

The L^AT_EX 2_ε package `ccfonts`

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1 Prerequisites

In order to make use of the package `ccfonts`, the following fonts and `.fd` files are required:

- The Concrete text fonts with traditional encoding (CTAN: `fonts/concrete/`)

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- The Concrete text fonts with European encoding (CTAN: `fonts/ecc/`)
- The mathematical Concrete fonts (CTAN: `fonts/concmath/`)
- The `.fd` files for the traditional and mathematical Concrete fonts (CTAN: `macros/latex/contrib/supported/concmath/`)
- The `.fd` files for the European Concrete fonts, which are distributed and installed in conjunction with the `ccfonts` package

On CTAN the fonts are available in METAFONT format. The Concrete typefaces are also provided in Type1 format from Micropress Inc, see <http://www.micropress-inc.com>.

2 Using the package

The L^AT_EX macro package `ccfonts` supports typesetting with the font family ‘Concrete’. Loading this package through

```
\usepackage{ccfonts}
```

will effect the following:

- The default roman font family is changed to `ccr`, i.e. Concrete.
- The default leading (`\baselineskip`) for the font sizes 8–12 pt is increased slightly.
- The ‘Concrete’ fonts are used in math mode, too.
- The packages `amsfonts` or `amssymb`, if loaded additionally, will use the Concrete versions of the AMS symbol fonts.

Notice that you may still have to specify the option `psamsfonts` for these packages, so as to prevent them from using design sizes of the Euler Fraktur fonts, which may be unavailable within your TeX system; this works flawlessly with version 1.1 of the `ccfonts` package now. (You need not care for this subject, unless Euler Fraktur is actually used.)

2.1 Package options

`boldsans` The semibold series of CM Sans is used as a replacement for the missing bold series of Concrete. (The default behaviour is to use the bold extended version of CM Roman.)

`standard-baselineskips` disables the increased leading. This can be useful, e.g., when typesetting in narrow columns.

`exscale` implements scaling of the math extension font. For a discussion of this feature see the file `exscale.dtx`.

`slantedGreek` makes uppercase Greek letters slanted by default. Regardless of this option, the new commands `\upDelta` and `\upOmega` will always produce an upright Δ and Ω .

2.2 Font encoding

The package does *not* change the default output font encoding from OT1. Switching to the extended T1 and TS1 encodings needs the following additional commands:

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

3 Known problems

- There are no bold math fonts available.
- In order to enlarge the default `\baselineskip`, the size-changing macros have been redefined, and they are no longer as robust as the original definitions. This may result in L^AT_EX errors with ‘moving arguments’. As a workaround, you may protect any font-related commands in moving arguments with a `\protect` command. In case this does not help, the package should be loaded with the option `standard-baselineskips` which will prevent the commands from being redefined; you will, however, have to care for an appropriate line spacing by other means then.

4 NFSS classification of the Concrete typefaces

encoding	family	series	shape(s)
<i>Concrete</i>			
OT1, T1, TS1	ccr	m	n, sl, it, sc
OT1	ccr	c	sl
<i>Concrete Math</i>			
OML	ccm	m	it
OMS	ccsy	m	n
OMX	ccex	m	n
<i>Concrete AMS A, B</i>			
U	msa	m	n
U	msb	m	n

Notice, that

- the series c (condensed) is available as slanted and with a font size of 9 pt only;
- the Concrete AMS fonts are only defined through the package `ccfonts`, i.e., there are no related `.fd` files.

5 Implementation

5.1 Font setup for text mode

We make `ccr` the default font family:

```
1 (*package)
2 \renewcommand{\rmdefault}{ccr}
```

The `\baselineskip` should be larger than with CM Roman. In order to overwrite the `\baselineskip` defined in the commands like `\normalsize`, `\small`, etc., we use a trick from Frank Jensen's package `beton`. First we set up a table containing our `\baselineskip` values:

```
3 \def\cc@baselineskip@table
4   {<\@viiipt>10<\@ixpt>11.5<\@xpt>13<\@xipt>14.5<\@xiipt>16}
```

All the standard L^AT_EX size-changing commands (`\small`, `\large`, etc.) are defined in terms of the `\@setfontsize` macro. This macro is called with the following three arguments: `#1` is the size-changing command; `#2` is the font size; `#3` is the `\baselineskip` value. We modify this macro to check the above `\cc@baselineskip@table` for an alternative `\baselineskip` value:

```
5 \def\cc@setfontsize#1#2#3%
6   {\edef\@tempa{\def\noexpand\@tempb####1<#2}%
7    \@tempa>##2<##3\@nil{\def\cc@baselineskip@value{##2}}%
8    \edef\@tempa{\noexpand\@tempb\cc@baselineskip@table<#2}%
9    \@tempa><\@nil
10   \ifx\cc@baselineskip@value\@empty
11     \def\cc@baselineskip@value{#3}%
12   \fi
13   \old@setfontsize{#1}{#2}\cc@baselineskip@value}
```

Now we redefine `\@setfontsize`:

```
14 \let\old@setfontsize=\@setfontsize
15 \let\@setfontsize=\cc@setfontsize
```

5.2 Options

5.2.1 Standard leading

The `\baselineskip` values specified in the above table should be appropriate for most purposes, i.e., for one-column material in the normal article/report/book formats. However, it is sometimes desirable to use a

smaller value for `\baselineskip`, e. g. in two-column material. We therefore provide an option to turn off the above automatic mechanism for `\baselineskip` settings:

```
16 \DeclareOption{standard-baselineskips}{%
17 \let\@setfontsize=\old@setfontsize}
```

5.2.2 The option `exscale`

The code is simply copied from `exscale.sty`, with `xcex` instead of `cmex`.

```
18 \DeclareOption{exscale}{
19 \DeclareFontFamily{OMX}{ccex}{}
20 \DeclareFontShape{OMX}{ccex}{m}{n}{%
21 <-8>sfixed*xcex7%
22 <8>xcex8%
23 <9>xcex9%
24 <10><10.95><12><14.4><17.28><20.74><24.88>xcex10%
25 }{}
26 \newdimen\big@size
27 \addto@hook\every@math@size{\setbox\z@\vbox{\hbox{${}$}\kern\z@}%
28 \global\big@size 1.2\ht\z@}
29 \def\bigg@#1#2{%
30 {\hbox{${}\left#2\center to#1\big@size{}\right.\n@space$}}
31 \def\big{\bBigg@\@ne}
32 \def\Big{\bBigg@\@1.5}
33 \def\bigg{\bBigg@\@tw@}
34 \def\Bigg{\bBigg@\@2.5}
35 }
```

5.2.3 The option `slantedGreek`

```
36 \let\upDelta\Delta
37 \let\upOmega\Omega
38 \DeclareOption{slantedGreek}{%
39 \DeclareMathSymbol{\Gamma}{\mathalpha}{letters}{0}
40 \DeclareMathSymbol{\Delta}{\mathalpha}{letters}{1}
41 \DeclareMathSymbol{\Theta}{\mathalpha}{letters}{2}
42 \DeclareMathSymbol{\Lambda}{\mathalpha}{letters}{3}
43 \DeclareMathSymbol{\Xi}{\mathalpha}{letters}{4}
44 \DeclareMathSymbol{\Pi}{\mathalpha}{letters}{5}
45 \DeclareMathSymbol{\Sigma}{\mathalpha}{letters}{6}
46 \DeclareMathSymbol{\Upsilon}{\mathalpha}{letters}{7}
47 \DeclareMathSymbol{\Phi}{\mathalpha}{letters}{8}
48 \DeclareMathSymbol{\Psi}{\mathalpha}{letters}{9}
49 \DeclareMathSymbol{\Omega}{\mathalpha}{letters}{10}
50 }
```

5.3 The option `boldsans`

```
51 \DeclareOption{boldsans}{%
```

```
52 \renewcommand{\bfdefault}{sbc}}
```

5.3.1 Processing options

Note that `\old@setfontsize` must have been defined before!

```
53 \ProcessOptions\relax
```

5.4 Font setup for math mode

```
54 \DeclareSymbolFont {operators} {OT1}{ccr} {m}{n}
55 \DeclareSymbolFont {letters} {OML}{ccm} {m}{it}
56 \DeclareSymbolFont {symbols} {OMS}{ccsy}{m}{n}
57 \DeclareSymbolFont {largesymbols}{OMX}{ccex}{m}{n}
58 \DeclareMathAlphabet{\mathbf} {OT1}{ccr}{bx}{n}
59 \DeclareMathAlphabet{\mathit} {OT1}{ccr} {m}{it}
```

In case the package `amsfonts` is loaded additionally, we must ensure that the Concrete versions of the AMS symbol fonts are used. We execute the font definitions `AtBeginDocument`, so that loading `amsfonts` with the option `psamsfonts` cannot do any harm. Notice that the option may be required for getting the Euler Fraktur fonts right.

```
60 \AtBeginDocument{
61   \DeclareFontFamily{U}{msa}{}
62   \DeclareFontShape{U}{msa}{m}{n}{%
63     <5><6><7><8><9><10>gen*xccam%
64     <10.95><12><14.4><17.28><20.74><24.88>xccam10}{-}
65   \DeclareFontFamily{U}{msb}{}
66   \DeclareFontShape{U}{msb}{m}{n}{%
67     <5><6><7><8><9><10>gen*xccbm%
68     <10.95><12><14.4><17.28><20.74><24.88>xccbm10}{-}
69 }
```

5.5 Initialization

We ensure that any package loaded after `ccfonts` will find the new value of `\baselineskip`.

```
70 \normalsize
71 \endpackage
```

The next line of code prevents `DocStrip` from adding the character table to all modules:

```
72 \endinput
```