The `realscripts` package

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1 Introduction

OpenType fonts provide the possiblity 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[1] to select OpenType fonts (or other sorts of fonts with the necessary font features), then loading this package will provide versions of 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 new 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 wish to) 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

```
\setfkomafont{footnotelabel}{⟨font switch⟩}
```

where ⟨*font switch*⟩ is a command such as `\sffamily` or a `fontspec` font defined with `\newfontfamily`.

[1] The `fontspec` package requires XeLaTeX or LuaLaTeX.

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{…}
\textsubscript{…}
```

A abcdefghijklmnopqrstuvwxyz1234567890 Z
A abcdefghijklmnopqrstuvwxyz1234567890 Z

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

```
\textsuperscript*{…}
\textsubscript*{…}
```

A abcdefghijklmnopqrstuvwxyz1234567890 Z
A abcdefghijklmnopqrstuvwxyz1234567890 Z

When the glyphs 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{…}
\textsubscript{…}
```

A abcdefghijklmnopqrstuvwxyz1234567890 Z
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{…}
\textsubscript{…}
```

A abcdefghijklmnopqrstuvwxyz1234567890 Z
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. for specifying alignment

```
\textsubsuperscript{…}{…}
\setlength\subsupersep{2pt}
\textsubsuperscript[c]{…}{…}
\textsubsuperscript[r]{…}{…}
```

A 789 123456 Z
A 789 123456 Z
A 456789 123 Z
A 789 123456 Z

File I
Implementation of realscripts

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

```
\RequirePackage{fontspec}
\ExplSyntaxOn
```

`\fakesubscript` `\fakesuperscript` The old ('fake') methods. Because `\textsubscript` is not defined in LaTeX 2_ε, we either define it from scratch along with `\textsuperscript` (for consistency).

```
\DeclareDocumentCommand \fakesubscript {m} {
  \@textsubscript{\selectfont#1}
}
\DeclareDocumentCommand \fakesuperscript {m} {
  \@textsuperscript{\selectfont#1}
}
```

`\textsubscript` `\textsubscript*` `\textsuperscript` `\textsuperscript*` These commands are either defined to create fake or real sub-/super-scripts if they are starred or not, respectively.

```
\RenewDocumentCommand \textsubscript {s} {
    \IfBooleanTF #1 \fakesubscript \realsubscript
}
\RenewDocumentCommand \textsuperscript {s} {
    \IfBooleanTF #1 \fakesuperscript \realsuperscript
}
```

`\realsubscript` The new subscript command to use rich font features if possible.

```
\DeclareDocumentCommand \realsubscript {m} {
  \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.

```
    \fontspec_if_opentype:TF
    { \fontspec_if_feature:nTF {+subs}
        { {\addfontfeature{VerticalPosition=Inferior}#1} }
        { \fontspec_if_feature:nTF {+sinf}
            { {\addfontfeature{VerticalPosition=ScientificInferior}#1} }
            { \fakesubscript{#1} }
        }
    }
```

ATSUI fonts:

```
    { \fontspec_if_aat_feature:nnTF {10} {2}
        { {\addfontfeature{VerticalPosition=Inferior}#1} }
        { \fakesubscript{#1} }
```

```
    }
  }
```

Non-fontspec fonts:

```
  { \fakesubscript{#1} }
}
```

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

```
\DeclareDocumentCommand \realsuperscript {m} {
  \fontspec_if_fontspec_font:TF
  {
```

OpenType fonts:

```
    \fontspec_if_opentype:TF
    { \fontspec_if_feature:nTF {+sups}
      { {\addfontfeature{VerticalPosition=Superior}#1} }
      { \fakesuperscript{#1} }
    }
```

ATSUI fonts:

```
    { \fontspec_if_aat_feature:nnTF {10} {1}
      { {\addfontfeature{VerticalPosition=Superior}#1} }
      { \fakesuperscript{#1} }
    }
  }
```

Non-fontspec fonts:

```
  { \fakesuperscript{#1} }
}
```

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.

```
\cs_set:Npn \@makefnmark {
  \mbox{\footnotemarkfont\textsuperscript{\@thefnmark}}
}
```

We define a `\footnotemarkfont` that is used to style the number used for the footnote, which by default is simply `\normalfont` (following LaTeX 2_ε's default). If `KOMA-Script` is being used, we use their hook for the footnotemark font instead.

```
\cs_if_exist:NTF \ftntm@font
{
  \cs_new:Npn \footnotemarkfont {\ftntm@font}
}
{
  \cs_new:Npn \footnotemarkfont {\normalfont}
}
```

5 sub+super

\textsubsuperscript
\textsupersubscript

Although the implementation below would be fine outside of this package too, no point writing yet another small package. Or is there?

```
\DeclareDocumentCommand \textsubsuperscript {s O{l} mm} {
  \group_begin:
  \IfBooleanTF #1
  {
    \hbox_set:Nn \l_tmpa_box {\textsubscript*{#3}}
    \hbox_set:Nn \l_tmpb_box {\textsuperscript*{#4}}
  }
  {
    \hbox_set:Nn \l_tmpa_box {\textsubscript{#3}}
    \hbox_set:Nn \l_tmpb_box {\textsuperscript{#4}}
  }
  \hbox_set:Nn \l_tmpa_box
    { \box_move_down:nn \subsupersep {\box_use:N \l_tmpa_box} }
  \hbox_set:Nn \l_tmpb_box
    { \box_move_up:nn \subsupersep {\box_use:N \l_tmpb_box} }
  \prg_case_str:nnn {#2}
  {
    {l}{\use_i:nnn}
    {c}{\use_ii:nnn}
    {r}{\use_iii:nnn}
  }
  {
    \PackageWarning{realscripts}{
      Unknown~alignment~option~`#2'. \MessageBreak
      One~ of~ `l',~ `c',~ `r',~ only
    }
    \use_i:nnn
  }
```

Left aligned:

```
  {
    \hbox_overlap_right:n { \box_use:N \l_tmpa_box }
    \hbox_overlap_right:n { \box_use:N \l_tmpb_box }
    \skip_horizontal:n {
      \dim_max:nn {\box_wd:N \l_tmpa_box} {\box_wd:N \l_tmpb_box}
    }
  }
```

Center aligned: (for completeness)

```
  {
    \dim_compare:nTF { \box_wd:N \l_tmpa_box > \box_wd:N \l_tmpb_box }
    {
      \skip_horizontal:n {
        0.5\box_wd:N \l_tmpa_box-0.5\box_wd:N \l_tmpb_box
```

```
      }
      \box_use:N \l_tmpb_box
      \skip_horizontal:n {
        -0.5\box_wd:N \l_tmpa_box-0.5\box_wd:N \l_tmpb_box
      }
      \box_use:N \l_tmpa_box
    }
    {
      \skip_horizontal:n {
        0.5\box_wd:N \l_tmpb_box-0.5\box_wd:N \l_tmpa_box
      }
      \box_use:N \l_tmpa_box
      \skip_horizontal:n {
        -0.5\box_wd:N \l_tmpb_box-0.5\box_wd:N \l_tmpa_box
      }
      \box_use:N \l_tmpb_box
    }
  }
```

Right aligned:

```
  {
    \skip_horizontal:n {
      \dim_max:nn {\box_wd:N \l_tmpa_box} {\box_wd:N \l_tmpb_box}
    }
    \hbox_overlap_left:n { \box_use:N \l_tmpa_box }
    \hbox_overlap_left:n { \box_use:N \l_tmpb_box }
  }
  \group_end:
}
\DeclareDocumentCommand \textsupersubscript {s O{l} mm} {
  \textsubsuperscript #1 [#2] {#3} {#2}
}
\dim_new:N \subsupersep
```

Until these are available in expl3:

```
\cs_set:Nn \dim_max:nn {
  \dim_compare:nTF {#1>#2} {#1} {#2}
}
\cs_set:Nn \dim_min:nn {
  \dim_compare:nTF {#2>#1} {#1} {#2}
}
```

Fin.