The **footbib** package[*]

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Contents

1 General overview

This package makes bibliographic references appear as footnotes. It defines a command `\footcite` which is similar to the `\cite` command of LATEX but the references cited in this way are inserted at the bottom of the pages. This *foot bibliography* does not conflict with the standard one and both may exist simultaneously in a document. The command `\cite` may still be used to produce the standard bibliography.

The foot bibliography uses its own style and bibliographic database which may be specified independently of the standard one. Any standard bibliography

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[*]This file has version number 2.0.4, last revised 2004/06/04.

style may be used. If the style does not provide explicit labels (e.g. `plain`), the references are numbered. The default is to number the references in the order in which they appear in the `thebibliography` environment. This may be overridden through options which allow the user to define a *numbering unit*. Then the references will be numbered in the order in which they are cited in the unit and the numbering restarts from 1 in each unit. The numbering unit may be a page, a double page, a chapter, a part or the whole document. Chapter and part may be used only if they are defined by the document class.

The user may also define a *citation unit* which may be a page, a double page, a chapter, a part or the whole document. The text of a reference will be inserted only once in each citation unit, on the page where the first citation occurs in the unit.

The mechanism used to put a reference only once in each citation unit may require several runs of LaTeX (usually at least two) before the references find their exact place. If necessary, LaTeX will issue, near the end of the document, a warning saying

```
Package footbib Warning: Bibliography not yet stable. Rerun LaTeX.
```

Using `footbib` in a document ⟨*doc*⟩`.tex` produces a file ⟨*doc*⟩`.fb.aux`. One must pass the argument ⟨*doc*⟩`.fb` to BibTeX to produce the bibliography which will be put in the file ⟨*doc*⟩`.fb.bbl`. The exact sequence of commands is

```
latex ⟨doc⟩
bibtex ⟨doc⟩.fb
latex ⟨doc⟩
latex ⟨doc⟩
...
```

Note: The name ⟨*doc*⟩`.fb.aux` might cause some problem on systems which do not allow a double extension in a file name or put a limit on the length of file names. A user command is provided to change it (see section 2.3).

At the beginning of the document, `footbib` inputs the bibliography from the file ⟨*doc*⟩`.fb.bbl` (or the name given by the user). If one wants to include the `thebibliography` environment in the main document, this may be done with a `filecontents` environment before the `\documentclass` command. See the LaTeX 2ε documentation for more details about this environment.

2   The user interface

2.1   Package options

2.1.1   oneside/twoside

oneside
twoside
The `oneside` and `twoside` options affect the behaviour of `footbib` when either unit (citation or numbering) is the page. In `oneside` mode, the actual unit is a single page while in `twoside` mode, the unit is a double page. These options may be used to override a global `oneside` or `twoside` option.

2.1.2 citeonce[*]

The `citeonce` option overrides the default *citation unit*. `footbib` puts the text of a reference only once in each citation unit which may be a (double) page, a chapter, a part or the whole document. The default citation unit is the page in `oneside` mode and the double page in `twoside` mode. The new citation unit (`chapter`, `part` or `document`) is given as an optional argument between parentheses (`citeonce(chapter)`, `citeonce(part)` or `citeonce(document)`). If no argument is supplied, `document` is assumed. The argument `chapter` (resp. `part`) may be used only if the document class defines `\chapter` (resp. `\part`). The argument `page` may also be used but has a somehow special meaning. It defines a citation unit which is not overridden by another `citeonce` option but instead has a cumulative effect. For instance if one says

        \usepackage[twoside,citeonce(page),citeonce(chapter)]{footbib}

then each double page and also each `\chapter` command starts a new citation unit. This may be useful if one wants a chapter to start a new unit even if it starts on a right page. It is only meaningful in `twoside` mode in conjunction with another `citeonce` option. In all other cases, it has no effect.

The `citeonce` option has a star form `citeonce*` with the same optional argument. When the star form is used, for each subsequent citation of a reference in the same citation unit but on another (double) page, the text of the reference is not omitted but replaced with a cross reference to the first citation in the same citation unit. The `page` argument is not available since it would have no effect.

2.1.3 firstcite

The `firstcite` option affects the way the references are labelled. When the bibliography style does not provide explicit labels, the references are numbered. The default is to assign to each reference a *static* label which is its order in the `thebibliography` environment. The label is then the same for all citations of a given reference. The `firstcite` option causes the references to be numbered dynamically according to the order of their first citations. `firstcite` takes an optional argument between parentheses `firstcite(`$\langle unit \rangle$`)` which defines the *numbering unit*. The numbering restarts then from 1 in each numbering unit. The argument $\langle unit \rangle$ may take the value `page`, `chapter`, `part` or `document`. If `page` is used, then the numbering unit is a page in `oneside` mode and a double page in `twoside` mode. If no argument is supplied, `document` is assumed.

The effect of several `firstcite` options is cumulative in the sense that if one says for instance

        \usepackage[twoside,firstcite(page),firstcite(chapter)]{footbib}

then each double page *and* each `\chapter` command starts a new numbering unit. This means that a `\chapter` command starts a new numbering unit even if it is on a right page.

If the bibliography style provides explicit labels, the `firstcite` option has no effect.

2.1.4 crossrefs[*] and nocrossrefs

When an entry in the bibliographic database contains a `CROSSREF` field, BibTeX

includes the cross-referenced entry in the bibliography and puts a `\cite` command in the entry where the `CROSSREF` field occurs. If no standard bibliography is produced, LaTeX will complain about an undefined reference. One may generally inhibit this behaviour of BibTeX by invoking it with the `-min-crossrefs=`⟨*number*⟩ option which tells how many times an entry must be cross-referenced before it is included in the bibliography and replaced with a `\cite` command. Setting ⟨*number*⟩ to a large value will generally inhibit the cross-referencing mechanism. However, this option has no effect if the cross-referenced entry is explicitly cited in the document.

The `crossrefs` option of `footbib` solves this problem by replacing each `\cite` command in a foot reference with `\footcite` (see the description of this command below). The star form `crossrefs*` replaces the `\cite` command with a `\footcite*`, which means that the text of the reference is not inserted. It is then the responsibility of the user to insert the text in the right place with a `\footnocite` command. Of course, standard citation through `\cite` is not possible anymore in a foot reference when either form of this option is used.

A `nocrossrefs` option is also provided to inhibit this behaviour in case it is not wanted but `crossrefs` occurs in the global options.

2.1.5 `split` and `nosplit`

<div style="margin-left:2em"></div>

split
nosplit

The `nosplit` option tells `footbib` not to split the references across pages. The `split` option allows references to be split. `split` is the default and exists only to allow the user to override a global `nosplit` option.

2.2 Commands to generate the foot bibliography

\footbibliography

`\footbibliography{`⟨*file*⟩`,`⟨*file*⟩`,...}`
Defines the list of bibliographic databases for the foot bibliography. This command has the same syntax as the `\bibliography` command of LaTeX.

\footbibliographystyle

`\footbibliographystyle{`⟨*style*⟩`}`
Defines the style of the foot bibliography. This command has the same syntax as the `\bibliographystyle` command of LaTeX.

\footcite

`\footcite{`⟨*key*⟩`,`⟨*key*⟩`,...}`
Puts the list of labels in the text and the text of the references at the bottom of the page. The text of each reference is inserted at most once in a citation unit, even if it is cited several times.

\footcite*

`\footcite*{`⟨*key*⟩`,`⟨*key*⟩`,...}`
Puts the list of labels in the text but does not put the reference at the bottom of the page.

\footnocite

`\footnocite{`⟨*key*⟩`,`⟨*key*⟩`,...}`
Puts the reference at the bottom of the page but puts nothing in the text.

Note: The main purpose of the commands `\footcite*` and `\footnocite` is to solve the problem of a `\footcite` occuring inside an environment where the reference will be lost (for instance in a `minipage` or `tabular` environment, in a `\mbox`, etc.). In this case, if the reference is not cited otherwise on the same page, it won't show up at the bottom of the page. It suffices to

add a `\footnocite` command just before or after this environment. The command `\footcite{⟨key⟩}` is more or less (but not completely) equivalent to `\footcite*{⟨key⟩}\footnocite{⟨key⟩}`.

2.3   customisation

`\footbibliographyname`   The basename of the `.aux` and `.bbl` files used for the foot bibliography may be re-defined by `\footbibliographyname{⟨name⟩}`. The default value is `\jobname.fb`[1] which causes `footbib` to read the bibliography from `\jobname.fb.bbl` and to use `\jobname.fb.aux` as an auxiliary file. This command may be used only in the preamble. The name supplied to `\footbibliographyname` must be different from the name of the main document.

`\footcitelabel`
`\putfootcitelabel`
`\footcitelistformat`
The list of citations in the text may not be typeset in one step as done by the `\cite` command of LaTeX. The reason is that the command which creates the text of the foot reference must be inserted after each citation. The way (LA)TEX handles insertions makes them vanish if they occur in a box. Hence if the command which formats the list of citations puts them in a box, the text is lost and the references do not show up at the bottom of the page. All references could be inserted at once, either before or after the list of citations but if this list gets split across pages, the text of some references could show up on the wrong page. Hence the list is created one piece at a time and the text of the corresponding reference is inserted after each citation. The list of citation is created as follows:

    1) start of list
    2) for each citation:
        a) if it is not the first one, separator of citations
        b) label of the reference, to which `\footcitelabel` is applied
        c) insertion of the text of the reference
    3) end of list

The separator of citations is made of two parts: ⟨sep_1⟩ and ⟨sep_2⟩. The command `\putfootcitelabel` is applied to each component of the list, excepted ⟨sep_2⟩ which is put as such. Typically, ⟨sep_2⟩ is a separator which may disappear at a line break, like a penalty or some spacing. That's why `\putfootcitelabel` is not applied to it so that it won't be put in a box. The effect is as follows:

    `\putfootcitelabel{⟨start of list⟩}`
    `\putfootcitelabel{\footcitelabel{⟨label 1⟩}}`
    ⟨insertion of the text of reference 1⟩
    `\putfootcitelabel{⟨sep_1⟩}`
    ⟨sep_2⟩
    `\putfootcitelabel{\footcitelabel{label 2}}`
    ⟨insertion of the text of reference 2⟩
    `\putfootcitelabel{⟨sep_1⟩}`
    ⟨sep_2⟩
       ⋮
    `\putfootcitelabel{\footcitelabel{label n}}`

---

[1] `\jobname` is a primitive TEX command which holds the name of the main document.

⟨*insertion of the text of reference n*⟩
`\putfootcitelabel{`⟨*end of list*⟩`}`

Each component of the list may be redefined as follows:

`\renewcommand*\footcitelabel[1]{...}`
`\renewcommand*\putfootcitelabel[1]{...}`
`\footcitelistformat`⟨*start of list*⟩⟨*sep₁*⟩⟨*sep₂*⟩⟨*end of list*⟩

Here are some examples of the variations allowed by this mechanism.

example 1: list of citations *a la LATEX*: [label 1, label 2, . . .]
`\renewcommand*\footcitelabel[1]{#1`
`\renewcommand*\putfootcitelabel[1]{#1`
`\footcitelistformat[,{\penalty1000\␣}]`

example 2: ditto but the list may not be cut

$$\vdots$$

`\footcitelistformat[,{\penalty10000\␣}]`

example 3: the list is raised and the labels are separated only by commas, without any space: [label 1,label 2,. . .]
`\renewcommand*\footcitelabel[1]{#1`
`\renewcommand*\putfootcitelabel[1]{\textsuperscript{\normalfont#1}}`
`\footcitelistformat[,{\penalty1000\relax}]`

example 4: ditto, but no brackets around the list of labels: label 1,label 2,. . .

$$\vdots$$

`\footcitelistformat{},{\penalty1000\relax}{}`

example 5: [label 1], [label 2], . . .
`\renewcommand*\footcitelabel[1]{[#1]}`
`\renewcommand*\putfootcitelabel[1]{#1}`
`\footcitelistformat{},{\penalty1000\␣}{}`

The default definitions are the ones of example 3 above.

`\footbibskip`
`\footbibrule` The foot bibliography is separated from the rest of the page by a vertical skip of length `\footbibskip` in which a horizontal line is drawn by the command `\footbibrule`. The length of the skip and the horizontal line may be redefined in the preamble by

`\setlength\footbibskip{...}`
`\renewcommand\footbibrule{...}`

CAUTION: `\footbibrule` must take zero vertical space.

`\footreflabel` The label of the foot reference is formated by the macro `\footreflabel` which takes the label as argument. It may be redefined by `\renewcommand*\footreflabel[1]{...}`.

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\footrefstyle The label and the text of the reference at the bottom of the page are typeset in the style defined by the command \footrefstyle which may be redefined in the preamble by \renewcommad\footrefstyle{...}. The default definition is \normalfont\footnotesize.

\footxref The options citeonce*(⟨unit⟩) tells footbib to replace the text of each reference but the first in each citation unit with a cross-reference to the last place where the full text of the reference appeared. The text of the cross-reference is generated by the command \footxref which takes two arguments: (1) the label and (2) the page of the last full citation. \footxref may be redefined in the preamble by \renewcommand*\footxref[2]{...}.

3 Known and potential problems

- The foot bibliography is not sorted. The references appear at the bottom of the page in the order in which they are cited on the page.

- If a float is inserted at the bottom of the page, the foot bibliography is put *above* it, like footnotes.

- The result is not very nice in twocolumn mode. The references should be balanced between the two columns of the page (if there are two) or put in the right column like the package ftnright of Frank Mittelbach does for footnotes.

- footbib does not work with most packages which modify the output routine of LaTeX: multicol, ftnright, floatflt, wrapfig, etc.

- At present, the convergence is not proved. There is no guarantee that the references eventually find their place. However, footbib was used in large documents (several hundreds pages) and such a problem never occured.

- The references must not contain any verbatim environment. But \verb is allowed since it is sometime used to typeset filenames, URL's, etc.

- The braces must be balanced in the references, excepted the ones that might occur inside the argument of a \verb command. This implies that a reference may not contain say \hbox\bgroup...} which is otherwise correct in (LA)TEX.

- When references are numbered, the space between the label and the reference itself may be too large because the longest label is determined from the argument of \begin{thebibliography}{⟨longest label⟩} and its length is used for all references. If all references on a page have small numbers and the bibliography contains many references (say more than 100), this length is not reliable. The longest label should be deduced from the maximal number of foot references on a page, but this may not be known at the beginning of the document, at least at the first run. At the second run, the information could be deduces from what was written into the .aux file, provided the \nofiles command was not used (otherwise, the .aux file was not written). When per page numbering is used (option firstcite(page)), the longest label could also be simply initialised to 99 which is not too large and should be enough.

4   Implementation

4.1   Identification

```
1 ⟨∗package⟩
2 \NeedsTeXFormat{LaTeX2e}
3 \ProvidesPackage{footbib}[\filedate\space v\fileversion\space (E.Domenjoud)]
```

4.2   Initial setup

Some badly behaved packages (written for LaTeX 2.09) change the catcodes before the beginning of the document and make some commands like `\@for` unusable. The catcodes needed in the definitions are set here and restored at the end of the package.

```
 4 \@makeother\'
 5 \edef\@tempa{\catcode\string'\string'=\the\catcode\string'\relax}
 6 \def\@tempb#1{\catcode'\noexpand#1\string=\the\catcode'#1\relax}
 7 \edef\@tempa{\@tempa
 8   \@tempb\:\@tempb\?\@tempb\=\@tempb\<\@tempb\>\@tempb\+\@tempb\-%
 9   \@tempb\.\@tempb\'\@tempb\~}
10 \expandafter\AtEndOfPackage\expandafter{\@tempa}
11 \@makeother\: \@makeother\? \@makeother\= \@makeother\< \@makeother\>
12 \@makeother\+ \@makeother\- \@makeother\. \@makeother\'
13 \catcode'\~=\active
```

4.3   Test of the output routine

If the LaTeX 2ε format is more recent than the package, we test whether the output routine changed. If so, a warning is issued because the user might get unexpected results. The package should work with all previous versions of LaTeX 2ε.

When docstrip is used to extract the package, this code is included only if the 'checkoutput' flag is used in addition to 'package'.

```
14 ⟨∗checkoutput⟩
15 \@ifpackagelater{footbib}\fmtversion\@tempswafalse\@tempswatrue
16 \if@tempswa
17 \def\@tempa#1#2{\def\@tempb{#2}\ifx#1\@tempb\else\@tempswatrue\fi}
18 \@tempswafalse
19 \@tempa\@specialoutput{\ifnum\outputpenalty>-\@Mii\@doclearpage\else
20   \ifnum\outputpenalty<-\@Miii\ifnum\outputpenalty<-\@MM\deadcycles\z@
21   \fi\global\setbox\@holdpg\vbox{\unvbox\@cclv}\else\global\setbox
22   \@holdpg\vbox{\unvbox\@holdpg\unvbox\@cclv\setbox\@tempboxa\lastbox
23   \unskip}\@pagedp\dp\@holdpg\@pageht\ht\@holdpg\unvbox\@holdpg\@next
24   \@currbox\@currlist{\ifnum\count\@currbox>\z@\advance\@pageht\@pagedp
25   \ifvoid\footins\else\advance\@pageht\ht\footins\advance\@pageht\skip
26   \footins\advance\@pageht\dp\footins\fi\ifvbox\@kludgeins\ifdim\wd
27   \@kludgeins=\z@\advance\@pageht\ht\@kludgeins\fi\fi\@reinserts
28   \@addtocurcol\else\@reinserts\@addmarginpar\fi}\@latexbug\ifnum
29   \outputpenalty<\z@\if@nobreak\nobreak\else\addpenalty\interlinepenalty
30   \fi\fi\fi\fi}
31 \@tempa\@doclearpage{\ifvoid\footins\ifvbox\@kludgeins{\setbox\@tempboxa
32   \box\@kludgeins}\fi\setbox\@tempboxa\vsplit\@cclv to\z@
33   \unvbox\@tempboxa\setbox\@tempboxa\box\@cclv\xdef\@deferlist{\@toplist
34   \@botlist\@deferlist}\global\let\@toplist\@empty\global\let\@botlist
```

```
35    \@empty\global\@colroom\@colht\ifx\@currlist\@empty\else\@latexerr
36    {Float(s) lost}\@ehb\global\let\@currlist\@empty\fi\@makefcolumn
37    \@deferlist\@whilesw\if@fcolmade\fi{\@opcol\@makefcolumn\@deferlist
38    }\if@twocolumn\if@firstcolumn\xdef\@dbldeferlist{\@dbltoplist
39    \@dbldeferlist}\global\let\@dbltoplist\@empty\global\@colht\textheight
40    \begingroup\@dblfloatplacement\@makefcolumn\@dbldeferlist\@whilesw
41    \if@fcolmade\fi{\@outputpage\@makefcolumn\@dbldeferlist}\endgroup\else
42    \vbox{}\clearpage\fi\fi\else\setbox\@cclv\vbox{\box\@cclv\vfil}\@makecol
43    \@opcol\clearpage\fi}
44 \@tempa\@makecol{\ifvoid\footins\setbox\@outputbox\box\@cclv\else\setbox
45    \@outputbox\vbox{\boxmaxdepth\@maxdepth\@tempdima\dp\@cclv\unvbox\@cclv
46    \vskip\skip\footins\color@begingroup\normalcolor\footnoterule\unvbox
47    \footins\color@endgroup}\fi\let\@elt\relax\xdef\@freelist{\@freelist
48    \@midlist}\global\let\@midlist\@empty\@combinefloats\ifvbox\@kludgeins
49    \@makespecialcolbox\else\setbox\@outputbox\vbox to\@colht{\@texttop\dimen@
50    \dp\@outputbox\unvbox\@outputbox\vskip-\dimen@\@textbottom}\fi\global
51    \maxdepth\@maxdepth}
52 \@tempa\@reinserts{\ifvoid\footins\else\insert\footins{\unvbox\footins}\fi
53    \ifvbox\@kludgeins\insert\@kludgeins{\unvbox\@kludgeins}\fi}
54 \fi
55 \if@tempswa
56    \PackageError{footbib}{the output routine of LaTeX changed}
57    {The output routine of LaTeX changed since the current version of
58     'footbib'.\MessageBreak Since 'footbib' patches this routine,
59     using it may produce unexpected\MessageBreak results. Send a mail to \space
60     Eric.Domenjoud@loria.fr \space to get a new version.\MessageBreak\MessageBreak
61     Type \space X <return> \space to quit or cross your fingers and
62     just type <return>.\MessageBreak}
63 \fi
64 ⟨/checkoutput⟩
```

4.4 Package Options

4.4.1 Initial code

\iffb@twoside
\iffb@citeonce
\iffb@pagecite
\fb@chaptercite
\fb@partcite
\iffb@firstcite
\iffb@pagenum
\fb@chapternum
\fb@partnum
\iffb@xref
\iffb@crossrefs
\iffb@xcrossrefs
\iffb@nosplit

First we define some switches which record the user options. The switch \iffb@twoside is initialised from the current value of \if@twoside because default global options are not passed to packages. If one says \documentclass{book} then the document is in twoside mode but the packages *don't know* it.

```
65 \newif\iffb@twoside      \let\iffb@twoside\if@twoside
66 \newif\iffb@citeonce     \fb@citeoncefalse
67 \newif\iffb@pagecite     \fb@pagecitefalse
68 \let\fb@chaptercite\@empty
69 \let\fb@partcite\@empty
70 \newif\iffb@firstcite    \fb@firstcitefalse
71 \newif\iffb@pagenum      \fb@pagenumfalse
72 \let\fb@chapternum\@empty
73 \let\fb@partnum\@empty
74 \newif\iffb@xref         \fb@xreffalse
75 \newif\iffb@crossrefs    \fb@crossrefsfalse
76 \newif\iffb@xcrossrefs   \fb@xcrossrefsfalse
77 \newif\iffb@nosplit      \fb@nosplitfalse
```

\fb@checksec   The macro \fb@checksec checks whether its first argument (a sectioning com-

mand) is defined. If so, the second argument (a list of command) is executed. Otherwise an error is raised and the second argument is discarded. It is called while processing the options which must patch a sectioning command.

```
78 \newcommand\fb@checksec[2]{%
79   \ifx#1\@undefined
80     \PackageError{footbib}{Bad option '\CurrentOption'}%
81     {{footbib}: The current document class does not define '\string#1'}%
82   \else
83     #2%
84   \fi}
```

4.4.2   Declaration and processing of options

oneside
twoside
```
85 \DeclareOption{oneside}{\fb@twosidefalse}
86 \DeclareOption{twoside}{\fb@twosidetrue}
```

firstcite
```
87 \DeclareOption{firstcite}{\fb@firstcitetrue}
88 \DeclareOption{firstcite(page)}{\fb@firstcitetrue\fb@pagenumtrue}
89 \DeclareOption{firstcite(chapter)}{\fb@firstcitetrue
90     \fb@checksec\chapter{\def\fb@chapternum{\fb@newnumunit}}}
91 \DeclareOption{firstcite(part)}{\fb@firstcitetrue
92     \fb@checksec\part{\def\fb@partnum{\fb@newnumunit}}}
93 \DeclareOption{firstcite(document)}{\fb@firstcitetrue}
```

citeonce
citeonce*
```
94 \DeclareOption{citeonce}{\fb@citeoncetrue}
95 \DeclareOption{citeonce(page)}{\fb@pagecitetrue}
96 \DeclareOption{citeonce(chapter)}{\fb@citeoncetrue
97     \fb@checksec\chapter{\def\fb@chaptercite{\fb@newciteunit}}}
98 \DeclareOption{citeonce(part)}{\fb@citeoncetrue
99     \fb@checksec\part{\def\fb@partcite{\fb@newciteunit}}}
100 \DeclareOption{citeonce(document)}{\fb@citeoncetrue}
101 \DeclareOption{citeonce*}{\fb@citeoncetrue\fb@xreftrue}
102 \DeclareOption{citeonce*(chapter)}{%
103     \ExecuteOptions{citeonce(chapter)}\fb@xreftrue}
104 \DeclareOption{citeonce*(part)}{%
105     \ExecuteOptions{citeonce(part)}\fb@xreftrue}
106 \DeclareOption{citeonce*(document)}{\ExecuteOptions{citeonce*}}
```

crossrefs
crossrefs*
nocrossrefs
```
107 \DeclareOption{crossrefs}{\fb@crossrefstrue\fb@xcrossrefstrue}
108 \DeclareOption{crossrefs*}{\fb@crossrefstrue\fb@xcrossrefsfalse}
109 \DeclareOption{nocrossrefs}{\fb@crossrefsfalse\fb@xcrossrefsfalse}
```

split
nosplit
```
110 \DeclareOption{split}{\fb@nosplitfalse}
111 \DeclareOption{nosplit}{\fb@nosplittrue}
```

```
112 \ProcessOptions*
113 \iffb@pagecite
114   \fb@citeoncefalse
115   \fb@xreffalse
116 \fi
117 \let\fb@firstcitetrue\@undefined   \let\fb@firstcitefalse\@undefined
118 \let\fb@citeoncetrue\@undefined    \let\fb@citeoncefalse\@undefined
119 \let\fb@pagecitetrue\@undefined    \let\fb@pagecitefalse\@undefined
120 \let\fb@xreftrue\@undefined        \let\fb@xreffalse\@undefined
```

```
121 \let\fb@crossrefstrue\@undefined  \let\fb@crossrefsfalse\@undefined
122 \let\fb@xcrossrefstrue\@undefined \let\fb@xcrossrefsfalse\@undefined
123 \let\fb@pagenumtrue\@undefined     \let\fb@pagenumfalse\@undefined
124 \let\fb@nosplittrue\@undefined     \let\fb@nosplitfalse\@undefined
125 \let\fb@checksec\@undefined
```

\chapter \quad At the beginning of the document, the commands `\chapter` and `\part` are
\part \quad patched if necessary so that they start a new citation or numbering unit. This
is achieved by adding in front of them the commands hold in `\fb@chaptercite`,
`\fb@chapternum`, `\fb@partcite` and `\fb@partnum` defined while processing the
options. When a command is patched, a `\clearpage` is added so that a new unit
always starts at the top of a page.

```
126 \AtBeginDocument{%
127   \begingroup
128     \def\@tempb#1{%
129       \ifx\@tempa\@empty\else
130         \edef\@tempa{\noexpand\clearpage\@tempa}%
131         \toks@\expandafter\expandafter\expandafter{\expandafter\@tempa#1}%
132         \xdef#1{\the\toks@}%
133       \fi}%
134     \let\fb@newnumunit\relax
135     \let\fb@newciteunit\relax
136     \edef\@tempa{\fb@partcite\fb@partnum}%
137     \@tempb\part
138     \edef\@tempa{\fb@chaptercite\fb@chapternum}%
139     \@tempb\chapter
140   \endgroup}
```

4.5 Customisation

4.5.1 Basename of the files used for the foot bibliography

\footbibliographyname \quad The basename of the `.aux` and `.bbl` files is produced by the command `\fb@bibname`
which is redefined by a call to `\footbibliographyname` in the preamble.

\quad `\footbibliographyname` first checks that its argument is different from
`\jobname`. Since the characters in `\jobname` have catcode 12 (other), the first
two commands below yield the argument of `\footbibliographyname` also with
catcodes 12 so that it may be compared to `\jobname`.

```
141 \newcommand*\footbibliographyname[1]{%
142   \edef\@tempa{#1}%
143   \edef\@tempa{\expandafter\strip@prefix\meaning\@tempa}%
144   \edef\@tempb{\jobname}%
145   \ifx\@tempa\@tempb
146     \PackageError{footbib}{Bad argument '#1'\on@line}%
147       {The name supplied to '\string\footbibliographyname' must be
148         different from the name\MessageBreak
149       of the current document to avoid conflicts with the standard
150         bibliography.\MessageBreak\MessageBreak
151       Type \space X <return> \space to quit.\MessageBreak}%
152   \else
153     \xdef\fb@bibname{#1}%
154   \fi}
155 \@onlypreamble\footbibliographyname
```

156 `\footbibliographyname{\jobname.fb}`

4.5.2 Layout of the list of citations in the text

\footcitelabel
\putfootcitelabel
\footcitelistformat
\fb@putfootcitelabel
\fb@citestart
\fb@citesep
\fb@citeend

Here we define the layout parameters for the list of citations in the text. We define an additional macro `\fb@putfootcitelabel` which is essentially `\putfootcitelabel`. Only `\scriptspace` and `\mathsurround` are set to 0 pt in case `\putfootcitelabel` involves some math. The modified version is applied to all components of the citation list but `\fb@citeend` to which the standard version is applied. This avoids unwanted spacing inside the list while allowing some additional spacing after it. The macro `\footcitelistformat` defines the macros `\fb@citestart`, `\fb@citesep` and `\fb@citeend` used by `\fb@cite` to build the list of citations in the text.

```
157 \newcommand*\footcitelabel[1]{#1}
158 \newcommand*\putfootcitelabel[1]{\textsuperscript{\normalfont#1}}
159 \newcommand*\fb@putfootcitelabel[1]{%
160   {\m@th\scriptspace\z@\putfootcitelabel{#1}}}
161 \newcommand*\footcitelistformat[4]{%
162   \def\fb@citestart{\fb@putfootcitelabel{#1}}%
163   \def\fb@citesep{\fb@putfootcitelabel{#2}#3}%
164   \def\fb@citeend{\putfootcitelabel{#4}}}%
165 \footcitelistformat[,{\penalty\@m}]
```

4.5.3 Appearance of the foot bibliography

\footbibskip
\footbibrule
\footrefstyle
\footreflabel
\footxref
\fb@ins

Here are defined all the layout parameters for the foot bibliography. `\fb@ins` is the insertion number for the foot bibliography. It is not really the right place for its declaration but it is needed to define the user definable parameter `\footbibskip`. By the way we set all the parameters for these insertions: 1 to 1 magnification and no limit on the height of the foot bibliography.

```
166 \newinsert\fb@ins
167 \count\fb@ins=1000
168 \AtBeginDocument{\dimen\fb@ins=\textheight}
169 \newcommand\footbibskip{\skip\fb@ins}
170 \footbibskip=\bigskipamount
171 \newcommand\footbibrule{\kern-3\p@\hrule\kern 2.6\p@}% \hrule is .4pt high
172 \newcommand\footrefstyle{\normalfont\footnotesize}
173 \newcommand*\footreflabel[1]{[#1]}
174 \newcommand*\footxref[2]{See~#1~on page~#2.}
```

4.6 Some useful definitions

\fb@vedef
\fb@doactive

The keys of the references must be read and written *more or less* verbatim. Since some packages make some characters permanently active, the catcodes should be changed before reading or writing a key or a list of keys and reset afterward. Unfortunately, in some situations this is not possible because the catcodes have already been attached to the characters. One solution is to scan the key and replace each active character with its non-active equivalent but this is fairly costly and does not work if some active character have been let equal to a non-active one or is hidden in a command occuring in the (list of) key(s). Another solution is to use `\meaning` to get a *verbatim* copy of the keys but this does not allow them

to contain commands like in `\foocite{\mylistofcitations}` The method used here consists in redefining the active characters so that their expansion produces the same character with a catcode 12 (other). Then an expansion of the key yields a *verbatim* copy of it. This mechanism allows the list of keys to contain itself commands which expand in the normal way. All characters which may both be active in the document and appear in the key of a reference must be treated in this way. Since BIBTEX allows almost any character in a key, it is safer to consider all characters which may be active in a document. No matter that they indeed are. The command `\dospecials` usually contains, among other, all such characters, each one escaped and preceded by `\do`. The LATEX 2ε kernel defines `\dospecials` as

    \def\dospecials{\do\␣\do\\\do\{\do\}\do\$\do\&\do\#\do\^\do_\do\%\do\~}

Any package which define new *special* characters should add them to this list.

An active character is needed to start with. Since `~` was made active at the beginning of the package, it may be safely used for this purpose.

```
175 \newcommand*\fb@doactive[1]{\lccode'~='#1\lowercase{\def~{\string~}}}
176 \newcommand*\fb@vedef[2]{%
177   \begingroup
178     \let\do\fb@doactive \dospecials
179     \edef\@tempa{\endgroup\def\noexpand#1{#2}}%
180   \@tempa}
```

`\fb@namexdef` `\fb@namexdef` is similar to the `\@namedef` command of LATEX but uses `\xdef` instead of `\def`

```
181 \newcommand*\fb@namexdef[1]{\expandafter\xdef\csname#1\endcsname}
```

`\fb@auxout` `\fb@auxout` is the auxiliary file used to record information about citations and as
`\fb@writeaux` input to BIBTEX. The commands `\footbibliographystyle` and `\footbibliography` do an immediate `\write` to this file. However, since these commands may be used in the preamble, this file might not yet be open for writing at the time they are used. We must wait until the end of the preamble before opening the auxiliary file to give the user a chance to define its name with `\footbibliographyname`. Therefore, we define the macro `\fb@writeaux` which postpones the write until the beginning of the document. It is somehow a *delayed immediate write* which means that the write will be performed as soon as possible, i.e. as soon as the auxiliary file is open for writing. This definition is temporary and will be changed to a *true* immediate write by `\AtBeginDocument`.

```
182 \newwrite\fb@auxout
183 \newcommand*\fb@writeaux[2]{%
184   \AtBeginDocument{%
185     \if@filesw
186       \immediate\write\fb@auxout{\string#1{#2}}%
187   \fi}}
```

4.7 Units handling

`\fb@numunit` We handle 3 counters: the *numbering unit* counter (`\fb@numunit`), the *ci-*
`\fb@citeunit` *tation unit* counter (`\fb@citeunit`) and the *cross-referencing unit* counter
`\fb@xrefunit` (`\fb@xrefunit`). This last counter is meaningful only if a `citeonce*` option was

used. It essentially counts pages in `oneside` mode and double pages in `twoside` mode. However, if the citation unit is a chapter (resp. a part), each `\chapter` (resp. `\part`) command also increments this counter.

```
188 \newcount\fb@numunit  \fb@numunit\@ne
189 \newcount\fb@citeunit \fb@citeunit\@ne
190 \newcount\fb@xrefunit \fb@xrefunit\@ne
```

\fb@refciteunit The macros `\fb@ref...unit` and `\fb@refpage` hold the units and the page of the
\fb@refxrefunit current citation.
\fb@refnumunit
\fb@refpage
\fb@theunits
\fb@getunits
\fb@get@units

```
191 \newcommand\fb@theunits{%
192   {\the\fb@citeunit}{\the\fb@xrefunit}{\the\fb@numunit}{\thepage}}
193 \newcommand*\fb@getunits[1]{%
194   \ifx#1\relax
195     \xdef#1{{\fb@key}\fb@theunits}%
196   \fi
197   \expandafter\fb@get@units#1}
198 \newcommand*\fb@get@units[5]{%
199   \def\fb@refciteunit{#2}%
200   \def\fb@refxrefunit{#3}%
201   \def\fb@refnumunit{#4}%
202   \def\fb@refpage{#5}}%
```

\fb@newciteunit The macros `\fb@newciteunit` and `\fb@newnumunit` are called by the patched
\fb@newnumunit   versions of `\part` or `\chapter` to start a new citation or numbering unit. The
patched sectioning unit also forces a page break so that a unit always starts at the
top of a page.

```
203 \newcommand\fb@newciteunit{%
204   \global\advance\fb@citeunit\@ne
205   \global\advance\fb@xrefunit\@ne}
206 \newcommand\fb@newnumunit{\global\advance\fb@numunit\@ne}
```

\fb@checkpage Each time the page counter is incremented, i.e. at the top of a new page, the
\fb@prevpage   macro `\fb@checkpage` updates the units counters if necessary. We first check
whether the current page is a right page. In `oneside` mode, it is never the case.
In `twoside` mode, it is the case if its number is `\fb@prevpage` + 1 and is odd,
where `\fb@prevpage` is a counter which holds the number of the last shiped out
page. If the number of the current page is not `\fb@prevpage` + 1, it means that
either the user has manually changed the page counter or the page numbering has
changed. In both case, we consider the current page as a left page. If the current
page is a right page, we do nothing. Otherwise, it may start a new unit[2] and we
update the unit counters.

```
207 \newcount\fb@prevpage \fb@prevpage\@ne
208 \newcommand*\fb@checkpage{%
209   \@tempswatrue
210   \iffb@twoside
211     \global\advance\fb@prevpage\@ne
212     \ifnum\fb@prevpage=\c@page
213       \ifodd\c@page
214         \@tempswafalse
```

---

[2]In fact, a right page may also start a new unit if the user used for instance the `firstcite(chapter)` option and the current page starts a new chapter. But in this case, the units are updated by the `\chapter` command.

```
215        \fi
216      \fi
217    \fi
218    \if@tempswa
```

The counter `\fb@numunit` is incremented if the switch `\iffb@pagenum` is true, i.e. the option `firstcite(page)` was used.

```
219      \iffb@pagenum
220        \global\advance\fb@numunit\@ne
221      \fi
```

The switch `\iffb@citeonce` is true iff a `citeonce` or `citeonce*` option was used. In this case, the `\fb@citeunit` counter is incremented by the `\chapter` or `\part` command. We just increment `\fb@xrefunit` in case `citeonce*` was used. If `\iffb@citeonce` is false, the citation unit is the (double) page and we increment `\fb@citeunit`. Since no `citeonce*` option was used, we do not need to handle `\fb@xrefunit`.

```
222      \iffb@citeonce
223        \global\advance\fb@xrefunit\@ne
224      \else
225        \global\advance\fb@citeunit\@ne
226      \fi
227    \fi
228    \global\fb@prevpage\c@page}
```

`\c@fb%checkpage` The next definition is a trick to make the macro `\fb@checkpage` execute each time the page counter is incremented. Each counter ⟨*cnt*⟩ declared by `\@addtoreset{`⟨*cnt*⟩`}{page}` is reset to 0 by `\global\c@`⟨*cnt*⟩`\z@` when the counter `page` is incremented. We define a macro `\c@`*xxx* which *looks like* a counter and we say `\@addtoreset{`*xxx*`}{page}`. To be sure that the user will never define a counter named *xxx*, we name our macro `\c@fb%checkpage`. The name of the associated *pseudo counter* is `fb%checkpage` that the user may normally not type. Each time the page counter is incremented, `\global\c@fb%checkpage\z@` is executed. The macro `\c@fb%checkpage` starts with an assignment (`\count@\z@`) which *uses* the `\global` and ends with a counter (`\count@`) which *gobbles* the following `\z@`. Since we change the catcode of `%`, it may not be used for comments below.

```
229 \catcode'\%=11
230 \newcommand\c@fb%checkpage{\count@\z@
231   \fb@checkpage
232   \count@}
233 \@addtoreset{fb%checkpage}{page}
234 \catcode'\%=14
```

5   Commands to handle the references

`\fb@refcount` The counter `\fb@refcount` holds the number of the last numbered reference. It is reset to 0 at the beginning of each numbering unit.

```
235 \newcount\fb@refcount
```

`\fb@lbl`
`\fb@txt` The token registers `\fb@lbl` and `\fb@txt` always holds the label and the text of the current reference.

```
236 \newtoks\fb@lbl
237 \newtoks\fb@txt
```

\fb@setref
\fb@getref
\fb@r.⟨key⟩

\fb@setref stores the current value of the token registers \fb@lbl and \fb@txt
in the macro \fb@r.⟨key⟩ where ⟨key⟩ is the key of the current reference. This
key is always stored in the macro \fb@key. \fb@setref is called each time a
component of a reference changes: when it is first read at the beginning of the
document, and when the dynamic label or the text of the reference has been
updated. \fb@getref does the converse: given a key, it updates \fb@lbl and
\fb@txt from \fb@r.⟨key⟩.

```
238 \newcommand\fb@setref{%
239   \fb@namexdef{fb@r.\fb@key}{{\the\fb@lbl}{\the\fb@txt}}}
240 \newcommand\fb@getref{\afterassignment\fb@txt\fb@lbl}
```

\fb@setlbl
\fb@getlbl

\fb@setlbl updates the dynamic label of a reference. \fb@getlbl gets the label
after calling \fb@setlbl if necessary to update it.

```
241 \newcommand\fb@setlbl{%
242   \global\advance\fb@refcount\@ne
243   \edef\@tempa{{\fb@refnumunit}{\the\fb@refcount}}%
244   \global\fb@lbl\expandafter{\expandafter\fb@getlbl\@tempa}%
245   \fb@setref
246   \the\fb@refcount}
247 \newcommand*\fb@getlbl[2]{\ifnum\fb@refnumunit=#1{#2}\else\fb@setlbl\fi}
```

\fb@settxt
\fb@gettxt

\fb@settxt and \fb@gettxt are similar to \fb@setlbl and \fb@getlbl but up-
date the text of the reference instead of the label. When \fb@settxt is called, the
label must have been expanded just before so that it has been updated if necessary.
Then \fb@lbl has either the form {⟨static label⟩} the form \fb@getlbl{⟨current
numunit⟩}{⟨dynamic label⟩}. In the later case, the test at the beginning of
\fb@getlbl must succeed so that in both cases, the first command in \fb@settxt
below assigns the label to \toks@.

```
248 \newcommand\fb@settxt[1]{%
249   \toks@=\the\fb@lbl
250   \toks@\expandafter\expandafter\expandafter{\expandafter
251     \footreflabel\expandafter{\the\toks@}}%
252   \edef\@tempa{{\fb@refciteunit}{\the\toks@}{\fb@refpage}}%
253   \global\fb@txt\expandafter{\expandafter\fb@gettxt\@tempa{#1}}%
254   \fb@setref
255   #1}
256 \newcommand\fb@gettxt[4]{%
257   \ifnum\fb@refciteunit=#1\relax
258     \footxref{#2}{#3}%
259   \else
260     \fb@settxt{#4}%
261   \fi}
```

5.1 Commands to handle the foot bibliography

\footbibliography
\footbibliographystyle

\footbibliography and \footbibliographystyle are the commands which de-
fine the bibliography file and the bibliography style. They just write their argu-
ment to the auxiliary file. If they are used in the preamble, the \fb@writeaux

macro in use is the delayed one. The write will actually take place at the beginning
of the document.

```
262 \newcommand\footbibliography{\fb@writeaux\bibdata}
263 \newcommand\footbibliographystyle{\fb@writeaux\bibstyle}
```

\fb@refnotfound When a reference is not found by LATEX, it is replaced by a default one generated
by the command \fb@refnotfound which takes the key of the reference as an
argument and expands to the default label and the default text.

```
264 \newcommand*\fb@refnotfound[1]{%
265   {?}{*** ERROR: citation '{\normalfont\bfseries#1}' undefined ***}}
```

5.1.1 Creation of the foot references

\footcite   All 3 citation commands \footcite, \footcite* and \footnocite actually call
\footcite*   the same macro \fb@cite. Before this call, they just set the flags \iffb@lbl
\footnocite   and \iffb@txt according to whether the label and the text of the reference are
\fb@@cite   requested. The settings are as follows:
\fb@optlbl
\iffb@lbl
\iffb@txt

	\iffb@lbl	\iffb@txt
\footcite	true	true
\footcite*	true	false
\footnocite	false	true

In addition, \footcite calls \fb@@cite to get the optional argument which is put
in \fb@optlbl.

```
266 \newif\iffb@lbl
267 \newif\iffb@txt
268 \DeclareRobustCommand\footcite{%
269   \fb@lbltrue\@ifstar{\fb@txtfalse\fb@@cite}{\fb@txttrue\fb@@cite}}
270 \newcommand\footnocite{\fb@lblfalse\fb@txttrue\fb@cite}
271 \newcommand*\fb@@cite[1][\@nil]{%
272   \def\fb@optlbl{#1}%
273   \ifx\fb@optlbl\@nnil
274     \let\fb@optlbl\relax
275   \else
276     \def\fb@optlbl{\fb@putfootcitelabel{, #1}}%
277   \fi
278   \fb@cite}
```

\fb@cite   \fb@cite is the macro which handles the list of citations. It calls \fb@xcite to
produce the actual label and insert the text of each individual reference.

```
279 \newcommand*\fb@cite[1]{%
280   \fb@vedef\fb@keys{#1}%
281   \iffb@lbl
282     \fb@citestart
283     \def\fb@citea{\let\fb@citea\fb@citesep}%
284   \fi
```

If the list of citation is empty, the \@for loop is not entered and no warning is
issued. Therefore, we check for this now.

```
285   \ifx\fb@keys\@empty
286     \PackageWarning{footbib}{Empty citation on page \thepage}%
287   \fi
```

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```
288    \@for\fb@key:=\fb@keys\do{%
289      \iffb@lbl\fb@citea\fi
290      \fb@xcite
291      \ifx\fb@deferredcite\@empty\else
292        \begingroup
293          \fb@lblfalse
294          \expandafter\fb@xnocite\fb@deferredcite\@nil
295        \endgroup
296      \fi}%
297    \iffb@lbl\fb@optlbl\fb@citeend\fi}
```

\fb@xfootcite   The macro \fb@xfootcite is a replacement for the \cite command of LATEX
\fb@deferredcite   inside a foot reference if the crossrefs or crossrefs* option was used. In
both cases, \fb@xfootcite performs a \footcite*. If the crossrefs option
was used, in addition, \fb@xfootcite adds globally the list of citation keys to
the list \fb@deferredcite. After the insertion of the current reference has been
completed, a \footnocite will be performed for each key in the list. The for-
mat of this list is ⟨key⟩,...,⟨key⟩, (the trailing comma makes it easier to handle
than ⟨key⟩,...,⟨key⟩ and allows to distinguish between an empty list and a list
containing only an empty element). This list is initially empty.

```
298 \newcommand\fb@xfootcite[2][\@nil]{%
299    \footcite*[#1]{#2}%
300    \iffb@xcrossrefs
301      \fb@vedef\fb@keys{#2}%
302      \xdef\fb@deferredcite{\fb@keys,\fb@deferredcite}%
303    \fi}
304 \let\fb@deferredcite\@empty
```

\fb@xnocite   After the insertion of the current reference has been completed, if some de-
ferred cross-references are present, the macro \fb@xnocite is called. It calls
\fb@xcite with \iffb@lbl=false to insert the text of the cross-references if nec-
essary. This might produce more deferred cross-references which will be added to
\fb@deferredcite.

```
305 \def\fb@xnocite#1,#2\@nil{%
306    \gdef\fb@deferredcite{#2}%
307    \def\fb@key{#1}%
308    \fb@xcite
309    \ifx\fb@deferredcite\@empty
310      \let\@tempa\@gobble
311    \else
312      \let\@tempa\fb@xnocite
313    \fi
314    \expandafter\@tempa\fb@deferredcite\@nil}
```

\fb@xcite   The macro \fb@xcite is called both by \fb@cite and \fb@xnocite to handle
each individual citation. It writes to the auxiliary file the information about the
citation, puts the label in the text if requested and put the text of the reference
on the page if necessary. If the reference is not found, it issues a warning.

The first command in \fb@xcite removes any space in front of the key.
\@empty is inserted after the key to prevent an error in case it is empty.

If the key is empty or the reference is undefined, the LATEX command
\G@refundefinedtrue is used to set the switch \if@refundefined which indi-
cates that some reference was undefined.

18

```
315 \newcommand\fb@xcite{%
316   \edef\fb@key{\expandafter\@firstofone\fb@key\@empty}%
317   \ifx\fb@key\@empty
318     \PackageWarning{footbib}{Empty citation on page \thepage}%
319     \G@refundefinedtrue
320   \else
321     \@ifundefined{fb@r.\fb@key}%
322       {\G@refundefinedtrue
323        \PackageWarning{footbib}{%
324          Citation `\fb@key' on page \thepage \space undefined}%
325        \fb@getref\fb@refnotfound\fb@key\fb@setref}%
326       {\fb@getref\@nameuse{fb@r.\fb@key}}%
327     \fb@bibcite
328     \iffb@lbl\fb@putfootcitelabel{\footcitelabel{\the\fb@lbl}}\fi
```

The text of the reference is inserted if requested (`\iffb@txt=`*true*) and either it
has not yet been inserted in the current citation unit, or a `citeonce*` option was
used and the last citation was on another (double) page.

```
329     \iffb@txt
330       \expandafter\let\expandafter\@tempa\csname
331           fb@fn\fb@key.\fb@refciteunit\endcsname
332       \@tempswatrue
333       \ifx\@tempa\relax\else
334         \iffb@xref
335           \ifx\@tempa\fb@refxrefunit
336             \@tempswafalse
337           \fi
338         \else
339           \@tempswafalse
340         \fi
341       \fi
342       \if@tempswa
343         \fb@namexdef{fb@fn\fb@key.\fb@refciteunit}{\fb@refxrefunit}%
344         \fb@citefn
345       \fi
346     \fi
347   \fi}
```

\fb@bibcite   The command `\fb@bibcite` writes to the auxiliary file all the informations about
\fb@lastrefnumunit   the current citation: the key, the units, and the page. It also resets to 0 the
\fb@citecount   counter `\fb@refcount` if the numbering unit changed between the last reference
and the current one. This counter is used to number the references. The counter
`\fb@lastrefnumunit` holds the numbering unit of the last reference. The counter
`\fb@citecount` holds the number of the current citation.

```
348 \newcount\fb@citecount
349 \newcount\fb@lastrefnumunit \fb@lastrefnumunit\m@ne
350 \newcommand\fb@bibcite{%
351   \fb@writeaux\citation\fb@key
352   \global\advance\fb@citecount\@ne
353   \expandafter\fb@getunits\csname fb@c.\the\fb@citecount\endcsname
354   \ifnum\fb@refnumunit=\fb@lastrefnumunit\else
355     \global\fb@lastrefnumunit\fb@refnumunit\relax
356     \global\fb@refcount\z@
357   \fi
```

```
358    \if@filesw
359      \write\fb@auxout\expandafter{\expandafter\string\expandafter
360        \bibcite\expandafter{\fb@key}\fb@theunits}%
361    \fi}
```

\fb@citefn   \fb@citefn inserts the text of the foot reference. It is called only if the reference was not already cited in the same citation unit or a `citeonce*` option was used. The code is mainly borrowed from the footnotes handling in LaTeX.

```
362 \newcommand\fb@citefn{%
363    \insert\fb@ins{%
364      \color@begingroup
365        \reset@font\footrefstyle
366        \interlinepenalty\iffb@nosplit\@M\else\interfootnotelinepenalty\fi
367        \splittopskip 1.2\ht\strutbox
368        \splitmaxdepth \dp\strutbox
369        \floatingpenalty \@MM
370        \hsize\columnwidth
371        \@parboxrestore
372        \ifx\newblock\@undefined\let\newblock\relax\fi
373        \iffb@crossrefs\let\cite\fb@xfootcite\fi
374        \@tempdima\fb@lblwidth
375        \advance\@tempdima\labelsep
376        \leftskip\@tempdima
377        \setbox\@tempboxa\hbox{\footreflabel{\the\fb@lbl}}%
378        \hskip-\@tempdima
379        \ifdim\wd\@tempboxa<\fb@lblwidth
380          \hbox to\fb@lblwidth{\unhbox\@tempboxa\hfil}%
381        \else
382          \box\@tempboxa
383        \fi
384        \hskip\labelsep
385        \rule\z@{1.2\ht\strutbox}\ignorespaces\the\fb@txt\@finalstrut\strutbox
386      \color@endgroup}}
```

5.2   AtBeginDocument, AtEndDocument

At the beginning of the document, we read the bibliography file and record all the references. This is memory consuming but the only alternative is to read again the bibliography file for each \footcite command which would be much slower. We must wait until the beginning of the document to give the user a chance to redefine \fb@bibname through \footbibliographyname. The preamble of the bibliography is executed once for all when the bibliography is read. After recording the bibliography, we read the .aux file (if it exists) and record the parameters (citation and numbering unit, page, etc.) of all citations as determined during the previous run. The parameters of the nth citation are recorded in the macro \fb@c.$\langle n \rangle$.

```
387 \AtBeginDocument{%
```

Save the current value of \thebibliography and redefine it

```
388    \let\fb@savethebibliography\thebibliography
389    \let\thebibliography\fb@thebibliography
390    \let\fb@thebibliography\@undefined
```

Read the `bbl` file. This executes the preamble, and if a `thebibliography` environment is found, sets `\fb@lblwidth` to the length of the longest label and records all references. `\fb@lblwidth` is initialised with a negative value which allows us to detect afterward whether a `thebibliography` environment was present.

```
391    \global\fb@lblwidth=-\maxdimen
392    \fb@refcount\z@
393    \@input{\fb@bibname.bbl}%
```

Restore the standard value of `\thebibliography`

```
394    \let\thebibliography\fb@savethebibliography
395    \let\fb@savethebibliography\@undefined
```

Assign a default value to `\fb@lblwidth` in case the `bbl` file was not found or contained no `thebibliography` environment.

```
396    \ifdim\fb@lblwidth<\z@
397      \settowidth\fb@lblwidth
398        {\footrefstyle\footreflabel{\expandafter\@firstoftwo\fb@refnotfound{?}}}%
399    \fi
```

`\bibcite`
`\fb@c.⟨num⟩`

Then read the auxiliary file and record the parameters of each citation

```
400    \fb@citecount\z@
401    \begingroup
402      \let\citation\@gobble \let\bibstyle\@gobble \let\bibdata\@gobble
403      \def\bibcite#1#2#3#4#5{%
404          \advance\fb@citecount\@ne
405          \fb@vedef\fb@key{#1}%
406          \fb@namexdef{fb@c.\the\fb@citecount}{{\fb@key}{#2}{#3}{#4}{#5}}}%
407      \@input{\fb@bibname.aux}%
408    \endgroup
```

`\fb@auxout`

Prepare the auxiliary file for writing

```
409    \if@filesw
410      \immediate\openout\fb@auxout=\fb@bibname.aux
411      \immediate\write\fb@auxout{\relax}%
412    \fi
```

`\fb@writeaux`

Finally, define a non delayed version of `\fb@writeaux`.

```
413    \renewcommand*\fb@writeaux[2]{%
414      \if@filesw
415        \immediate\write\fb@auxout{\string#1{#2}}%
416      \fi}%
417 }
```

`\fb@thebibliography`
`\fb@lblwidth`

The macro `\fb@thebibliography` records the length of the longest label in the ⟨dimen⟩ register `\fb@lblwidth` and then scans the bibliography and stores each reference in a global macro `\fb@r.⟨key⟩` where ⟨key⟩ is the key of the reference. The references are read one token at a time so that we may detect `\verb` commands even if they are hidden in groups.

```
418 \newdimen\fb@lblwidth
```

```
419 \newcommand*\fb@thebibliography[1]{%
```

We open still a new group to prevent our definitions to conflict with macros that might be used by \end{thebibliography}. We let \endthebibliography equal to \endgroup so that it closes this group.

```
420    \begingroup
421    \let\endthebibliography\endgroup
```

Record the size of the longest label

```
422    \settowidth\dimen@{\footrefstyle\footreflabel{#1}}%
423    \ifdim\dimen@>\fb@lblwidth\global\fb@lblwidth=\dimen@\fi
```

\@bracelevel
\@bgrouplineno
\@on@line
\@eat
Some definitions necessary to read the bibliography entries. All these definitions are local since the command \begin{thebibliography} opened a new group. They will be cancelled when \end{thebibliography} is executed. The names of global definitions have the form \fb@... while the names of local definitions simply start with \@... We reuse as much as possible existing global names so that we do not use memory unnecessarily. the \@bracelevel counter keeps track of groups nesting while reading the bibliography. The \@bgrouplineno counter holds the number of the input line where the current group started. It is used for error messages. \@on@line is similar to the \on@line command of the LATEX 2ε kernel but also shows the name of the current file.

```
424    \newcount\@bracelevel
425    \newcount\@bgrouplineno
426    \def\@on@line{\on@line\space of \fb@bibname.bbl}%
427    \def\@eat{\let\@tempa= }%
```

\@bgroup
\@egroup
\bgroup
\egroup
\bgroup and \egroup are redefined so that we may distinguish between explicit and implicit begin or end group characters.

```
428    \let\@bgroup{%
429    \let\@egroup}%
430    \let\bgroup\relax
431    \let\egroup\relax
```

\@actlet
\@actlet\⟨char⟩⟨cmd⟩ makes ⟨char⟩ active and let it equal to ⟨cmd⟩.

```
432    \def\@actlet##1{%
433        \catcode`##1=\active
434        \begingroup\lccode`~=`##1\lowercase{\endgroup\let~}}%
```

\@noitemerror
\@noitemerror is called to raise an error if anything is seen between \begin{thebibliography} and the first \bibitem. If the user types ⟨return⟩ at the prompt, the next token is swallowed and the processing goes on.

```
435    \def\@noitemerr{%
436        \PackageError{footbib}{Missing \string\bibitem\@on@line}\@empty
437        \afterassignment\@readbib\@eat}%
```

\@errifbraces
\@errifbraces⟨cmp⟩ compares \@bracelevel with 0 using ⟨cmp⟩ (= or >) and raises an error if the test succeeds.

```
438    \def\@errifbraces##1{%
439        \ifnum\@bracelevel##1\z@
440            {\ifx##1>\let\inputlineno\@bgrouplineno\fi
441            \PackageError{footbib}{%
442                \ifx##1>Unmatched begin\else Extra end\fi-group
443                character\@on@line}\@empty}%
444        \fi}%
```

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Now come all the commands which read and handle the tokens.

\@readbib These macros read the next token and take the appropriate action.
\@xreadbib

```
445  \def\@readbib{\futurelet\@tok\@xreadbib}%
446  \def\@xreadbib{%
447      \ifx\@tok\@sptoken\let\@tempa\@readsp
448      \else\ifx\@tok\par\let\@tempa\@readpar
449      \else\ifx\@tok\bibitem\let\@tempa\@endbibitem
450      \else\ifx\@tok\end\let\@tempa\@checkendbib
451      \else\if@newlist\let\@tempa\@noitemerr
452      \else\ifx\@tok\@bgroup\let\@tempa\@eat\afterassignment\@begingroup
453      \else\ifx\@tok\@egroup\let\@tempa\@eat\afterassignment\@endgroup
454      \else\ifx\@tok\verb\let\@tempa\relax
455      \else\let\@tempa\@addtotxt
456      \fi\fi\fi\fi\fi\fi\fi\fi\@tempa}%
```

\bibitem The macro \bibitem is called if the next token is \bibitem. It calls \@lbibitem
\@bibitem or \@bibitem depending on whether a label is provided or not. If no label is
\@lbibitem provided, \@bibitem provides one. The definition of this macro depends on the
switch \iffb@firstcite which is true iff a firstcite option was used. If so,
a *dynamic* label is provided. Otherwise, a *static* label is provided which is the
current value of the counter \fb@refcount.

```
457  \def\bibitem{%
458      \@errifbraces>%
459      \@newlistfalse
460      \@ifnextchar[\@lbibitem\@bibitem}%
461  \iffb@firstcite
462    \def\@bibitem{\@lbibitem[\fb@setlbl]}%
463  \else
464    \def\@bibitem{%
465      \advance\fb@refcount\@ne
466      \expandafter\@lbibitem\expandafter[\the\fb@refcount]}%
467  \fi
468  \def\@lbibitem[##1]##2{%
469      \fb@lbl{{##1}}%
470      \fb@vedef\fb@key{##2}%
471      \fb@txt{}%
472      \let\@lastsptok\@empty
473      \@inlabeltrue
474      \@readbib}%
```

\@checkendbib The macro \@checkendbib is called when the next token is \end. It reads
the argument of \end and checks whether it is thebibliography. If so it
calls \@endbibitem to terminate the current reference (if any) and reinserts
\end{thebibliography} which will terminate the bibliography.

```
475  \def\@checkendbib\end##1{%
476      \def\@tempa{##1}\def\@tempb{thebibliography}%
477      \ifx\@tempa\@tempb
478        \def\@tempa{\@endbibitem\end{##1}}%
479      \else
480        \if@newlist
481          \let\@tempa\@noitemerr
482        \else
```

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```
483        \def\@tempa{\@addtotxt{\end{##1}}}%
484      \fi
485    \fi\@tempa}%
```

\@endbibitem The macro `\@endbibitem` terminates the current reference (if any) and calls
`\fb@setref` which stores it in a macro. If the switch `\iffb@xref` is true, i.e a
`citeonce*` option was used, `\@endbibitem` adds to the text of the reference the
command `\fb@settxt` which will modify it dynamically.

```
486    \def\@endbibitem{%
487      \if@newlist\else
488        \@errifbraces>%
489        \iffb@xref
490          \fb@txt\expandafter{\expandafter\fb@settxt\expandafter{\the\fb@txt}}%
491        \fi
492        \fb@setref
493      \fi}%
```

\@addtotxt The macro `\@addtotxt` adds to the text of the reference so far, first the last *space*
token (⟨*space*⟩ or `\par`) and then its argument.

```
494    \long\def\@addtotxt##1{%
495      \fb@txt\expandafter\expandafter\expandafter
496        {\expandafter\the\expandafter\fb@txt\@lastsptok##1}%
497      \let\@lastsptok\@empty
498      \@inlabelfalse
499      \@readbib}%
```

\@readsp   The *space* tokens ⟨*space*⟩ and `\par` are handled in a delayed way. They are first
\@readpar   recorded in a single place (`\@lastsptok`), so that each one overrides the previ-
\@lastsptok ous one. The most recent one is added to the text of the reference each time
`\@addtotxt` is called. This mechanism discards any space preceding a `\par` token
and also the `\par` which occurs generally at the end of each reference.

```
500    \expandafter\def\expandafter\@readsp\space{%
501      \if@inlabel\else\let\@lastsptok\space\fi
502      \@readbib}%
503    \def\@readpar\par{%
504      \if@inlabel\else\def\@lastsptok{\par}\fi
505      \@readbib}%
```

\@begingroup The macros `\@begingroup` and `\@endgroup` are called when a begin- or end-group
\@endgroup   character is seen. `\@begingroup` opens a new group and increments the counter
`\@bracelevel`. It also records the number of the input line which may be used
later for error reporting. `\@endgroup` closes the group, which restores the previous
value of `\@bracelevel`, and calls `\@addtotxt` to add the group to the text of the
reference so far.

```
506    \def\@begingroup{%
507      \@bgroup
508      \advance\@bracelevel\@ne
509      \@bgrouplineno=\inputlineno
510      \fb@txt{}%
511      \let\@lastsptok\@empty
512      \@readbib}%
513    \def\@endgroup{%
```

```
514        \@errifbraces=%
515        \edef\@tempa{\@egroup\noexpand\@addtotxt{{\the\fb@txt\@lastsptok}}}%
516        \@tempa}%
```

\verb
\@sverb
We provide special support for the \verb command. The following code is essentially borrowed from the LaTeX 2ε kernel. Just we let the active characters equal to \relax so that they are not expanded.

```
517   \def\verb{%
518        \begingroup
```

First make all special characters 'other'

```
519        \let\do\@makeother \dospecials
```

Avoid ligatures

```
520        \def\do####1{\@actlet####1\relax}\verbatim@nolig@list
```

An end of line character in the argument of \verb is an error.

```
521        \@actlet\^^M\verb@eol@error
522        \@ifstar{\@sverb*}{\@actlet\ \relax\@sverb\@empty}}%
523   \def\@sverb##1##2{%
524        \@actlet##2\verb@egroup
```

Read the argument of \verb.

```
525        \edef\@tempa{\noexpand\verb##1\noexpand~\iffalse}\fi}%
```

\verb@egroup
Normal termination of \verb. The ~ must be protected against expansion because we are still inside the \edef started by \@sverb.

```
526   \def\verb@egroup{%
527        \noexpand~\iffalse{\fi}%
528        \expandafter\endgroup\expandafter\@addtotxt\expandafter{\@tempa}}%
```

\verb@eol@error
The macro \verb@eol@error is called if an end of line character occurs before the normal termination of \verb. Unlike it is done in the LaTeX 2ε kernel, we do not terminate the \verb because the most frequent case is when BibTeX breaks the argument of \verb because the line is too long. The closing delimiter will generally be found on the next line.

```
529   \def\verb@eol@error{\iffalse{\fi}%
530        \GenericError\@empty{LaTeX Error:
531            \noexpand\verb ended by end of line\@on@line}\@gobble%
532            {The argument of \string\verb\@on@line\space contains
533                an end of line.\MessageBreak
534             Type \space X <return> \space to quit.\MessageBreak}%
```

We try to recover from error in case the user types ⟨return⟩ at the prompt. We where defining \@tempa which contains now \verb?~... where ? stands for * or nothing.

```
535        \toks@\expandafter{\@tempa}%
536        \edef\@tempa{\the\toks@\iffalse}\fi}%
```

Some initialisation before starting to read the bibliography.

```
537   \@bracelevel\z@
538   \@newlisttrue
539   \@inlabeltrue
```

And finally start to read the bibliography. This is the end of \fb@thebibliography

```
540   \@readbib}
```

At the end of the document, we first do a `\clearpage` to be sure that all the writes have been performed. Then we close the auxiliary file and finally read it to check whether any change occured between the previous run and the current one. If so, we issue a warning.

```
541 \AtEndDocument{%
542   \clearpage
543   \if@filesw
544     \immediate\closeout\fb@auxout
545     \begingroup
546       \let\citation\@gobble \let\bibstyle\@gobble \let\bibdata\@gobble
547       \def\bibcite#1#2#3#4#5{%
548         \advance\fb@citecount\@ne
549         \fb@vedef\@tempa{{#1}{#2}{#3}{#4}{#5}}%
550         \expandafter\ifx\csname fb@c.\the\fb@citecount\endcsname
551           \@tempa\else\@tempswatrue\fi}%
552       \fb@citecount\z@
553       \@tempswafalse
554       \input\fb@bibname.aux
555       \if@tempswa
556         \PackageWarning{footbib}{Bibliography not yet stable. Rerun
557                           LaTeX\@gobble}%
558       \fi
559     \endgroup
560   \fi}
```

5.3 Output routine

We redefine the macros `\@specialoutput`, `\@doclearpage`, `\@makecol` and `\@reinserts` used by the output routine of LaTeX so that we may insert the foot bibliography. The code is just a patch to the macros defined in the LaTeX 2_ε kernel.

\@specialoutput   If a foot bibliography is present, `\@specialoutput` must add to the height of the page the height plus depth of the foot bibliography and the length of the skip above it.

```
561 \def\@specialoutput{%
562   \ifnum \outputpenalty>-\@Mii
563     \@doclearpage
564   \else
565     \ifnum \outputpenalty<-\@Miii
566       \ifnum \outputpenalty<-\@MM \deadcycles \z@ \fi
567       \global \setbox\@holdpg \vbox {\unvbox\@cclv}%
568     \else
569       \global \setbox\@holdpg \vbox{%
570                   \unvbox\@holdpg
571                   \unvbox\@cclv
572                   \setbox\@tempboxa \lastbox
573                   \unskip}%
574       \@pagedp \dp\@holdpg
575       \@pageht \ht\@holdpg
576       \unvbox \@holdpg
577       \@next\@currbox\@currlist{%
578         \ifnum \count\@currbox>\z@
```

```
579        \advance \@pageht \@pagedp
580        \ifvoid\footins \else
581          \advance \@pageht \ht\footins
582          \advance \@pageht \skip\footins
583          \advance \@pageht \dp\footins
584        \fi
```
─────────────────────── footbib addition ───────────────────────
```
585        \ifvoid\fb@ins\else
586          \advance\@pageht\ht\fb@ins
587          \advance\@pageht\skip\fb@ins
588          \advance\@pageht\dp\fb@ins
589        \fi
```
──
```
590        \ifvbox \@kludgeins
591          \ifdim \wd\@kludgeins=\z@
592            \advance \@pageht \ht\@kludgeins
593          \fi
594        \fi
595        \@reinserts
596        \@addtocurcol
597      \else
598        \@reinserts
599        \@addmarginpar
600      \fi}%
601    \@latexbug
602   \ifnum \outputpenalty<\z@
603     \if@nobreak
604       \nobreak
605     \else
606       \addpenalty \interlinepenalty
607     \fi
608   \fi
609  \fi
610  \fi}
```

\@doclearpage The test at the beginning of \@doclearpage has been modified so that it checks
that *both* footnotes and the foot bibliography are empty.

```
611 \def \@doclearpage {%
```
─────────────────────── footbib modification ───────────────────────
```
612 %  \ifvoid\footins
613  \@tempswatrue
614  \ifvoid\footins\else\@tempswafalse\fi
615  \ifvoid\fb@ins\else\@tempswafalse\fi
616  \if@tempswa
```
──
```
617     \ifvbox\@kludgeins
618       {\setbox \@tempboxa \box \@kludgeins}%
619     \fi
620     \setbox\@tempboxa\vsplit\@cclv to\z@ \unvbox\@tempboxa
621     \setbox\@tempboxa\box\@cclv
622     \xdef\@deferlist{\@toplist\@botlist\@deferlist}%
623     \global \let \@toplist \@empty
```

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```
624    \global \let \@botlist \@empty
625    \global \@colroom \@colht
626    \ifx \@currlist\@empty
627    \else
628      \@latexerr{Float(s) lost}\@ehb
629      \global \let \@currlist \@empty
630    \fi
631    \@makefcolumn\@deferlist
632    \@whilesw\if@fcolmade \fi{\@opcol\@makefcolumn\@deferlist}%
633    \if@twocolumn
634      \if@firstcolumn
635        \xdef\@dbldeferlist{\@dbltoplist\@dbldeferlist}%
636        \global \let \@dbltoplist \@empty
637        \global \@colht \textheight
638        \begingroup
639          \@dblfloatplacement
640          \@makefcolumn\@dbldeferlist
641          \@whilesw\if@fcolmade \fi{\@outputpage\@makefcolumn\@dbldeferlist}%
642        \endgroup
643      \else
644        \vbox{}\clearpage
645      \fi
646    \fi
647  \else
648    \setbox\@cclv\vbox{\box\@cclv\vfil}%
649    \@makecol\@opcol
650    \clearpage
651  \fi}
```

\@makecol   In addition to footnotes (if any), \@makecol must add the foot bibliography to
             the page. It is added immediately below the footnotes. The test at the beginning
             of \@makecol has been modified in the same way as in \@doclearpage

```
652 \def \@makecol {%
```

───────────────────── footbib modification ─────────────────────
```
653 %  \ifvoid\footins
654    \@tempswatrue
655    \ifvoid\footins\else\@tempswafalse\fi
656    \ifvoid\fb@ins\else\@tempswafalse\fi
657    \if@tempswa
```
──

```
658      \setbox\@outputbox \box\@cclv
659    \else
660      \setbox\@outputbox \vbox {%
661        \boxmaxdepth \@maxdepth
662        \@tempdima\dp\@cclv
663        \unvbox \@cclv
664        \vskip-\@tempdima
```
───────────────────────── footbib addition ─────────────────────
```
665        \ifvoid\footins \else
```
──

```
666          \vskip \skip\footins
667          \color@begingroup
```

```
668         \normalcolor
669          \footnoterule
670          \unvbox \footins
671        \color@endgroup
```

──────────────── footbib addition ────────────────

```
672      \fi
673      \ifvoid\fb@ins\else
674        \vskip\skip\fb@ins
675        \color@begingroup
676          \normalcolor
677          \footbibrule
678          \unvbox\fb@ins
679        \color@endgroup
680      \fi
```

```
681      }%
682    \fi
683    \let\@elt\relax
684    \xdef\@freelist{\@freelist\@midlist}%
685    \global \let \@midlist \@empty
686    \@combinefloats
687    \ifvbox\@kludgeins
688      \@makespecialcolbox
689    \else
690      \setbox\@outputbox \vbox to\@colht {%
691        \@texttop
692        \dimen@ \dp\@outputbox
693        \unvbox \@outputbox
694        \vskip -\dimen@
695        \@textbottom}%
696    \fi
697    \global \maxdepth \@maxdepth}
```

\@reinserts The macro \@reinsert was modified to reinsert also the foot bibliography after float processing.

```
698 \def\@reinserts{%
699    \ifvoid\footins\else\insert\footins{\unvbox\footins}\fi
```

──────────────── footbib addition ────────────────

```
700    \ifvoid\fb@ins\else\insert\fb@ins{\unvbox\fb@ins}\fi
```

```
701    \ifvbox\@kludgeins\insert\@kludgeins{\unvbox\@kludgeins}\fi}
```

```
702 \endinput
703 ⟨/package⟩
```

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.