

The LibertinusT1 Math Package

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This package is a \TeX math package to accompany the \TeX Libertine text package, serving as an alternative to `newtxmath` with the `libertine` option. Both packages use the Greek and Roman letters from Libertine, but `LibertinusT1Math` symbols are mostly taken from the `LibertinusMath` font which extends and corrects Libertine, while `newtxmath` uses symbols matching Times in weight and size, and so are a bit heavier and larger. I've changed a number of glyphs from `LibertinusMath` and added dozens of new glyphs. Like `LibertinusMath`, `LibertinusT1Math` does not contain calligraphic, script or gothic alphabets. The package sets `\mathcal` to the (unscaled) STIX calligraphic font and `\mathbb` to the `LibertinusT1Math` double-struck alphabet. The `mathalfa` package (loaded AFTER `libertinust1math`) offers a convenient way to change these default choices and to set the script and gothic alphabets. See the sample invocation below, which assumes you have `mathalfa` version 1.08 (March 2016) or higher.

NEW ADDITIONS IN VERSION 1.1: There is now support for sans serif fonts in math that allows the ISO typesetting rules to be followed, and to provide a math processing system using sans serif Roman and Greek letters. See the end of this documentation for details.

NEW ADDITIONS IN VERSION 1.1.8: There is now support for the scaling options in both the old `libertine` and the new `libertinus[-type1]` packages. Prior versions supported only earlier `libertine` package[s]. The details are spelled out below in the discussion of the scaled package option.

PACKAGE OPTIONS:

- `lcgreekalpha` makes lower-case Greek letters be of type `mathalpha` rather than `mathord`, forcing them to respond to alphabet changing commands such as `\mathnormal`, `\mathrm`, `\mathit` and `\mathsf`.
- `upint` changes the style of integrals from the default *slanted* to *upright*.
- `frenchmath` changes the math style to use upright Greek and Roman capital letters rather than math italic shapes.
- `slantedGreek` makes uppercase Greek math letters slanted.
- `uprightGreek` makes uppercase Greek math letters upright. This is the default except in ISO mode.
- `scaled` (or `scale` may be used change the scale of the math. The `fd` files in this package respond to three scale-changing macros:
 - `\LinuxLibertineT@scale`, set from option `llscale` (or `llscaled`) to the `libertine` package;
 - `\LibertinusRM@scale`, set by option `ScaleRM` to the `libertinus-type1` package or to the `libertinus` package;
 - `\libus@scale`, set by the `scaled` option to `libertinust1math`.

The current `libertineRoman` package contains no option that affects the scale parameter. If you need to scale `libertineRoman`, add to your preamble lines like

```
\makeatletter
\newcommand*{\LinuxLibertineT@scale}{1.03}
\makeatother
```

If `\libus@scale` is defined, it takes precedence over the other two settings. The result on math scaling only of the different possible scale settings is:

- the scaled option to `libertinust1math` overrides all other scale settings;
- if you did not issue a scale or scaled option to `libertinust1math`, then
 - * if you used a libertine package that set a value for `\LinuxLibertineT@scale`, then its value is used;
 - * otherwise, if you used `libertinus-type1` or `libertinus`, then the value of `\LibertinusRM@scale` is used.
- See the new material at the end for a discussion of the new options connected with sans serif in math.

SAMPLE INVOCATION:

```
\usepackage[sb]{libertine} % or \usepackage[sb]{libertinus}
\usepackage[T1]{fontenc}
\usepackage{textcomp}
\usepackage[varqu,varl]{zi4}% inconsolata for mono, not LibertineMono
\usepackage{amsthm} % libertinust1math loads amsmath
\usepackage{libertinust1math} % slanted integrals, by default
\usepackage[scr=boondoxo,bb=boondox]{mathalfa} %Omit bb=boondox for default libertine bb
```

SOME THINGS TO NOTE:

- The `amsmath` package is loaded, if necessary, by `libertinust1math`. The package depends on a number of its features and improvements to math typesetting.
- There are no bold symbols in `LibertinusMath`, but there are bold Roman and Greek letters, and the same is true of `LibertinusT1Math`.
- The italic letter *v* (ν) in `LibertinusMath` is easily confused with Greek ν (ν), so the math italic letter *v* is set to ν , and similarly in the bold math version.
- The layout of the type1 math fonts follows STIX to some extent, as does the `sty` file, though the content of this package is much less rich.
- `Dotlessi` and `dotlessj` are available in four math styles—`mathit`, `mathrm`, `mathbf` and `mathbfi`. For example:

Macro	Result
<code>\imath</code>	\imath
<code>\mathrm{\imath}</code>	\mathbf{i}
<code>\mathbf{\imath}</code>	\mathbf{i}
<code>\mathbfi{\imath}</code>	\mathbf{i}

- There are Greek alphabets in upright and italic shapes, regular and bold weights. Upright Greek letters have names like `\alphaup` (and `\upalpha`) while the italic forms have names like `\alphait`. According to the options you set, `\alpha` and so on are `\let` to the appropriate choice, but you may always use the underlying forms if you wish to use both upright and italic forms in your document.
- Uppercase Greek letters are of type `mathalpha`, so when you write `\mathit{\Gamma}`, you'll get Γ . However, unless you chose the option `lcgreekalpha`, `\mathrm{\beta}` would produce β , as it is of type `mathord` by default.
- There is an upright partial derivative symbol named `\uppartial` that typesets as ∂ , for those who wish to follow ISO rules.
- There are (as of version 1.1) macros for mathematical sans serif: `\mathsf`, `\mathsf` (italic sans), `\mathsfbf` (bold sans) and `\mathsfbfi` (bold sans italic.) See the end of this documentation for details.

- If you use one of the AMS classes such as `amsart` or `amsbook`, then the AMS fonts will be loaded even though not needed, taking up two of your precious sixteen math families. If you are running out of families (“too many math alphabets used in version normal”), use another capable class such as `memoir` or `scrartcl` and gain two more families.
- The subscripts and superscripts can appear a bit indistinct because they are rather faint and a bit small. You may find it useful to add to your preamble a number of lines like

```
\DeclareMathSizes{10}{10}{8}{6.5}
\DeclareMathSizes{10.95}{11}{9}{7.5}
\DeclareMathSizes{11}{11}{9}{7.5}
```

The four arguments, #1, #2, #3, #4, have the following effects: if the main text font is being rendered at #1pt, math will be rendered at #2pt with subscripts at #3pt and sub-subscripts at #4pt. So, you need an entry for all the text sizes you might use in the document.

The next pages show the font tables for `LibertinusT1Math`. If you see an unfamiliar symbol and wish to learn its \TeX name, get the \TeX name of the font (e.g., `operators`, `letters`, `symbols`, `largesymbols`) and the hex location of the glyph (e.g., “FF is hex notation for 255) and search `libertinust1math.sty` by hex number.

libertinust1-mathrm (operators):

	´0	´1	´2	´3	´4	´5	´6	´7	
´00x	Γ_0	Δ_1	Θ_2	Λ_3	Ξ_4	Π_5	Σ_6	Y_7	"0x
´01x	Φ_8	Ψ_9	Ω_{10}	α_{11}	β_{12}	γ_{13}	δ_{14}	ϵ_{15}	
´02x	ζ_{16}	η_{17}	θ_{18}	ι_{19}	κ_{20}	λ_{21}	μ_{22}	ν_{23}	"1x
´03x	ξ_{24}	π_{25}	ρ_{26}	σ_{27}	τ_{28}	υ_{29}	ϕ_{30}	χ_{31}	
´04x	ψ_{32}	ω_{33}	ϵ_{34}	ϑ_{35}	ϖ_{36}	ϱ_{37}	ς_{38}	φ_{39}	"2x
´05x	∇_{40}	∂_{41}	$-_{42}$	$+_{43}$	\pm_{44}	\mp_{45}	$(_{46}$	$)_{47}$	
´06x	0_{48}	1_{49}	2_{50}	3_{51}	4_{52}	5_{53}	6_{54}	7_{55}	"3x
´07x	8_{56}	9_{57}	$:_{58}$	$;_{59}$	$*_{60}$	$=_{61}$	$\$_{62}$	$?_{63}$	
´10x	$!_{64}$	A_{65}	B_{66}	C_{67}	D_{68}	E_{69}	F_{70}	G_{71}	"4x
´11x	H_{72}	I_{73}	J_{74}	K_{75}	L_{76}	M_{77}	N_{78}	O_{79}	
´12x	P_{80}	Q_{81}	R_{82}	S_{83}	T_{84}	U_{85}	V_{86}	W_{87}	"5x
´13x	X_{88}	Y_{89}	Z_{90}	$[_{91}$	\backslash_{92}	$]_{93}$	$\{_{94}$	$/_{95}$	
´14x	$\}_{96}$	a_{97}	b_{98}	c_{99}	d_{100}	e_{101}	f_{102}	g_{103}	"6x
´15x	h_{104}	i_{105}	j_{106}	k_{107}	l_{108}	m_{109}	n_{110}	o_{111}	
´16x	p_{112}	q_{113}	r_{114}	s_{115}	t_{116}	u_{117}	v_{118}	w_{119}	"7x
´17x	x_{120}	y_{121}	z_{122}	l_{123}	j_{124}	$\#_{125}$	$\%_{126}$	$'_{127}$	
´20x	$\grave{ }_{128}$	$\acute{ }_{129}$	$\hat{ }_{130}$	$\tilde{ }_{131}$	$\bar{ }_{132}$	$\breve{ }_{133}$	$\dot{ }_{134}$	$\ddot{ }_{135}$	"8x
´21x	'_{136}	^o_{137}	^v_{138}	^c_{139}	^e_{140}	^s_{141}	^l_{142}	^r_{143}	
´22x	$\overleftarrow{ }_{144}$	$\overleftarrow{ }_{145}$	$\overrightarrow{ }_{146}$	$\overleftarrow{ }_{147}$	$\overleftarrow{ }_{148}$	$\overleftrightarrow{ }_{149}$	\lceil_{150}	\rceil_{151}	"9x
´23x	\ast_{152}	$\&_{153}$	$@_{154}$	\neg_{155}	\cdot_{156}	\times_{157}	\leq_{158}	\div_{159}	
´24x	Z_{160}	 _{161}	 _{162}	 _{163}	 _{164}	\bullet_{165}	\dots_{166}	\dots_{167}	"Ax
´25x	$/_{168}$	$//_{169}$	$///_{170}$	\backslash_{171}	$\backslash\backslash_{172}$	$\backslash\backslash\backslash_{173}$	\wedge_{174}	$!!_{175}$	
´26x	 _{176}	$/_{177}$	$??_{178}$	$_{179}$	$///_{180}$	 _{181}	$_{182}$	$_{183}$	"Bx
´27x	\asymp_{184}	$_{185}$	\mathcal{E}_{186}	\mathcal{O}_{187}	1_{188}	\mathbb{A}_{189}	\mathbb{J}_{190}	\mathcal{O}_{191}	
´30x	\mathbb{T}_{192}	\mathbb{J}_{193}	\mathbb{A}_{194}	$_{195}$	\mathcal{V}_{196}	\mathbb{V}_{197}	\mathbb{C}_{198}	\mathbb{E}_{199}	"Cx
´31x	\mathbb{Z}_{200}	\mathcal{O}_{201}	Δ_{202}	\in_{203}	\notin_{204}	\in_{205}	\ni_{206}	\ni_{207}	
´32x	\ni_{208}	\blacksquare_{209}	\dagger_{210}	\geq_{211}	\setminus_{212}	\circ_{213}	\bullet_{214}	\propto_{215}	"Dx
´33x	∞_{216}	\perp_{217}	\angle_{218}	\nless_{219}	\lessgtr_{220}$	|_{221}$	\dagger_{222}	\parallel_{223}	
´34x	\parallel_{224}	\wedge_{225}	\vee_{226}	\cap_{227}	\cup_{228}	$\dot{\cdot}_{229}$	$\ddot{\cdot}_{230}$	\emptyset_{231}	"Ex
´35x	$\ddot{\cdot}_{232}$	\div_{233}	$\dot{-}_{234}$	$\ddot{-}_{235}$	$\dot{+}_{236}$	\sim_{237}	\sim_{238}	∞_{239}	
´36x	\sim_{240}	\wr_{241}	 _{242}	\approx_{243}	\approx_{244}	\neq_{245}	\cong_{246}	\cong_{247}	"Fx
´37x	\neq_{248}	\approx_{249}	\neq_{250}	\approx_{251}	\approx_{252}	\approx_{253}	\mathcal{K}_{254}	 _{255}	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathrm (bold-operators):

	´0	´1	´2	´3	´4	´5	´6	´7	
´00x	Γ_0	Δ_1	Θ_2	Λ_3	Ξ_4	Π_5	Σ_6	Y_7	"0x
´01x	Φ_8	Ψ_9	Ω_{10}	α_{11}	β_{12}	γ_{13}	δ_{14}	ϵ_{15}	
´02x	ζ_{16}	η_{17}	θ_{18}	ι_{19}	κ_{20}	λ_{21}	μ_{22}	ν_{23}	"1x
´03x	ξ_{24}	π_{25}	ρ_{26}	σ_{27}	τ_{28}	υ_{29}	ϕ_{30}	χ_{31}	
´04x	ψ_{32}	ω_{33}	ϵ_{34}	ϑ_{35}	ϖ_{36}	ϱ_{37}	ς_{38}	φ_{39}	"2x
´05x	∇_{40}	∂_{41}	$-_{42}$	$+_{43}$	\pm_{44}	\mp_{45}	$(_{46}$	$)_{47}$	
´06x	$\mathbf{0}_{48}$	$\mathbf{1}_{49}$	$\mathbf{2}_{50}$	$\mathbf{3}_{51}$	$\mathbf{4}_{52}$	$\mathbf{5}_{53}$	$\mathbf{6}_{54}$	$\mathbf{7}_{55}$	"3x
´07x	$\mathbf{8}_{56}$	$\mathbf{9}_{57}$	$\mathbf{:}_{58}$	$\mathbf{;}_{59}$	$\mathbf{*}_{60}$	$\mathbf{=}_{61}$	$\mathbf{\$}_{62}$	$\mathbf{?}_{63}$	
´10x	$\mathbf{!}_{64}$	\mathbf{A}_{65}	\mathbf{B}_{66}	\mathbf{C}_{67}	\mathbf{D}_{68}	\mathbf{E}_{69}	\mathbf{F}_{70}	\mathbf{G}_{71}	"4x
´11x	\mathbf{H}_{72}	\mathbf{I}_{73}	\mathbf{J}_{74}	\mathbf{K}_{75}	\mathbf{L}_{76}	\mathbf{M}_{77}	\mathbf{N}_{78}	\mathbf{O}_{79}	
´12x	\mathbf{P}_{80}	\mathbf{Q}_{81}	\mathbf{R}_{82}	\mathbf{S}_{83}	\mathbf{T}_{84}	\mathbf{U}_{85}	\mathbf{V}_{86}	\mathbf{W}_{87}	"5x
´13x	\mathbf{X}_{88}	\mathbf{Y}_{89}	\mathbf{Z}_{90}	$\mathbf{[}_{91}$	$\mathbf{\backslash}_{92}$	$\mathbf{]}_{93}$	$\mathbf{\{}_{94}$	$\mathbf{/}_{95}$	
´14x	$\mathbf{]}_{96}$	\mathbf{a}_{97}	\mathbf{b}_{98}	\mathbf{c}_{99}	\mathbf{d}_{100}	\mathbf{e}_{101}	\mathbf{f}_{102}	\mathbf{g}_{103}	"6x
´15x	\mathbf{h}_{104}	\mathbf{i}_{105}	\mathbf{j}_{106}	\mathbf{k}_{107}	\mathbf{l}_{108}	\mathbf{m}_{109}	\mathbf{n}_{110}	\mathbf{o}_{111}	
´16x	\mathbf{p}_{112}	\mathbf{q}_{113}	\mathbf{r}_{114}	\mathbf{s}_{115}	\mathbf{t}_{116}	\mathbf{u}_{117}	\mathbf{v}_{118}	\mathbf{w}_{119}	"7x
´17x	\mathbf{x}_{120}	\mathbf{y}_{121}	\mathbf{z}_{122}	\mathbf{l}_{123}	\mathbf{J}_{124}	$\mathbf{\#}_{125}$	$\mathbf{\%}_{126}$	$\mathbf{'_{127}}$	
´20x	$\mathbf{\`}_{128}$	$\mathbf{'_{129}}$	$\mathbf{\^}_{130}$	$\mathbf{\~}_{131}$	$\mathbf{\`}_{132}$	$\mathbf{\`}_{133}$	$\mathbf{\cdot}_{134}$	$\mathbf{..}_{135}$	"8x
´21x	$\mathbf{'_{136}}$	$\mathbf{^{\circ}_{137}}$	$\mathbf{\`}_{138}$	$\mathbf{\`}_{139}$	$\mathbf{'_{140}}$	$\mathbf{'_{141}}$	$\mathbf{\`}_{142}$	$\mathbf{\`}_{143}$	
´22x	$\mathbf{\rightarrow}_{144}$	$\mathbf{\leftarrow}_{145}$	$\mathbf{\rightarrow}_{146}$	$\mathbf{\cdots}_{147}$	$\mathbf{\cdots}_{148}$	$\mathbf{\leftrightarrow}_{149}$	$\mathbf{\lceil}_{150}$	$\mathbf{\rceil}_{151}$	"9x
´23x	$\mathbf{*}_{152}$	$\mathbf{\&_{153}}$	$\mathbf{@_{154}}$	$\mathbf{\neg_{155}}$	$\mathbf{\cdot_{156}}$	$\mathbf{\times_{157}}$	$\mathbf{\leq_{158}}$	$\mathbf{\div_{159}}$	
´24x	\mathbf{Z}_{160}	$\mathbf{\text{‰}_{161}}$	$\mathbf{\text{‰}_{162}}$	$\mathbf{\text{‰}_{163}}$	$\mathbf{\text{‰}_{164}}$	$\mathbf{\text{‰}_{165}}$	$\mathbf{.._{166}}$	$\mathbf{..._{167}}$	"Ax
´25x	$\mathbf{/_{168}}$	$\mathbf{//_{169}}$	$\mathbf{///_{170}}$	$\mathbf{\backslash_{171}}$	$\mathbf{\backslash\backslash_{172}}$	$\mathbf{\backslash\backslash\backslash_{173}}$	$\mathbf{^{\text{‰}}_{174}}$	$\mathbf{!!_{175}}$	
´26x	$\mathbf{^{\text{‰}}_{176}}$	$\mathbf{/_{177}}$	$\mathbf{??_{178}}$	$\mathbf{_{179}}$	$\mathbf{///_{180}}$	$\mathbf{\text{‰}_{181}}$	$\mathbf{_{182}}$	$\mathbf{_{183}}$	"Bx
´27x	$\mathbf{\asymp_{184}}$	$\mathbf{_{185}}$	$\mathbf{\mathcal{E}_{186}}$	$\mathbf{\mathcal{O}_{187}}$	$\mathbf{_{188}}$	$\mathbf{\mathring{A}_{189}}$	$\mathbf{\mathcal{J}_{190}}$	$\mathbf{\mathcal{O}_{191}}$	
´30x	$\mathbf{\mathcal{T}_{192}}$	$\mathbf{\mathcal{J}_{193}}$	$\mathbf{\mathcal{A}_{194}}$	$\mathbf{_{195}}$	$\mathbf{\mathcal{V}_{196}}$	$\mathbf{\mathcal{V}_{197}}$	$\mathbf{\mathcal{C}_{198}}$	$\mathbf{\mathcal{E}_{199}}$	"Cx
´31x	$\mathbf{\mathcal{A}_{200}}$	$\mathbf{\mathcal{O}_{201}}$	$\mathbf{\mathcal{A}_{202}}$	$\mathbf{\mathcal{E}_{203}}$	$\mathbf{\mathcal{E}_{204}}$	$\mathbf{\mathcal{E}_{205}}$	$\mathbf{\mathcal{E}_{206}}$	$\mathbf{\mathcal{E}_{207}}$	
´32x	$\mathbf{\mathcal{E}_{208}}$	$\mathbf{\blacksquare_{209}}$	$\mathbf{\text{‰}_{210}}$	$\mathbf{\geq_{211}}$	$\mathbf{\backslash_{212}}$	$\mathbf{\circ_{213}}$	$\mathbf{\bullet_{214}}$	$\mathbf{\propto_{215}}$	"Dx
´33x	$\mathbf{\infty_{216}}$	$\mathbf{\mathcal{L}_{217}}$	$\mathbf{\mathcal{L}_{218}}$	$\mathbf{\mathcal{A}_{219}}$	$\mathbf{\mathcal{A}_{220}}$	$\mathbf{|_{221}}$	$\mathbf{\text{‰}_{222}}$	$\mathbf{\parallel_{223}}$	
´34x	$\mathbf{\parallel_{224}}$	$\mathbf{\wedge_{225}}$	$\mathbf{\vee_{226}}$	$\mathbf{\cap_{227}}$	$\mathbf{\cup_{228}}$	$\mathbf{\cdot_{229}}$	$\mathbf{\cdot_{230}}$	$\mathbf{\mathcal{O}_{231}}$	"Ex
´35x	$\mathbf{\cdot_{232}}$	$\mathbf{\div_{233}}$	$\mathbf{-_{234}}$	$\mathbf{\div_{235}}$	$\mathbf{\div_{236}}$	$\mathbf{\sim_{237}}$	$\mathbf{\sim_{238}}$	$\mathbf{\infty_{239}}$	
´36x	$\mathbf{\sim_{240}}$	$\mathbf{\text{‰}_{241}}$	$\mathbf{\text{‰}_{242}}$	$\mathbf{\approx_{243}}$	$\mathbf{\approx_{244}}$	$\mathbf{\neq_{245}}$	$\mathbf{\cong_{246}}$	$\mathbf{\cong_{247}}$	"Fx
´37x	$\mathbf{\neq_{248}}$	$\mathbf{\approx_{249}}$	$\mathbf{\neq_{250}}$	$\mathbf{\cong_{251}}$	$\mathbf{\approx_{252}}$	$\mathbf{\cong_{253}}$	$\mathbf{\mathcal{X}_{254}}$	$\mathbf{\mathcal{X}_{255}}$	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathit (letters):

	´0	´1	´2	´3	´4	´5	´6	´7	
´00x	Γ_0	Δ_1	Θ_2	Λ_3	Ξ_4	Π_5	Σ_6	Y_7	"0x
´01x	Φ_8	Ψ_9	Ω_{10}	α_{11}	β_{12}	γ_{13}	δ_{14}	ϵ_{15}	
´02x	ζ_{16}	η_{17}	θ_{18}	ι_{19}	κ_{20}	λ_{21}	μ_{22}	ν_{23}	"1x
´03x	ξ_{24}	π_{25}	ρ_{26}	σ_{27}	τ_{28}	υ_{29}	ϕ_{30}	χ_{31}	
´04x	ψ_{32}	ω_{33}	ε_{34}	ϑ_{35}	ω_{36}	ϱ_{37}	ς_{38}	φ_{39}	"2x
´05x	∇_{40}	∂_{41}	\aleph_{42}	\beth_{43}	\beth_{44}	\daleth_{45}	\triangleright_{46}	\triangleleft_{47}	
´06x	0_{48}	1_{49}	2_{50}	3_{51}	4_{52}	5_{53}	6_{54}	7_{55}	"3x
´07x	8_{56}	9_{57}	\cdot_{58}	\cdot_{59}	$<_{60}$	\hbar_{61}	$>_{62}$	\star_{63}	
´10x	\neq_{64}	A_{65}	B_{66}	C_{67}	D_{68}	E_{69}	F_{70}	G_{71}	"4x
´11x	H_{72}	I_{73}	J_{74}	K_{75}	L_{76}	M_{77}	N_{78}	O_{79}	
´12x	P_{80}	Q_{81}	R_{82}	S_{83}	T_{84}	U_{85}	V_{86}	W_{87}	"5x
´13x	X_{88}	Y_{89}	Z_{90}	\flat_{91}	\natural_{92}	\sharp_{93}	\smile_{94}	\frown_{95}	
´14x	\hbar_{96}	a_{97}	b_{98}	c_{99}	d_{100}	e_{101}	f_{102}	g_{103}	"6x
´15x	h_{104}	i_{105}	j_{106}	k_{107}	l_{108}	m_{109}	n_{110}	o_{111}	
´16x	p_{112}	q_{113}	r_{114}	s_{115}	t_{116}	u_{117}	v_{118}	w_{119}	"7x
´17x	x_{120}	y_{121}	z_{122}	l_{123}	j_{124}	\neq_{125}	\ll_{126}	\bigwedge_{127}	
´20x	$\grave{\cdot}_{128}$	$\acute{\cdot}_{129}$	$\hat{\cdot}_{130}$	$\tilde{\cdot}_{131}$	$\bar{\cdot}_{132}$	$\breve{\cdot}_{133}$	$\dot{\cdot}_{134}$	$\ddot{\cdot}_{135}$	"8x
´21x	\circ_{136}	\circ_{137}	\smile_{138}	\smile_{139}	\smile_{140}	\smile_{141}	\smile_{142}	\smile_{143}	
´22x	$\overleftarrow{\cdot}_{144}$	$\overleftarrow{\cdot}_{145}$	$\overrightarrow{\cdot}_{146}$	$\overrightarrow{\cdot}_{147}$	$\overrightarrow{\cdot}_{148}$	$\overleftrightarrow{\cdot}_{149}$	$\overline{\cdot}_{150}$	$\overline{\cdot}_{151}$	"9x
´23x	\ast_{152}	$\overline{\cdot}_{153}$	$\hat{\cdot}_{154}$	$\tilde{\cdot}_{155}$	$\breve{\cdot}_{156}$	\smile_{157}	\smile_{158}	\smile_{159}	
´24x	$\overbrace{\cdot}_{160}$	$\overbrace{\cdot}_{161}$	$\overbrace{\cdot}_{162}$	$\overbrace{\cdot}_{163}$	$\overbrace{\cdot}_{164}$	$\overbrace{\cdot}_{165}$	$\overbrace{\cdot}_{166}$	$\overbrace{\cdot}_{167}$	"Ax
´25x	$\overbrace{\cdot}_{168}$	$\overbrace{\cdot}_{169}$	$\overbrace{\cdot}_{170}$	$\overbrace{\cdot}_{171}$	$\overbrace{\cdot}_{172}$	$\overbrace{\cdot}_{173}$	$\overbrace{\cdot}_{174}$	$\overbrace{\cdot}_{175}$	
´26x	$\overbrace{\cdot}_{176}$	$\overbrace{\cdot}_{177}$	$\overbrace{\cdot}_{178}$	$\overbrace{\cdot}_{179}$	$\overbrace{\cdot}_{180}$	$\overbrace{\cdot}_{181}$	$\overbrace{\cdot}_{182}$	$\overbrace{\cdot}_{183}$	"Bx
´27x	\gg_{184}	\emptyset_{185}	\neq_{186}	\neq_{187}	\neq_{188}	\neq_{189}	\neq_{190}	\lesssim_{191}	
´30x	\gtrsim_{192}	\neq_{193}	\neq_{194}	\lesssim_{195}	\gtrsim_{196}	\neq_{197}	\neq_{198}	$<_{199}$	"Cx
´31x	$>_{200}$	\leq_{201}	\geq_{202}	\lesssim_{203}	\gtrsim_{204}	\neq_{205}	\neq_{206}	\subset_{207}	
´32x	\supset_{208}	\subset_{209}	\subset_{210}	\subseteq_{211}	\supseteq_{212}	\subset_{213}	\subset_{214}	\subset_{215}	"Dx
´33x	$\not\subset_{216}$	\supset_{217}	\supset_{218}	\supset_{219}	\supset_{220}	\supset_{221}	\supset_{222}	\supset_{223}	
´34x	Π_{224}	\sqcup_{225}	\oplus_{226}	\ominus_{227}	\otimes_{228}	\oslash_{229}	\odot_{230}	\odot_{231}	"Ex
´35x	\odot_{232}	\ominus_{233}	\ominus_{234}	\boxplus_{235}	\boxminus_{236}	\boxtimes_{237}	\boxdiv_{238}	\vdash_{239}	
´36x	\dashv_{240}	\top_{241}	\perp_{242}	\vdash_{243}	\vDash_{244}	\vDash_{245}	\Vdash_{246}	\Vdash_{247}	"Fx
´37x	\Vdash_{248}	\Vdash_{249}	\neq_{250}	\neq_{251}	\neq_{252}	\neq_{253}	\neq_{254}	\neq_{255}	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathit-bold (bold-letters):

	´0	´1	´2	´3	´4	´5	´6	´7	
´00x	Γ_0	Δ_1	Θ_2	Λ_3	Ξ_4	Π_5	Σ_6	Y_7	"0x
´01x	Φ_8	Ψ_9	Ω_{10}	α_{11}	β_{12}	γ_{13}	δ_{14}	ϵ_{15}	
´02x	ζ_{16}	η_{17}	θ_{18}	ι_{19}	κ_{20}	λ_{21}	μ_{22}	ν_{23}	"1x
´03x	ξ_{24}	π_{25}	ρ_{26}	σ_{27}	τ_{28}	υ_{29}	ϕ_{30}	χ_{31}	
´04x	ψ_{32}	ω_{33}	ε_{34}	ϑ_{35}	ϖ_{36}	ϱ_{37}	ς_{38}	φ_{39}	"2x
´05x	∇_{40}	∂_{41}	\aleph_{42}	\beth_{43}	\beth_{44}	\daleth_{45}	\triangleright_{46}	\triangleleft_{47}	
´06x	$\mathbf{0}_{48}$	$\mathbf{1}_{49}$	$\mathbf{2}_{50}$	$\mathbf{3}_{51}$	$\mathbf{4}_{52}$	$\mathbf{5}_{53}$	$\mathbf{6}_{54}$	$\mathbf{7}_{55}$	"3x
´07x	$\mathbf{8}_{56}$	$\mathbf{9}_{57}$	\cdot_{58}	\cdot_{59}	$<_{60}$	\hbar_{61}	$>_{62}$	\star_{63}	
´10x	\preceq_{64}	A_{65}	B_{66}	C_{67}	D_{68}	E_{69}	F_{70}	G_{71}	"4x
´11x	H_{72}	I_{73}	J_{74}	K_{75}	L_{76}	M_{77}	N_{78}	O_{79}	
´12x	P_{80}	Q_{81}	R_{82}	S_{83}	T_{84}	U_{85}	V_{86}	W_{87}	"5x
´13x	X_{88}	Y_{89}	Z_{90}	\flat_{91}	\natural_{92}	\sharp_{93}	\smile_{94}	\frown_{95}	
´14x	\hbar_{96}	\mathbf{a}_{97}	\mathbf{b}_{98}	\mathbf{c}_{99}	\mathbf{d}_{100}	\mathbf{e}_{101}	\mathbf{f}_{102}	\mathbf{g}_{103}	"6x
´15x	\mathbf{h}_{104}	\mathbf{i}_{105}	\mathbf{j}_{106}	\mathbf{k}_{107}	\mathbf{l}_{108}	\mathbf{m}_{109}	\mathbf{n}_{110}	\mathbf{o}_{111}	
´16x	\mathbf{p}_{112}	\mathbf{q}_{113}	\mathbf{r}_{114}	\mathbf{s}_{115}	\mathbf{t}_{116}	\mathbf{u}_{117}	\mathbf{v}_{118}	\mathbf{w}_{119}	"7x
´17x	\mathbf{x}_{120}	\mathbf{y}_{121}	\mathbf{z}_{122}	\mathbf{l}_{123}	J_{124}	\preceq_{125}	\ll_{126}	$\widehat{}_{127}$	
´20x	\backslash_{128}	$\acute{}_{129}$	$\hat{}_{130}$	$\tilde{}_{131}$	$\bar{}_{132}$	$\breve{}_{133}$	$\dot{}_{134}$	$\ddot{}_{135}$	"8x
´21x	$?_{136}$	o_{137}	v_{138}	u_{139}	e_{140}	r_{141}	l_{142}	a_{143}	
´22x	$\overleftarrow{}_{144}$	$\overleftarrow{}_{145}$	$\overrightarrow{}_{146}$	$\overleftarrow{}_{147}$	$\overleftarrow{}_{148}$	$\overleftrightarrow{}_{149}$	\lceil_{150}	\lceil_{151}	"9x
´23x	\ast_{152}	$\bar{}_{153}$	$\hat{}_{154}$	$\tilde{}_{155}$	$\breve{}_{156}$	$\acute{}_{157}$	\sim_{158}	\vee_{159}	
´24x	$\overbrace{}_{160}$	$\overbrace{}_{161}$	$\overbrace{}_{162}$	$\overbrace{}_{163}$	$\overbrace{}_{164}$	$\overbrace{}_{165}$	$\overbrace{}_{166}$	$\overbrace{}_{167}$	"Ax
´25x	$\overbrace{}_{168}$	$\overbrace{}_{169}$	$\overbrace{}_{170}$	$\overbrace{}_{171}$	$\overbrace{}_{172}$	$\overbrace{}_{173}$	$\overbrace{}_{174}$	$\overbrace{}_{175}$	
´26x	$\overbrace{}_{176}$	$\overbrace{}_{177}$	$\overbrace{}_{178}$	$\overbrace{}_{179}$	$\overbrace{}_{180}$	$\overbrace{}_{181}$	$\overbrace{}_{182}$	$\overbrace{}_{183}$	"Bx
´27x	\gg_{184}	\emptyset_{185}	\star_{186}	\star_{187}	\star_{188}	\star_{189}	\star_{190}	\lesssim_{191}	
´30x	\gtrsim_{192}	\nless_{193}	\nless_{194}	\lessgtr_{195}	\lessgtr_{196}	\nless_{197}	\nless_{198}	\lessgtr_{199}	"Cx
´31x	\succ_{200}	\leq_{201}	\geq_{202}	\lesssim_{203}	\gtrsim_{204}	\star_{205}	\star_{206}	\subset_{207}	
´32x	\supset_{208}	φ_{209}	φ_{210}	\subseteq_{211}	\supseteq_{212}	φ_{213}	φ_{214}	φ_{215}	"Dx
´33x	φ_{216}	ϑ_{217}	ϑ_{218}	ϑ_{219}	\sqsubset_{220}	\sqsupset_{221}	\sqsubset_{222}	\supseteq_{223}	
´34x	Π_{224}	\sqcup_{225}	\oplus_{226}	\ominus_{227}	\otimes_{228}	\oslash_{229}	\odot_{230}	\odot_{231}	"Ex
´35x	\odot_{232}	\ominus_{233}	\ominus_{234}	\boxplus_{235}	\boxminus_{236}	\boxtimes_{237}	\boxtimes_{238}	\vdash_{239}	
´36x	\dashv_{240}	\top_{241}	\perp_{242}	\vdash_{243}	\vDash_{244}	\vDash_{245}	\Vdash_{246}	\Vdash_{247}	"Fx
´37x	\Vdash_{248}	\Vdash_{249}	\nVdash_{250}	\Vdash_{251}	\nVdash_{252}	\vDash_{253}	\nVdash_{254}	\nVdash_{255}	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathsym (symbols):

	´0	´1	´2	´3	´4	´5	´6	´7	
´00x	\mathbb{P}_0	$\bullet\rightarrow_1$	$\bullet\rightarrow_2$	\int_3	\iint_4	\iiint_5	\oint_6	\iiint_7	"0x
´01x	\int_8	\iint_9	\iiint_{10}	\oint_{11}	\cdot_{12}	\iiint_{13}	\bowtie_{14}	\bowtie_{15}	
´02x	\bowtie_{16}	Π_{17}	Π_{18}	\simeq_{19}	\vee_{20}	\wedge_{21}	Σ_{22}	\perp_{23}	
´03x	\S_{24}	\setminus_{25}	\int_{26}	\setminus_{27}	\lessgtr_{28}	\gtrless_{29}	\lll_{30}	\ggg_{31}	"1x
´04x	\lessgtr_{32}	\gtrless_{33}	\lessgtr_{34}	\gtrless_{35}	\lessgtr_{36}	\gtrless_{37}	\clubsuit_{38}	\clubsuit_{39}	
´05x	\clubsuit_{40}	\clubsuit_{41}	\clubsuit_{42}	\clubsuit_{43}	\lessgtr_{44}	\gtrless_{45}	\lessgtr_{46}	\gtrless_{47}	
´06x	\clubsuit_{48}	\clubsuit_{49}	\clubsuit_{50}	\clubsuit_{51}	\vdots_{52}	\cdots_{53}	\cdot_{54}	\cdot_{55}	"2x
´07x	\gtrless_{56}	\lessgtr_{57}	\lessgtr_{58}	\lessgtr_{59}	\lessgtr_{60}	\lessgtr_{61}	\cdot_{62}	\cdot_{63}	
´10x	\mathfrak{D}_{64}	\cdot_{65}	\cdot_{66}	\leftarrow_{67}	\uparrow_{68}	\rightarrow_{69}	\downarrow_{70}	\leftrightarrow_{71}	
´11x	\updownarrow_{72}	\nwarrow_{73}	\nearrow_{74}	\searrow_{75}	\swarrow_{76}	\leftarrow_{77}	\rightarrow_{78}	\leftarrow_{79}	"3x
´12x	\rightarrow_{80}	\leftarrow_{81}	\rightarrow_{82}	\leftarrow_{83}	\leftarrow_{84}	\leftarrow_{85}	\rightarrow_{86}	\rightarrow_{87}	
´13x	\leftrightarrow_{88}	\leftrightarrow_{89}	\leftarrow_{90}	\rightarrow_{91}	\leftrightarrow_{92}	\leftarrow_{93}	\rightarrow_{94}	\emptyset_{95}	
´14x	\simeq_{96}	\simeq_{97}	\simeq_{98}	\simeq_{99}	\simeq_{100}	\simeq_{101}	\simeq_{102}	\simeq_{103}	"4x
´15x	\simeq_{104}	\simeq_{105}	\simeq_{106}	\simeq_{107}	\simeq_{108}	\simeq_{109}	\simeq_{110}	\simeq_{111}	
´16x	\simeq_{112}	\neq_{113}	\equiv_{114}	\neq_{115}	\parallel_{116}	\parallel_{117}	\equiv_{118}	\leq_{119}	
´17x	\geq_{120}	\leq_{121}	\geq_{122}	\Re_{123}	\Im_{124}	\wp_{125}	\square_{126}	\cap_{127}	"5x
´20x	\clubsuit_{128}	\diamond_{129}	\heartsuit_{130}	\spadesuit_{131}	\mathfrak{J}_{132}	\circ_{133}	\S_{134}	\P_{135}	
´21x	\checkmark_{136}	—_{137}	—_{138}	ℓ_{139}	\mathfrak{H}_{140}	\mathfrak{H}_{141}	\cdot_{142}	\cdot_{143}	
´22x	\cdot_{144}	\cdot_{145}	\cdot_{146}	\cdot_{147}	\cdot_{148}	\cdot_{149}	\cdot_{150}	\cdot_{151}	"6x
´23x	\cdot_{152}	\cdot_{153}	\cdot_{154}	\cdot_{155}	\cdot_{156}	\cdot_{157}	\cdot_{158}	\cdot_{159}	
´26x	\cdot_{176}	\cdot_{177}	\cdot_{178}	\cdot_{179}	\cdot_{180}	\cdot_{181}	\cdot_{182}	\cdot_{183}	
´27x	\square_{184}	\cdot_{185}	\cdot_{186}	\cdot_{187}	\cdot_{188}	\cdot_{189}	\cdot_{190}	\cdot_{191}	"7x
´30x	\cdot_{192}	\cdot_{193}	\cdot_{194}	\cdot_{195}	\cdot_{196}	\cdot_{197}	\cdot_{198}	\cdot_{199}	
´31x	\cdot_{200}	\blacktriangle_{201}	\triangle_{202}	\cdot_{203}	\cdot_{204}	$\blacktriangleright_{205}$	\triangleright_{206}	\cdot_{207}	
´32x	\cdot_{208}	\cdot_{209}	\cdot_{210}	\blacktriangledown_{211}	\triangledown_{212}	\cdot_{213}	\cdot_{214}	\blacktriangleleft_{215}	"8x
´33x	\triangleleft_{216}	\leftarrow_{217}	\Rightarrow_{218}	\leftrightarrow_{219}	\leftrightarrow_{220}	\blacklozenge_{221}	\diamond_{222}	\Rightarrow_{223}	
´34x	\odot_{224}	\diamond_{225}	\circ_{226}	\neg_{227}	\neg_{228}	\circ_{229}	\bullet_{230}	\cdot_{231}	
´35x	\cdot_{232}	\cdot_{233}	\cdot_{234}	\cdot_{235}	\cdot_{236}	\cdot_{237}	\cdot_{238}	\neq_{239}	"9x
´36x	\leftrightarrow_{240}	\rightarrow_{241}	\leftarrow_{242}	\updownarrow_{243}	\Rightarrow_{244}	\downarrow_{245}	\leftrightarrow_{246}	\updownarrow_{247}	
´37x	\nwarrow_{248}	\nearrow_{249}	\searrow_{250}	\swarrow_{251}	\leftarrow_{252}	\circ_{253}	\diamond_{254}	\rightarrow_{255}	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathex (largesymbols):

	´0	´1	´2	´3	´4	´5	´6	´7	
´00x	(₀	)₁	₂	₃	[₄	]₅	₆	₇	"0x
´01x	[₈	]₉	[₁₀	]₁₁	{ ₁₂	} ₁₃	₁₄	₁₅	
´02x	< ₁₆	> ₁₇	₁₈	₁₉	₂₀	₂₁	/ ₂₂	\ ₂₃	"1x
´03x	(₂₄	)₂₅	₂₆	₂₇	[₂₈	]₂₉	₃₀	₃₁	
´04x	[₃₂	]₃₃	[₃₄	]₃₅	{ ₃₆	} ₃₇	₃₈	₃₉	"2x
´05x	< ₄₀	> ₄₁	₄₂	₄₃	₄₄	₄₅	/ ₄₆	\ ₄₇	
´06x	(₄₈	)₄₉	₅₀	₅₁	[₅₂	]₅₃	₅₄	₅₅	"3x
´07x	[₅₆	]₅₇	[₅₈	]₅₉	{ ₆₀	} ₆₁	₆₂	₆₃	
´10x	< ₆₄	> ₆₅	₆₆	₆₇	₆₈	₆₉	/ ₇₀	\ ₇₁	"4x
´11x	(₇₂	)₇₃	₇₄	₇₅	[₇₆	]₇₇	₇₈	₇₉	
´12x	[₈₀	]₈₁	[₈₂	]₈₃	{ ₈₄	} ₈₅	₈₆	₈₇	"5x
´13x	< ₈₈	> ₈₉	₉₀	₉₁	₉₂	₉₃	/ ₉₄	\ ₉₅	
´14x	[₉₆	]₉₇	[₉₈	]₉₉	[₁₀₀	]₁₀₁	[₁₀₂	[₁₀₃	"6x
´15x	[₁₀₄	[₁₀₅	[₁₀₆	[₁₀₇	{ ₁₀₈	{ ₁₀₉	[₁₁₀	[₁₁₁	
´16x	[₁₁₂	[₁₁₃	[₁₁₄	[₁₁₅	√ ₁₁₆	√ ₁₁₇	√ ₁₁₈	√ ₁₁₉	"7x
´17x	[₁₂₀	[₁₂₁	√ ₁₂₂	√ ₁₂₃	√ ₁₂₄	√ ₁₂₅	√ ₁₂₆	√ ₁₂₇	

'20x	$\int\!\!\int_{128}$	$\int\!\!\int_{129}$	$\int\!\!\int\!\!\int_{130}$	$\int\!\!\int\!\!\int_{131}$	\oint_{132}	\oint_{133}	$\int\!\!\int\!\!\int_{134}$	$\int\!\!\int\!\!\int_{135}$	"8x
'21x	\int_{136}	\int_{137}	$\int\!\!\int_{138}$	$\int\!\!\int_{139}$	$\int\!\!\int_{140}$	$\int\!\!\int_{141}$	\oint_{142}	\oint_{143}	
'22x	$\int\!\!\int\!\!\int_{144}$	$\int\!\!\int\!\!\int_{145}$	\oint_{146}	\oint_{147}	\oint_{148}	\oint_{149}	150	151	"9x
'23x	152	153	154	155	156	157	158	159	
'26x	176	\prod_{177}	\prod_{178}	\sum_{179}	\wedge_{180}	\vee_{181}	\cap_{182}	\cup_{183}	"Bx
'27x	$/_{184}$	\backslash_{185}	\odot_{186}	\oplus_{187}	\otimes_{188}	\cup_{189}	\cup_{190}	\sqcap_{191}	
'30x	\sqcup_{192}	193	194	195	196	197	198	\prod_{199}	"Cx
'31x	\prod_{200}	\sum_{201}	\wedge_{202}	\vee_{203}	\cap_{204}	\cup_{205}	$/_{206}$	\backslash_{207}	
'32x	\odot_{208}	\oplus_{209}	\otimes_{210}	\cup_{211}	\cup_{212}	\sqcap_{213}	\sqcup_{214}	215	"Dx
'33x	216	217	218	219	(220	)221	222	223	
'34x	\llbracket_{224}	\rrbracket_{225}	\lfloor_{226}	\rfloor_{227}	\lceil_{228}	\rceil_{229}	\int_{230}	\backslash_{231}	"Ex
'35x	232	233	\langle_{234}	\rangle_{235}	236	237	238	239	
'36x	$|_{240}$	\parallel_{241}	242	$|_{243}$	\parallel_{244}	245	246	247	"Fx
'37x	248	$\sqrt{}_{249}$	250	251	252	253	254	255	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathbb (mathbb):

	<i>´o</i>	<i>´1</i>	<i>´2</i>	<i>´3</i>	<i>´4</i>	<i>´5</i>	<i>´6</i>	<i>´7</i>	
<i>´10x</i>	₆₄	A ₆₅	B ₆₆	C ₆₇	D ₆₈	E ₆₉	F ₇₀	G ₇₁	<i>´4x</i>
<i>´11x</i>	H ₇₂	I ₇₃	J ₇₄	K ₇₅	L ₇₆	M ₇₇	N ₇₈	O ₇₉	
<i>´12x</i>	P ₈₀	Q ₈₁	R ₈₂	S ₈₃	T ₈₄	U ₈₅	V ₈₆	W ₈₇	<i>´5x</i>
<i>´13x</i>	X ₈₈	Y ₈₉	Z ₉₀	₉₁	₉₂	₉₃	₉₄	₉₅	
<i>´14x</i>	₉₆	a ₉₇	b ₉₈	c ₉₉	d ₁₀₀	e ₁₀₁	f ₁₀₂	g ₁₀₃	<i>´6x</i>
<i>´15x</i>	h ₁₀₄	i ₁₀₅	j ₁₀₆	k ₁₀₇	l ₁₀₈	m ₁₀₉	n ₁₁₀	o ₁₁₁	
<i>´16x</i>	p ₁₁₂	q ₁₁₃	r ₁₁₄	s ₁₁₅	t ₁₁₆	u ₁₁₇	v ₁₁₈	w ₁₁₉	<i>´7x</i>
<i>´17x</i>	x ₁₂₀	y ₁₂₁	z ₁₂₂	l ₁₂₃	J ₁₂₄	₁₂₅	₁₂₆	₁₂₇	
	<i>´8</i>	<i>´9</i>	<i>´A</i>	<i>´B</i>	<i>´C</i>	<i>´D</i>	<i>´E</i>	<i>´F</i>	

NEW SANS SERIF ALPHABETS:

With the new additions to `libertinust1math`, starting with version 1.1, there are substantial changes to the handling of sans serif. The changes have the following goals.

- Provide a math package with which all ISO typesetting rules may be followed.
- Simultaneously, add options for the non-ISO user to be able to make better use of sans serif math symbols.
- Provide the option of sans serif Roman and Greek math letters together with math symbols from `libertinust1math`, which may be useful to those who like to make their slides using sans serif for enhanced readability at lower resolutions.

Thanks go to Claudio Beccari for convincing me that the effort involved was worthwhile, at least for the ISO case.

Four fonts parallel to the serified roman and italic (regular and bold) have been added, with sans serif alphanumeric symbols based on those in STIX, but slightly reduced in size and the italics reworked to match the italic slant of libertine. (Aside from Biolinum Roman, the Biolinum fonts are not, in my opinion, suitable for use as sans math to accompany `libertinust1math`.) Glyphs in the four fonts may be accessed by the macros `\mathsf`, `\mathsfbf`, `\mathsf \mathsf` and `\mathsfbfit`, though not all of these may be defined, depending on the options you set.

NEW PACKAGE OPTIONS AND MACROS:

I've followed to some extent the options and macros in the `isomath` package.

- `nosans` provides the bare minimum access to sans serif math letters, preserving just `\mathsf` and its bold counterpart, `\mathsfbf`. This option keeps the use of additional math families to a minimum. (If you make no use of those macros, no new math families are created.) If `nosans` is not specified, new symbol fonts `sans` and `sansi` are declared, along with bold versions, and `\mathsfbfit` is declared to be the bold italic sans math alphabet. Two of the available sixteen math families will be committed.
- Option `lcgreekalpha` allows proper handling of alphabet changes for lower-case Greek letters. (They are mathord by default—this option changes them to `mathalpha`, so that you do in fact get the expected sans Greek when you enter `\mathsf{\phi}`.)
- ISO specifies changes needed to conform to ISO typesetting rules. If specified, the following changes will occur.
 - Option `nosans` is turned off, if present, and option `mathsf \mathsf` is ignored unless the additional option `mathsf \mathsf` is specified.
 - Option `lcgreekalpha` is turned on, allowing proper handling of alphabet changes for lower-case Greek letters.
 - Option `slantedGreek` is turned on, as required by ISO rules.
 - New commands are provided: `\mathboldsans` means `\mathsfbfit`, and `\mathbold` means `\mathbfit`, while each of `\vectorsym`, `\matrixsym` means `\mathbfit`, and `\ensorsym` means `\mathsfbfit`. For example, `\matrixsym{A}` renders as **A**, in accordance with ISO rules.
 - If you add the option `mathsf \mathsf` , then you also have access to sans italic math, which ISO regards as an option for some special cases. This will use another math family.
 - The option `reuseMathAlphabets` may be added, and can reduce math family usage by redefining `\mathbf` to mean `\mathbfit` (math bold italic) and `\mathsf` to mean `\mathsfbfit` (sans math bold italic.)
 - As it may be important to keep track of your math families when using ISO, I've added `\ShowMathFamilies`. If you get an error message “too many math alphabets used in version normal”, run the macro just before the error location to get an idea of its cause.
- `mathsf \mathsf` may be used without ISO, and the same effect described under the ISO heading.
- `reuseMathAlphabets` may be used without ISO, but really makes sense only under ISO.

- `sansmath` sets `nosans` and substitutes sans letters (Roman and Greek) in place of the default Libertine letters. With this option, every math expression in the document will be rendered using sans serif letters.

libertinust1-mathsfrm (\mathsf)

	´0	´1	´2	´3	´4	´5	´6	´7	
´00x	Γ_0	Δ_1	Θ_2	Λ_3	Ξ_4	Π_5	Σ_6	Υ_7	"0x
´01x	Φ_8	Ψ_9	Ω_{10}	α_{11}	β_{12}	γ_{13}	δ_{14}	ϵ_{15}	
´02x	ζ_{16}	η_{17}	θ_{18}	ι_{19}	κ_{20}	λ_{21}	μ_{22}	ν_{23}	"1x
´03x	ξ_{24}	π_{25}	ρ_{26}	σ_{27}	τ_{28}	υ_{29}	ϕ_{30}	χ_{31}	
´04x	ψ_{32}	ω_{33}	ϵ_{34}	δ_{35}	ϖ_{36}	ϱ_{37}	ς_{38}	φ_{39}	"2x
´05x	∇_{40}	∂_{41}	$-_{42}$	$+_{43}$	\pm_{44}	\mp_{45}	$(_{46}$	$)_{47}$	
´06x	0_{48}	1_{49}	2_{50}	3_{51}	4_{52}	5_{53}	6_{54}	7_{55}	"3x
´07x	8_{56}	9_{57}	$:_{58}$	$;_{59}$	$*_{60}$	$=_{61}$	$\$_{62}$	$?_{63}$	
´10x	$!_{64}$	A_{65}	B_{66}	C_{67}	D_{68}	E_{69}	F_{70}	G_{71}	"4x
´11x	H_{72}	I_{73}	J_{74}	K_{75}	L_{76}	M_{77}	N_{78}	O_{79}	
´12x	P_{80}	Q_{81}	R_{82}	S_{83}	T_{84}	U_{85}	V_{86}	W_{87}	"5x
´13x	X_{88}	Y_{89}	Z_{90}	$[_{91}$	\backslash_{92}	$]_{93}$	$\{_{94}$	$/_{95}$	
´14x	$\}_{96}$	a_{97}	b_{98}	c_{99}	d_{100}	e_{101}	f_{102}	g_{103}	"6x
´15x	h_{104}	i_{105}	j_{106}	k_{107}	l_{108}	m_{109}	n_{110}	o_{111}	
´16x	p_{112}	q_{113}	r_{114}	s_{115}	t_{116}	u_{117}	v_{118}	w_{119}	"7x
´17x	x_{120}	y_{121}	z_{122}	l_{123}	j_{124}	$\#_{125}$	$\%_{126}$	$'_{127}$	
´20x	$\grave{ }_{128}$	$\acute{ }_{129}$	$\hat{ }_{130}$	$\tilde{ }_{131}$	$\bar{ }_{132}$	$\breve{ }_{133}$	\cdot_{134}	$\ddot{ }_{135}$	"8x
´21x	$\ring{ }_{136}$	\circ_{137}	\smile_{138}	\smile_{139}	'_{140}	' _{141}	' _{142}	' _{143}	
´22x	$\overrightarrow{ }_{144}$	$\overleftarrow{ }_{145}$	$\overrightarrow{ }_{146}$	\cdots_{147}	\cdots_{148}	$\longleftrightarrow_{149}$	\top_{150}	\perp_{151}	"9x
´23x	\ast_{152}	$\&_{153}$	$\@_{154}$	\neg_{155}	\cdot_{156}	\times_{157}	\leq_{158}	\div_{159}	
´24x	Z_{160}	\mathfrak{z}_{161}	\exists_{162}	\dagger_{163}	\ddagger_{164}	\bullet_{165}	\dots_{166}	\dots_{167}	"Ax
´25x	$/_{168}$	$//_{169}$	$///_{170}$	\backslash_{171}	$\backslash\backslash_{172}$	$\backslash\backslash\backslash_{173}$	\wedge_{174}	$!!_{175}$	
´26x	\blacksquare_{176}	$/_{177}$	$??_{178}$	$_{179}$	$///_{180}$	\S_{181}	$_{182}$	$_{183}$	"Bx
´27x	\asymp_{184}	$_{185}$	\mathcal{E}_{186}	\mathfrak{U}_{187}	\mathfrak{l}_{188}	\mathring{A}_{189}	\mathfrak{J}_{190}	\mathfrak{D}_{191}	
´30x	\mathfrak{T}_{192}	\mathfrak{J}_{193}	\mathfrak{A}_{194}	$_{195}$	\mathfrak{B}_{196}	\mathfrak{V}_{197}	\mathfrak{C}_{198}	\mathfrak{E}_{199}	"Cx
´31x	\mathfrak{Z}_{200}	\mathfrak{O}_{201}	\mathfrak{A}_{202}	\mathfrak{E}_{203}	\mathfrak{E}_{204}	\mathfrak{E}_{205}	\mathfrak{E}_{206}	\mathfrak{E}_{207}	
´32x	\mathfrak{E}_{208}	\blacksquare_{209}	\dagger_{210}	\geq_{211}	\backslash_{212}	\circ_{213}	\bullet_{214}	α_{215}	"Dx
´33x	∞_{216}	\mathfrak{L}_{217}	\angle_{218}	\mathfrak{A}_{219}	\mathfrak{A}_{220}$	|_{221}$	\dagger_{222}	\parallel_{223}	
´34x	\parallel_{224}	\wedge_{225}	\vee_{226}	\cap_{227}	\cup_{228}	$\dot{\cdot}_{229}$	$\ddot{\cdot}_{230}$	\mathfrak{O}_{231}	"Ex
´35x	$\ddot{\cdot}_{232}$	\div_{233}	$\dot{-}_{234}$	$\ddot{\cdot}_{235}$	$\dot{+}_{236}$	\sim_{237}	\sim_{238}	∞_{239}	
´36x	\sim_{240}	\wr_{241}	\dagger_{242}	\approx_{243}	\approx_{244}	\neq_{245}	\cong_{246}	\cong_{247}	"Fx
´37x	\neq_{248}	\approx_{249}	\neq_{250}	\approx_{251}	\approx_{252}	\cong_{253}	\times_{254}	\simeq_{255}	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathsfrm-bold (\mathsfbf)

	´0	´1	´2	´3	´4	´5	´6	´7	
´00x	Γ ₀	Δ ₁	Θ ₂	Λ ₃	Ξ ₄	Π ₅	Σ ₆	Υ ₇	"0x
´01x	Φ ₈	Ψ ₉	Ω ₁₀	α ₁₁	β ₁₂	γ ₁₃	δ ₁₄	ε ₁₅	
´02x	ζ ₁₆	η ₁₇	θ ₁₈	ι ₁₉	κ ₂₀	λ ₂₁	μ ₂₂	ν ₂₃	"1x
´03x	ξ ₂₄	π ₂₅	ρ ₂₆	σ ₂₇	τ ₂₈	υ ₂₉	φ ₃₀	χ ₃₁	
´04x	ψ ₃₂	ω ₃₃	ε ₃₄	δ ₃₅	ϖ ₃₆	ϙ ₃₇	ς ₃₈	φ ₃₉	"2x
´05x	∇ ₄₀	∂ ₄₁	− ₄₂	+ ₄₃	± ₄₄	∓ ₄₅	(₄₆) ₄₇		
´06x	0 ₄₈	1 ₄₉	2 ₅₀	3 ₅₁	4 ₅₂	5 ₅₃	6 ₅₄	7 ₅₅	"3x
´07x	8 ₅₆	9 ₅₇	: ₅₈	;59	*60	=61	\$62	?63	
´10x	!64	A65	B66	C67	D68	E69	F70	G71	"4x
´11x	H72	I73	J74	K75	L76	M77	N78	O79	
´12x	P80	Q81	R82	S83	T84	U85	V86	W87	"5x
´13x	X88	Y89	Z90	[91	\92	]93	{94	/95	
´14x	}96	a97	b98	c99	d100	e101	f102	g103	"6x
´15x	h104	i105	j106	k107	l108	m109	n110	o111	
´16x	p112	q113	r114	s115	t116	u117	v118	w119	"7x
´17x	x120	y121	z122	l123	J124	#125	%126	'127	
´20x	`128	´129	^130	~131	˘132	ˇ133	˙134	¨135	"8x
´21x	˘136	˙137	ˇ138	˘139	˙140	ˇ141	˘142	˙143	
´22x	↪144	↩145	↪146	⋯147	⋯148	↩149	⌊150	⌈151	"9x
´23x	*152	&153	@154	¬155	·156	×157	≤158	÷159	
´24x	Z160	ℵ161	ℶ162	†163	‡164	•165	..166	...167	"Ax
´25x	/168	//169	///170	\171	\\172	\\\173	⌞174	!!175	
´26x	▪176	/177	??178	179	///180	181	182	183	"Bx
´27x	≈184	185	ℰ186	ℱ187	188	Å189	⌋190	⌋191	
´30x	⌊192	⌊193	ℒ194	195	ℑ196	ℑ197	ℒ198	ℑ199	"Cx
´31x	ℑ200	ℒ201	Δ202	ℰ203	ℑ204	ℰ205	ℑ206	ℑ207	
´32x	ℑ208	■209	‡210	≥211	\212	°213	•214	α215	"Dx
´33x	∞216	⌊217	∠218	⋈219	⋈220	|221	†222	||223	
´34x	||224	∧225	∨226	∩227	∪228	∴229	∴230	∅231	"Ex
´35x	∴232	÷233	÷234	÷235	÷236	~237	~238	∞239	
´36x	~240	~241	≠242	≈243	≈244	≠245	≈246	≠247	"Fx
´37x	≠248	≈249	≠250	≈251	≈252	≠253	≠254	≈255	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathsfit (\mathsf{fit})

	´0	´1	´2	´3	´4	´5	´6	´7	
´00x	Γ_0	Δ_1	Θ_2	Λ_3	Ξ_4	Π_5	Σ_6	Υ_7	"0x
´01x	Φ_8	Ψ_9	Ω_{10}	α_{11}	β_{12}	γ_{13}	δ_{14}	ϵ_{15}	
´02x	ζ_{16}	η_{17}	θ_{18}	ι_{19}	κ_{20}	λ_{21}	μ_{22}	ν_{23}	"1x
´03x	ξ_{24}	π_{25}	ρ_{26}	σ_{27}	τ_{28}	υ_{29}	ϕ_{30}	χ_{31}	
´04x	ψ_{32}	ω_{33}	ε_{34}	ϑ_{35}	ϖ_{36}	ϱ_{37}	ς_{38}	φ_{39}	"2x
´05x	∇_{40}	∂_{41}	\aleph_{42}	\beth_{43}	\beth_{44}	\daleth_{45}	\triangleright_{46}	\triangleleft_{47}	
´06x	0_{48}	1_{49}	2_{50}	3_{51}	4_{52}	5_{53}	6_{54}	7_{55}	"3x
´07x	8_{56}	9_{57}	\cdot_{58}	\cdot_{59}	$<_{60}$	\hbar_{61}	$>_{62}$	\star_{63}	
´10x	\preceq_{64}	A_{65}	B_{66}	C_{67}	D_{68}	E_{69}	F_{70}	G_{71}	"4x
´11x	H_{72}	I_{73}	J_{74}	K_{75}	L_{76}	M_{77}	N_{78}	O_{79}	
´12x	P_{80}	Q_{81}	R_{82}	S_{83}	T_{84}	U_{85}	V_{86}	W_{87}	"5x
´13x	X_{88}	Y_{89}	Z_{90}	b_{91}	\mathfrak{h}_{92}	$\#_{93}$	\smile_{94}	\frown_{95}	
´14x	\hbar_{96}	a_{97}	b_{98}	c_{99}	d_{100}	e_{101}	f_{102}	g_{103}	"6x
´15x	h_{104}	i_{105}	j_{106}	k_{107}	l_{108}	m_{109}	n_{110}	o_{111}	
´16x	p_{112}	q_{113}	r_{114}	s_{115}	t_{116}	u_{117}	v_{118}	w_{119}	"7x
´17x	x_{120}	y_{121}	z_{122}	l_{123}	j_{124}	\preceq_{125}	\ll_{126}	\frown_{127}	
´20x	$\grave{\cdot}_{128}$	$\acute{\cdot}_{129}$	$\hat{\cdot}_{130}$	$\tilde{\cdot}_{131}$	$\bar{\cdot}_{132}$	$\breve{\cdot}_{133}$	$\dot{\cdot}_{134}$	$\ddot{\cdot}_{135}$	"8x
´21x	$\ring{\cdot}_{136}$	\circ_{137}	\smile_{138}	\smile_{139}	$\grave{\cdot}_{140}$	$\acute{\cdot}_{141}$	$\grave{\cdot}_{142}$	$\acute{\cdot}_{143}$	
´22x	$\vec{\cdot}_{144}$	\leftarrow_{145}	\rightarrow_{146}	\cdots_{147}	\cdots_{148}	\leftrightarrow_{149}	\lceil_{150}	\lceil_{151}	"9x
´23x	\ast_{152}	$\bar{\cdot}_{153}$	$\hat{\cdot}_{154}$	$\tilde{\cdot}_{155}$	$\breve{\cdot}_{156}$	\frown_{157}	\smile_{158}	\smile_{159}	
´24x	$\overline{\cdot}_{160}$	$\overline{\cdot}_{161}$	$\overline{\cdot}_{162}$	$\overline{\cdot}_{163}$	$\overline{\cdot}_{164}$	$\overline{\cdot}_{165}$	$\overline{\cdot}_{166}$	$\overline{\cdot}_{167}$	"Ax
´25x	$\overline{\cdot}_{168}$	$\overline{\cdot}_{169}$	$\overline{\cdot}_{170}$	$\overline{\cdot}_{171}$	$\overline{\cdot}_{172}$	$\overline{\cdot}_{173}$	$\overline{\cdot}_{174}$	$\overline{\cdot}_{175}$	
´26x	$\overline{\cdot}_{176}$	$\overline{\cdot}_{177}$	$\overline{\cdot}_{178}$	$\overline{\cdot}_{179}$	$\overline{\cdot}_{180}$	$\overline{\cdot}_{181}$	$\overline{\cdot}_{182}$	$\overline{\cdot}_{183}$	"Bx
´27x	\gg_{184}	\emptyset_{185}	\star_{186}	\star_{187}	\star_{188}	\star_{189}	\star_{190}	\lesssim_{191}	
´30x	\gtrsim_{192}	\nless_{193}	\nless_{194}	\lessgtr_{195}	\gtrless_{196}	\nless_{197}	\nless_{198}	$<_{199}$	"Cx
´31x	$>_{200}$	\leq_{201}	\geq_{202}	\lesssim_{203}	\gtrsim_{204}	\star_{205}	\star_{206}	\subset_{207}	
´32x	\supset_{208}	$\not\subset_{209}$	$\not\subset_{210}$	\subseteq_{211}	\supseteq_{212}	$\not\subset_{213}$	$\not\subset_{214}$	$\not\subset_{215}$	"Dx
´33x	$\not\subset_{216}$	$\not\subset_{217}$	$\not\subset_{218}$	$\not\subset_{219}$	$\not\subset_{220}$	$\not\subset_{221}$	$\not\subset_{222}$	$\not\subset_{223}$	
´34x	\sqcap_{224}	\sqcup_{225}	\oplus_{226}	\ominus_{227}	\otimes_{228}	\oslash_{229}	\odot_{230}	\odot_{231}	"Ex
´35x	\odot_{232}	\ominus_{233}	\ominus_{234}	\boxplus_{235}	\boxminus_{236}	\boxtimes_{237}	\boxtimes_{238}	\vdash_{239}	
´36x	\dashv_{240}	\top_{241}	\perp_{242}	\vdash_{243}	\vDash_{244}	\vDash_{245}	\Vdash_{246}	\Vdash_{247}	"Fx
´37x	\Vdash_{248}	\Vdash_{249}	\Vdash_{250}	\Vdash_{251}	\Vdash_{252}	\cdot_{253}	\times_{254}	\simeq_{255}	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathsfit-bold (\mathsfbf)

	´0	´1	´2	´3	´4	´5	´6	´7	
´00x	Γ_0	Δ_1	Θ_2	Λ_3	Ξ_4	Π_5	Σ_6	Υ_7	"0x
´01x	Φ_8	Ψ_9	Ω_{10}	α_{11}	β_{12}	γ_{13}	δ_{14}	ϵ_{15}	
´02x	ζ_{16}	η_{17}	θ_{18}	ι_{19}	κ_{20}	λ_{21}	μ_{22}	ν_{23}	"1x
´03x	ξ_{24}	π_{25}	ρ_{26}	σ_{27}	τ_{28}	υ_{29}	ϕ_{30}	χ_{31}	
´04x	ψ_{32}	ω_{33}	ε_{34}	ϑ_{35}	ϖ_{36}	ϱ_{37}	ς_{38}	φ_{39}	"2x
´05x	∇_{40}	∂_{41}	\aleph_{42}	\beth_{43}	\beth_{44}	\daleth_{45}	\triangleright_{46}	\triangleleft_{47}	
´06x	$\mathbf{0}_{48}$	$\mathbf{1}_{49}$	$\mathbf{2}_{50}$	$\mathbf{3}_{51}$	$\mathbf{4}_{52}$	$\mathbf{5}_{53}$	$\mathbf{6}_{54}$	$\mathbf{7}_{55}$	"3x
´07x	$\mathbf{8}_{56}$	$\mathbf{9}_{57}$	\cdot_{58}	\cdot_{59}	$<_{60}$	\hbar_{61}	$>_{62}$	\star_{63}	
´10x	\preceq_{64}	\mathbf{A}_{65}	\mathbf{B}_{66}	\mathbf{C}_{67}	\mathbf{D}_{68}	\mathbf{E}_{69}	\mathbf{F}_{70}	\mathbf{G}_{71}	"4x
´11x	\mathbf{H}_{72}	\mathbf{I}_{73}	\mathbf{J}_{74}	\mathbf{K}_{75}	\mathbf{L}_{76}	\mathbf{M}_{77}	\mathbf{N}_{78}	\mathbf{O}_{79}	
´12x	\mathbf{P}_{80}	\mathbf{Q}_{81}	\mathbf{R}_{82}	\mathbf{S}_{83}	\mathbf{T}_{84}	\mathbf{U}_{85}	\mathbf{V}_{86}	\mathbf{W}_{87}	"5x
´13x	\mathbf{X}_{88}	\mathbf{Y}_{89}	\mathbf{Z}_{90}	\flat_{91}	\natural_{92}	\sharp_{93}	\smile_{94}	\frown_{95}	
´14x	\hbar_{96}	\mathbf{a}_{97}	\mathbf{b}_{98}	\mathbf{c}_{99}	\mathbf{d}_{100}	\mathbf{e}_{101}	\mathbf{f}_{102}	\mathbf{g}_{103}	"6x
´15x	\mathbf{h}_{104}	\mathbf{i}_{105}	\mathbf{j}_{106}	\mathbf{k}_{107}	\mathbf{l}_{108}	\mathbf{m}_{109}	\mathbf{n}_{110}	\mathbf{o}_{111}	
´16x	\mathbf{p}_{112}	\mathbf{q}_{113}	\mathbf{r}_{114}	\mathbf{s}_{115}	\mathbf{t}_{116}	\mathbf{u}_{117}	\mathbf{v}_{118}	\mathbf{w}_{119}	"7x
´17x	\mathbf{x}_{120}	\mathbf{y}_{121}	\mathbf{z}_{122}	\mathbf{l}_{123}	\mathbf{j}_{124}	\preceq_{125}	\ll_{126}	\frown_{127}	
´20x	$\grave{\cdot}_{128}$	$\acute{\cdot}_{129}$	$\hat{\cdot}_{130}$	$\tilde{\cdot}_{131}$	$\bar{\cdot}_{132}$	$\breve{\cdot}_{133}$	$\dot{\cdot}_{134}$	$\ddot{\cdot}_{135}$	"8x
´21x	$\ring{\cdot}_{136}$	\circ_{137}	\smile_{138}	\smile_{139}	$\grave{\cdot}_{140}$	$\acute{\cdot}_{141}$	$\grave{\cdot}_{142}$	$\acute{\cdot}_{143}$	
´22x	$\vec{\cdot}_{144}$	\leftarrow_{145}	\rightarrow_{146}	\cdots_{147}	\cdots_{148}	\leftrightarrow_{149}	\lceil_{150}	\rceil_{151}	"9x
´23x	\ast_{152}	$\bar{\cdot}_{153}$	$\hat{\cdot}_{154}$	$\tilde{\cdot}_{155}$	$\breve{\cdot}_{156}$	\frown_{157}	\smile_{158}	\smile_{159}	
´24x	$\overline{\cdot}_{160}$	$\overline{\cdot}_{161}$	$\overline{\cdot}_{162}$	$\overline{\cdot}_{163}$	$\overline{\cdot}_{164}$	$\overline{\cdot}_{165}$	$\overline{\cdot}_{166}$	$\overline{\cdot}_{167}$	"Ax
´25x	$\overline{\cdot}_{168}$	$\overline{\cdot}_{169}$	$\overline{\cdot}_{170}$	$\overline{\cdot}_{171}$	$\overline{\cdot}_{172}$	$\overline{\cdot}_{173}$	$\overline{\cdot}_{174}$	$\overline{\cdot}_{175}$	
´26x	$\overline{\cdot}_{176}$	$\overline{\cdot}_{177}$	$\overline{\cdot}_{178}$	$\overline{\cdot}_{179}$	$\overline{\cdot}_{180}$	$\overline{\cdot}_{181}$	$\overline{\cdot}_{182}$	$\overline{\cdot}_{183}$	"Bx
´27x	\gg_{184}	\emptyset_{185}	\neq_{186}	\neq_{187}	\neq_{188}	\neq_{189}	\neq_{190}	\lesssim_{191}	
´30x	\gtrsim_{192}	\neq_{193}	\neq_{194}	\lesssim_{195}	\gtrsim_{196}	\neq_{197}	\neq_{198}	$<_{199}$	"Cx
´31x	$>_{200}$	\leq_{201}	\geq_{202}	\lesssim_{203}	\gtrsim_{204}	\neq_{205}	\neq_{206}	\subset_{207}	
´32x	\supset_{208}	$\not\subset_{209}$	$\not\subset_{210}$	\subseteq_{211}	\supseteq_{212}	$\not\subset_{213}$	$\not\subset_{214}$	$\not\subset_{215}$	"Dx
´33x	$\not\subset_{216}$	$\not\subset_{217}$	$\not\subset_{218}$	$\not\subset_{219}$	$\not\subset_{220}$	$\not\subset_{221}$	$\not\subset_{222}$	$\not\subset_{223}$	
´34x	\sqcap_{224}	\sqcup_{225}	\oplus_{226}	\ominus_{227}	\otimes_{228}	\oslash_{229}	\odot_{230}	\odot_{231}	"Ex
´35x	\odot_{232}	\ominus_{233}	\ominus_{234}	\oplus_{235}	\oplus_{236}	\otimes_{237}	\odot_{238}	\vdash_{239}	
´36x	\dashv_{240}	\top_{241}	\perp_{242}	\vdash_{243}	\vDash_{244}	\vDash_{245}	\Vdash_{246}	\Vdash_{247}	"Fx
´37x	\Vdash_{248}	\Vdash_{249}	\neq_{250}	\neq_{251}	\neq_{252}	\cdot_{253}	\mathbf{x}_{254}	\neq_{255}	
	"8	"9	"A	"B	"C	"D	"E	"F	

Brief samples using the sans serif options, showing mathgroup usage

1.

Options=[], and no use of \mathsfxxxx macros.

$$y = f(x).$$

*** Mathgroups ***

```
(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])
```

2.

Options=[]

macro	symbol
\mathsf{x}	x
\mathsfbf{y}	y
\mathsfbfit{z}	z
\mathsfit{w}	undefined

*** Mathgroups ***

```
(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])
(7: \LS1/libertinust1mathsf/m/n/12 = libertinust1-mathsfrm at 14.39996pt)
(8: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)
(9: \LS1/libertinust1mathsf/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt)
```

3.

Options=[nosans], and no use of \mathsfxxxx macros.

$$y = f(x).$$

*** Mathgroups ***

```
(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
```

(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
 (5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
 (6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])

4.

Options=[nosans], and no use of \mathsfxxxx macros

macro	symbol
\mathsf{x}	x
\mathsfbf{y}	y
\mathsfbfit{z}	undefined
\mathsfit{w}	undefined

*** Mathgroups ***

(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
 (1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
 (2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
 (3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
 (4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
 (5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
 (6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])
 (7: \LS1/libertinust1mathsf/m/n/12 = libertinust1-mathsfrm at 14.39996pt)
 (8: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)

5.

Options=[mathsfit], and no use of \mathsfxxxx macros.

$$y = f(x).$$

*** Mathgroups ***

(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
 (1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
 (2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
 (3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
 (4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
 (5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
 (6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])

6.

Options=[mathsfit]

macro	symbol
\mathsf{x}	x
\mathsfbf{y}	y
\mathsfbfit{z}	z
\mathsfit{w}	w

*** Mathgroups ***

```
(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])
(7: \LS1/libertinust1mathsf/m/n/12 = libertinust1-mathsfrm at 14.39996pt)
(8: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)
(9: \LS1/libertinust1mathsf/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt)
(10: \LS1/libertinust1mathsf/m/it/12 = libertinust1-mathsfit at 14.39996pt)
```

7.

Options=[reuseMathAlphabets]

macro	symbol
<code>\mathsf{x}</code>	x
<code>\mathsfbf{y}</code>	y
<code>\mathsfbfit{z}</code>	z
<code>\mathsfit{w}</code>	undefined

*** Mathgroups ***

```
(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])
(7: \LS1/libertinust1mathsf/m/n/12 = libertinust1-mathsfrm at 14.39996pt)
(8: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)
(9: \LS1/libertinust1mathsf/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt)
```

8.

Options=[ISO]

macro	symbol
<code>\mathsf{x}</code>	x
<code>\mathsfbf{y}</code>	y
<code>\mathsfbfit{z}</code>	z
<code>\mathsfit{w}</code>	undefined

*** Mathgroups ***

```
(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
```

(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
 (4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
 (5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
 (6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])
 (7: \LS1/libertinust1mathsf/m/n/12 = libertinust1-mathsfrm at 14.39996pt)
 (8: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)
 (9: \LS1/libertinust1mathsf/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt)

9.

Options=[ISO,mathsfitt]

macro	symbol
\mathsf{x}	x
\mathsfbf{y}	y
\mathsfbfitt{z}	z
\mathsfitt{w}	w

*** Mathgroups ***

(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
 (1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
 (2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
 (3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
 (4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
 (5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
 (6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])
 (7: \LS1/libertinust1mathsf/m/n/12 = libertinust1-mathsfrm at 14.39996pt)
 (8: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)
 (9: \LS1/libertinust1mathsf/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt)
 (10: \LS1/libertinust1mathsf/m/it/12 = libertinust1-mathsfit at 14.39996pt)

10.

Options=[ISO,mathsfitt,reuseMathAlphabets]

macro	symbol
\mathbf{y}	y
\mathsf{x}	x
\mathsfbf{y}	y
\mathsfbfitt{z}	z
\mathsfitt{w}	w

*** Mathgroups ***

(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
 (1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
 (2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
 (3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
 (4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
 (5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])

(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])
(7: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)
(8: \LS1/libertinust1mathsf/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt)
(9: \LS1/libertinust1mathsf/m/it/12 = libertinust1-mathsfit at 14.39996pt)

11: An example of sansmath.

Options=[sansmath]

The boundedness of Φ_0 then yields

$$\int_D |\bar{\partial} u|^2 e^{\alpha|z|^2} \geq c_6 \alpha \int_D |u|^2 e^{\alpha|z|^2} + c_7 \delta^{-2} \int_A |u|^2 e^{\alpha|z|^2}.$$

Let $B(X)$ be the set of blocks of Λ_X and let $b(X) := |B(X)|$. If $\varphi \in Q_X$ then φ is constant on the blocks of Λ_X .

$$P_X = \{\varphi \in M \mid \Lambda_\varphi = \Lambda_X\}, \quad Q_X = \{\varphi \in M \mid \Lambda_\varphi \geq \Lambda_X\}. \quad (1)$$

If $\Lambda_\varphi \geq \Lambda_X$ then $\Lambda_\varphi = \Lambda_Y$ for some $Y \geq X$ so that

$$Q_X = \bigcup_{Y \geq X} P_Y.$$

Thus by Möbius inversion

$$P_Y = \sum_{X \geq Y} \mu(Y, X) Q_X.$$

Thus there is a bijection from Q_X to $W^{B(X)}$. In particular $|Q_X| = w^{b(X)}$.

*** Mathgroups ***

(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathsfrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathsfit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt [bold-operators])
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt [bold-letters])
