The \texttt{mathtime} and \texttt{mathpi} packages

Frank Mittelbach with support by David Carlisle

1997/10/10

1 The mathtime package

The mathtime package contains the code to support the Math Time fonts.

1.1 Usage and options

To load support for the Math Time fonts add the following declaration to the preamble of your \LaTeX\ document:

\begin{verbatim}
\usepackage[\textit{options}]{mathtime}
\end{verbatim}

This package supports several options:

\begin{itemize}
    \item \texttt{nobold} default.
    \item \texttt{cmbold} use cm bold fonts (not recommended, the bold fonts will then be encoded differently to the normal weight ones, and no account of this will be taken).
    \item \texttt{mtbold} This provides bold and heavy math versions coming with the Math Time Plus fonts.
    \item \texttt{heavybold} Also requires the Math Time Plus font set, just define bold math version (not heavy) but use the heavy fonts where available.
        In all cases the user level command \texttt{\heavymath} is defined to be \texttt{\boldmath} if the heavy math version is not defined.
    \item \texttt{slantedgreek} Make the lowercase greek letters slanted (by default). Note that the uppercase greek letters are always upright.
    \item \texttt{uprightgreek} Make the lowercase greek letters upright.
    \item \texttt{subscriptcorrection} Redefine \texttt{\_} so that it automatically adds negative kerns in subscripts if they start with either \texttt{j}, \texttt{p}, or \texttt{f}. This option might generate problems if other packages are loaded as well.
        The subscript correction also be be turned on and off within the document using the commands:
        \begin{verbatim}
        \enablesubscriptcorrection and \disablesubscriptcorrection.
        \end{verbatim}
\end{itemize}
nosubscriptcorrection Disable the subscript correction (default).

cmcal This option uses the Computer Modern calligraphic alphabet for \texttt{\textbackslash mathcal} — a bad choice, but what do you do if nothing else is at your disposal. We make this the default as we know that it is always around.

lucidacal This option sets up \texttt{\textbackslash mathcal} to load the Lucida calligraphic font as a math alphabet. It also defines \texttt{\textbackslash mathbcal} to always refer to the bold series of this alphabet.

lucidascr Like lucidacal but puts the font into \texttt{\textbackslash mathscr}. This might be useful if for some reason \texttt{\textbackslash mathcal} already contains some special calligraphic alphabet.

mtplusscr This option sets up \texttt{\textbackslash mathscr} to load the Math Time Plus script font as a math alphabet. It also defines \texttt{\textbackslash mathbscr} to always refer to the bold series of this alphabet.

mtpluscal Like mtplusscr but puts the font into the \texttt{\textbackslash mathcal} alphabet.

noTS1 The use of the mathtime fonts with text fonts encoded in the standard OT1 or T1 encodings leaves a few symbols (section and paragraph marks, and dagger symbols) undefined. By default the TS1 ‘text companion encoding’ will be used to access these symbols, but this option suppresses that. If the LY1 option (below) is used this option will be implied and dagger etc will be drawn from the operators font.

OT1 Use OT1 encoding for the operators font. This is the normal behaviour, but in this package the default behaviour is to use the default text encoding for the operators font.

T1 Use T1 encoding for the operators font.

LY1 Use LY1 (Y&Y’s ‘locally’ defined textanssi encoding) In the operators font. This option implies the noTS1 option. Dagger etc will be drawn from the operators font in this case.

Not all options can be used together, e.g., one can at most select one of the options setting up \texttt{\textbackslash mathcal}, if both options are given mtpluscal will win over lucidacal and in case of \texttt{\textbackslash mathscr}, lucidascr will be the winner over mtplusscr.

This package makes a lot of font re-assignments. Normally these generate warning messages on the terminal, however getting so many messages would be distracting, so a further three options control the font tracing. Even more control may be obtained by loading the \texttt{tracefnt} package.

errorshow Only show font errors on the terminal. Warnings are just sent to the log file. This is the default for this package.

warningshow Show font warnings on the terminal. This corresponds to the usual \texttt{\LaTeX} behaviour.

nofontinfo Suppress all font warnings, even from the log file.
1.2 Text fonts

The package sets up Times, Helvetica, and Courier as the default text fonts (selected through \textsc, \textsf, and \texttt) unless the text fonts have been explicitly set, e.g., by loading a package like newcent before loading the mathtime package. More exactly the package checks if \rmdefault refers to cmr and in that case changes all three defaults.

To support a few symbols not available in the Math Time fonts (but normally available with \LaTeX) the mathtime package has to load the the symbol companion font for Times (i.e., the TS1 encoded font). To preserve space we do not load the corresponding package (textcomp) but only declare those characters we do need. If you do want all symbols from this font available in your text load the textcomp package in the preamble. Conversely you may suppress the declaration of these symbols from the TS1 encoded fonts by use of the nots1 package option, in which case the default definitions refering to the standard \TeX encodings and hence possibly the Computer Modern fonts will be used.

1.3 Provided math alphabets

The package provides be default the five standard math alphabets \textsc, \textbf, \textit, \textsf and \texttt pointing to the document text fonts, the first three to the roman font in normal, bold, and italic, the others to the sans serif and the typewriter font.

The \textcal and \textbcal defaults to the Computer Modern calligraphic alphabet but can be modified with options as decribed above.

Script alphabets with \mathscr and \mathbscr are only available if explicitly selected by an option.

Alternatively one can select other fonts for \mathscr and \textcal, for example, by loading the mathpik package described below. An alternative (although not blending very well) would be the the Euler Script fonts from the AMS font collection which can be loaded as either \textcal or \mathscrp using the eucal package.

A Fraktur alphabet (\textfrak) can be loaded with the mathpik fonts (a good match) or by loading the eufrak package from the AMS font collection.

1.4 Additional or changed symbols

The Math Time fonts contain a small number of additional symbols which are made available by the mathtime package. See the general documentation of the Math Time fonts.

1.5 Font sizes

\LaTeX is set up in a way that the user normally uses commands that hide font sizes rather than specifying font sizes explicitly, e.g., instead of \fontsize{17pt}{19pt} \selectfont a command like \LARGE is used (which does in fact a bit more than just setting the font size).

It is the task of a document class and not that task of a support package like this one to decide about the absolute sizes used in a document. The task of a package like mathtime is to provide sensible values for math sizes given some text size.
The default ratio for script fonts is 0.76 and for scriptscript fonts 0.6.

2 The mathpi package

The mathpi package provides support for the Adobe math pi fonts by declaring a number of math alphabets. It can be used independently of the mathtime package. At least one option has to be given, otherwise loading this package will have no effect.

\texttt{mathfrak} Defines $\backslash \texttt{mathfrak}$ to refer to the fraktur alphabet from the Math Pi Two font.

\texttt{mathscr} Defines $\backslash \texttt{mathscr}$ to refer to the script alphabet from the Math Pi Two font. This needs the font especially encoded, see \texttt{mtfonts.fdd} for details.

\texttt{mathcal} Defines the script alphabet under the math alphabet command usually used for a calligraphic font, otherwise like \texttt{mathscr}.

\texttt{mathbb} Defines $\backslash \texttt{mathbb}$ to refer to the blackboard bold math alphabet from Math Pi Six.