The \texttt{HEP-MATH-FONT} package*

Extended Greek and sans-serif math

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Abstract

The \texttt{HEP-MATH-FONT} package adjust the math fonts to be italic sans-serif if the document is sans-serif. Additionally Greek letters are redefined to be always italic and upright in math and text mode, respectively. Some math font macros are adjusted to give more consistently the naively expected results.

The package is loaded using \texttt{\usepackage{hep-math-font}}.

If the document \texttt{\familydefault} font is switched to the sansserif \texttt{\sfdefault} font the math font is adjusted accordingly using fonts compatible to latin modern (LM) and computer modern (CM).

\textbf{warning} In order to be able to easily switch large chucks of math from serif to sans-serif documents the meaning of \texttt{\mathrm} and \texttt{\mathsf} is adjusted in this case so that the first generates upright sans-serif math and the second serif math. This is is neither the literal meaning of the macros nor the best behaviour if a single large document is written in sans-serif. However, it simplifies working in an environment where one copies pieces of math between serif and sans-serif documents e.g. publications vs. talks and funding applications.

Using the \texttt{fixmath} [1] and \texttt{textalpha} [2] packages Greek letter are adjusted so that they are always italic and upright in math and text mode, respectively. Greek letters can be written by using their unicode characters.

\texttt{symbols} The \texttt{symbols=⟨family⟩} class option sets the family of the symbol fonts. \texttt{symbols=ams} loads the two A\LaTeX\ fonts [3] and the \texttt{bm} bold fonts. The default \texttt{symbols=true} replaces additionally the blackboard font with the \texttt{dsfont} [4]. \texttt{symbols=minion} switches the symbol fonts to the Adobe MinionPro companion font from the \texttt{MnSymbol} package [5]. \texttt{symbols=false} deactivates loading any additional symbol fonts, effectively restricting the package to only switch the math font according to the sans-serif property of the main text.

1 Macros

\texttt{text} The \texttt{\mathrm{⟨math⟩}} macro and the \texttt{\text{⟨text⟩}} macro from \texttt{amstext} [6] are adjusted to produce upright Greek letters, i.e. \texttt{(AbΓδ AbΓδ)}, by adjusting the code from the \texttt{alphabeta} [7] package.

\texttt{mathbf} Bold math, via \texttt{\mathbf} is improved with the \texttt{bm} package [8], i.e. \texttt{(AbΓδ AbΓδ)}. Macros switching to \texttt{bfseries} such as \texttt{\section{⟨text⟩}} are ensured to also typeset math in bold.

\texttt{mathsf} The math sans-serif alphabet is redefined to be italic sans-serif if the main text is serif and italic.

\footnote{This document corresponds to \texttt{HEP-MATH-FONT} v1.2.}

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serif if the main text is sans-serif, i.e. \((Ab\delta Ab\delta)\). Ensuring that the distinction between these fonts is also kept if the (sans-)serif option of the document is switched.

\texttt{\textbackslash mathscr} The \texttt{\textbackslash mathcal} font i.e. \((ABCD)\) is accompanied by the \texttt{\textbackslash mathscr} font i.e. \((\mathcal{ABC})\).

\texttt{\textbackslash mathbb} The \texttt{\textbackslash mathbb} font is improved by the doublestroke package \([4]\) and adjusted depending on the (sans-)serif option of the document i.e. \((\text{AhI})\).

\texttt{\textbackslash mathtt} The \texttt{\textbackslash mathtt} macro switches to LM typewriter font i.e. \((AbΓAbΓ)\).

\texttt{\textbackslash mathfrak} Finally, the \texttt{\textbackslash mathfrak} font is also available i.e. \((AaBb12)\).

Details about the font handling in TeX can be found in reference \([9]\).

## 2 Math alphabet allocation

Of the 16 available math alphabets, TeX loads four by default

0) \texttt{OT1} Text (latin, upper case greek, numerals, text symbols)

The text font 0) of CM is \texttt{cmr10} \texttt{\textbackslash OT1/cmrm/n/10}, which is replaced by LM to be \texttt{rm-lmr10} \texttt{\textbackslash OT1/lmr/m/n/10}, the sansserif option uses \texttt{rm-lmss10} \texttt{\textbackslash OT1/lmss/m/n/10}.

1) \texttt{OML} Math Italic (latin, greek, numerals, text symbols)

The italic math font 1) of CM is \texttt{cmmi10} \texttt{\textbackslash OML/cmm/m/it/10}, and is replaced by LM to be \texttt{lmmi10} \texttt{\textbackslash OML/lmm/m/it/10}, the sansserif options uses \texttt{cmssmi10} \texttt{\textbackslash OML/cmssrm/m/it/10} from the \texttt{sansmathfonts} package \([10]\).

2) \texttt{OMS} Symbol (\texttt{\textbackslash mathcal}, operators)

The symbol font 2) of CM is \texttt{cmsy10} \texttt{\textbackslash OMS/cmsy/m/n/10}, and is replaced by LM to be \texttt{lmsy10} \texttt{\textbackslash OMS/lmsy/m/n/10}, the sansserif options uses \texttt{cmsssy10} \texttt{\textbackslash OMS/cmsssy/m/n/10} from the \texttt{sansmathfonts} package \([10]\).

3) \texttt{OMX} Math Extension (big operators, delimiters)

The extension font 3) of CM is \texttt{cmex10} \texttt{\textbackslash OMX/cmex/m/n/5}, and is replaced by the \texttt{exscale} package \([11]\) to be \texttt{cmex10} \texttt{\textbackslash OMX/cmex/m/n/10}, the sansserif option loads \texttt{cmssex10} \texttt{\textbackslash OMX/cmssex/m/n/10}.

The \texttt{amssymb} (\texttt{amsfonts}) packages \([12]\) load two more symbol fonts

4) \texttt{msam10} \texttt{\U/m/asm/n/10} AMS symbol font A (special math operators)

5) \texttt{msbm10} \texttt{\U/m/bm/m/n/10} AMS symbol font B (\texttt{\textbackslash mathbb}, negated operators)

The sansserif option replaces them with \texttt{ssmsam10} \texttt{\U/ssmsa/m/n/10} and \texttt{ssmsbm10} \texttt{\U/ssmsb/m/n/10} from the \texttt{sansmathfonts} package \([10]\), respectively.

The \texttt{bm} package \([8]\) loads the bold version for the fonts 0) to 2).

Other math alphabets are only loaded on demand, e.g. \texttt{\textbackslash mathsf} uses a sans-serif font and \texttt{\textbackslash mathbf} without the \texttt{bm} package uses a bold font. The \texttt{\textbackslash mathsc} macro uses the script font from the \texttt{mathrsfs} package \([13]\)

9) \texttt{rsfs10} \texttt{\U/rsfs/m/n/10} Math script font (capital letters)

The \texttt{\textbackslash mathbb} macro loads the double stroke font from the \texttt{dsfont} package \([4]\), this can be prevented with the \texttt{symbols=ams} option.
Figure 1: Basic math fonts
Figure 2: Math extension fonts
Figure 3: Minion symbol fonts
10) \texttt{dsromio} \ U/dsrom/m/n/10 Double stroke font

The \texttt{mathfrak} macro loads the fraktur font from the \texttt{amssymb} package [12]

11) \texttt{eufmio} \ U/euf/m/n/10 Math fraktur (Basic Latin)

The \texttt{hep-math-font} package uses nine of the available 16 math alphabets. This number can be reduced by three using \texttt{\newcommand{\bmmax}{0}} from the \texttt{bm} package [8] and brought down to the default of four with the option \texttt{symbols=false}.

The \texttt{symbols=minion} options replaces the fonts 2) to 5) with corresponding fonts from the \texttt{MnSymbol} package [5]. Additionally, two more symbol alphabets are allocated, the \texttt{bm} package [8] loads one more font and now \texttt{mathcal} triggers the use of one additional alphabet. Hence, the minion option uses three to four more math alphabets than a usual setup.

\section*{A Implementation}

\texttt{<\ast package>}

Use the \texttt{kvoptions} package [14].

\begin{verbatim}
\RequirePackage{kvoptions}
\SetupKeyvalOptions{
 family=hepmathfont,
 prefix=hepmathfont@
}
\end{verbatim}

\texttt{symbols} Provide the \texttt{symbols} option allowing to switch the symbol font.

\begin{verbatim}
\DeclareStringOption[true]{symbols}
\ProcessKeyvalOptions*
\end{verbatim}

\texttt{\ifxetexorluatex} Load the \texttt{ifluatex} [15] and \texttt{ifxetex} [16] packages. Define the \texttt{\ifxetexorluatex} conditional checking if the package is executed by Lua\TeX{} or Xe\TeX{}.

\begin{verbatim}
\RequirePackage{ifluatex}
\RequirePackage{ifxetex}
\newif\ifhepmathfont@symbols
\ifnum\pdf@strcmp{\hepmathfont@symbols}{false}=0
\else\hepmathfont@symbolstrue\fi
\newif\ifhep@ams
\end{verbatim}

\texttt{\ifxetexorluatex} Define conditionals based on the \texttt{symbols} package option using the \texttt{pdftexcmds} package [17].

\begin{verbatim}
\RequirePackage{pdftexcmds}
\newif\ifhepmathfont@symbols
\ifnum\pdf@strcmp{\hepmathfont@symbols}{false}=0
\else
\hepmathfont@symbolstrue\fi
\newif\ifhep@ams
\end{verbatim}
A.1 Sans serif

Check if document is set to sans-serif using the xstring package [18].

If the sansserif package option is active use code adjusted from the sansmathfonts package [10]. Ensure that \textsf is italic as well as sans-serif and sans for sans and sans-serif documents, respectively.

Define fonts for sans-serif documents.

Declare font substitutions.

Declare the symbol fonts.
Set bold symbol fonts.

55 \SetSymbolFont{operators}{bold}{OT1}{\hep@font@text}{b}{n}
56 \SetSymbolFont{letters}{bold}{OML}{\hep@font@math}{b}{it}
57 \ifhepmathfont@symbols@ifhep@minion\else
58 \SetSymbolFont{symbols}{bold}{OMS}{\hep@font@symbol}{b}{n}
59 \fi\fi


60 \ifhepmathfont@symbols@ifhep@minion\else
61 \DeclareSymbolFont{AMSa}{U}{ssmsa}{m}{n}
62 \DeclareSymbolFont{AMSb}{U}{ssmsb}{m}{n}
63 \fi\fi
64 \AtBeginDocument{%
65 \@ifpackageloaded{esint}{%
66 \DeclareSymbolFont{largesymbolsA}{U}{ssesint}{m}{n}
67 }{%
68 }
69 \ifhepmathfont@symbols@ifhep@minion\else
70 \DeclareSymbolFontAlphabet{\mathrm}{operators}
71 \DeclareSymbolFontAlphabet{\mathnormal}{letters}
72 \ifhep@minion\else
73 \DeclareSymbolFontAlphabet{\mathcal}{symbols}
74 \fi
75 \ifhepmathfont@symbols@ifhep@minion\else
76 \DeclareMathAlphabet{\mathit}{OML}{\hep@font@text}{m}{it}
77 \SetMathAlphabet\mathit{bold}{OML}{\hep@font@text}{bx}{it}
78 \fi
79 \mathrm Declare the symbol font alphabets.
80 \mathnormal
81 \mathcal
82 \mathit Declare \mathit.
83 \ifhepmathfont@symbols@ifhep@minion\else
84 \DeclareMathAlphabet{\mathsf}{OML}{\hep@font@text}{m}{it}
85 \SetMathAlphabet{\mathsf}{bold}{OML}{\hep@font@text}{bx}{it}
86 \fi
87 \mathsf Declare \mathsf for sans-serif documents to produce serif.
88 \ifhepmathfont@symbols@ifhep@minion\else
89 \DeclareMathAlphabet{\textalpha}{U}{mathx}{m}{it}
90 \SetMathAlphabet{\textalpha}{bold}{U}{mathx}{bx}{it}
91 \fi
92 \end{sansserif}
93 \fi

A.2 Greek letters

Load the fixmath [1] and textalpha [2] packages ensuring that upper Greek letters in math mode are italic and providing upright Greek letters in text mode, respectively. Define the hep@greek macro ensuring that both \text and \mathrm produce upright Greek letters using the amssymb [12] and amstext [6] packages.

94 \ifhepmathfont@symbols
95 \RequirePackage{amssymb}
96 \RequirePackage{amstext}
97 \RequirePackage{fixmath}
98 \fi
The following code follows closely the `alphabeta` package [7].

### A.2.1 Commands to access Greek letters by name

For letters defined in math mode, the commands work in both, text and math. Some Greek letters look identical to Latin letters and can therefore not be used as variable symbols in math formulas. These letters are not defined in TeX’s math mode, we provide an alias to the corresponding `\text...` command.

Mathematical notation distinguishes ‘variant shape symbols’ for pi, phi, rho, theta (small and capital), beta, and kappa (characters for the latter three symbols are not included in TeX’s math fonts). These variations have no syntactic meaning in Greek text and are not given code-points in the LGR encoding while Unicode defines separate code points for the symbol variants.

### A.2.2 Greek Alphabet

Macros keep their meaning in mathematical mode (i.e. use the same shape as without this package) and refer to `greek letter ...` in text. For `\epsilon` and `\phi`, this means that the selected symbol variant differs in text vs. math mode. Use `\varepsilon` and `\varphi` (see section ‘variant shape symbols’ below) to select the `greek letter ...` in both, text and math mode.

```latex
\providecommand*{\Alpha}{\textAlpha}
\providecommand*{\Beta}{\textBeta}
\hep@greek\Gamma\mathGamma\textGamma
\hep@greek\Delta\mathDelta\textDelta
\providecommand*{\Epsilon}{\textEpsilon}
\providecommand*{\Zeta}{\textZeta}
\providecommand*{\Eta}{\textEta}
\providecommand*{\Theta}{\textTheta}
\providecommand*{\Iota}{\textIota}
\providecommand*{\Kappa}{\textKappa}
\hep@greek\Lambda\mathLambda\textLambda
\providecommand*{\Mu}{\textMu}
\hep@greek\Xi\mathXi\textXi
\providecommand*{\Omicron}{\textOmicron}
\hep@greek\Pi\mathPi\textPi
\providecommand*{\Rho}{\textRho}
\hep@greek\Sigma\mathSigma\textSigma
\providecommand*{\Tau}{\textTau}
\hep@greek\Upsilon\mathUpsilon\textUpsilon
\hep@greek\Phi\mathPhi\textPhi
\providecommand*{\Chi}{\textChi}
\hep@greek\Psi\mathPsi\textPsi
\hep@greek\Omega\mathOmega\textOmega
```
Apply to minuscule Greek letters.

\[ \hepgreek\alpha\mathalpha\textalpha \]
\[ \hepgreek\beta\mathbeta\textbeta \]
\[ \hepgreek\gamma\mathgamma\textgamma \]
\[ \hepgreek\delta\mathdelta\textdelta \]
\[ \hepgreek\epsilon\mathepsilon\textepsilon \]
\[ \hepgreek\zeta\mathzeta\textzeta \]
\[ \hepgreek\eta\matheta\texteta \]
\[ \hepgreek\theta\maththeta\texttheta \]
\[ \hepgreek\iota\mathiota\textiota \]
\[ \hepgreek\kappa\mathkappa\textkappa \]
\[ \hepgreek\lambda\mathlambda\textlambda \]
\[ \hepgreek\mu\mathmu\textmu \]
\[ \hepgreek\nu\mathnu\textnu \]
\[ \hepgreek\xi\mathxi\textxi \]
\[ \providecommand*{\omicron}{\textomicron} \]
\[ \hepgreek\pi\mathpi\textpi \]
\[ \hepgreek\rho\mathrho\textrho \]
\[ \hepgreek\sigma\mathsigma\textsigma \]
\[ \hepgreek\varsigma\mathvarsigma\textvarsigma \]
\[ \providecommand*{\finalsigma}{\varsigma} \]
\[ \hepgreek\tau\mathtau\texttau \]
\[ \hepgreek\upsilon\mathupsilon\textupsilon \]
\[ \hepgreek\phi\mathphi\textphi \]
\[ \hepgreek\chi\mathchi\textchi \]
\[ \hepgreek\psi\mathpsi\textpsi \]
\[ \hepgreek\omega\mathomega\textomega \]

Archaic letters

\[ \hepgreek\digamma\mathdigamma\textdigamma \]
\[ \providecommand*{\Digamma}{\textDigamma} \]
\[ \providecommand*{\Stigma}{\textStigma} \]
\[ \hepgreek\stigma\textstigma \]
\[ \providecommand*{\varstigma}{\textvarstigma} \]
\[ \hepgreek\koppa\textkoppa \]
\[ \providecommand*{\Koppa}{\textKoppa} \]
\[ \hepgreek\qoppa\textsampi \]
\[ \providecommand*{\Qoppa}{\textQoppa} \]
\[ \hepgreek\sampi\textsampi \]

A.2.3 Variant shape symbols

TeX’s concept of “standard” vs. “variant” math symbols does not map to the distinction between greek letter ... vs. greek ... symbol in the Unicode standard (see test-tuenc-greek.pdf).

The \...symbol macros select the greek ... symbol in both, text and math mode. For \epsilon\symbol and \phi\symbol this is the default shape in math mode. The \var... macros select the shape used by TeX math (or, if not supported, the symbol shape)
\textsymbol == \textvar...
\providecommand*{\textpisymbol}{\varpi}
\providecommand*{\textrhosymbol}{\varrho}
\providecommand*{\textthetasymbol}{\vartheta}
\providecommand*{\textepsilon}{\varepsilon}
\providecommand*{\textphi}{\varphi}
\providecommand*{\textbetasymbol}{\varbeta}
\providecommand*{\textkappasymbol}{\varkappa}
\providecommand*{\textThetasymbol}{\Theta}
\providecommand*{\textThetasymbol}{\varTheta}

A.2.4 \textbf{TextCompositeCommands for the generic macros}

The NFSS TextComposite mechanism looks for the next token without expanding it. In order to
let compositions like \textbackslash\ensuregreek{\textbackslash\textalpha} or \textbackslash\ensuregreek{\textbackslash\textalpha''\textalpha} work as expected
we define TextComposites with the \textbackslash{}letter name commands\textbackslash{} (Composition only works if the
active font encoding is LGR).
\ifdefined\DeclareUnicodeCharacter
\providecommand*{\textbetasymbol}{\varbeta}
\providecommand*{\textkappasymbol}{\varkappa}
\providecommand*{\textThetasymbol}{\Theta}
\providecommand*{\textThetasymbol}{\varTheta}

A.2.5 \textbf{Re-definition for Greek Unicode input in math mode}

Check with \textbackslash{}ifdefined \textbackslash{}for the definition of \textbackslash{}DeclareUnicodeCharacter. In contrast to
\textbackslash{}ifdefined, this works without side-effects. It makes the package dependent on the \varepsilon\TeX extensions but these are standard in all current TeX distributions anyway. Map Greek characters
that are also defined in math mode to the generic macros.

\ifdefined\DeclareUnicodeCharacter
\DeclareUnicodeCharacter{0393}{\Gamma}
\DeclareUnicodeCharacter{0394}{\Delta}
\DeclareUnicodeCharacter{0398}{\Theta}
\DeclareUnicodeCharacter{039B}{\Lambda}
\DeclareUnicodeCharacter{039E}{\Xi}
\DeclareUnicodeCharacter{03A0}{\Pi}
\DeclareUnicodeCharacter{03A3}{\Sigma}
\DeclareUnicodeCharacter{03A5}{\Upsilon}
\DeclareUnicodeCharacter{03A9}{\Omega}
\DeclareUnicodeCharacter{03B1}{\alpha}
\DeclareUnicodeCharacter{03B2}{\beta}
\DeclareUnicodeCharacter{03B3}{\gamma}
\DeclareUnicodeCharacter{03B4}{\delta}
\DeclareUnicodeCharacter{03B5}{\varepsilon}
\DeclareUnicodeCharacter{03B6}{\zeta}
\DeclareUnicodeCharacter{03B7}{\eta}
\DeclareUnicodeCharacter{03B8}{\theta}
\DeclareUnicodeCharacter{03B9}{\iota}
\DeclareUnicodeCharacter{03BA}{\kappa}
\DeclareUnicodeCharacter{03BB}{\lambda}
\DeclareUnicodeCharacter{03BC}{\mu}
\DeclareUnicodeCharacter{03BD}{\nu}
\DeclareUnicodeCharacter{03BE}{\xi}
\DeclareUnicodeCharacter{03BF}{\pi}
\DeclareUnicodeCharacter{03C0}{\rho}
\DeclareUnicodeCharacter{03C1}{\sigma}
\DeclareUnicodeCharacter{03C2}{\varsigma}
\DeclareUnicodeCharacter{03C3}{\tau}
\DeclareUnicodeCharacter{03C4}{\upsilon}
\DeclareUnicodeCharacter{03C5}{\phi}
\DeclareUnicodeCharacter{03C6}{\chi}
\DeclareUnicodeCharacter{03C7}{\psi}
\DeclareUnicodeCharacter{03C8}{\omega}
\DeclareUnicodeCharacter{03C9}{\thetasymbol}
\DeclareUnicodeCharacter{03D1}{\rhosymbol}
\DeclareUnicodeCharacter{03D5}{\rhosymbol}
\DeclareUnicodeCharacter{03D6}{\rhosymbol}
\DeclareUnicodeCharacter{03D7}{\rhosymbol}
\DeclareUnicodeCharacter{03D8}{\rhosymbol}
\DeclareUnicodeCharacter{03D9}{\rhosymbol}
\DeclareUnicodeCharacter{03DA}{\rhosymbol}
\DeclareUnicodeCharacter{03DB}{\rhosymbol}
\DeclareUnicodeCharacter{03DC}{\rhosymbol}
\DeclareUnicodeCharacter{03DD}{\rhosymbol}
\DeclareUnicodeCharacter{03DE}{\rhosymbol}
\DeclareUnicodeCharacter{03DF}{\rhosymbol}
\DeclareUnicodeCharacter{03E0}{\rhosymbol}
\DeclareUnicodeCharacter{03E1}{\rhosymbol}
\DeclareUnicodeCharacter{03E2}{\rhosymbol}
\DeclareUnicodeCharacter{03E3}{\rhosymbol}
\DeclareUnicodeCharacter{03E4}{\rhosymbol}
\DeclareUnicodeCharacter{03E5}{\rhosymbol}
\DeclareUnicodeCharacter{03E6}{\rhosymbol}
\DeclareUnicodeCharacter{03E7}{\rhosymbol}
\DeclareUnicodeCharacter{03E8}{\rhosymbol}
\DeclareUnicodeCharacter{03E9}{\rhosymbol}
\DeclareUnicodeCharacter{03EA}{\rhosymbol}
\DeclareUnicodeCharacter{03EB}{\rhosymbol}
\DeclareUnicodeCharacter{03EC}{\rhosymbol}
\DeclareUnicodeCharacter{03ED}{\rhosymbol}
\DeclareUnicodeCharacter{03EE}{\rhosymbol}
\DeclareUnicodeCharacter{03EF}{\rhosymbol}
\DeclareUnicodeCharacter{03F0}{\rhosymbol}
\DeclareUnicodeCharacter{03F1}{\rhosymbol}
\DeclareUnicodeCharacter{03F2}{\rhosymbol}
\DeclareUnicodeCharacter{03F3}{\rhosymbol}
\DeclareUnicodeCharacter{03F4}{\rhosymbol}
\DeclareUnicodeCharacter{03F5}{\rhosymbol}

Ensure that this works also after loading other fonts packages such as cfr-lm using SUBSTITUTE-FONT [20].

\fi

\ifxetexorluatex
\% missing code
\else
\RequirePackage{substitutefont}
\substitutefont{LGR}{\rmdefault}{lmr}
\fi

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A.3 Additional math fonts

Either load the MnSymbol package [5] or the exscale package [11] in order to fix Latin Modern \texfamily fonts. Additionally, load the amsymb package [3] which provides further math symbols and also loads the amsfonts package [3].

\ifhep@minion
\RequirePackage{MnSymbol}
\else
\RequirePackage{exscale}
\RequirePackage{amssymb}
\fi

\textbf{Load the \texttt{bm} package [8] for superior boldmath. Make math symbols bold whenever they appear in bold macros such as \textsection{⟨\textit{text}⟩}.}

\\RequirePackage{bm}
\AtBeginDocument{\let\mathbf\bm}
\g@addto@macro\bfseries{\boldmath}

\texttt{Typewriter math font}

\DeclareMathAlphabet{\mathtt}{OT1}{lmtt}{m}{n}
\SetMathAlphabet{\mathtt}{bold}{OT1}{lmtt}{bx}{n}

\textsc{Provid the \texttt{mathsc} math script font from the \texttt{mathrsfs} package [13].}

\DeclareMathAlphabet{\mathsc}{U}{rsfs}{m}{n}

\textbb{Redefine the the \texttt{mathbb} math blackboard style font according to the (sans-)serif option with the font from the \texttt{dsfont} package [4].}

\ifhep@minion
\DeclareMathAlphabet{\mathbb}{U}{%\ifhepmathfont@serif dsrom\else dsss\fi}{m}{n}
\else
\ifhep@ams\else
\SetMathAlphabet{\mathbb}{normal}{U}{%\ifhepmathfont@serif dsrom\else dsss\fi}{n}
\fi
\else
\ifhep@ams\else
\SetMathAlphabet{\mathbb}{normal}{U}{%\ifhepmathfont@serif dsrom\else dsss\fi}{n}
\fi
\end{verbatim}

13
End of symbols conditional.

\fi
\fi

B Tests

\documentclass{article}
\%\textserif\textsans
\usepackage[oldstyle]{hep-font}
\usepackage{hep-math-font}
\usepackage{fancyvrb}\DefineShortVerb{|}
\newenvironment{vrb}{\begin{tabular}{@{}p{6cm}l@{}}}{\end{tabular}}
\begin{document}
\begin{vrb}
| & $Ab\Gamma\delta123$ \\
| & $\mathbf{Ab\Gamma\delta123}$ \\
| & $\mathrm{Ab\Gamma\delta123}$ \\
| & $\mathbf{\mathrm{Ab\Gamma\delta123}}$ !! \\
| & $\text{Ab\Gamma\delta123}$ \\
| & $\textbf{\text{Ab\Gamma\delta123}}$ \\
| & $\mathsf{Ab\Gamma\delta123}$ \\
| & $\mathbf{\mathsf{Ab\Gamma\delta123}}$ \\
| & $\mathtt{Ab\Gamma123}$ \\
| & $\mathbf{\mathtt{Ab\Gamma123}}$ \\
| & $\mathcal{ABC}$ \\
| & $\mathscr{ABC123}$ \\
| & $\mathbb{ABC1}$ \\
| & $\mathfrak{ABC123}$ \\
\end{vrb}
\Gamma\Delta\Lambda\Phi\Pi\Psi\Sigma\Theta\Upsilon\Xi\Omega
\alpha\beta\gamma\delta\epsilon\zeta\eta\theta\iota\kappa\lambda
\mu\nu\xi\rho\sigma\varsigma\tau\upsilon\phi\chi\psi\omega
\end{document}
# The ‘hep-math-font’ package

Extended Greek and sans-serif math

## Introduction

The ‘hep-math-font’ package adjust the math fonts to be sans-serif if the document is sans-serif. Additionally Greek letters are redefined to be always italic and upright in math and text mode respectively. Some math font macros are adjusted to give more consistently the naively expected results.

The package is loaded using ‘\usepackage{hep-math-font}’.

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