Math font group: statement of purpose

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The math font group

The math font group (MFG) is a joint venture of the LaTeX3 project and the TeX Users Group Extended Mathematics Font Encoding Technical Working Group. This document outlines:

- The *motivation* behind the MFG.
- The *standards* the MFG proposes to introduce.
- The *implementations* the MFG proposes to develop.

1 Motivation

One of TeX's strongest points is its ability to set mathematics. There has now been over ten years of experience typesetting mathematical material with TeX. During this time, TeX's math mode has been used to set a wide variety of material, including traditional mathematics, categorical diagrams, chemical reactions, computer programs and textual material such as '$5\frac{1}{2}$% of M$^{\text{lle}}$ Doe's bids were 3♠.'

In recent years, the fonts available for use in TeX have radically changed, with the arrival of the Cork standard for setting European Latin languages, and the Virtual Font standard for using non-META-FONT fonts in TeX.

However, the Cork encoding requires new companion math fonts, and there are a number of incompatible encodings for non-METAFONT math fonts.

The MFG believes that the time is ripe for a new math font standard, that will act as a companion to the Cork encoding, and will support non-METAFONT math fonts.

These standards are needed urgently, since they are a bottleneck for other TeX projects such as LaTeX3 and the adoption of the Cork encodings.

2 Standardization

The MFG intends to set a number of new standards for TeX math fonts, including:

2.1. Standardizing an interface between TeX and math fonts, specifying the minimum features each math font is expected to provide. This will include glyph positions, ligtable information, and font dimensions.

2.2. Standardizing an interface between a TeX user and a set of macros, specifying the minimum features a math macro package is expected to provide. This will include control sequence names and font changing commands such as `\boldsymbol`.

The interfaces will contain at least the functionality of `plain` TeX, LaTeX, $\mathcal{AMS}$-TeX and $\mathcal{AMS}$-LaTeX.

3 Implementation

The MFG intends to deliver a number of tools to support the new standards, including:

3.1. METAFONT programs containing shapes taken from Knuth's Computer Modern fonts, the AMS symbol fonts, the LaTeX symbol font, and the St Mary's Road font.

3.2. TeX programs implementing the user interface for `plain` TeX and LaTeX.

3.3. Virtual font production tools for using PostScript or other non-METAFONT fonts with the new encodings.

3.4. Test documents for checking whether fonts and macro packages conform to the standards, similar to Knuth's `trip` test for TeX.

These tools will allow existing and future TeX documents to be written with a number of new fonts supporting the new standards.

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