

# The `realscripts` package

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## 1 Introduction

OpenType fonts provide the possibility of using specially-drawn glyphs for subscript and superscript text.  $\LaTeX$  by default simply uses a smaller font size, which is acceptable if the font has optical sizes. Most fonts don't, however.

If you are using the `fontspec` package<sup>1</sup> to select OpenType fonts (or other sorts of fonts with the necessary font features), then loading this package will redefine the `\textsuperscript` and `\textsubscript` commands that take advantage of the OpenType font features.

The `\textsubsuperscript{<sub>}{<super>}` command is defined for typesetting superscripts above subscripts using the same approach. For symmetry, `\textsupersubscript{<super>}{<sub>}` is also provided. Options are available to specify the alignment of the sub- and super-scripts; see below.

## 2 Technical details

The old commands are defined in starred form (e.g., `\textsubscript*`) for cases where the new commands are not appropriate. The functionality of the starred and non-starred commands can also be accessed using the macros `\realsubscript`, `\realsuperscript`, `\fakesubscript`, and `\fakesuperscript`, in case another package (or you) redefine the original `\text...` commands.

This package will also patch the default  $\LaTeX$  footnote mechanism to use `\textsuperscript` automatically. You may change the font used to typeset the footnote numbers (by default it is the `\normalfont`) by redefining `\footnotemarkfont`; e.g.:

```
\renewcommand\footnotemarkfont{<font switch>}
```

and users of KOMA-Script may use instead

```
\setkomafont{footnotelabel}{<font switch>}
```

where `<font switch>` is a command such as `\sffamily` or a `fontspec` font defined with `\newfontfamily`.

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<sup>1</sup>The `fontspec` package requires  $\XeTeX$  or  $\LuaTeX$ .

Beware of other packages, however, that change the footnote mechanism. (Usually by redefining `\@makefnmark`.) I can often work around or work with such packages so `realscripts` cooperates gracefully with them; please report any conflicts to me.

### 3 Examples

Here is an example using the ‘Skia’ font of Mac OS X: (surrounded by ‘A’ and ‘Z’ for visual context)

```
\textsuperscript{...}    A abcdefghijklmnopqrstuvwxyz1234567890 Z
\textsubscript{...}     A abcdefghijklmnopqrstuvwxyz1234567890 Z
```

The original definitions are available in starred versions of the commands: (compare this example to that above to see why using these features is often desirable)

```
\textsuperscript*{...}  A abcdefghijklmnopqrstuvwxyz1234567890 Z
\textsubscript*{...}   A abcdefghijklmnopqrstuvwxyz1234567890 Z
```

When the font features are not available the commands will fall back on the standard technique of scaling down the text font: (this is Mac OS X’s ‘Didot’)

```
\textsuperscript{...}  A abcdefghijklmnopqrstuvwxyz1234567890 Z
\textsubscript{...}    A abcdefghijklmnopqrstuvwxyz1234567890 Z
```

But beware fonts that contain the necessary font features but lack the full repertoire of glyphs: (this is ‘Adobe Jenson Pro’)

```
\textsuperscript{...}  A abcdefghijklmnopqrstuvwxyz1234567890 Z
\textsubscript{...}    A abcdefghijklmnopqrstuvwxyz1234567890 Z
```

Finally, the ‘combined’ commands. Note the dimension available to add some extra space between the sub- and super-scripts, and the optional argument for specifying alignment.

```
\textsubsuperscript{...}{...}    A 789123456 Z
\setlength\subsupersep{2pt}      A 789123456 Z
\textsubsuperscript[c]{...}{...} A 456789123 Z
\textsubsuperscript[r]{...}{...} A 789123456 Z
```

## File I

# Implementation of realscripts

This is the package implementation. If you're only interested in the footnote re-definition, skip ahead to Section 4 on page 4.

```
1 \RequirePackage{fontspec}
2 \ExplSyntaxOn

\fake subscript The old ('fake') methods. Because \textsubscript is not defined in LATEX 2ε, we
\fake superscript either define it from scratch along with \textsuperscript (for consistency).
3 \DeclareDocumentCommand \fake subscript {m} {
4   \@textsubscript{\selectfont#1}
5 }
6 \DeclareDocumentCommand \fake superscript {m} {
7   \@textsuperscript{\selectfont#1}
8 }

\textsubscript These commands are either defined to create fake or real sub-/super-scripts if they
\textsubscript* are starred or not, respectively.
\textsuperscript
\textsuperscript*
9 \RenewDocumentCommand \textsubscript {s} {
10   \IfBooleanTF #1 \fake subscript \real subscript
11 }
12 \RenewDocumentCommand \textsuperscript {s} {
13   \IfBooleanTF #1 \fake superscript \real superscript
14 }

\real subscript The new subscript command to use rich font features if possible.
15 \DeclareDocumentCommand \real subscript {m} {
16   \fontspec_if_fontspec_font:TF {
For OpenType fonts, the subscript feature (subs) is used, but if that doesn't
exist then the scientific inferior feature (sinf) is used on the assumption that
something's better than nothing.
17     \fontspec_if_opentype:TF
18     { \fontspec_if_feature:nTF {+subs}
19       { \addfontfeature{VerticalPosition=Inferior}#1 }
20       { \fontspec_if_feature:nTF {+sinf}
21         { \addfontfeature{VerticalPosition=ScientificInferior}#1 }
22         { \fake subscript{#1} }
23       }
24     }
ATSUI fonts:
25     { \fontspec_if_aat_feature:nnTF {10} {2}
26       { \addfontfeature{VerticalPosition=Inferior}#1 }
27       { \fake subscript{#1} }
```

```

28   }
29   }

```

Non-fontspec fonts:

```

30   { \fakesubscript{#1} }
31   }

```

`\realsuperscript` The new superscript command to use rich font features if possible.

```

32 \DeclareDocumentCommand \realsuperscript {m} {
33   \fontspec_if_fontspec_font:TF
34   {

```

OpenType fonts:

```

35     \fontspec_if_opentype:TF
36     { \fontspec_if_feature:nTF {+sup}
37       { {\addfontfeature{VerticalPosition=Superior}#1} }
38       { \fakesuperscript{#1} }
39     }

```

ATSUI fonts:

```

40     { \fontspec_if_aat_feature:nnTF {10} {1}
41       { {\addfontfeature{VerticalPosition=Superior}#1} }
42       { \fakesuperscript{#1} }
43     }
44   }

```

Non-fontspec fonts:

```

45   { \fakesuperscript{#1} }
46   }

```

## 4 Patching footnotes

`\@makefnmark` This is the command used to typeset the ‘footnote mark’. Feel free to redefine it as necessary for your own purposes.

```

47 \cs_set:Npn \@makefnmark {
48   \mbox{\footnotemarkfont\textsuperscript{\@thefnmark}}
49 }

```

We define a `\footnotemarkfont` that is used to style the number used for the footnote, which by default is simply `\normalfont` (following L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub>’s default). If KOMA-Script is being used, we use their hook for the footnotemark font instead.

```

50 \cs_if_exist:NTF \ftntm@font
51 {
52   \cs_new:Npn \footnotemarkfont {\ftntm@font}
53 }
54 {
55   \cs_new:Npn \footnotemarkfont {\normalfont}
56 }

```

## 5 sub+super

`\textsubsuperscript`    Although the implementation below would be fine outside of this package too, no  
`\textsupersubscript`    point writing yet another small package.

```

57 \DeclareDocumentCommand \textsubsuperscript {s 0{1} mm} {
58   \leavevmode
59   \group_begin:
60   \IfBooleanTF #1
61   {
62     \hbox_set:Nn \l_tmpa_box {\textsubscript*{#3}}
63     \hbox_set:Nn \l_tmpb_box {\textsuperscript*{#4}}
64   }
65   {
66     \hbox_set:Nn \l_tmpa_box {\textsubscript{#3}}
67     \hbox_set:Nn \l_tmpb_box {\textsuperscript{#4}}
68   }
69   \hbox_set:Nn \l_tmpa_box
70     { \box_move_down:nn \subsupersep {\box_use:N \l_tmpa_box} }
71   \hbox_set:Nn \l_tmpb_box
72     { \box_move_up:nn \subsupersep {\box_use:N \l_tmpb_box} }
73   \str_case:nnF {#2}
74   {
75     {l}{\use_i:nnn}
76     {c}{\use_ii:nnn}
77     {r}{\use_iii:nnn}
78   }
79   {
80     \PackageWarning{realscripts}{
81       Unknown~alignment~option~`#2'. \MessageBreak
82       One~ of~ `l',~ `c',~ `r',~ only
83     }
84     \use_i:nnn
85   }
Left aligned:
86   {
87     \hbox_overlap_right:n { \box_use:N \l_tmpa_box }
88     \hbox_overlap_right:n { \box_use:N \l_tmpb_box }
89     \skip_horizontal:n {
90       \dim_max:nn {\box_wd:N \l_tmpa_box} {\box_wd:N \l_tmpb_box}
91     }
92   }
Center aligned: (for completeness)
93   {
94     \dim_compare:nTF { \box_wd:N \l_tmpa_box > \box_wd:N \l_tmpb_box }
95     {
96       \skip_horizontal:n {

```

```

97     0.5\box_wd:N \l_tmpa_box-0.5\box_wd:N \l_tmpb_box
98   }
99   \box_use:N \l_tmpb_box
100  \skip_horizontal:n {
101    -0.5\box_wd:N \l_tmpa_box-0.5\box_wd:N \l_tmpb_box
102  }
103  \box_use:N \l_tmpa_box
104 }
105 {
106  \skip_horizontal:n {
107    0.5\box_wd:N \l_tmpb_box-0.5\box_wd:N \l_tmpa_box
108  }
109  \box_use:N \l_tmpa_box
110  \skip_horizontal:n {
111    -0.5\box_wd:N \l_tmpb_box-0.5\box_wd:N \l_tmpa_box
112  }
113  \box_use:N \l_tmpb_box
114 }
115 }

```

Right aligned:

```

116 {
117  \skip_horizontal:n {
118    \dim_max:nn {\box_wd:N \l_tmpa_box} {\box_wd:N \l_tmpb_box}
119  }
120  \hbox_overlap_left:n { \box_use:N \l_tmpa_box }
121  \hbox_overlap_left:n { \box_use:N \l_tmpb_box }
122 }
123 \group_end:
124 }
125 \DeclareDocumentCommand \textsupersubscript {s 0{1} mm} {
126  \IfBooleanTF #1
127  { \textsubsuperscript * [#2] {#4} {#3} }
128  { \textsubsuperscript  [#2] {#4} {#3} }
129 }
130 \dim_new:N \subsupersep

```

Fin.