

# 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 `thmbpdf`” 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 `LATEX`”

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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 options are `english` (`american`, `australian`, `british`, `canadian`, `newzealand`, `UKenglish`, `USenglish`), `german` (`ngerman`, `austrian`, `naustrian`), `french` (`acadian`, `canadien`, `frenchb`, `francais`), `spanish`, and `brazil` (`brazilian`). Default is `english`.

## 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]{}% for backref < 1.33 necessary
\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 “`,1`”.
- `\backreftwosep`: inserted between entries in a list of two entries, default is “`,1and~`”.
- `\backreflastsep`: inserted between the last two entries of a list with more than two entries, default is “`,1and~`”.

Examples:

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

Since version 1.33 it is not necessary to redefine `pages`, it is automatically disabled if defined.

#### 2.3.3 Refinement `\backrefentrycount`

Since version 1.33 the entries of the distinct list of interface `\backrefalt` are wrapped in `\backrefentrycount`. The macro is called with two arguments. The first is the backref entry and the second one the citation count of this entry. As default the macro passes the first argument through and ignores the count argument. But it can be redefined, e.g.

```
\renewcommand*{\backrefalt}[4]{...}% see above
\renewcommand*{\backrefentrycount}[2]{%
  #1%
  \ifnum#2>1 %
    ~(#2)%
  \fi
}
```

In case of duplicates, the distinct entry is appended by the number of citations in parentheses.

## 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@verbosettrue}
```

#### 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 }
```

```

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\backrefbrazil{%
56 \def\backrefpagesname{p\'aginas}%
57 \def\backrefsectionsname{se\c c\~oes}%
58 \def\backrefsep{, }%
59 \def\backreftwosep{ e~}%
60 \def\backreflastsep{ e~}%
61 }
62 \def\backrefafrikaans{%
63 \def\backrefpagesname{bladsye}%
64 \def\backrefsectionsname{afdelings}%
65 \def\backrefsep{, }%
66 \def\backreftwosep{ en~}%
67 \def\backreflastsep{ en~}%
68 }%

```

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

```

69 \def\BR@addto#1#2{%
70 #2%
71 \@temptokena{#2}%
72 \ifx#1\relax
73 \let#1\@empty
74 \fi
75 \ifx#1\@undefined
76 \edef#1{\the\@temptokena}%
77 \else
78 \toks@\expandafter{#1}%
79 \edef#1{\the\toks@\the\@temptokena}%
80 \fi
81 \@temptokena{}\toks@\@temptokena
82 }
83 \def\BR@DeclareLang#1#2{%
84 \begingroup
85 \edef\x##1##2{%
86 \noexpand\ifx##2\relax
87 \errmessage{No definitions for language '#2' found!}%
88 \noexpand\fi
89 \endgroup
90 \noexpand\DeclareOption{#1}{%
91 \noexpand\BR@addto{\noexpand##1}{\noexpand##2}%
92 }%
93 }%

```

```

94 \expandafter\x\csname extras#1\expandafter\endcsname
95 \csname backref#2\expandafter\endcsname
96 }
97 \BR@DeclareLang{english}{english}
98 \BR@DeclareLang{american}{english}
99 \BR@DeclareLang{australian}{english}
100 \BR@DeclareLang{british}{english}
101 \BR@DeclareLang{canadian}{english}
102 \BR@DeclareLang{newzealand}{english}
103 \BR@DeclareLang{UKenglish}{english}
104 \BR@DeclareLang{USenglish}{english}
105 \BR@DeclareLang{german}{german}
106 \BR@DeclareLang{ngerman}{german}
107 \BR@DeclareLang{austrian}{german}
108 \BR@DeclareLang{naustrian}{german}
109 \BR@DeclareLang{french}{french}
110 \BR@DeclareLang{acadian}{french}
111 \BR@DeclareLang{canadien}{french}
112 \BR@DeclareLang{frenchb}{french}
113 \BR@DeclareLang{français}{french}
114 \BR@DeclareLang{spanish}{spanish}
115 \BR@DeclareLang{brazil}{brazil}
116 \BR@DeclareLang{brazilian}{brazil}
117 \BR@DeclareLang{afrikaans}{afrikaans}

```

Default is the english version:

```
118 \backrefenglish
```

### 3.2.4 Process options

```

119 \ExecuteOptions{pageref}
120 \ProcessOptions*\relax

```

## 3.3 The bibliography

\ifbackrefparscan

```

121 \newif\ifbackrefparscan
122 \backrefparscantrue

```

\ifBR@BackrefAlt

```
123 \newif\ifBR@BackrefAlt
```

\BR@bibitem

```

124 \def\BR@bibitem{%
125   \ifbackrefparscan
126     \expandafter\@ifnextchar\expandafter[\expandafter
127     \BR@@@bibitem\expandafter\BR@@bibitem
128   \else
129     \expandafter\@ifnextchar\expandafter[\expandafter
130     \BR@@@bibitem\expandafter\BR@@@bibitem
131   \fi
132 }

133 \def\BR@@bibitem[#1]#2#3\par{%
134   \let\backrefprint\BR@backrefprint
135   \BRorg@bibitem[{#1}]{#2}#3%
136   \BR@backref{#2}%
137 }%
138 \def\BR@@@bibitem#1#2\par{%

```

```

139 \let\backrefprint\BR@backrefprint
140 \BRorg@bibitem{#1}#2%
141 \BR@backref{#1}%
142 }
143 \def\BR@@@bibitem[#1]#2{%
144 \def\backrefprint{\BR@backref{#2}}%
145 \BRorg@bibitem[{#1}]{#2}%
146 }
147 \def\BR@@@bibitem#1{%
148 \def\backrefprint{\BR@backref{#1}}%
149 \BRorg@bibitem{#1}%
150 }
151 \def\BR@backrefprint{%
152 \PackageError{backref}{%
153 \string\backrefprint\space is only available after \string\bibitem
154 \MessageBreak
155 with setting \string\backrefparscanfalse
156 }{\@ehc
157 }
158 \let\backrefprint\BR@backrefprint
159 \def\BR@backref#1{%
160 \newblock
161 \begingroup
162 \csname @safe@activetrue\endcsname
163 \expandafter\providecommand\csname brc@#1\endcsname{0}%
164 \expandafter\providecommand\csname brcd@#1\endcsname{0}%
165 \csname @safe@activesfalse\endcsname\expandafter\endcsname
166 \ifBR@BackrefAlt
167 \ifx\backrefentrycount\BR@BackrefEntryCountUnused
168 \else
169 \BR@PopulateEntryCount{#1}%
170 \fi
171 \expandafter\backrefalt\csname brc@#1\endcsname\expandafter\endcsname
172 \csname brl@#1\endcsname\expandafter\endcsname
173 \csname brcd@#1\endcsname\expandafter\endcsname
174 \csname brld@#1\endcsname
175 \else
176 \expandafter\backref\csname br@#1\endcsname\expandafter\endcsname
177 \fi
178 \endgroup
179 \par
180 }
181 \ifundefined{newblock}{\def\newblock{\par}}{}
182 \let\BR@Unused\@empty
183 \def\BR@BackrefAltUnused#1#2#3#4{\BR@Unused}
184 \ifundefined{backrefalt}{%
185 \let\backrefalt\BR@BackrefAltUnused
186 }{}
187 \def\BR@BackrefEntryCountUnused#1#2{\BR@Unused#1}
188 \ifundefined{backrefentrycount}{%
189 \let\backrefentrycount\BR@BackrefEntryCountUnused
190 }{}

```

### 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@&lt;label&gt;</code>	list, entries separated by comma without dupes
<code>\brc@&lt;label&gt;</code>	number of citations without dupes
<code>\brl@&lt;label&gt;</code>	backref list without dupes
<code>\brcd@&lt;label&gt;</code>	number of all citations (with dupes)
<code>\brld@&lt;label&gt;</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.

```
191 \def\backcite#1#2{%
192   \@for\x:=#1\do{%
193     \begingroup
194     \csname @safe@activetrue\endcsname
195     \edef\x{\endgroup
196       \def\noexpand\x{\expandafter\@firstofone\x\@empty}%
197     }%
198     \x
```

Now macro \x contains the citation label name.

```
199 \expandafter\ifx\csname br@\x\endcsname\relax
```

Initialization, fill in the first entry.

```
200 \expandafter\protected@xdef\csname br@\x\endcsname{%
201 \protect\backrefxxx#2%
202 }%
203 \ifBR@BackrefAlt
204 \global\expandafter\let\csname brl@\x\expandafter\endcsname
205 \csname br@\x\endcsname
206 \global\expandafter\let\csname brld@\x\expandafter\endcsname
207 \csname br@\x\endcsname
208 \expandafter\gdef\csname brc@\x\endcsname{1}%
209 \expandafter\gdef\csname brcd@\x\endcsname{1}%
210 \fi
211 \else
```

Fill in further entry. But check for dupe first.

```
212 \begingroup
213 \@ifundefined{backrefxxxdupe}{-}{\let\backrefxxx\backrefxxxdupe}%
214 \expandafter\def\expandafter\reserved@a\expandafter{%
215 \backrefxxx#2%
216 }%
217 \let\BRorg@backrefxxx\backrefxxx
218 \global\let\BR@found=N%
219 \long\def\backrefxxx##1##2##3{%
220 \expandafter\def\expandafter\reserved@b\expandafter{%
221 \BRorg@backrefxxx{##1}{##2}{##3}%
222 }%
223 \ifx\reserved@a\reserved@b
224 \global\let\BR@found=Y%
225 \fi
226 }%
227 \setbox\@tempboxa\hbox{\csname br@\x\endcsname}%
228 \endgroup
229 \let\backrefsep\relax
230 \def\backreftwosep{\backrefsep}%
231 \def\backreflastsep{\backrefsep}%
232 \if N\BR@found
233 \expandafter\protected@xdef\csname br@\x\endcsname{%
234 \csname br@\x\endcsname, %
235 \protect\backrefxxx#2%
236 }%
237 \ifBR@BackrefAlt
238 \expandafter\protected@xdef\csname brl@\x\endcsname{%
239 \csname brl@\x\endcsname
240 \ifnum\@nameuse{brc@\x}=1 %
241 \noexpand\backreftwosep
242 \else
243 \noexpand\backreflastsep
244 \fi
245 \protect\backrefxxx#2%
246 }%
247 \count@=\@nameuse{brc@\x}\relax
248 \advance\count@ by 1 %
249 \expandafter\xdef\csname brc@\x\endcsname{\the\count@}%
250 \fi
251 \fi
```

```

252 \ifBR@BackrefAlt
253 \expandafter\protected@xdef\csname brld@\x\endcsname{%
254 \csname brld@\x\endcsname
255 \ifnum\@nameuse{brcd@\x}=1 %
256 \noexpand\backreftwosep
257 \else
258 \noexpand\backreflastsep
259 \fi
260 \protect\backrefxxx#2%
261 }%
262 \count@=\@nameuse{brcd@\x}\relax
263 \advance\count@ by 1 %
264 \expandafter\xdef\csname brcd@\x\endcsname{\the\count@}%
265 \fi
266 \fi
267 }%
268 }

```

\BR@PopulateEntryCount

```

269 \def\BR@PopulateEntryCount#1{%
270 \begingroup
271 \toks@{}%
272 \def\backrefsep{%
273 \toks@\expandafter{\the\toks@\backrefsep}%
274 }%
275 \def\backreftwosep{%
276 \toks@\expandafter{\the\toks@\backreftwosep}%
277 }%
278 \def\backreflastsep{%
279 \toks@\expandafter{\the\toks@\backreflastsep}%
280 }%
281 \def\protect{}%
282 \let\BR@backrefxxx\backrefxxx
283 \let\backrefxxx\BR@PopulateBackrefxxx
284 \def\BR@name{#1}%
285 \csname brl@#1\endcsname
286 \expandafter\xdef\csname brl@#1\endcsname{\the\toks@}%
287 \endgroup
288 }

```

\BR@PopulateBackrefxxx

```

289 \def\BR@PopulateBackrefxxx#1#2#3{%
290 \expandafter\def\expandafter\BR@tempa\expandafter{%
291 \BR@backrefxxx{#1}{#2}{#3}%
292 }%
293 \begingroup
294 \count@=\z@
295 \def\backrefsep{}%
296 \def\backreftwosep{}%
297 \def\backreflastsep{}%
298 \let\backrefxxx\BR@@PopulateBackrefxxx
299 \csname brld@\BR@name\endcsname
300 \toks\@tw@={\backrefxxx{#1}{#2}{#3}}%
301 \edef\x{\endgroup
302 \toks@{%
303 \the\toks@
304 \noexpand\backrefentrycount{%

```

```

305     \the\toks\tw@
306     }\the\count@}%
307   }%
308 }%
309 \x
310 }

```

\BR@@PopulateBackrefxxx

```

311 \def\BR@@PopulateBackrefxxx#1#2#3{%
312   \expandafter\def\expandafter\BR@tempb\expandafter{%
313     \BR@backrefxxx{#1}{#2}{#3}%
314   }%
315   \ifx\BR@tempa\BR@tempb
316     \advance\count@\@ne
317   \fi
318 }

```

### 3.5 Initialization

```

319 \def\@currentHref{}
320 \AtBeginDocument{%
321   \let\BRorg@bibitem\bibitem
322   \let\bibitem\BR@bibitem
323   \let\BRorg@thebibliography\thebibliography
324   \def\thebibliography{%
325     \BR@starttoc
326     \BRorg@thebibliography
327   }%
328   \@ifundefined{NAT@parse}{%
329     \global\let\BRorg@citex\@citex
330     \global\let\@citex\BR@citex
331   }{%
332     \@ifpackageloaded{hyperref}{%
333       \def\hyper@natlinkstart#1{\Hy@backout{#1}}%
334     }%
335     \PackageInfo{backref}{** backref set up for natbib **}%
336   }%
337 }

```

\BR@starttoc

```

338 \def\BR@starttoc{%
339   \ifx\backrefalt\BR@BackrefAltUnused
340     \global\BR@BackrefAltfalse
341   \else
342     \global\BR@BackrefAlttrue
343   \fi
344   \begingroup
345     \makeatletter
346     \@input{\jobname.brf}%
347     \if@filesw
348       \@ifundefined{tf@brf}{%
349         \expandafter\newwrite\csname tf@brf\endcsname
350       }{%
351         \@ifundefined{tf@brf@open}{%
352           \BR@RerunFileCheck
353           \immediate\openout\csname tf@brf\endcsname\jobname.brf\relax
354           \gdef\tf@brf@open{}%

```

```

355     }{}%
356   \fi
357   \@nobreakfalse
358 \endgroup
359 }

```

### 3.6 Collecting back cite informations

\BR@citex

```

360 \def\BR@citex[#1]#2{%
361   \BRorg@citex[{#1}]{#2}%
362   \ifBR@verbose
363     \PackageInfo{backref}{back cite \string'#2\string'}%
364   \fi
365   \Hy@backout{#2}%
366 }

```

Grr. for chicago.sty

```

367 \@ifpackageloaded{chicago}{%
368   \let\BRorg@citedatax\@citedatax
369   \def\@citedatax[#1]#2{%
370     \BRorg@citedatax[{#1}]{#2}%
371     \Hy@backout{#2}%
372   }%
373 }{}

```

\Hy@backout

```

374 \def\Hy@backout#1{%
375   \@bsphack
376   \ifx\@empty\@currentlabel
377     \protected@write\@auxout{}{%
378       \string\@writefile{brf}{%
379         \string\backcite{#1}{\thepage}{(document)}{Doc-Start}}%
380     }%
381   }%
382 \else
383   \protected@write\@auxout{}{%
384     \string\@writefile{brf}{%
385       \string\backcite{#1}{\thepage}{\@currentlabel}{\@currentHref}}%
386     }%
387   }%
388 \fi
389 \@esphack
390 }

```

### 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).

```

391 \RequirePackage{rerunfilecheck}[2009/12/10]
392 \def\BR@RerunFileCheck{%
393   \RerunFileCheck{\jobname.brf}{%
394     \@ifundefined{tf@brf@open}{%

```



\BR@RerunFileCheck	275, 278, 281,	\Hy@backout	333, 365, 371, 374
352, 391	284, 289, 290,	\hyper@natlinkstart	333
\BR@starttoc	295, 296, 297,	\hyper@page@backref	12, 25
\BR@tempa	311, 312, 319,	\hyper@section@back-	11, 22
\BR@tempb	324, 333, 338,	ref	11, 12
\BR@Unused	360, 369, 374, 392		
\BR@verbosefalse	192		
\BR@verbose>true			
\BRorg@backrefxxx			
217, 221	E	I	
\BRorg@bibitem	\edef 76, 79, 85, 195, 301	\if	232
135,	\else	\if@filesw	347
140, 145, 149, 321	77, 128,	\ifbackrefparscan	121, 125
\BRorg@citedatax	168, 175, 211,	\ifBR@BackrefAlt	123,
368, 370	242, 257, 341, 382	166, 203, 237, 252	
\BRorg@citex	\endcsname	\ifBR@verbose	2, 6, 362
\BRorg@thebibliogra-	94, 95, 162,	\ifHy@verbose	6
phy	163, 164, 165,	\ifnum	240, 255
323, 326	171, 172, 173,	\ifx	72,
	174, 176, 194,	75, 86, 167, 199,	
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\c	205, 206, 207,	\immediate	353, 396
\closeout	208, 209, 227,		
\count@	233, 234, 238,	J	
247, 248,	239, 249, 253,	\jobname	346, 353, 393
249, 262, 263,	254, 264, 285,		
264, 294, 306, 316	286, 299, 349, 353	L	
\csname	\endgroup 89, 178, 195,	\let	6, 15,
94, 95, 162,	228, 287, 301, 358	19, 22, 25, 73,	
163, 164, 165,	\errmessage	134, 139, 158,	
171, 172, 173,	87	182, 185, 189,	
174, 176, 194,	\ExecuteOptions	204, 206, 213,	
199, 200, 204,	301, 358	217, 218, 224,	
205, 206, 207,	\expandafter	229, 282, 283,	
208, 209, 227,	78, 94, 95, 126,	298, 321, 322,	
233, 234, 238,	127, 129, 130,	323, 329, 330, 368	
239, 249, 253,	163, 164, 165,	\long	9, 10, 11, 12, 219
254, 264, 285,	171, 172, 173,		
286, 299, 349, 353	176, 196, 199,	M	
	200, 204, 206,	\makeatletter	345
	208, 209, 214,	\MessageBreak	154
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8,	273, 276, 279,	\newblock	160, 181
13, 17, 21, 24, 90	286, 290, 312, 349	\newif	2, 121, 123
\def		\newwrite	349
9, 10,		\noexpand	86, 88,
11, 12, 14, 18,	F	90, 91, 196, 241,	
22, 25, 27, 28,	\fi	243, 256, 258, 304	
29, 30, 31, 32,	74, 80, 88,		
34, 35, 36, 37,	131, 170, 177,	G	
38, 39, 41, 42,	210, 225, 244,	\gdef	208, 209, 354
43, 44, 45, 46,	250, 251, 259,	\global	204,
48, 49, 50, 51,	265, 266, 317,	206, 218, 224,	
52, 53, 55, 56,	343, 356, 364, 388	329, 330, 340, 342	
57, 58, 59, 60,		H	
62, 63, 64, 65,		\hbox	227
66, 67, 69, 83,			
124, 133, 138,			
143, 144, 147,			
148, 151, 159,			
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191, 196, 214,			
219, 220, 230,			
231, 269, 272,			

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	235, 245, 260, 281	<code>\string</code> .	153, 155, 363,		
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<code>\protected@xdef</code> . . .				<b>X</b>	
	. 200, 233, 238, 253			<code>\x</code> . .	85, 94, 192, 195,
<code>\providecommand</code>	163, 164	<b>T</b>			196, 198, 199,
		<code>\tf@brf</code> . . . . .	396		200, 204, 205,
<b>R</b>		<code>\tf@brf@open</code> . . . . .	354		206, 207, 208,
<code>\relax</code>	72, 86, 120, 199,	<code>\the</code> .	76, 79, 249, 264,		209, 227, 233,
	229, 247, 262, 353		273, 276, 279,		234, 238, 239,
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