The **fixcmex** package[*]

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1   Description

Knuth's Computer Modern fonts only provide the math extensions font `cmex10` at just one size. Together with a release of AMS-TEX, the American Mathematical Society also provided the font at sizes 7, 8 and 9; these fonts are automatically loaded when `\usepackage{amsmath}` is done for a document. The option `cmex10` is allowed for reverting back to the fixed size, but it should only be used when the TEX distribution is more than, say twenty years old (at the time of writing).

Where's the difference? With the standard setup, a symbol like summation or integral in a footnote or in a `\Large` context will have the same size as in normal text. This size is also independent of the main point size of a document.

When amsmath (or exscale) is loaded, the symbols will be scaled, but only at the standard sizes, not arbitrarily. This is not a limitation any more, because the Type1 version of the `cmex` fonts has been available for several years and this package addresses it.

Many people use the Latin Modern fonts that are, in several respects, superior to the European Modern fonts when T1 font encoding is required. However, when `\usepackage{lmodern}` is done, the situation about the math extensions font goes back to the standard state described above, because `lmex10` is only provided at a fixed size.

The present package can be used when the main font of the document is Computer Modern (or European Modern, if T1 encoding is selected) or Latin Modern. It redefines the math extensions font so that it is arbitrarily scalable, using the optical size fonts provided by the AMS together with the original `cmex10` font.

The package should be loaded as late as possible, in any case *after* any font package. Its position with respect to hyperref or cleveref is irrelevant. It will do nothing if the math extensions font turns out to be not from Computer Modern or Latin Modern (with a warning).

There are no options and no commands.

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[*]This document corresponds to itnumpar v1.1, dated 2019/08/05.

2   Implementation

`\fixcmex@fix`   The main command just resets the math extensions font to be `cmex`, fully scalable.

```
1 ⟨*package⟩
2 \def\fixcmex@fix{%
3   \DeclareFontShape{OMX}{cmex}{m}{n}{%
4     <-7.5> cmex7
5     <7.5-8.5> cmex8
6     <8.5-9.5> cmex9
7     <9.5-> cmex10
8   }{}%
9   \SetSymbolFont{largesymbols}{normal}{OMX}{cmex}{m}{n}%
10  \SetSymbolFont{largesymbols}{bold}{OMX}{cmex}{m}{n}%
11  \mathversion{\math@version}%
12 }
13 \@onlypreamble\fixcmex@fix
```

Next, at begin document, the `\check@mathfonts` command makes sure the font assignments are performed for the normal size and the family name corresponding to the OMX encoding is extracted. If it is either `cmex` or `lmex` the command `\fixcmex@fix` will be executed. Otherwise a warning is issued, telling that the package has done nothing.

```
14 \AtBeginDocument{%
15   \begingroup
16     \check@mathfonts
17     \expandafter\expandafter\expandafter
18       \split@name\expandafter\string\the\textfont\thr@@\@nil
19     \escapechar=\m@ne
20     \edef\fixcmex@cmex{\string\cmex}\edef\fixcmex@lmex{\string\lmex}%
21     \ifx\f@family\fixcmex@cmex
22       \aftergroup\fixcmex@fix
23     \else
24       \ifx\f@family
25         \fixcmex@lmex\aftergroup\fixcmex@fix
26       \else
27         \PackageWarningNoLine{fixcmex}{No change in the math extension font}%
28       \fi
29     \fi
30   \endgroup
31 }
32 ⟨/package⟩
```

Change History

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