The Symbol Font `wasy`

Roland Waldi

Institut für Experimentelle Kernphysik
Universität Karlsruhe
Physikhochhaus, P.O.Box 6980
D-7500 Karlsruhe, Fed. Rep. Germany

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The font `wasy` contains all `lasy` characters, and a lot more symbols. New characters were modified from the `mf` files of the standard TEX fonts, and many were designed from scratch. Metafont sources for 5–10pt and a bold 10pt font are available.

An extension to PLAIN-TEX for using the fonts is included in the file `wasyfont.tex`. This can probably be used in LATEX documents, but a new LATEX format with the bindings already included and with `wasy` replacing the `lasy` font would be the superiour solution. This version includes all `lasy` characters at the proper codes (causing some incompatibilities with version 1 of `wasy`) to make such a procedure easy. The file `wasyfont.2` contains substitutes for some macros of `wasyfont.tex` to be used at installations, that do not support the `wasy` fonts.

A list of characters with their bindings in `wasyfont.tex` follows. Some macros are actually compositions of several characters useful in the given context. Macros using symbols which are already available from standard TEX fonts are also included; these are marked with *.

general symbols

`\male`	♂	`\female`	♀
`\currency`	¤	`\cent`	¢
`\lozenge`	⌑	`\kreuz`	✠
`\smiley`	☺	`\blacksmiley`	☻
`\frownie`	☹	`\sun`	☼
`\checked`	✓	`\brokenvert`	¦
`\diameter`	⌀	`\invdiameter`	⍉
`\phone`	☎	`\recorder`	⌕
`\clock`	⏲	`\permil`	‰
`\bell`	🔔	`\ataribox`	⯁
`\pointer`	➪	`\lightning`	ϟ
`\agemO`	℧		

diagrams

`\photon` `\gluon`

music notes

`\eighthnote` ♪ `\quarternote` ♩

\halfnote 𝅗𝅥 \fullnote 𝅝
\twonotes 𝅘𝅥𝅮

electrical engineering

\AC ∼ \HF ≈
\VHF ≋

APL

\APLup	△	\APLdown	▽
\APLbox	□	\APLinv	⌹
\APLleftarrowbox	⍇	\APLrightarrowbox	⍈
\APLuparrowbox	⍐	\APLdownarrowbox	⍗
\APLinput	⍞	\APLminus*	⍀
\APLlog	⍟	\APLstar	⍣
\APLvert*	|	\APLvert{\APLdown}	⍒
\APLnot*	∼	\APLnot{\APLdown}	⍖
\APLnot{\land}	⍲	\APLnot{\lor}	⍱
\APLcirc*	∘	\APLcirc{\bot}	⍤
\notbackslash*	⍀	\notslash*	⌿
\APLcomment	⍝		

astronomy

\ascnode	☊	\descnode	☋
\vernal	♈	\astrosun*	☉
\newmoon	●	\fullmoon	○
\leftmoon	☾	\rightmoon	☽
\mercury	☿	\venus	♀
\mars	♂	\jupiter	♃
\saturn	♄	\uranus	♅
\neptune	♆	\pluto	♇
\earth	♁		

astrological symbols and zodiacal symbols

\conjunction	☌	\opposition	☍
\aries	♈	\libra	♎
\taurus	♉	\scorpio	♏
\gemini	♊	\sagittarius	♐
\cancer	♋	\capricornus	♑
\leo	♌	\aquarius	♒
\virgo	♍	\pisces	♓

geometrical shapes

`\hexstar`	✳	`\varhexstar`	✳
`\davidsstar`	✡	`\APLstar`	⋆
`\Circle`	○	`\CIRCLE`	●
`\Leftcircle`	◖	`\LEFTCIRCLE`	◖
`\Rightcircle`	◗	`\RIGHTCIRCLE`	◗
`\LEFTcircle`	◐	`\RIGHTcircle`	◑
`\LEFTarrow`	◄	`\RIGHTarrow`	►
`\UParrow`	▲	`\DOWNarrow`	▼
`\Box`	□	`\APLbox`	□
`\XBox`	⊠	`\Bowtie`	⋈
`\Diamond`	◇	`\octagon`	◯
`\hexagon`	⬡	`\varhexagon`	⬡
`\pentagon`	⬠		

general math & physics

`\varangle`	∢	`$\invneg$`	⌐
`\leftturn`	↺	`\rightturn`	↻
`\diameter`	⌀	`\therefore`	∴

math operators

`$a\ocircle b`	$a \bigcirc b$	`$a\logof b`	$a \circledast b$
`$a\oplus^* b`	$a \oplus b$	`$a\otimes^* b`	$a \otimes b$
`$a\le^* b`	$a \leq b$	`$a\ge^* b`	$a \geq b$
`$a\apprle b`	$a \lesssim b$	`$a\apprge b`	$a \gtrsim b$
`$a\lhd b`	$a \lhd b$	`$a\rhd b`	$a \rhd b$
`$a\unlhd b`	$a \trianglelefteq b$	`$a\unrhd b`	$a \trianglerighteq b$
`$a\LHD b`	$a \blacktriangleleft b$	`$a\RHD b`	$a \blacktriangleright b$
`$a\sqsubset b`	$a \sqsubset b$	`$a\sqsupset b`	$a \sqsupset b$
`$a\sqsubseteq^* b`	$a \sqsubseteq b$	`$a\sqsupseteq^* b`	$a \sqsupseteq b$
`$a\propto^* b`	$a \propto b$	`$a\varpropto b`	$a \propto b$
`$a\leadsto b`	$a \rightsquigarrow b$		

integrals (text style)

`$\varint_a^b f(x)dx`	$\int_a^b f(x)dx$	`$\iint_a^b f(x)dx`	$\iint_a^b f(x)dx$
`$\iiint_a^b f(x)dx`	$\iiint_a^b f(x)dx$	`$\varoint_a^b f(x)dx`	$\oint_a^b f(x)dx$
`$\oiint_a^b f(x)dx`	$\oiint_a^b f(x)dx$		

integrals (display style)

$$\int \iint \iiint \oint \oiint$$

With the control sequence `\newpropto` you can change the proportional sign to the thin `wasy` symbol ($\propto$), which is more distinct from alpha (α) then the default symbol ($\propto$).

With the control sequence `\newint` you can change the TEX integrals from $\int, \oint$ to the vertical ones $\int, \oint$, in display:

$$\int_a^b \to \int_a^b, \qquad \oint_C \to \oint_C$$

There are also a few letters in roman style added (although these and some symbols as ℧, ‰ should be in a separate font, to be created in different styles like italic, sans serif etc. – the `wasychr.mf` source is prepared for that.

`\thorn`	þ	`\Thorn`	Þ
`\dh`	ð	`\Dh`*	Đ
`\inve`	ə	`\openo`	ɔ

Examples

"We provide the ♪♫, you provide the ☺"

The planets (☉ → outer space): ☿ ♀ ♁ ♂ asteroids ⚳ ♄ ⚴ ⚵ ⯓.

special characters on IBM PC's: ☺, ☻, ♡, ♢, ♣, ♠, •, ○, ♂, ♀, ♪, ♫, ☼, ►, ◄, ↕, !!, ¶, §, ▁, ↕, ↑, ↓, →, ←, ▲, ▼, ¦, ⌐, ¬, ...

special characters on Atari ST's: ➪, ⮉, ✓, ◷, ♠, ♪, ə, ⌐, ¬, ∮, ...

tube dimensions: ⌀5 mm, $d = 0.5$ mm, $l = 50$ mm

display math:

$$\sphericalangle(\vec{a}, \vec{b}) = 30^\circ$$

$$\prod_{x \lesssim 5} a_x \circledast b_x \simeq \int_{x \gtrsim 5} a \bigcirc b \, \mathrm{d}x \qquad \text{(nonsense.1)}$$

Gauss' law: $$\iiint_V \nabla \mathbf{F}(\mathbf{x}) \, \mathrm{d}^3x = \oiint_{S(V)} \mathbf{F}(\mathbf{x}) \, \mathrm{d}\mathbf{a}$$

Stokes' law: $$\iint_A [\nabla \times \mathbf{F}(\mathbf{x})] \, \mathrm{d}\mathbf{a} = \oint_{C(A)} \mathbf{F}(\mathbf{x}) \, \mathrm{d}\mathbf{l}$$

APL Program:
$U \leftarrow {}^{-}1 + G \leftarrow 2 \times \iota N \leftarrow \square$ ⍝ generate vectors of odd and even numbers

APL keyboard layout:

1	2	3	4	5	6	7	8	9	0	+	×	⋄
	Q	W	E	R	T	Y	U	I	O	P	←	→

A S D F G H J K L [ ] #
⊢ Z X C V B N M , . /

¨ ¯ < ≤ = ≥ > ≠ ∨ ∧ − ÷ $
? ω ϵ ρ ∼ ↑ ↓ ι ○ ⋆ { }
α ⌈ ⌊ _ ∇ ∆ ∘ ' □ ( ) ∼
⊣ ⊂ ⊃ ∩ ∪ ⊥ ⊤ | ; : \

I ⊻ ⊽ ⍋ ⍋ ⍋ ⍋ ⍋ ⍋ ⍋ ⍋ ! ⊟ ⊔
Q W E R T Y U I O P ⊟ ⊟
A S D F G H J K L ⍎ ⍎ ⍎
⍋ Z X C V B N M ⍝ ⍀ ⍀

⊗
⍐ ⍗

simple phonetic notation: corner [ˈkɔːnə], this [ðis], thrash [θræʃ]

check the appropriate box like this ⊠ or that ☑:

☐ I need the `wasy` fonts
☐ I don't need the `wasy` fonts

Font Table

`wasy`:

00 = △	01 = ◁	02 = ⊴	03 = ▷	04 = ⊵	05 = ∴	06 = ⌕	07 = ☎
08 = ✓	09 = ⇨	0A = ♠	0B = ♪	0C = ♩	0D = ♩	0E = ∘	0F = ♫
10 = ◀	11 = ▶	12 = ϟ	13 = ♌	14 = ♉	15 = ⍉	16 = ⊛	17 = ♈
18 = ⌐	19 = ♀	1A = ♂	1B = ⌑	1C = ⌚	1D = ∝	1E = ∢	1F = ∅
20 = ●	21 = ⟳	22 = ⟲	23 = ○	24 = ☾	25 = ☽	26 = ♁	27 = ☿
28 = ‹	29 = ›	2A = ⌃	2B = ⌄	2C = ☺	2D = ☻	2E = ☼	2F = ☹
30 = ℧	31 = ⋈	32 = □	33 = ◇	34 = ⊠	35 = ⌑	36 = ✠	37 = ⬡
38 = ⬡	39 = ⬡	3A = ∼	3B = ⇝	3C = ⊏	3D = ⊐	3E = ≲	3F = ≳
40 = ≋	41 = ⁎	42 = ⁎	43 = ✡	44 = ⬠	45 = ⋆	46 = ▽	47 = ◖
48 = ◗	49 = ◖	4A = ◗	4B = ▲	4C = ▼	4D =	4E =	4F =
50 = ɣ	51 = ⌒	52 = ⌒	53 =	54 =	55 = ə	56 = ♂	57 = ♂
58 = ♃	59 = ♄	5A = ⚷	5B = ⚷	5C = ♇	5D = ♉	5E = ♊	5F = ♋
60 = ♍	61 = ♎	62 = ♏	63 = ♐	64 = ♑	65 = ≈	66 = ♓	67 = ¢
68 = ‰	69 = þ	6A = Þ	6B = ð	6C = ɔ	6D = ⚽	6E = ⍐	6F = ⍗
70 = ⊟	71 = ⊟	72 = ∫	73 = ∬	74 = ∭	75 = ∮	76 = ∯	77 = ∫
78 = ∬	79 = ∭	7A = ∮	7B = ∯	7C = ¦	7D = ⍞	7E = □	7F = ⍝

`wasyb`:

00 = △	01 = ◁	02 = ⊴	03 = ▷	04 = ⊵	05 = ∴	06 = ⌕	07 = ☎
08 = ✓	09 = ➪	0A = ♠	0B = ♪	0C = ♩	0D = ♩	0E = 𝅗𝅥	0F = ♫
10 = ◀	11 = ▶	12 = ϟ	13 = ☊	14 = ♈	15 = ⌀	16 = ⊛	17 = ♈
18 = ⌐	19 = ♀	1A = ♂	1B = ¤	1C = ⏲	1D = ∝	1E = ⊀	1F = ⌀
20 = ●	21 = ☋	22 = ☌	23 = ○	24 = ☾	25 = ☽	26 = ♁	27 = ☿
28 = ‹	29 = ›	2A = ˆ	2B = ˇ	2C = ☺	2D = ☻	2E = ☼	2F = ☹
30 = ℧	31 = ⋈	32 = □	33 = ◇	34 = ⊠	35 = ¤	36 = ✠	37 = ⎔
38 = ◯	39 = ⬡	3A = ∼	3B = ⇝	3C = ⊏	3D = ⊐	3E = ≦	3F = ≧
40 = ≋	41 = ⚹	42 = ✳	43 = ✡	44 = ⬠	45 = ✶	46 = ▽	47 = ◖
48 = ◗	49 = ◐	4A = ◑	4B = ▲	4C = ▼	4D =	4E =	4F =
50 = ɣ	51 = ◜	52 = ◝	53 =	54 =	55 = ə	56 = ♂	57 = ♌
58 = ♄	59 = ♄	5A = ♁	5B = ☿	5C = ♇	5D = ♉	5E = ♊	5F = ♋
60 = ♍	61 = ⏢	62 = ♏	63 = ♐	64 = ♑	65 = ≈	66 = ♓	67 = ¢
68 = ‰	69 = þ	6A = Þ	6B = ð	6C = ɔ	6D = ⧫	6E = ⍐	6F = ⍗
70 = ⍈	71 = ⍇	72 = ∫	73 = ∬	74 = ∭	75 = ∮	76 = ∯	77 = ∫
78 = ∬	79 = ∭	7A = ∮	7B = ∯	7C = ¦	7D = ⍞	7E = □	7F = ⍸

Changes since version 1.0

version 1.1:

`\varangle` has been centered at the math axis

version 2.0:

new: letters Þ,þ,ð,ə,ɔ,℧

new astrological and zodiacal symbols

new symbols permil, cent, ataribox

now the full set of `lasy` is included; for this purpose 9 characters (☺, ☻, ☹, ☼, ♄, ♄, ♁, ☿, ♇) have **changed code**!

`wasyb10` font for bold math added