ebgaramond-maths

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Abstract

ebgaramond-maths provides some LaTeX support for the use of EBGaramond in mathematics. It requires ebgaramond and uses the postscript fonts provided by that package[1]. The package essentially consists of the files generated by an answer to a question at http://tex.stackexchange.com/q/152038/ and is a response to a follow-up request by the author of that question.

Contents

*Bug tracker: codeberg.org/cfr/ebgaramond-maths/issues | Code: codeberg.org/cfr/ebgaramond-maths | Mirror: github.com/cfr42/ebgaramond-maths

[1]This version corresponds to the 2019–05–04 version of ebgaramond.

Table 1: Symbols missing from EBGaramond

\leftharpoonup	\triangleright	\flat	\smile
\leftharpoondown	\triangleleft	\natural	\frown
\rightharpoonup	\star	\sharp	\vec
\rightharpoondown	\partial		\t

1 Introduction

There is not really much to document. To use EBGaramond in mathematics, you just load the package with any ⟨*options*⟩ required:

```
\usepackage[cmintegrals,cmbraces]{newtxmath}
\usepackage[<options>]{ebgaramond-maths}
```

Note that this will also load ebgaramond which will set your default serif font to EBGaramond. If for any reason you do not want this, note two things. First, your document will be a typographic abomination. Second, you can easily create the abomination of your choice by changing the default serif family *after* loading ebgaramond-maths.

⟨*options*⟩ are simply passed to ebgaramon, so the above code is equivalent to

```
\usepackage[cmintegrals,cmbraces]{newtxmath}
\PassOptionsToPackage{<options>}{ebgaramond}
\usepackage{ebgaramond-maths}
```

2 Details

The package includes `.tfm` and `.map` files which define EBGaramond-Maths, a new TEX font for LATEX. This font uses EBGaramond-Italic with an OML encoding. However, not all characters in this encoding are available (see table 1). Note that this is a limitation of the font itself and not of this package.

ebgaramond-maths uses this new font together with support files from ebgaramond to set up support for mathematics as follows:

- EBGaramond-Maths is used for `letters` (standard and bold);
- EBGaramond-LF (upright shape) is used for `operators` (standard and bold);
- EBGaramond-LF (swash shape) is used for the calligraphic alphabet, `\mathcal` (standard and bold);
- `\mathrm`, `\mathbf` and `\mathit` should work as expected and use EBGaramond-LF (upright, bold or italic as appropriate).

Note that EBGaramond did not include a bold weight by design. Contrary to the designer's intentions, this package follows ebgaramond and provides bold where required. Specifically, ebgaramond-maths uses whichever weight ebgaramond uses for `\mdseries` for the `normal` version of maths and whichever weight ebgaramond uses for `\bfseries` for the `bold` version.

3 Method

If you just wish to use the package, you do not need to read this section. It explains how to create the font support files used by the package given that you have ebgaramond installed.

As of version 1.3, l3build and fontscripts are used to generate the font files and build the package. This enables the use of automated regression testing and facilitates cross-platform building.

3.1 Current Method

This is the method used to build the package as of version 1.3. It used fontscripts, which extends and customises 'l3build' for use in creating font-support packages.

3.1.1 Obtain the Code

You need a copy of the code repository from either CODEBERG or GITHUB. This is simplest if you have `git` installed.

```
git clone https://codeberg.org/cfr/ebgaramond-maths.git
```

Alternatively, you can download a `zip` or `tar.gz`. CODEBERG also allows you to open a copy of the repository directly in various IDEs or to download a 'bundle'. GITHUB also provides a range of options.

3.1.2 Build

Unpack the archive if necessary, then change into the top-level of the repository, which should include a `build.lua`.

```
l3build fnttarg
```

This will should generate the font support files the package requires.

3.1.3 Additional Steps

Provided the previous step was successful, you should now be able to build whichever further l3build targets you wish. For example, to run the tests and build the documentation:

```
l3build check
l3build doc
```

Note that `install` will install the package into your personal `texmf` TDS tree. This is not recommended because it greatly complicates management of `.map` files.

3.2 Manual Method

This is the method originally used to create the package. I am leaving this in the documentation because it is likely to be more useful to somebody trying to understand how to create the package than the current method, especially somebody unfamiliar with l3build and fontscripts. It does, however, assume that you are using TeX Live on GNU/Linux or another Unix-like system such as OS X.

3.2.1 Variables

Make a working directory somewhere which I'll call `${work}`. The only requirement is that you have permission to write there and a (very small) amount of space. (It goes without saying that this should not be done as root.)

In the instructions which follow `${texmain}` is your main, current `texmf` directory. On my system, that's `/usr/local/texlive/YYYY` (where `YYYY` is the latest version of TeX Live installed) or `/usr/local/texlive/current`.

3.2.2 Working environment

Change to `${work}`. From now on, I assume that all commands are executed in this directory and that all created files are saved there.

Create the following symbolic links in your working directory[2]:

```
ln -s ${texmain}/texmf-dist/tex/fontinst/mathetx/oml.etx \
  ${texmain}/texmf-dist/fonts/opentype/public/ebgaramond/\
  EBGaramond-Italic.otf ./
```

3.2.3 Create a preliminary encoding file

This is not the encoding file TEX needs but it will form the basis for that file.

First, run `fontinst` in interactive mode. (That is, just type `fontinst` at the command.) At the prompt:

```
\input finstmsc.sty
\etxtoenc{oml}{oml-ebgaramond}
\bye
```

This will produce `oml-ebgaramond.enc` which should be lightly modified before feeding to `otftotfm`[3]:

```
sed -i -e 's/TeXMathItalicEncoding/\
  EBGaramondTeXMathItalicEncoding/g' \
  -e 's/oldstyle//' oml-ebgaramond.enc
```

This ensures that the encoding has a distinctive (and hopefully unique) name.

3.2.4 Generate the TEX font

ebgaramond already provides the type1 files needed so there is no need to regenerate those. All that is required is to generate a suitable `.tfm`:

```
otftotfm -e oml-ebgaramond.enc EBGaramond-Italic.otf \
  > EBGaramond-Maths.map
```

[2] On Windows, you will need to copy the file instead.

[3] On Windows, you will need to substitute an equivalent command or edit the file by hand.

This will create both the `.tfm` file and the `.map` file fragment TEX needs to use the font. It will also create a new encoding file with what will almost certainly be a very weird name. This is the encoding file TEX will use, as specified in the `.map` file fragment. The temporary encoding `oml-ebgaramond.enc` can now be deleted as it is no longer required.

4 Implementation

You do not need to read the remainder of this document in order to install or use the package.

```
\NeedsTeXFormat{LaTeX2e}
\RequirePackage{svn-prov}
\ProvidesPackageSVN[\filebase.sty]{$Id: ebgaramond-maths.dtx 10827 2025-02-19
\DefineFileInfoSVN

\RequirePackageWithOptions{ebgaramond}

\DeclareSymbolFont{letters}   {OML}   {EBGaramond-Maths} {\mdseries@rm} {it}
\DeclareSymbolFont{operators} {OT1}   {EBGaramond-LF}    {\mdseries@rm} {n}

\SetSymbolFont{letters}   {bold}  {OML} {EBGaramond-Maths} {\bfseries@rm} {it
\SetSymbolFont{operators} {bold}  {OT1} {EBGaramond-LF}    {\bfseries@rm} {n}

\DeclareFontSubstitution{OML}{EBGaramond-Maths}{\mdseries@rm}{it}
\DeclareFontSubstitution{OT1}{EBGaramond-LF}{\mdseries@rm}{n}

\SetMathAlphabet{\mathbf}   {normal}  {OT1} {EBGaramond-LF} {\bfseries@rm} {n
\SetMathAlphabet{\mathbf}   {bold}    {OT1} {EBGaramond-LF} {\bfseries@rm} {n
\SetMathAlphabet{\mathit}   {normal}  {OT1} {EBGaramond-LF} {\mdseries@rm} {i
\SetMathAlphabet{\mathit}   {bold}    {OT1} {EBGaramond-LF} {\bfseries@rm} {i

\DeclareMathAlphabet{\mathcal} {OT1} {EBGaramond-LF} {\mdseries@rm} {sw}
\SetMathAlphabet{\mathcal}  {bold}    {OT1} {EBGaramond-LF} {\bfseries@rm} {s

%
\gdef\ebgaramond@maths@help{%  EBGaramond does not provide this symbol.\Messa
  If you are using the recommended setup with newtxmath\MessageBreak
  you can use \string\re@DeclareMathSymbol{}{}{}{} to take it from another fo
  For example, to take symbols from Computer Modern:\MessageBreak
  \expandafter\noexpand\string\DeclareSymbolFont{cmletters}{OML}{cmm} {m}{it}
  Then a specific symbol, such as \string\leftharpoonup, can be defined as fo
  \expandafter\noexpand\string\re@DeclareMathSymbol{\string\leftharpoonup}{\m

%\newcommand*{\ebgaramond@maths@dim}{\leftharpoonup,\leftharpoondown,\rightha
\@for \xx:=\ebgaramond@maths@dim \do {%  \expandafter\edef\xx{\noexpand\Packa

```

4.1 Font Definitions

```
%%% Based on a file created using fontinst v1.928

%% THIS FILE SHOULD BE PUT IN A TEX INPUTS DIRECTORY

```

```
\ProvidesFileSVN{$Id: ebgaramond-maths.dtx 10827 2025-02-19 19:39:10Z cfrees

\DeclareFontFamily{OML}{EBGaramond-Maths}{}

\DeclareFontShape{OML}{EBGaramond-Maths}{m}{it}{
 <-> EBGaramond-Italic--oml-ebgaramond
 }{}
\DeclareFontShape{OML}{EBGaramond-Maths}{sb}{it}{
 <-> EBGaramond-SemiBoldItalic--oml-ebgaramond
 }{}
\DeclareFontShape{OML}{EBGaramond-Maths}{b}{it}{
 <-> EBGaramond-BoldItalic--oml-ebgaramond
 }{}
\DeclareFontShape{OML}{EBGaramond-Maths}{eb}{it}{
 <-> EBGaramond-ExtraBoldItalic--oml-ebgaramond
 }{}
\DeclareFontShape{OML}{EBGaramond-Maths}{medium}{it}{
 <-> EBGaramond-MediumItalic--oml-ebgaramond
 }{}

\DeclareFontShape{OML}{EBGaramond-Maths}{bx}{it}{<->ssub * EBGaramond-Maths/b

```

4.2 Sample

```
\documentclass{article}
\pdfmapfile{-EBGaramond-Maths}
\pdfmapfile{+EBGaramond-Maths}
\usepackage[cmintegrals,cmbraces]{newtxmath}
\usepackage[semibold]{ebgaramond-maths}

\begin{document}
ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

1234567890

$ABCDEFGHIJKLMNOPQRSTUVWXYZ$

$abcdefghijklmnopqrstuvwxyz$

$1234567890$

$\Gamma\varGamma\Delta\Lambda\varLambda\Xi\varXi\Pi\varPi\Sigma\varSigma\Upsi

$\alpha\beta\gamma\delta\epsilon\varepsilon\zeta\eta\theta\iota\kappa\lambda\

$\mathbf{ABCDEFGHIJKLMNOPQRSTUVWXYZ}$

$\mathbf{abcdefghijklmnopqrstuvwxyz}$

$\mathbf{0123456789}$

$\mathit{ABCDEFGHIJKLMNOPQRSTUVWXYZ}$

```

```
$\mathit{abcdefghijklmnopqrstuvwxyz}$

$\mathit{0123456789}$

$\mathrm{ABCDEFGHIJKLMNOPQRSTUVWXYZ}$

$\mathrm{abcdefghijklmnopqrstuvwxyz}$

$\mathrm{0123456789}$

$\mathcal{ABCDEFGHIJKLMNOPQRSTUVWXYZ}$

$\mathcal{abcdefghijklmnopqrstuvwxyz}$

$\mathcal{0123456789}$

{\bfseries
ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

1234567890}

\mathversion{bold}

$ABCDEFGHIJKLMNOPQRSTUVWXYZ$

$abcdefghijklmnopqrstuvwxyz$

$1234567890$

$\Gamma\varGamma\Delta\Lambda\varLambda\Xi\varXi\Pi\varPi\Sigma\varSigma\Upsi

$\alpha\beta\gamma\delta\epsilon\varepsilon\zeta\eta\theta\iota\kappa\lambda\

$\mathbf{ABCDEFGHIJKLMNOPQRSTUVWXYZ}$

$\mathbf{abcdefghijklmnopqrstuvwxyz}$

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$\mathit{ABCDEFGHIJKLMNOPQRSTUVWXYZ}$

$\mathit{abcdefghijklmnopqrstuvwxyz}$

$\mathit{0123456789}$

$\mathrm{ABCDEFGHIJKLMNOPQRSTUVWXYZ}$

$\mathrm{abcdefghijklmnopqrstuvwxyz}$

$\mathrm{0123456789}$

$\mathcal{ABCDEFGHIJKLMNOPQRSTUVWXYZ}$

$\mathcal{abcdefghijklmnopqrstuvwxyz}$
```

```
150
151 $\mathcal{0123456789}$
152
153 \end{document}
```

Change History

v1.0
General: First public release. 1
v1.1
General: Bug fix of sorts: package will now give compilation errors if missing symbols are used. 1
v1.2
General: For version 2019-05-04 of ebgaramond. 1
v1.3
General: Support for bold and extended weights. 5
Support for bold. Follow ebgaramond series settings. Pass options to ebgaramond. 5
Update for changes to type1 fonts. Switch to docstrip. 1

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Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.