

Linear Logic symbols for Computer Modern

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1 Documentation

1.1 Installation

The installation consists in copying the `.mf` files from the `mf` subdirectory somewhere in Metafont's search path and the `.sty` and `.fd` files from the `latex` subdirectory somewhere in L^AT_EX's search path.

Call `TEXMF` the base directory of your installation (on Unix this should be something like `/usr/share/texmf` or `~/texmf` for a single user installation). Then copy the directories as follows:

- copy `mf` as `TEXMF/fonts/source/public/cmll`
- copy `latex` as `TEXMF/tex/latex/cmll`

If you want to install the fonts in Type1 format:

- copy `type1` as `TEXMF/fonts/type1/public/cmll`
- copy `tfm` as `TEXMF/fonts/tfm/public/cmll`
- copy `cmll.map` as `TEXMF/fonts/map/dvips/misc/cmll.map`

You may have to update T_EX's databases by running `texhash` or `mktexlsr` (this is for Kpathsea-based distributions like t_EX) or a similar command.

1.2 Package loading

The package is loaded by simply saying `\usepackage{cmll}`. The variant of the font that should be used is chosen using the following package options:

<code>cm</code>	Computer Modern serif
<code>ss</code>	Computer Modern sans serif
<code>euler</code>	AMS Euler
<code>auto</code>	automatic selection (default)

Automatic selection is done by looking at the loaded packages and the current font settings. Note that this works only when `cmll` is loaded *after* changing those settings.

1.3 Symbols

The `cmll` font defines a handful of symbols useful in linear logic that were not defined in other fonts and packages.

Unary operators:

$!$	<code>\oc</code>	$?$	<code>\wn</code>
\downarrow	<code>\shpos</code>	\uparrow	<code>\shneg</code>
\Updownarrow	<code>\shift</code>		

Binary operators:

\wp	<code>\parr</code>	$\&$	<code>\with</code>
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Large operators:

\P	<code>\bigparr</code>	$\&$	<code>\bigwith</code>
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Binary relations:

\subset	<code>\coh</code>	\frown	<code>\scoh</code>
\supset	<code>\incoh</code>	\smile	<code>\sincoh</code>

The symbols $!$, $?$ and $\&$ are actually characters from the standard Computer Modern fonts declared with a new math code to get proper spacing. See the following examples:

$A \wp B$	$A \& B$	$A \wp B$	$A \& B$
$A = !B$	$A = !B$	$A = \oc B$	$A = !B$
$A = ?B$	$A = ?B$	$A = \wn B$	$A = ?B$

2 Files

2.1 This document

```

1 <*driver>
2 \documentclass{ltxdoc}
3 \usepackage{array,cmll}
4 \newenvironment{symbols}[1]{%
5   \par%
6   \def\dosymbol##1{\leavevmode\hbox to .5\textwidth{%
7     \kern.25\textwidth \hbox to 2em{\hss$##1$\hfil}}%
8     \texttt{\string##1}\hss}\penalty10}%
9   \flushleft%
10  #1\strut\\}\endflushleft}
11 \begin{document}
12 \DocInput{cmll.dtx}
13 \end{document}
14 </driver>

```

2.2 Font definitions

The font definition file is deduced from the ones for Computer Modern. We provide an NFSS entry named `cmllr` in medium and bold extended versions.

```

15 <*ucmllr>
16 \DeclareFontShape{U}{cmllr}{m}{n}{%

```

```

17      <5><6><7><8><9>gen*cml1r%
18      <10->cml1r10}{%
19 \DeclareFontShape{U}{cml1r}{bx}{n}{%
20      <5><6><7><8><9>gen*cml1bx%
21      <10->cml1bx10}{%
22 \ucml1r

```

The following is a definition for the sans-serif version, named `cml1ss`.

```

23 (*ucml1ss)
24 \DeclareFontShape{U}{cml1ss}{m}{n}{%
25      <-8>cml1ss8%
26      <9>cml1ss9%
27      <10->cml1ss10}{%
28 \DeclareFontShape{U}{cml1ss}{bx}{n}{%
29      <->cml1ssbx10}{%
30 \ucml1ss

```

The following is a definition for the Euler-style version, named `eull`.

```

31 (*ueull)
32 \DeclareFontShape{U}{eull}{m}{n}{%
33      <5><6><7><8><9>gen*eullr%
34      <10->eullr10}{%
35 \DeclareFontShape{U}{eull}{bx}{n}{%
36      <5><6><7><8><9>gen*eullbx%
37      <10->eullbx10}{%
38 \ueull

```

2.3 The package

```

39 (*package)
40 \NeedsTeXFormat{LaTeX2e}
41 \ProvidesPackage{cml1}[2006/02/22 Linear Logic symbols for Computer Modern]

```

The font is declared as a symbol font named `l1symbols`, in normal and bold versions. We provide package options to switch between the standard, sans-serif and Euler-style variants.

```

42 \def\cml1@style{auto}
43 \DeclareOption*{\edef\cml1@style{\CurrentOption}}
44 \ProcessOptions\relax

```

The following code is used to detect which family should be used. Euler is detected if its package is loaded, sans-serif is detected by looking at the default font family name.

```

45 \RequirePackage{ifthen}
46 \def\cml1@use@auto{%
47   \ifpackageloaded{euler}{%
48     \def\cml1@style{euler}}{%
49     \ifthenelse{\equal{\rmdefault}{cmss}}{%
50       \def\cml1@style{ss}}{%
51       \def\cml1@style{cm}}}%
52   \csname cml1@use@\cml1@style\endcsname}

```

The following macros are used to set up the font families and symbols from other fonts.

```

53 \def\cml1@use@cm{%

```

```

54 \DeclareSymbolFont{llsymbols}{U}{cml1r}{m}{n}%
55 \SetSymbolFont{llsymbols}{bold}{U}{cml1r}{bx}{n}%
56 \DeclareMathSymbol{\with}{\mathbin}{operators}{'\&}%
57 \DeclareMathSymbol{\oc}{\mathord}{operators}{'!}%
58 \DeclareMathSymbol{\wn}{\mathord}{operators}{'?}%

```

Here is the sans-serif variant.

```

59 \def\cml1@use@ss{%
60 \DeclareSymbolFont{llsymbols}{U}{cml1ss}{m}{n}%
61 \SetSymbolFont{llsymbols}{bold}{U}{cml1ss}{bx}{n}%
62 \DeclareMathSymbol{\with}{\mathbin}{operators}{'\&}%
63 \DeclareMathSymbol{\oc}{\mathord}{operators}{'!}%
64 \DeclareMathSymbol{\wn}{\mathord}{operators}{'?}%

```

And here is the Euler variant.

```

65 \def\cml1@use@euler{%
66 \DeclareSymbolFont{llsymbols}{U}{eull}{m}{n}%
67 \SetSymbolFont{llsymbols}{bold}{U}{eull}{bx}{n}%
68 \DeclareMathSymbol{\with}{\mathbin}{EulerFraktur}{"26}%
69 \DeclareMathSymbol{\oc}{\mathord}{EulerFraktur}{"21}%
70 \DeclareMathSymbol{\wn}{\mathord}{EulerFraktur}{"3F}%

```

Finally we activate the proper variant.

```

71 \csname cml1@use@\cml1@style\endcsname

```

The new symbol definitions are the same for all variants.

```

72 \DeclareMathSymbol{\parr}{\mathbin}{llsymbols}{0}
73 \DeclareMathSymbol{\shpos}{\mathord}{llsymbols}{1}
74 \DeclareMathSymbol{\shneg}{\mathord}{llsymbols}{2}
75 \DeclareMathSymbol{\shift}{\mathord}{llsymbols}{3}
76 \DeclareMathSymbol{\coh}{\mathrel}{llsymbols}{4}
77 \DeclareMathSymbol{\scoh}{\mathrel}{llsymbols}{5}
78 \DeclareMathSymbol{\incoh}{\mathrel}{llsymbols}{6}
79 \DeclareMathSymbol{\sincoh}{\mathrel}{llsymbols}{7}
80 \DeclareMathSymbol{\bigwith}{\mathop}{llsymbols}{8}
81 \DeclareMathSymbol{\bigparr}{\mathop}{llsymbols}{10}
82 \end{package}

```