Publishing with \LaTeX

Could your next report, white paper, article, book, paper, review, or essay benefit from using \LaTeX? Do you wish to be able to exchange documents with colleagues using other types of computer, without loss of formatting?

- Default styles give you immediate, automatic draft formatting for common types of documents.
- Powerful automation features handle cross-references, bibliographic citations, tables of contents, indexes, and glossaries with ease.
- Automated formatting of formulae, designed by one of the world’s leading computer scientists.
- Industry-standard Acrobat (PDF) and PostScript output.
- Open in Source and cross-platform portable.
- Easily supported via the Internet, with user groups in many countries, and by business-level consultants and vendors.
- Huge range of fonts and languages supported, with floating and fixed accents, hyphenation, and language-based typographic rules.
- Journal and book style files available from leading publishers.
- Available on almost all platforms: PDAs, smartphones, and tablets; laptops and desktops; minicomputers, mainframes, and supercomputers.
- Completely portable between systems — document files are all plain Unicode and can be edited and processed on any supported platform.

Mathematics

Automated mathematical formatting uses a symbolic notation, regardless of complexity. Spacing and sizing is done to mathematicians’ standards, so that:

\[ E(n_{g+1}'|n_i',n_i'';1 \leq i \leq g)=(N'N_g')\left[1-\left\{\left(1-\frac{c}{cN'+N''}\right)^{n_g'd}\left(1-\frac{c}{cN''+N'}\right)^{n_g''d}\right\}\right] \]


Typefaces

Whether you’re using Windows or Unix (including Apple Mac OS X and GNU/Linux systems), standard \LaTeX works with any type 1 outline (PostScript) or Type 3 bitmap (METAFONT). Using the \texttt{xpg4} processor (included on the DVD), you can also use all your TrueType and OpenType fonts. This gives you access to tens of thousands of typefaces, both free and commercial.

The standard Adobe ‘SS’ core PostScript fonts (Times, Palatino, Century Schoolbook, Hebrew, Zapf, etc) are provided by default; with the mathematics fonts of Computer Modern, Euler, and Times; and a range of decorative and specialist typefaces for technical, linguistic, and literary typesetting.

Additional features for \LaTeX and \pdf

The Standard Material

\begin{align}
\text{General} & \quad \text{Times Roman, Times New Roman} \\
\text{Serif} & \quad \text{Palatino, Palatino Linotype} \\
\text{Monospace} & \quad \text{Courier, Nimbus Mono} \\
\text{Sans Serif} & \quad \text{Helvetica, Arial, Monaco} \\
\text{Symbol} & \quad \text{Tm, Wingdings} \\
\end{align}

The Symbol Collection

\begin{align}
\text{Acro} & \quad \text{Acrobat Icons} \\
\text{Com} & \quad \text{Computer Icons} \\
\text{EI} & \quad \text{Engineering Icons} \\
\text{Bar} & \quad \text{Bullet Bar} \\
\text{Ink} & \quad \text{Ink Icons} \\
\text{Symbol} & \quad \text{Summation, Integral, Mathematics Symbols} \\
\text{Math} & \quad \text{Mathematical symbols} \\
\end{align}

The Two-Cation Collection

\begin{align}
\text{Qm} & \quad \text{Queen Mary's University of London} \\
\text{Biography} & \quad \text{Biography Icons} \\
\text{Conclusion} & \quad \text{Conclusion Icons} \\
\end{align}

The Symbolic Collection

\begin{align}
\text{Coll} & \quad \text{Cylindrical, Spherical, Cartesian Coordinates} \\
\text{Print} & \quad \text{Print Icons} \\
\text{Schematic} & \quad \text{Schematic Icons} \\
\text{Description} & \quad \text{Description Icons} \\
\end{align}

Non-Latin types include Japanese, Chinese, Devanagari, Urdu, Thai, Vietnamese, Coptic, Cyrillic, Greek, and many other languages and alphabets, including mixed bidirectional Arabic and Hebrew. Extensive user group coverage worldwide provides native-language support for non-Latin typesetting.

The fomatter specifies the \texttt{METAFONT} and \texttt{METAPOST} come with all \LaTeX systems for designing and implementing your own typefaces or special symbols.

The conclusions of the underlying \texttt{fig} formatting engine are very precise: it works internally in microns smaller than the wavelength of visible light (\approx 530 Å), resulting in great accuracy in positioning. \BaTeX can use any mixture of Anglo-American, Nordic, or American fonts, or metric or imperial units.

Table of Figures

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|}
\hline
\textbf{Method} & \textbf{Number} & \textbf{Total No.} & \textbf{Books Available} \\
\hline
\hline
\texttt{fig} & \texttt{fig} & \texttt{fig} & \texttt{fig} \\
\hline
\end{tabular}
\caption{Tables for which the Quantile and Kaplan-Meier functions are implemented, classified by size in \LaTeX.}
\end{table}

There are powerful tabular controls for both simple and complex designs, with fixed or auto-adjusting spacing which can be very easily specified to provide better visual appeal. Formal tables and figures are automatically numbered, and can be captured, labelled, crossreferenced, and included in a list of Tables and List of Figures.

Complex tabular matter can span pages and can be printed landscape while retaining the general orientation of rows and pagename. Simple tabular matter can appear anywhere, without being a formal numbered table.

Crossreferences

The crossreferencing features let you name anything you want to refer to (table, figure, section, chapter, page, item, etc) and then use that name anywhere in the document. This lets each crossreference automatically update its location so that no matter how much you edit the text, the references remain correct. The same method is used for automated indexing, glossary, table of contents, list of figures, list of tables, and bibliographic references.

The BiBTeX bibliographic database lets you store references separately from documents and automatically formats them to any of the standard styles, including numeric, in text, footnotes, or endnotes.

Persistence and reliability

\LaTeX was designed to be independent of any particular manufacturer, make, or model of computer or printer. Unlike some wordprocessor manufacturers’ proprietary file formats, \LaTeX uses plaintext (ASCII or Unicode) files which can be created and updated with any editor anywhere, and moved between different systems without danger of information loss or corruption.

The system has been carefully designed so that documents written years ago can still be typeset. Because the file format is stable, your investment in intellectual property cannot be damaged by vendors’ arbitrary or planned obsolescence, or by changes in versions or formats.

The \LaTeX project and the \LaTeX \texttt{book} implement your own customised document designs. Knuth’s original interest mainly to computer scientists and typographic programmers who need to know the finest detail.

Documentation

\begin{itemize}
\item \texttt{texinfo} (Fraser, P. (2005). Formatting information — a \texttt{info} guide to \texttt{fig} 2.14 ed). http://www.ctan.org/tex-archive/info/\texttt{info}\texttt{guide}.
\item \texttt{manpages} (Green, M. & Rohs, S. (1999). The \texttt{fig} \texttt{Bib} companion. Reading, MA Addison Wesley Longman. With Eitan Maze and torn Moves and Robert S. Nevels.
\item \texttt{biblatex} (Green, M., Rohs, S., & Möller, B. (1992). The \texttt{fig} graphics companion. Reading, MA Addison Wesley.
\item \texttt{knuth} (D. (1986). The \texttt{fig} book. Reading, MA Addison Wesley.
\item \texttt{lample} (1997). \texttt{fig}, a document preparation system 2nd ed. Reading, MA Addison Wesley.
\item \texttt{mittlebach} (G.), \texttt{green} (M.), \texttt{braun} (J.), \texttt{carlisle} (D.), & \texttt{rooby} (C. (1996). The \texttt{fig} Companion (2nd ed). Reading, MA Addison Wesley.
\item \texttt{paradux} (1993. Ed.) \texttt{fig}\texttt{latex} (Tech. Rep.). Portland, OR: \texttt{fig} Users Group.
\end{itemize}

The book by Lampert is the user manual for \LaTeX. You may need this second edition for \texttt{fig} 2.5. The \texttt{fig} Companion is more advanced, and useful if you want to implement your own custom document designs. Knuth’s original \texttt{fig} book is interest mainly to computer scientists and typographic programmers who need to know the finest detail.

There are dozens of other books, ranging from the online introductions, \texttt{fig}\texttt{latex} documentation and the two short introductions to \texttt{fig} 2.5, to the professional mathematicians’ \texttt{fig} of \texttt{fig} and the typographer’s \texttt{fig}\texttt{lyrics}.

\LaTeX material originally produced for paper printing, no matter how long ago, can quickly and easily be made available for today’s Web access. I have just recently had to provide a journal from 1987-1996 in a format available for the Web. The opening page was converted into HTML, with all graphics, and the complete articles, with all typesetting and font features (including Hebrew, phonetics, and Greek), were available for viewing in PDF just by re-running the \LaTeX files.

The biggest advantage in publishing production is that similar coding of files means anyone can do any journal — there is no need to learn new sets of commands for style variations. Changes in platforms have no effect on production as \LaTeX is available for all main operating systems.

It is possible to separate the writing tasks (creation of text) from the design/layout issues (spacing, fonts, etc) which allows the author simply to identify typesetting variables (leading sizes, footnotes, citations, etc) without getting bogged down trying to remember the text shape and font selections for each element.

Christina Thiel; CCS Publishing

Figures and illustrations

Figures can contain textual or graphical illustrations. Figures can be included with scaling, rotation, and clipping, using industry standard PDF or EPS vector formats for diagrams, or PNG or JPG bitmaps for pictures.