

The libertine gets mathematical

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Linux Libertine is a popular libre font family (released under the SIL Open Font License) and one of the early typefaces to be designed from the ground up as a libre project. Together with its organic sans-serif companion, Linux Biolinum, they serve as an excellent type family for many scholarly works.

Due to their attractiveness, Linux Libertine and Linux Biolinum fonts are often used for mathematical and other scientific works heavy in mathematical typesetting, but the lack of a mathematical companion forced people to try to find matching mathematical typefaces with varying degrees of success. A mathematical companion was thus one of the most requested features for this type family.

In late 2012 I started playing with the idea of creating a mathematical companion for this family using the existing text characters for basic mathematical alphabets, adding an OpenType MATH table, and some symbols needed for basic mathematical typesetting. I got the basics working, but then had to put it on the back burner for a while. In 2014 TUG showed interest in funding the development of this mathematical companion and work resumed. Development took a while, as usual, but in January 2016 the typeface was finally released.

Linux Libertine and Linux Biolinum are big typefaces with thousands of glyphs that were developed over the course of almost 10 years, and it had accumulated many issues over the time. While working on the mathematical companion, I couldn't help but try to fix many of these issues, and after a while it became clear that this is becoming a full fork of the original project, not just an additional member of the family.

With this in mind, I went ahead and made it a full fork. Since the original typefaces use the OFL "reserved names" clause, I had to rename my modified fonts. I first wanted to just drop the "Linux" part and release under the name "Libertine" (why should a typeface be named after an operating system kernel?), but it turns out I can't use either of the words "Linux" or "Libertine" in my fork, not just the combined name. Frédéric Wang suggested the Latin word "Libertinus" which I liked much, so Linux Libertine became Libertinus Serif and Linux Biolinum became Libertinus Sans, with the brand new mathematical companion being named Libertinus Math.

Libertinus Math is an OpenType font with a MATH table, so it can be used only with a mathematical typesetting engine that supports such fonts,

$$(x + \alpha)^n = \sum_{k=0}^n \binom{n}{k} x^k \alpha^{n-k}$$

$$|x| = \begin{cases} -x, & x < 0 \\ x, & x \geq 0 \end{cases}$$

$$\nabla \cdot \nabla \psi = \frac{\partial^2 \psi}{\partial x^2} + \frac{\partial^2 \psi}{\partial y^2} + \frac{\partial^2 \psi}{\partial z^2}$$

$$= \frac{1}{r^2 \sin \theta} \left[\sin \theta \frac{\partial}{\partial r} \left(r^2 \frac{\partial \psi}{\partial r} \right) \right]$$

Figure 1: Sample of Libertinus Math

Libertinus Serif
Libertinus Serif Italic
Libertinus Serif Semibold
Libertinus Serif Semibold Italic
Libertinus Serif Bold
Libertinus Serif Bold Italic
 Libertinus Serif Display
 Libertinus Sans
Libertinus Sans Italic
Libertinus Sans Bold
 Libertinus Math
 Libertinus Mono
 L i b e r t i n u s K e y b o a r d

Figure 2: List of Libertinus fonts

like X_YTeX, LuaTeX, Mozilla Firefox, and MS Office, among others. Unfortunately, it cannot be readily used with traditional TeX implementations that lack support for such fonts.

The work on the mathematical companion involved using the existing serif and sans-serif glyphs to provide corresponding mathematical alphabets, drawing a missing lower case for the blackboard alphabet, and adding many missing mathematical symbols and big variants to cover symbols used in plain TeX and the L^ATeX kernel. Not all alphabets are covered, though. There are no script, fraktur, sans-serif bold italic, or typewriter alphabets.

The original Linux Libertine fonts were developed using free software, mainly FontForge. That tradition continues in this fork, but replacing FontForge by its fork Sorts Mill Editor (bitbucket.org/sortsmill/sortsmill-tools), and adding (a fork of) FontTools (github.com/behdad/fonttools) to the mix.

The new font files can be downloaded from: github.com/khaledhosny/libertinus/releases ctan.org/pkg/libertinus

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