# 1 Introduction

This file defines the package `wasysym` which makes some additional characters available that come from the `wasy` fonts (Waldis symbol fonts). These fonts are not automatically included in the NFSS2/LaTeX $2_\varepsilon$ since they take up important space and aren't necessary if one makes use of the packages `amsfonts` or `amssymb`.

Warning: This style uses version 2 of the `wasy`-fonts. It is not 100 % compatible to the old version 1 from 1989. I have provided no compatibility mode for the old fonts! If some characters come out wrong you have to upgrade.

The math-commands defined by the `wasysym` package are:

`\Join` ⋈ `\Box` □ `\Diamond` ◇ `\leadsto` ⇝ `\sqsubset` ⊏
`\sqsupset` ⊐ `\lhd` ◁ `\unlhd` ⊴ `\LHD` ◀ `\rhd` ▷ `\unrhd` ⊵
`\RHD` ▶ `\apprle` ≲ `\apprge` ≳ `\wasypropto` ∝ `\invneg` ⌐ `\ocircle` ○
`\logof` ⊛ `\varint` ∫ `\iint` ∬ `\iiint` ∭ `\varoint` ∮ `\oiint` ∯

The following commands are available in text-mode and scale according to the textfont size:

General symbol:

`\male` ♂ `\female` ♀ `\currency` ¤ `\phone` ☎ `\recorder` ⌕ `\clock` ◷
`\lightning` ϟ `\pointer` ➪ `\RIGHTarrow` ▶ `\LEFTarrow` ◀ `\UParrow` ▲
`\DOWNarrow` ▼ `\diameter` ⌀ `\invdiameter` ⍉ `\varangle` ⍼ `\wasylozenge` ⌑
`\kreuz` ✠ `\smiley` ☺ `\frownie` ☹ `\blacksmiley` ☻ `\sun` ☼
`\checked` ✓ `\bell` ➧ `\ataribox` ⬖ `\cent` ¢ `\permil` ‰ `\brokenvert` ¦
`\wasytherefore` ∴ `\Bowtie` ⋈ `\agemO` ℧

Electrical and physical symbols:

`\AC` ∼ `\HF` ≈ `\VHF` ≋ `\photon` ∿∿∿ `\gluon` ෧෧෧෧෧෧

Polygons and Stars:

`\Square` □ `\XBox` ⊠ `\CheckedBox` ☑ `\hexagon` ⬡ `\varhexagon` ⬡
`\pentagon` ⬠ `\octagon` ⯃ `\hexstar` ✶ `\varhexstar` ✶ `\davidsstar` ✡

Music notes:

`\eighthnote` ♪ `\quarternote` ♩ `\halfnote` 𝅗𝅥 `\fullnote` 𝅝 `\twonotes` ♫

Various circles:

`\Circle` ○ `\CIRCLE` ● `\Leftcircle` ◖ `\LEFTCIRCLE` ◖ `\Rightcircle` ◗
`\RIGHTCIRCLE` ◗ `\LEFTcircle` ◐ `\RIGHTcircle` ◑ `\leftturn` ↺
`\rightturn` ↻

Phonetic signs:

`\thorn` þ `\Thorn` Þ `\dh` ð `\DH` Ð (The old `\Dh` command will go away in the next release.) `\openo` ɔ `\inve` ə

Some symbols used in astonomy:

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

Astrological symbols and the zodiacal symbols:

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

And the APL-symbols, whoever needs them:

\APLstar ⋆ \APLlog ⍟ \APLbox ⍞ \APLup ⍙ \APLdown ⍛ \APLinput ⍠
\APLcomment ⍝ \APLinv ⍣ \APLuparrowbox ⍐ \APLdownarrowbox ⍗
\APLleftarrowbox ⍇ \APLrightarrowbox ⍈ \notbackslash ⍀
\notslash ⌿ \APLnot ∼ \APLvert | \APLcirc ∘ \APLminus ⍤

## 2 The DOCSTRIP modules

The following modules are used in the implementation to direct DOCSTRIP in generating the external files:

| | |
|---|---|
| driver | produce a documentation driver file |
| package | produce a package file |
| fd | produce a font definition file |

## 3 The Implementation

`\symwasy` It is possible to detect whether or not the `wasy` symbols are already defined by checking for the math group number with the name `\symwasy`.

In that case we exit but write a message to the transcript file

```
⟨*package⟩
\ifx\symwasy\undefined \else
  \wlog{Package wasysym: nothing to set up^^J}%
  \endinput
\fi
```

Otherwise we define the new symbol font

```
\DeclareSymbolFont{wasy}{U}{wasy}{m}{n}
\SetSymbolFont{wasy}{bold}{U}{wasy}{b}{n}
```

`\wasyfamily` `\textwasy` To access the wasy-symbols in text-mode I have defined them as a new fontfamily. Since I only take single characters but don't want to write this is not an elegant approach. But it works and the symbols scale according to textsize, which is all I promised.

```
\def\wasyfamily{\fontencoding{U}\fontfamily{wasy}\selectfont}
\DeclareTextFontCommand{\textwasy}{\wasyfamily}
```

We declare some new commands to generate overlayed symbols and to switch to the new integral-signs:

```
%
\def\overstrike#1#2{{\setbox0\hbox{$#2$}\hbox to \wd0{\hss
    $#1$\hss}\kern-\wd0\box0}}
\def\newpropto{\let\propto\wasyvarpropto}
\def\newint{\let\int\varint \let\oint\varoint} % default limits
%
```

Defining some special symbols:

```
\def\male       {\hbox{\wasyfamily\char26}}
\def\female     {\hbox{\wasyfamily\char25}}
\def\currency   {{\wasyfamily\char27}}
\def\phone      {{\wasyfamily\char7}}
\def\recorder   {{\wasyfamily\char6}}
\def\clock      {{\wasyfamily\char28}}
\def\lightning  {{\wasyfamily\char18}}
\def\pointer    {{\wasyfamily\char9}}
\def\RIGHTarrow {{\wasyfamily\char17}}
\def\LEFTarrow  {{\wasyfamily\char16}}
\def\UParrow    {{\wasyfamily\char75}}
\def\DOWNarrow  {{\wasyfamily\char76}}
\def\AC         {\hbox{\kern0.5pt\wasyfamily\char58\kern0.5pt}}
\def\HF         {\lower0.9pt\hbox to 0pt{\kern0.5pt\wasyfamily\char58\hss}%
        \raise0.9pt\hbox{\kern0.5pt\wasyfamily\char58\kern0.5pt}}
\def\VHF        {\hbox{\wasyfamily\char64}}
%\def\Box{\hbox{\wasyfamily\char50}}
\def\Square     {\hbox{$\Box$}}
\def\CheckedBox {\hbox to 0pt{\wasyfamily\char50\hss}\hbox{\wasyfamily\char8}}
\def\XBox       {\hbox{\wasyfamily\char52}}
\def\hexagon    {\hbox{\wasyfamily\char55}}
\def\pentagon   {\hbox{\wasyfamily\char68}}
\def\octagon    {\hbox{\wasyfamily\char56}}
\def\varhexagon {\hbox{\wasyfamily\char57}}
\def\hexstar    {\hbox{\wasyfamily\char65}}
\def\varhexstar {\hbox{\wasyfamily\char66}}
\def\davidsstar {\hbox{\wasyfamily\char67}}
\def\diameter   {\hbox{\wasyfamily\char31}}
\def\invdiameter{\hbox{\wasyfamily\char21}}
\def\varangle   {\hbox{\wasyfamily\char30}}
\def\wasylozenge{\hbox{\wasyfamily\char53}}
\def\kreuz      {\hbox{\wasyfamily\char54}}
\def\smiley     {\hbox{\wasyfamily\char44}}
\def\frownie    {\hbox{\wasyfamily\char47}}
\def\blacksmiley{\hbox{\wasyfamily\char45}}
\def\sun        {\hbox{\wasyfamily\char46}}
\def\checked    {\hbox{\wasyfamily\char8}}
\def\bell       {\hbox{\wasyfamily\char10}}
\def\eighthnote {\hbox{\wasyfamily\char11}}
\def\quarternote{\hbox{\wasyfamily\char12}}
\def\halfnote   {\hbox{\wasyfamily\char13}}
\def\fullnote   {\hbox{\wasyfamily\char14}}
\def\twonotes   {\hbox{\wasyfamily\char15}}
\def\brokenvert {\hbox{\wasyfamily\char124}}
```

```
\def\ataribox   {\hbox{\wasyfamily\char109}}
\def\wasytherefore{\hbox{\wasyfamily\char5}}
\def\Circle     {\hbox{\wasyfamily\char35}}
\def\CIRCLE     {\hbox{\wasyfamily\char32}}
\def\Leftcircle {\hbox{\wasyfamily\char73}}
\def\LEFTCIRCLE {\hbox{\wasyfamily\char71}}
\def\Rightcircle{\hbox{\wasyfamily\char74}}
\def\RIGHTCIRCLE{\hbox{\wasyfamily\char72}}
\def\LEFTcircle {\hbox to 0pt{\wasyfamily\char71\hss}\hbox{\wasyfamily\char35}}
\def\RIGHTcircle{\hbox to 0pt{\wasyfamily\char72\hss}\hbox{\wasyfamily\char35}}
%% astronomy
\def\vernal     {\hbox{\wasyfamily\char23}}
\def\ascnode    {\hbox{\wasyfamily\char19}}
\def\descnode   {\hbox{\wasyfamily\char20}}
\let\fullmoon   \Circle
\let\newmoon    \CIRCLE
\def\leftmoon   {\hbox{\wasyfamily\char36}}
\def\rightmoon  {\hbox{\wasyfamily\char37}}
%\def\astrosun  {{\tensy\char12}}
\def\astrosun   {\hbox{$\odot$}}
\def\mercury    {\hbox{\wasyfamily\char39}}
\def\venus      {\raise0.2ex\hbox{\wasyfamily\char25}}
\def\earth      {\lower0.3ex\hbox{\wasyfamily\char38}}
\def\mars       {\lower0.2ex\hbox{\wasyfamily\char26}}
\def\jupiter    {\hbox{\wasyfamily\char88}}
\def\saturn     {\hbox{\wasyfamily\char89}}
\def\uranus     {\hbox{\wasyfamily\char90}}
\def\neptune    {\hbox{\wasyfamily\char91}}
\def\pluto      {\hbox{\wasyfamily\char92}}
%%%%%% the zodiac
\let\aries      \vernal
\def\taurus     {\hbox{\wasyfamily\char93}}
\def\gemini     {\hbox{\wasyfamily\char94}}
\def\cancer     {\hbox{\wasyfamily\char95}}
\let\leo        \ascnode
\def\virgo      {\hbox{\wasyfamily\char96}}
\def\libra      {\hbox{\wasyfamily\char97}}
\def\scorpio    {\hbox{\wasyfamily\char98}}
\def\sagittarius{\hbox{\wasyfamily\char99}}
\def\capricornus{\hbox{\wasyfamily\char100}}
\def\aquarius   {\hbox{\wasyfamily\char101}}
\def\pisces     {\hbox{\wasyfamily\char102}}
\def\conjunction{{\wasyfamily\char86}}
\def\opposition {{\wasyfamily\char87}}
%%%%%% APL characters
\def\APLstar    {\hbox{\wasyfamily\char69}}
\def\APLlog     {\hbox{\wasyfamily\char22}}
\def\APLbox     {\hbox{\wasyfamily\char126}}
\def\APLup      {\hbox{\wasyfamily\char0}}
\def\APLdown    {\hbox{\wasyfamily\char70}}
\def\APLinput   {\hbox{\wasyfamily\char125}}
\def\APLcomment {\hbox{\wasyfamily\char127}}
\def\APLinv     {{\hbox to 0pt{$\div$\hss}\APLbox}}
\def\APLuparrowbox{\hbox{\wasyfamily\char110}}
```

```
\def\APLdownarrowbox{\hbox{\wasyfamily\char111}}
\def\APLleftarrowbox{\hbox{\wasyfamily\char112}}
\def\APLrightarrowbox{\hbox{\wasyfamily\char113}}
\def\notbackslash{\overstrike{\backslash}{-}}
\def\notslash   {\overstrike{/}{-}}
\def\APLminus   {\raise0.7ex\hbox{$-$}}
\def\APLnot#1{\overstrike{\sim}{#1}}
\def\APLcirc#1{\overstrike{\circ}{#1}}
\def\APLvert#1{\overstrike{\vert}{#1}}
%%%%%% math characters
\def\Bowtie     {\hbox{\wasyfamily\char49}}
\def\leftturn   {\hbox{\wasyfamily\char34}}
\def\rightturn  {\hbox{\wasyfamily\char33}}
%%%%%% diagrams
\def\photon     {\hbox{\wasyfamily\char58\char58\char58\char58}}
\def\gluon      {\hbox{\wasyfamily\char81\char80\char80\char80%
    \char80\char80\char80\char82}}
%%%%%% special characters
\def\cent       {\hbox{\wasyfamily\char103}}
\def\permil     {\hbox{\wasyfamily\char104}}
\def\agemO      {{\wasyfamily\char48}}
\def\thorn      {{\wasyfamily\char105}}
\def\Thorn      {{\wasyfamily\char106}}
\DeclareTextCommand{\dh}{OT1}{{\wasyfamily\char107}}
%\DeclareTextSymbol{\dh}{T1}{240} %\dh is already declared
\DeclareTextCommand{\DH}{OT1}{\leavevmode{\rm\setbox0\hbox{D}%
    \hbox to\wd0{\kern 0.04em\char32\hss D}}}
\DeclareTextCommand{\Dh}{OT1}{\DH} % Will go away soon
\DeclareTextCommand{\Dh}{T1}{\DH}  % Will go away soon
\def\openo      {{\wasyfamily\char108}}
\def\inve       {{\wasyfamily\char85}}
```

Because the lasy symbols are made an error in the format we have to undefine them before we can set them anew with `\DeclareMathSymbol`. Made the math-groups more readable and changed `\lhd` and friends to be binary operators as in latexsym.

```
  \let\mho\undefined
  \let\sqsupset\undefined \let\Join\undefined
  \let\lhd\undefined      \let\Box\undefined
  \let\unlhd\undefined    \let\Diamond\undefined
  \let\rhd\undefined      \let\leadsto\undefined
  \let\unrhd\undefined    \let\sqsubset\undefined

  \DeclareMathSymbol\mho     {\mathord}{wasy}{"30}
  \DeclareMathSymbol\Join    {\mathrel}{wasy}{"31}
  \DeclareMathSymbol\Box     {\mathord}{wasy}{"32}
  \DeclareMathSymbol\Diamond {\mathord}{wasy}{"33}
  \DeclareMathSymbol\leadsto {\mathrel}{wasy}{"3B}
  \DeclareMathSymbol\sqsubset{\mathrel}{wasy}{"3C}
  \DeclareMathSymbol\sqsupset{\mathrel}{wasy}{"3D}
  \DeclareMathSymbol\lhd     {\mathbin}{wasy}{"01}
  \DeclareMathSymbol\unlhd   {\mathbin}{wasy}{"02}
  \DeclareMathSymbol\LHD     {\mathbin}{wasy}{"10}
  \DeclareMathSymbol\rhd     {\mathbin}{wasy}{"03}
```

```
  \DeclareMathSymbol\unrhd   {\mathbin}{wasy}{"04}
  \DeclareMathSymbol\RHD     {\mathbin}{wasy}{"11}
  \DeclareMathSymbol\apprle  {\mathrel}{wasy}{"3E}
  \DeclareMathSymbol\apprge  {\mathrel}{wasy}{"3F}
  \DeclareMathSymbol\wasypropto   {\mathrel}{wasy}{"1D}
  \DeclareMathSymbol\invneg  {\mathrel}{wasy}{"18}
  \DeclareMathSymbol\ocircle {\mathbin}{wasy}{"23}
  \DeclareMathSymbol\logof   {\mathrel}{wasy}{"16}
  \DeclareMathSymbol\varint  {\mathop}{wasy}{"72}
  \DeclareMathSymbol\iint    {\mathop}{wasy}{"73}
  \DeclareMathSymbol\iiint   {\mathop}{wasy}{"74}
  \DeclareMathSymbol\varoint {\mathop}{wasy}{"75}
  \DeclareMathSymbol\oiint   {\mathop}{wasy}{"76}
⟨/package⟩
```

## 3.1 LaTeX symbols fonts

The rest of this file defines the the font shape declarations that have to go into the corresponding `.fd` file.

We introduce the `.fd` file in the log file. The explicit spaces are necessary in an `.fd` file and the `\string` guards against situations where `, < or > is active.

```
⟨*fd⟩
\DeclareFontFamily{U}{wasy}{}
\DeclareFontShape{U}{wasy}{m}{n}{ <5> <6> <7> <8> <9> gen * wasy
      <10> <10.95> <12> <14.4> <17.28> <20.74> <24.88>wasy10  }{}
\DeclareFontShape{U}{wasy}{b}{n}{ <-10> sub * wasy/m/n
 <10> <10.95> <12> <14.4> <17.28> <20.74> <24.88>wasyb10 }{}
⟨/fd⟩
```

The next line goes into all files and in addition prevents DOCSTRIP from adding any further code from the main source file (such as a character table).

```
\endinput
```