BOONDOX math alphabets

Michael Sharpe
msharpe at ucsd dot edu

The BOONDOX fonts are PostScript versions of subsets of the STIX fonts corresponding to regular and bold weights of three alphabets—calligraphic, fraktur and double struck, AKA blackboard bold. Support files are provided so that they can be called up from LaTeX math mode using the commands `\mathcal`, `\mathbcal`, `\mathfrak`, `\mathbfrak`, `\mathbb` and `\mathbbb`. The font family name derives from the fact that, at least in the US, the phrase "in the boondox" implies "in the stix."

The base PostScript fonts were constructed from STIXGeneral.otf and STIXGeneralBol.otf using a FontForge script, resulting in

```
zxxrl8a.pfb % BOONDOXDoubleStruck-Regular
zxxbl8a.pfb % BOONDOXDoubleStruck-Bold
zxxrw8a.pfb % BOONDOXCalligraphic-Regular
zxxbw8a.pfb % BOONDOXCalligraphic-Bold
zxxrf8a.pfb % BOONDOXFraktur-Regular
zxxbf8a.pfb % BOONDOXFraktur-Bold
```

together with the corresponding `.afm` files. (The names are almost Berry conformant: the initial `z` warns that they break the rules, and the font id `xx` is completely unblessed by any authority. The remaining parts are nearly OK, except that the font lack many glyphs normally in `8a` encoding, but all glyphs are in the correct slots.)

Using afm2tfm, the afm files were transformed to raw tfm files (kern information discarded)

```
zxxrl7z.tfm
zxxbl7z.tfm
zxxrw7z.tfm
zxxbw7z.tfm
zxxrf7z.tfm
zxxbf7z.tfm
zxxrow7z.tfm % same as zxxrw7z, less oblique
zxxbow7z.tfm % same as zxxbw7z, less oblique
```

which serve as the basis for further virtual math fonts. Finally, using FontForge scripts and manual adjustments to the metrics to suit my personal taste, produces (no pretense of using Berry names):

BOONDOX-r-cal.tfm
BOONDOX-b-cal.tfm
BOONDOX-r-calo.tfm
BOONDOX-b-calo.tfm
BOONDOX-r-frak.tfm
BOONDOX-b-frak.tfm
BOONDOX-r-ds.tfm
BOONDOX-b-ds.tfm

and the corresponding .vf files.

There are two ways to use these. The traditional method is based on .sty and .fd files for each pair: BOONDOX-cal, BOONDOX-calo, BOONDOX-frak and BOONDOX-ds. For example,

```
\usepackage[scaled=.95]{BOONDOX-ds}
```

defines the output from \mathbb and \mathbbb to come from BOONDOX-r-ds and BOONDOX-b-ds respectively, scaled to 95% of normal size, and

```
\usepackage{BOONDOX-calo}
```

defines the output from \mathcal and \mathbcal to come from BOONDOX-r-calo and BOONDOX-b-calo respectively. (These are *less* oblique versions of the BOONDOX calligraphic fonts.)

The second method uses a different interface not depending on the .sty and .fd files at all. The package mathalfa permits you to say

```
\usepackage[bb=boondox,bbscaled=.95,cal=boondoxo]{mathalfa}
```

to accomplish the same effect as the above.

See the mathalfa documentation for font samples of these and many other math alphabets.

Added 2017-02-23

A new BOONDOX alphabet was added, based on STIX-MathScr, but with the slant removed and glyphs reworked to have smaller swashes and smaller tails that intrude less into the space inhabited by subscripts. To call this alphabet as \mathscr, use e.g.,

```
\usepackage[scaled=.98]{BOONDOX-uprscr}
```

This alphabet is also available through mathalfa. Because using it in these ways adds an extra math family, it may be desirable to load it not as a math font. See the documentation to TXUprCal for details of such usage.