The LibertinusT1 Math Package

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This package is a LaTeX math package to accompany the LaTeX 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.

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 two scale-changing macros, \LinuxLibertine@scale and \libus@scale, the latter being set by the scaled option. If \libus@scale is defined, it takes precedence over the other. The current libertine packages contain no option that affects the scale parameter. If you need to scale libertine, add to your preamble lines like

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

- 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}
\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 libertinus 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 (v) in LibertinusMath is easily confused with Greek \nu (ν), so the math italic letter v is set to υ, 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 mathbfit. For example:

Macro	Result
$\imath$	$\imath$
$\mathrm{\imath}$	ı
$\mathbf{\imath}$	**ı**
$\mathbfit{\imath}$	*ı*

- 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, \mathsfit (italic sans), \mathsfbf (bold sans) and \mathsfbfit (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 next pages show the font tables for LibertinusT1Math. If you see an unfamiliar symbol and wish to learn its LaTeX name, get the LaTeX 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	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}	$-_{42}$	$+_{43}$	$\pm_{44}$	$\mp_{45}$	$(_{46}$	$)_{47}$	
´06x	0_{48}	1_{49}	2_{50}	3_{51}	4_{52}	5_{53}	6_{54}	7_{55}	"3x
´07x	8_{56}	9_{57}	$:_{58}$	$;_{59}$	$\star_{60}$	$=_{61}$	$\$_{62}$	$?_{63}$	
´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}	$\imath_{123}$	$\jmath_{124}$	$\#_{125}$	$\%_{126}$	$'_{127}$	
´20x	$`_{128}$	$´_{129}$	$\hat{}_{130}$	$\tilde{}_{131}$	$\bar{}_{132}$	$\breve{}_{133}$	$\dot{}_{134}$	$\ddot{}_{135}$	"8x
´21x	$˝_{136}$	$˚_{137}$	$ˇ_{138}$	$˘_{139}$	$‘_{140}$	$’_{141}$	$_{142}$	$_{143}$	
´22x	$\to_{144}$	$\leftarrow_{145}$	$\rightarrow_{146}$	$\cdots_{147}$	$\ldots_{148}$	$\leftrightarrow_{149}$	$\urcorner_{150}$	$\lceil_{151}$	"9x
´23x	$*_{152}$	$\&_{153}$	$@_{154}$	$\neg_{155}$	$\cdot_{156}$	$\times_{157}$	$\leq_{158}$	$\div_{159}$	
´24x	Z_{160}	$_{161}$	$\Ǝ_{162}$	$\dagger_{163}$	$\ddagger_{164}$	$\bullet_{165}$	$_{166}$	$\dots_{167}$	"Ax
´25x	ℓ_{168}	$//_{169}$	$///_{170}$	$\backslash_{171}$	$\backslash\backslash_{172}$	$\backslash\backslash\backslash_{173}$	$_{174}$	$!!_{175}$	
´26x	$\blacksquare_{176}$	$/_{177}$	$??_{178}$	$_{179}$	$////_{180}$	$_{181}$	$_{182}$	$_{183}$	"Bx
´27x	$\asymp_{184}$	$_{185}$	ε_{186}	Υ_{187}	$_{188}$	$Å_{189}$	$\dashv_{190}$	$\complement_{191}$	
´30x	$\urcorner_{192}$	$\llcorner_{193}$	λ_{194}	$_{195}$	$_{196}$	$\forall_{197}$	$\complement_{198}$	$\exists_{199}$	"Cx
´31x	$_{200}$	$\emptyset_{201}$	Δ_{202}	$\in_{203}$	$\notin_{204}$	$\in_{205}$	$\ni_{206}$	$_{207}$	
´32x	$\ni_{208}$	$\blacksquare_{209}$	$\dotplus_{210}$	$\geq_{211}$	$\diagdown_{212}$	$°_{213}$	$\bullet_{214}$	$\propto_{215}$	"Dx
´33x	∞_{216}	$\llcorner_{217}$	$\angle_{218}$	$\measuredangle_{219}$	$\sphericalangle_{220}$	$\mid_{221}$	$\nmid_{222}$	$\parallel_{223}$	
´34x	$\nparallel_{224}$	$\wedge_{225}$	$\vee_{226}$	$\cap_{227}$	$\cup_{228}$	$\therefore_{229}$	$\because_{230}$	$\emptyset_{231}$	"Ex
´35x	$\vdots_{232}$	$\doteq_{233}$	$\fallingdotseq_{234}$	$\Bumpeq_{235}$	$\risingdotseq_{236}$	$\sim_{237}$	$\backsim_{238}$	∞_{239}	
´36x	$\sim_{240}$	$\wr_{241}$	$\nsim_{242}$	$\approx_{243}$	$\simeq_{244}$	$\neq_{245}$	$\cong_{246}$	$\ncong_{247}$	"Fx
´37x	$\neq_{248}$	$\approx_{249}$	$\napprox_{250}$	$\approxeq_{251}$	$\thickapprox_{252}$	$\cong_{253}$	$\varkappa_{254}$	$\leftrightharpoons_{255}$	
	"8	"9	"A	"B	"C	"D	"E	"F	

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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	$\mathbf{8}_{56}$	$\mathbf{9}_{57}$	$:_{58}$	$;_{59}$	$\star_{60}$	$=_{61}$	$\$_{62}$	$?_{63}$	
´10x	$!_{64}$	$\mathbf{A}_{65}$	$\mathbf{B}_{66}$	$\mathbf{C}_{67}$	$\mathbf{D}_{68}$	$\mathbf{E}_{69}$	$\mathbf{F}_{70}$	$\mathbf{G}_{71}$	"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	$\mathbf{X}_{88}$	$\mathbf{Y}_{89}$	$\mathbf{Z}_{90}$	$[_{91}$	$\backslash_{92}$	$]_{93}$	$\{_{94}$	$/_{95}$	
´14x	$\}_{96}$	$\mathbf{a}_{97}$	$\mathbf{b}_{98}$	$\mathbf{c}_{99}$	$\mathbf{d}_{100}$	$\mathbf{e}_{101}$	$\mathbf{f}_{102}$	$\mathbf{g}_{103}$	"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	$\mathbf{x}_{120}$	$\mathbf{y}_{121}$	$\mathbf{z}_{122}$	$\mathbf{1}_{123}$	$\mathbf{J}_{124}$	$\#_{125}$	$\%_{126}$	$'_{127}$	
´20x	$\grave{}_{128}$	$\acute{}_{129}$	$\hat{}_{130}$	$\tilde{}_{131}$	$\bar{}_{132}$	$\breve{}_{133}$	$\dot{}_{134}$	$\ddot{}_{135}$	"8x
´21x	$_{136}$	$\circ_{137}$	$\check{}_{138}$	$_{139}$	$\grave{}_{140}$	$\acute{}_{141}$	$_{142}$	$_{143}$	
´22x	$\rightarrow_{144}$	$\leftarrow_{145}$	$\rightarrow_{146}$	$\cdots_{147}$	$\cdots_{148}$	$\leftrightarrow_{149}$	$_{150}$	$_{151}$	"9x
´23x	$*_{152}$	$\&_{153}$	$@_{154}$	$\neg_{155}$	$\cdot_{156}$	$\times_{157}$	$\leq_{158}$	$\div_{159}$	
´24x	Z_{160}	$_{161}$	$\ni_{162}$	$\dagger_{163}$	$\ddagger_{164}$	$\bullet_{165}$	$._{166}$	$\ldots_{167}$	"Ax
´25x	$/_{168}$	$//_{169}$	$///_{170}$	$\backslash_{171}$	$\backslash\backslash_{172}$	$\backslash\backslash\backslash_{173}$	$_{174}$	$!!_{175}$	
´26x	$\blacksquare_{176}$	$/_{177}$	$??_{178}$	$_{179}$	$////_{180}$	$_{181}$	$_{182}$	$_{183}$	"Bx
´27x	$\asymp_{184}$	$_{185}$	$\mathcal{E}_{186}$	$\mho_{187}$	$_{188}$	$\mathring{A}_{189}$	$\dashv_{190}$	$\complement_{191}$	
´30x	$_{192}$	$\lrcorner_{193}$	λ_{194}	$_{195}$	$_{196}$	$\forall_{197}$	$\complement_{198}$	$\exists_{199}$	"Cx
´31x	$\nexists_{200}$	$\emptyset_{201}$	$\triangle_{202}$	$\in_{203}$	$\notin_{204}$	$\in_{205}$	$\ni_{206}$	$\not\ni_{207}$	
´32x	$\ni_{208}$	$\blacksquare_{209}$	$\dotplus_{210}$	$\geq_{211}$	$\backslash_{212}$	$\circ_{213}$	$\bullet_{214}$	$\propto_{215}$	"Dx
´33x	∞_{216}	$\llcorner_{217}$	$\angle_{218}$	$_{219}$	$_{220}$	$_{221}$	$_{222}$	$\|_{223}$	
´34x	$_{224}$	$\wedge_{225}$	$\vee_{226}$	$\cap_{227}$	$\cup_{228}$	$\therefore_{229}$	$\because_{230}$	$\emptyset_{231}$	"Ex
´35x	$\vdots_{232}$	$\doteq_{233}$	$_{234}$	$_{235}$	$_{236}$	$\sim_{237}$	$_{238}$	∞_{239}	
´36x	$\backsim_{240}$	$_{241}$	$_{242}$	$\approx_{243}$	$\simeq_{244}$	$\neq_{245}$	$\cong_{246}$	$\ncong_{247}$	"Fx
´37x	$\neq_{248}$	$\approx_{249}$	$\not\approx_{250}$	$\cong_{251}$	$\approx_{252}$	$\cong_{253}$	$\varkappa_{254}$	$_{255}$	
	"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	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}	$\aleph_{42}$	$\beth_{43}$	λ_{44}	$\gimel_{45}$	$\rhd_{46}$	$\lhd_{47}$	
´06x	0_{48}	1_{49}	2_{50}	3_{51}	4_{52}	5_{53}	6_{54}	7_{55}	"3x
´07x	8_{56}	9_{57}	$._{58}$	$,_{59}$	$<_{60}$	$\hbar_{61}$	$>_{62}$	$\star_{63}$	
´10x	$\lneqq_{64}$	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}	$\imath_{123}$	$\jmath_{124}$	$\gneqq_{125}$	$\lll_{126}$	$\frown_{127}$	
´20x	$\grave{}_{128}$	$\acute{}_{129}$	$\hat{}_{130}$	$\tilde{}_{131}$	$\bar{}_{132}$	$\check{}_{133}$	$\dot{}_{134}$	$\ddot{}_{135}$	"8x
´21x	$_{136}$	$\mathring{}_{137}$	$_{138}$	$\breve{}_{139}$	$_{140}$	$_{141}$	$_{142}$	$_{143}$	
´22x	$\rightarrow_{144}$	$\leftarrow_{145}$	$\rightarrow_{146}$	$\cdots_{147}$	$\ldots_{148}$	$\leftrightarrow_{149}$	$_{150}$	$_{151}$	"9x
´23x	$\ast_{152}$	$_{153}$	$\hat{}_{154}$	$\tilde{}_{155}$	$\check{}_{156}$	$\hat{}_{157}$	$\tilde{}_{158}$	$\check{}_{159}$	
´24x	$\frown_{160}$	$_{161}$	$\smile_{162}$	$\frown_{163}$	$_{164}$	$\smile_{165}$	$_{166}$	$_{167}$	"Ax
´25x	$_{168}$	$_{169}$	$_{170}$	$_{171}$	$_{172}$	$_{173}$	$_{174}$	$_{175}$	
´26x	$_{176}$	$_{177}$	$_{178}$	$_{179}$	$_{180}$	$_{181}$	$_{182}$	$_{183}$	"Bx
´27x	$\ggg_{184}$	$\wp_{185}$	$\nmid_{186}$	$\nmid_{187}$	$\nmid_{188}$	$\lneq_{189}$	$\lnsim_{190}$	$\lesssim_{191}$	
´30x	$\gtrsim_{192}$	$\gneq_{193}$	$\gnsim_{194}$	$\leqq_{195}$	$\geqq_{196}$	$\gneqq_{197}$	$\gnsim_{198}$	$<_{199}$	"Cx
´31x	$>_{200}$	$\leqslant_{201}$	$\geqslant_{202}$	$\lesssim_{203}$	$\gtrsim_{204}$	$\nprec_{205}$	$\nsucc_{206}$	$\subset_{207}$	
´32x	$\supset_{208}$	$\nsubseteq_{209}$	$\nsupseteq_{210}$	$\subseteqq_{211}$	$\supseteqq_{212}$	$\subsetneqq_{213}$	$\supsetneqq_{214}$	$\subsetneq_{215}$	"Dx
´33x	$\supsetneq_{216}$	$\Cup_{217}$	$\Cap_{218}$	$\uplus_{219}$	$\sqsubset_{220}$	$\sqsupset_{221}$	$\sqsubseteq_{222}$	$\sqsupseteq_{223}$	
´34x	$\sqcap_{224}$	$\sqcup_{225}$	$\oplus_{226}$	$\ominus_{227}$	$\otimes_{228}$	$\oslash_{229}$	$\odot_{230}$	$\circledcirc_{231}$	"Ex
´35x	$\circledast_{232}$	$\circleddash_{233}$	$\circleddash_{234}$	$\boxplus_{235}$	$\boxminus_{236}$	$\boxtimes_{237}$	$\boxdot_{238}$	$\vdash_{239}$	
´36x	$\dashv_{240}$	$\top_{241}$	$\bot_{242}$	$\vdash_{243}$	$\Vdash_{244}$	$\vDash_{245}$	$\Vdash_{246}$	$\Vvdash_{247}$	"Fx
´37x	$\Vdash_{248}$	$\nvdash_{249}$	$\nvDash_{250}$	$\nVdash_{251}$	$\nVDash_{252}$	$_{253}$	$\varkappa_{254}$	$\trianglelefteq_{255}$	
	"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	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}	$\aleph_{42}$	$\beth_{43}$	$\gimel_{44}$	$\daleth_{45}$	$\triangleright_{46}$	$\triangleleft_{47}$	
´06x	0_{48}	1_{49}	2_{50}	3_{51}	4_{52}	5_{53}	6_{54}	7_{55}	"3x
´07x	8_{56}	9_{57}	$._{58}$	$,_{59}$	$<_{60}$	$\hbar_{61}$	$>_{62}$	$\star_{63}$	
´10x	$\leqq_{64}$	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}	$_{84}$	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}	$\imath_{123}$	$\jmath_{124}$	$\geqq_{125}$	$\lll_{126}$	$\frown_{127}$	
´20x	$\grave{}_{128}$	$\acute{}_{129}$	$\hat{}_{130}$	$\tilde{}_{131}$	$\bar{}_{132}$	$\breve{}_{133}$	$\dot{}_{134}$	$\ddot{}_{135}$	"8x
´21x	$_{136}$	$\mathring{}_{137}$	$\check{}_{138}$	$_{139}$	$_{140}$	$_{141}$	$_{142}$	$_{143}$	
´22x	$\rightarrow_{144}$	$\leftarrow_{145}$	$\rightarrow_{146}$	$\cdots_{147}$	$\ldots_{148}$	$\leftrightarrow_{149}$	$_{150}$	$_{151}$	"9x
´23x	$*_{152}$	$_{153}$	$\hat{}_{154}$	$\tilde{}_{155}$	$\check{}_{156}$	$\hat{}_{157}$	$\tilde{}_{158}$	$\check{}_{159}$	
´24x	$\frown_{160}$	$_{161}$	$_{162}$	$_{163}$	$_{164}$	$_{165}$	$_{166}$	$_{167}$	"Ax
´25x	$_{168}$	$_{169}$	$_{170}$	$_{171}$	$_{172}$	$_{173}$	$_{174}$	$_{175}$	
´26x	$_{176}$	$_{177}$	$_{178}$	$_{179}$	$_{180}$	$_{181}$	$_{182}$	$_{183}$	"Bx
´27x	$\ggg_{184}$	$\wr_{185}$	$\nleqq_{186}$	$\lneq_{187}$	$\lneqq_{188}$	$\lnsim_{189}$	$\lesssim_{190}$	$\lesssim_{191}$	
´30x	$\gtrsim_{192}$	$\ngeqq_{193}$	$\gneqq_{194}$	$\lesseqgtr_{195}$	$\gtreqless_{196}$	$\gneq_{197}$	$\gnsim_{198}$	$<_{199}$	"Cx
´31x	$>_{200}$	$\leqslant_{201}$	$\geqslant_{202}$	$\lessgtr_{203}$	$\gtrless_{204}$	$\nprec_{205}$	$\nsucc_{206}$	$\subset_{207}$	
´32x	$\supset_{208}$	$\nsubseteq_{209}$	$\nsupseteq_{210}$	$\subseteqq_{211}$	$\supseteqq_{212}$	$\subsetneqq_{213}$	$\supsetneqq_{214}$	$\subsetneq_{215}$	"Dx
´33x	$\supsetneq_{216}$	$\Cup_{217}$	$\Cap_{218}$	$\uplus_{219}$	$\sqsubset_{220}$	$\sqsupset_{221}$	$\sqsubseteq_{222}$	$\sqsupseteq_{223}$	
´34x	$\sqcap_{224}$	$\sqcup_{225}$	$\oplus_{226}$	$\ominus_{227}$	$\otimes_{228}$	$\oslash_{229}$	$\odot_{230}$	$\circledcirc_{231}$	"Ex
´35x	$\circledast_{232}$	$\circleddash_{233}$	$\ominus_{234}$	$\boxplus_{235}$	$\boxminus_{236}$	$\boxtimes_{237}$	$\boxdot_{238}$	$\vdash_{239}$	
´36x	$\dashv_{240}$	$\top_{241}$	$\bot_{242}$	$\vdash_{243}$	$\vDash_{244}$	$\models_{245}$	$\Vdash_{246}$	$\Vvdash_{247}$	"Fx
´37x	$\Vmodels_{248}$	$\nvdash_{249}$	$\nvDash_{250}$	$\nVdash_{251}$	$\nVDash_{252}$	$_{253}$	$\varkappa_{254}$	$\trianglelefteq_{255}$	
	"8	"9	"A	"B	"C	"D	"E	"F	

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libertinust1-mathsym (symbols):

	´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	ℌ24	╲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	ℱ63	
´10x	Ǝ64	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	ℜ123	ℑ124	℘125	⌂126	⌢127	
´20x	♣128	♦129	♥130	♠131	♪132	°133	§134	¶135	″8x
´21x	✓136	▬137	▭138	ℓ139	∯140	∰141	142	143	
´22x	144	145	146	147	148	149	150	151	″9x
´23x	152	153	154	⌐155	156	157	158	159	
´26x	176	177	178	179	180	181	⌊182	■183	″Bx
´27x	□184	185	186	187	188	189	190	191	
´30x	192	193	194	195	196	197	198	199	″Cx
´31x	200	▲201	△202	203	204	▶205	▷206	207	
´32x	208	209	210	▼211	▽212	213	214	◀215	″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	

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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	

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	˝8	˝9	˝A	˝B	˝C	˝D	˝E	˝F	
´20x	∬ 128	∬ 129	∭ 130	∭ 131	∮ 132	∮ 133	⨌ 134	⨌ 135	˝8x
´21x	∫ 136	∫ 137	∬ 138	∬ 139	∭ 140	∭ 141	∮ 142	∮ 143	
´22x	⨌ 144	⨌ 145	∯ 146	∯ 147	∰ 148	∰ 149	150	151	˝9x
´23x	152	153	154	155	156	157	158	159	
´26x	176	∏ 177	∐ 178	∑ 179	⋀ 180	⋁ 181	⋂ 182	⋃ 183	˝Bx
´27x	╱ 184	╲ 185	⨀ 186	⨁ 187	⨂ 188	⨄ 189	⨄ 190	⊓ 191	
´30x	⊔ 192	193	194	195	196	197	198	∏ 199	˝Cx
´31x	∐ 200	∑ 201	⋀ 202	⋁ 203	⋂ 204	⋃ 205	╱ 206	╲ 207	
´32x	⨀ 208	⨁ 209	⨂ 210	⨄ 211	⨄ 212	⊓ 213	⊔ 214	215	˝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	

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libertinust1-mathbb (mathbb):

	´0	´1	´2	´3	´4	´5	´6	´7	
´10x	64	$\mathbb{A}$65	$\mathbb{B}$66	$\mathbb{C}$67	$\mathbb{D}$68	$\mathbb{E}$69	$\mathbb{F}$70	$\mathbb{G}$71	˝4x
´11x	$\mathbb{H}$72	$\mathbb{I}$73	$\mathbb{J}$74	$\mathbb{K}$75	$\mathbb{L}$76	$\mathbb{M}$77	$\mathbb{N}$78	$\mathbb{O}$79	
´12x	$\mathbb{P}$80	$\mathbb{Q}$81	$\mathbb{R}$82	$\mathbb{S}$83	$\mathbb{T}$84	$\mathbb{U}$85	$\mathbb{V}$86	$\mathbb{W}$87	˝5x
´13x	$\mathbb{X}$88	$\mathbb{Y}$89	$\mathbb{Z}$90	91	92	93	94	95	
´14x	96	$\mathbb{a}$97	$\mathbb{b}$98	$\mathbb{c}$99	$\mathbb{d}$100	$\mathbb{e}$101	$\mathbb{f}$102	$\mathbb{g}$103	˝6x
´15x	$\mathbb{h}$104	$\mathbb{i}$105	$\mathbb{j}$106	$\mathbb{k}$107	$\mathbb{l}$108	$\mathbb{m}$109	$\mathbb{n}$110	$\mathbb{o}$111	
´16x	$\mathbb{p}$112	$\mathbb{q}$113	$\mathbb{r}$114	$\mathbb{s}$115	$\mathbb{t}$116	$\mathbb{u}$117	$\mathbb{v}$118	$\mathbb{w}$119	˝7x
´17x	$\mathbb{x}$120	$\mathbb{y}$121	$\mathbb{z}$122	$\mathbb{1}$123	$\mathbb{J}$124	125	126	⌢127	
	˝8	˝9	˝A	˝B	˝C	˝D	˝E	˝F	

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 serifed 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, \mathsfit 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 `mathsfit` is ignored unless the additional option `mathsfit` 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 \tensorsym means \mathsfbfit. For example, $\matrixsym{A}$ renders as *A*, in accordance with ISO rules.

  - If you add the option `mathsfit`, 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.

- `mathsfit` 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}	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}	$ı_{123}$	$ȷ_{124}$	$\#_{125}$	$\%_{126}$	$,_{127}$	
´20x	$\grave{}_{128}$	$\acute{}_{129}$	$\hat{}_{130}$	$\tilde{}_{131}$	$\bar{}_{132}$	$\breve{}_{133}$	$\dot{}_{134}$	$\ddot{}_{135}$	″8x
´21x	$_{136}$	$°_{137}$	$\check{}_{138}$	$_{139}$	$`_{140}$	$'_{141}$	$_{142}$	$_{143}$	
´22x	$\rightarrow_{144}$	$\leftarrow_{145}$	$\rightarrow_{146}$	$\ldots_{147}$	$\ldots_{148}$	$\leftrightarrow_{149}$	$_{150}$	$_{151}$	″9x
´23x	$*_{152}$	$\&_{153}$	$@_{154}$	$\neg_{155}$	$\cdot_{156}$	$\times_{157}$	$\leq_{158}$	$\div_{159}$	
´24x	Z_{160}	$_{161}$	$\ni_{162}$	$\dagger_{163}$	$\ddagger_{164}$	$\bullet_{165}$	$_{166}$	$\ldots_{167}$	″Ax
´25x	$/_{168}$	$//_{169}$	$///_{170}$	$\backslash_{171}$	$\backslash\backslash_{172}$	$\backslash\backslash\backslash_{173}$	$_{174}$	$!!_{175}$	
´26x	$\blacksquare_{176}$	$/_{177}$	$??_{178}$	$_{179}$	$////_{180}$	$_{181}$	$_{182}$	$_{183}$	″Bx
´27x	$\asymp_{184}$	$_{185}$	$\mathcal{E}_{186}$	$\mho_{187}$	$ı_{188}$	$\mathring{A}_{189}$	$\dashv_{190}$	C_{191}	
´30x	$\daleth_{192}$	$\lrcorner_{193}$	λ_{194}	$_{195}$	$\aleph_{196}$	$\forall_{197}$	$\complement_{198}$	$\exists_{199}$	″Cx
´31x	$\nexists_{200}$	$\varnothing_{201}$	Δ_{202}	$\in_{203}$	$\notin_{204}$	$\in_{205}$	$\ni_{206}$	$\eth_{207}$	
´32x	$\ni_{208}$	$\blacksquare_{209}$	$\dotplus_{210}$	$\geq_{211}$	$\diagdown_{212}$	$°_{213}$	$\bullet_{214}$	$\propto_{215}$	″Dx
´33x	∞_{216}	$\llcorner_{217}$	$\angle_{218}$	$\measuredangle_{219}$	$\sphericalangle_{220}$	$\mid_{221}$	$\nmid_{222}$	$\parallel_{223}$	
´34x	$\nparallel_{224}$	$\wedge_{225}$	$\vee_{226}$	$\cap_{227}$	$\cup_{228}$	$\therefore_{229}$	$\because_{230}$	$\varnothing_{231}$	″Ex
´35x	$\vdots_{232}$	$\dotdiv_{233}$	$\doteq_{234}$	$_{235}$	$_{236}$	$\sim_{237}$	$\frown_{238}$	∞_{239}	
´36x	$\sim_{240}$	$\wr_{241}$	$_{242}$	$\approx_{243}$	$\simeq_{244}$	$\neq_{245}$	$\cong_{246}$	$\ncong_{247}$	″Fx
´37x	$\neq_{248}$	$\approx_{249}$	$\not\approx_{250}$	$\cong_{251}$	$\approx_{252}$	$\cong_{253}$	$\varkappa_{254}$	$_{255}$	
	″8	″9	″A	″B	″C	″D	″E	″F	

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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}	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	$\mathbf{8}_{56}$	$\mathbf{9}_{57}$	$:_{58}$	$;_{59}$	$*_{60}$	$=_{61}$	$\$_{62}$	$?_{63}$	
´10x	$!_{64}$	$\mathbf{A}_{65}$	$\mathbf{B}_{66}$	$\mathbf{C}_{67}$	$\mathbf{D}_{68}$	$\mathbf{E}_{69}$	$\mathbf{F}_{70}$	$\mathbf{G}_{71}$	"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	$\mathbf{X}_{88}$	$\mathbf{Y}_{89}$	$\mathbf{Z}_{90}$	$[_{91}$	$\backslash_{92}$	$]_{93}$	$\{_{94}$	$/_{95}$	
´14x	$\}_{96}$	$\mathbf{a}_{97}$	$\mathbf{b}_{98}$	$\mathbf{c}_{99}$	$\mathbf{d}_{100}$	$\mathbf{e}_{101}$	$\mathbf{f}_{102}$	$\mathbf{g}_{103}$	"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	$\mathbf{x}_{120}$	$\mathbf{y}_{121}$	$\mathbf{z}_{122}$	$\imath_{123}$	$\jmath_{124}$	$\#_{125}$	$\%_{126}$	$,_{127}$	
´20x	$\grave{}_{128}$	$\acute{}_{129}$	$\hat{}_{130}$	$\tilde{}_{131}$	$\bar{}_{132}$	$\breve{}_{133}$	$\dot{}_{134}$	$\ddot{}_{135}$	"8x
´21x	$_{136}$	$\mathring{}_{137}$	$\check{}_{138}$	$_{139}$	$`_{140}$	$'_{141}$	$_{142}$	$_{143}$	
´22x	$\rightarrow_{144}$	$\leftarrow_{145}$	$\rightarrow_{146}$	$\cdots_{147}$	$\ldots_{148}$	$\leftrightarrow_{149}$	$\urcorner_{150}$	$\ulcorner_{151}$	"9x
´23x	$*_{152}$	$\&_{153}$	$@_{154}$	$\neg_{155}$	$\cdot_{156}$	$\times_{157}$	$\leq_{158}$	$\div_{159}$	
´24x	$\mathbb{Z}_{160}$	$\natural_{161}$	$\ni_{162}$	$\dagger_{163}$	$\ddagger_{164}$	$\bullet_{165}$	$\mathinner{\cdotp}_{166}$	$\dots_{167}$	"Ax
´25x	$\diagup_{168}$	$//_{169}$	$///_{170}$	$\diagdown_{171}$	$\backslash\backslash_{172}$	$\backslash\backslash\backslash_{173}$	$_{174}$	$!!_{175}$	
´26x	$\blacksquare_{176}$	$/_{177}$	$??_{178}$	$_{179}$	$////_{180}$	$|_{181}$	$_{182}$	$_{183}$	"Bx
´27x	$\times_{184}$	$_{185}$	$\mathcal{E}_{186}$	$\mho_{187}$	$\daleth_{188}$	$\AA_{189}$	$\dashv_{190}$	$\complement_{191}$	
´30x	$\urcorner_{192}$	$\llcorner_{193}$	λ_{194}	$_{195}$	$\aleph_{196}$	$\forall_{197}$	$\complement_{198}$	$\exists_{199}$	"Cx
´31x	$\nexists_{200}$	$\emptyset_{201}$	Δ_{202}	$\in_{203}$	$\notin_{204}$	$\in_{205}$	$\ni_{206}$	$\eth_{207}$	
´32x	$\ni_{208}$	$\blacksquare_{209}$	$\dotplus_{210}$	$\geq_{211}$	$\diagdown_{212}$	$\circ_{213}$	$\bullet_{214}$	$\propto_{215}$	"Dx
´33x	∞_{216}	$\llcorner_{217}$	$\angle_{218}$	$\measuredangle_{219}$	$\sphericalangle_{220}$	$|_{221}$	$\nmid_{222}$	$\|_{223}$	
´34x	$\nparallel_{224}$	$\wedge_{225}$	$\vee_{226}$	$\cap_{227}$	$\cup_{228}$	$\therefore_{229}$	$\because_{230}$	$\emptyset_{231}$	"Ex
´35x	$\vdots_{232}$	$\doteq_{233}$	$\div_{234}$	$\Bumpeq_{235}$	$\fallingdotseq_{236}$	$\sim_{237}$	$\smile_{238}$	∞_{239}	
´36x	$\sim_{240}$	$\wr_{241}$	$\nsim_{242}$	$\approx_{243}$	$\simeq_{244}$	$\neq_{245}$	$\cong_{246}$	$\ncong_{247}$	"Fx
´37x	$\nequiv_{248}$	$\approx_{249}$	$\not\approx_{250}$	$\cong_{251}$	$\approx_{252}$	$\cong_{253}$	$\aleph_{254}$	$\varheartsuit_{255}$	
	"8	"9	"A	"B	"C	"D	"E	"F	

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libertinust1-mathsfit (\mathsfit)

	´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}	$\aleph_{42}$	$\beth_{43}$	λ_{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}	$._{58}$	$,_{59}$	$<_{60}$	$\hbar_{61}$	$>_{62}$	$\star_{63}$	
´10x	$\leqq_{64}$	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}	I_{123}	J_{124}	$\geqq_{125}$	$\lll_{126}$	$\frown_{127}$	
´20x	$`_{128}$	$´_{129}$	$\hat{}_{130}$	$\tilde{}_{131}$	$\bar{}_{132}$	$\breve{}_{133}$	$\dot{}_{134}$	$\ddot{}_{135}$	˝8x
´21x	$,_{136}$	$°_{137}$	$\check{}_{138}$	$\smile_{139}$	$`_{140}$	$,_{141}$	$\urcorner_{142}$	$_{143}$	
´22x	$\rightarrow_{144}$	$\leftarrow_{145}$	$\rightarrow_{146}$	$..._{147}$	$...._{148}$	$\leftrightarrow_{149}$	$\lrcorner_{150}$	$\urcorner_{151}$	˝9x
´23x	$*_{152}$	$\bar{}_{153}$	$\hat{}_{154}$	$\tilde{}_{155}$	$\check{}_{156}$	$\hat{}_{157}$	$\tilde{}_{158}$	$\check{}_{159}$	
´24x	$\frown_{160}$	$\frown_{161}$	$\smile_{162}$	$\frown_{163}$	$\smile_{164}$	$\smile_{165}$	$\frown_{166}$	$\smile_{167}$	˝Ax
´25x	$_{168}$	$_{169}$	$_{170}$	$_{171}$	$_{172}$	$_{173}$	$_{174}$	$_{175}$	
´26x	$_{176}$	$_{177}$	$_{178}$	$_{179}$	$_{180}$	$_{181}$	$_{182}$	$_{183}$	˝Bx
´27x	$\ggg_{184}$	$\pitchfork_{185}$	$\nleqslant_{186}$	$\nleqslant_{187}$	$\nleqslant_{188}$	$\nleqq_{189}$	$\nleqq_{190}$	$\lesssim_{191}$	
´30x	$\gtrsim_{192}$	$\nleqq_{193}$	$\ngeqq_{194}$	$\leqq_{195}$	$\geqq_{196}$	$\nleqq_{197}$	$\ngeqq_{198}$	$<_{199}$	˝Cx
´31x	$>_{200}$	$\leqslant_{201}$	$\geqslant_{202}$	$\lesssim_{203}$	$\gtrsim_{204}$	$\nprec_{205}$	$\nsucc_{206}$	$\subset_{207}$	
´32x	$\supset_{208}$	$\nsubseteq_{209}$	$\nsupseteq_{210}$	$\subseteqq_{211}$	$\supseteqq_{212}$	$\nsubseteq_{213}$	$\nsupseteq_{214}$	$\subsetneqq_{215}$	˝Dx
´33x	$\supsetneqq_{216}$	$\Cup_{217}$	$\Cap_{218}$	$\uplus_{219}$	$\sqsubset_{220}$	$\sqsupset_{221}$	$\sqsubseteq_{222}$	$\sqsupseteq_{223}$	
´34x	$\sqcap_{224}$	$\sqcup_{225}$	$\oplus_{226}$	$\ominus_{227}$	$\otimes_{228}$	$\oslash_{229}$	$\odot_{230}$	$\circledcirc_{231}$	˝Ex
´35x	$\circledast_{232}$	$\circleddash_{233}$	$\ominus_{234}$	$\boxplus_{235}$	$\boxminus_{236}$	$\boxtimes_{237}$	$\boxdot_{238}$	$\vdash_{239}$	
´36x	$\dashv_{240}$	$\top_{241}$	$\bot_{242}$	$\vdash_{243}$	$\Vdash_{244}$	$\vDash_{245}$	$\Vdash_{246}$	$\Vvdash_{247}$	˝Fx
´37x	$\VDash_{248}$	$\nvdash_{249}$	$\nvDash_{250}$	$\nVdash_{251}$	$\nVDash_{252}$	$_{253}$	$\times_{254}$	$\trianglelefteq_{255}$	
	˝8	˝9	˝A	˝B	˝C	˝D	˝E	˝F	

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libertinust1-mathsfit-bold (\mathsfbfit)

	´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}	$\aleph_{42}$	$\beth_{43}$	λ_{44}	$\gimel_{45}$	$\triangleright_{46}$	$\triangleleft_{47}$	
´06x	0_{48}	1_{49}	2_{50}	3_{51}	4_{52}	5_{53}	6_{54}	7_{55}	″3x
´07x	8_{56}	9_{57}	$._{58}$	$,_{59}$	$<_{60}$	$\hbar_{61}$	$>_{62}$	$\star_{63}$	
´10x	$\leqq_{64}$	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}	$\imath_{123}$	$\jmath_{124}$	$\geqq_{125}$	$\lll_{126}$	$\frown_{127}$	
´20x	$`_{128}$	$´_{129}$	$\hat{}_{130}$	$\tilde{}_{131}$	$\bar{}_{132}$	$\breve{}_{133}$	$\dot{}_{134}$	$\ddot{}_{135}$	″8x
´21x	$_{136}$	$\circ_{137}$	$\check{}_{138}$	$_{139}$	$_{140}$	$,_{141}$	$_{142}$	$_{143}$	
´22x	$\rightarrow_{144}$	$\leftarrow_{145}$	$\rightarrow_{146}$	$..._{147}$	$....._{148}$	$\leftrightarrow_{149}$	$_{150}$	$_{151}$	″9x
´23x	$*_{152}$	$_{153}$	$\hat{}_{154}$	$\tilde{}_{155}$	$\check{}_{156}$	$\hat{}_{157}$	$\tilde{}_{158}$	$\check{}_{159}$	
´24x	$\frown_{160}$	$\frown_{161}$	$\smile_{162}$	$\frown_{163}$	$\frown_{164}$	$\smile_{165}$	$\frown_{166}$	$\frown_{167}$	″Ax
´25x	$_{168}$	$_{169}$	$_{170}$	$_{171}$	$_{172}$	$_{173}$	$_{174}$	$_{175}$	
´26x	$_{176}$	$_{177}$	$_{178}$	$_{179}$	$_{180}$	$_{181}$	$_{182}$	$_{183}$	″Bx
´27x	$\ggg_{184}$	$_{185}$	$_{186}$	$_{187}$	$_{188}$	$_{189}$	$_{190}$	$\lesssim_{191}$	
´30x	$\gtrsim_{192}$	$_{193}$	$_{194}$	$\lessgtr_{195}$	$\gtreqless_{196}$	$_{197}$	$_{198}$	$<_{199}$	″Cx
´31x	$>_{200}$	$\leqslant_{201}$	$\geqslant_{202}$	$\lesssim_{203}$	$\gtrsim_{204}$	$_{205}$	$_{206}$	$\subset_{207}$	
´32x	$\supset_{208}$	$\not\subset_{209}$	$\not\supset_{210}$	$\subseteq_{211}$	$\supseteq_{212}$	$\nsubseteq_{213}$	$\nsupseteq_{214}$	$\subsetneq_{215}$	″Dx
´33x	$\supsetneq_{216}$	$\Cup_{217}$	$\Cup_{218}$	$\uplus_{219}$	$\sqsubset_{220}$	$\sqsupset_{221}$	$\sqsubseteq_{222}$	$\sqsupseteq_{223}$	
´34x	$\sqcap_{224}$	$\sqcup_{225}$	$\oplus_{226}$	$\ominus_{227}$	$\otimes_{228}$	$\oslash_{229}$	$\odot_{230}$	$\circledcirc_{231}$	″Ex
´35x	$\circledcirc_{232}$	$\ominus_{233}$	$\ominus_{234}$	$\boxplus_{235}$	$\boxminus_{236}$	$\boxtimes_{237}$	$\boxdot_{238}$	$\vdash_{239}$	
´36x	$\dashv_{240}$	$\top_{241}$	$\bot_{242}$	$\vdash_{243}$	$\vDash_{244}$	$\models_{245}$	$\Vdash_{246}$	$\Vvdash_{247}$	″Fx
´37x	$\Vdash_{248}$	$\nvdash_{249}$	$\nvdash_{250}$	$\nVdash_{251}$	$\nVdash_{252}$	$_{253}$	$\varkappa_{254}$	$\trianglelefteq_{255}$	
	″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
\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)
```

8.

```
Options=[ISO]
```

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)
```

9.

`Options=[ISO,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)
```

10.

`Options=[ISO,mathsfit,reuseMathAlphabets]`

macro	symbol
\mathbf{y}	**y**
\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/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.

$$P_X = \{\varphi \in M \mid \Lambda_\varphi = \Lambda_X\}, \qquad Q_X = \{\varphi \in M \mid \Lambda_\varphi \geq \Lambda_X\}. \tag{1}$$

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

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

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

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*** Mathgroups ***
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