How Do You Like Your Figures?

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Abstract

The figureversions package defines several commands to switch between figure versions, which determine the appearance of numbers in your document. The package works with many font packages available on CTAN as well as with most OpenType fonts under XeTeX and LuaTeX in combination with fontspec.

Contents

1 Introduction

1234567890
1234567890

While basic fonts only have *lining* figures (aka numbers), which extend from the base line to the height of capital letters, advanced fonts may come with several other *figure versions*, the most prominent being *old-style* or *text* figures which look more like lowercase letters and therefore fit nicely into a block of lower/mixed-case text: compare 1234567890 to 1234567890.

Since LaTeX's font selection system [1] has no support for figure versions, font package authors have resorted to define one LaTeX font family for each figure version, so you can switch between different figure versions by invoking the low-level `\fontfamily` command, followed by a call to `\selectfont`. This is not only cumbersome, but also ties the font family to the figure version, so you cannot change them independently.

The figureversions package not only makes it easier to switch figure versions, but it also lets you change the two dimensions of a figure version separately: *figure style* and *figure*

12345 12345
67890 67890

alignment. While figure style is solely about the the appearance of figures, figure alignment is concerned with the width of figures. In particular, *tabular* figures all have the same width, so multiple-digit numbers nicely line up when stacked on top of each other.

1.1 History

Most commands defined by this package first appeared in the MinionPro package[1] by Achim Blumensath et al., a package that made the professional Minion™ Pro font family by Adobe accessible to all LaTeX users (i.e. not only when using XeTeX or LuaTeX). Since the concept of figure versions is not specific to Minion Pro, the corresponding functionality was then incorporated by Andreas Bühmann into a separate package called fontaxes.[2] The fontaxes package does not only support different figure versions, but has also split the *shape* of a font into two dimensions ('axes'), which can be changed independently of each other. For instance, `\itshape` operates on the first dimension, while `\scshape` operates on the second. With LaTeX release 2020-02-02, that functionality was integrated into the kernel [2], so – with the exception of the functionality dealing with figure versions – the fontaxes package has been made redundant. Hence, its current maintainer decided to undertake a modern rewrite and strip off all functionality that has been integrated into the kernel, thereby adding support for fontspec[3] under XeTeX and LuaTeX.

2 Usage

You can load this package by adding

```
\usepackage{figureversions}
```

to the preamble of your document.

2.1 High-level document commands

`\lnfigures`	`\lnfigures`
`\txfigures`	`\txfigures`
`\liningfigures`	`\liningfigures{`⟨*text*⟩`}`
`\textfigures`	`\textfigures{`⟨*text*⟩`}`

By default, the figureversions package knows two figure styles, 'text' and 'lining', which can be accessed using the commands `\txfigures` and `\lnfigures` respectively. Similar to commands like `\itshape`, these commands are *declarations* and remain in effect until the end of the current group or environment. If you only want to change the figure style for a short amount of text, you can use the corresponding *text font commands* `\liningfigures` and `\textfigures`, which take as argument the text to which the figure style should apply.

[1] https://ctan.org/pkg/minionpro
[2] https://ctan.org/pkg/fontaxes
[3] https://ctan.org/pkg/fontspec

\prfigures \prfigures
\tbfigures \tbfigures
\proportionalfigures \proportionalfigures{⟨*text*⟩}
\tabularfigures \tabularfigures{⟨*text*⟩}

For changing the figure alignment, use the commands \prfigures and \tbfigures: while \prfigures changes to proportional figures, which vary in width, \tbfigures changes to tabular or *monospaced* figures. As for \linfigures and \txfigures, the selected figure alignment remains in effect until the end of the current group or environment; the corresponding text font commands are \proportionalfigures and \tabularfigures.

\boldmath \boldmath
\unboldmath \unboldmath
\tabularmath \tabularmath
\proportionalmath \proportionalmath

By default, LaTeX provides two *math versions*, 'normal' and 'bold', as well as commands \boldmath and \unboldmath for switching between them. The figureversions packages redefines these commands to only change the math font's weight and provides commands \tabularmath and \proportionalmath to switch between tabular and proportional figures in math mode.[4] This functionality assumes the presence of additional math versions 'tabular' and 'boldtabular'; the package will copy the setups of math versions 'normal' and 'bold' if you do not provide your own declarations.

\figureversion \figureversion{⟨*comma-separated list*⟩}

The \figureversion command can be used to change the figure version by a single command. It takes as argument a comma-separated list of one or more of the following options:[5]

text, osf	for text figures,
lining, lf	for lining figures,
tabular, tab	for tabular figures (also in math mode),
proportional, prop	for proportional figures (also in math mode).

2.2 Low-level document commands

The low-level commands described in this section are mostly relevant for package authors. They are meant to be be combined with other low-level font selection commands like \fontshape and \fontseries and a subsequent call to \selectfont. Finally, since they rely on the classical LaTeX 2_ε font selection scheme – with the exception of \mathweight and \mathfigurealignment – they would normally not work with fontspec.

\fontfigurestyle \fontfigurestyle{⟨*figure style*⟩}

By default, the figureversions package knows two figure styles: 'text' and 'lining', but package authors can define additional figure styles; see Section 2.3.

[4] Note that these commands have to be executed outside of math mode.
[5] More options can be added by package authors; see Section 2.3.

`\fontfigurealignment` `\fontfigurealignment{⟨figure alignment⟩}`

Using this command, you can choose either 'proportional' or 'tabular' figures.

`\fontbasefamily` `\fontbasefamily{⟨family name⟩}`

Recall that figure versions are implemented on top of the LaTeX 2_ε font selection scheme by amending the family name. For instance, `\fontfamily{cantarell-TLF}` selects *Cantarell* with tabular lining figures. The `\fontbasefamily` command thus allows you to select the font family independently of the figure version. Hence, `\fontbasefamily{cantarell}` switches to Cantarell, but does not change the current figure style or alignment.

`\mathweight` `\mathweight{⟨font weight⟩}`

The package knows two different math weights 'normal' and 'bold', which can be accessed by this command. Note that – like `\mathversion` – this command does *not* work in math mode and takes effect immediately, i.e. for all following invocations of math mode.

`\mathfigurealignment` `\mathfigurealignment{⟨figure alignment⟩}`

To change the math figure alignment, use this command. As for `\fontfigurealignment`, valid arguments are 'proportional' and 'tabular'. Like `\mathweight`, this command does not work in math mode and takes effect immediately.

2.3 Code-level interface

Like other packages implemented in LaTeX3, this package defines several commands at *code level*, i.e. with `\ExplSyntaxOn`, which can be used to extend the functionality of this package.

`\figureversions_new_figurestyle:nnn` `\figureversions_new_figurestyle:nnn {⟨name⟩} {⟨proportional suffixes⟩} {⟨tabular suffixes⟩}`
`\figureversions_new_figurestyle:Vnn`

Defines a new figure style named ⟨*name*⟩ with corresponding font family suffixes (given as comma-separated lists, maybe empty) for proportional and tabular figure alignment. For instance, the existing figure style 'text' is defined by

```
\figureversions_new_figurestyle:nnn {text} {0sF} {T0sF}
```

`\figureversions_new_figureversion:nn` `\figureversions_new_figureversion:nn {⟨option⟩} {⟨code⟩}`

Defines a new option for the `\figureversion` command: Expands to ⟨*code*⟩ when `\figureversion` is called with ⟨*option*⟩ among its arguments.

3 Compatibility

3.1 Font support

Within the LaTeX 2_ε font selection scheme, the package supports the two most common naming schemes for font families:

1. ⟨*family*⟩-⟨*suffix*⟩ where the suffix is e.g. `0sF` for proportional text figures or `TLF` for tabular lining figures.

2. ⟨*family*⟩⟨*style*⟩ where the family is given by a three-letter lowercase identifier and and *style* is either `j` for text figures or `x` for lining figures.[6]

Almost all of the many font packages available on CTAN adhere to one of these conventions, so figureversions works with all of them.

Even more fonts are supported with fontspec: Since the figureversions package simply maps commands like `\tbfigures` to the corresponding OpenType feature, the package works with any OpenType font that implements one or more of these features.

3.2 Interplay with other packages

Since this package defines the `\tbfigures` command to switch to tabular figures, this package plays well and – in some sense – enables the tabfigures package[7], which patches several LaTeX commands and environments to use tabular figures. If you are a document author who uses a font with proportional figures by default, the tabfigures package is warmly recommended (also used in this document for e.g. the table of contents).

As mentioned in the introduction, this package replaces the fontaxes package, which – as of version 1.1 – is just a wrapper around this package, adding some internal commands that have historically been used by package authors to define new figure styles. If you are the author of a package that depends on fontaxes, please consider updating you package to depend on this package instead, using the commands described in Section 2.3 to define additional figure styles if necessary.

References

[1] LaTeX Project Team: LaTeX 2ε font selection. `https://www.latex-project.org/help/documentation/fntguide.pdf`

[2] LaTeX News. Issue 31, February 2020. `https://www.latex-project.org/news/latex2e-news/ltnews31.pdf`

[6] Note that this scheme does not support different figure alignments.
[7] https://ctan.org/pkg/tabfigures