{...}
... \verb|...| ... % potentially dangerous stuff
... \url{...} ...
\backrefprint        % print back reference list here
\backrefparscantrue  % enable scan again

```

2.3 Formatting of the back references list

The back references list is separated from the entry by `\newblock`, if the used bibliography package supports this. The package options control the kind of back references (page numbers, sections numbers), whereas the hooks control the formatting.

There are two hooks `\backref` and a new hook `\backrefalt`, available since version 1.21 of package `backref`. The former one is enabled by default.

2.3.1 Formatting hook `\backref`

Macro `\backref` has a comma separated list of backref references as first and only argument. With `hyperref` options only this list will be printed. Without `hyperref` there is an introductory text, controlled by macros `\backrefpagesname` or `\backrefsectionsname`.

2.3.2 Formatting hook `\backrefalt`

`\backrefalt` is a new interface since version 1.21 of package `backref`. It takes four arguments:

1. Number of citations without dupes.
2. Back references list without dupes.
3. Number of all citations (with dupes).
4. Back reference list with all entries (with dupes).

The latter options consider equal entries as one entry. Now `\backrefalt` can easily be defined with text that depends on the number of citations, for example:

```

\usepackage[backref]{backref}
\renewcommand*{\backref}[1]{%
\renewcommand*{\backrefalt}[4]{%
  \ifcase #1 %
    No citations.%
  \or
    One citation in section #2.%
  \else
    #1 citations in sections #2.%
  \fi
}

```

The separation between the list entries are controlled by the following macros:

- `\backrefsep`: inserted between entries except for the next cases, default is “,_U”.
- `\backreftwosep`: inserted between entries in a list of two entries, default is “_Uand~”.
- `\backreflastsep`: inserted between the last two entries of a list with more than two entries, default is “,_Uand~”.

Examples:

```

<entry1>
<entry1> \backreftwosep <entry2>
<entry1> \backrefsep <entry2> \backreflastsep <entry3>

```

3 The macros

Internal command names of this package start with `\BR@`, commands, that store the original meaning of commands, which will be redefined, are prefixed with `\BRorg@`.

3.1 Package identification

```
1 <*package>
```

3.2 Options

3.2.1 Option verbose

If package `hyperref` is loaded, then its setting is used as default for the verbose switch.

```

2 \newif\ifBR@verbose
3 \@ifundefined{ifHy@verbose}{%
4   \BR@verbosefalse
5 }{%
6   \let\ifBR@verbose\ifHy@verbose
7 }
8 \DeclareOption{verbose}{\BR@verbostrue}

```

3.2.2 Options for way of working

What is printed depends on how the 3 available items of information are used (page number, section number, label).

```
9 \long\def\page@backref#1#2#3{#1}
10 \long\def\section@backref#1#2#3{#2}
11 \long\def\hyper@section@backref#1#2#3{\hyperlink{#3}{#2}}
12 \long\def\hyper@page@backref#1#2#3{\hyperlink{page.#1}{#1}}
```

Now the options follows, that can be used without package hyperref.

```
13 \DeclareOption{pageref}{%
14   \def\backref{\backrefpagesname\ }%
15   \let\backrefxxx\page@backref
16 }
17 \DeclareOption{ref}{%
18   \def\backref{\backrefsectionsname\ }%
19   \let\backrefxxx\section@backref
20 }
```

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

```
21 \DeclareOption{hyperref}{%
22   \def\backref{\let\backrefxxx\hyper@section@backref
23 }
24 \DeclareOption{hyperpageref}{%
25   \def\backref{\let\backrefxxx\hyper@page@backref
26 }
```

3.2.3 Language options

```
27 \def\backrefenglish{%
28   \def\backrefpagesname{pages}%
29   \def\backrefsectionsname{sections}%
30   \def\backrefsep{, }%
31   \def\backreftwosep{ and~}%
32   \def\backreflastsep{, and~}%
33 }
34 \def\backrefgerman{%
35   \def\backrefpagesname{Seiten}%
36   \def\backrefsectionsname{Abschnitte}%
37   \def\backrefsep{, }%
38   \def\backreftwosep{ und~}%
39   \def\backreflastsep{, und~}%
40 }
41 \def\backreffrench{%
42   \def\backrefpagesname{pages}%
43   \def\backrefsectionsname{sections}%
44   \def\backrefsep{, }%
45   \def\backreftwosep{ et~}%
46   \def\backreflastsep{ et~}%
47 }
48 \def\backrefspanish{%
49   \def\backrefpagesname{p\`aginas}%
50   \def\backrefsectionsname{secciones}%
51   \def\backrefsep{, }%
52   \def\backreftwosep{ y~}%
53   \def\backreflastsep{ y~}%
54 }
55 \def\backrefafrikaans{%
```

```

56 \def\backrefpagesname{bladsye}%
57 \def\backrefsectionsname{afdelings}%
58 \def\backrefsep{,}%
59 \def\backreftwosep{ en~}%
60 \def\backreflastsep{ en~}%
61 }%

```

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

```

62 \def\BR@addto#1#2{%
63   #2%
64   \@temptokena{#2}%
65   \ifx#1\relax
66     \let#1\@empty
67   \fi
68   \ifx#1\undefined
69     \edef#1{\the\@temptokena}%
70   \else
71     \toks@\expandafter{#1}%
72     \edef#1{\the\toks@\the\@temptokena}%
73   \fi
74   \@temptokena{}\toks@\@temptokena
75 }
76 \def\BR@DeclareLang#1#2{%
77   \begingroup
78   \edef\x##1#2{%
79     \noexpand\ifx##2\relax
80       \errmessage{No definitions for language ‘#2’ found!}%
81     \noexpand\fi
82   \endgroup
83   \noexpand\DeclareOption{#1}{%
84     \noexpand\BR@addto{\noexpand##1}{\noexpand##2}%
85   }%
86 }%
87 \expandafter\x\csname extras#1\expandafter\endcsname
88           \csname backref#2\expandafter\endcsname
89 }
90 \BR@DeclareLang{english}{english}
91 \BR@DeclareLang{UKenglish}{english}
92 \BR@DeclareLang{USenglish}{english}
93 \BR@DeclareLang{british}{english}
94 \BR@DeclareLang{german}{german}
95 \BR@DeclareLang{ngerman}{german}
96 \BR@DeclareLang{austrian}{german}
97 \BR@DeclareLang{naustrian}{german}
98 \BR@DeclareLang{french}{french}
99 \BR@DeclareLang{frenchb}{french}
100 \BR@DeclareLang{français}{french}
101 \BR@DeclareLang{spanish}{spanish}
102 \BR@DeclareLang{afrikaans}{afrikaans}

```

Default is the english version:

```

103 \backrefenglish

```

3.2.4 Process options

```

104 \ExecuteOptions{pageref}
105 \ProcessOptions*\relax

```

3.3 The bibliography

```

\ifbackrefparscan
106 \newif\ifbackrefparscan
107 \backrefparscantrue

\BR@bibitem
108 \def\BR@bibitem{%
109   \ifbackrefparscan
110     \expandafter\@ifnextchar\expandafter[\expandafter
111       \BR@@lbibitem\expandafter\BR@@bibitem
112   \else
113     \expandafter\@ifnextchar\expandafter[\expandafter
114       \BR@@@lbibitem\expandafter\BR@@@bibitem
115   \fi
116 }

117 \def\BR@@lbibitem[#1]#2#3\par{%
118   \let\backrefprint\BR@backrefprint
119   \BRorg@bibitem[{#1}]{#2}#3%
120   \BR@backref{#2}%
121 }%
122 \def\BR@@@bibitem#1#2\par{%
123   \let\backrefprint\BR@backrefprint
124   \BRorg@bibitem{#1}#2%
125   \BR@backref{#1}%
126 }
127 \def\BR@@@lbibitem[#1]#2{%
128   \def\backrefprint{\BR@backref{#2}}%
129   \BRorg@bibitem[{#1}]{#2}%
130 }
131 \def\BR@@@bibitem#1{%
132   \def\backrefprint{\BR@backref{#1}}%
133   \BRorg@bibitem{#1}%
134 }
135 \def\BR@backrefprint{%
136   \PackageError{backref}{%
137     \string\backrefprint\space is only available after \string\bibitem
138     \MessageBreak
139     with setting \string\backrefparscanfalse
140   }\@ehc
141 }
142 \let\backrefprint\BR@backrefprint
143 \def\BR@backref#1{%
144   \newblock
145   \begingroup
146     \csname @safe@activestruel\endcsname
147     \expandafter\providecommand\csname brc@#1\endcsname{0}%
148     \expandafter\providecommand\csname brcd@#1\endcsname{0}%
149     \csname @safe@activestruel\endcsname
150     \expandafter\backref\csname br@#1\endcsname\expandafter\endcsname
151     \expandafter\backrefalt\csname brc@#1\endcsname\expandafter\endcsname
152     \csname brl@#1\endcsname\expandafter\endcsname
153     \csname brcd@#1\endcsname\expandafter\endcsname
154     \csname brld@#1\endcsname
155   \endgroup
156   \par

```

```

157 }
158 \ifundefined{newblock}{\def\newblock{\par}}{}
159 \providecommand*\backrefalt[4]{}

```

3.4 Reading .brf file

`\backcite` The file `\jobname.brf` collects the back cite informations as calls of `\backcite` with the informations in the arguments.

The first argument of macro `\backcite` is the citation label, the second parameter contains the page number (`\thepage`), the current label of the citation (`\@currentlabel`), and the current anchor name (`\@currentHref`). Example for a citation at the first page in second section:

```
\backcite {bib:abc}{1}{2}{section.2}
```

While the file `\jobname.brf` is read, the informations are collected and stored in macros whose names are build by the citation label `\label`:

<code>\br@<label></code>	list, entries separated by comma without dupes
<code>\brc@<label></code>	number of citations without dupes
<code>\brl@<label></code>	backref list without dupes
<code>\brcd@<label></code>	number of all citations (with dupes)
<code>\brld@<label></code>	backref list with all entries (with dupes)

What are “dupes”? An instance: you have three references to an entry in the bibliography on the first page:

```

\backcite {bib:abc}{1}{1}{section.1}
\backcite {bib:abc}{1}{1}{section.1}
\backcite {bib:abc}{1}{2}{section.2}

```

Then the whole backref list with option `pageref` would print, e.g.:

Entry for `bib:abc`. Cited on pages 1, 1, 1.

Without dupes the entries with the same page number would be removed, e.g.:

Entry for `bib:abc`. Cited on page 1.

Also the third entry is removed, because it has the same page number. For the comparison only these pieces of information are considered that will be used later by `\backrefxxx`. With option `pageref` macro `\backrefxxx` becomes `\page@backref` that throws away the second and third argument and only uses the first argument with the page number. To be more precise, the first expansion of `\backrefxxx` is used in comparison. If some arguments are used here, but later omitted, then this will not be detected.

`\backrefxxxdupe` With option `hyperref` you will get two entries in the following example because the second entry differs in the link information, so the result will be the same section number, but as different links.

```

\backref {bib:abc}{1}{1}{section.1}
\backref {bib:abc}{1}{1}{equation.1}

```

Macro `\backrefxxxdupe` will be used in the comparison test if it is defined. Thus you can provide a definition in this case as follows:

```
\newcommand*\backrefxxxdupe[3]{#2}
```

Then only the section number is interpreted, but not the anchor name.

To avoid same entries, it is checked before, whether the entry already exists.
Only the information needed by `\backrefxxx` is compared.

```

160 \def\backcite#1#2{%
161   \@for\x:=#1\do{%
162     \begingroup
163       \csname @safe@activetrue\endcsname
164       \edef\x{\endgroup
165         \def\noexpand\x{\expandafter\@firstofone\x\@empty}%
166       }%
167     \x

```

Now macro `\x` contains the citation label name.

```

168   \expandafter\ifx\csname br@\x\endcsname\relax

```

Initialization, fill in the first entry.

```

169     \expandafter\protected@xdef\csname br@\x\endcsname{%
170       \protect\backrefxxx#2%
171     }%
172     \global\expandafter\let\csname brl@\x\expandafter\endcsname
173       \csname br@\x\endcsname
174     \global\expandafter\let\csname brld@\x\expandafter\endcsname
175       \csname br@\x\endcsname
176     \expandafter\gdef\csname brc@\x\endcsname{1}%
177     \expandafter\gdef\csname brcd@\x\endcsname{1}%
178   \else

```

Fill in further entry. But check for dupe first.

```

179     \begingroup
180     \@ifundefined{backrefxxxdupe}{\let\backrefxxx\backrefxxxdupe}%
181     \expandafter\def\expandafter\reserved@a\expandafter{%
182       \backrefxxx#2%
183     }%
184     \let\BRorg@backrefxxx\backrefxxx
185     \global\let\BR@found=N%
186     \long\def\backrefxxx##1##2##3{%
187       \expandafter\def\expandafter\reserved@b\expandafter{%
188         \BRorg@backrefxxx{##1}{##2}{##3}%
189       }%
190       \ifx\reserved@a\reserved@b
191         \global\let\BR@found=Y%
192       \fi
193     }%
194     \setbox\@tempboxa\hbox{\csname br@\x\endcsname}%
195   \endgroup
196   \let\backrefsep\relax
197   \def\backreftwosep{\backrefsep}%
198   \def\backreflastsep{\backrefsep}%
199   \if N\BR@found
200     \expandafter\protected@xdef\csname br@\x\endcsname{%
201       \csname br@\x\endcsname, %
202       \protect\backrefxxx#2%
203     }%
204     \expandafter\protected@xdef\csname brl@\x\endcsname{%
205       \csname brl@\x\endcsname
206       \ifnum\@nameuse{brc@\x}=1 %
207         \noexpand\backreftwosep
208       \else
209         \noexpand\backreflastsep

```

```

210         \fi
211         \protect\backrefxxx#2%
212     }%
213     \count@=\@nameuse{brc@\x}\relax
214     \advance\count@ by 1 %
215     \expandafter\xdef\csname brc@\x\endcsname{\the\count@}%
216 \fi
217 \expandafter\protected\xdef\csname brld@\x\endcsname{%
218     \csname brld@\x\endcsname
219     \ifnum\@nameuse{brcd@\x}=1 %
220         \noexpand\backreftwosep
221     \else
222         \noexpand\backreflastsep
223     \fi
224     \protect\backrefxxx#2%
225 }%
226 \count@=\@nameuse{brcd@\x}\relax
227 \advance\count@ by 1 %
228 \expandafter\xdef\csname brcd@\x\endcsname{\the\count@}%
229 \fi
230 }%
231 }

```

3.5 Initialization

```

232 \def\@currentHref{}
233 \AtBeginDocument{%
234     \let\BRorg@bibitem\bibitem
235     \let\bibitem\BR@bibitem
236     \let\BRorg@thebibliography\thebibliography
237     \def\thebibliography{%
238         \BR@starttoc
239         \BRorg@thebibliography
240     }%
241     \@ifundefined{NAT@parse}{%
242         \global\let\BRorg@citex\@citex
243         \global\let\@citex\BR@citex
244     }{%
245         \@ifpackageloaded{hyperref}{%}{%
246             \def\hyper@natlinkstart#1{\Hy@backout{#1}}%
247         }%
248         \PackageInfo{backref}{** backref set up for natbib **}%
249     }%
250 }

\BR@starttoc

251 \def\BR@starttoc{%
252     \begingroup
253     \makeatletter
254     \@input{\jobname.brf}%
255     \if@filesw
256         \@ifundefined{tf@brf}{%
257             \expandafter\newwrite\csname tf@brf\endcsname
258         }{}%
259         \@ifundefined{tf@brf@open}{%
260             \BR@RerunFileCheck
261             \immediate\openout\csname tf@brf\endcsname\jobname.brf\relax

```

```

262      \gdef\tf@brf@open{%
263      }{}%
264      \fi
265      \@nobreakfalse
266 \endgroup
267 }

```

3.6 Collecting back cite informations

\BR@citex

```

268 \def\BR@citex[#1]#2{%
269   \BRorg@citex[{#1}]{#2}%
270   \ifBR@verbose
271     \PackageInfo{backref}{back cite \string'#2\string'}%
272   \fi
273   \Hy@backout{#2}%
274 }

```

Grr. for chicago.sty

```

275 \@ifpackageloaded{chicago}{%
276   \let\BRorg@citedatax\@citedatax
277   \def\@citedatax[#1]#2{%
278     \BRorg@citedatax[{#1}]{#2}%
279     \Hy@backout{#2}%
280   }%
281 }{}

```

\Hy@backout

```

282 \def\Hy@backout#1{%
283   \@bsphack
284   \ifx\@empty\@currentlabel
285     \protected@write\@auxout{%
286       \string\@writefile{brf}{%
287         \string\backcite{#1}{\thepage}{(document)}{Doc-Start}}%
288     }%
289   }%
290   \else
291     \protected@write\@auxout{%
292       \string\@writefile{brf}{%
293         \string\backcite{#1}{\thepage}{\@currentlabel}{\@currentHref}}%
294     }%
295   }%
296   \fi
297   \@esphack
298 }

```

3.7 Rerun warning

\BR@RerunFileCheck The following code computes a MD5 sum and the file size of the .brf file at the begin and the end of the document and compares them. A rerun warning is given, if they do not match. This method requires pdfTEX or LuaTEX. The method fails, if the MD5 sum and the file size are the same for a changed .brf file (it's probably very seldom).

```

299 \RequirePackage{rerunfilecheck}[2009/12/10]
300 \def\BR@RerunFileCheck{%
301   \RerunFileCheck{\jobname.brf}{%

```


205, 215, 217, 218, 228, 257, 261	73, 81, 115, 192, 210, 216, 223, 229, 264, 272, 296	O \openout 261
D \DeclareOption .. 8, 13, 17, 21, 24, 83 \def ... 9, 10, 11, 12, 14, 18, 22, 25, 27, 28, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39, 41, 42, 43, 44, 45, 46, 48, 49, 50, 51, 52, 53, 55, 56, 57, 58, 59, 60, 62, 76, 108, 117, 122, 127, 128, 131, 132, 135, 143, 158, 160, 165, 181, 186, 187, 197, 198, 232, 237, 246, 251, 268, 277, 282, 300 \do 161	G \gdef 176, 177, 262 \global ... 172, 174, 185, 191, 242, 243	P \PackageError 136 \PackageInfo .. 248, 271 \page@backref 9, 15 \par .. 117, 122, 156, 158 \ProcessOptions ... 105 \protect 170, 202, 211, 224 \protected@write 285, 291 \protected@xdef 169, 200, 204, 217 \providecommand 147, 148, 159
E \edef 69, 72, 78, 164 \else 70, 112, 178, 208, 221, 290 \endcsname 87, 88, 146, 147, 148, 149, 150, 151, 152, 153, 154, 163, 168, 169, 172, 173, 174, 175, 176, 177, 194, 200, 201, 204, 205, 215, 217, 218, 228, 257, 261 \endgroup 82, 155, 164, 195, 266 \errmessage 80 \ExecuteOptions ... 104 \expandafter 71, 87, 88, 110, 111, 113, 114, 147, 148, 149, 150, 151, 152, 153, 165, 168, 169, 172, 174, 176, 177, 181, 187, 200, 204, 215, 217, 228, 257	H \hbox 194 \Hy@backout 246, 273, 279, 282 \hyper@natlinkstart 246 \hyper@page@backref 12, 25 \hyper@section@backref 11, 22 \hyperlink 11, 12	R \relax 65, 79, 105, 168, 196, 213, 226, 261 \RequirePackage ... 299 \RerunFileCheck ... 301 \reserved@a ... 181, 190 \reserved@b ... 187, 190
F \fi 67,	I \if 199 \if@filesw 255 \ifbackrefparscan 106, 109 \ifBR@verbose . 2, 6, 270 \ifHy@verbose 6 \ifnum 206, 219 \ifx 65, 68, 79, 168, 190, 284 \immediate ... 261, 304	S \section@backref 10, 19 \setbox 194 \space 137 \string 137, 139, 271, 286, 287, 292, 293
	J \jobname .. 254, 261, 301	T \tf@brf 304 \tf@brf@open 262 \the 69, 72, 215, 228 \thebibliography 236, 237 \thepage 287, 293 \toks@ 71, 72, 74
	L \let 6, 15, 19, 22, 25, 66, 118, 123, 142, 172, 174, 180, 184, 185, 191, 196, 234, 235, 236, 242, 243, 276 \long .. 9, 10, 11, 12, 186	U \undefined 68
	M \makeatletter 253 \MessageBreak 138	X \x 78, 87, 161, 164, 165, 167, 168, 169, 172, 173, 174, 175, 176, 177, 194, 200, 201, 204, 205, 206, 213, 215, 217, 218, 219, 226, 228 \xdef 215, 228
	N \newblock 144, 158 \newif 2, 106 \newwrite 257 \noexpand 79, 81, 83, 84, 165, 207, 209, 220, 222	