BOONDOX math alphabets

Michael Sharpe
msharpe at ucsd dot edu

The BOONDOX fonts are PostScript versions of subsets of the STIX fonts correspond-ing 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 STIXGeneral-Bol.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 dis-carded)

```
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.