THE SANSMATHACCENT PACKAGE

ARIEL BARTON

It is sometimes desirable to typeset math in sans serif. This is particularly true when constructing slides, and so is done by default in the beamer class.

However, the Computer Modern sans serif fonts do not contain the information TeX needs to position accents correctly. So math accents end up placed badly:

$$\tilde{M} \quad \dot{u} \quad \hat{T} \quad \bar{v} \quad \mathring{A}$$

The sansmathaccent package corrects the accent placements:

$$\tilde{M} \quad \dot{u} \quad \hat{T} \quad \bar{v} \quad \mathring{A}$$

Version 2 is compatible with the bm package:

$$\boldsymbol{\tilde{M} \quad \dot{u} \quad \hat{T} \quad \bar{v} \quad \mathring{A}}$$

1. Usage

This package was uploaded to CTAN in March 2013. If you have installed or updated your TEX distribution since then, this package might have been installed on your system.

If not, you will need to install it. MikTEX should do this automatically if you try to typeset a document that uses the package. MacTEX users can install and update CTAN packages using the program "TeX Live Utility" in the `/Applications/TeX` folder. TEX Live users can use the command-line utility `tlmgr` (see `http://tug.org/texlive/doc/tlmgr.html`).

If that does not work, consult one of the following web pages for advice on how to install a fonts package by hand:
`http://www.tug.org/fonts/fontinstall.html`
`http://www.tug.org/fonts/fontinstall-personal.html`
`http://en.wikibooks.org/wiki/LaTeX/Packages/Installing_Extra_Packages`

Some versions of beamer load sansmathaccent automatically. If your version of beamer does not, you can load it yourself:

```
\documentclass{beamer}
\usepackage{sansmathaccent}
\begin{document}
\begin{frame}{}
$\tilde M$ $\dot u$ $\hat{T}$
\end{frame}
\end{document}
```

In an article, book, letter, or other document class other than beamer, first use the sfmath package to switch to sans serif math, then use sansmathaccent to correct the accents:

```
\documentclass{article}
\usepackage{sfmath,sansmathaccent}
\begin{document}
$\tilde M$ $\dot u$ $\hat{T}$
\end{document}
```

2. Warnings

sansmathaccent is not a standalone package; it is a package to correct a specific problem that appears in beamer and sfmath. If neither of those packages is used, sansmathaccent will do nothing.

Observe also that sansmathaccent will only work with Computer Modern sans serif math text; if you use a package such as helvet or pxfonts to change the sans serif math font away from the default, sansmathaccent will not help you.

Feedback is appreciated and may be sent to origamist@gmail.com.

3. License

This work (the sansmathaccent package) consists of the following files:

- mathkerncmssi8.tfm
- mathkerncmssi9.tfm
- mathkerncmssi10.tfm
- mathkerncmssi12.tfm
- mathkerncmssi17.tfm
- mathkerncmssxi8.tfm
- mathkerncmssxi9.tfm
- mathkerncmssxi10.tfm
- mathkerncmssxi12.tfm
- mathkerncmssxi17.tfm
- mathkerncmssxi8.vf
- mathkerncmssxi9.vf
- mathkerncmssxi10.vf
- mathkerncmssxi12.vf
- mathkerncmssxi17.vf
- ot1mathkerncmss.fd
- sansmathaccent.map
- sansmathaccent.pdf
- sansmathaccent.sty
- sansmathaccent.tex

This work may be distributed and/or modified under the conditions of the LaTeX Project Public License, either version 1.3 of this license or (at your option) any later version.

The latest version of the license is in

http://www.latex-project.org/lppl.txt

and version 1.3 or later is part of all distributions of LaTeX version 2003/06/01 or later.

This work has the LPPL maintenance status “author-maintained”.

3.1. **Derived Works included in this package.** The files

- `mathkerncmssi8.tfm`
- `mathkerncmssi9.tfm`
- `mathkerncmssi10.tfm`
- `mathkerncmssi12.tfm`
- `mathkerncmssi17.tfm`

were derived from the files

- `cmssi8.tfm`
- `cmssi9.tfm`
- `cmssi10.tfm`
- `cmssi12.tfm`
- `cmssi17.tfm`

all of which are part of the LaTeX base distribution and can be found at `ctan.org`. The edited TeX Font Metric (`.tfm`) files were generated using the utilities `tftopl` and `pltotf` and using Hendrik Vogt's patch (included in the documentation in Section 4).

The virtual fonts

- `mathkerncmssxi8`
- `mathkerncmssxi9`
- `mathkerncmssxi10`
- `mathkerncmssxi12`
- `mathkerncmssxi17`

(`tfm` and `vf` files) and the file `ot1mathkerncmss.fd` were generated from the files

- `ecso0800.tfm`
- `ecso0900.tfm`
- `ecso1000.tfm`
- `ecso1200.tfm`
- `ecso1728.tfm`
- `cmssbx10.tfm`

all of which are part of the LaTeX base distribution and can be found at `ctan.org`. The edited files were generated using the fontinst package and the utilities `tftopl` and `vptovf`, and some original fontinst files (included in the documentation in Section 5).

4. Patch file

The following is the patch file used to generate the corrected TFM files for the medium-width fonts. It is included for reference; you don't need to read this section to use the package. The patch file was written by Hendrik Vogt and used with permission.

```
17a18,61
>     (LABEL C E)
>     (LABEL C H)
>     (LABEL C M)
>     (LABEL C N)
>     (LABEL C Q)
>     (LABEL C i)
>     (LABEL C j)
```

```
>    (KRN O 177 R 0.1)
>    (STOP)
>    (LABEL C J)
>    (KRN O 177 R 0.22)
>    (STOP)
>    (LABEL C e)
>    (LABEL C m)
>    (LABEL C n)
>    (LABEL C r)
>    (LABEL C B)
>    (LABEL C R)
>    (LABEL C S)
>    (LABEL C Z)
>    (KRN O 177 R 0.08)
>    (STOP)
>    (LABEL C c)
>    (LABEL C q)
>    (LABEL C s)
>    (LABEL C z)
>    (KRN O 177 R 0.06)
>    (STOP)
>    (LABEL C v)
>    (LABEL C x)
>    (KRN O 177 R 0.04)
>    (STOP)
>    (LABEL C h)
>    (KRN O 177 R 0.02)
>    (STOP)
>    (LABEL C l)
>    (LABEL C U)
>    (KRN O 177 R 0.11)
>    (STOP)
>    (LABEL C d)
>    (LABEL C C)
>    (LABEL C G)
>    (KRN O 177 R 0.12)
>    (STOP)
25a70
>    (KRN O 177 R 0.1)
61a107
>    (KRN O 177 R 0.04)
62a109
>    (KRN O 177 R 0.03)
68a116
>    (KRN O 177 R 0.08)
70a119
>    (KRN O 177 R 0.04)
77a127
```

```
>    (KRN O 177 R 0.1)
79a130
>    (KRN O 177 R 0.07)
86a138
>    (KRN O 177 R 0.08)
87a140
>    (KRN O 177 R 0.06)
93a147
>    (KRN O 177 R 0.09)
95a150
>    (KRN O 177 R 0.06)
103a159
>    (KRN O 177 R 0.08)
104a161
>    (KRN O 177 R 0.1)
111a169
>    (KRN O 177 R 0.05)
112a171
>    (KRN O 177 R 0.06)
120a180
>    (KRN O 177 R 0.08)
122a183
>    (KRN O 177 R 0.07)
124a186
>    (KRN O 177 R 0.08)
127a190
>    (KRN O 177 R 0.14)
134a198
>    (KRN O 177 R 0.05)
140a205
>    (KRN O 177 R 0.01)
143a209
>    (KRN O 177 R 0.1)
```

The above was saved as a file `sansmathaccent.patch`.

Then the following bash script was run:

```
for i in 8 9 10 12 17
do tftopl $(kpsewhich cmssi$i.tfm) > mathkerncmssi$i.pl
patch mathkerncmssi$i.pl sansmathaccent.patch
pltotf mathkerncmssi$i.pl
done
```

This generated the desired TFM files.

5. Fontinst files

The bold slanted fonts used in this package are virtual fonts. These virtual fonts were generated using the fontinst package and the following two files (again, included only for reference).

File `mathkerncmss.mtx`:

```
\setkern{A}{dieresis}{140}
\setkern{B}{dieresis}{80}
\setkern{C}{dieresis}{120}
\setkern{D}{dieresis}{80}
\setkern{E}{dieresis}{100}
\setkern{F}{dieresis}{100}
\setkern{G}{dieresis}{120}
\setkern{H}{dieresis}{100}
\setkern{I}{dieresis}{100}
\setkern{J}{dieresis}{220}
\setkern{K}{dieresis}{80}
\setkern{L}{dieresis}{50}
\setkern{M}{dieresis}{100}
\setkern{N}{dieresis}{100}
\setkern{O}{dieresis}{100}
\setkern{P}{dieresis}{80}
\setkern{Q}{dieresis}{100}
\setkern{R}{dieresis}{80}
\setkern{S}{dieresis}{80}
\setkern{T}{dieresis}{90}
\setkern{U}{dieresis}{110}
\setkern{V}{dieresis}{70}
\setkern{W}{dieresis}{70}
\setkern{X}{dieresis}{60}
\setkern{Y}{dieresis}{60}
\setkern{Z}{dieresis}{80}
\setkern{a}{dieresis}{80}
\setkern{b}{dieresis}{50}
\setkern{c}{dieresis}{60}
\setkern{d}{dieresis}{120}
\setkern{e}{dieresis}{80}
\setkern{f}{dieresis}{100}
\setkern{g}{dieresis}{10}
\setkern{h}{dieresis}{20}
\setkern{i}{dieresis}{100}
\setkern{j}{dieresis}{100}
\setkern{k}{dieresis}{40}
\setkern{l}{dieresis}{110}
\setkern{m}{dieresis}{80}
\setkern{n}{dieresis}{80}
\setkern{o}{dieresis}{60}
\setkern{p}{dieresis}{80}
\setkern{q}{dieresis}{60}
\setkern{r}{dieresis}{80}
\setkern{s}{dieresis}{60}
\setkern{t}{dieresis}{70}
\setkern{u}{dieresis}{80}
\setkern{v}{dieresis}{40}
```

```
\setkern{w}{dieresis}{30}
\setkern{x}{dieresis}{40}
\setkern{y}{dieresis}{40}
\setkern{z}{dieresis}{60}
```

File `installfonts.tex`:

```
\input fontinst.sty

\installfonts

\generalpltomtx{ecso0800}{ecso0800}{pl}{t1}
\generalpltomtx{ecso0900}{ecso0900}{pl}{t1}
\generalpltomtx{ecso1000}{ecso1000}{pl}{t1}
\generalpltomtx{ecso1200}{ecso1200}{pl}{t1}
\generalpltomtx{ecso1728}{ecso1728}{pl}{t1}
\generalpltomtx{cmssbx10}{cmssbx10}{pl}{ot1}

\substitutesilent{bx}{b}
\substitutesilent{sl}{it}

\installfamily{OT1}{mathkerncmss}{\skewchar\font127 }

\installfontas{cmss8}          {OT1}{mathkerncmss}  {m}{n}{<-8.5>}
\installfontas{cmss9}          {OT1}{mathkerncmss}  {m}{n}{<8.5-9.5>}
\installfontas{cmss10}         {OT1}{mathkerncmss}  {m}{n}{<9.5-11.5>}
\installfontas{cmss12}         {OT1}{mathkerncmss}  {m}{n}{<11.5-15.7>}
\installfontas{cmss17}         {OT1}{mathkerncmss}  {m}{n}{<15.7->}

\installfontas{mathkerncmssi8} {OT1}{mathkerncmss}  {m}{sl}{<-8.5>}
\installfontas{mathkerncmssi9} {OT1}{mathkerncmss}  {m}{sl}{<8.5-9.5>}
\installfontas{mathkerncmssi10}{OT1}{mathkerncmss}  {m}{sl}{<9.5-11.5>}
\installfontas{mathkerncmssi12}{OT1}{mathkerncmss}  {m}{sl}{<11.5-15.7>}
\installfontas{mathkerncmssi17}{OT1}{mathkerncmss}  {m}{sl}{<15.7->}

\installfontas{cmssbx10}       {OT1}{mathkerncmss}{bx}{n}{}

\installfont{mathkerncmssxi8}  {ecso0800,cmssbx10,mathkerncmss}
    {ot1}{OT1}{mathkerncmss}  {bx}{sl}{<-8.5>}
\installfont{mathkerncmssxi9}  {ecso0900,cmssbx10,mathkerncmss}
    {ot1}{OT1}{mathkerncmss}  {bx}{sl}{<8.5-9.5>}
\installfont{mathkerncmssxi10}  {ecso1000,cmssbx10,mathkerncmss}
    {ot1}{OT1}{mathkerncmss}  {bx}{sl}{<9.5-11.5>}
\installfont{mathkerncmssxi12}  {ecso1200,cmssbx10,mathkerncmss}
    {ot1}{OT1}{mathkerncmss}  {bx}{sl}{<11.5-15.7>}
\installfont{mathkerncmssxi17}  {ecso1728,cmssbx10,mathkerncmss}
    {ot1}{OT1}{mathkerncmss}  {bx}{sl}{<15.7->}

\endinstallfonts\bye
```

Once these files had been written, the following script was run:

```
tftopl cmssbx10 cmssbx10

tftopl ecso0800 ecso0800
tftopl ecso0900 ecso0900
tftopl ecso1000 ecso1000
tftopl ecso1200 ecso1200
tftopl ecso1728 ecso1728

tex installfonts.tex

for file in *.vpl; do vptovf $file; done
```

This generated the TFM files and virtual fonts for the bold version, and also the LaTeX font definition file `otlmathkerncmss.fd`.