

THE SANSMATHFONTS PACKAGE

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The Computer Modern font family has a sans serif typeface. However, compared to the serif typeface, it is incomplete: there are no sans serif small caps or math fonts. Furthermore, the bold slanted font is not available as an outline font. This leads to highly unsatisfactory typography of documents that use sans serif for the body text.

The `sansmathfonts` package provides these “missing” fonts. Most of the usefulness of the package is in the fonts; `sansmathfonts.sty` is a small package providing L^AT_EX support. To use it, simply say `\usepackage{sansmathfonts}` in the document preamble.

In the default (OT1) text font encoding, and also in the T1 and U font encodings, this will redefine the document’s default sans serif font family from `cmss` to `xcmss`; this will make the ***bold slanted*** and CAPS AND SMALL CAPS fonts available via normal L^AT_EX font commands (`\textbf`, `\textit` and `\textsc`). If you additionally load Harald Harder’s `slantsc` package, this will make *SLANTED CAPS AND SMALL CAPS* available.

This will also switch the math fonts to sans serif:

$$\Im \exp(i\omega) = \sin(\omega)$$

If you use symbols from the `amsfonts` or `esint` packages, they will also be replaced by appropriate sans serif versions:

$$\oint \cup \hbar$$

By default, the commands `\mathrm` and `\mathsf` both produce sans serif text. To get serified roman text, use the command `\mathserif`:

`mathrm mathsf mathserif`

`sansmathfonts` knows about the `beamer` document class and will automatically use `beamer’s professionalfonts` theme.

The math fonts differ slightly from Knuth’s standard sans serif fonts. Specifically, for ease of reading I have chosen to put the serifs back on the uppercase I, Pi and Xi:

I I I I Π Π Π Ξ Ξ Ξ and not `|` Π Ξ

Sans serif Is outside of math mode still have no serifs unless the package option `[I]` is used; note that this option as yet only works with the OT1 and U font encodings.

Feedback is appreciated and may be sent to `origamist@gmail.com`.

1. PACKAGE OPTIONS

- `[I]` The `[I]` package option puts the serifs back on the capital I even in text mode. This option only works with the OT1 and U font encodings. It

will work under `pdflatex`'s defaults; in `LuaLaTeX` or `XeLaTeX`, you will need to change the text encoding by saying `\usepackage[OT1]{fontenc}`.

- `[onlymath]`, `[nottext]`. These options provide sans serif math but do not change the text sans serif font.
- `[onlytext]`, `[notmath]`. These options provide sans serif text fonts and improve the behavior of `\mathsf` but do not change the default math font from roman to sans serif. You can get a similar effect by not using the `sansmath-fonts` package and using the line `\renewcommand{\sfdefault}{xcmss}` or `\renewcommand{\sfdefault}{cmsmf}` in the document preamble.

2. LIST OF NEW FONTS

All of the Type 1 fonts in this package were generated using `mfttrace 1.2.18` and `Fontforge`.

The following fonts are based mainly on Donald Knuth's Computer Modern fonts.

Unslanted italic (needed for the pounds symbol £):

- `cmssu10`

Text CAPS AND SMALL CAPS, OT1 encoding:

- `cmssbxsc10` • `cmsscsc8` • `cmsscsc9` • `cmsscsc10`
- `cmssxic10` • `cmsscsci8` • `cmsscsci9` • `cmsscsci10`

Math italic ($\alpha\beta\gamma abclp$):

- `cmssmi5` • `cmssmi8` • `cmssmib5` • `cmssmib8`
- `cmssmi6` • `cmssmi9` • `cmssmib6` • `cmssmib9`
- `cmssmi7` • `cmssmi10` • `cmssmib7` • `cmssmib10`

Math symbols ($\Re \oplus \Im$):

- `cmsssy5` • `cmsssy8` • `cmssbsy5` • `cmssbsy8`
- `cmsssy6` • `cmsssy9` • `cmssbsy6` • `cmssbsy9`
- `cmsssy7` • `cmsssy10` • `cmssbsy7` • `cmssbsy10`

Math extended fonts ($\int \sum \prod$):

- `cmssex7` • `cmssex8` • `cmssex9` • `cmssex10`

Sans serif text fonts with serified capital I:

- `cmsmf8` • `cmsmfbx8` • `cmsmfi8` • `cmsmfxi8`
- `cmsmf9` • `cmsmfbx9` • `cmsmfi9` • `cmsmfxi9`
- `cmsmf10` • `cmsmfbx10` • `cmsmfi10` • `cmsmfxi10`
- `cmsmf12` • `cmsmfbx12` • `cmsmfi12` • `cmsmfxi12`
- `cmsmf17` • `cmsmfbx17` • `cmsmfi17` • `cmsmfxi17`
- `cmsmfcsc8` • `cmsmfbxcsc10` • `cmsmfcsci8` • `cmsmfxicsc10`
- `cmsmfcsc9` • • `cmsmfcsci9` • •
- `cmsmfcsc10` • • `cmsmfcsci10` • •

The following fonts are based on fonts by other authors.

Eddie Soudrais's <code>esint</code> package	AMS symbols (<code>amsfonts</code> package)	AMS symbols (<code>amsfonts</code> package)
<ul style="list-style-type: none"> • <code>ssesint7</code> • <code>ssesint8</code> • <code>ssesint9</code> • <code>ssesint10</code> 	<ul style="list-style-type: none"> • <code>ssmsam5</code> • <code>ssmsam6</code> • <code>ssmsam7</code> • <code>ssmsam8</code> • <code>ssmsam9</code> • <code>ssmsam10</code> 	<ul style="list-style-type: none"> • <code>ssmsbm5</code> • <code>ssmsbm6</code> • <code>ssmsbm7</code> • <code>ssmsbm8</code> • <code>ssmsbm9</code> • <code>ssmsbm10</code>

The following fonts are based on Jörg Knappen's European Computer Modern fonts.

NORMAL	<i>SLANTED</i>	BOLD	<i>BOLD SLANTED</i>
• <code>eczz0500</code>	• <code>eczi0500</code>	• <code>eczx0500</code>	• <code>eczo0500</code>
• <code>eczz0600</code>	• <code>eczi0600</code>	• <code>eczx0600</code>	• <code>eczo0600</code>
• <code>eczz0700</code>	• <code>eczi0700</code>	• <code>eczx0700</code>	• <code>eczo0700</code>
• <code>eczz0800</code>	• <code>eczi0800</code>	• <code>eczx0800</code>	• <code>eczo0800</code>
• <code>eczz0900</code>	• <code>eczi0900</code>	• <code>eczx0900</code>	• <code>eczo0900</code>
• <code>eczz1000</code>	• <code>eczi1000</code>	• <code>eczx1000</code>	• <code>eczo1000</code>
• <code>eczz1095</code>	• <code>eczi1095</code>	• <code>eczx1095</code>	• <code>eczo1095</code>
• <code>eczz1200</code>	• <code>eczi1200</code>	• <code>eczx1200</code>	• <code>eczo1200</code>
• <code>eczz1440</code>	• <code>eczi1440</code>	• <code>eczx1440</code>	• <code>eczo1440</code>
• <code>eczz1728</code>	• <code>eczi1728</code>	• <code>eczx1728</code>	• <code>eczo1728</code>
• <code>eczz2074</code>	• <code>eczi2074</code>	• <code>eczx2074</code>	• <code>eczo2074</code>
• <code>eczz2488</code>	• <code>eczi2488</code>	• <code>eczx2488</code>	• <code>eczo2488</code>
• <code>eczz2986</code>	• <code>eczi2986</code>	• <code>eczx2986</code>	• <code>eczo2986</code>
• <code>eczz3583</code>	• <code>eczi3583</code>	• <code>eczx3583</code>	• <code>eczo3583</code>

The `sansmathfonts` package also provides outline versions of the following fonts (supplied with MacTeX 2012 as Metafont fonts only). These provide **bold** and **bold slanted** fonts at varying sizes.

• <code>cmssxi8</code>	• <code>cmssxi12</code>	• <code>cmssbx8</code>	• <code>cmssbx12</code>
• <code>cmssxi9</code>	• <code>cmssxi17</code>	• <code>cmssbx9</code>	• <code>cmssbx17</code>
• <code>cmssxi10</code>			

3. FILES IN THIS PACKAGE

109 of the new fonts listed in Section 2 come in three files each: the TeX Font Metric files (extension `.tfm`), the Type 1 font file (extension `.pfb`), and Metafont source file (extension `.mf`).

The 9 `cmssxi` and `cmssbx` fonts come as `.pfb` files only, as the MetaFont sources are already part of the TeX Live distribution (see also the `sauter` package at <http://www.ctan.org/tex-archive/fonts/cm/sauter>).

The 28 `cmsmf` fonts are almost identical to their `cmss` counterparts. Thus, these fonts are provided as *virtual* fonts, and so come in five parts: the virtual font file (`cmsmf.vf`), the TeX Font Metric file (`cmsmf.tfm`), and the font `cmsmfIPiXi` containing only the altered letters I , Ξ and Π (and i , in the small caps fonts); this font

comes as MetaFont source (`cmsmfIPiXi.mf`), T_EX font metric (`cmsmfIPiXi.tfm`) and Type 1 font (`cmsmfIPiXi.pfb`).

In addition, this package should come with the following 29 supplementary Metafont source files:

- `eczi.mf`
- `eczo.mf`
- `eczx.mf`
- `eczz.mf`
- `sans-amsya.mf`
- `sans-amsyb.mf`
- `sans-asybols.mf`
- `sans-bigdel.mf`
- `sans-bigint.mf`
- `sans-bigop.mf`
- `sans-bsymbols.mf`
- `sans-calu.mf`
- `sans-csc.mf`
- `sans-greekl.mf`
- `sans-greeku.mf`
- `sans-IPiXi.mf`
- `sans-IPiXicsc.mf`
- `sans-mathex.mf`
- `sans-mathint.mf`
- `sans-mathsl.mf`
- `sans-mathsy.mf`
- `sans-roman.mf`
- `sans-romanu.mf`
- `sans-romms.mf`
- `sans-slantms.mf`
- `sans-sym.mf`
- `sans-symbol.mf`
- `sans-xbbold.mf`
- `sansfontbase.mf`

This package should also come with the following 11 L^AT_EX Font Definition files:

- `omlcsmssm.fd`
- `omscmsssy.fd`
- `omxcmssex.fd`
- `ot1cmssm.fd`
- `ot1xcmsm.fd`
- `t1xcmsm.fd`
- `ucmsmf.fd`
- `ussesint.fd`
- `ussmsa.fd`
- `ussmsb.fd`
- `uxcmsm.fd`

Finally, it should come with the font map file, LaTeX package, and documentation:

- `sansmathfonts.map`
- `sansmathfonts.sty`
- `sansmathfonts.tex`
- `sansmathfonts.pdf`

4. LICENSE

This work (the `sansmathfonts` package) consists of the files listed in Section 3.

This work may be distributed and/or modified under the conditions of the L^AT_EX Project Public License, either version 1.3 of this license or (at your option) any later version.

The latest version of the license is in

<http://www.latex-project.org/lppl.txt>

and version 1.3 or later is part of all distributions of L^AT_EX version 2003/06/01 or later.

This work has the LPPL maintenance status “maintained”.

Almost all of the Metafont files in this package are very closely based on existing files in the 2011 T_EX Live distribution; see comments near the start of the individual files for notes on their sources. Also, note that the files

- `cmssxi8.pfb`
- `cmssxi9.pfb`
- `cmssxi10.pfb`
- `cmssxi12.pfb`
- `cmssxi17.pfb`
- `cmssbx8.pfb`
- `cmssbx9.pfb`
- `cmssbx12.pfb`
- `cmssbx17.pfb`

were derived from unedited MetaFont source files in the `sauter` package using `mft` 1.2.18 and `Fontforge`.

5. REVISION HISTORY

- April 2013: Original upload
- February 2017: Corrected the font names in `sansmathfonts.map`; this allowed the package to be used correctly with `dvips`.
- April 2019: Fixed a bug in the file `ucmsmf.fd` that prevented the `[I]` package option from working correctly; rewrote most of the `.fd` files to allow fonts to be loaded at arbitrary sizes; changed maintenance status from “author-maintained” to “maintained”.
- June 2019: Rewrote the file `omxcmssex.fd` to allow the math extended characters to be loaded at arbitrary sizes.
- June 2021: Rewrote the OT1, T1, and U font definition files to substitute bold-extended fonts for bold fonts as necessary. Added some package errors and warnings if the document font encoding is not supported.
- October 2022: Bug fix to allow compatibility with LuaL^AT_EX and XeL^AT_EX.
- November 2023: Corrected the spacing of the lowercase `i` in the caps and small caps fonts used with the `[I]` package option.