

# Supplementary files belonging to the *lineno.sty* distribution

Lazy ASCII → PDF listings

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## Preface

`lineno.sty` is a macro package made by Stephan I. Böttcher for attaching line numbers to L<sup>A</sup>T<sub>E</sub>X documents. Some people have used it for revising submissions in collaboration with referees or co-authors. Documentations are nowadays preferred to be in Adobe's PDF—so `lineno.sty`'s documentation is `lineno.pdf`<sup>1</sup>.

`ednotes.sty` uses `lineno.sty` for critical editions, combining it with Alexander I. Rozhenko's `manyfoot.sty`—this was Christian Tapp's idea, who then hired me for adding the T<sub>E</sub>Xnical details. In doing this, I had to change some internals of `lineno.sty`, so Stephan transferred maintenance to me; then some of my macro files that I originally had made for `ednotes.sty` wandered into the `lineno` directory of CTAN—because they turned out not to need `ednotes.sty`, just to work as extensions of `lineno.sty`.

Now, I haven't had the time for making `.dtx` versions of the `.sty` files for `ednotes`. Therefore, ordinary `.pdf` documentation for the remaining `.sty` files of `lineno` is missing. What you see here is nothing but a somewhat structured listing of the additional `.txt` and `.sty` files in PDF, deriving from the `verbatim` package and its `\verbatiminput` command. I hope the high quality (scalable) output is worth it.

By contrast, the new package `fnlineno.sty` added in 2011 for footnote line numbers is documented in `fnlineno.pdf`<sup>2</sup> in high quality, using the `nicetext`<sup>3</sup> bundle.

*U. L.*

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<sup>1</sup><http://mirror.ctan.org/macros/latex/contrib/lineno/lineno.pdf>

<sup>2</sup><http://mirror.ctan.org/macros/latex/contrib/lineno/fnlineno.pdf>

<sup>3</sup><http://mirror.ctan.org/macros/latex/contrib/nicetext>

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## 1 The .txt files

### 1.1 Summary: README.txt

### 1.2 Licenses/Copyright: COPYING.txt

```
% lineno.sty
%
% The files in this directory are
%
% Copyright 1995--2003 Stephan I. Böttcher
% Copyright 2002--2005 Uwe Lück for versions 4.x and code from former Ednotes
% Copyright 2011      Uwe Lück for fnlineno.sty/tex/pdf
% Copyright 2021--2023 Karl Wette for versions 5.x
%
% The files can be redistributed and/or modified under
% the terms of the LaTeX Project Public License; either
% version 1.3a of the License, or any later version.
% The latest version of this license is in
%   http://www.latex-project.org/lppl.txt
% We did our best to help you, but there is NO WARRANTY.
%
% =====
<- (UL) End of official declaration.
```

#### History:

```
Update for version 5.x 2022/12/05 kw
add. fnlineno         2011/02/16 ul
This file -> The files 2004/10/12 ul
$Id: COPYING,v 3.0.2.1 2004/09/13 20:15:47 stephan Exp $
```

LPPL v1.3a 2004/10/26

### 1.3 Update summaries: CHANGES.txt

CHANGES for lineno pkg v5.5 2025/05/13:

1. Protect `\\` with `\protect` instead of `\DeclareRobustCommand`.

CHANGES for lineno pkg v5.4 2025/01/29:

1. Option to allow `~\linelabel~` with `~\nolinenumbers~`.

CHANGES for lineno pkg v5.3 2023/05/20:

1. Handle special value of `\prevdepth=-1000pt`; thanks to Yukai Chou and Frank Mittelbach.
2. Add package options ‘sep’ and ‘width’ for setting line number separation and width.
3. Add ‘twocolumn’ support for ‘bframe’ env; thanks to Yukai Chou.

CHANGES for lineno pkg v5.2 2023/05/19:

1. Support ‘amsmath’ option ‘`\allowdisplaybreaks`’.

CHANGES for lineno pkg v5.1 2023/01/19:

1. Patch ‘amsmath’ with `\AddToHook` if possible.

CHANGES for lineno pkg v5.0 2022/07/30:

1. Merge in ‘linenoamsmath’ patches.

CHANGES for lineno pkg 2011/02/16:

1. new `fnlineno.sty` for numbering footnote lines + `\linelabel`, described in `fnlineno.pdf`
2. new overview `SRCFILES.txt`

(From README.txt -- KW) numline obsolete, mirror.ctan.org, fnlineno, amsmath compatibility, CHANGES.txt, lineno.tds.zip

CHANGES for lineno.sty v4.41 2005/11/02:

1. Loadable after amsmath.
2. Removed some nonsense from documentation.

CHANGES for lineno.sty v4.4 2005/10/27:  
[failed to be uploaded to CTAN, but distributed by mail]:

1. Proper effective line depth at end of paragraphs.  
The spacing bug was quite obvious in two-column mode when a paragraph end was at a column bottom.
2. Another bug concerning two-column mode that had been introduced in v4.22 has been removed again.
3. Support for `\addvspace` introduced more and more bugs in versions of v4.32 and v4.33. The reasons seem to be clear now, and v4.4 should be stable.

CHANGES for lineno.sty v4.32 2005/10/17:

1. Support for `\addvspace`  
(a math display or a list meets a heading -- or a sub-heading follows a heading -- or the like)
2. Clearly explained former option 'displaymath' and its change to a default.

CHANGES for lineno.sty v4.31 2005/10/01:

1. `\modulolinenumbers*` and a package option 'modulo\*' for printing first line number after interrupting editor's text, regardless of the modulo.
2. Improved explanation of `\firstlinenumber` and package options.

CHANGES for lineno.sty v4.3 2005/05/16:

1. Option 'displaymath' (proper numbering at paragraphs containing math displays) becomes default.
2. Compatibility with hyperref now indeed (at least much more).
3. Tidied up documentation: terrible confusion of \newcounter vs. \stepcounter; sections on the same matter written at different times; ...
4. Additional internal improvements that perhaps hardly are observable (no more spurious linenumbers in math displays from vertical mode; some compatibility with packages that use \holdinginserts; \linelabel in headings etc.).

CHANGES for lineno.sty v4.22 2005/05/09:

1. Restored "global" version of numbering lines of a \parbox or minipage or ... (I had missed and disabled this in taking over lineno.sty), explained in documentation (lineno.pdf/dvi subsec. 7.2).
2. Enabled \flushbottom in two-column pagewise or switching mode.
3. Re-implemented modulo mode -- disabling certain users' tricks see lineno.pdf sec. 5.5, also for a still supported substituting trick.
4. Tidied up setting the next line number globally vs. locally (TeXbook p. 301).
5. Tidied up discussions (in documentation) of possible changes in implementation.

CHANGES for lineno.sty v4.21 2005/04/28:

Removed serious flaws with math display, + something ...

CHANGES for lineno.sty v4.2 2005/04/26:

1. Re-enabled package option 'displaymath' (needed rearrangement

after sec. 5).

2. New package option ‘addpageno’ for adding page numbers to line number references -- see sec. 6.1 of `lineno.pdf`.
3. Improved support for `\includeonly` (and improved sec. 5.3, p. 27).
4. Improved compatibility with other packages that change `\output` (`tameflts.sty`, e.g., for saving footnotes against `\marginpar` and floats), added advice on this matter -- sec. 2.3, pp. 7, 14f.

CHANGES for `lineno.sty` v4.11 2005/03/08:

1. The ‘edtable’ option now supports math environments like ‘array’. This requires updating `edtable.sty` to v1.3. (The claim in previous versions of `edtable` on this support simply was wrong, sorry.) For how to make use of this support, we urge you to read the usage instructions in `edtable.sty` (v1.3). These have been extended very much, structured more clearly, and supplied with examples.
2. `\linelabel` now complains when appearing outside line numbering mode. This counters Stephan Boettcher’s original intention, but I generalize from my own experience that it is helpful to be told when you have forgotten to switch into line numbering mode and (e.g.) wonder why all the line number references are 1 ... `ednotes.sty` users profit as well (at least I expect and hope that anybody profits, which, to be sure, does not mean that I hope that anybody forgets to switch ...).
3. The subsection on ‘edtable’ in `lineno.sty/tex/pdf` was not quite correct or complete -- corrected, improved.
4. The final list of user commands in `lineno.sty/tex/pdf` has not been complete. This has not changed, but it is briefly explained what is missing and where it can be found.

CHANGE 2005/01/20:

We have devised macros for indexing with line numbers, yet we don’t take the time to release them officially. If you are interested, please ask via <http://contact-ednotes.sty.de.vu>

CHANGES for lineno.sty v4.1 2004/10/19:

Extension packages from the Ednotes bundle for enabling `\linelabel` in math mode and tabular environments are now handled through new package options ‘`mathrefs`’, ‘`edtable`’, ‘`longtable`’, and ‘`nolongtablepatch`’. Two of these extension packages moved from the ednotes folder to the lineno folder. `lineno.tex/pdf` has been updated accordingly. (From README.txt -- KW) minor fixes (removed ‘`supported/`’, e.g.); bracketed text; lines with ‘(UL)’; redistribution with README only.

CHANGES for lineno.sty v4.00 2004/09/03:

- o incorporated earlier extension packages `linenox0.sty`, `linenox1.sty`, `lnopatch.sty` (which belonged to the Ednotes bundle before);
- o adopted LaTeX Project Public License v1.3.

EARLIER CHANGES (From README.txt -- KW)

- 2004-10-19 UL: package options for tabular and math
- 2004-09-03 UL: merge Ednotes changes, taking over lineno.sty
- 2002 .. 2003 FMi, UL, SiB: bug fixes
- 2001-08-04 SiB: `linenomath` wrapping for `\[ \]`
- 2001-07-30 SiB: `[hyperref]` option obsolete.
- 2001-01-17 SiB: LaTeX class option `[twocolumn]` support
- 2001-01-04 SiB: LaTeX class option `[fleqn]` support
- 2000-12-18 SiB: `longtable` compatibility
- 2000-07-01 SiB: extra `\newlabel` items, `[hyperref]` option
- 2000-03-10 SiB: indirect call of `\output`, to work with `multicol`.
- 1999-08-28 SiB: fixed the footnote problem using `\holdinginserts`
- 1999-06-11 SiB: included the extensions into lineno.sty
- 1999-03-02 SiB: Added LPPL License

## 1.4 Source file infos: SRCFILES.txt

## 2 Tabular and array environments

`lineno.sty`'s package options `edtable`, `longtable`, and `nolongtablepatch` redefine L<sup>A</sup>T<sub>E</sub>X tabular and array environments such that `lineno` and `ednotes` commands can be used inside. The code for these options resides in separate files at present. We are listing them here.

### 2.1 `edtable.sty`

```
%% 'edtable.sty'---Uwe Lück, direction Christian Tapp.
%% LaTeX package for tables with line numbers and
%% editorial notes.
%%
%% Copyright (C) 2003-2005 Uwe Lück
%%
\def\fileversion{1.3c} \def\filedate{2005/10/03}
%%
%% This file can be redistributed and/or modified under
%% the terms of the LaTeX Project Public License; either
%% version 1.3 of the License, or any later version.
%% The latest version of this license is in
%%   http://www.latex-project.org/lppl.txt
%% We did our best to help you, but there is NO WARRANTY.
%%
%% Please send your comments via
%%
%%   https://github.com/latex-lineno/lineno
%%
%% * USAGE: *
%
% *Requirements/overview:*
%
% The package is made for the background of the LaTeX2e macro
% package and enhances functionality of the following packages:
% 1.) Stephan I. Böttcher's 'lineno.sty' for printing line
%     numbers in the margin and a \label version \linelabel
%     relating labels to line numbers;
% 2.) our 'ednotes.sty' for indicating variant readings and
%     other editorial remarks in separate footnote apparatuses;
% 3.) David Carlisle's 'longtable.sty' for multi-page tables.
%                                     %% TODO: supertabular etc.!?
% 4.) our 'ltabptch.sty' for a patch of 'longtable.sty'
%     (i.e., optionally, see below).
%
% Actually, only the first package is necessary for using the
% present one. The present one needs your line numbering commands
```



```

% according to the first one and its documentation to which we
% refer here. We likewise refer to the remaining packages for the
% details of their functionality.
%
% 'lineno.sty' version 4.1 and (in case it is used) 'ednotes.sty'
% version 0.8 (onwards) are needed. For obtaining recent versions
% of required packages, see the CTAN folder
%   /macros/latex/contrib/ednotes.
%
% *Install/load:*
% 1.) To be used, the present file must be put into a folder
%     that (La)TeX searches. You should have obtained a file
%     containing more detailed hints about this.
% 2.) We recommend loading this file not by
%     \usepackage[<options>]{edtable} but by loading 'lineno.sty'
%     or 'ednotes.sty' with package option 'edtable'.
% 3.) To use the package options 'longtable' and
%     'nolongtablepatch' that are described below, enter them
%     as options for 'lineno.sty' or 'ednotes.sty'.
%
% *User Commands:*
%
% 1. The package defines an environment 'edtable' -- for its
%    syntax we consider two cases:
% (a) Let <stdtable> be a tabular environment "like 'tabular'".
% "Like" here means: (i) we have tested it with 'tabular', but
% it should work with many more (e.g., from the 'array' and
% 'tabularx' packages) -- which share certain properties of
% implementation and requirements. Sorry, you must try, or we
% hope you will (and tell us). (For wizards: <stdtable> may
% probably be anything using a single \halign and \tabskip=Opt.)
% Definitively:
% (ii) LaTeX's standard 'array' and other environments are not
% "like" 'tabular'. Namely, environments that work only in math
% mode are not meant here. They are considered below in 'b.'.
% (iii) 'longtable' from the 'longtable' package of the 'tools'
% bundle neither is meant. An option of the present package
% deals with it as described below. Neither 'supertabular' is
% meant.
% (iv) In general, usage with tabular environments that can
% break across pages as in (iii) is not recommended, at least
% when working with 'ednotes.sty'. Even if some worked here, a
% shortcoming with 'ednotes.sty' would be that the footnotes can
% appear on bad pages.
% -- Now the syntax is:
%   \begin{edtable}{<stdtable>}<args><entries>\end{edtable}

```

```

% -- where <args> and <entries> are usual arguments and entries
% for <stdtable>. So an example is:
%   \begin{edtable}{tabular}{cc}
%       left upper & right upper \\ left lower & right lower
%   \end{edtable}
% This produces just what <stdtable> does in an extra line,
% only adding line numbers in the margin and processing 'ednotes'
% commands in the entries appropriately.
% (b) Let <stdarray> be an "array environment" like -- standard
% LaTeX's 'array'! "Like" here means (i) ... analogously to
% <stdtable> above. (ii) "Text" ... oh, sorry, this is not clear
% to me at present, and I am in a hurry.           %% TODO
% (iii) Nothing from the 'amsmath' package seems to work here,
% sorry, I have tried a lot ... (iv) For standard LaTeX's
% 'eqnarray', it is better to try the 'linenomath' environment
% of 'lineno.sty' [with package option 'mathlines']. Its
% modifications in 'amsmath' produce (at best) a spurious line
% number with the 'linenomath' environment (up to now).
% -- Now the syntax is:
%   \begin{edtable}[<$$$>]{<stdarray>}
%       <args><entries>\end{edtable}
% -- where <args> and <entries> are usual arguments and entries
% for <stdarray>. <$$$> can be one of '$' or '$$'. Indeed, the
% <stdtable> syntax above (without [<$$$>]) *does not work*
% inside $...$ or $$...$$$. -- An example:
%   \begin{edtable}[$$]{array}{cc}
%       a_{11} & a_{12} \\ a_{21} & a_{22}
%   \end{edtable}
% Now, this produces just what <stdarray> does in an extra line
% etc. as with <stdtable>. However, \linelabel and 'ednotes.sty'
% footnotes may need the 'mathrefs' option of 'lineno.sty'. For
% the difference between '$' and '$$', see below.
%
% 2. When working with 'ednotes.sty', in
%   \Anote{L1\<L2\>L3}{NOTE}
% L2 may contain &'s and \\'s, but L1, L3 must not! Analogously
% for \Bnote, etc., \Anotelabel...\donote..., etc. -- Well this
% holds for <stdtable>, hardly for <stdarray> ...           %% TODO
%
% 3. On positioning: You may have wondered about 'extra line'
% above. This means that 'edtable' starts a new line at
% \begin{edtable} and at \end{edtable}.           %% TODO: sure!?
% (a) It should be placed within a 'center', 'flushleft', or
% 'flushright' environment for proper (vertical) spacing, but
% also works without. However, with <stdarray> and optional
% parameter '$$' of 'edtable' (i.e., \begin{edtable}[$$]...),

```

```

% you can obtain the usual math display spacing *within a
% paragraph*; especially, the vertical space is less when the
% previous line is short ... and so on.
% (b) Horizontal positioning of line numbers (usually) needs a
% second run (after changing a table)! %% TODO: automatic warning.
% (For wizards: It may fail if some of \leftskip, \rightskip,
% \linewidth, and \@totalleftmargin are used in an unusual way.)
% A <dimen> register \ETextraoffset is provided whose value is
% Opt by default and which additionally moves line numbers
% to the left (right) if given a positive (negative) value.
%                                     %% TODO: any use?
%
% *Package options:*
%
% 1. Option 'longtable' adjusts the 'longtable' environment
% defined by David Carlisle's longtable.sty for use with
% 'lineno.sty' and 'ednotes.sty'. The option makes 'longtable'
% environments appear with line numbers in the margin, according
% to 'lineno.sty', and process 'ednotes.sty' commands if line
% numbering is active according to 'lineno.sty'.
% [We maintain an alternative package with just this function
% in a slightly different implementation.] %% -> ulnltab.sty.
% Lemmas may go across table entries as with 'edtable' (see above).
% ---There might be options like 'supertabular' for adjusting
% other tabular environments that cannot be handled by the
% 'edtable' environment provided here---they have not been
% implemented yet!                                     %% TODO
%
% 2. Option 'nolongtablepatch' avoids loading/asking for
% 'ltabptch.sty'. I.e.: according to LaTeX bugs database,
% tools/3180 and tools/3485, there have been problems with
% vertical spacing around 'longtable' environments. By default
% the present package loads our 'ltabptch.sty' or asks for it.
% Option 'nolongtablepatch' overrides this. This is useful when
% you don't want to have the patch, especially when you use an
% "emergency stop" installation of TeX.
%
% *Wizard interface:*
% Macros \ET@makeLineNumber, \ET@use@outerhook,
% \ET@execute@outerhook, \ET@ampnotes \ET@startlinewith,
% \ET@trivialize@linelabel are provided as tools for adjusting
% tabular environments for use with 'lineno.sty' and
% 'ednotes.sty'. \ET@step@linenumber is \let \stepLineNumber
% (from 'lineno.sty'), but could be used as a hook for
% something different. See Environment 'edtable' and Option
% 'longtable' below for examples of application.

```

```

%                                     %% TODO: specification here.
%
%
%% * Acknowledgements: *
%
% Stephan I. Böttcher told us how to do it in extensive discussion
% and by providing some first code lines. We changed these essentially
% in some respects, but kept his general ideas and some parts of his
% macros, the latter even without knowing what we are doing.
%
% v1.3 is due to a request by Martin Brandenburg.
%
% * Now for internals: *
%
\NeedsTeXFormat{LaTeX2e}[1994/12/01]
% 1994/12/01: \newenvironment* etc. %% TODO: more recent needed?
\ProvidesPackage{edtable}[\filedate\space v\fileversion\space
  arrays with lineno + ednotes (ul)]
%
% Alternative ideas for implementation:
% 1. There is a German package 'TABMAC' enhancing 'EDMAC' (cf.
% documentation of 'ednotes.sty'). We could have rewritten its
% macros so it would work with 'lineno.sty' and 'ednotes.sty'
% in place of 'EDMAC'. [TODO: "tabmac.sty"]
% 2. We redefine 'longtable' by Option 'longtable' because
% there seems to be only one reasonable use of the 'longtable'
% environment in the course of a critical edition. This may be
% different for environments like 'array' and 'tabular' which
% can be used within text lines. Therefore, these environments
% are not redefined.
% 3. One might use \everycr, however: (a) it is executed
% before the first row, (b) it is executed in fake lines that
% 'longtable' uses.
% 4. As an alternative to \everycr, there is the approach of
% redefining \cr and \crrc for setting \noalign. This needs
% redefining \@tabularcr etc.---not nice. We use this approach
% here for 'longtable' which uses a stretching \tabskip.
% For \tabskip=Opt, we attach line numbers by a template.
%
% \RequirePackage{lineno}[2004/10/06]
% Wanted to check lineno version--causes unknown option error.
% See LaTeX bug latex/3730.

% Options:

%% TODO: underful page with 'longtable.sty'!?
```

```

\let\if@ET@longtable\iffalse % \newif\if@ET@longtable@
\DeclareOption{longtable}{\let\if@ET@longtable\iftrue}
\let\if@ET@ltabptch\iftrue
\DeclareOption{nolongtablepatch}{\let\if@ET@ltabptch\iffalse}
\ProcessOptions

% Redefine \longtable if option:
\if@ET@longtable
  % Stephan's direction for attaching a line number to each row
  % is using \noalign in the course of \\.
  % However, (1) the user should not worry about closing the table
  % with \ or without, and (2) the line number thing should not
  % happen twice if \ is the last token before \end{longtable}.
  % Our solution: attach something to the beginning of \endlongtable
  % which attaches line number unless an unsucceded \ has done it.
  % This thing is activated by each row start and turned off by \.
  % Since the switch at row start may happen to be in a pbox,
  % let it act globally on \endlongtable. (The \crrc at the beginning
  % of \endlongtable must not be changed directly, since original
  % \crrc may be required in table entries using \oalign etc.)
  %
  \RequirePackage{longtable}%
  % \IfFileExists{longtable.sty}{\RequirePackage{longtable}}%
  % {\RequirePackage{longtable}}%
  % For Atari problem, it suffices to rename 'longtable.sty'
  % into 'longtabl.sty'.
  %
  % Patch for tools/3180 and tools/3485 of LaTeX bug database:
  \if@ET@ltabptch
    \IfFileExists{ltabptch.sty}{\RequirePackage{ltabptch}}{%
      \PackageError{edtable}{%
        ltabptch.sty (for improving spacing around\MessageBreak
        longtable) missing! Be sure to use it always\MessageBreak
        or never!%
      }{%
        To omit ltabptch.sty *and* escape this error,\MessageBreak
        use package option 'nolongtablepatch'.%
      }%
    }
  }
\fi
\let\@ET@longtable\longtable
\def\longtable{%
  \ifLineNumbers
    \expandafter\@ET@longtable
  \else
    \let\@ET@sw@cr\@ET@crrc % ... in \endlongtable.
  \fi

```

```

\expandafter\@ET@longtable
\fi
}
\def\@ET@longtable{%
% Since we have made it anyway, we use the method of redefining
% \halign for inserting the activating row start as well.
% However, redefinition must be repeated before every \LT@bchunk.
% \longtable and \LT@get@widths are good places for this.
\@ET@startlinewith\@ET@sw@cr@on
\@ET@trivialize@linelabel
\@ET@use@outerhook
\@ET@ampnotes
\let\LT@tabularcr\@ET@LT@tabularcr
\expandafter\def\expandafter\LT@get@widths\expandafter
{\LT@get@widths\@ET@startlinewith\@ET@sw@cr@on}
% Admittedly, we could make it less of a hack by using @{...}
% ---we could then leave \LT@get@widths untouched.
\@ET@longtable
}
\def\@ET@sw@cr@on{\global\let\@ET@sw@cr\@ET@cr@attach}
% We are hacking a longtable version offering
% \def\LT@tabularcr{%
% \relax\iffalse{\fi\ifnum0='}\fi
% \@ifstar
% {\def\crrcr{\LT@crrcr\noalign{\nobreak}}\let\cr\crrcr
% \LT@t@bularcr}%
% {\LT@t@bularcr}}
% We need a redefinition of \cr which is not overridden by \@ifstar:
\def\@ET@LT@tabularcr{%
\relax\iffalse{\fi\ifnum0='}\fi
\def\cr{\@ET@sw@cr}%
% So \crrcr is affected by change of \@ET@sw@cr, cf. below.
\let\crrcr\cr
\@ifstar
{\gdef\@ET@sw@nobreak{\nobreak
\global\let\@ET@sw@nobreak\relax}%
{\def\cr{\@ET@sw@cr\noalign{\nobreak}}\let\cr\crrcr
% Why didn't this work? %% TODO: try shorter again.
\LT@t@bularcr}%
\LT@t@bularcr
% {\let\cr\@ET@sw@cr \let\crrcr\cr
% \LT@t@bularcr}% This accompanied \def\cr... above.
}
% Attach \@ET@sw@cr to beginning of \endlongtable:
\expandafter\def\expandafter\endlongtable\expandafter
{\expandafter\@ET@sw@cr\endlongtable}

```

```

\def\@ET@cr@attach{% Actually attaching line numbers.
  \@ET@crcr\noalign{% Basically Stephan's approach.
% If we were not careful, following box containing line number
% could fool interline glue after longtable, even if tools/3485
% is repaired in some way. This box should have same depth as
% the line composed previously.
    \nobreak %% \@ET@ex... might cause page break. 2003/10/30.
    \setbox\z@\@ET@makeLineNumber
    \ht\z@-\prevdepth \dp\z@\prevdepth \box\z@
    \@ET@step@linenumber
    \global\let\@ET@sw@cr\@ET@crcr % ... if called by \\.
% This also resets the \crcr starting \LT@echunk following
% \@xargarraycr or \@yargarraycr in \LT@argtabularcr.
% \let...\relax seems to suffice at well, but in case ...
    \@ET@execute@outerhook %% 2003/10/30.
    \@ET@sw@nobreak
%    \@ET@execute@outerhook
  }%
}
\let\@ET@crcr\crcr
\global\let\@ET@sw@nobreak\relax % Just to remind ...
\fi

\let\@ET@step@linenumber\stepLineNumber
% \def\@ET@step@linenumber{\global\advance\c@linenumber\@ne}
\def\@ET@makeLineNumber{\hb@xt@\z@{\makeLineNumber}}
%% TODO: export to lineno.sty!?
% Special \halign:
% For 'array' etc., we insert line numbers by a leftmost template.
% @{...} in the last argument of 'array' etc. is difficult for this
% since 'tabular*' has an additional argument. So we redefine
% \halign to put something to the right of the next \bgroup.
% Now, as a macro, \halign would break in an \edef or \xdef.
% Horribly, this danger has become quite real in longtable.sty's
% definition of \LT@bchunk. Only its latest version 4.10 has
% preceded \halign by a \noexpand (for mathtext.sty which
% redefines \halign as well). We need not rely on such a
% provision if we let \halign expand to \the<token register>
% for some token register. However, using \toks@ or \@temptokena
% is neither very safe---might be filled by macro ahead with
% something new. So reserve an own token register.
\newtoks\@ET@toks
\@ET@toks{\@ET@specialhalign}
% v1.3: In 'AMSMath', there are \halign's followed by explicit
% left braces. Thus '\def\@ET@specialhalign#1\bgroup{' broke.
%% TODO ...

```

```

\def\@ET@specialhalign{%
  \ifmeasuring@ \expandafter\@firstoftwo
% v1.3 2005/03/04, for 'amsmath'.
  \else \expandafter\@secondoftwo
  \fi
  {\let\halign\@ET@@halign \halign}%
  {\@ifnextchar\bgroupp\@ET@replace@arg\@ET@sphalign@to}}
%% TODO: change back, commenting out code above, report
%% error with 'alignat'.
% \@ifnextchar\bgroupp\@ET@replace@arg\@ET@sphalign@to}
% If 'amsmath' not loaded (v1.3):
\AtBeginDocument{\@ifundefined{measuring@true}{%
  \let\ifmeasuring@\iffalse}\relax}
\def\@ET@replace@arg#1{%
  \def\@EN@tempa{#1}\def\@EN@tempb{\bgroupp}% Corr. after v1.3b.
  \ifx\@EN@tempa\@EN@tempb
    \def\@EN@tempa{\@ET@sphalign@to\bgroupp}%
  \else
    \def\@EN@tempa{\@ET@sphalign@to{#1}}%
% This may be wrong, #1 might be 't' from 'to' ...
  \fi
  \@EN@tempa}
\def\@ET@sphalign@to#1\bgroupp{%
  \let\halign\@ET@@halign % Reset for nested arrays.
  \halign#1\bgroupp
% \ifmeasuring@\else % For 'amsmath', moved backwards.
  \@ET@startline % [Wizard interface, via \@ET@starlinewith.]
% \fi
}
% Wizard interface:
\def\@ET@starlinewith{% Next token precedes preamble.
% \let\@ET@@halign\halign % Or \AtBeginDocument?
% ... indeed: bad loop with long longtable (\LT@get@widths!?)
  \def\halign{\the\@ET@toks}%
  \let\@ET@startline
}
\AtBeginDocument{\let\@ET@@halign\halign}
% Or save it at start of environment only
% (don't repeat inside longtable).
%
% Outer hook for inserts: (wizard interface)
\def\@ET@execute@outerhook{% To be placed outside inner mode.
  \@ET@outerhook \global\let\@ET@outerhook\@empty
}
\global\let\@ET@outerhook\@empty % Just to remind: global!
% \@EN@hookfn (ednotes) sends to outer hook:

```



```

\def\@ET@use@outerhook{% Wizard interface.
  \def\@EN@hookfn{\g@addto@macro\@ET@outerhook}%
}%% TODO: move last line to 'ednotes', \let\@ET@use...\@empty.
%%      But this requires re-installing both packages
%%      at the same time. See the 'ampnotes' thing as well.
%
% Trivialize \linelabel: (wizard interface)
\def\@ET@trivialize@linelabel{\let\linelabel\@ET@linelabel}
\def\@ET@linelabel{%
  \protected@edef\@currentlabel{\theLineNumber}%
  \label
}
% Change ampersand at \Anote etc.: (wizard interface)
%% 2003/10/31.
% & is changed by \Anote etc. No \begin...\endgroup,
% next \\ or & after % note/donote command switches back.
% ---Global change seems to break table setup.
\begingroup
\gdef\@ET@hideamps{\catcode'\&\active}
\@ET@hideamps
\gdef\@ET@ampnotes{%
  \let&\@ET@hideamp
  %% & would be undefined after \\ in lemma.
  \let\@ET@EN@rnote\@EN@note
  \def\@EN@note{\@ET@hideamps\@ET@EN@rnote}%
  \let\@ET@EN@notelb\@EN@notelabel
  \def\@EN@notelabel{\@ET@hideamps\@ET@EN@notelb}%
}
%% TODO: & and \\ in \@EN@lemmaexpands!?
\endgroup
\def\@ET@hideamp{&}

\newenvironment*{edtable}[2][\{%
% #1 $ or $$, #2 standard environment name.
%% TODO: star version!? cf. lineno.sty's 'numquote'.
  \def\@ET@mode{#1}%
  \def\@ET@currenvir{#2}%
  \ifhmode \ifnum\the\lastpenalty=-\@M\else
% \par must be executed for printing/stopping line numbers:
  \centercr\relax \noindent
  \fi \fi
  \ifvmode \noindent \fi % Otherwise linewidths are indented
% -- however, not recommended.
  \@ET@use@outerhook
  \@ET@trivialize@linelabel
  \@ET@ampnotes

```

```

\ET@startlinewith\ET@normal@startline
\global\advance\c@linenumber\m@ne % Stepping correction.
% (Must come after closing previous paragraph.)
% Calculate offset:
\global\advance\c@ET@array\@ne
% Saving/calling width of table ('longtable's algorithm).
% Test if there is \@flushglue on the left (center or flushleft):
\edef\@EN@tempa{\the\@flushglue}%
% ... v1.3: fool this for "$$.
\in@{${$}{#1\@nil}}% \in@{#1}{#2} searches #1 in #2#1 ...
\edef\@EN@tempb{\the\ifin@\@flushglue\else\leftskip\fi}%
\ifx\@EN@tempa\@EN@tempb
% Assume \ET@offset is Opt else here.
\ET@offset\linewidth
\advance\ET@offset-%
\ifundefined\ET@arraywidth@csn % Shortened for v1.3.
{\linewidth\G@refundefinedtrue
\PackageWarningNoLine{edtab}{^^JLine numbers at
\ET@currenvir\space need \jobname.aux}}%
{\csname\ET@arraywidth@csn\endcsname}%
% Test if \@flushglue on the right (center):
% ... v1.3: fool it again. Repeat \in@ in case ...
\in@{${$}{#1\@nil}}%
\edef\@EN@tempb{\the\ifin@\@flushglue\else\rightskip\fi}%
\ifx\@EN@tempa\@EN@tempb \divide\ET@offset\tw@ \fi
\fi
\advance\ET@offset\@totalleftmargin
\advance\ET@offset\ET@extraoffset % Offset ready.
\setbox\@tempboxa\hbox\bgroup
% v1.3: 'alignat' complains later when this is \vbox instead.
% \vbox\bgroup % Tried in vain.
\ifx\ET@mode\@empty\else $\fi
\csname#2\endcsname
}{%
\csname end\ET@currenvir \endcsname
\ifx\ET@mode\@empty\else $\fi
\egroup
\ET@step@linenumber % Stepping correction.
\if@filesw
\immediate\write\@auxout{%
\gdef\expandafter\noexpand
\csname\ET@arraywidth@csn\endcsname
{\the\wd\@tempboxa}}%
%% TODO: warning if changed!?
\fi
% No automatic line number at array line:

```

```

\nolinelnumbers
\@ET@mode\ensuremath{\vcenter{\box\@tempboxa}}\@ET@mode % v1.3.
\@ET@execute@outerhook
\ifhmode \@centercr\relax \fi
% \par must be executed for proper restart of printing line numbers
% (think so).
\@endpetrue % Outside \@flushglue environment, avoid indent ahead.
%% TODO: slightly change for math mode around? Or give an error
%%      in math mode.
}
%% TODO: make \edtable \outer!?
\def\@ET@normal@startline{%
  \@ET@step@linenumber
  \llap{\@ET@makeLineNumber \hskip\@ET@offset}%
}
\newdimen\@ET@offset
\newdimen\ETextraoffset
%% TODO: export to lineno.sty!?
\newcount\c@ET@array
\def\@ET@arraywidth@csn{ET@a@\romannumeral\c@ET@array}
%
%% TODO: .dtx
\endinput

%% VERSION HISTORY:
v0.22 2003/01/13 First version, named 'edtab02.sty', sent around,
                together with ednotes.sty.
v0.23 2003/01/22 Added version history.
v0.24 2003/01/27 Copyright notice.
%% v0.3 2003/03/03 Requires linenox0.sty. %% RETREATED
%% TODO: reconsider, see 'lineno[x].sty'.
v0.25 2003/03/05 Added <ednotes.sty@web.de>.
v0.26 2003/03/23 Added \@ET@startlinewith to wizard command list;
                moved redefinition \LT@get@widths from option code
                into \@ET@longtable so this really happens in
                line number mode only; moved \let\@ET@@halign\halign
                from \@ET@startlinewith to \AtBeginDocument.
v0.27 2003/06/02 Added \ifvmode \noindent \fi to 'edtable' definition;
                2003/06/10 added 'lemma cannot run' to instructions.
v0.28 2003/10/31 \@ET@cr@attach: moved \@ET@execu..., added \nobreak.
                Added \@ET@ampnotes and documentation: now working
                across entries.
v1.0 2004/05/13 'ednotes.sty' etc., updated copyright. Renamed as
                'edtable.sty' for TUGboat article.
                \RequirePackage{lineno}, changed doc. accordingly.
                Removed 'may be released under different name'.

```

v1.10 2004/07/27 Looking for 'longtabl.sty' for my Atari!  
 2004/08/22 Added warning (screen/documentation) concerning  
 ltabptch.sty.  
 2004/08/23 Added suggestion of option 'nolongtablepatch';  
 LPPL v1.3.

v1.2 2004/08/31 Rearranged preamble concerning maintenance,  
 removed 'preliminary release'.  
 2004/10/06 \newif -> \let...; option 'nolongtablepatch';  
 changed documentation accordingly and for  
 loading edtable.sty by lineno/ednotes option;  
 \let\@ET@step@linenumber\stepLineNumber; use  
 \ifLineNumbers.  
 2004/10/07 Needed version numbers.  
 2004/10/08 ltabptch warning -> error!  
 2004/10/11 Disabled \RequirePackage{lineno}[...]; undid  
 the 'longtabl.sty' thing from 2004/07/27.  
 2004/10/12 latex/3730.

v1.2a 2004/11/07 LPPL v1.3a.

v1.2b 2005/01/10 Contact via http.

v1.3b 2005/03/04 Support for environments like 'array'  
 environment. The description of 'edtable' was  
 wrong in this respect!

v1.3 2005/03/07 Adaptations in documentation, and extended usage  
 instructions very much, correcting some  
 errors as well. Acknowledgement to M. B.

v1.3a 2005/03/09 Corrected numbering in 'usage'.

v1.3c 2005/03/15 \@centercr\relax, TODO on math mode.  
 2005/04/09 'editorial' -> 'editorial'.

## 2.2 ltabptch.sty

```
%% LTabPtch.sty---Uwe L"uck---patch for Longtable.
\def\filedate{2005/01/10} \def\fileversion{1.74d}
%% For David Carlisle's Longtable.sty, version 4.11
%% Fixes tools/3180 (Sebastian Rahtz) and tools/3485:
%% missing/wrong interline glues above/below table.
%%
%% Copyright (C) 2002--2004 Uwe L"uck,
%% http://www.contact-ednotes.sty.de.vu
%% --author-maintained.
%%
%% Usage, no warranty, distribution as in lppl.txt on CTAN
%% (macros/latex/base/lppl.txt).
%%
%% Loading Longtable.sty with options must be done earlier!
%%
```

```

\NeedsTeXFormat{LaTeX2e}[1994/05/20] % \CheckCommand
\ProvidesPackage{ltabptch}[\filedate\space v\fileversion\space
  Longtable patch for tools/3180, 3485 (ul)]
%
% The problem(s):
% Sebastian Rahtz (tools/3180) observed 2000/03/05 that there be
% a "spurious blank line" below the longtable. This impression
% may have been due to two spacing problems:
% (1) There is \parskip and some interline glue below longtable,
% while there is no \parskip and no interline glue above
% (without head as specified by \endhead or \firstendhead)
% or just \lineskip 0.0pt (with head---\endhead, \endfirsthead).
% (2) After longtable, \prevdepth is the depth of the last line
% before the longtable (if there is no head) or the depth of the
% head (otherwise). So \prevdepth may be 0pt. By contrast, the
% last table row has depth of at least \dp\@arstrutbox--which
% should rather matter, and this is 3.6pt or more.
% --I have reported something like this as tools/3485, not
% entirely correctly. Details are presented below \endinput.
%
% Solution presented:
% (1) I think there should be \parskip and usual interline glue
% above, since the same would happen with a table in a center
% environment (e.g.).
% \noindent seems to work fatally; moreover, \LT@start's decision
% whether to enter a new page would ignore \parskip and interline
% glue still needed.
% So emulate interline glue calculation according to TeXbook p. 80
% and add it by \vskip, along with \parskip.
% (This is rather a hack---a proper correction should perhaps not
% "emulate" but place the interlineglue changes of \LT@array inside
% the \vbox \LT@bchunk starts and treat glue between chunks in a
% new way.)
% (2) Set \prevdepth to depth of box 0 before the latter is
% \unvbox'ed (which leaves \prevdepth untouched, TeXbook p. 282)
% in \endlongtable.
%
% I thought David Carlisle would change Longtable according to my
% suggestions. By e-mail from 2003/04/07 however, he finds it
% better not to change Longtable, in order not to change layouts
% of works that have been made using Longtable so far
% (e-Mail 2003/04/08).
%
%% <- TODO: change this when David has changed his mind!
% By the way:
% 1.) There are two successive lines in the Longtable code (v4.11)

```

```

%      together saying:
%      \prevdepth\z@\global
%      \global\let\LT@setprevdepth\relax
%      Isn't the first \global just a typo?
%      --Yes--this is David Carlisle's answer in his e-mail
%      dating from 2004/05/14.
% 2.) Couldn't the one-column restriction easily be removed
%      by using \columnwidth instead of \hsize?
%
% Patching is to override Longtable.sty:
\RequirePackage{longtable}[2004/02/01]
%% TODO: Cf. \CheckCommand below.
% Load earlier on your own for choosing Longtable options!
%
% For (1), we are patching \LT@start, assumed to have been defined
% as follows (Longtable v4.11; sorry we can no longer handle v3.16
% through 4.10):

\CheckCommand*{\LT@start}{%
  \let\LT@start\endgraf
  \endgraf\penalty\z@\vskip\LTpre
  \dimen@ \pagetotal
  \advance\dimen@ \ht\ifvoid\LT@firsthead\LT@head\else\LT@firsthead\fi
  \advance\dimen@ \dp\ifvoid\LT@firsthead\LT@head\else\LT@firsthead\fi
  \advance\dimen@ \ht\LT@foot
  \dimen@ii\vfuzz
  \vfuzz\maxdimen
  \setbox\tw@\copy\z@
  \setbox\tw@\vsplit\tw@ to \ht\@arstrutbox
  \setbox\tw@\vbox{\unvbox\tw@}%
  \vfuzz\dimen@ii
  \advance\dimen@ \ht
    \ifdim\ht\@arstrutbox>\ht\tw@\@arstrutbox\else\tw@\fi
  \advance\dimen@\dp
    \ifdim\dp\@arstrutbox>\dp\tw@\@arstrutbox\else\tw@\fi
  \advance\dimen@ -\pagegoal
  \ifdim \dimen@>\z@\vfil\break\fi
    \global\@colroom\@colht
  \ifvoid\LT@foot\else
    \advance\vsizel-\ht\LT@foot
    \global\advance\@colroom-\ht\LT@foot
    \dimen@\pagegoal\advance\dimen@-\ht\LT@foot\pagegoal\dimen@
    \maxdepth\z@
  \fi
  \ifvoid\LT@firsthead\copy\LT@head\else\box\LT@firsthead\fi\nobreak
%% \nobreak new with Longtable v4.11.

```

```

\output{\LT@output}}
%
% Change it:
\def\LT@start{%
  \let\LT@start\endgraf
  \endgraf\penalty\z@\vskip\LTpre
  \vskip\parskip %% U.L.
  % I want to add the interline glue before \pagetotal goes to \dimen@.
  % So I move \LT@start's \vsplit here.
  %% U.L. start:
  \dimen@ii\vfuzz
  \vfuzz\maxdimen
  \setbox\tw@\copy\z@
  \setbox\tw@\vsplit\tw@ to \ht\@arstrutbox
  \setbox\tw@\vbox{\unvbox\tw@}%
  \vfuzz\dimen@ii
  \ifdim\prevdepth>-\@m\p@
  % First we need the maximum of the heights of \tw@ and head row.
  % A little flaw might be here: I am ignoring \LT@start's
  % \@arstrutbox concern below, cf. remark there.
  \@tempkipa % \normalbaselineskip going to enter.
  \ht\ifvoid\LT@firsthead\LT@head\else\LT@firsthead\fi
  % \typeout{\@tempkipa=\the\@tempkipa}% TEST
  \@tempkipa-\ifdim\@tempkipa<\ht\tw@\ht\tw@\else\@tempkipa\fi
  % \typeout{\@tempkipa=\the\@tempkipa}% TEST
  \advance\@tempkipa-\prevdepth
  % \typeout{\string\prevdepth=\prevdepth}% TEST
  % \typeout{\@tempkipa=\the\@tempkipa}% TEST
  \advance\@tempkipa\normalbaselineskip
  % \typeout{\normallineskiplimit=\the\normallineskiplimit}% TEST
  % \typeout{\@tempkipa=\the\@tempkipa}% TEST
  \vskip \ifdim\@tempkipa<\normallineskiplimit
    \normallineskip
  \else
    \@tempkipa
  \fi
  \fi
  \nointerlineskip % v1.4 prevent head from adding more
  % (if only negative) glue.
  % \prevdepth -1000\p@ % Prevent head from adding more glue (v1.3).
  %% U.L. end.
  \dimen@\pagetotal
  \advance\dimen@ \ht\ifvoid\LT@firsthead\LT@head\else\LT@firsthead\fi
  \advance\dimen@ \dp\ifvoid\LT@firsthead\LT@head\else\LT@firsthead\fi
  \advance\dimen@ \ht\LT@foot
  % \dimen@ii\vfuzz

```

```

% \vfuzz\maxdimen
% \setbox\tw@\copy\z@
% \setbox\tw@\vsplit\tw@ to \ht\@arstrutbox
% \setbox\tw@\vbox{\unvbox\tw@}%
% \vfuzz\dimen@ii
%
% Remark U.L.: The following four code lines seem strange to me:
% after all, \tw@ contains \@arstrutbox, doesn't it?
% And even if not: why should we need room for another \@arstrutbox?
\advance\dimen@ \ht
\ifdim\ht\@arstrutbox>\ht\tw@\@arstrutbox\else\tw@\fi
\advance\dimen@\dp
\ifdim\dp\@arstrutbox>\dp\tw@\@arstrutbox\else\tw@\fi
\advance\dimen@ -\pagegoal
\ifdim \dimen@>\z@\vfil\break\fi
\global\@colroom\@colht
\ifvoid\LT@foot\else
\advance\vsizel-\ht\LT@foot
\global\advance\@colroom-\ht\LT@foot
\dimen@\pagegoal\advance\dimen@-\ht\LT@foot\pagegoal\dimen@
\maxdepth\z@
\fi
\ifvoid\LT@firsthead\copy\LT@head\else\box\LT@firsthead\fi\nobreak
%% \nobreak new with Longtable 4.11.
\output{\LT@output}}
%
%
% For (2), we are patching \endlongtable:
% The patch should not change essentials of \endlongtable
% which may have changed when this patch meets longtable.
% We just assume that the final contribution to the main vertical
% list is done by \unvbox0 which is preceded by \LT@start.
% \prevdepth\dp0 can be put in between, it will then
% last till the end (TeXbook pp. 282, 277f.).
\def\@tempa#1\LT@start{#1\LT@start \prevdepth\dp\z@}
\expandafter\expandafter\expandafter \def
\expandafter\expandafter\expandafter \endlongtable
\expandafter\expandafter\expandafter
{\expandafter\@tempa\endlongtable}
%
\endinput

```

## DETAILED DIAGNOSIS:

Concerning the question of "bugs" vs. "features", you might reason what features should be aimed at.



%% TODO: This can be shortened when David agrees.

(A) If there is `\parskip` below a `longtable`, there should be `\parskip` above as well--shouldn't it?

(B) Interline glue above should (in general) depend on the same values of `\baselineskip` and `\lineskip` as below---OK?

(C) Interline glue below a `longtable` should depend on the depth of the last row, not on the depth of the head or of the last line above the `longtable`--OK?

The recent versions of `longtable.sty` have not satisfied any of these three demands.

Concerning (A), `\parskip` appears below the `longtable`, but not above.

Concerning (B), (i) no interline glue appears above if there is no head, (ii) otherwise, only zero interline glue appears.

Concerning (C), the interline glue below the `longtable` is calculated using the depth of (i) the last line above the `longtable` as `\prevdepth` when there is no head or of (ii) the head otherwise. (Thus I was wrong earlier when I claimed that `\prevdepth` were `Opt` after `longtable`. This only holds in the previous case (i) when the last line above the `longtable` has zero depth.)

You can observe this by playing with the demonstration file `ltabptch.tex` in CTAN folder `macros/latex/contrib/ltabptch`.

Reasons: For contributing a head to the main vertical list, `longtable` uses `\copy` or `\box`, which yields a `<box>` according to TeXbook p. 278. Rows are contributed by `\unvbox`. Now, violation of (A) is due to the fact that neither `\copy` or `\box` of the head nor the `\unvbox` for table rows leads to execution of an `\indent` or `\noindent` (TeXbook pp. 282f., see also `<horizontal command>`).

Violation of (B) is due either to (i) the fact that `\unvbox` is no `<box>` (TeXbook p. 282/278) or to (ii) the fact that at `\copy` or `\box` `\baselineskip` and `\lineskip` are `Opt`.

Violation of (C) is due to the fact that `\unvbox` does not change `\prevdepth` (TeXbook p. 282).

As to recognizable effects:

Violation of (A), of course, has very little effect in general since `\parskip` is `Opt` plus `1pt` usually. This is hardly recognizable in the presence of the `\bigskipamount` above and below a `longtable`.

Violation of (B) results in missing appropriate interline glue above, which often should be 3.6pt or more. This may rather be recognizable and may contribute to the impression that there even is a spurious blank line below the longtable (this is what Sebastion Rahtz reported in tools/3180).

For the previous as well as for the details and the effects of violation of (C), consider the algorithm for calculating interline glue on p. 80 of the TeXbook. If there is no head, and the depth of the last line before the longtable is 0pt, the interline glue below the longtable is `\baselineskip` minus the height of the first line after the longtable. The interline glue *should be* `\baselineskip` minus height of following line *minus* depth of last table row--if this depth is not too large (depending on `\lineskiplimit`). This depth is at least 3.6pt. So the interline glue is often by 3.6pt or more greater than is appropriate. Considering the missing interline glue above the longtable and the `\parskip` below, the glue after the longtable is by 6.2pt (or more) plus 1pt larger than the glue before. Due to the shrink component of the surrounding `\bigskipamount`, the glue following the longtable may be nearly twice as large as the glue before. ---Usually, violation of (C) has no effect at all. Namely, there is a head usually, and its depth is usually the same as the depth of the last row, namely `\dp\@arstrutbox`.

#### %% VERSION HISTORY:

```
v1.7  2003/01/07 Sent around 2003/01/13 with first release of
           ednotes.sty. Sent to David Carlisle. Earlier versions
           were sent to Frank Mittelbach and the team.

v1.71 2003/01/22 Added version history.
v1.72 2003/01/27 Changed copyright notice.
v1.73 2004/05/13 Adapted to Longtable v4.11; new copyright;
           longtable -> Longtable (selectively).
           Added 'I have ... 3485'.

v1.74 2004/08/05 Added '---Yes---...'.
           2004/08/21 Typo fix for 'problem'; added report on 2003/04/08.
           2004/08/23 Corrected and extended diagnosis, sent to CTAN.
v1.74b .../08/23 '---' -> '--'; added that (C) usually doesn't
           matter.
v1.74c .../08/31 'author-maintained'.
v1.74d 2005/01/10 Contact via http.
```

### 3 \linelabel and notes from *math* mode: ednmath0.sty

```

%% Macro package 'ednmath0.sty' for LaTeX2e,
%% copyright (C) 2004 Uwe Lück
%% math support for 'lineno.sty' and 'ednotes.sty'.
%%
\def\fileversion{v0.2b} \def\filedate{2005/01/10}
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%% There is NO WARRANTY.
%% This code is very EXPERIMENTAL!
%%
%% Please report bugs, problems, and suggestions via
%%
%% https://github.com/latex-lineno/lineno
%
%% * MAIN FEATURE *
%
% lineno.sty's \linelabel and ednotes.sty's commands are enabled
% to work in math mode if it's "entered in outer mode"
% (including 'displaymath' and 'equation' environments).
% (lineno.sty is the package by Stephan Boettcher.)
% They will even work in tabular environments that are adjusted
% to notes by package 'edtable.sty'.
%
% CAVEATS:
% -- Does not work yet in environments like LaTeX's
% 'eqnarray'. (This could probably be repaired along the lines
% of Edtable.sty--we're short of time and will try later.)
% -- Useful error messages when (i) math mode is entered from
% inner mode or when (ii) a math display gets not line number
% are missing at present.
%
%% * USAGE: *
%
% * Most simple: *
% --If you are working with ednotes and want to use its
% commands in math mode, load ednotes.sty--version 0.8
% onwards--with its package option 'mathnotes'.
% --If you don't work with ednotes, only with lineno, you

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% get the main feature of making \linelabel work in math mode
% by loading lineno.sty--version 4.1 onwards--with its
% package option 'mathrefs'.
%
% * Switch off and on: *
% To reduce danger resulting from missing error messages
% ("caveat" above), you may switch these new math facilities
% off by \NoNotesToMath where you don't expect to need them.
% You may switch them on again by \NotesToMath where you want
% to use them, being aware of the danger. Both commands work
% locally, so you can replace one of them by enclosing it in
% a group. E.g., even, after \NoNotesToMath you can use an
% environment as follows:
%   \begin{NotesToMath}
%     <text>
%   \end{NotesToMath}
% (I am not quite sure that this is useful.)
%
% * Customize ellipsis: *
% ednotes' \lemmaellipsis is changed to expand to
% \mathlemmaellipsis when entering math, and this is preset
% to be LaTeX's \mathellipsis. (This is three dots as
% \mathinner.) You can change this by redefining
% \mathlemmaellipsis, e.g.:
%   \renewcommand{\mathlemmaellipsis}{\cdots}
% If you need \cdots as the ellipsis at a single place only,
% you may, of course, use the '<...>' option of \<, e.g.:
%   $ x = \Anote{a\<\cdots bcd\>e}{Indeed?} - y $
%
% * Customize note mode: *
% For variant readings, you may want that the note is
% usually set in math mode--so you may want that you
% needn't type the dollar signs in the note text.
% Note that you can do this by customizing \notefmt,
% and you can do this by customizing \Anotefmt (e.g.)
% to have this feature for \Anote only.
%
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{ednmath0}[\filedate\space\fileversion\space
  math support for lineno/ednotes (ul)]
%
%% User commands:
\def\NotesToMath{\let\LN@mathhook\LN@labelinmath
  \@bsphack \@esphack
% For \begin{NotesToMath}

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}
\def\NoNotesToMath{\@bsphack
  \def\LN@mathhook{\@parmoderr\@gobble}%
  \@esphack
}
\def\endNotesToMath{\@bsphack\@Esphack}
\let\endNoNotesToMath\endNotesToMath
%
%% Core code for lineno.sty:
\@ifundefined{LN@postlabel}{%
  \PackageError{ednmath0}{%
    Bad lineno.sty version%
  }{%
    lineno.sty from 2004/08/16 or later
    must be loaded earlier.%
  }%
}%
\def\LN@labelinmath#1{%
  \ifmmode
    \LN@postlabel{#1}%
  \else
    \@parmoderr
  \fi
}
}
%
%% Core code for ednotes.sty:
\@ifundefined{EN@note}{%
% v0.01 sent a warning in this case. Considered superfluous now.
}%
\def\EN@themathlemmatag{%
  \ifmmode
    \toks@{\expandafter{\@EN@lemmatag}%
    \edef\EN@lemmatag{%
      $%
      \def\noexpand\lemmaellipsis{%
        \noexpand\mathlemmaellipsis}%
      \the\toks@
      $%
    }%
  \else
    \expandafter \def \expandafter \@EN@lemmatag
    \expandafter {\expandafter $\expandafter
    \def \expandafter \lemmaellipsis \expandafter {%
      \expandafter \mathlemmaellipsis \expandafter }%
    \@EN@lemmatag $}%
  \fi
}

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}
% To be sure, \lemmaellipsis doesn't need to be changed when
% ednotes '\<...\>' feature is not used. Though I prefer to
% use one hook only in ednotes for both situations, with and
% without '\<...\>'.
%
% The final \unskip in ednotes' \@EN@lemmatag would undo a final
% \quad. That's OK: outside math the same happens.
% In v0.01, \NoNotesToMath undid ednotes changes for math mode.
% However, re-appearance of \linelabel error messages suffices.
%
% Now add lemma switch to the left of \[No]NotesToMath:
\toks@ \expandafter {\NotesToMath}
\edef \NotesToMath {%
  \let \noexpand \@EN@mathlemmatag \noexpand \@EN@themathlemmatag
  \the \toks@
}
% \typeout {\string \NotesToMath: \meaning \NotesToMath}
\toks@ \expandafter {\NoNotesToMath}
\edef \NoNotesToMath {%
  \let \noexpand \@EN@mathlemmatag \relax
  \the \toks@
}
% \typeout {\string \NoNotesToMath: \meaning \NoNotesToMath}
}
% We need no extra device for a choice for users whether the *note*
% should be set in math mode or in horizontal mode by default
% (which might depend on the kind ["layer"] of notes).
% This can be done already by customization of ednotes' \notefmt.
% However, we might change ednotes' default \notefmt to default
% \renewcommand*{\notefmt}[1]{$\#1$}
%
\let \mathlemmaellipsis \mathellipsis
%% TODO: Since when has LaTeX provided \mathellipsis?
%% -> \Needs...
%
% Default:
\NotesToMath
%
\endinput

%% TODO: Without \linenumberdisplaymath, in displaymath,
%% an error should be shown. Use, e.g., that in a displaymath
%% \ifinner is false.
%% TODO: E.g., by changing \everymath, perhaps can be warned
%% that the math group is in a box already, so the vertical

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%% items will get lost.
%% TODO: Adjust 'eqnarray' (in Edtable?) as well.

%% VERSION HISTORY:
v0.01 2004/08/16 First version, sent to Christian.
v0.02 2004/08/16 Considerably simplified for ednotes.
        2004/08/19 Added ellipsis stuff, documentation, and
        instructions. Uncapitalized package names.
        Added \end[No]NotesToMath.
        2004/08/20 Added \@bsphack and \@esphack; corrected
        ednotes extension (too much deleted, completely
        wrong), introducing \@EN@themathlemmatag.
v0.02b .../08/31 Rearranged preamble concerning maintenance.
v0.1 2004/09/20 Removed mentions of 'linenox0.sty'.
v0.2 2004/10/07 Removed another mention of 'linenox0.sty';
        Instructions: 'lineno' or 'ednotes.sty' option.
v0.2a 2004/11/07 LPPL v1.3a.
v0.2b 2005/01/10 Contact via http.

```

## 4 Extended line number references: *vplref.sty*

*vplref.sty* is input through the *lineno* package option `addpageno`. This adds page numbers to line number references to distant sides—using the *varioref* package from the L<sup>A</sup>T<sub>E</sub>X distribution.

```

%% 'vplref.sty'
%% -- extended line number referencing with linenos.sty.

\def\filedate{2005/04/25} \def\fileversion{0.2a}

%% Copyright (C) 2004, 2005 Uwe Lück
%% -- support of linenos.sty for varioref.sty.

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%% USAGE:
%
% \vpagelineref{<label>} expands to
%
% a) \ref{<label>}
%    -- if on same page as \linelabel{<label>}

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%
% b) \LineWithPage{<label>} -- otherwise.
%
% \LineWithPage{<label>} expands -- by default -- to
%
% \pageref{<label>}. \ref{<label>}
%
% This can be customized by editing
%
% \renewcommand*{\LineWithPage}[1]{\pageref{#1}. \ref{#1}}
%
% in your document preamble, after vplref.sty has been loaded
% (which may have happened through lineno.sty with option
% 'addpageno').

%% IMPLEMENTATION:

\NeedsTeXFormat{LaTeX2e}[1994/12/01] %% \Declare...*
\ProvidesPackage{vplref}[\filedate\space v\fileversion \space
    page-line cross-refs] %% UL 2011/02/13

\AtBeginDocument{\RequirePackage{lineno,varioref}}

%% Anderer Ansatz: GPNo (\FirstOnPage)

\DeclareRobustCommand*{vpagelineref}[1]{\{
% \def\reftextcurrent{\lineref{#1}}%% First vpageref arg.
\let\reftextfaraway\LineWithPage
\def\reftextafter{\reftextfaraway{#1}}%
\let\reftextbefore\reftextafter
\let\reftextfaceafter\reftextafter
\let\reftextfacebefore\reftextafter
%% <- Looks somewhat stupid, but varioref.sty has its merits
%% as compared with the mechanism in ednotes.sty.
\pageref[\ref{#1}][\{#1}%% The robust alternative.
%% Here and with \LineWithPage, \lineref seems more appropriate
%% than \ref, but it produces errors when labels have not been
%% defined. This seems to be an incompatibility with lineno.sty.
}}

%% Customizable format for different page:
\newcommand*{\LineWithPage}[1]{\pageref{#1}. \ref{#1}}

\endinput

VERSION HISTORY:

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v0.1	2004/10/19	First, sent to Sergei Mariev.
v0.11	2004/10/19	Fit to recent varioref version; sent to Sergei.
v0.2	2005/04/25	\Require... \AtBeginDocument.
v0.2a	2011/02/13	add. caption to \ProvidesPackage