

# The `begingreek` package

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## Abstract

This small extension module defines the environment `greek` to be used with `pdfLaTeX` so as to perform as the similar environment defined in `polyglossia`. A corresponding command, `\greetxt`, is also defined. Of course there are some differences, but it has been used extensively and proved to be quite useful.

## 1 Introduction

When using `pdfLaTeX` and `babel`, language changes are done with `babel`'s language switching commands `\selectlanguage`, `\foreignlanguage` or with the environments `otherlanguage` and `otherlanguage*`. They work fine, but sometimes it is better to have a more friendly command or environment that can be used at least in place of the last three commands or environments.

Some more extra functionalities may be desirable, such as the possibility of specifying a different font family or to switch font family for a particular stretch of Greek text.

This small module does exactly what is described above; it has been created only to be used with `pdfLaTeX`, therefore if it gets loaded with a package that is to be run with `XeLaTeX` or `LuaLaTeX` it will complain loudly and its loading will be aborted. The strong error message is such that the user is forced to quit and either change compiler or comment out the call to this module.

## 2 Usage

This module is loaded in the preamble in the usual way:

Font	Family name	Sample text
Artemisia	<b>artemisia</b>	αβγδεζηθικλμνξοπρσςτυφχψω
Baskerville	<b>gfsbaskerville</b>	αβγδεζηθικλμνξοπρσςτυφχψω
Bodoni	<b>bodoni</b>	αβγδεζηθικλμνξοπρσςτυφχψω
Complutum	<b>complutum</b>	αβγδεζηθικλμνξοπρσςτυφχψω
Didot	<b>udidot</b>	αβγδεζηθικλμνξοπρσςτυφχψω
Neohellenic	<b>neohellenic</b>	αβγδεζηθικλμνξοπρσςτυφχψω
Porson	<b>porson</b>	αβγδεζηθικλμνξοπρσςτυφχψω
Solomos	<b>solomos</b>	αβγδεζηθικλμνξοπρσςτυφχψω
Greek Times	<b>txr</b>	αβγδεζηθικλμνξοπρσςτυφχψω
Kerkis	<b>mak</b>	αβγδεζηθικλμνξοπρσςτυφχψω
LX	<b>llcmss</b>	αβγδεζηθικλμνξοπρσςτυφχψω
Default	<b>lmr</b>	αβγδεζηθικλμνξοπρσςτυφχψω

Table 1: Some greek font families available with T<sub>E</sub>X Live; the first font group is made available by the Greek Font Society; the second group is made available by different authors. The last font is just the default one.

`\usepackage[⟨greek font family⟩]{begingreek}`

The *⟨greek font family⟩* must be specified with the exact name that appears in the *font description file* with file extension `.fd`; for example, if the Didot fonts produced by the Greek Font Society (GFS) are desired, the *font description file* must be specified as `udidot` because the `.fd` file is named `lgrudidot.fd`; we recall that the names of the `.fd` files result from the agglutination of the encoding code and the family name, everything in lower case: `lgr` is the lower case code of the LGR encoding, and `udidot` is the family name. As another example, if the Greek Baskerville font, also distributed by the same GFS, is required, the font family name is `gfsbaskerville` as it can be deduced from the name of the `.fd` file. The same similar attention must be paid for the other available Greek fonts. Table 1 gives an overview of the correspondence between font names, font families, and their appearance.

If no optional *⟨greek font family⟩* is specified, the default Latin Modern compatible LGR encoded Greek fonts are selected.

Please notice that among the LGR encoded Greek fonts there are many collections, not only those distributed by the Greek Font Society; table 1 displays some families already available at the time of writing this documentation. This table shows only the normal upright shape of each listed family, but each collection might contain also other families, other shapes and the matching Latin fonts in codings T1 or OT1.

Another point should be stressed; the fonts distributed by the Greek Font Society are pretty good but, please, do not expect that they are complete as the Latin Modern compatible ones; the latter were built in order to satisfy the most stringent requirements of the Hellenists; while the former were designed to satisfy the every day needs of Greek typesetting. I don't claim that the default fonts are better than the ones provided by other groups; it is just a caveat that with some fonts certain glyphs are available which are not available with other fonts.

### 3 Incomplete fonts and different encoding

I would like to stress even more the necessity of reading the documentation relative to each Greek font collection you want to use in your document. Some fonts, such as Epigrafica, have been designed just for the monotonic Greek spelling; the Epigrafica documentation is explicit about this point, and says that there is work in progress to extend the functionality to the polytonic Greek version; dated 2006, but apparently this work has not been completed.

Other non LGR encoded fonts may be used to typeset Greek text, for example the Ibycus fonts, the Yannis Harambous' Greek fonts, the Sylvio Levi's fonts; they may be used with Plain  $\TeX$  and therefore don't use `.fd` files; or they have their own package, for example `ibycus.sty`, to make the fonts accessible to  $\LaTeX$  users. Therefore don't use this extension module `begingreek` with these fonts; if you do and specify the names of these fonts as if they were their font family names, you get a warning message and the Greek text gets typeset with the default fonts (see the next paragraph).

### 4 Font controls

It may happen to misspell the Greek font family name to be specified as an option to the module loading statement. This specified name is used to create the corresponding `.fd` file name and it is checked if this `.fd` actually exists. If it does not exist, a warning message is output and the default Greek font is used in its place.

The `.fd` might be missing also if a basic incomplete  $\TeX$  system distribution is installed; in this case the user should provide to complete the installation or refrain from using a Greek font family that is not available or that misses the companion `.fd` file.

### 5 The new greek environment

With this package loaded, the user has a new environment available; this environment has the following syntax:

```
\begin{greek}[\langle other Greek font family \rangle]
\langle Greek text \rangle
\end{greek}
```

where the  $\langle Greek\ text \rangle$  may be as short as a single word or as long as several paragraphs.

This Greek text may be input in three different ways: in order to get  $\alpha\upsilon\tau\eta$ , it is possible to write the source file as  $\alpha\upsilon\tau\eta$  or `a>ut~h|`, or `a\>t\~h|`. The first way looks much better to a Hellenist, but it may be difficult to type without a suitable keyboard and/or operating system; it also requires loading the `textalpha` package. Notice that the second form, characteristic of the LGR encoded Greek fonts, relies on the font ligature functionality, but in certain cases it lets some kerning failures become visible; the third form relies on the internal LICR definitions (LICR: LaTeX Internal Character Representation) and no kerning failures take place; the direct Greek input relies on a special extended LICR when used with `pdfLaTeX`.

The LICR definitions have been part of any modern T<sub>E</sub>X Live distribution since December 2013.

The optional argument *⟨other Greek font family⟩* is just another family; the less you have to type, the less error-prone is your source code. **Nevertheless the family name that is being specified is tested for the existence of its corresponding font .fd file, and if this file does not exist or the family name is misspelt, the default Greek font is used.**

## 6 The command `\greetxt`

For very short Greek texts an even simpler approach may be defined. With a single command `\greetxt` it is possible to typeset a Greek text as short as one word or containing a short phrase, with a font of an optionally specified family. The syntax is the following one:

`\greetxt[⟨other Greek font family⟩]{⟨Greek short text⟩}`

where *⟨other Greek font family⟩* behaves as described for the `greek` environment, while *⟨Greek short text⟩* stresses the fact that the Greek text must be short, a fraction of a paragraph; should it contain a paragraph terminator (command `\par` or a blank line) an error flag is raised.

## 7 Font shapes and series

For both the environment `greek` and the command `\greetxt` the font shape and/or series are specified with the usual shape and/or font declarations such as `\bfseries`, `\itshape`, and so on. Some families have non standard shapes; the default Latin Modern compatible Greek fonts extra shapes are already defined in their specific .fd font files; the same is true with other families; in general the medium and bold extended series and the upright and italic/slanted shapes are always available; although table 1 displays some families where the *normal* shape is already oblique, those families miss another italic or slanted shape.

The user therefore should control the documentation of the extension module relative to each family; should this documentation be missing, the user should fetch the font .fd file, open it with a text editor, and read inside the file which shapes are available; this does not necessarily imply that the specific font extension module has a special command to choose that shape, but the user can define himself one. This is not unusual: even the standard Computer Modern (CM) Latin fonts have available the upright italic shape, but the L<sup>A</sup>T<sub>E</sub>X kernel and all standard classes miss the `\uishape` declaration and the `\textui` command, in spite that the `ui` internal shape code is defined and the font is available. With the 2021 release of T<sub>E</sub>X Live the list of available standard font series and shapes codes has been extended, and this glitch apparently is eliminated, at least with the various fonts available with the standard T<sub>E</sub>X Live installation.

## 8 Examples

The following examples are carried on with the `\greetxt` command, but of course they produce the same results if the Greek text is enclosed in a corresponding environment. Here we assume that the command `\alphabet` contains the lowercase

Latin Modern	
Command	Result
<code>\greektxt{\alphabet}</code>	$\alpha\beta\gamma\delta\epsilon\zeta\eta\theta\iota\kappa\lambda\mu\nu\xi\omicron\rho\sigma\tau\upsilon\phi\chi\psi\omega$
<code>\greektxt{\bfseries\alphabet}</code>	<b><math>\alpha\beta\gamma\delta\epsilon\zeta\eta\theta\iota\kappa\lambda\mu\nu\xi\omicron\rho\sigma\tau\upsilon\phi\chi\psi\omega</math></b>
<code>\greektxt{\lshape\alphabet}</code>	<i><math>\alpha\beta\gamma\delta\epsilon\zeta\eta\theta\iota\kappa\lambda\mu\nu\xi\omicron\rho\sigma\tau\upsilon\phi\chi\psi\omega</math></i>
<code>\greektxt{\itshape\alphabet}</code>	<i><math>\alpha\beta\gamma\delta\epsilon\zeta\eta\theta\iota\kappa\lambda\mu\nu\xi\omicron\rho\sigma\tau\upsilon\phi\chi\psi\omega</math></i>
Bodoni	
Command	Result
<code>\greektxt[bodoni]{\alphabet}</code>	$\alpha\beta\gamma\delta\epsilon\zeta\eta\theta\iota\kappa\lambda\mu\nu\xi\omicron\rho\sigma\tau\upsilon\phi\chi\psi\omega$
<code>\greektxt[bodoni]{\bfseries\alphabet}</code>	<b><math>\alpha\beta\gamma\delta\epsilon\zeta\eta\theta\iota\kappa\lambda\mu\nu\xi\omicron\rho\sigma\tau\upsilon\phi\chi\psi\omega</math></b>
<code>\greektxt[bodoni]{\itshape\alphabet}</code>	<i><math>\alpha\beta\gamma\delta\epsilon\zeta\eta\theta\iota\kappa\lambda\mu\nu\xi\omicron\rho\sigma\tau\upsilon\phi\chi\psi\omega</math></i>

Table 2: Some examples of family, series and shape selection

Greek alphabet and `\lshape` has been defined as `\fontshape{li}\selectfont`. Table 2 displays some results in order to show some family, series and shape selection.

Please notice in table 2 the difference between the lipsian `li` and the italic `it` shapes; the former is more compact and uses a “curly” epsilon, while the latter, besides being slightly larger, uses an “arched” epsilon. Notice also that the GFS fonts, such as the Bodoni one used in table 2, do not have two different oblique shapes as the Latin Modern ones do. The italic shape of the Latin Modern fonts imitates the GFS Olga font, while the its lipsian shape imitates the fonts used by some printers in Lipsia (Germany).

## 9 Acknowledgements

I should acknowledge the collaboration of a person, whose name I can’t remember, with whom some of years ago I developed the first embryo of this module; the project was eventually abandoned, I don’t remember why.

I must thank also Mauro Sacchetto whose questions posted in the forum of the Italian TUG forced me to resume the project; he also tested the environment and the command, and gave me a very important feedback.

## 10 The code

The identification lines have already been written to the `.sty` file; here we describe the real code.

First we load the module `iftex` in order to test if the typesetting engine is `pdfTeX`; if it is not, we provide an error message and force the user to quit the job, besides aborting this package loading.

```

1 \usepackage{iftex}
2 \unless\ifPDFTeX
3 \PackageError{begingreek}{\MessageBreak
4 Package ‘begingreek’ works only with ‘pdfLaTeX’\MessageBreak
5 Nothing done\MessageBreak
6 \MessageBreak

```

```

7 Type X to quit}{\@ehd}
8 \expandafter\endinput
9 \fi

```

At this point we know we are typesetting with the pdfTeX engine; now we test if the greek language has been specified to babel. It does not matter which attributes or modifiers of the language have been specified, but any Greek variant is valid. We use the  $\epsilon$ -TeX command `\ifcsname` so that we do not leave any trace in memory and in particular we do not need to test the macro with `\ifx` against `\relax`. If the language greek has not been specified to babel or if this module has been loaded before babel itself, an error flag is raised and the user is forced to quit the job.

```

10 \unless\ifcsname captionsgreek\endcsname
11 \PackageError{begingreek}{%
12 *****\MessageBreak
13 Package 'begingreek' may be used only \MessageBreak
14 if language 'greek' is already defined. \MessageBreak
15 Check that 'begingreek' is loaded after \MessageBreak
16 'babel' and that the language 'greek' \MessageBreak
17 has been specified \MessageBreak
18 *****\MessageBreak
19 Type X to quit}{\@ehd}
20 \expandafter\endinput
21 \fi

```

Now we can define the package option with the standard facilities provided by the L<sup>A</sup>T<sub>E</sub>X kernel. First we set the default Greek font family to the lmr one (Latin Modern compliant “serifed” Greek fonts). Then we define a generic option that uses the `\CurrentOption` macro for setting another default Greek font family. Of course it is necessary to test if the generic option passed as an optional argument to the `begingreek` package is a valid one; to be a valid one there must exist a file named `lgr\CurrentOption.fd`; if this file does exist, the proper (expanded) definition is made, otherwise a warning message is issued and the default greek font family is used. Eventually the `\ProcessOptions` command is given so that the generic option becomes the new default Greek font family; within the document body it is possible to change the current Greek font family, so that the whole process can work to fit the user needs.

```

22 \def\greekfontfamily{lmr}
23
24 \DeclareOption*{%
25   \IfFileExists{lgr\CurrentOption.fd}%
26   {\edef\greekfontfamily{\CurrentOption}}%
27   {\PackageWarning{begingreek}{%
28     The file lgr\CurrentOption.fd does not exist\MessageBreak
29     Either provide such a file, or specify a \MessageBreak
30     valid Greek font family to the \MessageBreak
31     \string\begin\string{greek\string} package \MessageBreak
32     I continue with the default font family \MessageBreak}%
33   }%
34 }
35 \ProcessOptions\relax
36

```

Now we can define the new environment `greek`. Notice that we use the de-

fault Greek font family to specify the environment optional argument, but we have to test the validity of the font family name; we cannot use the same name `\greekfontfamily` in the internal definitions otherwise we'd produce an infinite loop; so we have to change the name of the macro that holds the specified family name; if it is an invalid name, either misspelt or inexistent, we reset it to the default, either the overall default or the package defined default (saved in `\greekfontfamily`) so we can proceed without further problems.

```

37 \newenvironment{greek}[1][\greekfontfamily]{\begin{otherlanguage}{greek}%
38 \edef\Greekgfontfamily{#1}%
39 \IfFileExists{lgr\Greekgfontfamily.fd}{}%
40   {\PackageWarning{begingreek}{\MessageBreak
41     Font family lgr\Greekgfontfamily.fd does not exist\MessageBreak
42     Default fonts used\MessageBreak}}%
43 \def\Greekgfontfamily{\greekfontfamily}}%
44 \fontfamily{\Greekgfontfamily}\selectfont
45 }\end{otherlanguage}}
46

```

The corresponding command definition is almost equal. The optional Greek font family name is subject to the same tests as for the corresponding optional argument of the `greek` environment.

```

47 \newcommand*\greetxt[2][\greekfontfamily]{%
48 \edef\Greekgfontfamily{#1}%
49 \IfFileExists{lgr\Greekgfontfamily.fd}{}%
50   {\PackageWarning{begingreek}{\MessageBreak
51     Font family lgr\Greekgfontfamily.fd does not exist\MessageBreak
52     Default fonts used\MessageBreak}}%
53 \def\Greekgfontfamily{\greekfontfamily}}%
54 \fontfamily{\Greekgfontfamily}\selectfont
55 \foreignlanguage{greek}{#2}}
56

```

And this definition ends this small package.