Using common PostScript fonts with LaTeX

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This document refers to
PSNFSS version 8.1

Contents

1 The PSNFSS bundle

The PSNFSS system, developed by Sebastian Rahtz, offers a set of files that provide a complete working setup of the LaTeX font selection scheme (NFSS2) for use with common PostScript fonts. The basic distribution, that should be part of any useful LaTeX installation, covers the so-called 'Base 35' fonts (which are built into any Level 2 PostScript printing device and the Ghostscript interpreter) and the free

typeface families Adobe Utopia and Bitstream Charter (which need not always be actually available—see the documentation of your LaTeX system).

2   Package overview

The easiest way to make use of the above-mentioned typefaces is to completely replace one or more of the font families used by LaTeX as 'roman', 'sans serif' and 'typewriter' family and for math. This is accomplished by the packages listed in table 1. Its first row lists the default (Computer Modern) font families; an empty column indicates that a package does not change the particular font family from the default setting. The PSNFSS distribution comprises also a package pifont, which serves for accessing symbol fonts (aka 'Pi fonts'), such as Symbol and Zapf Dingbats, see section 8.

Table 1: Packages for using common PostScript fonts

package	roman	sans serif	typewriter	math
(none)	CM Roman	CM Sans Serif	CM Typewriter	≈ CM Roman
mathptmx	Times			≈ Times
mathptm	Times			≈ Times
mathpple	Palatino			≈ Palatino
helvet		Helvetica		
avant		Avant Garde		
courier			Courier	
chancery	Zapf Chancery			
times	Times	Helvetica	Courier	
palatino	Palatino	Helvetica	Courier	
bookman	Bookman	Avant Garde	Courier	
newcent	New Century Schoolbook	Avant Garde	Courier	
utopia	Utopia			
charter	Charter			

3   Special considerations

3.1   Inter-line spacing

With certain font families, the leading of the standard LaTeX document classes may be to small. This results from the larger x-height of these fonts, as compared with Computer Modern. Since it is a question of document design and line width, the packages of the PSNFSS bundle do *not* care for this. Issueing the command

$$\linespread\{\langle factor\rangle\}$$

in the preamble will globally enlarge the leading by the given factor.

3.2   Using sans serif fonts

The packages helvet and avant do not change the default text font family from 'roman'. If required, the additional command

```
\renewcommand{\familydefault}{\sfdefault}
```

will make the sans serif font family (Helvetica or Avant Garde) be used as the default one.

3.3 Output font encoding

None of the packages listed in table 1 changes the output font encoding from its default setting OT1. It is, however, recommended to use PostScript fonts in the extended T1 and TS1 (text symbols) encodings through the commands:

```
\usepackage[T1]{fontenc}
\usepackage{textcomp}
```

When using PostScript fonts, there is no reason at all to stay with the obsolete OT1 encoding, which does not provide access to all glyphs!

In case your TeX system does not provide the T1 encoded versions of the default CM fonts (aka EC), it must be prevented from trying to load these before finally switching to the desired PostScript font family. This is accomplished by the following sequence of commands:

1. loading the required PSNFSS package(s)
2. redefine `\familydefault` (if required—see above)
3. `\normalfont`
4. switching the encoding as shown above

4   The package helvet

Helvetica is actually somewhat larger than other typefaces of the same nominal size. This does not matter much, as long as it is used for headings or similar material only. Within running text, however, mixing, e.g., Times and Helvetica will look bad. This can be fixed by loading the helvet package with the option `[scaled=`⟨*scale*⟩`]`, e.g.:

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v8.1

```
\usepackage[scaled=.92]{helvet}
```

This will load the font family `phv` (Helvetica) for sans-serif, scaled down to 92% of its 'natural' size, which is suitable for use with Adobe Times.

The ⟨*scale*⟩ can be omitted:

```
\usepackage[scaled]{helvet}
```

A default scaling of 0.95 will be assumed then, which makes the height of the Helvetica capitals comply with most other typeface families.

5   The package mathptmx

Loading this package changes the default roman font family to Adobe Times, and the virtual mathptmx fonts will be used for math.

These virtual fonts are made up basically from Times Italic, with the missing math symbols coming from CM, RSFS (for `\mathcal`) and Adobe Symbol. All these fonts are available in Type1 format, so that one can create documents which do not require any bitmap fonts.

3

5.1 Font size of the 'large' math symbols

With mathptmx, the 'large' math symbols are automatically scaled to fit the base font size. In contrast to standard LaTeX you need not load the package exscale for this purpose!

5.2 Known bugs and deficiencies

- There are no bold math fonts, and `\boldmath` is not supported.
- The following symbols are either missing or unusable:
  `\emptyset, \jmath, \coprod, \amalg`.

6 The package mathptm

The package mathptm is a predecessor mathptmx. In contrast to the latter and to LaTeX's standard behaviour, lowercase Greek in math is typeset upright. Zapf Chancery is used as the calligraphic math alphabet, whereas the mathptmx package uses the RSFS fonts for `\mathcal`. In conjunction with other minor mprovements, mathptmx can be considered as typographically superior.

Furthermore, mathptm needs the font `cmex9`, which is not always available in Type1 format. As a result, the mathptmx package should be preferred.

7 The package mathpple

Loading this package changes the default roman font family to Adobe Palatino, and the virtual mathpple fonts will be used for math.

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These virtual fonts are made up basically from Palatino Italic, with the missing math symbols coming from the CM and Euler fonts and from Adobe Symbol. All these fonts are available in Type1 format, so that one can create documents which do not require any bitmap fonts.

7.1 Package options

```
[slantedGreek]
```

When the package is loaded with this option, uppercase Greek will be typeset slanted, too.

7.2 New commands

```
\upDelta
\upOmega
```

Regardless of the `slantedGreek` option, these commands will always print an upright Δ and Ω.

`\mathbold`

`\mathbold` is a math alphabet for typesetting variables (incl. Greek) in an italic boldface style. Do not mix this up with `\mathbf`, which selects an upright boldface text font for use in math!

7.3 Using the AMS math symbol fonts with mathpple

When the package amssymb or amsfonts is loaded in conjunction with mathpple, the AMS symbols will be scaled slightly so as to match Palatino. Do *not* specify the option `psamsfonts` for amsfonts or amssymb! The package mathpple cares for using the AMS symbol fonts at those design sizes only, which are available in Type1 format.

Notice, that various AMS symbols do not blend well with the style of the Palatino typefaces.

7.4 Font size of the 'large' math symbols

With mathpple, the 'large' math symbols are automatically scaled to fit the base font size. In contrast to standard LaTeX you need not load the package exscale for this purpose!

7.5 Known bugs and deficiencies

- `\coprod` is missing
- no boldface variants of `\partial` and `\infty`
- `\jmath` is taken from CM math italic

7.6 Important changes over version 1.x

7.6.1 Combining Palatino and Helvetica

Previous versions of the mathpple package came with `.fd` files for a font family named `phvv`, which was actually Helvetica, scaled down to 95% of its natural size. This font family is no longer provided with PSNFSS. Use the `scaled=...` option of the helvet package instead, i.e., replace

```
\renewcommand{\sfdefault}{phvv}
```

with:

```
\usepackage[scaled=.95]{helvet}
```

7.6.2 Super- and subscripts

The size of super- and subscripts in math has been somewhat enlarged, as compared with mathpple v1.x. Thus, page breaks may be different now.

8 The package pifont[1]

Using symbol fonts is supported through the pifont package, providing commands for using the Zapf Dingbats font, as well as an interface to other families.

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[1] This description has been copied, with minor changes, from [1], chapter 11.9.3 and 11.9.4.

8.1   Commands for using Zapf Dingbats

`\ding {⟨number⟩}`

A given character can be chosen via the `\ding` command. Its parameter is an integer that specifies the character to be typeset. For example, `\ding{38}` gives ✌; see table 2 on the following page.

`\begin{dinglist} {⟨number⟩}`
`\begin{dingautolist} {⟨number⟩}`

The `dinglist` environment is a special itemized list. The argument specifies the number of the character to be used as the beginning of each item. For example,

```
\begin{dinglist}{43}
  \item The first item in the list
  \item The second item in the list
  \item The third item in the list
\end{dinglist}
```

prints

☞   The first item in the list

☞   The second item in the list

☞   The third item in the list

There also exists an environment `dingautolist`, which allows you to build an enumerated list with a set of Zapf Dingbats characters. In this case, the argument specifies the number of the first character in the list. Subsequent items will be numbered with the character following the previous one. E.g.,

```
\begin{dingautolist{192}
  \item The first item
  \item The second item
  \iten The third item
\end{dingautolist{192}
```

prints

①   The first item

②   The second item

③   The third item

`\dingfill {⟨number⟩}`
`\dingline {⟨number⟩}`

`\dingfill` acts like the other filling commands in TEX, but fills the space with a chosen symbol   ➡ ➡ ➡ ➡ ➡ ➡ ➡ ➡ ➡ ➡ ➡ ➡ ➡ ➡ ➡ ➡   like that.

`\dingline` generates a frestanding line filled with the given symbol, with a little space on the left and right:

✄ ✄ ✄ ✄ ✄ ✄ ✄ ✄ ✄ ✄ ✄ ✄ ✄ ✄ ✄ ✄ ✄ ✄

Table 2: The characters in the PostScript font Zapf Dingbats

32		33		34		35		36		37		38		39	
40		41		42		43		44		45		46		47	
48		49		50		51		52		53		54		55	
56		57		58		59		60		61		62		63	
64		65		66		67		68		69		70		71	
72		73		74		75		76		77		78		79	
80		81		82		83		84		85		86		87	
88		89		90		91		92		93		94		95	
96		97		98		99		100		101		102		103	
104		105		106		107		108		109		110		111	
112		113		114		115		116		117		118		119	
120		121		122		123		124		125		126			
		161		162		163		164		165		166		167	
168		169		170		171		172		173		174		175	
176		177		178		179		180		181		182		183	
184		185		186		187		188		189		190		191	
192		193		194		195		196		197		198		199	
200		201		202		203		204		205		206		207	
208		209		210		211		212		213		214		215	
216		217		218		219		220		221		222		223	
224		225		226		227		228		229		230		231	
232		233		234		235		236		237		238		239	
		241		242		243		244		245		246		247	
248		249		250		251		252		253		254			

8.2 Generic commands

The pifont package has a general mechanism for coping with Pi fonts. It provides the following generic commands with, in each case, the first argument ⟨*family*⟩ specifying the name of the Pi font family in question (such as psy for the Symbol font, and pzd for the Zapf Dingbats font, see table 3 on page 9). If indicated, a second argument ⟨*number*⟩ specifies the decimal position of a symbol in that font.

`\Pifont {⟨family⟩}`

This switches to the font family ⟨*family*⟩ and the encoding U.

`\Pisymbol {⟨family⟩} {⟨number⟩}`

This command typesets the specified symbol (compare this with the `\ding` command).

`\begin{Pilist} {⟨family⟩} {⟨number⟩}`
`\begin{Piautolist} {⟨family⟩} {⟨number⟩}`

In the `Pilist` environment the specified symbol is used in front of each item in an itemized list (compare with the `dinglist` environment).

`Piautolist` is an environment where a series of symbols starting with the one at the decimal position ⟨*number*⟩ in font family ⟨*family*⟩ is used to number the items in an enumerated list (compare with the `dingautolist` environment).

```
\Pifill {⟨family⟩} {⟨number⟩}
\Piline {⟨family⟩} {⟨number⟩}
```

`\Pifill` acts like the other filling commands in TEX, but fills the space with a chosen symbol (compare with `\dingfill`).

`\Piline` typesets a line consisting of several copies of the specfied symbol, with some space at the left and right (compare with `\dingline`).

9 Typeface samples and overview

Table 3 on the following page lists all text and symbol font shapes and the related PostScript fonts that are supported through the basic PSNFSS distribution. Available encodings are OT1, T1, TS1 and 8r, except for Symbol and Zapf Dingbats, which are implemented with encoding U. See [3] for how to access a given font shape directly.

Notice, that none of the font families provides true small capitals, so the shape 'sc' refers to so-called 'faked' small capitals. Using them is *not* recommended, due to poor typographical quality; they are only provided for the sake of compatibility with previous versions of PSNFSS.

The math font families loaded by the mathptm, mathptmx and mathpple packages are not listed here. See the documented source file `psfonts.dtx` for information on this topic.

The below samples show the regular variant each text font family. The size is 9.6 pt, except for Zapf Chancery, which is shown at 14.4 pt; Helvetica is scaled to 95 % of the nominal size.

Times The sun was just rising as Dr. Robert entered his wife's room. An orange glow, and against it the jagged silhouette of the mountains. Then suddenly a dazzling sickle of incandescence between two peaks. The sickle became a half circle and the first long shadows, the first shafts of golden light crossed the garden outside the window. And when one looked up again at the mountains there was the whole unbearable glory of the risen sun.

Palatino The sun was just rising as Dr. Robert entered his wife's room. An orange glow, and against it the jagged silhouette of the mountains. Then suddenly a dazzling sickle of incandescence between two peaks. The sickle became a half circle and the first long shadows, the first shafts of golden light crossed the garden outside the window. And when one looked up again at the mountains there was the whole unbearable glory of the risen sun.

New Century Schoolbook The sun was just rising as Dr. Robert entered his wife's room. An orange glow, and against it the jagged silhouette of the mountains. Then suddenly a dazzling sickle of incandescence between two peaks. The sickle became a half circle and the first long shadows, the first shafts of golden light crossed the garden outside the window. And when one looked up again at the mountains there was the whole unbearable glory of the risen sun.

Table 3: Font shapes supported by the basic PSNFSS distribution

family	series	shape(s)	PostScript font names
Times			
ptm	m	n, sl, it, sc	Times-Roman, Times-Italic
ptm	b	n, sl, it, sc	Times-Bold, Times-BoldItalic
Palatino			
ppl	m	n, sl, it, sc	Palatino-Roman, Palatino-Italic
ppl	b	n, sl, it, sc	Palatino-Bold, Palatino-BoldItalic
New Century Schoolbook			
pnc	m	n, sl, it, sc	NewCenturySchlbk-Roman, NewCenturySchlbk-Italic
pnc	b	n, sl, it, sc	NewCenturySchlbk-Bold, NewCenturySchlbk-BoldItalic
Bookman			
pbk	m	n, sl, it, sc	Bookman-Light, Bookman-LightItalic
pbk	b	n, sl, it, sc	Bookman-Demi, Bookman-DemiItalic
Helvetica			
phv	m	n, sl, sc	Helvetica, Helvetica-Oblique
phv	b	n, sl, sc	Helvetica-Bold, Helvetica-BoldOblique
phv	mc	n, sl, sc	Helvetica-Narrow, Helvetica-Narrow-Oblique
phv	bc	n, sl, sc	Helvetica-Narrow-Bold, Helvetica-Narrow-BoldOblique
Avant Garde			
pag	m	n, sl, sc	AvantGarde-Book, AvantGarde-BookOblique
pag	b	n, sl, sc	AvantGarde-Demi, AvantGarde-DemiOblique
Courier			
pcr	m	n, sl, sc	Courier, CourierOblique
pcr	b	n, sl, sc	Courier-Bold, Courier-BoldOblique
Zapf Chancery			
pzc	m	it	ZapfChancery-MediumItalic
Utopia			
put	m	n, sl, it, sc	Utopia-Regular, Utopia-Italic
put	b	n, sl, it, sc	Utopia-Bold, Utopia-BoldItalic
Charter			
bch	m	n, sl, it, sc	CharterBT-Roman, CharterBT-Italic
bch	b	n, sl, it, sc	CharterBT-Bold, CharterBT-BoldItalic
Symbol			
psy	m	n	Symbol
Zapf Dingbats			
pzd	m	n	ZapfDingbats

Bookman	The sun was just rising as Dr. Robert entered his wife's room. An orange glow, and against it the jagged silhouette of the mountains. Then suddenly a dazzling sickle of incandescence between two peaks. The sickle became a half circle and the first long shadows, the first shafts of golden light crossed the garden outside the window. And when one looked up again at the mountains there was the whole unbearable glory of the risen sun.
Helvetica	The sun was just rising as Dr. Robert entered his wife's room. An orange glow, and against it the jagged silhouette of the mountains. Then suddenly a dazzling sickle of incandescence between two peaks. The sickle became a half circle and the first long shadows, the first shafts of golden light crossed the garden outside the window. And when one looked up again at the mountains there was the whole unbearable glory of the risen sun.
Avant Garde	Don't use Avant Garde for typesetting larger portions of text!
Courier	```A monospaced typeface, suitable for typesetting filenames, URL's etc.```
Utopia	The sun was just rising as Dr. Robert entered his wife's room. An orange glow, and against it the jagged silhouette of the mountains. Then suddenly a dazzling sickle of incandescence between two peaks. The sickle became a half circle and the first long shadows, the first shafts of golden light crossed the garden outside the window. And when one looked up again at the mountains there was the whole unbearable glory of the risen sun.
Charter	The sun was just rising as Dr. Robert entered his wife's room. An orange glow, and against it the jagged silhouette of the mountains. Then suddenly a dazzling sickle of incandescence between two peaks. The sickle became a half circle and the first long shadows, the first shafts of golden light crossed the garden outside the window. And when one looked up again at the mountains there was the whole unbearable glory of the risen sun.
Zapf Chancery	*To Hermann Zapf – whose strokes are the best.*

References

[1] Michel Goossens, Frank Mittelbach, and Alexander Samarin: *The LaTeX Companion*. Addison Wesley, 1994.

[2] Michel Goossens, Sebastian Rahtz, and Frank Mittelbach: *The LaTeX Graphics Companion*. Addison Wesley Longman, 1997.

[3] LaTeX3 Project Team (Ed.): *LaTeX 2ε font selection*. CTAN: `macros/latex/doc/html/fntguide/fntguide.html` (Part of the LaTeX online documentation)