

The `pageslts` package

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2014/01/19 v1.2c

Abstract

This package puts the labels `LastPage` (`\AtEndDocument`) and `VeryLastPage` (`\AfterLastShipout`) into the `.aux` file, allowing the user to refer to the (very) last page of a document. This might be particularly useful in places like headers or footers. When more than one page numbering scheme is used, these references do not give the total *number* of pages. For this case the label `LastPages` is introduced. Additionally, at the last page of each page numbering scheme a label `pagesLTS.<numbering scheme>` is placed, where `<numbering scheme>` is e.g. `arabic`, `roman`, `Roman`, `alph`, or `Alph`. For `fnsymbol` please use `\lastpageref{pagesLTS.fnsymbol}` instead of `\pageref{pagesLTS.fnsymbol}`. When the same numbering scheme is used twice, the page numbers are either reset to one or continued automatically, depending on the option given when the package is called. The command `\theCurrentPage` prints the current total/absolute page number – in contrast to `\thepage`, which gives only the page *name* in the current page numbering scheme. `\theCurrentPageLocal` gives the current number of pages in the current page numbering scheme. `\thepage` and `\theCurrentPageLocal` are different e.g. when `\addtocounter{page}{...}` or `\setcounter{page}{...}` were used. At the first page of the document a label `pagesLTS.0` is created. This label can be referred to, too. Further labels are provided for special cases.

The `alphalph` package is supported, i.e. page numbers `alph` or `Alph` > 26 and `fnsymbol` > 9 can be used (with according options set). Even zero and negative page numbers can be used with `arabic`, `alph`, `Alph`, `roman`, `Roman`, and `fnsymbol` page numbering (with `alphalph` package and according options).

`\pageref*` and `\lastpageref*`, for using `hyperref` but suppressing links, are supported.

Please make sure to first deinstall the obsolete `pagesLTS` package before installing this `pageslts` package!

(There is at least one operating system which otherwise automatically renames `pageslts` to `pagesLTS`.)

Right after `\begin{document}` a `\pagenumbering{...}` should be called – with the appropriate argument out of e.g.

`arabic` (Arabic numerals: 1, 2, 3, 4,...),

`roman` (Lowercase Roman numerals: i, ii, iii, iv,...), `Roman` (Uppercase Roman numerals: I, II, III, IV,...),

`alph` (Lowercase letters: a, b, c, d,...), `Alph` (Uppercase letters: A, B, C, D,...),

`fnsymbol` (Footnote symbols: *, †, ‡, §,...).

This package first started as a revision of the `lastpage` package of **Jeffrey P. Goldberg** (Thanks!), but then it became obvious that a replacement was needed.

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Save per page about 200 ml water, 2 g CO₂ and 2 g wood: Therefore please print only if this is really necessary.

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1 Introduction

This package puts the labels `LastPage` (`\AtEndDocument`) (same as my `LastPage` package, invented by JEFFREY P. GOLDBERG) and `VeryLastPage` (`\AfterLastShipout`) into the `.aux` file, allowing the user to refer to the (very) last page of a document via `\lastpageref{LastPage}` and `\lastpageref{VeryLastPage}`. This might be particularly useful in places like headers or footers. When more than one page numbering scheme is used, these references do not give the total *number* of pages. For this case the label `LastPages` is introduced (similar to the label `TotPages` of the `TotPages` package, but the label `LastPages` is set later in the document). Additionally, at the last page of each page numbering scheme a label `pagesLTS.<numbering scheme>` is placed, where `<numbering scheme>` is e.g. `arabic`, `roman`, `Roman`, `alph`, or `Alph`. For fn-symbol please use `\lastpageref{pagesLTS.fnsymbol}` instead of `\pageref{pagesLTS.fnsymbol}`. When the same numbering scheme is used twice, the page numbers are either reset to one or continued automatically, depending on the option given when the package is called. The command `\theCurrentPage` prints the current total/absolute page number - in contrast to `\thepage`, which gives only the page *name* in the current page numbering scheme. `\theCurrentPageLocal` gives the current number of pages in the current page numbering scheme. `\thepage` and `\theCurrentPageLocal` are different e.g. when `\addtocounter{page}{...}` or `\setcounter{page}{...}` were used. (See also L^AT_EX bug 3421: 3rd page is even (twoside, titlepage, abstract), <http://www.latex-project.org/cgi-bin/ltxbugs2html?category=LaTeX&responsible=anyone&state=anything&keyword=pagenumber&pr=latex%2F3421&search=>.) At the first page of the document a label `pagesLTS.0` is created. This label can be referred to, too. Further labels are provided for special cases.

The `alphalph` package is supported, i.e. page numbers `alph` or `Alph` > 26 and `fnsymbol` > 9 can be used (with the according options set). Even zero or negative page numbers can be used with `arabic`, `alph`, `Alph`, and `fnsymbol` page numbering (with `alphalph` package and according options), and zero `roman` and `Roman` pages, too.

Right after `\begin{document}` a `\pagenumbering{...}` should be called – with the appropriate argument out of e.g. `arabic` (Arabic numerals: 1, 2, 3, 4,...), `roman` (Lowercase Roman numerals: i, ii, iii, iv,...), `Roman` (Uppercase Roman numerals: I, II, III, IV,...), `alph` (Lowercase letters: a, b, c, d,...), `Alph` (Uppercase letters: A, B, C, D,...), `fnsymbol` (Footnote symbols: *, †, ‡, §,...).

This package first started as a revision of the `lastpage` package of JEFFREY P. GOLDBERG (Thanks!), but then it became obvious that a replacement was needed to accomplish what this package does.

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logical page numbers

Tip: For the display of the pdf file use **logical page numbers** together with `hyperref`!

- In Adobe Reader XI (11.0.6) enable:

Edit > Preferences (Ctrl+k) > Page Display > Page Content and Information > Use logical page numbers .

- Use the `hyperref` package with option `plainpages=false` .

The display will be e.g. “7 (7 of 9)”, or, in case of Roman instead of arabic numbers, “VII (7 of 9)”, and when different page numbers are used (see below) e.g. `arabic` after 10 Roman pages: “17 (27 of 30)”. Please try this with the compiled `pageslts-example` file!

The name of the `pageslts` package refers to Last, Total, and page numbering Schemes pages. `pagesLTS` was a former name of this package.

2 Usage

Just load the package placing

```
\usepackage[<options>]{pageslts}
```

in the preamble of your L^AT_εX source file (about `\AtEndDocument` see subsection 3.2) and place a `\pagenumbering{...}` with appropriate argument (e.g. arabic, roman, Roman, fnsymbol, alph, or Alph) right behind `\begin{document}` (see subsection 2.3.1)!

For example for various draft forms it is desirable to have a page reference to the last page, so that e.g. page footers can contain something like “page N of K ”, where N is the current page and K is the last page. Once the package is loaded, anywhere in the text references can be made to the labels `LastPage`, `VeryLastPage`, and `LastPages` (most times with `\pageref{...}`, but more save with `\lastpageref{...}`). In particular one can use the `fancyhdr` or `nccfancyhdr` package, or redefinitions of the page headings and footings to get a reference to the (very) last page.

`\pageref*` If the `hyperref` package is used, the references are hyperlinked to their aims. If these hyperlinks shall be suppressed, `\lastpageref*` `\pageref*{...}` and `\lastpageref*{...}` can be used.

2.1 Options

`options` The `pageslts` package takes the following options:

2.1.1 pagecontinue

`pagecontinue` When option `pagecontinue=false` is **not** given (i.e. `pagecontinue` or `pagecontinue=true` or no `pagecontinue` option at all), at each `\pagenumbering{...}` command the number of the page will be continued with the page number following the last page of the same page numbering scheme. For example, if there are V Roman pages in the frontmatter, some arabic ones in the mainmatter, and then Roman ones again in the backmatter, the last ones will start with VI instead of I again.

If you want to start with I (or i, 1, a, A, *,...) again, set option `pagecontinue=false`. If you want to generally continue the numbers, but for some page numbering scheme do not want this, use `pagecontinue=true` and say `\setcounter{page}{1}` after `\pagenumbering{...}` for that page numbering scheme.

2.1.2 alphMult, AlphMulti, fnsymbolmult

The page number printed in `fnsymbol`¹ must be > 0 and < 10 and those printed in `alph`² and `Alph`³ must be > 0 and < 27 . After page Z L^AT_εX *should* continue with AA, AB, AC,... Some people prefer AA, BB, CC,..., but in hexadecimal it is $AA_{16} = 170_{10}$ and $171_{10} = AB_{16}$, whereas $BB_{16} = 187_{10}$. In any way it should continue at all (maybe even with an user option to choose between the two continuations), but instead only gives an error:

```
LaTeX Error: Counter too large
See the LaTeX manual or LaTeX Companion for explanation.
You've lost some text. Try typing <return> to proceed.
If that doesn't work, type X <return> to quit.
```

¹ *, †, ‡, §, ¶, ||, **, ††, ‡‡

² a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z

³ A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z

But thanks to the `alphalph` package by HEIKO OBERDIEK these limitation no longer hold. With his `\erroralph` command now even negative or zero page “numbers” are possible.

`alphMult` The string option `alphMult` takes three values: `ab`, `bb`, `0`:

ab After page `z`, the page “numbers” continue with `aa`, `ab`, `ac`, `ad`,..., `fxshrxw` (the default), and before `a` with `0`, `-a`, `-b`,..., `-z`, `-aa`, `-ab`,..., `-fxshrxw` (= `-21 474 836 47`).

bb After page `z`, the page “numbers” continue with `aa`, `bb`, `cc`, `dd`,..., and before `a` with `0`, `-a`, `-b`,..., `-z`, `-aa`, `-bb`,... (Internally up to `±55 834 558` is allowed, but when printed will exceed the \LaTeX capacity even for smaller numbers – in the example file this happens at about 6 500.) (If you have a document with more than 6 500 pages, you might think about splitting it in volumes. And page “numbers” with about 100 digits are probably not easy to grasp for the reader, too.)

0 (zero) The `pageslts` package does nothing, thus the user is free to define the page “numbers” after `z` and before `a`. (But if the user does not do anything at all, the **LaTeX Error: Counter too large** will appear again.)

`AlphMulti` The string option `AlphMulti` takes three values: `AB`, `BB`, `0`:

AB After page `Z`, the page “numbers” continue with `AA`, `AB`, `AC`, `AD`,..., `FXSHRXW` (the default), and before `A` with `0`, `-A`, `-B`,..., `-Z`, `-AA`, `-AB`,..., `-FXSHRXW`.

BB After page `Z`, the page “numbers” continue with `AA`, `BB`, `CC`, `DD`,..., and before `A` with `0`, `-A`, `-B`,..., `-Z`, `-AA`, `-BB`,... (About the limits please see `alphMult` above.)

0 (zero) The `pageslts` package does nothing, thus the user is free to define the page “numbers” after `Z` and before `A`. (But if the user does not do anything at all, the **LaTeX Error: Counter too large** will appear again.)

`fnsymbolmult` When option `fnsymbolmult=false` is **not** given (i.e. `fnsymbolmult` or `fnsymbolmult=true` or no `fnsymbolmult` option at all), after 5 (¶) the page “number” is continued with the doubled “number” of the first, second, third,... page (`**`, `††`, `‡‡`, `§§`, `¶¶`), and after the tenth page the “number” is tripled (`***`, `†††`,...). Compile the `pageslts-example.tex` with `pdf \LaTeX` and see the resulting `pdf` file.

Before `*` (page 1) the page “numbers” are continued with `0`, `-*`, `-†`,..., `-¶`, `-**`, `-††`,...

If this is not wanted, set option `fnsymbolmult=false`, and `pageslts` will do nothing and allow the user to change the page “number”. (But if the user does not do anything at all, the

LaTeX Error: Counter too large
will appear again.)

While in $\LaTeX 2_{\epsilon}$ arabic (page) numbers are possible up to `MAX = 2 147 483 647` (cf. the `alphalph` package), `\erroralphalph{\fnsymbolmult}{...}` numbers are possible up to 10 737 415 only. If this number is not only used internally but printed, after number about 11 705 (which is 2 341 times ¶) the $\LaTeX 2_{\epsilon}$ capacity is exceeded, depending on the remaining file and its use of \TeX capacity, of course. (If you have a document with more than 11 705 pages, you might think about splitting it in volumes. And page “numbers” with 2 341 digits are probably not easy to grasp for the reader, too.)

2.1.3 romanMult, RomanMulti

`romanMult` The options `romanMult(=true)` and `RomanMulti(=true)` expand the `\roman` and `\Roman` page numbering scheme to values below one (< 1), i. e. 0, -i, -ii, -iii, -iv, . . . and 0, -I, -II, -III, -IV, . . . , respectively.

Again the \TeX capacity will be exceeded before $\pm \text{MAX} = \pm 2\,147\,483\,647$, and even if 1 000 000 000 is internally possible, this would print 1 000 000 times the letter m (or M), which would require either very small print or quite huge paper size.

(If you have a document with so many pages, you might think about splitting it in volumes. And page “numbers” with thousands of digits are probably not easy to grasp for the reader, too.)

If the expansion below 1 is not wanted, set options `romanMult=false` and/or `RomanMulti=false`, and `pageslts` will do nothing and allow the user to change the page “number”. (But if the user does not do anything at all, \LaTeX will just ignore the values - not even a warning will be issued.)

2.1.4 Arabic page numbers

`Arabic page numbers` In $\text{\LaTeX}_{2\epsilon}$ arabic (page) numbers are already possible between $-\text{MAX} \dots \text{MAX}$, where $\text{MAX} = 2\,147\,483\,647$ (cf. the `alphalph` package), without any expansion necessary. (But if you have a document with so many pages, you might think about splitting it in volumes!)

2.2 Labels

`pagesLTS.0` At the first page a label `pagesLTS.0` is created. If `\pagenumbering{...}` is used right after `\begin{document}`, this is much easier for the `pageslts` package (and chances for successful placing of all labels are much higher; cf. subsection 2.3.2).

`LastPage` `\AtEndDocument` (see subsection 3.2) this package defines a label, `LastPage`, which the user can refer to with the `\lastpageref{LastPage}` command. While `\pageref{LastPage}` is also possible (especially for backward compatibility with the `LastPage` package), this is discouraged, because it will not work when it is used together with the `hyperref` package and the `fnsymbol` page numbering scheme. (The `LastPage` package did not work with this combination, too, so if you want to, you can reproduce the old error – but you do not have to do it, but can use `\lastpageref{LastPage}`.)

`VeryLastPage` `\AfterLastShipout` the label `VeryLastPage` is defined, which the user can also refer to with the `\lastpageref{VeryLastPage}` command. Depending on usage of `\AtEndDocument` by other packages, `LastPage` might not point to the very last page, but `\lastpageref{VeryLastPage}` should do this (cf. subsection 3.2).

`LastPages` When more than one page numbering scheme is used, neither `LastPage` nor `VeryLastPage` give the total **number** of pages. For example, for a document with VI+36 pages, both give “36” as reference to the last page. While this is correct, the total number of pages is 42, and this is given by the reference to `LastPages`: `\lastpageref{LastPages}` (note the “s” at the end). When the page number was manipulated by `\addtocounter{page}{...}` or `\setcounter{page}{...}`, `LastPages` ignores this. (At a page numbering change the page is reset to one (without option `pagecontinue`). This is done by `\setcounter{page}{1}`, thus this is ignored, too.)

`\pageref{totpages}` of the `totpages` package is similar to `\lastpageref{LastPages}`, but while the target for `\pageref{totpages}` is placed `\AtEndDocument`, the target for `\lastpageref{LastPages}` is placed `\AfterLastShipout`, therefore `\lastpageref{LastPages}` is safer to really get the total page number.

`\theCurrentPage` `\theCurrentPage` gives the current total/absolute page, in contrast to `\thepage`, which gives only the page *name* in the current page numbering scheme. For example, when there are Roman VII pages in the frontmatter and afterwards in the mainmatter you are at arabic page 9, then `\theCurrentPage` is 16, whereas `\thepage` is 9. When the page “number” (name) is manipulated by `\addtocounter{page}{...}` or `\setcounter{page}{...}`, `\theCurrentPage` ignores this. Because `CurrentPage` is a normal counter, you can also say e.g. `\Roman{CurrentPage}` to get the value in Roman page numbering scheme (e.g. VIII for 8).

`\theCurrentPageLocal` `\theCurrentPageLocal` gives the current (arabic) number of pages in the current page numbering scheme. `\thepage` and `\theCurrentPageLocal` are different e.g. when `\addtocounter{page}{...}` or `\setcounter{page}{...}` were used. `\theCurrentPageLocal` can be printed in other formats, e.g. `\roman{pagesLTS.current.local.roman}`, but probably it only makes sense if page numbering scheme and format are the same, e.g. `\Roman{pagesLTS.current.local.Roman}` or `\Alph{pagesLTS.current.local.Alph}`. `\arabic{pagesLTS.current.local....}` probably make sense even when combined with another page numbering scheme. And this is exactly what `\theCurrentPageLocal` does:
`\def\theCurrentPageLocal{\arabic{pagesLTS.current.local.\pagesLTS@pnc}}.`

`pagesLTS. page numbering scheme . number` If you want to refer to the last page of the first, second,... use of a page numbering scheme, you can refer to `pagesLTS.<page numbering scheme>.<number>`, e.g. `\lastpageref{pagesLTS.Roman.1}`, where `<number>` is the occurrence of the page numbering scheme. For details please see page 9.

`\lastpageref` For pages with the `fnsymbol` page numbering scheme, `\lastpageref{...}` instead of `\pageref{...}` *must* be used. This is required for pages somewhere inside of the document as well as the (very) last page(s). Because `\lastpageref{...}` is a synonym for `\pageref{...}`, where no `fnsymbol` page numbering scheme is used, it is save(r) to use it for all references to labels provided by the `pageslts` package.

2.3 `\pagenumbering{...}`

`\pagenumbering`

2.3.1 If `\pagenumbering{...}` is not used

When the `pageslts` package is used, but `\pagenumbering{...}` (with an argument like arabic, roman, Roman, fnsymbol, alph, or Alph) is not used, there should be no problem, except that you might need more (!) compiler runs to get all references right, and some references might even be missing (see below). The `pageslts` package tries to determine the page numbering scheme at the first shipout, but success is not guaranteed. Thus please use `\pagenumbering{...}` at the beginning of your document!

Without `\pagenumbering{<something>}` (`<something>` e.g. = arabic) at the beginning of the document, the page numbers might be given in arabic *by (class) default*, but the `pageslts` package does not know about this without `\pagenumbering{arabic}`. –

The label `pagesLTS.0` is created at the first page even if no `\pagenumbering{...}` command is given. Maybe have a look at the `.aux` file after compiling your document to detect further labels (of other packages, too).

2.3.2 If `\pagenumbering{...}` is used once

pagesLTS.0 At the first page a label `pagesLTS.0` is created. If `\pagenumbering{...}` is used right after `\begin{document}`, this is much easier for the `pageslts` package (and chances for successful placing of all labels are much higher).

2.3.3 If `\pagenumbering{...}` is used more than once

Everything from the preceding subsections applies and additionally the following:

When different page numbering schemes are used, e.g. Roman numbers for the frontmatter and arabic numbers for the mainmatter, please use `\pagenumbering{...}` for each of them! Even if you do this, the reference to neither the label `LastPage` nor the label `VeryLastPage` gives the **total** number of pages, but only the number of pages of the last used page numbering scheme (which could be exactly what you want, e.g. if you want to refer to the last page itself and do not want to give the total number of pages).

LastPages For remediation the label `LastPages` (with “s” at its end) is introduced. Please then refer to this label by `\lastpageref{LastPages}` instead of `LastPage` or `VeryLastPage`.

pagesLTS.arabic Additionally, at the last page of each page numbering scheme a label `pagesLTS.<numbering scheme>` is placed, where
pagesLTS.roman `<numbering scheme>` is e.g. arabic, roman, Roman, alph, Alph,...
pagesLTS.Roman For the **fnsymbol** page numbering scheme `\lastpageref{pagesLTS.fnsymbol}` is needed instead of
pagesLTS.alph `\pageref{pagesLTS.fnsymbol}`. You can and should use `\lastpageref{...}` also for the other page numbering schemes.
pagesLTS.Alph
pagesLTS.fnsymbol

While at the time of the last revision of the `pageslts` package no other page numbering schemes were known to the maintainer, this package in principle works with every scheme which is recognized by the original `\pagenumbering` command. But the `hyperref` package only then works with crazy page names, if the references to those pages are given in a certain way, thus the combination of a new page numbering scheme, the `hyperref` and the `pageslts` package might not work. – The `pageslts` package by itself also works with schemes, which the original `\pagenumbering{...}` does not recognize, but because the original `\pagenumbering{...}` is called by the `pageslts` package, this might cause an error, see subsection 3.6! (And if the number format is unknown to \LaTeX , the pages will have no number, and therefore cannot be referenced. You might be able to help yourself by using the `hyperref` package and manually placing `\hypertargets` and `\hrefs`.)

2.3.4 If the same `\pagenumbering{...}` scheme is used more than once

Everything from the preceding subsections applies and additionally the following:

pagecontinue If the same page numbering scheme is used twice (or even more often) in one document (e.g. in the frontmatter Roman: I–V, in the mainmatter arabic: 1–20, and in the backmatter again Roman: VI–X), the second time it is used, the page numbering is either continued (option `pagecontinue` or `pagecontinue=true` or no option `pagecontinue`; the default) or reset to one (option `pagecontinue=false`). It is even possible to use a page numbering scheme more than twice.

pagesLTS. page numbering If you want to refer to the last page of the first, second,... use of a page numbering scheme, page V in the example above, scheme . number you can refer to `pagesLTS.<page numbering scheme>.<number>`, e.g. `\lastpageref{pagesLTS.Roman.1}`, where `<number>` is the occurrence of the page numbering scheme.

If you want to refer to the first page of a page numbering scheme, just place a label there, e. g.

```
\pagenumbering{Roman}
\section{Section title\label{RomanSection}}
```

(You know where you use `\pagenumbering{...}` and this is the `pageslts` package, not the `firstpage` one).

When you want to give the number of pages of each “sector” of the page numbering scheme, you can use

```
pagesLTS. page numbering \lastpages{<page numbering scheme>}{<number>},
scheme . number where <page numbering scheme> is e.g. Roman, arabic,... and <number> the “sector” number, e.g. \lastpages{Roman}{2}.
.local.cnt (Internally, the counter has the format pagesLTS.<page numbering scheme>.<number>.local.cnt.)
```

If you used the page numbering scheme Roman for three times, you could say

```
Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}\
There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\
\lastpages{Roman}{1}~pages in the first Roman sector
(\pageref{Roman} -- \lastpageref{pagesLTS.Roman.1}),\
\lastpages{Roman}{2}~pages in the second Roman sector
(\pageref{Roman2} -- \lastpageref{pagesLTS.Roman.2}), and\
\lastpages{Roman}{3}~pages in the third Roman sector
(\pageref{Roman3} -- \lastpageref{pagesLTS.Roman.3}).\
```

to get

```
Last Roman page (pagesLTS.Roman): VIII
There are 8 pages with Roman numbers:
3 pages in the first Roman sector (I – III),
4 pages in the second Roman sector (IV – VII), and
3 pages in the third Roman sector (VIII – X).
```

(see e. g. the compiled `pageslts-example` file).

If you want to continue one page numbering scheme, but later on (third use of it, or for another page numbering scheme) want to reset the page number, just say `\setcounter{page}{1}` there.

In your document the code

```
\makeatletter
\renewcommand{\@evenfoot}{%
  {\normalsize\slshape DRAFT \today\hfil \upshape page {\thepage} (\theCurrentPage) of\ %
  \lastpageref{pagesLTS.Roman} + \lastpageref{pagesLTS.arabic}\ = \lastpageref{LastPages} pages%
  }
\renewcommand{\@oddfoot}{\@evenfoot}
\makeatother
```

creates footers like

“DRAFT January 19, 2014 page V (5) of VII + 35 = 42 pages”

or

“DRAFT January 19, 2014 page 10 (17) of VII + 35 = 42 pages”

in the compiled document (cf. the `pageslts-example` file).

Code like

```
This book has \lastpageref{pagesLTS.Roman}+\lastpageref{pagesLTS.arabic} pages %
(\lastpageref{LastPages} pages in total).
```

produces output like

This book has X+85 pages (95 pages in total).

(when using the `hyperref` package, the references are even hyperlinked).

If `\addtocounter{page}{...}` or `\setcounter{page}{...}` have been used, the local version of `CurrentPage` can be used, `\theCurrentPageLocal`, see subsection [2.2](#).

2.4 `papermas(s)` package

There is a kind of an add-on to this package, the `papermas` package, which can be used to compute the number of sheets of paper needed to print a document (you can print more than one page of a document on one sheet of paper) as well as the approximate mass of the printout. Please see the [7.1](#) subsection.

3 A few warnings

3.1 Hyperref and repeated page numbers

When two (or more) different page numbering schemes are used, or the page number is reset, or for any other reason there are two pages with the same number (maybe in different format, e. g. 1 and I), and `hyperref` has not been configured right, this can cause problems. Use `hyperref` with `plainpages=false` and `pdfpagelabels=true`, and everything should be fine.

More details can be found at <http://www.tex.ac.uk/cgi-bin/texfaq2html?label=pdfpagelabels>.

3.2 `\AtEndDocument`

The output of a $\text{\LaTeX} 2_{\epsilon}$ run is not independent of the order in which packages are loaded. It is often the case that the same formats for which one must put tables and figure at the end, are the ones in which endnotes are also required. If one wants to use `\AtEndDocument` here as well (as done for `\lastpageref{LastPage}`), then it is easy to get to three separate uses of `\AtEndDocument` (assuming one uses this for the endnotes as well). Clearly it is not safe for any package writer or user to assume that no material will follow what they put into `\AtEndDocument`. Therefore a message, which begins with `AED`, is included in every usage of `\AtEndDocument`, and it is tried to minimize any side effects the usage may have.

As now HEIKO OBERDIEK's `atveryend` package is used, the references `\lastpageref{VeryLastPage}` and `\lastpageref{LastPages}` should work all right. About how to get the `atveryend` package, please see subsection 7.1.

3.3 Interaction with very old versions of the `endfloat` package

The very old version 2.0 (and earlier) of the `endfloat` package actually redefined the `\enddocument` command, and so interfered drastically with the $\text{\LaTeX} 2_{\epsilon}$ commands which make use of `\AtEndDocument`. Newer versions of `endfloat` exist (at the time of writing this documentation: v2.5d as of 2011/12/25) in modern documentation form, which should be available from the same source where you received this file, see subsection 7.1.

A note is placed in the style file at the `\RequirePackage` section, and later it is even checked whether a (very) old `endfloat` package is in use. If it is, a warning or even an error message is given, depending on `endfloat` version. This assumes, that the old versions of `endfloat` at least gave a version date, of course.

If you want your `LastPage` to label the last page of these end floats, you need to load `pageslts` after loading `endfloat`, or to use `VeryLastPage` instead. If, on the other hand, you want `LastPage` to refer to the (not so) last page, exclusive of the floats at the end, then load in the reverse order. Independent from the order of `pageslts` and `endfloat`, you will still need the modified⁴ version of `endfloat`.

Using the `LastPages` (`s!`) label should get you to the last page in all cases: `\lastpageref{LastPages}`.

Other $\text{\LaTeX} 209$ (!) packages also seem to like to redefine `\enddocument`. In addition to the old `endfloat`, `harvard` comes to mind. All of these will need to be modified swiftly. **If possible, update to $\text{\LaTeX} 2_{\epsilon}$!**

⁴New versions are available for over 15 years now, so it might be time to update, if you did not do it already.

3.4 showkeys package

When the showkeys package has been loaded in `draft` mode, in the margin for each label a box is displayed with the name of the label. showkeys accomplishes this by redefining `\label`, but pageslts does not use `\label`, but writes directly to the `\jobname.aux`-file, and this is generally done after the according page has shipped out, therefore no box can be placed on the preceding page. At least pageslts gives a warning, that showkeys cannot present the respective label.

3.5 lastpage package

This package first started as a revision of the lastpage package of JEFFREY P. GOLDBERG (jeffrey+news at goldmark dot org), but it became obvious that a replacement was needed to accomplish what this package does. For backward compatibility, a label named LastPage is provided. Thus `\usepackage{lastpage}` can be replaced by

```
\usepackage[pagecontinue=false,%
```

```
alphMult=0,AlphMulti=0,fnsymbolmult=false,romanMult=false,RomanMulti=false]{pageslts},
```

if the behaviour of the lastpage package should be simulated. Using `old` (!) versions of the lastpage before the pageslts before the hyperref [2012/11/06 v6.83m] package results in multiply definitions of the LastPage label. While the pageslts package cancels the command `\lastpage@putlabel` from the old lastpage package (because it does this itself, and better), hyperref redefines `\lastpage@putlabel` and thereby reintroduces it again (hyperref should probably check for the version of the lastpage package and/or whether the pageslts package was also loaded.)

3.6 Using an unknown page numbering scheme

I do not know whether L^AT_EX 2_ε can handle another page numbering scheme (e. g. Hebraic), but if you want to use it, this should be no problem for the pageslts package. But the original `\pagenumbering{...}` as well as the hyperref package (if used) might want to vote against it, especially when used together with the pageslts package. Especially especially (*sic!*) if the last page uses this new page numbering scheme, you should check everything double (at least).

(And if the number format is unknown to L^AT_EX, the pages will have no number, and therefore cannot be referenced. You might be able to help yourself by using the hyperref package and manually placing `\hypertargets` and `\hrefs`.)

3.7 Page counter overflow

Without the use of the alphalph package, the

“ranges of supported counter values are more or less restricted. Only `\arabic` can be used with any counter value T_EX supports.

Presentation command	Supported domain	Ignored values	Error message ‘Counter too large’
<code>\arabic</code>	<code>-MAX..MAX</code>		
<code>\roman</code> , <code>\Roman</code>	<code>1..MAX</code>	<code>-MAX..0</code>	
<code>\alph</code> , <code>\Alph</code>	<code>1..26</code>	<code>0</code>	<code>-MAX..-1</code> , <code>27..MAX</code>
<code>\fnsymbol</code>	<code>1..9</code>	<code>0</code>	<code>-MAX..-1</code> , <code>10..MAX</code>

MAX = 2147483647

” (HEIKO OBERDIEK: The alphalph package, 2010/04/18, v2.3, first table, p. 2).

Please see subsections 2.1.2 and 2.1.3 for instructions how to overcome these limitations.

3.8 Using the `fnsymbol` page numbering scheme

Using the `fnsymbol` page numbering scheme can result in problems – big ones!

When using this page numbering scheme, it is very important to use `\lastpageref{...}` instead of `\pageref{...}` for any link to any label provided by the `pageslts` package.

While the `pageslts` package tries really very hard to circumvent any problem, other packages might screw up – and quite totally for that. So, you have been warned!

- There can be a counter overflow, see preceding subsection 3.7.
- Adobe Reader XI (11.0.1) does not show the correct page names for all pages with `fnsymbol` page numbering scheme:

page number	page name	shown by the Reader	
		without <code>alphalph</code> &	with <code>pageslts</code>
-2	LaTeX Error		-
-1	LaTeX Error		-*
0	(ignored by L ^A T _E X)		0
1	*	*	*
2	†		
3	‡		
4	§		
5	¶		
6		”026B30D	**
7	**	**	**
8	††		
9	‡‡		
10	LaTeX Error		
11	LaTeX Error		* * *
12	LaTeX Error		

and so on, while at least the (... of ...) part of the page number is displayed correctly (see page 4, tip about logical page numbers). When the `alphalph` package and the `pageslts` package with `fnsymbolmult` option are used, page names like `-*`, `0`, `*`, `**` are also presented correctly by the Reader. (Adobe Reader X even got the other pages right.)

4 Alternatives

There are similar packages, which do (or do not) similar things. As I neither know what exactly you want to accomplish when using this package (e. g. page number vs. page name, hyperlinks or not), nor what resources you have (e. g. ε -T_EX), here is a list of some possible alternatives:

LastPage

- The `LastPage` package also provides the `LastPage` label (but not `VeryLastPage` or `LastPages`). If you only want this and have a quite limited amount of T_EX resources, you might want to use that package instead.
- If L^AT_EX 2.09 is still used, and if you are unable to switch to L^AT_EX 2 ε , the L^AT_EX 2.09 compatible `lastpage209.sty` can be used (which is also contained in the recent `LastPage` package).

totpages

- The `totpages` package provides a `totpages` label similar to `LastPages`, but `\AtEndDocument` instead of `\AfterLastShipout`. Therefore you should stay with `pageslts`. The `totpages` package additionally computes the number of paper sheets needed to (double) print the document (with one, two, three, . . . pages on one sheet of paper). This can also be accomplished with the `papermas` package.

totcount

- The `totcount` package provides the last value of a counter, thus also the value of the `page` counter. You do not get a hyperlink to the last page, only the numerical value of the last page name is given (i. e. `X+72` pages gives 72 instead of 82 as total number of pages), and the number of pages can be changed e. g. by `\addtocounter`.

nofm

- “There is a package `nofm.sty` available, but some versions of it are defective, and most don’t work with `fancyhdr` because they take over the complete page layout.” (PIET VAN OOSTRUM: Page layout in L^AT_EX, March 2, 2004, section 16; `fancyhdr.pdf`) `nofm` as of 1991/02/25 (without version number), available at <ftp://tug.ctan.org/pub/tex-archive/obsolete/macros/latex209/contrib/misc/nofm.sty>, does not work with e. g. `hyperref`, redefines `\enddocument` as well as `\@oddhead`, `\@evenhead`, `\@oddfoot`, and `\@evenfoot`. If you know the (CTAN:) location of a **working** (!) version, please send me an e-mail, thanks!

countlto

- You may want to have a look at the `countlto` package.

zref

- The `zref` package of HEIKO OBERDIEK requires ε -T_EX. `pageslts` does not require ε -T_EX, but if you already have ε -T_EX, you may have a look at the extensive `zref` package, whether it suits your needs better (or additionally or whatsoever).

(You programmed or found another alternative, which is available at CTAN:?)

OK, send an e-mail to me with the name, location at CTAN:, and a short notice, and I will probably include it in the list above.)

About how to get those packages, please see subsection 7.1.

5 Example

```
1 (*example)
2 \documentclass[british]{article}
3 %%%%%%%%%%%
4 \usepackage[lipsum][2011/04/14]%          v1.2
5 \usepackage[draft]{showkeys}[2007/08/07]% v3.15
6 %%      Use final instead of draft to hide the keys. %%
7 \usepackage[hyperref][2012/11/06]%      v6.83m
8 \hypersetup{
9  extension=pdf,%
10 plainpages=false,%
11 pdfpagelabels=true,%
12 hyperindex=false,%
13 pdflang={en},%
14 pdftitle={pageslts package example},%
15 pdfauthor={Hans-Martin Muench},%
16 pdfsubject={Example for the pageslts package},%
17 pdfkeywords={LaTeX, pageslts, H.-Martin Muench},%
18 pdfview=Fit,%
19 pdfstartview=Fit,%
20 pdfpagelayout=SinglePage,%
21 bookmarksopen=true%
22 }
23 \usepackage[pagecontinue=true,alphMult=ab,AlphMulti=AB,fnsymbolmult=true,%
24  romanMult=true,RomanMulti=true]{pageslts}[2014/01/19]% v1.2c
25 %% These are the default options. %%
26
27 \makeatletter
28  \renewcommand{\@evenfoot}{%
29   {Page \thepage\ (\theCurrentPage; local: \theCurrentPageLocal) of %
30   \lastpageref{pagesLTS.roman}(\lastpageref{pagesLTS.roman.local}) + %
31   \lastpageref{pagesLTS.Roman}(\lastpageref{pagesLTS.Roman.local}) + %
32   \lastpageref{pagesLTS.arabic}(\lastpageref{pagesLTS.arabic.local}) + %
33   \lastpageref{pagesLTS.fnsymbol}(\lastpageref{pagesLTS.fnsymbol.local}) + %
34   \lastpageref{pagesLTS.alph}(\lastpageref{pagesLTS.alph.local}) + %
35   \lastpageref{pagesLTS.Alph}(\lastpageref{pagesLTS.Alph.local}) = %
36   \lastpageref{LastPages} pages.%
37  }
38  \renewcommand{\@oddfoot}{\@evenfoot}
39  \def\pagesLTSexampleArabic{3}
40  \def\pagesLTSexamplealph{23}
41  \gdef\unit#1{\mathord{\thinspace\mathrm{#1}}}%
42 \makeatother
43
44 \listfiles
45
```



```

46 \begin{document}
47 \pagenumbering{roman}
48 %% Note the first \pagenumbering immediately behind \begin{document}! %%
49 %%\addtocounter{page}{-2} %%
50
51 \section*{Example for pageslts}
52 \addcontentsline{toc}{section}{Example for pageslts}
53 \markboth{Example for pageslts}{Example for pageslts}
54
55 This example demonstrates the most common uses of package\
56 \textsf{pageslts}, v1.2c as of 2014/01/19 (HMM).\
57 The used options were \texttt{pagecontinue=true},
58 \texttt{alphMult=ab}, \texttt{AlphMulti=AB}, \linebreak
59 \texttt{fnsymbolmult=true},
60 \texttt{romanMult=true}, and \texttt{RomanMulti=true}
61 (the default ones).\
62 For more details please see the documentation!\
63
64 \label{keys} To hide the \pageref{keys}{\quad } use option
65 \texttt{final} instead of \texttt{draft} with the \textsf{showkeys}
66 package (or remove the package call from the preamble of
67 this document).\
68
69 \textbf{Hyperlinks or not:} If the \textsf{hyperref} package is loaded,
70 the references are also hyperlinked:\
71 \smallskip
72 Page \thepage\ (\thecurrentpage; local: \thecurrentpagelocal) of %
73 \lastpageref{pagesLTS.roman}(\lastpageref{pagesLTS.roman.local}) + %
74 \lastpageref{pagesLTS.Roman}(\lastpageref{pagesLTS.Roman.local}) + %
75 \lastpageref{pagesLTS.arabic}(\lastpageref{pagesLTS.arabic.local}) + %
76 \lastpageref{pagesLTS.fnsymbol}(\lastpageref{pagesLTS.fnsymbol.local}) + %
77 \lastpageref{pagesLTS.alph}(\lastpageref{pagesLTS.alph.local}) + %
78 \lastpageref{pagesLTS.Alph}(\lastpageref{pagesLTS.Alph.local}) = %
79 \lastpageref{LastPages} pages.\
80 If the \textsf{hyperref} package is loaded, but the hyperlinks of the
81 references shall be suppressed, \verb|\pageref*{...}|
82 and \verb|\lastpageref*{...}| can be used:\
83 Page \thepage\ (\thecurrentpage; local: \thecurrentpagelocal) of %
84 \lastpageref*{pagesLTS.roman}(\lastpageref*{pagesLTS.roman.local}) + %
85 \lastpageref*{pagesLTS.Roman}(\lastpageref*{pagesLTS.Roman.local}) + %
86 \lastpageref*{pagesLTS.arabic}(\lastpageref*{pagesLTS.arabic.local}) + %
87 \lastpageref*{pagesLTS.fnsymbol}(\lastpageref*{pagesLTS.fnsymbol.local}) + %
88 \lastpageref*{pagesLTS.alph}(\lastpageref*{pagesLTS.alph.local}) + %
89 \lastpageref*{pagesLTS.Alph}(\lastpageref*{pagesLTS.Alph.local}) = %
90 \lastpageref*{LastPages} pages.\
91
92

```

```

93 \textbf{Trademarks} appear throughout this example without any
94 trademark symbol; they are the property of their respective
95 trademark owner. There is no intention of infringement; the
96 usage is to the benefit of the trademark owner.\\
97
98 \textbf{Tip}: Use \textit{logical page numbers} for
99 the display of the pdf!\\
100 (In Adobe Reader XI (11.0.6): \underline{E}dit $>$
101 Prefere\underline{n}ces (Ctrl+k) $>$ Page Display $>$
102 Page Content and Information $>$ Use logical page
103 \nolinebreak{\underline{n}umbers.})\\
104
105 You want negative page numbers? Not only arabic, but even roman,
106 Roman, alph, Alph or fnsymbol ones? No problem, e.\,g. just give a\\
107 \verb|\addtocounter{page}{-\textit{some number}\verb|}| in the
108 source code of this example file (or uncomment the prepared line)!
109
110 \bigskip
111
112 Save per page about $200\unit{ml}$ water, $2\unit{g}$ CO$_{2}$
113 and $2\unit{g}$ wood:\\
114 Therefore please print only if this is really necessary.
115
116 \pagebreak
117
118 \tableofcontents
119
120 \newpage
121
122 \pagenumbering{roman}
123 %% in case the page numbering is changed before,
124 %% otherwise pagesLTS.current.local.roman on this page
125 %% would be undefined
126
127 \section{roman}
128
129 \noindent (\texttt{roman} page numbering was started before,
130 because the page numbering scheme was needed to start at
131 the first page, of course.)\\
132
133 \noindent First page (\verb|\lastpageref{pagesLTS.0}|):
134 \lastpageref{pagesLTS.0}\\
135
136 \noindent The page (\verb|\thepage|): \thepage \\
137
138 \noindent Current page (\verb|\thecurrentpage|),
139 i.\,e. counted continuously from the first page): \thecurrentpage \\

```

```

140 You can get this also in other formats:
141 \roman{CurrentPage}, \Roman{CurrentPage}, \arabic{CurrentPage},
142 \fnsymbol{CurrentPage}, \alph{CurrentPage}, \Alph{CurrentPage}.
143
144 \noindent CurrentPageLocal (\verb|\theCurrentPageLocal|),
145 i.\,e. counted continuously from the first page of the
146 current page numbering scheme): \theCurrentPageLocal \\
147 You can get also this in other formats, too:
148 \roman{pagesLTS.current.local.roman}, \Roman{pagesLTS.current.local.roman},
149 \arabic{pagesLTS.current.local.roman}, \fnsymbol{pagesLTS.current.local.roman},
150 \alph{pagesLTS.current.local.roman}, \Alph{pagesLTS.current.local.roman},
151 but probably it only makes sense if page numbering scheme and format are
152 the same, e.\,g.\\
153 \verb|\Roman{pagesLTS.current.local.Roman}|\\
154 or \verb|\Alph{pagesLTS.current.local.Alph}|. \verb|\arabic{...}| could
155 make sense even if combined with another page numbering scheme.
156 And this is exactly what \verb|\theCurrentPageLocal| does:\\
157 \nolinebreak{\verb|\def\theCurrentPageLocal{\arabic{pagesLTS.current.local.\pagesLTS@pnc}}|.}\ \\
158
159 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
160 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
161
162 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
163 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
164 \lastpages{Roman}{1}~pages in the first Roman sector
165 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
166 \lastpages{Roman}{2}~pages in the second Roman sector
167 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
168 \lastpages{Roman}{3}~pages in the third Roman sector
169 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\ \\
170
171 When the option \texttt{pagecontinue=false} is used with the
172 \textsf{pageslts} package, the \verb|\lastpageref{pagesLTS.Roman}| will
173 point to the same page as before, but this will have a lower number.\\
174 The \verb|\lastpageref{pagesLTS.Roman.local}| will not change,
175 because the number of pages does not change (only the page numbers).\ \\
176
177 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
178 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
179 because an \verb|\addtocounter{page}{\pagesLTSexampleArabic\verb|}| was used.)\\
180
181 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
182 (\verb|\lastpageref{pagesLTS.fnsymbol}| -- never \verb|\pageref{pagesLTS.fnsymbol}|!)\\
183 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
184
185 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
186 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,

```

```

187 because an \verb|\addtocounter{page}{\pagesLTsexamplealph\verb|}| was used.)\
188
189 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
190 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\
191
192 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\
193
194 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\
195 (\texttt{lastpage} and \texttt{VeryLastPage} are identical, unless
196 a package with output \linebreak
197 \verb|\AtEndDocument| after the \textsf{pageslts} package was added.)\
198
199 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
200 (=total number of pages)\
201
202 \lipsum[1-3]
203
204 \newpage
205
206 \pagenumbering{Roman}
207
208 \section{Roman\label{Roman}}
209 \subsection{Common Roman page numbering}
210
211 \noindent First page (\verb|\lastpageref{pagesLTS.0}|):
212 \lastpageref{pagesLTS.0}\
213
214 \noindent The page (\verb|\thepage|): \thepage \
215
216 \noindent Current page (\verb|\theCurrentPage|),
217 i.\,e. counted continuously from the first page): \theCurrentPage \
218
219 \noindent CurrentPageLocal (\verb|\theCurrentPageLocal|),
220 i.\,e. counted continuously from the first page of the
221 current page numbering scheme): \theCurrentPageLocal \
222
223 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
224 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\
225
226 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
227 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\
228 \lastpages{Roman}{1}~pages in the first Roman sector
229 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\
230 \lastpages{Roman}{2}~pages in the second Roman sector
231 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\
232 \lastpages{Roman}{3}~pages in the third Roman sector
233 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\

```

234

235 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }

236 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,

237 because an \verb|\addtocounter{page}{|\pagesLTSexampleArabic\verb|}| was used.)\

238

239 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \

240 (\verb|\lastpageref{pagesLTS.fnsymbol}| -- never \verb|\pageref{pagesLTS.fnsymbol}|!)\

241 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\

242

243 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }

244 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,

245 because an \verb|\addtocounter{page}{|\pagesLTSexamplealph\verb|}| was used.)\

246

247 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }

248 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\

249

250 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\

251

252 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\

253 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless

254 a package with output \linebreak

255 \verb|\AtEndDocument| after the \textsf{pageslts} package was added.)\

256

257 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }

258 (=total number of pages)\

259

260 \lipsum[1-4]

261

262 \newpage

263

264 \subsection{Last page of first Roman sector}

265 \verb|\lastpageref{pagesLTS.Roman}| does \textbf{not}

266 refer to this page (but there: \lastpageref{pagesLTS.Roman}),

267 because the option \texttt{pagecontinue=true}

268 was chosen. When a reference to this page is wanted,\

269 \verb|\lastpageref{pagesLTS.Roman.1}| can be used: \lastpageref{pagesLTS.Roman.1}.\

270

271 \bigskip

272 There are \lastpages{Roman}{1}~pages (\verb|\lastpages{Roman}{1}|)

273 in this first Roman sector.\

274 The Roman page numbering scheme is continued later in section~\ref{Roman2})!

275

276 \newpage

277

278 \pagenumbering{arabic}

279

280 \section{arabic}

```

281
282 \subsection{Standard page numbering}
283
284 \noindent First page (\verb|\lastpageref{pagesLTS.0}|):
285 \lastpageref{pagesLTS.0}\
286
287 \noindent The page (\verb|\thepage|): \thepage \
288
289 \noindent Current page (\verb|\theCurrentPage|),
290 i.\,e. counted continuously from the first page): \theCurrentPage \
291
292 \noindent CurrentPageLocal (\verb|\theCurrentPageLocal|),
293 i.\,e. counted continuously from the first page of the
294 current page numbering scheme): \theCurrentPageLocal \
295
296 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
297 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\
298
299 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
300 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\
301 \lastpages{Roman}{1}~pages in the first Roman sector
302 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\
303 \lastpages{Roman}{2}~pages in the second Roman sector
304 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\
305 \lastpages{Roman}{3}~pages in the third Roman sector
306 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\
307
308 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
309 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
310 because an \verb|\addtocounter{page}{\pagesLTSexampleArabic\verb|}| was used.)\
311
312 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \
313 (\verb|\lastpageref{pagesLTS.fnsymbol}| -- never \verb|\pageref{pagesLTS.fnsymbol}|!)\
314 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\
315
316 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
317 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
318 because an \verb|\addtocounter{page}{\pagesLTSexamplealph\verb|}| was used.)\
319
320 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
321 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\
322
323 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\
324
325 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\
326 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
327 a package with output \linebreak

```

```

328 \verb|\AtEndDocument| after the \textsf{pagesLTS} package was added.)\\
329
330 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
331 (=total number of pages)\\
332
333 \lipsum[1-4]
334 \newpage
335
336 \subsection[Empty page style]{Also an empty page style is no problem %
337 for the current or total page count}
338
339 \bigskip
340
341 \thispagestyle{empty}
342
343 \noindent First page (\verb|\lastpageref{pagesLTS.0}|):
344 \lastpageref{pagesLTS.0}\\
345
346 \noindent The page (\verb|\thepage|): \thepage \\
347
348 \noindent Current page (\verb|\theCurrentPage|),
349 i.\,e. counted continuously from the first page): \theCurrentPage \\
350
351 \noindent CurrentPageLocal (\verb|\theCurrentPageLocal|),
352 i.\,e. counted continuously from the first page of the
353 current page numbering scheme): \theCurrentPageLocal \\
354
355 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
356 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\
357
358 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
359 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
360 \lastpages{Roman}{1}~pages in the first Roman sector
361 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
362 \lastpages{Roman}{2}~pages in the second Roman sector
363 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
364 \lastpages{Roman}{3}~pages in the third Roman sector
365 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\ \\
366
367 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
368 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
369 because an \verb|\addtocounter{page}{\pagesLTSexampleArabic\verb|}| was used.)\\
370
371 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
372 (\verb|\lastpageref{pagesLTS.fnsymbol}| -- never \verb|\pageref{pagesLTS.fnsymbol}|!)\\
373 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
374

```

```

375 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
376 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
377 because an \verb|\addtocounter{page}{|\pagesLTSexamplealph\verb|}| was used.)\
378
379 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
380 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\
381
382 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\
383
384 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\
385 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
386 a package with output \linebreak
387 \verb|\AtEndDocument| after the \textsf{pageslts} package was added.)\
388
389 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
390 (=total number of pages)\
391
392 \lipsum[1-4]
393
394 \newpage
395
396 \subsection[addtocounter, setcounter]{Neither %
397 \texttt{\textbackslash addtocounter\{page\}} nor %
398 \texttt{\textbackslash setcounter\{page\}} is a problem for the %
399 current or total page numbers}
400
401 (Here is an \verb|\addtocounter{page}{|\pagesLTSexampleArabic\verb|}|
402 in the source code.)\
403 \addtocounter{page}{\pagesLTSexampleArabic}
404
405 \noindent The page (from \verb|\thepage| command): \thepage \
406
407 \noindent Current page (from \verb|\theCurrentPage|\ %
408 command), i.\,e. counted continuously from the first page): \theCurrentPage \
409
410 \noindent CurrentPageLocal (from \verb|\theCurrentPageLocal|\ %
411 command), i.\,e. counted continuously from the first page of the
412 current page numbering scheme): \theCurrentPageLocal\
413
414 \noindent Last page's number (LastPages): \lastpageref{LastPages}{\hskip3em }
415 (= total number of pages)\
416
417 \lipsum[1-7]
418
419 \newpage
420
421 \pagenumbering{fnsymbol}

```



```

422
423 \section{fnsymbol}
424
425 Adobe Reader XI (11.0.1) does not show the correct page names
426 for all pages with \texttt{fnsymbol} page numbering scheme:
427
428 \begin{center}
429 \begin{tabular}{c|c|c|c}
430 page & page & \multicolumn{2}{c|}{shown by the Reader} & \\
431 number & name & without & & \multicolumn{1}{c|}{with} & \\
432 & & \multicolumn{2}{c|}{\textsf{alphalph}} & \& \textsf{pageslts}} & \hline
433 $-2$ & \texttt{LaTeX Error} & & & \ensuremath {-\ } & \\
434 $-1$ & \texttt{LaTeX Error} & & & \ensuremath {- * } & \\
435 $0$ & (ignored by \LaTeX) & & & 0 & \\
436 $1$ & \ensuremath {*} & & * & \ensuremath {*} & \\
437 $2$ & \ensuremath {\dagger } & & & & \\
438 $3$ & \ensuremath {\ddagger } & & & & \\
439 $4$ & \ensuremath {\mathsection } & & & & \\
440 $5$ & \ensuremath {\mathparagraph } & & & & \\
441 $6$ & \ensuremath {\delimiter "026B30D } & & "026B30D & \ensuremath {**} & \\
442 $7$ & \ensuremath {**} & & ** & & \\
443 $8$ & \ensuremath {\dagger \dagger } & & & & \\
444 $9$ & \ensuremath {\ddagger \ddagger } & & & & \\
445 $10$ & \texttt{LaTeX Error} & & & & \\
446 $11$ & \texttt{LaTeX Error} & & & \ensuremath {***} & \\
447 $12$ & \texttt{LaTeX Error} & & & & \\
448 \end{tabular}
449 \end{center}
450
451 \noindent and so on, while at least the (\ldots\ of \ldots ) part
452 of the page number is displayed correctly.\\
453
454 \bigskip
455
456 Without option \texttt{fnsymbolmult=true} of the \textsf{pageslts} package
457 (and the help of \textsc{Heiko Oberdiek}'s \textsf{alphalph} package),
458 after page~9 (\textquotedblleft \ensuremath {\ddagger \ddagger } \textquotedblright )
459 (and also for negative page numbers) there would just appear a
460 \begin{quote}
461 \begin{verbatim}
462 LaTeX Error: Counter too large
463 See the LaTeX manual or LaTeX Companion for explanation.
464 You've lost some text. Try typing <return> to proceed.
465 If that doesn't work, type X <return> to quit.
466 \end{verbatim}
467 \end{quote}
468 Now the page numbers after 5 (\ensuremath {\mathparagraph }) are

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```

469 continued with the doubled \textquotedblleft number\textquotedblright{} of
470 the first, second, third,\ldots\ page (\ensuremath {**},
471 \ensuremath {\dagger \dagger }, \ensuremath {\ddagger \ddagger },
472 \ensuremath {\mathsection \mathsection },
473 \ensuremath {\mathparagraph \mathparagraph }),
474 and after the tenth page the \textquotedblleft number\textquotedblright{} is
475 tripled (\ensuremath {***}, \ensuremath {\dagger \dagger \dagger },\ldots).
476 Page zero is named 0 and negative pages just named like the positive ones
477 with addition of a minus sign~(-$-$).
478
479 \bigskip
480
481 \noindent First page (\verb|\lastpageref{pagesLTS.0}|):
482 \lastpageref{pagesLTS.0}\
483
484 \noindent The page (\verb|\thepage|): \thepage \
485
486 \noindent Current page (\verb|\theCurrentPage|),
487 i.\,e. counted continuously from the first page): \theCurrentPage \
488
489 \noindent CurrentPageLocal (\verb|\theCurrentPageLocal|),
490 i.\,e. counted continuously from the first page of the
491 current page numbering scheme): \theCurrentPageLocal \
492
493 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
494 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\
495
496 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
497 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\
498 \lastpages{Roman}{1}~pages in the first Roman sector
499 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\
500 \lastpages{Roman}{2}~pages in the second Roman sector
501 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\
502 \lastpages{Roman}{3}~pages in the third Roman sector
503 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\
504
505 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
506 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
507 because an \verb|\addtocounter{page}{\pagesLTSexampleArabic\verb|}| was used.)\
508
509 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \
510 (\verb|\lastpageref{pagesLTS.fnsymbol}| -- never \verb|\pageref{pagesLTS.fnsymbol}|!)\
511 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\
512
513 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
514 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
515 because an \verb|\addtocounter{page}{\pagesLTSexamplealph\verb|}| was used.)\

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```

516
517 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
518 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
519
520 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
521
522 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
523 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
524 a package with output \linebreak
525 \verb|\AtEndDocument| after the \textsf{pageslts} package was added.)\\
526
527 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
528 (=total number of pages)\\
529
530 \lipsum[1-60]
531
532 \newpage
533
534 \pagenumbering{Roman}
535
536 \section{Roman - again!\label{Roman2}}
537
538 The page number would start with \textquotedblleft I\textquotedblright{} again --
539 but for the \textsf{pageslts} package (with option \texttt{pagecontinue=true},
540 or with option just \texttt{pagecontinue}, or even just
541 \nolinebreak{with\textbf{out}} option \texttt{pagecontinue=false}).
542 This package remembered the (\arabic{pagesLTS.double.Roman}-1)\footnote{%
543 OK, here you have to compute this value for yourself, but %
544 subtracting one should be manageable for \TeX{}nicians.} pages already
545 done in Roman output, and therefore continues with page
546 \textquotedblleft \thepage \textquotedblright .\\
547 If you want to start with \textquotedblleft I\textquotedblright{} all
548 over again, you will have two pages with the same name,
549 but nevertheless you can do this by using option \texttt{pagecontinue=false}
550 or a \verb|\setcounter{page}{1}| here (not demonstrated in this example file).\\
551
552 \noindent First page (\verb|\lastpageref{pagesLTS.0}|):
553 \lastpageref{pagesLTS.0}\\
554
555 \noindent The page (\verb|\thepage|): \thepage \\
556
557 \noindent Current page (\verb|\thecurrentpage|),
558 i.\,e. counted continuously from the first page): \thecurrentpage \\
559
560 \noindent CurrentPageLocal (\verb|\thecurrentpagelocal|),
561 i.\,e. counted continuously from the first page of the
562 current page numbering scheme): \thecurrentpagelocal \\

```

563
564 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
565 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\\

566
567 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
568 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\
569 \lastpages{Roman}{1}~pages in the first Roman sector
570 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\\
571 \lastpages{Roman}{2}~pages in the second Roman sector
572 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\\
573 \lastpages{Roman}{3}~pages in the third Roman sector
574 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em })).\\

575
576 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
577 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
578 because an \verb|\addtocounter{page}{\pagesLTSexampleArabic\verb|}| was used.)\\
579

580 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\
581 (\verb|\lastpageref{pagesLTS.fnsymbol}| -- never
582 \verb|\pageref{pagesLTS.fnsymbol}|!)\\
583 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
584

585 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
586 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
587 because an \verb|\addtocounter{page}{\pagesLTSexamplealph\verb|}| was used.)\\
588

589 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
590 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
591

592 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
593

594 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
595 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
596 a package with output \linebreak
597 \verb|\AtEndDocument| after the \textsf{pageslts} package was added.)\\
598

599 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
600 (=total number of pages)\\
601
602 \lipsum[1-6]
603
604 \newpage
605
606 \verb|\lastpageref{pagesLTS.Roman}| does \textbf{not}
607 refer to this page (but there: \lastpageref{pagesLTS.Roman}),
608 because the option \texttt{pagecontinue=true}
609 was chosen. When a reference to this page is wanted,\\

```

610 \verb|\lastpageref{pagesLTS.Roman.2}| can be used: \lastpageref{pagesLTS.Roman.2}.\
611
612 \bigskip
613 There are \lastpages{Roman}{2}~pages (\verb|\lastpages{Roman}{2}|) in this
614 second Roman sector.\
615 The Roman page numbering scheme is continued later in section~\ref{Roman3})!
616
617 \newpage
618
619 \pagenumbering{alph}
620
621 \section{alph\label{alph}}
622
623 \noindent First page (\verb|\lastpageref{pagesLTS.0}|):
624 \lastpageref{pagesLTS.0}\
625
626 \noindent The page (\verb|\thepage|): \thepage \
627
628 \noindent Current page (\verb|\theCurrentPage|),
629 i.\,e. counted continuously from the first page): \theCurrentPage \
630
631 \noindent CurrentPageLocal (\verb|\theCurrentPageLocal|),
632 i.\,e. counted continuously from the first page of the
633 current page numbering scheme): \theCurrentPageLocal \
634
635 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
636 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\
637
638 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
639 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\
640 \lastpages{Roman}{1}~pages in the first Roman sector
641 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\
642 \lastpages{Roman}{2}~pages in the second Roman sector
643 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\
644 \lastpages{Roman}{3}~pages in the third Roman sector
645 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\
646
647 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
648 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
649 because an \verb|\addtocounter{page}{\pagesLTExampleArabic\verb|}| was used.)\
650
651 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \
652 (\verb|\lastpageref{pagesLTS.fnsymbol}| -- never \verb|\pageref{pagesLTS.fnsymbol}|!)\
653 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\
654
655 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
656 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,

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657 because an \verb|\addtocounter{page}{\pagesLTSexamplealph\verb}| was used.)\
658
659 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
660 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\
661
662 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\
663
664 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\
665 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
666 a package with output \linebreak
667 \verb|\AtEndDocument| after the \textsf{pageslts} package was added.)\
668
669 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
670 (=total number of pages)\
671
672 \lipsum[1-4]
673
674 \newpage
675
676 Without option \texttt{alphMult=ab} of the \textsf{pageslts} (and the help of
677 \textsc{Heiko Oberdiek's} \textsf{alphalph} package), after page
678 \textquotedblleft z\textquotedblright there would just appear a
679 \begin{quote}
680 \begin{verbatim}
681 LaTeX Error: Counter too large
682 See the LaTeX manual or LaTeX Companion for explanation.
683 You've lost some text. Try typing <return> to proceed.
684 If that doesn't work, type X <return> to quit.
685 \end{verbatim}
686 \end{quote}
687 Now the page numbers are continued aa, ab, ac,\ldots\ (aa, bb, cc,\ldots\ is
688 also possible, see the \textsf{pageslts} documentation).\
689 To demonstrate this, we add a\
690 \verb|\addtocounter{page}{\pagesLTSexamplealph\verb}|.\
691 in the source code here.
692
693 \addtocounter{page}{\pagesLTSexamplealph}
694
695 \bigskip
696
697 \lipsum[1-18]
698
699 \newpage
700
701 \pagenumbering{Roman}
702
703 \section{Roman - third time!\label{Roman3}}

```

```

704
705 The page number would start with
706 \textquotedblleft I\textquotedblright{} again -- but
707 for the \textsf{pageslts} package (with option \texttt{pagecontinue=true},
708 or with option just \texttt{pagecontinue}, or even just
709 \nolinebreak{with\textbf{out}} option \texttt{pagecontinue=false}).
710 This package remembered the
711 (\arabic{pagesLTS.double.Roman}-1)\footnote{OK, here %
712 you have to compute this value for yourself, but %
713 subtracting one should be managable for \TeX nicians.} pages already
714 done in Roman output, and therefore continues with page
715 \textquotedblleft \thepage \textquotedblright .\
716 If you want to start with \textquotedblleft I\textquotedblright{} all
717 over again, you will have (at least) two pages with the same name,
718 but nevertheless you can do this by using option
719 \texttt{pagecontinue=false} instead of \texttt{pagecontinue=true}
720 (not demonstrated here).\
721
722 \noindent First page (\verb|\lastpageref{pagesLTS.0}|):
723 \lastpageref{pagesLTS.0}\
724
725 \noindent The page (\verb|\thepage|): \thepage \
726
727 \noindent Current page (\verb|\theCurrentPage|),
728 i.\,e. counted continuously from the first page: \theCurrentPage \
729
730 \noindent CurrentPageLocal (\verb|\theCurrentPageLocal|),
731 i.\,e. counted continuously from the first page of the
732 current page numbering scheme): \theCurrentPageLocal \
733
734 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
735 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\
736
737 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
738 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\
739 \lastpages{Roman}{1}~pages in the first Roman sector
740 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\
741 \lastpages{Roman}{2}~pages in the second Roman sector
742 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\
743 \lastpages{Roman}{3}~pages in the third Roman sector
744 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\
745
746 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
747 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
748 because an \verb|\addtocounter{page}{|\pagesLTSexampleArabic\verb|}| was used.)\
749
750 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \

```

751 (\verb|\lastpageref{pagesLTS.fnsymbol}| -- never \verb|\pageref{pagesLTS.fnsymbol}|!)\

752 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\

753

754 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }

755 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,

756 because an \verb|\addtocounter{page}{\pagesLTSexamplealph\verb|}| was used.)\

757

758 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }

759 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\

760

761 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\

762

763 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\

764 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless

765 a package with output \linebreak

766 \verb|\AtEndDocument| after the \textsf{pageslts} package was added.)\

767

768 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }

769 (=total number of pages)\

770

771 \lipsum[1-3]

772

773 \newpage

774

775 \lastpageref{pagesLTS.Roman}

776 (\verb|\lastpageref{pagesLTS.Roman}|)

777 \textbf{does} refers to this page, because the option

778 \texttt{pagecontinue=true} was chosen. Also\

779 \verb|\lastpageref{pagesLTS.Roman.3}| can be used: \lastpageref{pagesLTS.Roman.3}.\

780

781 \bigskip

782

783 There are \lastpages{Roman}{3}~pages (\verb|\lastpages{Roman}{3}|) in this

784 third Roman sector.\

785

786 \newpage

787

788 \pagenumbering{Alph}

789

790 \section{Alph}

791

792 \noindent First page (\verb|\lastpageref{pagesLTS.0}|):

793 \lastpageref{pagesLTS.0}\

794

795 \noindent The page (\verb|\thepage|): \thepage \

796

797 \noindent Current page (\verb|\theCurrentPage|),


```

798 i.\,e. counted continuously from the first page): \theCurrentPage \\  

799  

800 \noindent CurrentPageLocal (\verb|\theCurrentPageLocal|),  

801 i.\,e. counted continuously from the first page of the  

802 current page numbering scheme): \theCurrentPageLocal \\  

803  

804 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }  

805 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\  

806  

807 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }  

808 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\\  

809 \lastpages{Roman}{1}~pages in the first Roman sector  

810 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\  

811 \lastpages{Roman}{2}~pages in the second Roman sector  

812 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\  

813 \lastpages{Roman}{3}~pages in the third Roman sector  

814 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\\  

815  

816 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }  

817 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,  

818 because an \verb|\addtocounter{page}{\pagesLTsexampleArabic\verb|}| was used.)\  

819  

820 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \\  

821 (\verb|\lastpageref{pagesLTS.fnsymbol}| -- never \verb|\pageref{pagesLTS.fnsymbol}|!)\  

822 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\  

823  

824 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }  

825 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,  

826 because an \verb|\addtocounter{page}{\pagesLTsexamplealph\verb|}| was used.)\  

827  

828 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }  

829 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\  

830  

831 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\  

832  

833 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\  

834 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless  

835 a package with output \linebreak  

836 \verb|\AtEndDocument| after the \textsf{pageslts} package was added.)\  

837  

838 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }  

839 (=total number of pages)\  

840  

841 \lipsum[1-3]  

842  

843 Without option \texttt{alphMulti=AB} of the \textsf{pageslts} (and the help of  

844 \textsc{Heiko Oberdiek's} \textsf{alphalph} package), after page

```

```

845 \textquotedblleft Z\textquotedblright{} there would just appear a
846 \begin{quote}
847 \begin{verbatim}
848 LaTeX Error: Counter too large
849 See the LaTeX manual or LaTeX Companion for explanation.
850 You've lost some text. Try typing <return> to proceed.
851 If that doesn't work, type X <return> to quit.
852 \end{verbatim}
853 \end{quote}
854 Now the page numbers are continued AA, AB, AC,\ldots\ (AA, BB, CC,\ldots\ is
855 also possible, see the \textsf{pageslts} documentation).\
856 This is not demonstrated here, but see section~\ref{alph}.
857
858 \newpage
859
860 \section{The End}
861
862 \noindent First page (\verb|\lastpageref{pagesLTS.0}|):
863 \lastpageref{pagesLTS.0}\
864
865 \noindent The page (\verb|\thepage|): \thepage \
866
867 \noindent Current page (\verb|\theCurrentPage|),
868 i.\,e. counted continuously from the first page): \theCurrentPage \
869
870 \noindent CurrentPageLocal (\verb|\theCurrentPageLocal|),
871 i.\,e. counted continuously from the first page of the
872 current page numbering scheme): \theCurrentPageLocal \
873
874 \noindent Last roman page (pagesLTS.roman): \lastpageref{pagesLTS.roman}{\hskip4em }
875 (There are \lastpageref{pagesLTS.roman.local} pages with roman numbers.)\
876
877 \noindent Last Roman page (pagesLTS.Roman): \lastpageref{pagesLTS.Roman}{\hskip3em }
878 (There are \lastpageref{pagesLTS.Roman.local}~pages with Roman numbers:\
879 \lastpages{Roman}{1}~pages in the first Roman sector
880 (\pageref{Roman}{\hskip3em }-\lastpageref{pagesLTS.Roman.1}{\hskip3em }),\
881 \lastpages{Roman}{2}~pages in the second Roman sector
882 (\pageref{Roman2}{\hskip3em }-\lastpageref{pagesLTS.Roman.2}{\hskip3em }), and\
883 \lastpages{Roman}{3}~pages in the third Roman sector
884 (\pageref{Roman3}{\hskip3em }-\lastpageref{pagesLTS.Roman.3}{\hskip3em }).\
885
886 \noindent Last arabic page (pagesLTS.arabic): \lastpageref{pagesLTS.arabic}{\hskip5em }
887 (There are only \lastpageref{pagesLTS.arabic.local} pages with arabic numbers,
888 because an \verb|\addtocounter{page}{|pagesLTSexampleArabic\verb|}| was used.)\
889
890 \noindent Last fnsymbol page (pagesLTS.fnsymbol): \lastpageref{pagesLTS.fnsymbol} \
891 (\verb|\lastpageref{pagesLTS.fnsymbol}| -- never \verb|\pageref{pagesLTS.fnsymbol}|!)\

```

```

892 (There are \lastpageref{pagesLTS.fnsymbol.local} pages with fnsymbol numbers.)\\
893
894 \noindent Last alph page (pagesLTS.alph): \lastpageref{pagesLTS.alph}{\hskip4em }
895 (There are only \lastpageref{pagesLTS.alph.local} pages with alph numbers,
896 because an \verb|\addtocounter{page}{\pagesLTSexamplealph\verb}| was used.)\\
897
898 \noindent Last Alph page (pagesLTS.Alph): \lastpageref{pagesLTS.Alph}{\hskip4em }
899 (There are \lastpageref{pagesLTS.Alph.local} pages with Alph numbers.)\\
900
901 \noindent Last page's \textit{name} (LastPage): \lastpageref{LastPage}\\
902
903 \noindent Very last page's \textit{name} (VeryLastPage): \lastpageref{VeryLastPage}\\
904 (\texttt{LastPage} and \texttt{VeryLastPage} are identical, unless
905 a package with output \linebreak
906 \verb|\AtEndDocument| after the \textsf{pageslts} package was added.)\\
907
908 \noindent Last page's \textit{number} (LastPages): \lastpageref{LastPages}{\hskip3em }
909 (=total number of pages)\\
910
911 \medskip
912
913 \noindent Page \thepage\ (\theCurrentPage; local: \theCurrentPageLocal) of %
914 \lastpageref{pagesLTS.roman} (\lastpageref{pagesLTS.roman.local}) + %
915 \lastpageref{pagesLTS.Roman} (\lastpageref{pagesLTS.Roman.local}) + %
916 \lastpageref{pagesLTS.arabic} (\lastpageref{pagesLTS.arabic.local}) + %
917 \lastpageref{pagesLTS.fnsymbol} (\lastpageref{pagesLTS.fnsymbol.local}) + %
918 \lastpageref{pagesLTS.alph} (\lastpageref{pagesLTS.alph.local}) + %
919 \lastpageref{pagesLTS.Alph} (\lastpageref{pagesLTS.Alph.local}) = %
920 \lastpageref{LastPages} pages.
921
922 \end{document}
923 </example>

```

6 The implementation

(This and the source code of the example file are the reasons for printing the documentation in landscape format instead of portrait.)

We start off by checking that we are loading into L^AT_EX 2_ε and announcing the name and version of this package.

```
924 (*package)
925 \NeedsTeXFormat{LaTeX2e}[2011/06/27]
926 \ProvidesPackage{pageslts}[2014/01/19 v1.2c
927           Refers to special pages' numbers/names (HMM)]
928
```

A short description of the pageslts package:

```
929 %% Allows for things like\\
930 %% |Page \thepage\ (\theCurrentPage; local: \theCurrentPageLocal) of %
931 %% \lastpageref{pagesLTS.roman}(\lastpageref{pagesLTS.roman.local}) + %
932 %% \lastpageref{pagesLTS.Roman}(\lastpageref{pagesLTS.Roman.local}) + %
933 %% \lastpageref{pagesLTS.arabic}(\lastpageref{pagesLTS.arabic.local}) + %
934 %% \lastpageref{pagesLTS.fnsymbol}(\lastpageref{pagesLTS.fnsymbol.local}) + %
935 %% \lastpageref{pagesLTS.alph}(\lastpageref{pagesLTS.alph.local}) + %
936 %% \lastpageref{pagesLTS.Alph}(\lastpageref{pagesLTS.Alph.local}) = %
937 %% \lastpageref{LastPages} pages.!\
938 %% to get\\
939 %% 'Page d (57; local: 4) of ii(2) + XX(20) + *(1) + 30(30) + e(5) + C(3) = 61 pages.'.
940
```

The package is now named ‘pageslts’ but had been named ‘pagesLTS’ before. L^AT_EX does not load a package two times, but it is case sensitive, i. e. would load ‘pageslts’ and ‘pagesLTS’, resulting in possible problems. Therefore we check for a loaded ‘pagesLTS’ package (assuming `\pagesLTS@loaded` is not `p@gesLTSlo@d` and not defined to `p@gesLTSlo@d` by another package). This check might work only for the second and following compilation runs.

```
941 \@ifpackageloaded{pagesLTS}{%
942   \def\pagesLTS@doubleload{p@gesLTSlo@d}
943   \ifx\pagesLTS@loaded\pagesLTS@doubleload%
944     \PackageError{pageslts}{Requested pagesLTS instead of pageslts}{%
945       You have requested package ‘pagesLTS’. This package is now named ‘pageslts’.\MessageBreak%
946       Requesting ‘pagesLTS’ as well as ‘pageslts’ leads to loading the same package\MessageBreak%
947       twice (and results in errors). Loading of ‘pageslts’ will therefore be\MessageBreak%
948       abandoned now. To fix this problem, please look in the \jobname.log file for\MessageBreak%
949       LaTeX Warning: You have requested package ‘pagesLTS’,\MessageBreak%
950       \space \space \space \space \space \space \space \space \space \space \space \space%
951       \space \space but the package provides ‘pageslts’.\MessageBreak%
952       and change the package call in the calling style/document.\MessageBreak%
953       If a style file made the mistake, please inform its maintainer and/or the\MessageBreak%
954       maintainer of the pageslts package about it (after making sure you have\MessageBreak%
955       the recent version of that style file).\MessageBreak%
956       Thank you and sorry for the inconvenience!\MessageBreak%
```

```

957     }
958   \endinput
959   \fi
960 }{% \relax
961   }
962
963 \gdef\pagesLTS@loaded{p@gesLTSlo@d@d}
964

```

For its `\AfterLastShipout` (as well as its `\AtEndAfterFileList`) command we need the `atveryend` package by HEIKO OBERDIEK (see subsection 7.1):

```

965 \RequirePackage{atveryend}[2011/06/30]%      v1.8

```

For its `\EveryShipout` command we need the `everyshi` package by MARTIN SCHRÖDER (see subsection 7.1):

```

966 \RequirePackage{everyshi}[2001/05/15]%      v3.00

```

For its `\LetLtxMacro` command we need the `letltxmacro` package by HEIKO OBERDIEK (see subsection 7.1):

```

967 \RequirePackage{letltxmacro}[2010/09/02]%    v1.4

```

For `\ltx@ifpackageloaded` the `ltxcmds` package is needed, also by HEIKO OBERDIEK (see subsection 7.1):

```

968 \RequirePackage{ltxcmds}[2011/11/09]%      v1.22

```

For the handling of the options we need the `kvoptions` package also by HEIKO OBERDIEK (see subsection 7.1):

```

969 \RequirePackage{kvoptions}[2011/06/30]%     v3.11

```

The `undolabl` package of H.-MARTIN MÜNCH (i.e. myself), with code from ULRICH DIEZ, (see subsection 7.1) is needed to overwrite labels, when the same page numbering scheme is used twice (or even more often).

```

970 \RequirePackage{undolabl}[2012/01/01]%     v1.0k

```

We use the `rerunfilecheck` package by HEIKO OBERDIEK to make sure that the user gets and sees the rerun warnings (if any).

```

971 \RequirePackage{rerunfilecheck}[2011/04/15]% v1.7

```

We must not forget to give the source of `Prelim@EveryShipout`:

```

972 %% pageslts package uses Prelim@EveryShipout code from the
973 %% prelim2e package [2009/05/29 v1.3] by Martin Schr\{o}der, thanks!
974

```

About the `prelim2e` package by MARTIN SCHRÖDER see subsection 7.1.

A last information for the user(s):

```

975 %% pageslts may work with earlier versions of those packages,
976 %% but this was not tested. Please consider updating your packages
977 %% to the most recent version (if they are not already the most
978 %% recent version).
979

```

See subsection 7.1 about how to get them.

The very old version 2.0 (and earlier) of the `endfloat` package actually redefined the `\enddocument` command, and so interfered drastically with the $\LaTeX 2_{\epsilon}$ commands which make use of `\AtEndDocument`. Newer versions of `endfloat` exists (at the time of writing this documentation: v2.5d as of 2011/12/25) in modern documentation form, which are available from [CTAN](#): (see subsection 7.1). A note is placed here, and later it is checked whether a (very) old `endfloat` package is in use. If it is, a warning or even an error message is given, depending on `endfloat` version. This assumes, that the old versions of `endfloat` at least gave a version date, of course.

```
980 %% The recent version of the endfloat package is v2.5d as of 2011/12/25.
981 %% The pageslts package is not fully compatible with version 2.0
982 %% (and earlier) of the endfloat package, because those versions
983 %% redefined the \enddocument command.
984
```

The options are introduced:

```
985 \SetupKeyvalOptions{family = pagesLTS,prefix = pagesLTS@}
986 \DeclareBoolOption[true]{pagecontinue}% \pagesLTS@pagecontinue
987 \DeclareStringOption[ab]{alphMulti}
988 \DeclareStringOption[AB]{AlphMulti}
989 \DeclareBoolOption[true]{romanMulti}
990 \DeclareBoolOption[true]{RomanMulti}
991 \DeclareBoolOption[true]{fnsymbolmult}
992
993 \ProcessKeyvalOptions*
994
```

For comparisons, zero, one, two and three are defined (`\z@`, `\@one` and so on do not work for this).

```
995 \def\pagesLTS@zero{0}
996 \def\pagesLTS@one{1}
997 \def\pagesLTS@two{2}
998 \def\pagesLTS@three{3}
999
```

The traditional behaviour is a reset of the page number to one, each time the page numbering scheme changes. The option `pagecontinue` changes this to a continuation with the number/name following the last page number/name of the same page numbering scheme. The user is informed accordingly.

```
1000 \ifpagesLTS@pagecontinue%
1001   \PackageInfo{pageslts}{Option pagecontinue enabled\MessageBreak%
1002     (maybe by default):\MessageBreak%
1003     The pageslts package will continue the page numbering,\MessageBreak%
1004     when the same page numbering scheme is used twice.\MessageBreak%
1005     If you do not want this, call pageslts with option\MessageBreak%
1006     pagecontinue=false (or use \string\setcounter{page}=1).\MessageBreak%
1007   }
1008 \else
```

```

1009 \PackageWarningNoLine{pageslts}{Option pagecontinue is false:\MessageBreak%
1010 The pageslts package was used, but the option\MessageBreak%
1011 pagecontinue was set to false.\MessageBreak%
1012 If you want the page numbers to be continued,\MessageBreak%
1013 when the same page numbering scheme is used twice,\MessageBreak%
1014 please call pageslts with option pagecontinue=true,\MessageBreak%
1015 otherwise the page number is reset to one each time\MessageBreak%
1016 the page numbering scheme is changed.\MessageBreak%
1017 For details please see the documentation%
1018 }
1019 \fi
1020

```

The page number printed in `alph` or in `Alph` page numbering scheme had to be > 0 and < 27 . Now the `alphalph` package allows to extend the numbering scheme (not only for pages). Because some users prefer `aa`, `ab`, `ac`, `ad`,... and some `aa`, `bb`, `cc`, `dd`,..., both schemes can be chosen via the options. The `fnsymbol` page numbering scheme was restricted to values > 0 and < 10 . The `alphalph` package allows to extend this page numbering scheme, too. Option `fnsymbolmult` can be chosen with the `pageslts` package. If no extension is wished (or another extension is wished and implemented manually), `pageslts` can be called with options set to 0 (zero) and false: `alphMult=0`, `AlphMulti=0`, `fnsymbolmult=false`.

```

1021 \def\pagesLTS@ab{ab}
1022 \def\pagesLTS@bb{bb}
1023 \def\pagesLTS@ABi{AB}
1024 \def\pagesLTS@BBi{BB}
1025
1026 \ifx\pagesLTS@alphMult\pagesLTS@ab%
1027 \else
1028   \ifx\pagesLTS@alphMult\pagesLTS@bb%
1029   \else
1030     \ifx\pagesLTS@alphMult\pagesLTS@zero%
1031       \PackageWarningNoLine{pageslts}{%
1032         Option alphMult=0 found:\MessageBreak%
1033         The pageslts package was used, but the option\MessageBreak%
1034         alphMult was set to 0 (zero).\MessageBreak%
1035         If you want the page numbers to be extended\MessageBreak%
1036         after z, you have to organize this yourself now.\MessageBreak%
1037         For automatic continuation, please use the\MessageBreak%
1038         alphalph package and call pageslts\MessageBreak%
1039         with option alphMult=ab (for aa, ab, ac, ad,...) or\MessageBreak%
1040         with option alphMult=bb (for aa, bb, cc, dd,...).\MessageBreak%
1041         For details please see the documentation!%
1042       }
1043     \else
1044       \PackageError{pageslts}{Unknown option value}{%
1045         The pageslts package was used with option\MessageBreak%
1046         alphMult= \pagesLTS@alphMult . Only values\MessageBreak%
1047         ab, bb, and 0 (zero) are valid.\MessageBreak%
1048         The default ab is set.\MessageBreak%

```

```

1049     For details please see the documentation!%
1050   }
1051   \setkeys{pagesLTS}{alphMult=ab}
1052   \fi
1053 \fi
1054 \fi
1055
1056 \ifx\pagesLTS@AlphMulti\pagesLTS@ABi%
1057 \else
1058   \ifx\pagesLTS@AlphMulti\pagesLTS@BBi%
1059   \else
1060     \ifx\pagesLTS@AlphMulti\pagesLTS@zero%
1061       \PackageWarningNoLine{pageslts}{%
1062         Option AlphMulti=0 found:\MessageBreak%
1063         The pageslts package was used, but the option\MessageBreak%
1064         AlphMulti was set to 0 (zero).\MessageBreak%
1065         If you want the page numbers to be extended\MessageBreak%
1066         after Z, you have to organize this yourself now.\MessageBreak%
1067         For automatic continuation, please use the\MessageBreak%
1068         alphalph package and call pageslts\MessageBreak%
1069         with option AlphMulti=AB (for AA, AB, AC, AD,...) or\MessageBreak%
1070         with option AlphMulti=BB (for AA, BB, CC, DD,...).\MessageBreak%
1071         For details please see the documentation!%
1072       }
1073     \else
1074       \PackageError{pageslts}{Unknown option value}{%
1075         The pageslts package was used with option\MessageBreak%
1076         AlphMulti= \pagesLTS@AlphMulti . Only values\MessageBreak%
1077         AB, BB, and 0 (zero) are valid.\MessageBreak%
1078         The default AB is set.\MessageBreak%
1079         For details please see the documentation!%
1080       }
1081     \setkeys{pagesLTS}{AlphMulti=AB}
1082   \fi
1083 \fi
1084 \fi
1085

```

If `alph` or `Alph` or `fnsymbol` page numbers shall be continued, the `alphalph` package is required.

```

1086 \ifx\pagesLTS@alphMult\pagesLTS@zero% \relax
1087 \else \RequirePackage{alphalph}[2011/05/13]% v2.4
1088 \fi
1089
1090 \ifx\pagesLTS@AlphMulti\pagesLTS@zero% \relax
1091 \else \RequirePackage{alphalph}[2011/05/13]% v2.4
1092 \fi
1093
1094 \ifpagesLTS@fnsymbolmult%

```


1095 \RequirePackage{alphalph}[2011/05/13]% v2.4

1096 \fi

1097

For the roman page numbering scheme, it is just the choice of an extension by pageslts or not.

1098 \ifpagesLTS@romanMult%

1099 \PackageInfo{pageslts}{Option romanMult enabled\MessageBreak%

1100 (maybe by default):\MessageBreak%

1101 The pageslts package will extend the page numbering\MessageBreak%

1102 of the roman scheme below i with\MessageBreak%

1103 0, -i, -ii, -iii, -iv,...\MessageBreak%

1104 If you do not want this, call pageslts with option\MessageBreak%

1105 romanMult=false.\MessageBreak%

1106 }

1107 \else

1108 \PackageWarningNoLine{pageslts}{Option romanMult is set to false:\MessageBreak%

1109 The pageslts package was used, but the option\MessageBreak%

1110 romanMult was set to false.\MessageBreak%

1111 If you want the page numbering of the roman scheme\MessageBreak%

1112 to be extended below i,\MessageBreak%

1113 please call pageslts with option romanMult=true,\MessageBreak%

1114 otherwise zero and negative page numbers of the\MessageBreak%

1115 roman scheme will need to be defined otherwise.\MessageBreak%

1116 For details please see the documentation!\MessageBreak%

1117 }

1118 \fi

1119

Same for the Roman page numbering scheme.

1120 \ifpagesLTS@RomanMulti%

1121 \PackageInfo{pageslts}{Option RomanMulti enabled\MessageBreak%

1122 (maybe by default):\MessageBreak%

1123 The pageslts package will extend the page numbering\MessageBreak%

1124 of the Roman scheme below I with\MessageBreak%

1125 0, -I, -II, -III, -IV,...\MessageBreak%

1126 If you do not want this, call pageslts with option\MessageBreak%

1127 RomanMulti=false.\MessageBreak%

1128 }

1129 \else

1130 \PackageWarningNoLine{pageslts}{Option RomanMulti is set to false:\MessageBreak%

1131 The pageslts package was used, but the option\MessageBreak%

1132 RomanMulti was set to false.\MessageBreak%

1133 If you want the page numbering of the Roman scheme\MessageBreak%

1134 to be extended below i,\MessageBreak%

1135 please call pageslts with option RomanMulti=true,\MessageBreak%

1136 otherwise zero and negative page numbers of the\MessageBreak%

1137 Roman scheme will need to be defined otherwise.\MessageBreak%

1138 For details please see the documentation!\MessageBreak%

```

1139 }
1140 \fi
1141

```

For the footnotesymbol page numbering scheme, it is also just the choice of a extension by pageslts or not.

```

1142 \ifpagesLTS@fnsymbolmult%
1143   \PackageInfo{pageslts}{Option fnsymbolmult enabled\MessageBreak%
1144     (maybe by default):\MessageBreak%
1145     The pageslts package will extend the page numbering\MessageBreak%
1146     of the footnotesymbol scheme using the alphas\MessageBreak%
1147     package.\MessageBreak%
1148     If you do not want this, call pageslts with option\MessageBreak%
1149     fnsymbolmult=false.\MessageBreak%
1150   }
1151 \else
1152   \PackageWarningNoLine{pageslts}{%
1153     Option fnsymbolmult is set to false:\MessageBreak%
1154     The pageslts package was used, but the option\MessageBreak%
1155     fnsymbolmult was set to false.\MessageBreak%
1156     If you want the page numbering of the footnotesymbol\MessageBreak%
1157     scheme to be extended using the alphas package,\MessageBreak%
1158     please call pageslts with option fnsymbolmult=true,\MessageBreak%
1159     otherwise page numbers of the footnotesymbol scheme\MessageBreak%
1160     greater than nine will need to be defined otherwise.\MessageBreak%
1161     For details please see the documentation!\MessageBreak%
1162   }
1163 \fi
1164

```

Now defining some variables, place-holders, and abbreviations:

```

1165 \def\pagesLTS@pnc{0}
1166 \def\pagesLTS@called{0}
1167 \def\pagesLTS@fns{fnsymbol}
1168 \def\pagesLTS@alph{alph}
1169 \def\pagesLTS@Alph{Alph}
1170 \def\pagesLTS@rerun{0}
1171 \def\pagesLTS@eso{0}
1172 \def\pagesLTS@esov{0}
1173 \def\lastpageref{\lastpagereftxt}
1174 \def\pagesLTS@undolable{none}
1175 \def\pncmissing{0}
1176 \def\pagesLTS@SK{0}
1177 \def\pagesLTS@messageNPN{%
1178   The pageslts package was used, but\MessageBreak%
1179   \string\pagenumbering \MessageBreak%
1180   was not called at the beginning of the document\MessageBreak%
1181   (maybe earlier or later).\MessageBreak%
1182   Please use \string\pagenumbering \MessageBreak%

```

```

1183 (with an argument like arabic, roman, Roman,\MessageBreak%
1184 fnsymbol, alph, or Alph) at the beginning\MessageBreak%
1185 of your document! Otherwise your document\MessageBreak%
1186 will probably compile, but the pageslts\MessageBreak%
1187 package might not be able to get all labels\MessageBreak%
1188 for the references to the respective pages\MessageBreak%
1189 right.\MessageBreak%
1190 }
1191

```

It is checked whether writing into an .aux-file is allowed. The pageslts package cannot be used without that! If it is allowed, we define \pagesLTS@loaded as p@gesLTSnotlo@d@ed for the next run.

```

1192 \if@filesw% \relax
1193 \else
1194   \PackageError{pageslts}{No auxiliary file allowed.}{%
1195     The pageslts package was not allowed to write to an .aux file.\MessageBreak
1196     This package does not work without access to an .aux file.\MessageBreak
1197     Press Ctrl+Z to exit.\MessageBreak
1198   }
1199 \fi
1200

```

\pagenumbering To keep the original meaning of \pagenumbering:

```

1201 \LetLtxMacro{\OrigPagenumbering}{\pagenumbering}
1202

```

Defining some new counters (and doing related things):

```

1203 \newcounter{CurrentPage}
1204 \setcounter{CurrentPage}{1}
1205 \def\theCurrentPageLocal{\arabic{pagesLTS.current.local.\pagesLTS@pnc}}

```

The counter pagesLTS.pagenr is for saving the total page number of the last page in the .aux file.

```

1206 \newcounter{pagesLTS.pagenr}

```

While generally \pagesLTS@ifcounter{pagesLTS.current.local.\pagesLTS@pnc} is used, for the beginning of the document pagesLTS.current.local.0 is predefined. (A \pagesLTS@ifcounter{pagesLTS.current.local.\pagesLTS@pnc} could be used for this, too, but we know that pagesLTS.current.local.0 was not defined, so we can just do the definition here.) And the first local page gets the number one.

```

1207 \newcounter{pagesLTS.current.local.0}
1208 \setcounter{pagesLTS.current.local.0}{1}

```

And the same again for pagesLTS.pnc.0.

```

1209 \newcounter{pagesLTS.pnc.0}
1210

```

`\xroman` When `\roman{...}` is used with a value < 1 , L^AT_EX just ignores this (see subsection 3.7). Here we provide a command `\xroman{...}` (expanded roman), which gives the usual `\roman` numbers (i, ii, iii, iv, ...) for positive values, `-|...|` (i. e. -i, -ii, -iii, -iv, ...) for negative values, and 0 for all other values (which should be zero).

```
1211 \newcommand{\xroman}[1]{%
1212   \ifnum\value{#1}>0%
1213     \roman{#1}%
1214   \else%
1215     \ifnum\value{#1}<0%
```

`\arabic{#1}` gives the arabic number of argument `#1`, which is negative here (for example `-7`), “-” puts another minus sign in front of it (for example `--7`), `\number` removes all unnecessary preceding zeros, plus and minus signs (for example `7`), `\romannumeral` turns it into a roman number (for example `vii`), and “-” puts the minus sign back in front of it (for example `-vii`).

```
1216     -\romannumeral\number-\arabic{#1}%
1217   \else%
1218     0%
1219   \fi%
1220 \fi%
1221 }
1222
```

`\XRoman` `\XRoman` does the same for uppercase `\Roman` numbers. `-\uppercase{\romannumeral\number-\arabic{#1}}` cannot be used, because the result in the example is `-\uppercase{vii}` and not `-VII`.⁵ Therefore we have a look at L^AT_EX's own `\@Roman\FOOcounter`,
`\def\@Roman#1{\expandafter\@slowromancap\romannumeral #1@}`,
and use `\@slowromancap`, which is a fully expandable macro, to do the trick for this:
“

```

\def\@slowromancap#1{\ifx @#1% then terminate
\else
\if i#1I\else\if v#1V\else\if x#1X\else\if l#1L\else\if
c#1C\else\if d#1D\else \if m#1M\else#1\fi\fi\fi\fi\fi\fi\fi
\expandafter\@slowromancap
\fi
}

```

” (1998/05/16 Version v1.1g L^AT_EX Kernel File `m ltcounets.dtx` 105 Counters and Lengths).

```

1223 \newcommand{\XRoman}[1]{%
1224   \ifnum\value{#1}>0%
1225     \Roman{#1}%
1226   \else%
1227     \ifnum\value{#1}<0%
1228       -\expandafter\@slowromancap\romannumeral\number-\arabic{#1}@%
1229     \else%
1230       0%
1231     \fi%
1232   \fi%
1233 }
1234

```

`\XXRoman` In older versions `\XXRoman` was used. For compatibility, it is forwarded to `\XRoman` and an error message is given.

```

1235 \newcommand{\XXRoman}[1]{\XRoman{#1}%
1236   \PackageError{pageslts}{Old command \string\XXRoman\space found}{Replaced by \string\XRoman.}%
1237 }
1238

```

`\pagesLTS@ifcounter` We provide a way to create counters like

```

pagesLTS.pnc. page - pagesLTS.pnc.<page numbering scheme>, e.g. pagesLTS.pnc.Roman,
  numbering scheme
pagesLTS.double. page - pagesLTS.double.<page numbering scheme>, e.g. pagesLTS.double.Roman,
  numbering scheme
PageCurrentLocal. page - PageCurrentLocal.<page numbering scheme>, e.g. PageCurrentLocal.Roman,
  numbering scheme

```

for all page numbering schemes, even those not supported by the current original `\pagenumbering` (1994/05/19 v1.1a L^AT_EX Kernel File `w ltpageno.dtx` 52 Page Numbering), which is

⁵This does not matter for the print out, but for the display of the logical page numbers as well as the `.aux` file.

```

\countdef\c@page=0 \c@page=1
\def\cl@page{}
\def\pagenumbering#1{%
  \global\c@page \@ne \gdef\thepage{\csname @#1\endcsname
\c@page}}

```

```

1239 \newcommand{\pagesLTS@ifcounter}[1]{%
1240   \@ifundefined{c@#1}{\newcounter{#1}}{\relax}%
1241 }
1242

```

`\lastpages` We provide a command to give the number of pages in a sector of a split page numbering scheme (see page 9, `pagesLTS.<page numbering scheme>.<number>.local.cnt`):

```

1243 \newcommand{\lastpages}[2]{%
1244   \pagesLTS@ifcounter{pagesLTS.#1.#2.local.cnt}%
1245   \arabic{pagesLTS.#1.#2.local.cnt}%
1246 }
1247

```

`\pagesLTS@writelabel` At last defining the writing of a label:

```

1248 \newcommand{\pagesLTS@writelabel}[1]{%
1249   \addtocounter{page}{+1}%

```

`\addtocounter{page}{+1}` because `\pagesLTS@putlabel` includes an `\addtocounter{page}{-1}`, which is not necessary here.

Into the `.aux` file something like

```
\newlabel{pagesLTS.Roman}{\theCurrentPageLocal}{page.VIII}
```

is written, thus `\lastpageref{pagesLTS.Roman}` prints VIII and links to page.VIII.

```

1250 \pagesLTS@putlabel{pagesLTS.#1}{\thepage}{1}
1251 \addtocounter{page}{-1}%
1252 \ifx\pagesLTS@pnc\pagesLTS@zero% \relax

```

i. e. if the current page numbering scheme is “0”, i. e. before the first `\pagenumbering{...}` command, do nothing,

```

1253 \else%
1254   \addtocounter{page}{+1}%
1255   \pagesLTS@putlabel{pagesLTS.#1.local}{\theCurrentPageLocal}{1}

```

otherwise write into the `.aux` file something like

```
\newlabel{pagesLTS.arabic.local}{\theCurrentPageLocal}{page.8}
```

thus `\lastpageref{pagesLTS.arabic.local}` prints 5 and links to page.8. Here (and in the example file) it is not “print 8 and link to page.8”, because `\addtocounter{page}{3}` has been used, thus the page with “number” (name) 8 is the **fifth** (= 8 – 3) page.

```

1256   \addtocounter{page}{-1}%
1257   \fi%
1258 }
1259

```

`\erroralphalph` `\erroralphalph` extends the “numbers” of counters to zero and negative values for representations usually not supporting this: `\alphalph`, `\AlphAlph`, and `\fnsymbolmult` of the `alphalph` package. `\alph`, `\Alph`, and `\fnsymbol` would not support “numbers” below one. `\arabic` already supports negative numbers and zero. `\roman` and `\Roman` support neither negative numbers nor zero, but are expanded in this package (`\xroman` and `\XRoman`), see page 44.

```

1260
1261 %% The following code is from Heiko Oberdiek [2010/04/18],          %%
1262 %% expanding his alphalph package as of 2010/04/18, v2.3. (Thanks!) %%
1263 \newcommand*\erroralphalph[2]{%
1264   \ifnum\value{#2}>0%
1265     #1{\value{#2}}%
1266   \else%
1267     \ifnum\value{#2}<0%
1268       -#1{\expandafter\@gobble\the\value{#2}}%
1269     \else%
1270       0%
1271     \fi%
1272   \fi%
1273 }
1274 %% End of code from Heiko Oberdiek                                %%
1275 %% Check and Error/Warning messages have been moved to \EveryShipout, %%
1276 %% because messages inside e.g. the \pageref command can cause trouble. %%
1277

```

`\expandPagenumbering` Here the `\erroralphalph` command is called with the appropriate arguments for each page numbering scheme.

```

1278
1279 \newcommand\expandPagenumbering[1]{%
1280   \let\OrigthePage\thePage%
1281   \def\pagesLTS@tmpC{arabic}%
1282   \ifx\pagesLTS@pnc\pagesLTS@tmpC% \relax
1283     \arabic already supports negative numbers and zero (-MAX...MAX, where MAX = 2 147 483 647).
1284   \else%
1285     \def\pagesLTS@tmpC{roman}%
1286     \ifx\pagesLTS@pnc\pagesLTS@tmpC%
1287       \ifpagesLTS@romanMult%
1288         \renewcommand*\thePage{\xroman{page}}%
1289       \fi%
1290     \else%
1291       \def\pagesLTS@tmpC{Roman}%

```

`\erroralphalph{\roman}{page}` cannot be used, because `-\roman{\expandafter\@gobble\the\value{page}}` does not work. If option `romanMult` is not false, `\xroman` (see page 44) expands the usable roman page numbers to values below 1 (i, I, respectively), see subsection 2.1.3.

```

1291 \ifx\pagesLTS@pnc\pagesLTS@tmpC%
1292 \ifpagesLTS@RomanMulti%

```

The same for \Roman page numbering, expanded by \XRoman (see page 44).

```

1293 \renewcommand*{\thepage}{\XRoman{page}}%
1294 \fi%
1295 \else%
1296 \ifx\pagesLTS@pnc\pagesLTS@alph%

```

\alph and \Alph page numberings are expanded to negative and zero values, and to values greater than “z” or “Z” with the alphalph package. – If \pagesLTS@alphMult was zero, nothing is done.

```

1297 \ifx\pagesLTS@alphMult\pagesLTS@ab%
1298 \renewcommand*{\thepage}{\erroralphalph{\alphalph}{page}}%
1299 \else \ifx\pagesLTS@alphMult\pagesLTS@bb%
1300 \renewcommand*{\thepage}{\erroralphalph{\alphMult}{page}}%
1301 \fi%
1302 \fi%
1303 \else%
1304 \ifx\pagesLTS@pnc\pagesLTS@Alph%
1305 \ifx\pagesLTS@AlphMulti\pagesLTS@ABi%
1306 \renewcommand*{\thepage}{\erroralphalph{\AlphAlph}{page}}%
1307 \else \ifx\pagesLTS@AlphMulti\pagesLTS@BBi%
1308 \renewcommand*{\thepage}{\erroralphalph{\AlphMult}{page}}%
1309 \fi%
1310 \fi%
1311 \else%
1312 \ifx\pagesLTS@pnc\pagesLTS@fns%

```

Same for \fnsymbol page numbers.

```

1313 \ifpagesLTS@fnsymbolmult%
1314 \renewcommand*{\thepage}{\erroralphalph{\fnsymbolmult}{page}}%
1315 \fi%
1316 \else%

```

If the used page numbering scheme has not been recognized by the pageslts package so far, we can do nothing, and problems might result.

```

1317 \PackageError{pageslts}{unknown page numbering scheme}{%
1318 The pageslts package encountered the unknown\MessageBreak%
1319 page numbering scheme\MessageBreak%
1320 ‘#1’. \MessageBreak%
1321 If this is no typing mistake, it might work\MessageBreak%
1322 - or it might not work.\MessageBreak%
1323 \@ehc%
1324 }
1325 \fi%
1326 \fi%

```



```

1327     \fi%
1328     \fi%
1329   \fi%
1330 \fi%
1331 \let\pagesLTS@tmpC\undefined%
1332 }
1333

```

`\pagenumbering` Now for the **new** version of the `\pagenumbering` command:

```

1334 \renewcommand{\pagenumbering}[1]{%

```

If the current page numbering scheme, `\pagesLTS@pnc`, or the requested page numbering scheme, `#1`, is `\pagesLTS@fns`, i. e. `fnsymbol`, the counter `pagesLTS.fnsymbol.local` is needed. If it does not exist yet, it is created here.

```

1335   \edef\pagesLTS@tmpA{#1}%
1336   \ifx\pagesLTS@pnc\pagesLTS@fns%
1337     \pagesLTS@ifcounter{pagesLTS.fnsymbol.local}%
1338   \fi%
1339   \ifx\pagesLTS@tmpA\pagesLTS@fns%
1340     \pagesLTS@ifcounter{pagesLTS.fnsymbol.local}%
1341   \fi%

```

If the current page numbering scheme, `\pagesLTS@pnc`, and the requested page numbering scheme, `#1`, is the same one, nothing further is done, otherwise the real action begins.

```

1342   \ifx\pagesLTS@pnc\pagesLTS@tmpA% \relax
1343   \else%

```

The next code is executed, when we are at a page after the first one. This distinction is done for two reasons: On the one hand, `\pagenumbering` could be called *before* `\begin{document}` (where the current page should not be greater than one), and on the other hand we go one page back to aim all references to that page. Obviously at the first page there is no going backward.

```

1344     \ifnum \value{CurrentPage}>1%
1345       \addtocounter{page}{-1}%
1346       \addtocounter{pagesLTS.current.local.\pagesLTS@pnc}{-1}%

```

For the case that the page numbering scheme is or will be split, like e. g. the Roman one in the `pageslts-example.tex`, a counter like `pagesLTS.Roman.1.local.count` (or `pagesLTS.Roman.2.local.count`, `pagesLTS.Roman.3.local.count`,...) is introduced and set to the number of the local page.

```

1347     \newcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}%
1348     \setcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1349       \value{pagesLTS.current.local.\pagesLTS@pnc}}%

```

If the page numbering scheme is `fnsymbol`, and if it *was* used before, from said counter the number of pages of the preceding uses of the same page numbering scheme, `pagesLTS.\pagesLTS@pnc.done`, is subtracted (same as for the other schemes, see below). Instead of introducing a new counter (which can be problematic, when the number of available counters is limited), we borrow the `pagesLTS.pnc.0` counter, i. e. we save its value to `\pagesLTS@tmpa`, (ab)use the counter, and then set it back to its former value as saved in `\pagesLTS@tmpa`.

```

1350 \ifx\pagesLTS@pnc\pagesLTS@fns%
1351 \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}>1%
1352 \mathchardef\pagesLTS@tmpa=\arabic{pagesLTS.pnc.0}%
1353 \setcounter{pagesLTS.pnc.0}{\value{pagesLTS.pnc.\pagesLTS@pnc}}%
1354 \addtocounter{pagesLTS.pnc.0}{-1}%
1355 \addtocounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1356 -\value{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.0}.local.count}}%
1357 \setcounter{pagesLTS.pnc.0}{\pagesLTS@tmpa}%
1358 \fi%

```

If the page numbering scheme is *not* fnsymbol, a numbered label is written:

```

1359 \else%
1360 \pagesLTS@writelabel{\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}}%

```

If the page numbering scheme was *not* used before,

```

1361 \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}<2%

```

an unnumbered label is also written:

```

1362 \pagesLTS@writelabel{\pagesLTS@pnc}%

```

If the page numbering scheme *was* used before, from said counter the number of pages of the preceding uses of the same page numbering scheme, `pagesLTS.\pagesLTS@pnc.done`, is subtracted. Instead of introducing a new counter (which can be problematic, when the number of available counters is limited), we again borrow the `pagesLTS.pnc.0` counter (see above).

```

1363 \else%
1364 \mathchardef\pagesLTS@tmpa=\arabic{pagesLTS.pnc.0}%
1365 \setcounter{pagesLTS.pnc.0}{\value{pagesLTS.pnc.\pagesLTS@pnc}}%
1366 \addtocounter{pagesLTS.pnc.0}{-1}%
1367 \pagesLTS@ifcounter{pagesLTS.\pagesLTS@pnc.done}%
1368 \addtocounter{pagesLTS.\pagesLTS@pnc.done}{%
1369 \value{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.0}.local.count}}%
1370 \addtocounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1371 -\value{pagesLTS.\pagesLTS@pnc.done}}%
1372 \setcounter{pagesLTS.pnc.0}{\pagesLTS@tmpa}%
1373 \fi%

```

The values are written to the `.aux` file (if writing is allowed: `\if@filesw`), because they must be available at the beginning of the document:

```

1374 \if@filesw%
1375 \immediate\write\@auxout{\string
1376 \pagesLTS@ifcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.cnt}}%
1377 \fi%
1378 \edef\pagesLTS@tmpB{\arabic{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}}%
1379 \if@filesw%
1380 \immediate\write\@auxout{\string
1381 \setcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.cnt}{\pagesLTS@tmpB}}%
1382 \fi%
1383 \fi%

```

For further code for the case of `fnsymbol` please see below (`\lastpagereftext`, page 53).
The last page number is saved, in case the same page numbering scheme is continued later.

```
1384 \pagesLTS@ifcounter{pagesLTS.double.\pagesLTS@pnc}%  
1385 \setcounter{pagesLTS.double.\pagesLTS@pnc}{\value{page}}%
```

We went back one page, so we must go forward again:

```
1386 \addtocounter{pagesLTS.current.local.\pagesLTS@pnc}{+1}%  
1387 \addtocounter{page}{+1}%
```

The page numbering scheme `\pagesLTS@pnc` is now set to the new one, given by the user as argument with the `\pagenumbering{...}` command:

```
1388 \xdef\pagesLTS@pnc{#1}%
```

The new page numbering scheme is now started for real:

```
1389 \OrigPagenumbering{#1}%
```

If a page numbering scheme not known by the original `\pagenumbering{...}` command is used, an error will arise here - but maybe without error message.

If page numbering scheme `\alph`, `\Alph`, or `\fnsymbol` is used, `pageslts` extends the page numbers according to the given options, using the `alphalph` package. `\arabic` does not need any expansion. `\roman` and `\Roman` at least receive a definition for zero.

```
1390 \expandPagenumbering{#1}%
```

Counters like `pagesLTS.pnc.Roman` are introduced:

```
1391 \pagesLTS@ifcounter{pagesLTS.pnc.\pagesLTS@pnc}%
```

The saved number of times this page numbering scheme was used is increased by one:

```
1392 \addtocounter{pagesLTS.pnc.\pagesLTS@pnc}{1}%
```

Now defining the counter `pagesLTS.double.\pagesLTS@pnc`, if it did not exist already, adding 1, because this is the first page of it (or another one, if the scheme is continued):

```
1393 \pagesLTS@ifcounter{pagesLTS.double.\pagesLTS@pnc}%  
1394 \addtocounter{pagesLTS.double.\pagesLTS@pnc}{1}%
```

The page number is continued, if the option `pagecontinue=false` is **not** set, otherwise it is reset to one. Note that neither the local nor the current counter are reset, as they contain the real *values* and not the *names* of the pages.

```
1395 \ifpagesLTS@pagecontinue%  
1396 \setcounter{page}{\value{pagesLTS.double.\pagesLTS@pnc}}%  
1397 \else%  
1398 \setcounter{page}{1}%  
1399 \fi%
```

If it does not exist already, the counter `pagesLTS.current.local.\pagesLTS@pnc` (e.g. `pagesLTS.current.local.Roman`) is created.

```
1400 \pagesLTS@ifcounter{pagesLTS.current.local.\pagesLTS@pnc}%
```

If `pagesLTS.double.\pagesLTS@pnc` of the current page numbering scheme is equal to one, this is the first page of this page numbering scheme. Then `pagesLTS.current.local.\pagesLTS@pnc` (which was zero) is set to one.

```
1401     \ifnum \value{pagesLTS.double.\pagesLTS@pnc}=1%
1402     \setcounter{pagesLTS.current.local.\pagesLTS@pnc}{1}%
1403     \fi%
```

Otherwise, i. e. if `\value{CurrentPage}` is not >1 , i. e. before the first page has shipped out:

```
1404     \else%
1405     %% before the first page has shipped out
```

The current page numbering scheme is defined by the argument of `\pagenumbering{...}`, which the user gave:

```
1406     \xdef\pagesLTS@pnc{#1}%
```

and the page numbering scheme set by the original page numbering command (1994/05/19 v1.1a LaTeX Kernel File `lt-pageno.dtx` 52 Page Numbering), which resets the page number to one, but at the first page continuation does not make sense). Well, nearly the original page numbering command: `\OrigPagenumbering{\pagesLTS@pnc}` does not work, so we “expand” the `\OrigPagenumbering` command:

```
1407     \global\c@page \@ne\relax%
1408     \global\def\thepage{\csname \expandafter @\pagesLTS@pnc \endcsname \c@page}%
```

If a page numbering scheme is used, which is not known by L^AT_EX, an error might arise here – but maybe without error message.

If page numbering scheme `\alph`, `\Alph`, or `\fnsymbol` is used, `pageslts` extends the page numbers according to the given options, using the `alphalph` package. `\arabic` does not need any expansion. `\roman` and `\Roman` at least receive a definition for zero.

```
1409     \expandPagenumbering{#1}
```

We are at the first page, so the page counters are set to one:

```
1410     \pagesLTS@ifcounter{pagesLTS.pnc.\pagesLTS@pnc}%
1411     \setcounter{pagesLTS.pnc.\pagesLTS@pnc}{1}%
1412     \pagesLTS@ifcounter{pagesLTS.double.\pagesLTS@pnc}%
1413     \setcounter{pagesLTS.double.\pagesLTS@pnc}{1}%
1414     \pagesLTS@ifcounter{pagesLTS.current.local.\pagesLTS@pnc}%
1415     \setcounter{pagesLTS.current.local.\pagesLTS@pnc}{1}%
1416     \fi%
```

Whether `\pagenumbering{...}` is called in the preamble, `\AtBeginDocument`, right after `\begin{document}`, or somewhere in the document, we want to remember *whether* it was called at all:

```
1417     \gdef\pagesLTS@called{1}%
1418     \fi%
```

We do not need the temporary definitions any more.

```
1419     \let\pagesLTS@tmpA\undefined%
1420     \let\pagesLTS@tmpB\undefined%
1421     }
1422
```

`\lastpageref*` If `hyperref` is used, but (some) references to some last page shall not be hyperlinked, a command `\lastpageref*` (analogous to `\pageref*`) is needed. Therefore we define (analogous to `\HyPsd@pageref` from the `hyperref` package by HEIKO OBERDIEK)

```
1423 %% analogous to \HyPsd@pageref from the hyperref package by Heiko Oberdiek:
1424 \def\lastpagereftxt#1{\pagesLTS@@pageref#1*}
1425
```

Macro `\pagesLTSpageref` checks, whether a star is present (analogous to `\HyPsd@@pageref` again from the `hyperref` package of HEIKO OBERDIEK):

```
1426 \def\pagesLTS@@pageref#1*#2\END{%
1427   \ifx\#2\% no star
1428     \pagesLTS@@pageref{#1}%
1429   \else% star
1430     \expandafter\pagesLTS@@pagerefstar%
1431   \fi%
1432 }
1433
1434 \def\pagesLTS@@pageref#1{\lastpagereftext{#1}}
1435 \def\pagesLTS@@pagerefstar#1{\lastpagereftextstar{#1}}
1436
```

`\lastpagereftext` When `\lastpageref` is used somewhere inside the `txt` (text), i.e. not at the last page, it is defined as `\lastpagereftxt` (see above). When the page numbering scheme is `fnsymbol`, and the `hyperref` package has been loaded, a `hyperref` instead of a label is used for the reference to `pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}`. (And if the `pagesLTS.fnsymbol.local` counter did not exist yet, it is created here.)

```
1437 \newcommand{\lastpagereftext}[1]{%
1438   \def\pagesLTS@tmpA{#1}%
1439   \def\pagesLTS@tmpB{pagesLTS.fnsymbol.local}%
1440   \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1441     \pagesLTS@ifcounter{pagesLTS.fnsymbol.local}%
1442     \ltx@ifpackageloaded{hyperref}{%
1443       \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}%
1444       {\arabic{pagesLTS.fnsymbol.local}}%

```

When the page numbering scheme is `fnsymbol`, but the `hyperref` package has *not* been loaded, just the arabic number of the `pagesLTS.fnsymbol.local` counter is given (because there will be no hyperlink anyway).

```
1445   }{\arabic{pagesLTS.fnsymbol.local}}%

```

Otherwise just the common `\pageref` is applied:

```
1446   \else%
1447     \pageref{#1}%
1448   \fi%

```

We do not need the temporary definitions any more.

```
1449 \let\pagesLTS@tmpA\undefined%
1450 \let\pagesLTS@tmpB\undefined%

```

```
1451 }
1452
```

`\lastpagereftextstar` And the same for the starred version, where no hyperlink is generated:

```
1453 \newcommand{\lastpagereftextstar}[1]{%
1454   \def\pagesLTS@tmpA{#1}%
1455   \def\pagesLTS@tmpB{pagesLTS.fnsymbol.local}%
1456   \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1457     \pagesLTS@ifcounter{pagesLTS.fnsymbol.local}%
1458     \arabic{pagesLTS.fnsymbol.local}%
1459   \else%
```

There is no `\pageref*` without `hyperref`.

```
1460   \ltx@ifpackageloaded{hyperref}{\pageref*{#1}}{\pageref{#1}}%
1461   \fi%
1462   \let\pagesLTS@tmpA\undefined%
1463   \let\pagesLTS@tmpB\undefined%
1464 }
1465
```

`\lastpagerefend` When the `hyperref` package is used and the page numbering scheme of the last page is `fnsymbol`, `\lastpageref` is defined as `\lastpagerefend`. Hyperrefs instead of labels are used for the reference to `fnsymbol` pages (including the last one).

Again it must be discriminated between unstarred form and starred form:

```
1466 \def\lastpagerefend#1{\pagesLTS@@pagerefend#1*END}
1467
1468 \def\pagesLTS@@pagerefend#1*#2\END{%
1469   \ifx\#2\% no star
1470     \pagesLTS@@pagerefend{#1}%
1471   \else% star
1472     \expandafter\pagesLTS@@pagerefendstar%
1473   \fi%
1474 }
1475
1476 \def\pagesLTS@@pagerefend#1{\l@stpagerefend{#1}}
1477 \def\pagesLTS@@pagerefendstar#1{\l@stpagerefendstar{#1}}
1478
```

`\l@stpagerefend` The unstarred form (i. e. with hyperlinks, if `hyperref` is loaded, otherwise without hyperlinks):

```
1479 \newcommand{\l@stpagerefend}[1]{%
1480   \def\pagesLTS@tmpA{#1}%
1481   \def\pagesLTS@tmpB{pagesLTS.fnsymbol.local}%
1482   \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1483     \pagesLTS@ifcounter{pagesLTS.fnsymbol.local}%
1484     \ltx@ifpackageloaded{hyperref}{%
1485       \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}%
```

```

1486     {\arabic{pagesLTS.fnsymbol.local}}%
1487   }{\arabic{pagesLTS.fnsymbol.local}}%
1488 \else%
1489   \def\pagesLTS@tmpB{pagesLTS.fnsymbol}%
1490   \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1491     \ltx@ifpackageloaded{hyperref}{%
1492       \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}%
1493         {\pagesLTS.lastpage}%
1494     }{\pageref{pagesLTS.fnsymbol}}%
1495 \else%
1496   \def\pagesLTS@tmpB{LastPage}%
1497   \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1498     \ltx@ifpackageloaded{hyperref}{%
1499       \href{\#pagesLTS.fnsymbol.local.\pagesLTS@eso}%
1500         {\pagesLTS.lastpage}%
1501     }{\pageref{LastPage}}%
1502 \else%
1503   \def\pagesLTS@tmpB{VeryLastPage}%
1504   \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1505     \ltx@ifpackageloaded{hyperref}{%
1506       \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}%
1507         {\pagesLTS.lastpage}%
1508     }{\pageref{VeryLastPage}}%
1509 \else%
1510   \def\pagesLTS@tmpB{LastPages}%
1511   \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1512     \ltx@ifpackageloaded{hyperref}{%
1513       \href{\#pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.local}}%
1514         {\arabic{pagesLTS.pagenr}}%
1515     }{\pageref{LastPages}}%
1516 \else%
1517   \pageref{#1}%
1518 \fi%
1519 \fi%
1520 \fi%
1521 \fi%
1522 \fi%

```

We do not need the temporary definitions any more.

```

1523 \let\pagesLTS@tmpA\undefined%
1524 \let\pagesLTS@tmpB\undefined%
1525 }
1526

```

`\l@stpagerefendstar` And the starred form, without hyperlinks, even if `hyperref` is loaded, otherwise (i. e. without loaded `hyperref`) this command is not called:

```
1527 \newcommand{\l@stpagerefendstar}[1]{%
1528   \def\pagesLTS@tmpA{#1}%
1529   \def\pagesLTS@tmpB{pagesLTS.fnsymbol.local}%
1530   \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1531     \pagesLTS@ifcounter{pagesLTS.fnsymbol.local}%
1532     \arabic{pagesLTS.fnsymbol.local}%
1533   \else%
1534     \def\pagesLTS@tmpB{pagesLTS.fnsymbol}%
1535     \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1536       \ltx@ifpackageloaded{hyperref}{\pageref*{pagesLTS.fnsymbol}}{%
1537         \pageref{pagesLTS.fnsymbol}}%
1538     \else%
1539       \def\pagesLTS@tmpB{LastPage}%
1540       \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1541         \ltx@ifpackageloaded{hyperref}{\pageref*{LastPage}}{\pageref{LastPage}}%
1542       \else%
1543         \def\pagesLTS@tmpB{VeryLastPage}%
1544         \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1545           \ltx@ifpackageloaded{hyperref}{\pageref*{VeryLastPage}}{%
1546             \pageref{VeryLastPage}}%
1547         \else%
1548           \def\pagesLTS@tmpB{LastPages}%
1549           \ifx\pagesLTS@tmpA\pagesLTS@tmpB%
1550             \ltx@ifpackageloaded{hyperref}{\pageref*{LastPages}}{\pageref{LastPages}}%
1551           \else%
1552             \ltx@ifpackageloaded{hyperref}{\pageref*{#1}}{\pageref{#1}}%
1553           \fi%
1554         \fi%
1555       \fi%
1556     \fi%
1557   \fi%
1558 \fi%
1559 \let\pagesLTS@tmpA\undefined%
1560 \let\pagesLTS@tmpB\undefined%
1561 }
1562
```


`\overrideLTSlabel` `\overridelabel` from the `undolabl` package just `\undonewlabels` a label and places a new `\label{#1}`, but we need to place a `\pagesLTS@putlabel{#1}{#2}`, therefore we need another command instead of (but somewhat similar to) `\overridelabel`:

```

1563 % somewhat analogous to \overridelabel from the undolabl package:
1564 \newcommand\overrideLTSlabel[2]{%
1565   \@bsphack
1566   \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}>1%
1567     \edef\pagesLTStmpA{#1}%
1568     \edef\pagesLTStmpB{pagesLTS.\pagesLTS@pnc.local}%
1569     \ifx\pagesLTStmpA\pagesLTStmpB%
1570       \immediate\write\@auxout{\string\undonewlabel{#1}}%
1571       \@overriddenmessage s{#1}%
1572     \fi%
1573   \fi%
1574   \pagesLTS@putlabel{#1}{#2}{0}%
1575   \@esphack%
1576 }
1577

```

`LTS@Prelim@EveryShipout` Because we cannot make references to pages with `fnsymbol` page “numbers” manually with `hyperref`, we use `\phantomsections` and refer to one of those. But because we do not know how many `\phantomsections` and `\section*s` are introduced by the user (or other packages; cf. L^AT_EX bug 2298: knowing level of `section*`, <http://www.latex-project.org/cgi-bin/ltxbugs2html?category=LaTeX&responsible=anyone&state=open&keyword=&pr=latex%2F2298&search=>), we cannot refer to the last one as we did with the pages.

```

1578 \newcommand{\@pagesLTS@Prelim@EveryShipout}{%
1579 %% The following code is from the prelim2e package           %%
1580 %% [2009/05/29 v1.3] by Martin Schröder (Thanks!):         %%
1581   \bgroup
1582   \dimen\z@=\wd\@cclv
1583   \dimen\@ne=\ht\@cclv
1584   \dimen\tw@=\dp\@cclv
1585   \dimen\thr@@=\dimen1
1586   \advance\dimen\thr@@ by \dimen\tw@
1587   \global\setbox\@cclv\vbox to \dimen\thr@@{%
1588     \hb@xt@\dimen\z@{%
1589       \box\@cclv%
1590       \hss%
1591     }%
1592     \vbox to \z@{%
1593       \hb@xt@\dimen\z@{%
1594         \let\protect\relax
1595 %% Code not from prelim2e package:                               %%

```

Therefore each page with `fnsymbol` page “number” receives a `\phantomsection` and a label, which includes a number increased by one for each page. This is done for `pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.cont}` as well as `pagesLTS.fnsymbol`, `pagesLTS.\pagesLTS@pnc`, and `pagesLTS.\pagesLTS@pnc.local`. In case an older label already existed, it is overwritten by an `\overridelabel` command.

```

1596 \ifx\pagesLTS@pnc\pagesLTS@fns%
1597 \pagesLTS@ifcounter{pagesLTS.fnsymbol.cont}%
1598 \addtocounter{pagesLTS.fnsymbol.cont}{1}%
1599 \ltx@ifpackageloaded{hyperref}{%
1600 \phantomsection%
1601 \hypertarget{pagesLTS.fnsymbol.local.\arabic{pagesLTS.fnsymbol.cont}}{}%
1602 }{}%
1603 \ifnum \pagesLTS@esov=\pagesLTS@zero%
1604 \label{pagesLTS.fnsymbol}%
1605 \else%
1606 \overridelabel{pagesLTS.fnsymbol}%
1607 \fi%
1608 \else%
1609 \ltx@ifpackageloaded{hyperref}{\phantomsection}{}%
1610 \if@files%
1611 \overridelabel{pagesLTS.\pagesLTS@pnc}%

```

We need to go forward one page (and later backward again), because `\overrideLTSlabel` calls a `\pagesLTS@putlabel`, and that one uses `\addtocounter{page}{-1}... \addtocounter{page}{+1}`, which is not needed here.

```

1612 \addtocounter{page}{+1}%
1613 \overrideLTSlabel{pagesLTS.\pagesLTS@pnc.local}{\theCurrentPageLocal}%
1614 \addtocounter{page}{-1}%
1615 \fi%
1616 \fi%
1617 %% Code from prelim2e package again: %%
1618 }%
1619 \vss%
1620 }%
1621 \vss%
1622 }%
1623 \wd\@cclv=\dimen\z@
1624 \ht\@cclv=\dimen\@ne
1625 \dp\@cclv=\dimen\tw@
1626 \egroup
1627 %% End of code from the prelim2e package. %%
1628 }
1629

```

\EveryShipout At the end of each shipout, the following commands are executed:

```
1630 \EveryShipout{%
1631   \ifnum\value{page}>0% \relax
1632   \else%
1633     \ifnum\value{page}=0%
1634       \PackageWarning{pageslts}{%
1635         Counter 'page' is zero!\MessageBreak%
1636         If the page numbering scheme is not arabic\MessageBreak%
1637         and further not extended\MessageBreak%
1638         (see Page counter overflow in the pageslts\MessageBreak%
1639         documentation), without other measures\MessageBreak%
1640         this will lead to a counter overflow.\MessageBreak%
1641       }%
1642     \else%
1643       \ifnum\value{page}<0%
1644         \PackageWarning{pageslts}{%
1645           Counter 'page' is negative: '\the\value{page}'!\MessageBreak%
1646           If the page numbering scheme is not arabic\MessageBreak%
1647           and further not extended\MessageBreak%
1648           (see Page counter overflow in the pageslts\MessageBreak%
1649           documentation), without other measures\MessageBreak%
1650           this will lead to a counter overflow.\MessageBreak%
1651         }%
1652       \else%
1653         \PackageError{pageslts}{%
1654           Counter 'page' does not have a recognized value:\MessageBreak%
1655           '\the\value{page}'\MessageBreak%
1656           \@ehd \MessageBreak%
1657         }%
1658       \fi%
1659     \fi%
1660   \fi%
```

If the `CurrentPage` is equal to one, this is the first shipout.

```
1661 \ifnum \value{CurrentPage}=1% This is the first shipout!
```

We check whether some page numbering scheme was defined by `\pagenumbering{...}` (as it should be!):

```
1662 \ifx\pagesLTS@called\pagesLTS@zero%
```

If it was not defined (i. e. `\pagesLTS@called` is zero), the user should be informed, that a `\pagenumbering{...}` is missing behind `\begin{document}`. Of course, it is possible that some package did some pages of output with `\AtBeginDocument`. In that case, one `\pagenumbering{...}` before `\begin{document}` and one `\pagenumbering{...}` (with the same argument, of course!) behind `\begin{document}` could help somewhat. When `\PackageError` was used here, the error message was not written to the screen and the `.log`-file, but into the document. Therefore we just make a note to give the error message later (`\AtEndDocument`). At that time unfortunately most of the document has already been compiled (or did not compile due to this error), but I do not know how to change that.

```
1663 \global\def\pncmissing{1}%
```

We save the current value of the page,

```
1664 \mathchardef\pagesLTS@tmpD=\arabic{page}%
```

determine the current page numbering scheme,

```
1665 %% Code from Andres L\{o}h, Universiteit Utrecht (NL) %%
1666 \def\extract#1{\expandafter\extract@ #1\END}%
1667 \def\extract@#1\csname @#2\endcsname#3\END{#2}%
1668 \edef\pagesLTS@tmpQ{\extract\thepage}%
1669 %% End of code from Andres L\{o}h %%
1670 \let\pagesLTS@tmpP\pagesLTS@tmpQ%
```

set the current page numbering scheme to 0 (because before the beginning of the document it should be 0),

```
1671 \def\pagesLTS@pnc{0}%
```

and then issue a `\pagenumbering` command with the determined page numbering scheme as argument:

```
1672 \pagenumbering{\pagesLTS@tmpP}%
```

This resets the page to one (if option `pagecontinue=false` was chosen), but because we do not start a new page numbering scheme here but manifest a page numbering scheme, which the user forgot to define, the page number should not have been reset to one. (This is the first page, but maybe the user wants it to have page number 2001?) Therefore we revert this here and set the page number to its value, which was saved before the `\pagenumbering` command.

```
1673 \setcounter{page}{\pagesLTS@tmpD}%
1674 \fi%
```

We are at the first page, so we put the label here.

```
1675 \pagesLTS@writelabel{0}%
1676 \fi%
```

If the current page numbering scheme `\pagesLTS@pnc` is `\pagesLTS@fns` (which is defined as `fnsymbol`), the label is set by `\@pagesLTS@Prelim@EveryShipout` (see just above), and `\pagesLTS@esov` is set to the (real) number (not the name) of this page numbering scheme, `\arabic{pagesLTS.fnsymbol.cont}`.

When no more pages with `fnsymbol` page “number” are shipped out, the value remains fixed and we have our reference to the last page of the `fnsymbol` page numbering range. (At least we will have that reference after some more work, see below).

```
1677 \ifx\pagesLTS@pnc\pagesLTS@fns%
1678 \@pagesLTS@Prelim@EveryShipout%
1679 \gdef\pagesLTS@esov{\arabic{pagesLTS.fnsymbol.cont}}%
```

When another page numbering scheme was reused (in the example file `Roman`), we also need to apply `\@pagesLTS@Prelim@EveryShipout`, because otherwise we would get multiply defined labels.

```
1680 \else%
1681 \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}>1%
1682 \@pagesLTS@Prelim@EveryShipout%
1683 \fi%
1684 \fi%
```

The `CurrentPage` as well as the `pagesLTS.current.local.\pagesLTS@pnc` are advanced by one (because one page was shipped out and the next is about to begin).

```
1685 \addtocounter{CurrentPage}{1}%
1686 \addtocounter{pagesLTS.current.local.\pagesLTS@pnc}{1}%
1687 }
1688
```

`\pagesLTS@putlabelhyper` Here the labels are set, if the `hyperref` package was loaded. Simply using `\label` would not work, because labels wait for the output routines to work, and there may not be any more invocations of the output routines. To force the write out we need to do an `\immediate` write.

```
1689 \newcommand{\pagesLTS@putlabelhyper}[2]{%
1690 \ifHy@pageanchor \relax%
1691 \else%
```

If the `hyperref` package is used, but `pageanchors` are disabled, the hyperlinking will not work.

```
1692 \PackageError{pagesLTS}{hyperref option pageanchor disabled}{%
1693 The \string\lastpageref{#1} link doesn't work\MessageBreak%
1694 using hyperref with disabled option 'pageanchor'.\MessageBreak%
1695 }%
1696 \fi
```

If use of the `.aux`-file is allowed, the label for `LastPage` is written into that file, the page reference depending on the options, which where set for the `hyperref` package.

```
1697 %% The following code is from the hyperref package           %%
1698 %% [2010/04/17 v6.80x; newer versions are available]         %%
1699 %% by Heiko Oberdiek (Big Thanks!).                           %%
1700 \if@filesw
1701 \begingroup
1702 \let\@number\@firstofone
1703 \ifHy@pageanchor
1704 \ifHy@hypertextnames
1705 \ifHy@plainpages
1706 \def\Hy@temp{\arabic{page}}%
1707 \else
1708 \Hy@unicodefalse
1709 %% Code not from hyperref package:                             %%
1710 %% The following lines are modified from the hyperref package. %%
1711 %% Without the modification, after the first shipout "PD1" is %%
1712 %% inserted each time |\pdfstringdef\Hy@temp{\thepage}| is %%
1713 %% executed (if |fnsymbol| is not used).                       %%
1714 \ifnum \value{CurrentPage}=1%
1715 \ifx\pagesLTS@pnc\pagesLTS@fns%
1716 \pdfstringdef\Hy@temp{\thepage}%
1717 \else%
1718 \def\Hy@temp{\thepage}%
1719 \fi%
```

```

1720         \else%
1721         \pdfstringdef\Hy@temp{\thepage}%
1722         \fi%
1723 %% Code from hyperref package again:                               %%
1724         \fi
1725         \else
1726         \def\Hy@temp{\the\Hy@pagecounter}%
1727         \fi
1728         \fi
1729 %% End of code from the hyperref package.                           %%
1730 %% (The following four lines are modified                           %%
1731 %% from the hyperref package.)                                     %%
1732         \immediate\write\@auxout{\string
1733         \newlabel{#1}{{}{#2}}{\ifHy@pageanchor page.\Hy@temp\fi}{}}%
1734         \endgroup%
1735         \fi%
1736     }
1737

```

`\pagesLTS@putlabel` Since the page has been put out, we are on the page after that page. We therefore subtract one from the page counter.

```

1738 \newcommand\pagesLTS@putlabel}[3]{%
1739   \addtocounter{page}{-1}%

```

When the `showkeys` package has been loaded in `draft` mode, in the margin for each label a box is displayed with the name of the label. `showkeys` accomplishes this by redefining `\label`, but `pageslts` does not use `\label`, but writes directly to the `\jobname.aux`-file, and this is generally done after the according page has shipped out, therefore no box can be placed on the preceding page. At least `pageslts` gives a warning, that `showkeys` cannot present the respective label.

```

1740 \ifx\pagesLTS@SK\pagesLTS@one%
1741   \message{^^J}%
1742   \message{Package pageslts Warning: Package showkeys without option final loaded,}%
1743   \ifnum\value{pagesLTS.pagenr}<1%
1744     \message{(pageslts)                but label #1 on page \thepage\space(about \theCurrentPage)}%
1745   \else%
1746     \message{(pageslts)                but label #1 on page \thepage\space(about \theCurrentPage\space of \arabic{pagesLTS.pagenr})}%
1747   \fi%
1748   \message{(pageslts)                cannot be shown, because pageslts does not use \string\label,}%
1749   \message{(pageslts)                but writes directly to the \jobname.aux file. ^^J}%
1750 \fi%

```

If the `hyperref` package is used, the format of the labels is somewhat longer.

```

1751 \ltx@ifpackageloaded{hyperref}{\pagesLTS@putlabelhyper{#1}{#2}}{% else

```

If the `hyperref` package is not used, there will be no hyperlinks, and the label is written in the way of the old `lastpage` package. But we must remember to undo the label first, if it already exists.

```
1752   \if@filesw%
1753     \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}<2%
```

When the `nameref` package is used, `\newlabel` needs five instead of two arguments:

```
1754     \ltx@ifpackageloaded{nameref}{%
1755       \immediate\write\@auxout{\string\newlabel{#1}{#2}{#3}{#4}{#5}}{% else
1756       \immediate\write\@auxout{\string\newlabel{#1}{#2}}}%
1757     \else%
1758       \edef\pagesLTStmpA{#1}%
1759       \edef\pagesLTStmpB{pagesLTS.\pagesLTS@pnc.local}%
1760       \ifx\pagesLTStmpA\pagesLTStmpB%
1761         \edef\pagesLTStmpA{#3}%
1762         \ifx\pagesLTStmpA\pagesLTS@one%
```

Only when the third argument of `\pagesLTS@putlabel` is 1, we do need to undo the label. Otherwise there is no label to undo, and the `undolabl` package would give an error.

```
1763       \immediate\write\@auxout{\string\undonewlabel{#1}}%
1764       \fi%
1765     \fi%
1766     \ltx@ifpackageloaded{nameref}{%
1767       \immediate\write\@auxout{\string\newlabel{#1}{#2}{#3}{#4}{#5}}{% else
1768       \immediate\write\@auxout{\string\newlabel{#1}{#2}}}%
1769     \fi%
1770   \fi%
1771 }%
```

After the writeout we restore the page number again, since there might be other things still to be done.

```
1772   \addtocounter{page}{+1}%
1773 }
1774
```

`\pagesLTS@putlabels` `\pagesLTS@putlabels` is nearly identical to `\pagesLTS@putlabelV`:

```
1775 \newcommand{\pagesLTS@putlabels}{%
1776   \addtocounter{page}{-1}%
1777   \addtocounter{CurrentPage}{-1}%
1778   \addtocounter{pagesLTS.current.local.\pagesLTS@pnc}{-1}%
```

If `\pagenumbering{...}` has not been used, `\pagesLTS@pnc` is still zero (0, `\pagesLTS@zero`), and the according warning message is given.

```
1779   \ifx\pagesLTS@pnc\pagesLTS@zero%
1780     \PackageWarning{pagesLTS}{No page numbering scheme found:\MessageBreak%
1781       \pagesLTS@messageNPN }%
```

otherwise the numbered label is written, and if the page numbering scheme was not used before, the unnumbered label is written, too.

```
1782   \else%
1783     \pagesLTS@writelabel{\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}}%
1784     \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}<2%
1785       \ifx\pagesLTS@pnc\pagesLTS@fns% \relax
1786       \else%
1787         \pagesLTS@writelabel{\pagesLTS@pnc}%
1788         \fi%
1789       \fi%
1790     \fi%
```

Before the label for the `LastPages` can be put, we must advance one page again, because `\pagesLTS@putlabel` itself goes back one page (and at its end forward again).

```
1791   \addtocounter{page}{+1}%
1792   \pagesLTS@putlabel{LastPages}{\theCurrentPage}{1}%
```

Here should follow a

```
\addtocounter{page}{-1},
```

but we have to remember to increase the page counters again, which were decreased at the start of this `\pagesLTS@putlabels` command, and that would include

```
\addtocounter{page}{+1},
```

therefore this two lines cancel each other and therefore just can be skipped. But the other counters have to be increased:

```
1793   \addtocounter{CurrentPage}{+1}%
1794   \addtocounter{pagesLTS.current.local.\pagesLTS@pnc}{1}%
1795   }
1796
```


`\AtBeginDocument` `\AtBeginDocument` we write into the aux file regarding the double loading of the package. Then it is checked whether the `endfloat` package has been loaded, whether it is newer than March 1992 (i.e. at least April 1992 v2.0), in which case it is compatible with this `pageslts` package.
 If it is even newer than 2011/12/24, it is the recent version (as of the time of last revision of this documentation: 2011/12/25 v2.5d).

```

1797 \AtBeginDocument{%
1798   \if@filesw%
1799   \immediate\write\auxout{\string\gdef\string\pagesLTS@loaded{pagesLTSnotloaded}}%
1800   \fi%
1801   \ifpackageloaded{endfloat}%
1802   {\@ifpackagelater{endfloat}{1992/03/31}% April 1992 v2.0
1803    {\@ifpackagelater{endfloat}{2011/12/24}{% 2011/12/25 v2.5d
1804     \relax}%

```

If it is compatible, but not the recent version, a warning is given:

```

1805   {\PackageWarningNoLine{pageslts}{Old endfloat package detected:\MessageBreak%
1806    There is a newer version of the endfloat package available.\MessageBreak%
1807    Please consider updating your version.\MessageBreak%
1808    The pageslts package might be incompatible with\MessageBreak%
1809    your current endfloat package.\MessageBreak%
1810   }%
1811  }%

```

If it is so very old, that it is not compatible, an Error message is given:

```

1812   {\PackageError{pageslts}{Incompatible, very old endfloat package detected.}%
1813    {The very old version 2.0 (and earlier) of the\MessageBreak%
1814     endfloat package actually redefined the \string\enddocument ,\MessageBreak%
1815     and so interfered drastically with the LaTeX2e commands\MessageBreak%
1816     which make use of \string\AtEndDocument .\MessageBreak%
1817     Newer versions of the endfloat package exists\MessageBreak%
1818     (at least: v2.5d as of 2011/12/25)\MessageBreak%
1819     in modern documentation form,\MessageBreak%
1820     which should be available from CTAN.\MessageBreak%
1821     Please update your endfloat package\MessageBreak%
1822     for use with the pageslts package.\MessageBreak %
1823   }%
1824  }%
1825 }%
1826 }{}%

```

It is checked whether the old lastpage package has been loaded.
 (If it has been loaded indeed, the \lastpage@putlabel is “killed”, see subsection 3.5.)

```

1827 \@ifpackageloaded{lastpage}%
1828   {\@ifpackagelater{lastpage}{2010/07/28}% 2010/07/29 v1.2a
1829     {\@ifpackagelater{lastpage}{2013/01/27}% 2013/01/28 v1.21
1830       {\PackageWarning{pageslts}{lastpage package detected.\MessageBreak%
1831         With pageslts package in use, lastpage has no function.\MessageBreak%
1832         Just remove the lastpage package from your document.\MessageBreak%
1833         }%
1834       }%
1835     \PackageWarning{pageslts}{Old lastpage package detected.\MessageBreak%
1836       With pageslts package in use, lastpage has no function.\MessageBreak%
1837       Just remove the lastpage package from your document.\MessageBreak%
1838       At least update it!\MessageBreak%
1839     }%
1840   }%
1841 }%
1842 \PackageWarning{pageslts}{Incompatible package lastpage detected:\MessageBreak%
1843   Package pageslts was loaded, but also an old\MessageBreak%
1844   version of the lastpage package.\MessageBreak%
1845   pageslts has all functionality of the lastpage\MessageBreak%
1846   package (and more), so just remove the lastpage\MessageBreak%
1847   package from your document.\MessageBreak%
1848   (At least update it!)\MessageBreak%
1849   pageslts will now ‘kill’ the lastpage@putlabel\MessageBreak%
1850   command of the lastpage package.\MessageBreak%
1851 }%
1852 \gdef\lastpage@putlabel{\relax}%
1853 }%
1854 }%

```

Further it is checked whether the alphalph package has been loaded. If that is the case, the commands are defined accordingly.

```

1855 \ltx@ifpackageloaded{alphalph}%
1856   {\newalphalph{\AlphMult}[mult]{\@Alph}{26}%
1857     \newalphalph{\alphMult}[mult]{\@alph}{26}%
1858     \newalphalph{\fnsymbolmult}[mult]{\@fnsymbol}{5}%
1859   }%

```

Further it is checked whether the hyperref package has been loaded:

```
1860 \ltx@ifpackageloaded{hyperref}{%
```

and whether the pdfpages package is loaded:

```
1861 \@ifpackageloaded{pdfpages}%  
1862 {\PackageWarningNoLine{pageslts}{Package pdfpages detected.\MessageBreak%  
1863 Using hyperref with pdfpages can cause problems. See\MessageBreak%  
1864 ftp://ftp.ctan.org/tex-archive/\MessageBreak%  
1865 macros/latex/contrib/pax/\MessageBreak%  
1866 for project pax (PDFAnnotExtractor)%  
1867 }%  
1868 }{% \relax  
1869 }%
```

The undolabl package has been updated and now uses \undonewlabel with only one argument.

```
1870 \@ifpackageloaded{undolabl}%  
1871 {\@ifpackagelater{undolabl}{2010/07/14}% 2010/07/15 v1.0d  
1872 {\@ifpackagelater{undolabl}{2011/12/31}% 2012/01/01 v1.0k  
1873 {% recent version as of the time of last revision of this package: OK  
1874 }{% old, but not obsolete version  
1875 \PackageWarningNoLine{pageslts}{Old version of undolabl package used.\MessageBreak%  
1876 See ftp://ftp.ctan.org/tex-archive/macros/latex/contrib/undolabl/ \MessageBreak%  
1877 for a new version.\MessageBreak%  
1878 }%  
1879 }  
1880 }{\PackageError{pageslts}{Incompatible, obsolete version of undolabl package used.}{%  
1881 See ftp://ftp.ctan.org/tex-archive/macros/latex/contrib/undolabl/ \MessageBreak%  
1882 for a new version.\MessageBreak%  
1883 Type X <return> to quit.\MessageBreak%  
1884 }%  
1885 }  
1886 }{\PackageError{pageslts}{Package undolabl missing}{%  
1887 Package undolabl not found.\MessageBreak%  
1888 The pageslts package needs the undolabl package.\MessageBreak%  
1889 See e.g.\MessageBreak%  
1890 ftp://ftp.ctan.org/tex-archive/macros/latex/contrib/undolabl/ \MessageBreak%  
1891 Type X <return> to quit.\MessageBreak%  
1892 }%  
1893 }
```

Additionally a version check of the available hyperref package is performed and if need be a warning is issued:

```

1894 \@ifpackagelater{hyperref}{2012/11/05}{% 2012/11/06 v6.83m
1895 \relax}{%
1896 \PackageWarningNoLine{pageslts}{Old hyperref package detected:\MessageBreak%
1897 There is a newer version of the\MessageBreak%
1898 hyperref package available.\MessageBreak%
1899 Please consider updating your version.\MessageBreak%
1900 }%
1901 }%
1902 %% pageslts supports the use of the package hyperref by
1903 %% Heiko Oberdiek (hyperref version 2012/11/06 v6.83m).
1904 %% pageslts may work with earlier versions of this packages,
1905 %% but this was not tested.
1906 }{%

```

If no hyperref package in use is detected, a warning is issued, too:

```

1907 \PackageWarning{pageslts}{Package hyperref NOT detected.\MessageBreak%
1908 pageslts would support hyperref. The page references\MessageBreak%
1909 will NOT be hyperlinked!\MessageBreak }%
1910 }%

```

If the showkeys package has been loaded in draft mode, warnings about missing label boxes will be issued (see p. 62), but because it cannot be checked for showkeys after `\AtBeginDocument`, the check must be done here and the result remembered.

```

1911 \ltx@ifpackageloaded{showkeys}{%
1912 \@ifpackagewith{showkeys}{final}{\gdef\pagesLTS@SK{1}}}{%
1913 }
1914

```

`\AtEndDocument` `\AtEndDocument` we first give the error message about the missing (i. e. not found) page numbering scheme, which could not be given in `\EveryShipout`.

```

1915 \AtEndDocument{%
1916 \ifx\pncmissing\pagesLTS@one%
1917 \PackageError{pageslts}{pagenumbering scheme missing}{\pagesLTS@messageNPN }%
1918 \fi%

```

Then we put in a `\message` to show, in what order things (which were called) are done (see subsection 3.2).

```

1919 \message{^^J%
1920 AED: pageslts setting LastPage ^^J}%

```

After this we issue a `\clearpage` to put out all floats, which are still floating, remember the page number (if `fnsymbol`), and after that we place the `LastPage` label.

```

1921 \clearpage%
1922 \ifx\pagesLTS@pnc\pagesLTS@fns%
1923 \def\pagesLTS@tmpA{\arabic{pagesLTS.fnsymbol.local}}%
1924 \ifnum \pagesLTS@eso=\pagesLTS@tmpA%
1925 \gdef\pagesLTS@rerun{0}%
1926 \else%

```

```

1927     \gdef\pagesLTS@rerun{1}%
1928     \fi%
1929     \if@filesw%
1930         \immediate\write\@auxout{\string
1931             \gdef\string\pagesLTS@eso{\pagesLTS@tmpA}}%
1932     \fi%
1933 \fi%
1934 \pagesLTS@putlabel{LastPage}{\thepage}{1}%

```

We do not need the temporary definition any more.

```

1935 \let\pagesLTS@tmpA\undefined%
1936 }
1937

```

`\AfterLastShipout` `\AfterLastShipout` is a command from HEIKO OBERDIEK's `atveryend` package (see above).

```

1938 \AfterLastShipout{%

```

If writing to the `.aux` file is allowed:

```

1939 \if@filesw%

```

The number of pages with the `fnsymbol` page numbering scheme, `\pagesLTS@esov`, is saved via the `.aux` file (if it is not zero):

```

1940 \ifx\pagesLTS@esov\pagesLTS@zero%
1941 \else%
1942     \immediate\write\@auxout{\string
1943         \pagesLTS@ifcounter{pagesLTS.fnsymbol.local}}%
1944     \immediate\write\@auxout{\string
1945         \setcounter{pagesLTS.fnsymbol.local}{\pagesLTS@esov}}%
1946 \fi%

```

If the `hyperref` package is in use, and the page numbering scheme of the last page is `fnsymbol`, everything is quite more complicated. Therefore `\lastpageref` is switched from simple `\lastpagereftxt` to the more difficult `\lastpagerefend`.

```

1947 \ltx@ifpackageloaded{hyperref}{%
1948     \ifx\pagesLTS@pnc\pagesLTS@fns%
1949         \immediate\write\@auxout{\string
1950             \gdef\string\lastpageref{\string\lastpagerefend}}%
1951     \fi%
1952 }{%
1953 \fi%

```

At the call of a `\pagenumbering{...}` command, everything for a split page numbering scheme is organized. For the last page numbering scheme, there is no `\pagenumbering{...}` command at the end, so we need to handle this here:

```

1954 \pagesLTS@ifcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}%
1955 \setcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1956     \value{pagesLTS.current.local.\pagesLTS@pnc}}%

```

And we are one page after the last one (`\AfterLastShipout!`), so we go back one page. (We again borrow the `pagesLTS.pnc.0` counter for the computations instead of defining yet another one.)

```

1957 \addtocounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{-1}
1958 \ifnum \value{pagesLTS.pnc.\pagesLTS@pnc}>1%
1959 \mathchardef\pagesLTS@tmpD=\arabic{pagesLTS.pnc.0}%
1960 \setcounter{pagesLTS.pnc.0}{\value{pagesLTS.pnc.\pagesLTS@pnc}}%
1961 \@tempcnta=\value{pagesLTS.pnc.0}\relax%
1962 \loop%
1963 \ifnum\@tempcnta>1\relax%
1964 \addtocounter{pagesLTS.pnc.0}{-1}%
1965 \addtocounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}{%
1966 -\value{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.0}.local.count}}%
1967 \@tempcnta=\value{pagesLTS.pnc.0}\relax%
1968 \repeat%
1969 \setcounter{pagesLTS.pnc.0}{\pagesLTS@tmpD}%
1970 \fi%
1971 \if@filesw%
1972 \immediate\write\@auxout{\string
1973 \pagesLTS@ifcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.cnt}}%
1974 \edef\pagesLTS@tmpA{\arabic{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.count}}%
1975 \immediate\write\@auxout{\string
1976 \setcounter{pagesLTS.\pagesLTS@pnc.\arabic{pagesLTS.pnc.\pagesLTS@pnc}.local.cnt}{\pagesLTS@tmpA}}%
1977 \let\pagesLTS@tmpA\undefined%
1978 \fi%

```

We need to save (via the .aux file) the page name `\thepage` and the page number `\arabic{CurrentPage}` of the last page, in case the last page has fnsymbol page numbering scheme.

```

1979 \addtocounter{page}{-1}%
1980 \edef\pagesLTS@tmpA{\thepage}%
1981 \if@filesw%
1982 \immediate\write\@auxout{\string
1983 \gdef\string\pagesLTS.lastpage{\pagesLTS@tmpA}}%
1984 \fi%
1985 \addtocounter{page}{+1}%
1986 \addtocounter{CurrentPage}{-1}%
1987 \edef\pagesLTS@tmpB{\arabic{CurrentPage}}%
1988 \if@filesw%
1989 \immediate\write\@auxout{\string
1990 \setcounter{pagesLTS.pagenr}{\pagesLTS@tmpB}}%
1991 \fi%
1992 \addtocounter{CurrentPage}{+1}%

```

The `VeryLastPage` label is set here, and when `\lastpageref{VeryLastPage}` instead of `\lastpageref{LastPage}` is used, it should really point to the last page. `LastPage` and `VeryLastPage` should be identical, unless a package was active with output `\AtEndDocument` *after* the `pageslts` package.

```
1993 \message{^^J%
1994   AED: pageslts setting VeryLastPage via AfterLastShipout ^^J}%
1995 \pagesLTS@putlabel{VeryLastPage}{\thepage}{1}%
```

The `LastPages` label is set here, and `\lastpageref{LastPages}` gives the total number of pages and points to the (very) last page.

```
1996 \message{^^J%
1997   AED: pageslts setting LastPages via AfterLastShipout ^^J}%
1998 \pagesLTS@putlabels%
1999 \typeout{^^J}%
2000 \ifodd\pagesLTS@tmpB%
2001   \@PackageInfoNoLine{pageslts}{Total number of pages is odd}%
2002 \else%
2003   \@PackageInfoNoLine{pageslts}{Total number of pages is even}%
2004 \fi%
2005 \typeout{^^J}%
```

We do not need the temporary definitions any more.

```
2006 \let\pagesLTS@tmpA\undefined%
2007 \let\pagesLTS@tmpB\undefined%
2008 }
2009
```

`\AtEndAfterFileList` `\AtEndAfterFileList{...}` is even later:

“After the `.aux` file closing and reading `LATEX` prints the file list if requested by `\listfiles`. Then this hook is executed.”

(`atveryend` package of HEIKO OBERDIEK, v1.7 as of 2011/04/23, newer version available.) Here it is used for a rerun hint. For example if the page numbering scheme of the last page of the `pageslts-example.tex` file is changed to `fnsymbol` and two runs of `pdfLATEX` are done, `pdfLATEX` will be happy and will not complain about changed labels. But indeed, a *third* run is necessary and indicated by the warning message below.

```
2010 \AtEndAfterFileList{%
2011   \ifx\pagesLTS@rerun\pagesLTS@one%
2012     \PackageWarningNoLine{pageslts}{%
2013       Label(s) may have changed.\MessageBreak%
2014       Rerun to get cross-references right%
2015     }%
2016 \fi%
2017 }
2018
```

`\frontmatter` `\frontmatter` often contains `\pagenumbering`, but for some unknown reason there are problems when another `\pagenumbering` with different page numbering scheme has been used before on the same page. (This would not make any sense anyway, because one page can only have one page numbering scheme.) This problem does not occur when two `\pagenumbering` commands are used inside normal text. Thus we need to check whether `\frontmatter` has been defined, whether it changes the page numbering scheme, and whether the page numbering scheme before `\frontmatter` was initiated at the same page.

First we need an `\ifundefined`, which neither requires ε -TeX nor defines the command, which is to be tested, to `\relax` (in which case it would be no longer undefined for further tests).

The code of Markus Kohm from <http://de.comp.text.tex.narkive.com/uNza5NAA/ifundef-and-ifdef> is fine for this:

`\ifund@fined`

```

2019 \newcommand*{\ifund@fined}[1]{%
2020 % from http://de.comp.text.tex.narkive.com/uNza5NAA/ifundef-and-ifdef
2021 \begingroup\expandafter\expandafter\expandafter\endgroup
2022 \expandafter\ifx\csname #1\endcsname\relax
2023   \expandafter\@firstoftwo
2024 \else
2025   \expandafter\@secondoftwo
2026 \fi
2027 }
2028
2029 \ifund@fined{frontmatter}{\relax}{%
2030 \ltx@GlobalPrependToMacro{frontmatter}{pagesLTS@prefrontmatter}%
2031 \ltx@GlobalAppendToMacro{frontmatter}{pagesLTS@postfrontmatter}%
2032 }
2033

```

`pagesLTS@prefrontmatter`

At the beginning of the real (i.e. unchanged) `\frontmatter` (FMB), we remember the current (c) page numbering (pn) scheme: its name (n) and page number (p). `\pagesLTS@FMBpncp` would be 1 if the according `\pagenumbering` command was used on the same page at the `\frontmatter`.

```

2034 \newcommand{\pagesLTS@prefrontmatter}{%
2035 \xdef\pagesLTS@FMBpncn{\pagesLTS@pnc}%
2036 \xdef\pagesLTS@FMBpncp{\arabic{pagesLTS.current.local.\pagesLTS@pnc}}%
2037 }
2038

```

`pagesLTS@postfrontmatter`

The named checks are performed and in case of the named problem an error message is given. Any idea how to automatically solve this issue?

```

2039 \newcommand{\pagesLTS@postfrontmatter}{%
2040 \xdef\pagesLTS@FMEpncn{\pagesLTS@pnc}%
2041 \ifx\pagesLTS@FMBpncn\pagesLTS@FMEpncn%
2042 \else%
2043   \ifx\pagesLTS@FMBpncn\pagesLTS@zero%
2044   \else%
2045     \ifx\pagesLTS@FMBpncp\pagesLTS@one%

```



```
2046 \PackageError{pageslts}{\string\pagenumbering\space before \string\frontmatter}{%
2047 Do not use \string\pagenumbering{\pagesLTS@FMBpncn} before \string\frontmatter \MessageBreak%
2048 on the same page!\MessageBreak%
2049 \string\frontmatter\space (re)defines the page numbering scheme to \pagesLTS@FMEpncn , \MessageBreak%
2050 thus earlier use of \string\pagenumbering{\pagesLTS@FMBpncn} on the same page is useless anyway.}%
2051 \fi%
2052 \fi%
2053 \fi%
2054 }
2055
2056 \end{package}
```

7 Installation

7.1 Downloads

Everything should be available on **CTAN**: <ftp://ftp.ctan.org/tex-archive/>, but may need additional packages themselves.

`pageslts.dtx` For unpacking the `pageslts.dtx` file and constructing the documentation it is required:

- **T**_EXFormat **L**^A**T**_EX 2_ε, 2011/06/27, v2ε: **CTAN**:
- document class `ltxdoc`, 2007/11/11, v2.0u, **CTAN**:[macros/latex/base/ltxdoc.dtx](#)
- package `holtxdoc`, 2012/03/21, v0.24, **CTAN**:[macros/latex/contrib/oberdiek/holtxdoc.dtx](#)
- package `hypdoc`, 2011/08/19, v1.11, **CTAN**:[macros/latex/contrib/oberdiek/hypdoc.dtx](#)
- package `geometry`, 2010/09/12, v5.6, **CTAN**:[macros/latex/contrib/geometry/geometry.dtx](#)
- package `ulem`, 2012/05/18, no version number given, **CTAN**:[macros/latex/contrib/ulem/](#)

`pageslts.sty` The `pageslts.sty` for **L**^A**T**_EX 2_ε (i. e. all documents using the `pageslts` package) requires:

- **T**_EXFormat **L**^A**T**_EX 2_ε, 2011/06/27, v2ε, **CTAN**:
- package `atveryend`, 2011/06/30, v1.8, **CTAN**:[macros/latex/contrib/oberdiek/atveryend.dtx](#)
- package `everyshi`, 2001/05/15, v3.00, **CTAN**:[macros/latex/contrib/ms/everyshi.dtx](#)
- package `kvoptions`, 2011/06/30, v3.11, **CTAN**:[macros/latex/contrib/oberdiek/kvoptions.dtx](#)
- package `letltxmacro`, 2010/09/02, v1.4, **CTAN**:[macros/latex/contrib/oberdiek/letltxmacro.dtx](#)
- package `ltxcmds`, 2011/11/09, v1.22, **CTAN**:[macros/latex/contrib/oberdiek/ltxcmds.dtx](#)
- package `rerunfilecheck`, 2011/04/15, v1.7, **CTAN**:[macros/latex/contrib/oberdiek/rerunfilecheck.dtx](#)
- package `undolabl`, 2012/01/01, v1.0k, **CTAN**:[macros/latex/contrib/undolabl/undolabl.dtx](#)

`pageslts-example.tex` The `pageslts-example.tex` requires the same files as all documents using the `pageslts` package, and additionally:

- class `article`, 2007/10/19, v1.4h, from `classes.dtx`: **CTAN**:[macros/latex/base/classes.dtx](#)
- package `alphalph`, 2011/05/13, v2.4, **CTAN**:[macros/latex/contrib/oberdiek/alphalph.dtx](#)
- package `lipsum`, 2011/04/14, v1.2, **CTAN**:[macros/latex/contrib/lipsum/lipsum.dtx](#)
- package `showkeys`, 2007/08/07, v3.15, **CTAN**:[macros/latex/required/tools/showkeys.dtx](#)
- package `hyperref`, 2012/11/06, v6.83m, **CTAN**:[macros/latex/contrib/hyperref.zip](#)
- package `pageslts`, 2014/01/19, v1.2c, **CTAN**:[macros/latex/contrib/pageslts/pageslts.dtx](#)

(Well, it is the example file for this package, and because you are reading the documentation for the `pageslts` package, it can be assumed that you already have some version of it – is it the current one?)

papermas The papermas package is not required, but requires itself the the pageslts package and can be considered as kind of add-on:

- package papermas, 2011/08/22, v1.0h, [CTAN:macros/latex/contrib/papermas/papermas.dtx](http://ctan.org/ctan/macros/latex/contrib/papermas/papermas.dtx)

endfloat The endfloat package is not required, but because the pageslts package is incompatibel with very old versions of the endfloat package (see subsection 3.3), here the recent one is listed:

- package endfloat, 2011/12/25, v2.5d, [CTAN:macros/latex/contrib/endfloat/endfloat.dtx](http://ctan.org/ctan/macros/latex/contrib/endfloat/endfloat.dtx)

prelim2e The prelim2e package is not required either, but because Prelim@EveryShipout code was taken from that package, it is listed, too:

- package prelim2e, 2009/05/29, v1.3, [CTAN:macros/latex/contrib/ms/prelim2e.dtx](http://ctan.org/ctan/macros/latex/contrib/ms/prelim2e.dtx)

fancyhdr Neither fancyhdr nor nccfancyhdr package is required (the lastpage package used its predecessor fancyheadings), but because nccfancyhdr they were mentioned, also they are listed here:

- package fancyhdr, 2005/03/22, v3.2, [CTAN:macros/latex/contrib/fancyhdr.zip](http://ctan.org/ctan/macros/latex/contrib/fancyhdr.zip)
- package nccfancyhdr, 2004/12/07, v1.1, [CTAN:macros/latex/contrib/ncctools/source/nccfancyhdr.dtx](http://ctan.org/ctan/macros/latex/contrib/ncctools/source/nccfancyhdr.dtx)

lastpage As possible alternatives in section 4 there are listed

totpages

totcount

nofm

count1to

zref

- package lastpage, 2013/01/28, v1.2l, [CTAN:macros/latex/contrib/lastpage/lastpage.dtx](http://ctan.org/ctan/macros/latex/contrib/lastpage/lastpage.dtx)
- package totpages, 2005/09/19, v2.00, [CTAN:macros/latex/contrib/totalpages/totalpages.dtx](http://ctan.org/ctan/macros/latex/contrib/totalpages/totalpages.dtx)
- package totcount, 2011/01/25, v1.2, [CTAN:macros/latex/contrib/totcount/totcount.dtx](http://ctan.org/ctan/macros/latex/contrib/totcount/totcount.dtx)
- package nofm, 1991/02/25, v??.?, [ftp://tug.ctan.org/pub/tex-archive/obsolete/macros/latex209/contrib/misc/nofm.sty](http://tug.ctan.org/pub/tex-archive/obsolete/macros/latex209/contrib/misc/nofm.sty), does not work with e.g. hyperref
- package count1to, 2009/05/24, v2.1, [CTAN:macros/latex/contrib/ms/count1to.dtx](http://ctan.org/ctan/macros/latex/contrib/ms/count1to.dtx)
- package zref, 2012/04/04, v2.24, [CTAN:macros/latex/contrib/oberdiek/zref.dtx](http://ctan.org/ctan/macros/latex/contrib/oberdiek/zref.dtx)

Oberdiek All packages of HEIKO OBERDIEK's bundle 'oberdiek' (especially alphalph, atveryend, holtxdoc, letltxmacro, ltxcmds, kvoptions, rerunfilecheck, and zref) are also available in a TDS compliant ZIP archive:

alphalph [CTAN:install/macros/latex/contrib/oberdiek.tds.zip](http://ctan.org/ctan/install/macros/latex/contrib/oberdiek.tds.zip).

atveryend It is probably best to download and use this, because the packages in there should be both recent and compatible.

holtxdoc

letltxmacro

ltxcmds

kvoptions

rerunfilecheck

zref

Münch A hyperlinked list of my (other) packages can be found at <http://ctan.org/author/muench-hm>.

7.2 Package, unpacking TDS

Package. This package is available on [CTAN](#):

[CTAN:macros/latex/contrib/pageslts/pageslts.dtx](#)

The source file.

[CTAN:macros/latex/contrib/pageslts/pageslts.pdf](#)

The documentation.

[CTAN:macros/latex/contrib/pageslts/pageslts-example.pdf](#)

The compiled example file, as it should look like.

[CTAN:macros/latex/contrib/pageslts/README](#)

The README file.

There is also a `pageslts.tds.zip` available:

[CTAN:install/macros/latex/contrib/pageslts.tds.zip](#)

Everything in TDS compliant, compiled format.

which additionally contains

<code>pageslts.ins</code>	The installation file.
<code>pageslts.drv</code>	The driver to generate the documentation.
<code>pageslts.sty</code>	The <code>.style</code> file.
<code>pageslts-example.tex</code>	The example file.

For required other packages, see the preceding subsection.

Unpacking. The `.dtx` file is a self-extracting `docstrip` archive. The files are extracted by running the `.dtx` through plain `TeX`:

```
tex pageslts.dtx
```

About generating the documentation see paragraph [7.4](#) below.

TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

<code>pageslts.sty</code>	→ <code>tex/latex/pageslts.sty</code>
<code>pageslts.pdf</code>	→ <code>doc/latex/pageslts.pdf</code>
<code>pageslts-example.tex</code>	→ <code>doc/latex/pageslts-example.tex</code>
<code>pageslts-example.pdf</code>	→ <code>doc/latex/pageslts-example.pdf</code>
<code>pageslts.dtx</code>	→ <code>source/latex/pageslts.dtx</code>

If you have a `docstrip.cfg` that configures and enables `docstrip`'s TDS installing feature, then some files can already be in the right place, see the documentation of `docstrip`.

7.3 Refresh file name databases

If your $\text{T}_{\text{E}}\text{X}$ distribution (te $\text{T}_{\text{E}}\text{X}$, mik $\text{T}_{\text{E}}\text{X}$,...) relies on file name databases, you must refresh these. For example, te $\text{T}_{\text{E}}\text{X}$ users run `texhash` or `mktextlsr`.

7.4 Some details for the interested

Unpacking with $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$. The `.dtx` chooses its action depending on the format:

plain $\text{T}_{\text{E}}\text{X}$: Run `docstrip` and extract the files.

$\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$: Generate the documentation.

If you insist on using $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ for `docstrip` (really, `docstrip` does not need $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{pageslts.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

Generating the documentation. You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put the following line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with pdf $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$:

```
pdflatex pageslts.dtx
makeindex -s gind.ist pageslts.idx
pdflatex pageslts.dtx
makeindex -s gind.ist pageslts.idx
pdflatex pageslts.dtx
```

7.5 Compiling the example

The example file, `pageslts-example.tex`, can be compiled via

```
latex pageslts-example.tex
```

or (recommended)

```
pdflatex pageslts-example.tex
```

and will need *at least* (!) three compiler runs to get all references right.

8 Acknowledgements

I (H.-Martin Münch) would like to thank JEFFREY P. GOLDBERG for inventing the `lastpage` package. This package first started as a revision of the `lastpage` package, but it became obvious that a replacement was needed to accomplish what this package does. Further I would like to thank HEIKO OBERDIEK for providing the `\erroralphalph` command as well as a lot (!) of useful packages (from which I also got everything I know about creating a file in `dtx` format, ok, say it: copying), MARTIN SCHRÖDER for his `prelim2e` package, from which I got the `Prelim@EveryShipout` code, ULRICH DIEZ for his code for the `undolabl` package, which allows overwriting of labels, ANDRES LÖH for the code to determine the current page numbering scheme, and the `news:comp.text.tex` and `news:de.comp.text.tex` newsgroups for their help in all things T_EX. For bug reports I thank Michał Herman and kwikwi.

9 History

[1994/06/17, `lastpage`]

- `lastpage` v0.99a: First shot by Jeffrey P. Goldberg.

[1994/06/25, `lastpage`]

- `lastpage` v0.1b: Last version number created by Jeffrey P. Goldberg.

[1994/07/20, `lastpage`]

- `lastpage` v0.1b (again): Documentation updated by Jeffrey P. Goldberg.
The main source code of the `lastpage` package 1994/07/20 v0.1b was:

```
\NeedsTeXFormat{LaTeX2e}[1994/06/01]
\ProvidesPackage{lastpage}[1994/07/20 v0.1b
  LaTeX2e package for refs to last page number (JPG)]
\def\lastpage@putlabel{\addtocounter{page}{-1}%
  \immediate\write\@auxout{\string
  \newlabel{LastPage}{{}\{thepage}}}%
  \addtocounter{page}{1}}
\AtEndDocument{%
  \message{AED: lastpage setting LastPage}%
  \clearpage\lastpage@putlabel}%
\endinput
```

and then `hyperref` and `revtex` even redefine `\lastpage@putlabel`.

[2010/02/18, `lastpage`]

- `lastpage` v1.1: Proposed `LastPages` label by H.-Martin Münch on `news:comp.text.tex`, see e. g. <http://groups.google.com/group/comp.text.tex/msg/4407493da9c747f0?dmode=source>; now available in this `pageslts` package.

[2010/05/15 v1.0 pagesLTS]

- pagesLTS Complete rewriting of the package, so as to work with **more than one page numbering scheme**; using `\AtVeryEnd` for `VeryLastPage`; upgrade from `fancyheadings` to `fancyhdr` package, then removed the need for a `fancyhdr` package at all.
- Rewriting of the package, so as to work with the `fnsymbol` page numbering scheme (even on the last page).
- Introduction of `kvoptions` into this package.
- Check for incompatible `endfloat` package.
- `lastpage209.sty` for L^AT_EX209.
- Replacement of `\filedate`, `-version`, `-name`,... because of L^AT_EX bug 2705:
Synopsis: Possible problem with `\fileversion` and `\filedate`
<http://www.latex-project.org/cgi-bin/ltxbugs2html?category=LaTeX&responsible=anyone&state=anything&keyword=lastpage&pr=latex%2F2705&search=>
- `alphalph` support included.
- Page numbering extension `\erroralph` by HEIKO OBERDIEK included.
- (Page-) Numbering extension for `roman` and `Roman` numbers included.
- Incompatible, old `lastpage` package “killed”.
- Example `pagesLTS-example.tex`.
- Alternatives listing (section 4).
- Listing of T_EX sources (subsection 7.1).
- A lot (!) of details.
- Complete rewriting of the documentation.
- Everything in DTX framework.
- New package name: `pagesLTS` for Last, Total, and page numbering Schemes pages.

[2010/06/01 v1.1(a) pagesLTS]

- Abstract changed: Negative `roman` and `Roman` page numbers are now possible.
- Some references to other packages have been updated.
- Several typing mistakes have been corrected (and new ones have been included probably) - both in the `style` file as well as in this documentation.

[2010/06/03 v1.1b pagesLTS]

- Corrected a bug in `\XXRoman`, where `\roman` instead of `\Roman` had been used.
- New `papermas` package mentioned.
- Updated references to other packages.
- TDS locations updated.
- Several changes in the documentation and the Readme file.

[2010/06/24 v1.1c pagesLTS]

- `holtxdoc` warning in `drv` updated.
- Removed CRLF line endings from the `dtx` file.
- Corrected the location of the package at CTAN. (In this version TDS was still missing due to packaging error.)
- Corrected Message format in `pagesLTS.ins`.
- Updated references to other packages: `hyperref`, `undolabl`, and `papermas`.
- Added a list of my other packages.

[2010/07/15 v1.1d pagesLTS]

- Added the `\@ifclassloaded{revtex4}` code for `\lastpage@putlabel` (changed to `\pagesLTS@putlabelhyper`) from the `hyperref` package **as comment** - what is the meaning of that code?
- In the documentation added the explanation of the occurrence of multiply definitions of the `LastPage` label with `lastpage`, `pagesLTS`, `hyperref` package (in that order).
- Corrected the given location of the `pagesLTS.tds.zip` file at CTAN.
- Updated references to other packages: `hyperref` and `undolabl`.
- Updated to new version of `undolabl` package [2010/07/15] v1.0d, which uses `\undonewlabel` with only one instead of two arguments.
- Added a warning message, if `hyperref` *and* `pdfpages` are *both* used. (Should not `hyperref` give this warning?)
- The usual correction of typos and minor details in the documentation.

[2010/07/29 v1.1e pagesLTS]

- Removed lastpage209.sty, because it is now contained in the lastpage.dtx file, $v \geq 1.2a$.
- Removed the `\@ifclassloaded{revtex4}` code for `\lastpage@putlabel`.
- Handling of lastpage package adapted to updated version 1.2(a).
- There is a new version of the used geometry package: 2010/07/13, v5.5.
- Corrected error in lastpage code [1994/07/20 v0.1b] given in 9 History.
- Version handling for undolabl package updated.
- Included a `\CheckSum`.
- Some minor details.

[2010/08/08 v1.1f pagesLTS]

- Version 1.1e had a bug: AlphAlph was replaced by alphalph (because that package is named like this), but this was done also in commands and definitions - now reverted.
- The recent version of the Adobe Reader ~~is~~ was 9.3.3 (instead of 9.3.1).

[2010/08/12 v1.1g pagesLTS]

- Now the rerun warning is given *after* e.g. the `\listfiles`, increasing the chance of the user to read it (trick found in HARALD HARDERS' `fnbreak` package, thanks!).

[2010/08/23 v1.1h pagesLTS]

- Renamed `\XXRoman` to `\XRoman`.
- Reduced the number of needed counters.
- Removed wrong `%` from the driver file.
- Changed the `\unit` definition (got rid of an old `\rm`).
- Without use of the `hyperref` package, labels of type `pagesLTS.<page numbering scheme>.local` became multiply defined. Now an `\undolabl` was inserted.
- Diverse details.

[2010/08/25 v1.1i pagesLTS]

- Bug fix: `tcilatex` defines the `\hyperref` command, therefore for `hyperref` package detection this had to be changed to `\Hy@Warning`.

[2010/09/12 v1.1j pagesLTS]

- Bug fix: L^AT_EX issued a “Label(s) may have changed. Rerun to get cross-references right.”-warning, even if labels had not changed but were overwritten.
- Starred version of `\lastpageref` for suppressing hyperlinks introduced.
- A lot of details.

[2010/09/22 v1.1k pagesLTS]

- When no `fnsymbol` pagenumbersing scheme is used, the respective counters are not defined, saving three counters.
- Updated to version 2010/09/13 v6.81n of the `hyperref` package (which needs two more counters than the old 2010/06/18 v6.81g version).
- Moved the package from `.../latex/muench/pagesLTS/...` to `.../latex/pagesLTS/...`
(Please make sure that the old version of the `pagesLTS` package was properly uninstalled from your system.)

[2010/09/27 v1.1l pagesLTS]

- Bug fix: `\PackageError{pagesLTS}{pagenumbering missing}{\pagesLTS@messageNPN }` had to be moved to the outside of `\EveryShipout`, because it wrote its message into the document instead to the screen and the `.log`-file.
- Updated to version 2010/04/24 v0.19 of the `holtxdoc` package.
- `lastpage` package has a new version: 2010/09/24 v1.2f.

[2011/02/01 v1.1m pagesLTS]

- Added a new warning subsection about `hyperref` and repeated page numbers.
- Bug fix: Missing `%` after `-\romannumeral\number-\arabic{#1}` added.
- The (then) new version v2.4i of the `endfloat` package was then even older than 15 years.
- Put a warning in the documentation as well as in the `log`-file and at the screen during compilation about the `showkeys` package. (The labels of the `pagesLTS` package cannot be shown by the `showkeys` package.)
- Bug fix: In some situations a rerun warning was given even if no rerun was necessary.
- Replaced the list of my packages with a link to a web page list of those, which has the advantage of showing the recent versions of all those packages.
- There is a new version of the used `geometry` package: 2010/09/12, v5.6.
- There ~~is~~ was a new version of the `hyperref` package: 2010/12/16, v6.81z.
- The recent version of the Adobe Reader ~~is~~ was X (10.0.0) (instead of 9.3.3). Its handling of special page numbers was improved.

- The option `alphMult` is now set to `ab` by default.
- The option `AlphMulti` is now set to `AB` by default.
- There is a new version of the `lastpage` package: 2011/02/01, v1.2g.
- There is a new version of the used `undolabl` package: 2011/02/01, v1.0h.
- There ~~is~~ was a new version of the `papermas` package: 2011/02/01, v1.0e.
- Some details.

[2011/03/16 v1.1n pagesLTS]

- Bug fix: Handling of option `pagecontinue=false` changed. When `pagecontinue=false` was used, but also a `alphMult`, `AlphMulti`, `fnsymbolmult`, `romanMult` or `RomanMulti` option other than 0 or `false`, respectively, was used, the page numbering *was* continued/extended. Now a warning is issued in case of such option clash and `pagecontinue=false` is heeded, disabling all continuation.
- Bug fix: `\ProvidesPackage{pagesLTS}` contained an older date (2010/09/27 of v1.11 instead of 2011/02/01 of v1.1m).
- Bug fix: The `ulem` package is needed to generate the documentation from the `pagesLTS.dtx` file, but was not listed as necessary package.
- Bug fix: One reference to an outdated version of `undolabl` package, replaced by the recent version.
- There ~~is~~ was a new version of the `hyperref` package: 2011/03/09, v6.82d.
- The recent version of the Adobe Reader ~~is~~ was X (10.0.1) (instead of 10.0.0).
- Some minor details.

[2011/03/17 v1.1o pagesLTS]

- There ~~is~~ was a new version of the `lipsum` package: 2011/02/08, v1.1.
- Documentation and ReadMe bug fix: This `pagesLTS` package is located at `CTAN:macros/latex/contrib/pageslts/` instead of `.../pagesLTS/`.
- There is a new (possible) alternative package, `totcount`, see section 4.
- Bug fix: There was a reference to `lastpage` 1994/07/20, v0.1b, instead of the current version.

[2011/08/08 v1.2a]

- Renamed the package from **pagesLTS** to **pageslts** (keeping family, prefix, internal commands,... as pagesLTS). Added checking against double loading as pagesLTS and pageslts.
- The holtxdoc package was fixed (recent: 2011/02/04, v0.21), therefore the warning in `drv` could be removed.
- There is a new version of the ulem package: 2011/03/18 (no version number given).
- There is a new version of the lipsum package: 2011/04/14, v1.2.
- There ~~is~~ was a new version of the used hyperref package: 2011/04/17, v6.82g.
- `\AtEndAfterFileList` from the then new version of the atveryend package, 2011/04/23, v1.7, by HEIKO OBERDIEK, is now used for the rerun hint instead of appending to `\@dofilelist`.
- The recent version of the Adobe Reader ~~is~~ was 10.1.0 (instead of 10.0.1).
- Now defining 2: `\def\pagesLTS@two{2}` (for example for the thumbs package) and 3: `\def\pagesLTS@three{3}`.
- Replaced `\texttt{\textbackslash...}` by `|\...|` in the `dtx` and by `\verb|\...|` in the example (where possible).
- When the `alphaph` package is needed, it is loaded via `\RequirePackage` instead of crashing with an error message.
- There are new version of the packages `papermas`, `undolabl`, and `lastpage`.
- A lot of details (also in the documentation).

[2013/01/28 v1.2b]

- Updated to T_EX live 2012 (for compiling the documentation and example) and installed the available updates. Therefore I can no longer test whether `pageslts` works with earlier versions of L^AT_EX. (It probably does, but there is no guarantee.)
- Replaced `\let` by `\LetLtxMacro`.
- New versions of Adobe Reader and of the packages `alphaph`, `atveryend`, `endfloat`, `holtxdoc`, `hypdoc`, `hyperref`, `kvoptions`, `lastpage`, `papermas`, `ulem`, `undolabl`, and `zref` have become available.
- The `nameref` package redefines `\label` to have five arguments instead of two, therefore `\newlabel{LastPage}{\thepage}{\thepage}` instead of `\newlabel{LastPage}{\thepage}` must be used. (Bug reported at <http://tex.stackexchange.com/q/95541/6865>, thanks to Michał Herman!) Fixed.
- Updates to a lot of details, also in the documentation.

- Bug: missing loop, fix: inserted.
- Bug: when option `pagecontinue=false` was set, the extension of the page numbering schemes was disabled by mistake, fixed.
- Now using `\ltx@ifpackageloaded` from the `ltxcmds` package for checking (even after `\AtBeginDocument`) whether a package has been loaded.
- Bug: incompatibility with `lineno` because of a mistake in the redefined `\pagenumbering`, fixed. (Bug reported by kwikwi, thanks!)
- Bug: When `\pagenumbering` preceded `\frontmatter` on the same page but with different argument than the `\pagenumbering`, which was inside `\frontmatter`, then some labelling got mixed up. (Also this bug reported by kwikwi, thanks!) While this is not fixed automatically, now an appropriate error message is given. (Two different page numbering schemes on the same page make no sense anyway.)
- Updates of minor details.

When you find a mistake or have a suggestion for an improvement of this package, please send an e-mail to the maintainer, thanks!
(Please see BUG REPORTS in the README.)

Note: `Y` is not missing in the following index, but no command beginning with this letter has been used in this `pageslts` package.

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