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 (NFSS) is extended with the NFSSEXT-CFR package [4].

The latin modern (LM) font is loaded using the CFR-LM [5] and LMODERN [6] packages for pdfTeX and LuaTeX, respectively.

The text companion fonts are loaded [7].

\textsc Bold SMALL CAPS and a sans serif SMALL CAPS based on the CM font [8] is provided, the latter using the SANSMATHFONTS [9] and HFOLDSTY [10] packages.

\textui A sans-serif upright italic font is provided using the SANSMATHFONTS package [9].

Finally the INPUTENC package [11] with the utf8 option is loaded.

A Implementation

<*package>

Define a hepfont namespace for the options using the KVOPTIONS package [12].

```
1 \RequirePackage{kvoptions}
2 \SetupKeyvalOptions{
```

```
3    family=hepfont,
4    prefix=hepfont@
5  }
```

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

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

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

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

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

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

Process options.

```
11 \ProcessKeyvalOptions*
```

Read font argument from class call.

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

\ifxetexorluatex   Load the IFLUATEX [13] and IFXETEX [14] packages. Define the \ifxetexorluatex conditional checking if the package is executed by LuaLATEX or XƎLATEX.

```
19 \RequirePackage{ifluatex}
20 \RequirePackage{ifxetex}
21 \newif\ifxetexorluatex
22 \ifxetex\xetexorluatextrue
23 \else\ifluatex\xetexorluatextrue
24   \else\xetexorluatexfalse\fi
25 \fi
```

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 [15].

```
26 \def\hepfont@encoding{T\ifxetexorluatex U\else 1\fi}
27 \PassOptionsToPackage{\hepfont@encoding}{fontenc}
28 \RequirePackage{fontenc}
```

Switch document to sans-serif font if requested using the PDFTEXCMDS package [16].

```
29 \RequirePackage{pdftexcmds}
```

```
30 \ifnum\pdf@strcmp{\hepfont@size}{default}=0\else
31   \def\hepfont@remove@pt#1pt{#1}
32   \edef\hepfont@pt@size{\expandafter\hepfont@remove@pt\hepfont@size}
33   \let\small\relax
34   \let\footnotesize\relax
35   \let\scriptsize\relax
36   \let\tiny\relax
37   \let\large\relax
38   \let\Large\relax
39   \let\LARGE\relax
40   \let\huge\relax
41   \let\Huge\relax
42   \input{size\hepfont@pt@size.clo}
43 \fi
```

Switch document to sans-serif font if requested.

```
44 \ifhepfont@sans
45   \renewcommand{\familydefault}{\sfdefault}
46 \fi
```

Fix the remaining CM [8] fonts using the FIX-CM package [2] and load the MICROTYPE font optimizations [3].

```
47 \RequirePackage{fix-cm}
48 \RequirePackage{microtype}
```

Switch to the LM font using the CFR-LM [5] or LMODERN [6] packages depending on the TeX engine. In both cases the NFSS is extended using the NFSSEXT-CFR [4] package.

```
49 \ifxetexorluatex
50   \RequirePackage{nfssext-cfr}
51   \RequirePackage{lmodern}
52 \else
53   \ifhepfont@lining
54     \PassOptionsToPackage{rm={lining},sf={lining},tt={lining}}{cfr-lm}
55   \fi
56   \RequirePackage{cfr-lm}
57 \fi
```

Ensure that the table of contest uses tabular figures using the XPATCH package [17].

```
58 \RequirePackage{xpatch}
59 \xpretocmd{\@dottedtocline}{\tstyle}{}{}
60 \xpatchcmd{\@dottedtocline}{\normalfont}{\normalfont\tstyle}{}{}
61 \xpretocmd{\l@section}{\tstyle}{}{}
62 \xpretocmd{\l@chapter}{\tstyle}{}{}
63 \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.

```
64 \newcommand{\codestyle}{\tmstyle\lstyle}
65 \let\verbatim@font\codestyle
66 \RequirePackage{xparse}
67 \ProvideDocumentCommand{\code}{v}{{\codestyle #1}}
```

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

```
68 \g@addto@macro\@floatboxreset{\tlstyle}
69 % \g@addto@macro\@subfloatboxreset{\tlstyle}
```

Load the TEXTCOMP extension [7] and define helper functions.

```
70 \RequirePackage{textcomp}
71 \newcommand{\hepfont@sf@shape}[3]{%
72   \DeclareFontShape{\hepfont@encoding}{\sfdefault}{#1}{#2}{#3}{}%
73 }
74 \newcommand{\hepfont@rm@shape}[3]{%
75   \DeclareFontShape{\hepfont@encoding}{\rmdefault}{#1}{#2}{#3}{}%
76 }
```

For modern TeX engines define the bold and sans serif small caps font shapes using the FONTSPEC package [18].

```
77 \ifxetexorluatex
78   \RequirePackage{fontspec}
79   \setmainfont{Latin Modern Roman}[
80     UprightFeatures={SmallCapsFont={[lmromancaps10-regular.otf]}},
81     BoldFeatures={
82       SmallCapsFeatures={Letters=SmallCaps},
83       SmallCapsFont={[cmunbx.otf]}
84     }
85   ]
86   \hepfont@sf@shape{bx}{sc}{<->cmssbxcsc10}{}
87   \hepfont@sf@shape{b}{sc}{<->cmssbxcsc10}{}
88   \hepfont@sf@shape{m}{scit}{<->cmsscsci10}{}
89   \hepfont@sf@shape{m}{sc}{%
90     <-9>cmsscsc8<9-10>cmsscsc9<10->cmsscsc10%
91   }{}
```

If pdfLaTeX

```
92 \else
```

For serif fonts

```
93   \rmfamily
```

\textsc   For lining numerals add CM roman small caps (italic and bold) from the SLANTSC package [19].

```
94   \ifhepfont@lining
95     \RequirePackage{slantsc}
96     \hepfont@rm@shape{b}{sc}{<->ssub*cmr/bx/sc}{}
97     \hepfont@rm@shape{bx}{sc}{<->ssub*cmr/bx/sc}{}
```

```
 98    \hepfont@rm@shape{b}{scsl}{<->ssub*cmr/bx/scsl}{}
 99    \hepfont@rm@shape{bx}{scsl}{<->ssub*cmr/bx/scit}{}
100    \hepfont@rm@shape{b}{scit}{<->ssub*cmr/bx/scsl}{}
101    \hepfont@rm@shape{bx}{scit}{<->ssub*cmr/bx/scit}{}
```

\textsc For oldstyle numerals use the fonts from the HFOLDSTY package [10].

```
102  \else
103    \DeclareFontFamily{\hepfont@encoding}{hfor}{}
104    \DeclareFontShape{\hepfont@encoding}{hfor}{bx}{sc}{
105      <-6>hfoxc0500<6-7>hfoxc0600<7-8>hfoxc0700<8-9>hfoxc0800
106      <9-10>hfoxc0900<10-12>hfoxc1000<12-17>hfoxc1200<17->hfoxc1728
107    }{}
108    \DeclareFontShape{\hepfont@encoding}{hfor}{bx}{scsl}{
109      <-6>hfooc0500<6-7>hfooc0600<7-8>hfooc0700<8-9>hfooc0800
110      <9-10>hfooc0900<10-12>hfooc1000<12-17>hfooc1200<17->hfooc1728
111    }{}
112    \hepfont@rm@shape{b}{sc}{<->ssub*hfor/bx/sc}{}
113    \hepfont@rm@shape{bx}{sc}{<->ssub*hfor/bx/sc}{}
114    \hepfont@rm@shape{bx}{scsl}{<->ssub*hfor/bx/scsl}{}
115    \hepfont@rm@shape{b}{scit}{<->ssub*hfor/bx/scsl}{}
116    \hepfont@rm@shape{bx}{scit}{<->ssub*hfor/bx/scsl}{}
117    \hepfont@rm@shape{b}{scsl}{<->ssub*hfor/bx/scsl}{}
118  \fi
```

\textsc Provide the sans serif small caps font shape using the extended CM from the SANSMATHFONTS package [9].

```
119    \sffamily
120    \hepfont@sf@shape{m}{sc}{<->ssub*xcmss/m/sc}{}
121    \hepfont@sf@shape{b}{sc}{<->ssub*xcmss/bx/sc}{}
122    \hepfont@sf@shape{bx}{sc}{<->ssub*xcmss/bx/sc}{}
123    \hepfont@sf@shape{m}{scit}{<->ssub*xcmss/m/scit}{}
124    \hepfont@sf@shape{b}{scit}{<->ssub*xcmss/bx/scit}{}
125    \hepfont@sf@shape{bx}{scit}{<->ssub*xcmss/bx/scit}{}
126    \hepfont@sf@shape{m}{scsl}{<->ssub*xcmss/m/scit}{}
127    \hepfont@sf@shape{b}{scsl}{<->ssub*xcmss/bx/scit}{}
128    \hepfont@sf@shape{bx}{scsl}{<->ssub*xcmss/bx/scit}{}
```

\textui Provide a sans upright italic font.

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

Load the INPUTENC package [11] whe using pdfLaTeX.

```
131  \ifxetexorluatex\else
132    \PassOptionsToPackage{utf8}{inputenc}
133    \RequirePackage{inputenc}
134  \fi
```

`\unit` Patch the `\unit` and `\unitfrac` macros to work with lining numerals using the XPATCH package [17] if the UNITS package [20] is loaded. TODO implement patch without actually loading the package.

```
135 \ifhepfont@lining\else
136 % \AtBeginDocument{
137 %   \@ifpackageloaded{units}{
138     \RequirePackage{units}
139     \RequirePackage{xpatch}
140     \xpatchcmd{\unit}{\else#1}{%
141       \else\ifthenelse{\boolean{mmode}}{#1}{\textl{#1}}%
142     }{}{}
143     \xpatchcmd{\unitfrac}{\else#1}{%
144       \else\ifthenelse{\boolean{mmode}}{#1}{\textl{#1}}%
145     }{}{}
146 %   }{}
147 % }
148 \fi
```

`</package>`

B   Test

`<*test>`

```
149 \documentclass[a4paper]{article}
150
151 \usepackage[oldstyle]{hep-font}
152 %% \usepackage[oldstyle]{hep-paper}
153
154 \usepackage[cm]{fullpage}
155
156 \usepackage{fancyvrb}\DefineShortVerb{\|}
157 \newenvironment{vrb}{\begin{tabular}{@{}p{5.4cm}ll@{}}}{\end{tabular}}
158
159 \begin{document}
160
161 \subsection*{Roman}
162
163 \rmfamily
164 \begin{vrb}
165 |\rmfamily| & {Latin Modern Roman 123} \\
166 | \sbweight| & {\sbweight Latin Modern Roman Semi Bold 123} \\
167 | \bfseries| & {\bfseries Latin Modern Roman Bold Extended 123} \\
168 |\slshape| & {\slshape Latin Modern Roman Oblique 123} \\
169 | \sbweight| & {\sbweight\slshape Latin Modern Roman Semi Bold Oblique 123} \\
170 | \bfseries| & {\bfseries\slshape Latin Modern Roman Bold Oblique Extended 123} \\
171 |\itshape| & {\itshape Latin Modern Roman Italic 123} \\
172 | \bfseries| & {\bfseries\itshape Latin Modern Roman Bold Italic Extended 123} \\
173 |\uishape| & {\uishape Latin Modern Roman Upright Italic 123} \\
174 |\scshape| & {\scshape Latin Modern Roman Small Caps 123} \\
```

```
175 |  \bfseries| & {\bfseries\scshape Computer Modern Roman Bold Small Caps 123} \\
176 |  \sishape| & {\scshape\slshape Latin Modern Roman Oblique Small Caps 123} \\
177 |    \bfseries| & {\slshape\bfseries\scshape Computer Modern Roman Bold Small Caps 123} \\
178 \end{vrb}
179
180 \subsubsection*{Dunhill}
181
182 \tistyle
183 \begin{vrb}
184 |\tistyle | & {Latin Modern Dunhill 123} \\
185 |  \slshape| & {\slshape Latin Modern Dunhill Oblique 123} \\
186 \end{vrb}
187
188 \subsubsection*{Funny}
189
190 \fontfamily{cmfr}\selectfont
191 \begin{vrb}
192 |\fontfamily{cmfr}\selectfont | & {Computer Modern Funny 123} \\
193 |  \itshape| & {\itshape Computer Modern Funny Oblique 123} \\
194 \end{vrb}
195
196 \subsubsection*{Fib}
197
198 \fontfamily{cmfib}\selectfont
199 \begin{vrb}
200 |\fontfamily{cmfib}\selectfont | & {Computer Modern Fibonacci 123} \\
201 |  \slshape| & {\slshape Computer Modern Fibonacci Oblique 123} \\
202 \end{vrb}
203
204 \subsection*{Sans}
205
206 \sffamily
207 \begin{vrb}
208 |\sffamily| & {Latin Modern Sans 123} \\
209 |  \fontseries{sbc}\selectfont| & {\fontseries{sbc}\selectfont Latin Modern Sans Demi Cond
210 |  \bfseries| & {\bfseries Latin Modern Sans Bold 123} \\
211 |\slshape| & {\slshape Latin Modern Sans Oblique 123} \\
212 |  \fontseries{sbc}\selectfont| & {\fontseries{sbc}\selectfont\slshape Latin Modern Sans D
213 |  \bfseries| & {\bfseries\slshape Latin Modern Sans Bold Oblique 123} \\
214 |\uishape| & {\uishape Computer Modern Sans Upright Italic 123} \\
215 |\scshape| & {\scshape Computer Modern Sans Small Caps 123} \\
216 |  \bfseries| & {\bfseries\scshape Computer Modern Sans Bold Small Caps 123} \\
217 |  \itshape| & {\itshape\scshape Computer Modern Sans Italic Small Caps 123} \\
218 |    \bfseries| & {\itshape\bfseries\scshape Computer Modern Sans Italic Bold Small Caps 1
219 \end{vrb}
220
221 \subsubsection*{Quotation}
222
223 \qtstyle
224 \begin{vrb}
```

```
225 |\qtstyle | & {Latin Modern Sans Extended 123} \\
226 |   \bfseries | & {\bfseries Latin Modern Sans Bold Extended 123} \\
227 |\slshape | & {\slshape Latin Modern Sans Extended Oblique 123} \\
228 |   \bfseries | & {\bfseries\slshape Latin Modern Sans Bold Extended Oblique 123} \\
229 \end{vrb}
230
231 \subsection*{Typewriter}
232
233 \ttfamily
234 \tvstyle
235 \begin{vrb}
236 |\ttfamily\tvstyle | & {Latin Modern Typewriter Proportional 123} \\
237 |   \bfseries | & {\bfseries Latin Modern Typewriter Proportional Dark 123} \\
238 |   \lgweight | & {\lgweight Latin Modern Typewriter Proportional Light 123} \\
239 |\slshape | & {\slshape Latin Modern Typewriter Proportional Oblique 123} \\
240 |   \bfseries | & {\bfseries\slshape Latin Modern Typewriter Proportional Dark Oblique 123}
241 |   \lgweight | & {\lgweight Latin Modern Typewriter Proportional Light Oblique 123} \\
242 \end{vrb}
243
244 \subsubsection*{Fixed-width}
245
246 \tmstyle
247 \begin{vrb}
248 |\ttfamily\tmstyle | & {Latin Modern Typewriter 123} \\
249 |   \lgweight | & {\lgweight Latin Modern Typewriter Light 123} \\
250 |   \bfseries | & {\bfseries Latin Modern Typewriter Dark 123} \\
251 |   \fontseries{lc}\selectfont | & {\fontseries{lc}\selectfont Latin Modern Typewriter Ligh
252 |\slshape | & {\slshape Latin Modern Typewriter Oblique 123} \\
253 |   \lgweight | & {\lgweight\slshape Latin Modern Typewriter Light Oblique 123} \\
254 |   \bfseries | & {\bfseries\slshape Latin Modern Typewriter Dark Oblique 123} \\
255 |   \fontseries{lc} | & {\fontseries{lc}\slshape Latin Modern Typewriter Light Condensed Ob
256 |\itshape | & {\itshape Latin Modern Typewriter Italic 123} \\
257 |\scshape | & {\scshape Latin Modern Typewriter Small Caps 123} \\
258 |   \slshape | & {\scshape\slshape Latin Modern Typewriter Oblique Small Caps 123} \\
259 \end{vrb}
260
261 \end{document}
```

</test>

C   Readme

<*readme>

```
262 # The `hep-font` package
263
264 Latin modern extended by computer modern.
265
266 ## Introduction
267
268 The `hep-font` package loads standard font packages and extends the usual
```

</readme>

References

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