Math Alphabets Derived From newpx and newtx

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1 Overview

The txfonts and pxfonts packages, both created by Young Ryu but no longer under active development, provide fairly complete typesetting environments based on the Times and Palatino text font families respectively. Other packages (e.g., txgreeks, providing the option of upright or slanted Greek letters) extend the range of coverage of its macros.

These packages contain some interesting math alphabets. The script alphabet glyphs (upper case only) seem to be identical to those in Mathematica5, but the Fraktur font common to both packages is, as far as I can tell, distinct from the Fraktur of other major math font packages, and worthy of note. Blackboard bold comes in two different versions in txfonts (openface and double-struck) and in yet another double-struck version in pxfonts. The double-struck alphabets are similar in overall style to those in mathpazo and Mathematica7, with stems a mix of double-struck, regular weight and solid bold.

The original plan was to provide virtual fonts for all these alphabets, plus packages that allow them to be used in stand-alone fashion and as part of the mathalfa package.

In the decade since this package was first released, some changes have been made to the original alphabets, most notably:

- the Fraktur fonts have been modified so that they now match the weight of Times-like fonts rather than lighter fonts such as Computer Modern;
- The secondary Blackboard Bold font provided with newtx, with uppercase letters of the form ABCDEXYZ has been extended with full lowercase plus dotlessi and dotlessj, like abcdexyz.

The package contains the following files:

Virtual fonts (.tfm and .vf):

- txr-cal Regular weight calligraphic from txfonts and pxfonts.
- txb-cal Bold weight calligraphic from txfonts and pxfonts.
- txr-frak Regular weight fraktur from txfonts and pxfonts.
- txb-frak Bold weight fraktur from txfonts and pxfonts.
- txr-of Regular weight openface from txfonts.
- txb-of Bold weight openface from txfonts.
- txr-ds Regular weight double-struck from txfonts.
- pxx-ds Regular weight double-struck from pxfonts.
- pxb-ds Bold weight double-struck from pxfonts.
Font definition (.fd) files:

- utx-cal.fd  Regular and bold weights, calligraphic.
- ot1tx-frak.fd  Regular and bold weights, fraktur.
- utx-of.fd  Regular and bold weights, openface.
- ot1tx-ds.fd  Regular weight double-struck from txfonts.
- upx-ds.fd  Regular and bold weights, double-struck from pxfonts.

Style files:

- ptxtx-cal.sty  Load regular and bold weights, calligraphic.
- ptxtx-frak.sty  Load regular and bold weights, fraktur.
- tx-of.sty  Load regular and bold weights, openface.
- tx-ds.sty  Load regular weight double-struck from txfonts.
- px-ds.sty  Load regular and bold weights, double-struck from pxfonts.

(Only ptxtx-frak.sty and tx-ds.sty have been modified since the original versions.) When loaded following loading other math sty files, these will replace one of the math alphabets. For example, tx-ds.sty will redefine \mathbb and its associated special characters, like \bbdotlessi, to use the double-struck glyphs from newtx.

2 The interesting font files

The files (.afm and .pfb) with glyphs of interest are:

- txmiaX, txbmiaX---Fraktur (UC, lc) and Double-Struck (regular weight only)
- tksy, txbsy---Calligraphic (UC)
- txsyb, txbsyb---Openface (UC)
- pxsyb, pxbsyb---Double-Struck (UC)

This package depends on txfonts and pxfonts. It will not function unless the map files txfonts.map and pxfonts.map are enabled. This is the default in \TeX{} Live installations.

On the other hand, the metrics for the math alphabets in this collection have been adjusted and do not have the problems of the originals. This is a matter of personal taste, and may not suit yours. Sorry—there is no way to allow simple user-configured settings for these parameters.

The easiest way to use the fonts in this package is mathalpha, aka mathalfa, the latest version of which builds in support for these alphabets. For font samples, see the documentation for that package.