The HEP-FONT package*

Latin modern extended by computer modern

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Abstract

The HEP-FONT package loads standard font packages and extends the usual latin modern implementations by replacing missing fonts with computer modern counterparts.

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

`size` The `size=`⟨*size*⟩ option loads the specified font size. The possible ⟨*sizes*⟩ are: `8pt`, `9pt`, `10pt`, `11pt`, `12pt`, `14pt`, `17pt`, `20pt` and `default` deactivates this switch. The default value is 11 pt.

`sans` The `sans` option switches to sans-serif font instead of serif font.

`oldstyle` The `oldstyle` option switches to oldstyle numerals such as 123 in text mode instead of lining numerals such as 123.

The FONTENC package [1] with `T1` and `TU` font encoding is loaded for pdfTEX and LuaTEX, respectively.

Some restrictions of computer modern (CM) fonts are lifted with the FIXCM package [2].

The MICROTYPE [3] optimizations are activated.

The LATEX new font selection scheme is extended with the NFSSEXT-CFR package [4].

The latin modern (LM) font is loaded using the CFR-LM package [5] for pdfTEX.

The text companion fonts are loaded [6].

`\textsc` Bold **Small Caps** and a sans serif Small Caps based on the CM font [7] is provided, the latter using the SANSMATHFONTS [8] and HFOLDSTY [9] packages.

`\textui` A sans-serif upright italic font is provided using the SANSMATHFONTS package [8].

Finally the INPUTENC package [10] with the `utf8` option is loaded.

A Implementation

<*package>

Define a hepfont namespace for the options using the KVOPTIONS package [11].

```
\RequirePackage{kvoptions}
\SetupKeyvalOptions{
  family=hepfont,
```

*This document corresponds to HEP-FONT v1.4.

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```
  prefix=hepfont@
}
```

`size` Define the `size` option switching taking the font size as an argument.

```
\DeclareStringOption[11pt]{size}
```

`sans` Define the `sans` option switching to sans serif font.

```
\DeclareBoolOption[false]{sans}
\DeclareComplementaryOption{serif}{sans}
```

`lining` Define the `lining` option deactivating the use of text figures in text mode.

```
\DeclareBoolOption[true]{lining}
\DeclareComplementaryOption{oldstyle}{lining}
```

Process options.

```
\ProcessKeyvalOptions*
```

Read font argument from class call.

```
\def\hepfont@get@class#1.cls#2\relax{\def\hepfont@class{#1}}
\def\hepfont@getclass{\expandafter\hepfont@get@class\@filelist\relax}
\hepfont@getclass
\@ifclasswith{\hepfont@class}{10pt}{\setkeys{hepfont}{size=10pt}}{}
\@ifclasswith{\hepfont@class}{11pt}{\setkeys{hepfont}{size=11pt}}{}
\@ifclasswith{\hepfont@class}{12pt}{\setkeys{hepfont}{size=12pt}}{}
\@ifpackageloaded{jheppub}{\setkeys{hepfont}{size=default}}{}
```

Switch text size to requested value using the PDFTEXCMDS package [12].

```
\RequirePackage{pdftexcmds}
\ifnum\pdf@strcmp{\hepfont@size}{default}=0\else
  \def\hepfont@remove@pt#1pt{#1}
  \edef\hepfont@pt@size{\expandafter\hepfont@remove@pt\hepfont@size}
  \let\small\relax
  \let\footnotesize\relax
  \let\scriptsize\relax
  \let\tiny\relax
  \let\large\relax
  \let\Large\relax
  \let\LARGE\relax
  \let\huge\relax
  \let\Huge\relax
  \input{size\hepfont@pt@size.clo}
\fi
```

A.1 LuaLaTeX or XeLaTeX

Load the IFTEX package [13] and check if LuaLaTeX or XeLaTeX are running

```
\RequirePackage{iftex}
\iftutex
```

Load the FONTSETUP package [14] which lodas in turn the FONTSPEC [15] and UNICODE-MATH [16] packages.

```
  \RequirePackage{fontspec}
  \ifhepfont@lining\else
    \defaultfontfeatures{Numbers=OldStyle}
  \fi
  \PassOptionsToPackage{
    math-style=ISO,
    bold-style=ISO,
    sans-style=italic
  }{unicode-math}
  \PassOptionsToPackage{
    \ifhepfont@sans sansdefault\else olddefault\fi
  }{fontsetup}
  \RequirePackage{fontsetup}
```

Define numeral macros.

```
  \DeclareRobustCommand{\pstyle}{%
    \not@math@alphabet\pstyle\relax%
    \addfontfeatures{Numbers=Proportional}%
  }
  \DeclareRobustCommand{\tstyle}{%
    \not@math@alphabet\tstyle\relax%
    \addfontfeatures{Numbers=Monospaced}%
  }
  \DeclareRobustCommand{\ostyle}{%
    \not@math@alphabet\ostyle\relax%
    \addfontfeatures{Numbers=OldStyle}%
  }
  \DeclareRobustCommand{\lstyle}{%
    \not@math@alphabet\lstyle\relax%
    \addfontfeatures{Numbers=Lining}%
  }
  \DeclareRobustCommand{\postyle}{\pstyle\ostyle}
  \DeclareRobustCommand{\plstyle}{\pstyle\lstyle}
  \DeclareRobustCommand{\tostyle}{\tstyle\ostyle}
  \DeclareRobustCommand{\tlstyle}{\tstyle\lstyle}
  \DeclareRobustCommand{\tmstyle}{\ttfamily}
  \DeclareRobustCommand{\tvstyle}{\ttfamily}
  \DeclareTextFontCommand{\textl}{\lstyle}
  \DeclareTextFontCommand{\texto}{\ostyle}
  \DeclareTextFontCommand{\textp}{\pstyle}
  \DeclareTextFontCommand{\textt}{\tstyle}
```

```
\DeclareTextFontCommand{\textpl}{\plstyle}
\DeclareTextFontCommand{\textpo}{\postyle}
\DeclareTextFontCommand{\texttl}{\tlstyle}
\DeclareTextFontCommand{\textto}{\tostyle}
```

A.2 pdfLaTeX

```
\else
```

Load the INPUTENC package [10].

```
\PassOptionsToPackage{utf8}{inputenc}
\RequirePackage{inputenc}
```

Pick the correct font encoding depending on the engine used and load the FONTENC package [1] with this encoding. For details of the font encoding see [17].

```
\def\hepfont@encoding{T1}
\PassOptionsToPackage{\hepfont@encoding}{fontenc}
\RequirePackage{fontenc}
```

Switch document to sans-serif font if requested.

```
\ifhepfont@sans
  \renewcommand*{\familydefault}{\sfdefault}
\fi
```

Switch to the LM font using the CFR-LM package [5] Additionally, some warnings are silenced using the SILENCE [18] and ETOOLBOX [19] packages.

```
\RequirePackage{etoolbox}
\RequirePackage{silence}
\robustify\@latex@warning@no@line
\robustify\sl@StoreMessage
\WarningFilter{nfssext-cfr}{Patching font initialisation macro for serif.}
\WarningFilter{nfssext-cfr}{Patching font initialisation macro for sans.}
\WarningFilter{nfssext-cfr}{Patching font initialisation macro for typewriter.}
\WarningFilter{nfssext-cfr}{Overwriting kernel definition of \swshape (new)}
\ifhepfont@lining
  \PassOptionsToPackage{rm={lining},sf={lining},tt={lining}}{cfr-lm}
\fi
\RequirePackage{cfr-lm}
```

Fix the remaining CM [7] fonts using the FIX-CM package [2]

```
\RequirePackage{fix-cm}
```

Load the TEXTCOMP extension [6] and define helper functions.

```
\RequirePackage{textcomp}
```

A.2.1 Serif

For serif fonts

```
\rmfamily
```

```
\newcommand*{\hepfont@rm@shape}[3]{%
  \DeclareFontShape{\hepfont@encoding}{\rmdefault}{#1}{#2}{#3}{}%
}
```

\textsc For lining numerals add CM roman small caps (italic and bold) from the SLANTSC package [20].

```
\ifhepfont@lining
  \RequirePackage{slantsc}
  \hepfont@rm@shape{b}{sc}{<->ssub*cmr/bx/sc}{}
  \hepfont@rm@shape{bx}{sc}{<->ssub*cmr/bx/sc}{}
  \hepfont@rm@shape{b}{scsl}{<->ssub*cmr/bx/scsl}{}
  \hepfont@rm@shape{bx}{scsl}{<->ssub*cmr/bx/scit}{}
  \hepfont@rm@shape{b}{scit}{<->ssub*cmr/bx/scsl}{}
  \hepfont@rm@shape{bx}{scit}{<->ssub*cmr/bx/scit}{}
```

\textsc For oldstyle numerals use the fonts from the HFOLDSTY package [9].

```
\else
  \DeclareFontFamily{\hepfont@encoding}{hfor}{}
  \DeclareFontShape{\hepfont@encoding}{hfor}{bx}{sc}{
    <-6>hfoxc0500<6-7>hfoxc0600<7-8>hfoxc0700<8-9>hfoxc0800
    <9-10>hfoxc0900<10-12>hfoxc1000<12-17>hfoxc1200<17->hfoxc1728
  }{}
  \DeclareFontShape{\hepfont@encoding}{hfor}{bx}{scsl}{
    <-6>hfooc0500<6-7>hfooc0600<7-8>hfooc0700<8-9>hfooc0800
    <9-10>hfooc0900<10-12>hfooc1000<12-17>hfooc1200<17->hfooc1728
  }{}
  \hepfont@rm@shape{b}{sc}{<->ssub*hfor/bx/sc}{}
  \hepfont@rm@shape{bx}{sc}{<->ssub*hfor/bx/sc}{}
  \hepfont@rm@shape{bx}{scsl}{<->ssub*hfor/bx/scsl}{}
  \hepfont@rm@shape{b}{scit}{<->ssub*hfor/bx/scsl}{}
  \hepfont@rm@shape{bx}{scit}{<->ssub*hfor/bx/scsl}{}
  \hepfont@rm@shape{b}{scsl}{<->ssub*hfor/bx/scsl}{}
\fi
```

A.2.2 Sans serif

```
\sffamily
\newcommand*{\hepfont@sf@shape}[3]{%
  \DeclareFontShape{\hepfont@encoding}{\sfdefault}{#1}{#2}{#3}{}%
}
```

\textsc Provide the sans serif small caps font shape using the extended CM from the SANSMATHFONTS package [8].

```
\hepfont@sf@shape{m}{sc}{<->ssub*xcmss/m/sc}{}
\hepfont@sf@shape{b}{sc}{<->ssub*xcmss/bx/sc}{}
\hepfont@sf@shape{bx}{sc}{<->ssub*xcmss/bx/sc}{}
\hepfont@sf@shape{m}{scit}{<->ssub*xcmss/m/scit}{}
\hepfont@sf@shape{b}{scit}{<->ssub*xcmss/bx/scit}{}
\hepfont@sf@shape{bx}{scit}{<->ssub*xcmss/bx/scit}{}
\hepfont@sf@shape{m}{scsl}{<->ssub*xcmss/m/scit}{}
```

```
\hepfont@sf@shape{b}{scsl}{<->ssub*xcmss/bx/scit}{}
\hepfont@sf@shape{bx}{scsl}{<->ssub*xcmss/bx/scit}{}
```

`\textui` Provide a sans upright italic font.

```
\hepfont@sf@shape{m}{ui}{<->cmssu10}{}
```

A.3 Engine independent macros

```
\fi
```

Load the MICROTYPE font optimizations [3].

```
\RequirePackage{microtype}
```

Ensure that the table of contest uses tabular figures using the XPATCH package [21].

```
\RequirePackage{xpatch}
\xpretocmd{\@dottedtocline}{\tstyle}{}{}
\xpatchcmd{\@dottedtocline}{\normalfont}{\normalfont\tstyle}{}{}
\xpretocmd{\l@section}{\tstyle}{}{}
\xpretocmd{\l@chapter}{\tstyle}{}{}
\xpretocmd{\l@part}{\tstyle}{}{}
```

Ensure that the `verbatim` environment uses proportional font and provide an inline `\code` macro. Work around a bug in NFSSEXT-CFR which defines a global `\set` macro and breaks other macros of the same name.

```
\newcommand*{\codestyle}{\tmstyle\lstyle}
\let\verbatim@font\codestyle
\RequirePackage{xparse}
\ProvideDocumentCommand{\code}{v}{{\codestyle #1}}
```

Adjust the figures according to the `lining` option and ensure that tables always use lining.

```
\g@addto@macro\@floatboxreset{\tlstyle}
% \g@addto@macro\@subfloatboxreset{\tlstyle}
```

Adjust the equation such that the number is always table style.

```
\pretocmd{\theequation}{\tstyle}{}{}
```

`\unit` Patch the `\unit` and `\unitfrac` macros to work with lining numerals using the XPATCH package [21] if the UNITS package [22] is loaded. TODO implement patch without actually loading the package.

```
\ifhepfont@lining\else
% \AtBeginDocument{
%   \@ifpackageloaded{units}{
  \RequirePackage{units}
  \RequirePackage{xpatch}
  \xpatchcmd{\unit}{\else#1}{%
    \else\ifthenelse{\boolean{mmode}}{#1}{\textl{#1}}%
  }{}{}
  \xpatchcmd{\unitfrac}{\else#1}{%
    \else\ifthenelse{\boolean{mmode}}{#1}{\textl{#1}}%
```

```
  }{}{}
%   }{}
% }
\fi
```

</package>

B Test

B.1 pdfLaTeX

<*pdflatex>

```
\documentclass[a4paper]{article}

\usepackage[oldstyle]{hep-font}
\usepackage[cm]{fullpage}
\usepackage{fancyvrb}\DefineShortVerb{\|}
\newenvironment{vrb}{\begin{tabular}{@{}p{5.4cm}ll@{}}}{\end{tabular}}

\begin{document}

\subsection*{Roman}

\begin{vrb}
|\rmfamily| &
{\rmfamily Latin Modern Roman 123} \\
|  \sbweight| &
{\rmfamily\sbweight Latin Modern Roman Semi Bold 123} \\
|  \bfseries| &
{\rmfamily\bfseries Latin Modern Roman Bold Extended 123} \\
|\slshape| &
{\rmfamily\slshape Latin Modern Roman Oblique 123} \\
|  \sbweight| &
{\rmfamily\sbweight\slshape Latin Modern Roman Semi Bold Oblique 123} \\
|  \bfseries| &
{\rmfamily\bfseries\slshape Latin Modern Roman Bold Oblique Extended 123} \\
|\itshape| &
{\rmfamily\itshape Latin Modern Roman Italic 123} \\
|  \bfseries| &
{\rmfamily\bfseries\itshape Latin Modern Roman Bold Italic Extended 123} \\
|\uishape| &
{\rmfamily\uishape Latin Modern Roman Upright Italic 123} \\
|\scshape| &
{\rmfamily\scshape Latin Modern Roman Small Caps 123} \\
|  \bfseries| &
{\rmfamily\bfseries\scshape Computer Modern Roman Bold Small Caps 123} \\
|  \sishape| &
{\rmfamily\scshape\slshape Latin Modern Roman Oblique Small Caps 123} \\
|    \bfseries| &
{\rmfamily\slshape\bfseries\scshape Computer Modern Roman Bold Small Caps 123} \\
```

```
\end{vrb}

\subsubsection*{Dunhill}

\begin{vrb}
|\tistyle | &
{\tistyle Latin Modern Dunhill 123} \\
|  \slshape| &
{\tistyle\slshape Latin Modern Dunhill Oblique 123} \\
\end{vrb}

\subsection*{Sans}

\begin{vrb}
|\sffamily| &
{\sffamily Latin Modern Sans 123} \\
|  \fontseries{sbc}\selectfont| &
{\sffamily\fontseries{sbc}\selectfont Latin Modern Sans Demi Condensed 123} \\
|  \bfseries| &
{\sffamily\bfseries Latin Modern Sans Bold 123} \\
|\slshape| &
{\sffamily\slshape Latin Modern Sans Oblique 123} \\
|  \fontseries{sbc}\selectfont| &
{\sffamily\fontseries{sbc}\selectfont\slshape Latin Modern Sans Demi Condensed Oblique 123
|  \bfseries| &
{\sffamily\bfseries\slshape Latin Modern Sans Bold Oblique 123} \\
|\uishape| &
{\sffamily\uishape Computer Modern Sans Upright Italic 123} \\
|\scshape| &
{\sffamily\scshape Computer Modern Sans Small Caps 123} \\
|  \bfseries| &
{\sffamily\bfseries\scshape Computer Modern Sans Bold Small Caps 123} \\
|  \itshape| &
{\sffamily\itshape\scshape Computer Modern Sans Italic Small Caps 123} \\
|    \bfseries| &
{\sffamily\itshape\bfseries\scshape Computer Modern Sans Italic Bold Small Caps 123} \\
\end{vrb}

\subsubsection*{Quotation}

\begin{vrb}
|\qtstyle | &
{\sffamily\qtstyle Latin Modern Sans Extended 123} \\
|  \bfseries | &
{\sffamily\qtstyle\bfseries Latin Modern Sans Bold Extended 123} \\
|\slshape | &
{\sffamily\qtstyle\slshape Latin Modern Sans Extended Oblique 123} \\
|  \bfseries | &
{\sffamily\qtstyle\bfseries\slshape Latin Modern Sans Bold Extended Oblique 123} \\
\end{vrb}
```

```
262
263 \subsection*{Typewriter}
264
265 \begin{vrb}
266 |\ttfamily\tvstyle | &
267 {\ttfamily\tvstyle Latin Modern Typewriter Proportional 123} \\
268 |  \bfseries | &
269 {\ttfamily\tvstyle\bfseries Latin Modern Typewriter Proportional Dark 123} \\
270 |  \lgweight | &
271 {\ttfamily\tvstyle\lgweight Latin Modern Typewriter Proportional Light 123} \\
272 |\slshape | &
273 {\ttfamily\tvstyle\slshape Latin Modern Typewriter Proportional Oblique 123} \\
274 |  \bfseries | &
275 {\ttfamily\tvstyle\bfseries\slshape Latin Modern Typewriter Proportional Dark Oblique 123}
276 |  \lgweight | &
277 {\ttfamily\tvstyle\lgweight\slshape Latin Modern Typewriter Proportional Light Oblique 123
278 \end{vrb}
279
280 \subsubsection*{Fixed-width}
281
282 \begin{vrb}
283 |\ttfamily\tmstyle | &
284 {\ttfamily\tmstyle Latin Modern Typewriter 123} \\
285 |  \lgweight | &
286 {\ttfamily\tmstyle\lgweight Latin Modern Typewriter Light 123} \\
287 |  \bfseries | &
288 {\ttfamily\tmstyle\bfseries Latin Modern Typewriter Dark 123} \\
289 |  \fontseries{lc}\selectfont | &
290 {\ttfamily\tmstyle\fontseries{lc}\selectfont Latin Modern Typewriter Light Condensed 123}
291 |\slshape | &
292 {\ttfamily\tmstyle\slshape Latin Modern Typewriter Oblique 123} \\
293 |  \lgweight | &
294 {\ttfamily\tmstyle\lgweight\slshape Latin Modern Typewriter Light Oblique 123} \\
295 |  \bfseries | &
296 {\ttfamily\tmstyle\bfseries\slshape Latin Modern Typewriter Dark Oblique 123} \\
297 |  \fontseries{lc} | &
298 {\ttfamily\tmstyle\fontseries{lc}\slshape Latin Modern Typewriter Light Condensed Oblique
299 |\itshape | &
300 {\ttfamily\tmstyle\itshape Latin Modern Typewriter Italic 123} \\
301 |\scshape | &
302 {\ttfamily\tmstyle\scshape Latin Modern Typewriter Small Caps 123} \\
303 |  \slshape | &
304 {\ttfamily\tmstyle\scshape\slshape Latin Modern Typewriter Oblique Small Caps 123} \\
305 \end{vrb}
306
307 \end{document}
```

</pdflatex>

B.2 LuaLaTeX

<*lualatex>

```
\documentclass{article}

\usepackage[oldstyle]{hep-font}

\usepackage{fancyvrb}\DefineShortVerb{\|}
\newenvironment{vrb}{\begin{tabular}{@{}p{5.4cm}ll@{}}}{\end{tabular}}

\begin{document}

\subsection*{Roman}

\begin{vrb}
|\rmfamily| &
{\rmfamily New Computer Modern 123} \\
|  \bfseries| &
{\rmfamily\bfseries New Computer Modern 123} \\
|\slshape| &
{\rmfamily\slshape New Computer Modern 123} \\
|  \bfseries| &
{\rmfamily\bfseries\slshape New Computer Modern 123} \\
|\itshape| &
{\rmfamily\itshape New Computer Modern 123} \\
|  \bfseries| &
{\rmfamily\bfseries\itshape New Computer Modern 123} \\
|\scshape| &
{\rmfamily\scshape New Computer Modern 123} \\
|  \bfseries| &
{\rmfamily\bfseries\scshape New Computer Modern 123} \\
|  \sishape| &
{\rmfamily\scshape\slshape New Computer Modern 123} \\
|    \bfseries| &
{\rmfamily\slshape\bfseries\scshape New Computer Modern 123} \\
\end{vrb}

\subsection*{Sans}

\begin{vrb}
|\sffamily| &
{\sffamily New Computer Modern 123} \\
|  \bfseries| &
{\sffamily\bfseries New Computer Modern 123} \\
|\slshape| &
{\sffamily\slshape New Computer Modern 123} \\
|  \bfseries| &
{\sffamily\bfseries\slshape New Computer Modern 123} \\
|\itshape| &
{\sffamily\itshape New Computer Modern 123} \\
```

```
|  \bfseries| &
{\sffamily\bfseries\itshape New Computer Modern 123} \\
|\scshape| &
{\sffamily\scshape New Computer Modern 123} \\
\end{vrb}

\subsection*{Typewriter}

\begin{vrb}
|\ttfamily| &
{\ttfamily New Computer Modern 123} \\
|  \bfseries| &
{\ttfamily\bfseries New Computer Modern 123} \\
|\slshape| &
{\ttfamily\slshape New Computer Modern 123} \\
|  \bfseries| &
{\ttfamily\bfseries\slshape New Computer Modern 123} \\
|\itshape| &
{\ttfamily\itshape New Computer Modern 123} \\
|  \bfseries| &
{\ttfamily\bfseries\itshape New Computer Modern 123} \\
|\scshape| &
{\ttfamily\scshape New Computer Modern 123} \\
\end{vrb}

\subsection*{Uncial}

\begin{vrb}
|\uncial| &
{\uncial New Computer Modern 123} \\
|  \bfseries| &
{\uncial\bfseries New Computer Modern 123} \\
|\slshape| &
{\uncial\slshape New Computer Modern 123} \\
|  \bfseries| &
{\uncial\bfseries\slshape New Computer Modern 123} \\
\end{vrb}

\end{document}
```

</lualatex>

C Readme

<*readme>

```
# The ‘hep-font‘ package

Latin modern extended by computer modern.

## Introduction
```

```
399
400 The ‘hep-font‘ package loads standard font packages and extends the usual
401 Latin Modern implementations by replacing missing fonts with Computer
402 Modern counterparts.
403
404 The package is loaded with ‘\usepackage{hep-font}‘.
405
406 ## Author
407
408 Jan Hajer
409
410 ## License
411
412 This file may be distributed and/or modified under the conditions of the
413 ‘LaTeX‘ Project Public License, either version 1.3c of this license or
414 (at your option) any later version. The latest version of this license is
415 in ‘http://www.latex-project.org/lppl.txt‘ and version 1.3c or later is
416 part of all distributions of LaTeX version 2005/12/01 or later.
```

</readme>

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