The esrelation Package

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v 0.9 30/04/2015

1 Installation

The program termination problem, also known at the uniform halting problem, can be defined as: Using a finite amount of time: determine whether a given program will always finish running or could possibly execute forever.

The Metafont programming and \TeX\ 2\ε package writing and \TeX\macro programming (especially the \TeX\macro programming) required to produce these symbols looked like it might, itself, never end. It took more than a year of work in fits and starts to understand how the jalopy of bits and pieces go together to make a font work with \LaTeX. The Comprehensive \TeX\ 2\ε Symbol List (http://www.ctan.org/tex-archive/info/symbols/comprehensive/) does not currently include this set, but on completion all of these files will be ready to upload in the correct formats for inclusion. These are implemented as a standard \TeX\ math symbol font, implemented with custom Metafont sources, rendered on-the-fly as needed by \LaTeX\ 2\ε. Also provided in this package is a PostScript Type 1 version of the font. Symbols are accessed through macros defined in this package.

Installation involves copying the supplied files to their designated places within \TeX\‘s search path and updating \TeX\‘s databases.

1. First, you need to find the folder texmf-local (on Unix the default is /usr/local/texlive/texmf-local). To do that, run:

   kpsewhich --var-value TEXMFLOCAL

   Subsequently, this directory will be referred to as TEXMFLOCAL.

2. Run \TeX\ on esrelation.ins. Copy the files into the following directories, creating subdirectories as necessary:

   • copy esrelation.sty and uesrelation.fd to:
     TEXMFLOCAL/tex/latex/esrelation
   • copy esrelation.mf and esrelation10.mf to:
     TEXMFLOCAL/fonts/source/public/esrelation

   If you also want to install the fonts in \TeX\ version:

   • copy esrelation10.pfb to:
     TEXMFLOCAL/fonts/type1/public/esrelation

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• copy esrelation.map to:
  TEXMFLOCAL/fonts/map/dvips/esrelation

  Note that all created directories should be set to mode 755 and all files
  should be set to mode 644.

3. Update your \LaTeX font database. This is called the ls-r and lives in a few
   places. Fortunately, you can just run this, likely as sudo or root (-H sets
   HOME for the sudo environment):

   sudo -H mktexlsr

4. Update your \TeX font map by running the command:

   sudo -H updmap-sys --enable Map=esrelation.map

5. Update the font database again:

   sudo -H mktexlsr

6. Open \LaTeX, and start relating.

2 Using esrelation

Load the package with \usepackage{esrelation}. Available symbols to be used
from math mode:

\relationrightproject \overline{A, Z}
\relationleftproject \overline{A, Z}]
\relationlifting \overline{A, Z}
\restrictwand \iota
def 0 \neq 1
\restrictwandup \iota
def 0 \neq 1
\restrictbarb \mathcal{R}
def 0 \neq 1
\restrictbarbup \mathcal{R}
def 0 \neq 1
\restrictmallet \mathcal{Z}
def 0 \neq 1
\restrictmalletup \mathcal{Z}
def 0 \neq 1
\[ \sqrt[3]{R_A} \]
\[ (0, 1) \]
\[ 0, 1 \]
\[ (0, 1) \]
\[ \overrightarrow{1, 1} \]
\[ x > 1, \ x = 0 \]
\[ (x, X_i) \]
\[ \overrightarrow{i, R} \]
\[ X_i \ X_i^2 \ X_i^\infty \]
\[ X_i \]
\[ X_i \]
End. Try some more combinations now that it’s running.