The file `cbfonts-fd.fdd` for use with LaTeX 2ε

Claudio Beccari `claudio dot beccari at gmail dot com`

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1 Introduction

This file `cbfonts-fd.fdd` provides font definitions files for typesetting Greek texts with the `LGR` encoded `cb` fonts.

The font definition files produced from this documented source file deal with both the `cb` fonts as LGR encoded (Greek) variants to match the European Computer Modern (T1 encoded EC fonts) and the Latin Modern fonts (T1 encoded LM fonts). This file derives from the `greek.fdd` one, originally prepared by myself and Apostolos Syropoulos, under the supervision of Johannes Braams.

Please, take notice that the actual fonts are the same ones with both incarnations of the font description files; the EC version, with fixed sizes, mimics the Latin EC font description files, that were set up in the early nineties and referred themselves to the bitmapped fonts that were (and still are) the only format available for such fonts. Their vector versions were produced either for benefit of commercial versions of the TeX system, for example for the commercial VTeX distribution, or were superseded by differently named font collections, such as the `CM-super` one. For compatibility reasons the font description files were not modified and still provide a finite set of font sizes.

The Latin Modern font collection was created with the vector format in mind; therefore their font description files contain definitions that allow continuous scaling of such fonts; in practice the optical sizes are reduced in number and each scaled version of every font is used for a range of font sizes, not for a single font size, as it happens with the EC fonts. This same approach was used here, since the `cb` fonts are normally distributed as both bitmapped and vector fonts, the latter ones being preferred when typesetting with pdfLaTeX.

I rewrote this file in order to detach it from the `babel-greek` bundle that is intended to deal with the Greek language irrespective of which fonts are used and possibly also from their encoding, so as to make it compatible with the UNICODE encoding. At the same time this documentation file and the derived font description files are specific for the `cb` fonts, so that the new Greek language `babel-greek` package maintainer does not have to maintain also the font description files, while I take care of the `cb` fonts.

The `LGR` font encoding is declared and set up by the encoding definition file `lgrenc.def` from the `greek-fontenc` package (http://www.ctan.org/pkg/greek-fontenc).

It is useful to recall that while typesetting Greek text intermixed with other languages in Latin script, the change of script takes place just by changing the encoding, at least when Type 1 fonts are used. When using `XeLaTeX` or `LuaLaTeX`, that employ OpenType fonts, this encoding shift is not necessary, because OpenType fonts include many hundreds glyphs, among which the Greek ones. I should remark that the Greek glyph collection of OpenType fonts is wider than the glyph collection of the `cb` Greek ones, but OT fonts generally lack certain `cb` glyphs often used in philology documents.

Moreover composers sometimes would like to use other fonts, different from the EC or LM ones; they can do so by calling suitable font packages; for example Antonis Tsolomitis made available the package `txfontsb` that contains the Greek glyphs arranged according to the `LGR` encoding, and that mach the design and style of the Latin Times eXtended fonts (package `txfonts`); they come with their suitable font description files that use the same family names as the Latin ones. Beware, though, that these Greek fonts match pretty well my fonts, but lack some important glyphs.

It is possible to use the `cb` fonts with other font families, as well as with the `TX` fonts, in spite of the availability of the fonts by Antonis Tsolomitis; may be they don't match as well the design and style of the Latin font families, but at least the `cb` fonts are more complete. The `teubner` package (http://www.ctan.org/pkg/teubner) contains suitable macros for creating the necessary font description files. The interested user is invited to refer him/her self to the extended `teubner` package documentation in file `teubner-doc.pdf`.

2 Font samples

Some font samples in medium series are shown in table 1.

As the above examples show, in spite the fact that not all shapes have been displayed, the Greek `cb` fonts contain more families and shapes that the corresponding EC and LM fonts. The necessary macros to change families, series, and shapes are either the usual ones already available for the EC and LM fonts, or are explicitly defined in the Greek language description file and in package `teubner`.

The outline family was requested at the very beginning of my work on Greek fonts by Apostolos Syropoulos who needed them for a slide show he typeset in Greek with the very first fonts available in provvisional form.

The Lipsian shape was requested by the users of package `teubner` who, being mostly philologists, were accustomed to this particular font shape used the Teubner Typography in Lipsia. This font is available in three series, medium, bold, and extended bold. The bold version is particularly desired when using this font with blacker Latin fonts, so that it substitutes easily the medium series in order to match the blacker Latin fonts in a better way.

The upright versions of the italic shape are more or less traditional with standard TEX system fonts, but explicit selection commands for the LM fonts are available, to my best knowledge, only in package `cfr-lm`.

Table 1: Some samples of Greek fonts

Family and shape	Sample glyphs
Regular upright	αβγδεζηθικλμνξοπρστυφχψως ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
Regular slanted	*αβγδεζηθικλμνξοπρστυφχψως* *ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ*
Regular italics	*αβγδεζηθικλμνξοπρστυφχψως* *ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ*
Regular lipsian	*αβγδεζηθικλμνξοπρστυφχψως* *ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ*
Regular caps and small caps	ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩΣ ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
Regular with serifed lower case	αβγδεζηθικλμνξοπρστυφχψως ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
Regular unslanted italics	αβγδεζηθικλμνξοπρστυφχψως ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
Outline upright	αβγδεζηθικλμνξοπρστυφχψως ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
Sans serif upright	αβγδεζηθικλμνξοπρστυφχψως ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
Sans serif italics	*αβγδεζηθικλμνξοπρστυφχψως* *ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ*
Sans serif variant italics	*αβγδεζηθικλμνξοπρστυφχψως* *ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ*
Typewriter type	αβγδεζηθικλμνξοπρστυφχψως ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
Typewriter type italics	*αβγδεζηθικλμνξοπρστυφχψως* *ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ*
Typewriter type caps and small caps	ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩΣ ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
Slides sans serif	αβγδεζηθικλμνξοπρστυφχψως ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
Slides typewriter	αβγδεζηθικλμνξοπρστυφχψως ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ

The sans serf italic variant differs from the regular one only in the shape of lower case epsilon; it was asked for by Greek users of the cb fonts.

This documented file contains the necessary information within the very description of the various families, series and shapes, so as to let the user to define him/her self the macros needed to select every family, series and shape s/he wants to use.

3 Scalable fonts

This new package release redefines to font definition files of the Latin Modern compatible CB Greek fonts so as to accept a scaling factor; the new `lgrlm??.fd` files are compatible with the previous ones: in facts they can be used exactly as the previous ones, but they can load slightly scaled fonts in order to match the x-height of other Latin script fonts the users might prefer to the standard Latin Modern ones. The users have three choices.

1. They define the macro `\lmfntscale` macro to contain the scaling factor.
2. They define in their preamble the following code:

   ```
   \makeatletter
   \newcommand*\setLGRfntscale{\bgroup
   \settoheight{\dimen3333}{\normalsize a}%
   \settoheight{\dimen4444}{\normalsize\usefont{LGR}{lmr}{m}{n} a}
   \dimen@=\dimexpr\dimen3333*\p@/\dimen4444\relax
   \edef\x{\egroup\noexpand\gdef\noexpand\lmfntscale{\strip@pt\dimen@}}\x}
   \makeatother
   ```

   and, after `\begin{document}`,they use command `\serLGRfntscale` without any argument, so that this macro doas the necessary calculations in order to define the special macro `\lmfntscale` with the substitution text contain the computed scale factor.

   Notice that the declarations `\makeatletter` and `\makeatother` should be omitted if that macro definition is inserted into a user's class or package file.

3. If available the users may call the `scalablecbfonts` package that automatically computes the scale factor, or lets the users compute it by issuing the `\setLGRfntscale` command as described above, but it also accepts a *key=value* option with the *value* containing the scale factor the want to use; the users might load the package as in this example:

   ```
   \usepackage[scalefactor=1.08]{scalablecbfonts}
   ```

   I suggest to use this package by letting it automatically compute the scale factor; it yields the most accurate value.

   The documentation of the `scalablecbfonts` gives more detailed information to use the scaled Greek Latin Modern CB fonts in conjunction with Latin script fonts different from the Latin Modern ones.

It is worth noting that in order to use the scaled Latin Modern compatible CB Greek fonts it is compulsory that their family names start with `lm`; missing this point the scale factor defined by means of the listed three methods misses its goal, because the it acts only on the Greek families whose name starts with `lm` since the Greek families whose name starts with `cm` provide only a finite set of fixed sizes; even in vector format they must remain compatible with the default Latin script CM fonts used by LaTeX.

It is also important to recall the necessity of defining special `.fd` files in case the users desire to employ Latin script fonts different from the Modern Latin ones. Package`teubner` may be used to produce them, but the `scalablecbfonts` package (in preparation at the date of this documentation) might be capable of doing all this work in an automatic way. This very file has been typeset using the new PX fonts for the Latin script and the Greek fonts appearing in table 1 shows that the size of the Greek fonts has been matched to the larger Palatino ones used in this document.

4 The `docstrip` modules

The following modules are used to direct `docstrip` in generating external files and for delimiting the driver file:

driver	guard for this documentation driver file
LGRcmr	The Roman font shapes
LGRcmro	The Outline Roman font shapes
LGRcmss	The Sans Serif font shapes
LGRcmtt	The typewriter font shapes
LGRlcmss	The slide Sans Serif font shapes
LGRlcmtt	The slide typewriter fonts
LGRlmr	The Roman font shapes
LGRlmro	The Outline Roman font shapes
LGRlmss	The Sans Serif font shapes
LGRlmtt	The typewriter font shapes

A typical DOCSTRIP command file would then have entries like:

```
\generateFile{lgrcmr.fd}{t}{\from{cbgreek.fdd}{LGRcmr}}
```

5 The font definition files

The `cb` fonts that I prepared are complete, in any sense of the word, and moreover fit nicely with the Computer Modern font family and the Latin Modern ones.

We begin with the definitions for the Greek European Computer font families.

```
\providecommand{\EC@family}[5]{%
  \DeclareFontShape{#1}{#2}{#3}{#4}
  {<5><6><7><8><9><10><10.95><12><14.4>%
   <17.28><20.74><24.88><29.86><35.83>genb*#5}{}}
```

```
\DeclareFontFamily{LGR}{cmr}{}
\EC@family{LGR}{cmr}{m}{n}    {grmn}
\EC@family{LGR}{cmr}{m}{sl}   {grmo}
\EC@family{LGR}{cmr}{m}{it}   {grmi}
\EC@family{LGR}{cmr}{m}{sc}   {grmc}
\EC@family{LGR}{cmr}{m}{ui}   {grmu}
\EC@family{LGR}{cmr}{m}{li}   {grml}
\EC@family{LGR}{cmr}{m}{rs}   {gmmn}
\EC@family{LGR}{cmr}{m}{ro}   {gmmo}
%
\EC@family{LGR}{cmr}{bx}{sc}  {grxc}
\EC@family{LGR}{cmr}{bx}{n}   {grxn}
\EC@family{LGR}{cmr}{bx}{sl}  {grxo}
\EC@family{LGR}{cmr}{bx}{it}  {grxi}
\EC@family{LGR}{cmr}{bx}{ui}  {grxu}
\EC@family{LGR}{cmr}{bx}{li}  {grxl}
\EC@family{LGR}{cmr}{bx}{rs}  {gmxn}
\EC@family{LGR}{cmr}{bx}{ro}  {gmxo}
\EC@family{LGR}{cmr}{b}{li}   {grbl}
\DeclareFontShape{LGR}{cmr}{b}{n}
       {<->ssub*cmr/bx/n}{}
\DeclareFontShape{LGR}{cmr}{b}{sc}
       {<->ssub*cmr/bx/sc}{}
```

The Greek outline family is complete with the same five shapes and the two series as the roman family.

```
\providecommand{\EC@family}[5]{%
  \DeclareFontShape{#1}{#2}{#3}{#4}
  {<5><6><7><8><9><10><10.95><12><14.4>%
   <17.28><20.74><24.88><29.86><35.83>genb*#5}{}}
\DeclareFontFamily{LGR}{cmro}{}
\EC@family{LGR}{cmro}{m}{n}    {gomn}
\EC@family{LGR}{cmro}{m}{sl}   {gomo}
\EC@family{LGR}{cmro}{m}{it}   {gomi}
\EC@family{LGR}{cmro}{m}{sc}   {gomc}
\EC@family{LGR}{cmro}{m}{ui}   {gomu}
\EC@family{LGR}{cmro}{bx}{sc}  {goxc}
\EC@family{LGR}{cmro}{bx}{n}   {goxn}
\EC@family{LGR}{cmro}{bx}{sl}  {goxo}
\EC@family{LGR}{cmro}{bx}{it}  {goxi}
\EC@family{LGR}{cmro}{bx}{ui}  {goxu}
\DeclareFontShape{LGR}{cmro}{b}{n}
       {<->ssub*cmro/bx/n}{}
\DeclareFontShape{LGR}{cmro}{b}{sc}
       {<->ssub*cmro/bx/sc}{}
```

Then we have the `typewriter` fonts.

```
\providecommand{\EC@family}[5]{%
  \DeclareFontShape{#1}{#2}{#3}{#4}
  {<5><6><7><8><9><10><10.95><12><14.4>%
```

```
   <17.28><20.74><24.88><29.86><35.83>genb*#5}{}}
\DeclareFontFamily{LGR}{cmtt}{\hyphenchar\font\m@ne}
\EC@family{LGR}{cmtt}{m}{n}   {gttn}
\EC@family{LGR}{cmtt}{m}{sl}  {gtto}
\EC@family{LGR}{cmtt}{m}{sc}  {gttc}
\EC@family{LGR}{cmtt}{m}{it}  {gtti}
\EC@family{LGR}{cmtt}{m}{ui}  {gttu}
\DeclareFontShape{LGR}{cmtt}{bx}{n}
       {<->ssub*cmtt/m/n}{}
\DeclareFontShape{LGR}{cmtt}{bx}{sl}
       {<->ssub*cmtt/m/sl}{}
\DeclareFontShape{LGR}{cmtt}{bx}{it}
       {<->ssub*cmtt/m/it}{}
\DeclareFontShape{LGR}{cmtt}{bx}{sc}
       {<->ssub*cmtt/m/sc}{}
\DeclareFontShape{LGR}{cmtt}{bx}{ui}
       {<->ssub*cmtt/m/ui}{}
```

Now we come to the Sans Serif font families to be used in Greek texts.

```
\providecommand{\EC@family}[5]{%
  \DeclareFontShape{#1}{#2}{#3}{#4}
  {<5><6><7><8><9><10><10.95><12><14.4>%
   <17.28><20.74><24.88><29.86><35.83>genb*#5}{}}
\DeclareFontFamily{LGR}{cmss}{}
\EC@family{LGR}{cmss}{m}{n}    {gsmn}
\EC@family{LGR}{cmss}{m}{sl}   {gsmo}
\EC@family{LGR}{cmss}{m}{sc}   {gsmc}
\EC@family{LGR}{cmss}{m}{it}   {gsmi}
\EC@family{LGR}{cmss}{m}{ui}   {gsmu}
\EC@family{LGR}{cmss}{m}{iv}   {gsme}
\EC@family{LGR}{cmss}{m}{uv}   {gsma}
%
\EC@family{LGR}{cmss}{bx}{n}   {gsxn}
\EC@family{LGR}{cmss}{bx}{sl}  {gsxo}
\EC@family{LGR}{cmss}{bx}{sc}  {gsxc}
\EC@family{LGR}{cmss}{bx}{it}  {gsxi}
\EC@family{LGR}{cmss}{bx}{ui}  {gsxu}
\EC@family{LGR}{cmss}{bx}{iv}  {gsxe}
\EC@family{LGR}{cmss}{bx}{uv}  {gsxa}
```

We have finished with the "regular" fonts. We now provide the fonts definition files for the fonts used only in slides. First comes the typewriter font.

```
\DeclareFontFamily{LGR}{lcmtt}{\hyphenchar\font\m@ne}
\DeclareFontShape{LGR}{lcmtt}{m}{n}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * gltn}{}
\DeclareFontShape{LGR}{lcmtt}{m}{In}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * gljn}{}
\DeclareFontShape{LGR}{lcmtt}{m}{it}{%
```

```
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glto}{}
\DeclareFontShape{LGR}{lcmtt}{m}{Iit}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * gljo}{}
\DeclareFontShape{LGR}{lcmtt}{m}{sl}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 ssub * lcmtt/m/it}{}
\DeclareFontShape{LGR}{lcmtt}{m}{Isl}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 ssub * lcmtt/m/Iit}{}
\DeclareFontShape{LGR}{lcmtt}{m}{sc}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * gltc}{}
\DeclareFontShape{LGR}{lcmtt}{m}{Isc}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * gljc}{}
```

And then the Sans Serif font.

```
\DeclareFontFamily{LGR}{lcmss}{}
\DeclareFontShape{LGR}{lcmss}{m}{n}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glmn}{}
\DeclareFontShape{LGR}{lcmss}{m}{In}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glin}{}
\DeclareFontShape{LGR}{lcmss}{m}{sl}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glmo}{}
\DeclareFontShape{LGR}{lcmss}{m}{Isl}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glio}{}
\DeclareFontShape{LGR}{lcmss}{m}{it}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glmi}{}
\DeclareFontShape{LGR}{lcmss}{m}{Iit}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glii}{}
\DeclareFontShape{LGR}{lcmss}{m}{ui}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glmu}{}
\DeclareFontShape{LGR}{lcmss}{bx}{n}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glxn}{}
\DeclareFontShape{LGR}{lcmss}{bx}{In}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glwn}{}
\DeclareFontShape{LGR}{lcmss}{bx}{sl}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glxo}{}
```

```
\DeclareFontShape{LGR}{lcmss}{bx}{Isl}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glwo}{}
\DeclareFontShape{LGR}{lcmss}{bx}{it}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glxi}{}
\DeclareFontShape{LGR}{lcmss}{bx}{Iit}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glwi}{}
\DeclareFontShape{LGR}{lcmss}{m}{sc}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glmc}{}
\DeclareFontShape{LGR}{lcmss}{m}{Isc}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glic}{}
\DeclareFontShape{LGR}{lcmss}{bx}{sc}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glxc}{}
\DeclareFontShape{LGR}{lcmss}{bx}{Isc}{%
 <7><8><10><12><13.82><16.59><19.91><23.89><28.66><34.4><41.28>
 genb * glwc}{}
```

And now come the font definition files compatible with the Latin Modern family names and sizes; notice that the Latin Modern fonts are available only as scalable PostScript fonts, therefore they cope with (stepwise) continuous scaling; also the cb fonts are distributed as scalable PostScript fonts, so it makes sense to use the same size and family specifications as the LM fonts.

We start with the Latin Modern Regular.

```
\expandafter\ifx\csname lmfntscale\endcsname\relax
   \let\lm@fntscale\empty
\else
   \edef\lm@fntscale{s*[\csname lmfntscale\endcsname]}%
\fi
\DeclareFontFamily{LGR}{lmr}{}
\DeclareFontShape{LGR}{lmr}{m}{n}%
  {<-5.5>    \lm@fntscale grmn0500  <5.5-6.5> \lm@fntscale grmn0600
   <6.5-7.5> \lm@fntscale grmn0700  <7.5-8.5> \lm@fntscale grmn0800
   <8.5-9.5> \lm@fntscale grmn0900  <9.5-11>  \lm@fntscale grmn1000
   <11-15>   \lm@fntscale grmn1200  <15->     \lm@fntscale grmn1728}{}
\DeclareFontShape{LGR}{lmr}{m}{rs}%
  {<-5.5>    \lm@fntscale gmmn0500  <5.5-6.5> \lm@fntscale gmmn0600
   <6.5-7.5> \lm@fntscale gmmn0700  <7.5-8.5> \lm@fntscale gmmn0800
   <8.5-9.5> \lm@fntscale gmmn0900  <9.5-11>  \lm@fntscale gmmn1000
   <11-15>   \lm@fntscale gmmn1200    <15->   \lm@fntscale gmmn1728}{}
\DeclareFontShape{LGR}{lmr}{m}{sl}%
  {<-8.5>   \lm@fntscale grmo0800   <8.5-9.5> \lm@fntscale grmo0900
   <9.5-11> \lm@fntscale grmo1000   <11-15>   \lm@fntscale grmo1200
      <15-> \lm@fntscale grmo1728}{}
\DeclareFontShape{LGR}{lmr}{m}{ro}%
  {<-8.5>   \lm@fntscale gmmo0800   <8.5-9.5> \lm@fntscale gmmo0900
```

```
   <9.5-11> \lm@fntscale gmmo1000   <11-15>   \lm@fntscale gmmo1200
   <15->    \lm@fntscale gmmo1728}{}
\DeclareFontShape{LGR}{lmr}{m}{it}%
  {<-7.5>    \lm@fntscale grmi0700
   <7.5-8.5> \lm@fntscale grmi0800  <8.5-9.5> \lm@fntscale grmi0900
   <9.5-11>  \lm@fntscale grmi1000  <11-15>   \lm@fntscale grmi1200
    <15->    \lm@fntscale grmi1728}{}
\DeclareFontShape{LGR}{lmr}{m}{li}%
  {<-7.5> \lm@fntscale grml0700
   <7.5-8.5> \lm@fntscale grml0800    <8.5-9.5> \lm@fntscale grml0900
   <9.5-11>  \lm@fntscale grml1000     <11-15>  \lm@fntscale grml1200
   <15->     \lm@fntscale grml1728}{}
\DeclareFontShape{LGR}{lmr}{m}{ui}%
  {<-7.5>    \lm@fntscale grmu0700
   <7.5-8.5> \lm@fntscale grmu0800    <8.5-9.5> \lm@fntscale grmu0900
   <9.5-11>  \lm@fntscale grmu1000    <11-15>   \lm@fntscale grmu1200
   <15->     \lm@fntscale grmu1728}{}
\DeclareFontShape{LGR}{lmr}{m}{sc}%
  {<-7.5>    \lm@fntscale grmc0700
   <7.5-8.5> \lm@fntscale grmc0800    <8.5-9.5> \lm@fntscale grmc0900
   <9.5-11>  \lm@fntscale grmc1000    <11-15>   \lm@fntscale grmc1200
   <15->     \lm@fntscale grmc1728}{}
% slanted CSC is changed to unslanted CSC
\DeclareFontShape{LGR}{lmr}{m}{scsl}%
     {<-> ssub*lmr/m/sc}{}
%%%%%%%% bold and bold extended series
\DeclareFontShape{LGR}{lmr}{bx}{n}
  {<-5.5>    \lm@fntscale grxn0500  <5.5-6.5> \lm@fntscale grxn0600
   <6.5-7.5> \lm@fntscale grxn0700  <7.5-8.5> \lm@fntscale grxn0800
   <8.5-9.5> \lm@fntscale grxn0900  <9.5-11>  \lm@fntscale grxn1000
   <11-15>   \lm@fntscale grxn1200  <15->     \lm@fntscale grxn1728}{}
\DeclareFontShape{LGR}{lmr}{bx}{rs}
  {<-5.5>    \lm@fntscale gmxn0500  <5.5-6.5> \lm@fntscale gmxn0600
   <6.5-7.5> \lm@fntscale gmxn0700  <7.5-8.5> \lm@fntscale gmxn0800
   <8.5-9.5> \lm@fntscale gmxn0900  <9.5-11>  \lm@fntscale gmxn1000
   <11-15>   \lm@fntscale gmxn1200  <15->     \lm@fntscale gmxn1728}{}
\DeclareFontShape{LGR}{lmr}{bx}{it}
  {<-7.5>    \lm@fntscale grxi0700
   <7.5-8.5> \lm@fntscale grxi0800    <8.5-9.5> \lm@fntscale grxi0900
   <9.5-11>  \lm@fntscale grxi1000    <11-15>   \lm@fntscale grxi1200
   <15->     \lm@fntscale grxi1728}{}
\DeclareFontShape{LGR}{lmr}{b}{li}
  {<-7.5>    \lm@fntscale grbl0700
   <7.5-8.5> \lm@fntscale grbl0800    <8.5-9.5> \lm@fntscale grbl0900
   <9.5-11>  \lm@fntscale grbl1000    <11-15>   \lm@fntscale grbl1200
   <15->     \lm@fntscale grbl1728}{}
\DeclareFontShape{LGR}{lmr}{bx}{li}
  {<-7.5>    \lm@fntscale grxl0700
   <7.5-8.5> \lm@fntscale grxl0800    <8.5-9.5> \lm@fntscale grxl0900
   <9.5-11>  \lm@fntscale grxl1000    <11-15>   \lm@fntscale grxl1200
```

```
   <15->     \lm@fntscale grxl1728}{}
\DeclareFontShape{LGR}{lmr}{bx}{ui}
  {<-7.5>    \lm@fntscale grxu0700
   <7.5-8.5> \lm@fntscale grxu0800    <8.5-9.5>  \lm@fntscale grxu0900
   <9.5-11>  \lm@fntscale grxu1000    <11-15>    \lm@fntscale grxu1200
   <15->     \lm@fntscale grxu1728}{}
\DeclareFontShape{LGR}{lmr}{bx}{sl}
  {<-8.5>    \lm@fntscale grxo0800    <8.5-9.5> \lm@fntscale grxo0900
   <9.5-11>  \lm@fntscale grxo1000   <11-15>    \lm@fntscale grxo1200
   <15->     \lm@fntscale grxo1728}{}
\DeclareFontShape{LGR}{lmr}{bx}{ro}
  {<-8.5>    \lm@fntscale gmxo0800    <8.5-9.5> \lm@fntscale gmxo0900
   <9.5-11>  \lm@fntscale gmxo1000    <11-15>   \lm@fntscale gmxo1200
   <15->     \lm@fntscale gmxo1728}{}
\DeclareFontShape{LGR}{lmr}{bx}{sc}%
  {<-7.5>    \lm@fntscale grxc0700
   <7.5-8.5> \lm@fntscale grxc0800    <8.5-9.5> \lm@fntscale grxc0900
   <9.5-11>  \lm@fntscale grxc1000    <11-15>   \lm@fntscale grxc1200
   <15->     \lm@fntscale grxc1728}{}
```

Then the Latin Modern Regular Outline:

```
\expandafter\ifx\csname lmfntscale\endcsname\relax
   \let\lm@fntscale\empty
\else
   \edef\lm@fntscale{s*[\csname lmfntscale\endcsname]}%
\fi
\DeclareFontFamily{LGR}{lmro}{}
\DeclareFontShape{LGR}{lmro}{m}{n}%
  {<-5.5>    \lm@fntscale gomn0500   <5.5-6.5> \lm@fntscale gomn0600
   <6.5-7.5> \lm@fntscale gomn0700   <7.5-8.5> \lm@fntscale gomn0800
   <8.5-9.5> \lm@fntscale gomn0900   <9.5-11>  \lm@fntscale gomn1000
   <11-15>   \lm@fntscale gomn1200   <15->     \lm@fntscale gmr1728}{}
\DeclareFontShape{LGR}{lmro}{m}{sl}%
  {<-8.5>    \lm@fntscale gomo0800    <8.5-9.5> \lm@fntscale gomo0900
   <9.5-11>  \lm@fntscale gomo1000    <11-15>   \lm@fntscale gomo1200
   <15->     \lm@fntscale gomo1728}{}
\DeclareFontShape{LGR}{lmro}{m}{it}%
  {<-7.5>    \lm@fntscale gomi0700
   <7.5-8.5> \lm@fntscale gomi0800    <8.5-9.5> \lm@fntscale gomi0900
   <9.5-11>  \lm@fntscale gomi1000    <11-15>   \lm@fntscale gomi1200
   <15->     \lm@fntscale gomi1728}{}
\DeclareFontShape{LGR}{lmro}{m}{ui}%
  {<-7.5>    \lm@fntscale gomu0700
   <7.5-8.5> \lm@fntscale gomu0800    <8.5-9.5> \lm@fntscale gomu0900
   <9.5-11>  \lm@fntscale gomu1000    <11-15>   \lm@fntscale gomu1200
   <15->     \lm@fntscale gomu1728}{}
\DeclareFontShape{LGR}{lmro}{m}{sc}%
  {<-7.5>    \lm@fntscale gomc0700
   <7.5-8.5> \lm@fntscale gomc0800    <8.5-9.5> \lm@fntscale gomc0900
   <9.5-11>  \lm@fntscale gomc1000    <11-15>   \lm@fntscale gomc1200
```

```
   <15->     \lm@fntscale gomc1728}{}
% slanted CSC is changed to unslanted CSC
\DeclareFontShape{LGR}{lmro}{m}{scsl}%
     {<-> ssub*lmr/m/sc}{}
%%%%%%%% bold extended series
\DeclareFontShape{LGR}{lmro}{bx}{n}
  {<-5.5>    \lm@fntscale goxn0500  <5.5-6.5> \lm@fntscale gox0600
   <6.5-7.5> \lm@fntscale goxn0700  <7.5-8.5> \lm@fntscale goxn0800
   <8.5-9.5> \lm@fntscale goxn0900  <9.5-11>  \lm@fntscale goxn1000
   <11-15>   \lm@fntscale goxn1200  <15->     \lm@fntscale goxn1728}{}
\DeclareFontShape{LGR}{lmro}{bx}{it}
  {<-7.5>    \lm@fntscale goxi0700
   <7.5-8.5> \lm@fntscale goxi0800    <8.5-9.5> \lm@fntscale goxi0900
   <9.5-11>  \lm@fntscale goxi1000    <11-15>   \lm@fntscale goxi1200
   <15->     \lm@fntscale goxi1728}{}
\DeclareFontShape{LGR}{lmro}{bx}{ui}
  {<-7.5>    \lm@fntscale goxu0700
   <7.5-8.5> \lm@fntscale goxu0800    <8.5-9.5> \lm@fntscale goxu0900
   <9.5-11>  \lm@fntscale goxu1000    <11-15>   \lm@fntscale goxu1200
   <15->     \lm@fntscale goxu1728}{}
\DeclareFontShape{LGR}{lmro}{bx}{sl}
  {<-8.5>    \lm@fntscale goxo0800    <8.5-9.5> \lm@fntscale goxo0900
   <9.5-11>  \lm@fntscale goxo1000    <11-15>   \lm@fntscale goxo1200
   <15->     \lm@fntscale goxo1728}{}
\DeclareFontShape{LGR}{lmro}{bx}{sc}%
  {<-7.5>    \lm@fntscale goxc0700
   <7.5-8.5> \lm@fntscale goxc0800    <8.5-9.5> \lm@fntscale goxc0900
   <9.5-11>  \lm@fntscale goxc1000    <11-15>   \lm@fntscale goxc1200
   <15->     \lm@fntscale goxc1728}{}
```

Now the Latin Modern Sans Serif

```
\expandafter\ifx\csname lmfntscale\endcsname\relax
   \let\lm@fntscale\empty
\else
   \edef\lm@fntscale{s*[\csname lmfntscale\endcsname]}%
\fi
\DeclareFontFamily{LGR}{lmss}{}
\DeclareFontShape{LGR}{lmss}{m}{n}
  {<-8.5>    \lm@fntscale gsmn0800
   <8.5-9.5> \lm@fntscale gsmn0900  <9.5-11>  \lm@fntscale gsmn1000
   <11-15.5> \lm@fntscale gsmn1200  <15.5->   \lm@fntscale gsmn1728}{}
\DeclareFontShape{LGR}{lmss}{m}{it}
  {<-8.5>    \lm@fntscale gsmi0800
   <8.5-9.5> \lm@fntscale gsmi0900   <9.5-11>  \lm@fntscale gsmi1000
   <11-15.5> \lm@fntscale gsmi1200   <15.5->   \lm@fntscale gsmi1728}{}
\DeclareFontShape{LGR}{lmss}{m}{iv}
  {<-8.5>    \lm@fntscale gsme0800
   <8.5-9.5> \lm@fntscale gsme0900  <9.5-11>  \lm@fntscale gsme1000
   <11-15.5> \lm@fntscale gsme1200  <15.5->   \lm@fntscale gsme1728}{}
\DeclareFontShape{LGR}{lmss}{m}{ui}
```

```
  {<-8.5>    \lm@fntscale gsmu0800
   <8.5-9.5> \lm@fntscale gsmu0900  <9.5-11>  \lm@fntscale gsmu1000
   <11-15.5> \lm@fntscale gsmu1200  <15.5->   \lm@fntscale gsmu1728}{}
\DeclareFontShape{LGR}{lmss}{m}{uv}
  {<-8.5>    \lm@fntscale gsma0800
   <8.5-9.5> \lm@fntscale gsma0900  <9.5-11>  \lm@fntscale gsma1000
   <11-15.5> \lm@fntscale gsma1200  <15.5->   \lm@fntscale gsma1728}{}
\DeclareFontShape{LGR}{lmss}{m}{sl}
  {<-8.5>    \lm@fntscale gsmo0800
   <8.5-9.5> \lm@fntscale gsmo0900  <9.5-11>  \lm@fntscale gsmo1000
   <11-15.5> \lm@fntscale gsmo1200  <15.5->   \lm@fntscale gsmo1728}{}
\DeclareFontShape{LGR}{lmss}{m}{sc}
  {<-8.5>    \lm@fntscale gsmc0800
   <8.5-9.5> \lm@fntscale gsmc0900  <9.5-11>  \lm@fntscale gsmc1000
   <11-15.5> \lm@fntscale gsmc1200  <15.5->   \lm@fntscale gsmc1728}{}
%%%%%%%% semibold condensed series substituted with medium series
\DeclareFontShape{LGR}{lmss}{sbc}{n}
{<-> ssub*lmss/m/n}{}
\DeclareFontShape{LGR}{lmss}{sbc}{sl}
{<-> ssub*/lmss/m/sl}{}
\DeclareFontShape{LGR}{lmss}{sbc}{it}
{<->ssub*lmss/m/sl}{}
%%%%%%%%% bold extended series
\DeclareFontShape{LGR}{lmss}{bx}{n}
  {<-8.5>    \lm@fntscale gsxn0800
   <8.5-9.5> \lm@fntscale gsxn0900  <9.5-11>  \lm@fntscale gsxn1000
   <11-15.5> \lm@fntscale gsxn1200  <15.5->   \lm@fntscale gsxn1728}{}
\DeclareFontShape{LGR}{lmss}{bx}{sl}
  {<-8.5>    \lm@fntscale gsxo0800
   <8.5-9.5> \lm@fntscale gsxo0900  <9.5-11>  \lm@fntscale gsxo1000
   <11-15.5> \lm@fntscale gsxo1200  <15.5->   \lm@fntscale gsxo1728}{}
\DeclareFontShape{LGR}{lmss}{bx}{it}
  {<-8.5>    \lm@fntscale gsxi0800
   <8.5-9.5> \lm@fntscale gsxi0900  <9.5-11>  \lm@fntscale gsxi1000
   <11-15.5> \lm@fntscale gsxi1200  <15.5->   \lm@fntscale gsxi1728}{}
\DeclareFontShape{LGR}{lmss}{bx}{iv}
  {<-8.5>    \lm@fntscale gsxe0800
   <8.5-9.5> \lm@fntscale gsxe0900  <9.5-11>  \lm@fntscale gsxe1000
   <11-15.5> \lm@fntscale gsxe1200  <15.5->   \lm@fntscale gsxe1728}{}
\DeclareFontShape{LGR}{lmss}{bx}{ui}
  {<-8.5>    \lm@fntscale gsxu0800
   <8.5-9.5> \lm@fntscale gsxu0900  <9.5-11>  \lm@fntscale gsxu1000
   <11-15.5> \lm@fntscale gsxu1200  <15.5->   \lm@fntscale gsxu1728}{}
\DeclareFontShape{LGR}{lmss}{bx}{uv}
  {<-8.5>    \lm@fntscale gsxa0800
   <8.5-9.5> \lm@fntscale gsxa0900  <9.5-11>  \lm@fntscale gsxa1000
   <11-15.5> \lm@fntscale gsxa1200  <15.5->   \lm@fntscale gsxa1728}{}
\DeclareFontShape{LGR}{lmss}{bx}{sc}
  {<-8.5>    \lm@fntscale gsxc0800
   <8.5-9.5> \lm@fntscale gsxc0900  <9.5-11>  \lm@fntscale gsxc1000
```

```
   <11-15.5> \lm@fntscale gsxc1200  <15.5->   \lm@fntscale gsxc1728}{}
```

And finally the Latin Modern typewriter font.

```
\expandafter\ifx\csname lmfntscale\endcsname\relax
   \let\lm@fntscale\empty
\else
   \edef\lm@fntscale{s*[\csname lmfntscale\endcsname]}%
\fi
\DeclareFontFamily{LGR}{lmtt}{\hyphenchar\font\m@ne}
\DeclareFontShape{LGR}{lmtt}{m}{n}
  {<-8.5>   \lm@fntscale gttn0800  <8.5-9.5> \lm@fntscale gttn0900
   <9.5-11> \lm@fntscale gttn1000  <11-15>   \lm@fntscale gttn1200
   <15->    \lm@fntscale gttn1728}{}
\DeclareFontShape{LGR}{lmtt}{m}{sl}
  {<-8.5>   \lm@fntscale gtto0800  <8.5-9.5> \lm@fntscale gtto0900
   <9.5-11> \lm@fntscale gtto1000  <11-15>   \lm@fntscale gtto1200
   <15->    \lm@fntscale gtto1728}{}
\DeclareFontShape{LGR}{lmtt}{m}{it}{<-> ssub*lmtt/m/sl}{}
\DeclareFontShape{LGR}{lmtt}{m}{sc}
  {<-8.5>   \lm@fntscale gttc0800  <8.5-9.5> \lm@fntscale gttc0900
   <9.5-11> \lm@fntscale gttc1000  <11-15>   \lm@fntscale gttc1200
   <15->    \lm@fntscale gttc1728}{}
% shape undefined, substituted with unslanted
\DeclareFontShape{LGR}{lmtt}{m}{scsl}{<-> ssub*lmtt/m/sc}{}
```

The slide fonts have not been mapped to the Latin Modern families and sizes, because there are no slide fonts in the LM collection. Moreover nowadays the traditional slide fonts are very seldom used, since slides are produced with other classes different from the `slides` class, and they use different fonts.

In any case the package `LXfonts` is set up to use suitable font definition files so as to mix Latin and Greek `CB` fonts together with regular and AMS math fonts that match one another so as to produce beautiful slides with the `beamer` class.

The next line goes into all files and in addition prevents DOCSTRIP from adding any further code from the main source file (such as a character table.

```
\endinput
```