

The metalogo package

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I Introduction

This package exposes the spacing parameters for the various T_EX logos to the end user (and suitably redefines the logos in a generalised way). It is intended to help X_ƎL^AT_EX users, who use various typefaces, to easily optimise the logos for each typeface. Still, the package remains useful if any typeface is used, not necessarily loaded through X_ƎT_EX. It is known that, in Plain T_EX's definition of $\backslash\text{TeX}$, the lower right serif on the 'E' protrudes through the 'X' in `cmr10` and `cmr12`; this package can be used to fix this sort of unacceptable grotesque.

2 Parameters

The five logos, T_EX, L^AT_EX, L^AT_EX_{2 ϵ} , X_ƎT_EX and X_ƎL^AT_EX, can be customised in terms of the kerns between consecutive characters and the lowerings of 'E' and 'Ǝ'. These and their corresponding strings, which identify the parameters, are listed in table 1. In addition, the characters for the raised 'A' and lowered 'e' can be customised.

3 Commands

3.1 Overview

`\setlogokern` `\setlogokern{⟨string⟩}{⟨dimen⟩}` sets the amount of kern between two consecutive characters in a logo. *⟨string⟩* must be one of Te, eX, La, aT, Xe, eT, eL or X2, which correspond with the particular kerns as shown in table 1, and *⟨dimen⟩* must be a legitimate T_EX dimension.

Negative *⟨dimen⟩*s narrow the space between two letters, positive *⟨dimen⟩*s widen the space.

`\setlogodrop` `\setlogodrop[⟨string⟩]{⟨dimen⟩}` sets the amount of drop for letters that sit below

TABLE 1: Kern and drop parameters

Kerns			
Characters	String	Parent logo	Default value
TE	Te	TEX	-0.1667em
EX	eX	TEX	-0.125em
LA	La	$\text{L}\text{A}\text{T}\text{E}\text{X}$	-0.36em
AT	aT	$\text{L}\text{A}\text{T}\text{E}\text{X}$	-0.15em
XE	Xe	$\text{X}\text{E}\text{T}\text{E}\text{X}$	-0.125em
ET	eT	$\text{X}\text{E}\text{T}\text{E}\text{X}$	-0.1667em
EL	eL	$\text{X}\text{E}\text{L}\text{A}\text{T}\text{E}\text{X}$	-0.125em
$\text{X}2$	X2	$\text{L}\text{A}\text{T}\text{E}\text{X} 2_{\epsilon}$	0.15em

Drops			
Character	String	Parent logo	Default value
E	TeX	TEX	0.5ex
E	Xe	$\text{X}\text{E}\text{T}\text{E}\text{X}$	0.5ex

the baseline. $\langle string \rangle$ must be one of TeX , Xe or XeTeX and $\langle dimen \rangle$ must be a legitimate TeX dimension.

If $\langle string \rangle$ is TeX , the command sets the drop for the ‘E’ of TeX . If $\langle string \rangle$ is Xe , the command sets the drop for the ‘E’ of XeTeX . If $\langle string \rangle$ is XeTeX , both are set. If $[\langle string \rangle]$ is omitted, XeTeX is assumed.

Positive $\langle dimen \rangle$ s lower the letter and negative $\langle dimen \rangle$ s raise the letter.

`\setLaTeXa` `\setLaTeXa{\langle arg \rangle}` defines the command that typesets the raised ‘A’ in the $\text{L}\text{A}\text{T}\text{E}\text{X}$ logo as $\langle arg \rangle$. Some useful values for $\langle arg \rangle$ are:

- `\scshape a`
- `\char"1D00`
(Unicode character U+1D00 Latin Letter Small Capital A)
- `\check@mathfonts\fontsize\sf@size\z@\math@fontsfalse`
`\selectfont A`
(from $\text{L}\text{A}\text{T}\text{E}\text{X} 2_{\epsilon}$ ’s definition)

The first two suggestions typeset the character using a small capital shape. The first can be used if the font contains small capital features or small capital shapes are available, as for many TeX or OpenType fonts. The second can be used if the font does not contain small capital features but does contain phonetic extension characters in Unicode encoding. The third suggestion prints a shrunken capital letter ‘A’ and is useful as a last resort if the font does not contain a small capital ‘A’, as for many home and office computer fonts.

The weights of the strokes in the character are guaranteed to harmonise with the surrounding characters for the first two suggestions, but not for the third because the third shrinks a regular sized character, making the strokes thinner. As the third suggestion is guaranteed to work for any font, it is the default; the other two might produce unexpected results if there is no small capital ‘A’.

`\setLaTeXee` `\setLaTeXee{⟨arg⟩}` defines the command that typesets the lowered ‘ ε ’ in the $\text{\LaTeX}_{2\varepsilon}$ logo as $\langle arg \rangle$. Note that this command is used in maths mode (as a subscript) and there should be an `\mbox` or else if needed.

If an argument contains an ‘@’ as part of a control sequence, the command would usually have `\makeatletter` before and `\makeatother` after.

It is not usually a good idea to use absolute dimensions like point (pt) and millimetre (mm) because these dimensions do not adapt to any font size. Relative dimensions like em (the current point size, em) and ex (the height of the lowercase letter ‘x’, ex) are preferred as these dimensions are proportional to the font size.

`\seteverylogo` `\seteverylogo{⟨toks⟩}` defines the hook that is called whenever a logo is typeset as $\langle toks \rangle$.

`\everylogo` `\everylogo{⟨toks⟩}` appends $\langle toks \rangle$ to the hook.

These two commands are useful to set parameters that depend on the current font. `\ifdim\fontdimen1\font=0pt` is true if the current font is not slanted; `\ifb\expandafter\@car\f@series\@nil` is true if the current font is bold. In a similar way, other font attributes can be tested using the internal macros that are documented in section 2.3 of ‘ $\text{\LaTeX}_{2\varepsilon}$ font selection’ (`fntguide.pdf`). This technique is useful to set dynamic parameters for fonts with optical sizes.

3.2 Defaults

`\setLaTeXa{default}` is equivalent to `\setLaTeXa{\check@mathfonts\fontsize\sf@size\z@\math@fontfalse\selectfont A}` (the third suggestion in the previous section).

`\setLaTeXee{default}` is equivalent to `\setLaTeXee{\textstyle\varepsilon}` (as in $\text{\LaTeX}_{2\varepsilon}$ ’s definition).

`\setlogokern{⟨string⟩}{default}` and `\setlogodrop{⟨string⟩}{default}` each apply the default value to the parameter that corresponds to $\langle string \rangle$, as indicated in table 1.

4 Examples

Clearly, the following examples are not good for normal use, but they exaggerate the possibilities:

T	EX, L ^A T _E X	EX	<code>\setlogokern{Te}{1.5em}</code>
T _E X, X _Y L ^A T _E X			<code>\setlength\len{-4pt}\setlogokern{eX}{\len}</code> <code>\setlogodrop{.8ex}</code>
X _Y T _E X			<code>\setlogodrop[Xe]{1ex}</code>

It is a good idea to experiment to determine optimal values (Clever people might open the font in a font editor and directly measure the optimal values). This document is typeset in Sabon LT Std and contains the following settings:

```
\makeatletter
\setlogokern{Te}{-0.084em}
\setlogokern{eX}{-0.063em}
\setlogokern{eT}{-0.074em}
\setlogokern{Xe}{-0.063em}
\setlogokern{eL}{-0.068em}
\setlogokern{La}{-0.305em}
\setlogokern{aT}{-0.07313em}
\setlogokern{X2}{0.101em}
\setlogodrop{0.131em}
\setLaTeXa{%
  \ifdim\fontdimen\@ne\font=\z@%else
    \addfontfeature{FakeSlant=\the\fontdimen\@ne\font}%
  \fi
  \if b\expandafter\@car\f@series\@nil
    \check@mathfonts\fontsize\sf@size\z@
    \math@fontsfalse\selectfont A%
  \else
    \scshape a%
  \fi}
\setLaTeXee{\mbox{\stixgeneral\itshape e}}
\makeatother
```

This example demonstrates how to set the ‘A’ to depend on the current font, without using `\seteverylogo` or `\everylogo`. The following example sets -0.084 em and -0.063 em kerns for regular and -0.075 em and -0.068 em kerns for bold text:

```
\seteverylogo{%
  \if b\expandafter\@car\f@series\@nil
    \setlogokern{Te}{-0.075em}%
    \setlogokern{eX}{-0.068em}%
  \else
    \setlogokern{Te}{-0.084em}%
    \setlogokern{eX}{-0.063em}%
  \fi}
```

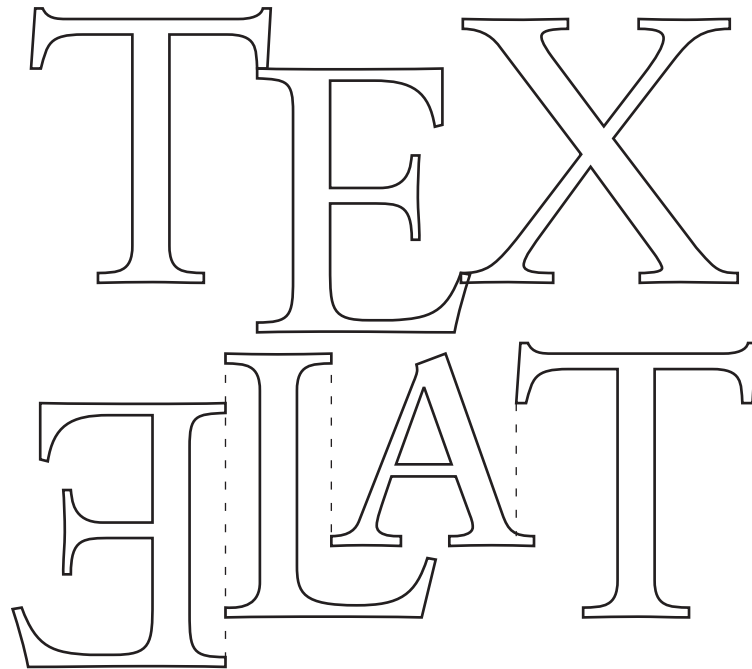
5 Future directions

Default parameters for common fonts should be built into the package, so that users need not worry about setting them themselves. There should also be an easier way to set dynamic parameters for different font variations (bold, italic, optical sizes, etc.) and shorthands to set multiple kerns with one command. If you want another feature, or another logo supported, please let me know!

6 Æsthetics

What one person thinks is beautiful is not necessarily beautiful to another. This section describes my preferences in determining the optimal kern and drop values. Of course, you do not need to agree with me and are free to do something else.

I like my adjacent characters to either be connected or have aligned serifs. If they are connected, they should be set as tight as possible, without any part that ‘sticks out’:



7 The package

`graphicx` is used to transform ‘E’ into ‘Ê’, and if `XƎTEX` is used, `fontspec`’s `FakeSlant` feature is used to transform ‘Ê’ into ‘Ê̂’, otherwise `\itshape\XeTeX` produces $X_{\text{Ǝ}}TEX$.

```
1 \RequirePackage{graphicx}
2 \RequirePackage{ifxetex}
3 \ifxetex
4   \RequirePackage{fontspec}[2008/08/09]
5 \fi
```

Preserve the original logo definitions.

```
6 \let\original@TeX\TeX
7 \let\original@LaTeX\LaTeX
8 \let\original@LaTeXe\LaTeXe
9 \@ifundefined{XeTeX}{\let\original@XeTeX\XeTeX}
10 \@ifundefined{XeLaTeX}{\let\original@XeLaTeX\XeLaTeX}
```

Default parameters.

```
11 \newif\if@x1@default
12 \AtEndOfPackage{
13   \setlogokern{Te}{default}
14   \setlogokern{eX}{default}
15   \setlogokern{La}{default}
16   \setlogokern{aT}{default}
17   \setlogokern{Xe}{default}
18   \setlogokern{eT}{default}
19   \setlogokern{eL}{default}
20   \setlogokern{X2}{default}
21   \setlogodrop{default}
22   \setLaTeXa{default}
23   \setLaTeXee{default}
24   \seteverylogo{}}
```

This macro kerns by $-\#1 \times \langle \text{current slant} \rangle$. It is similar to L^AT_EX_{2_ε}’s `\ltx@sh@ft`, but multiplies the dimension by -1 . They are used as a kind of italic correction for raised and lowered characters, since a character should shear with respect to an origin on the baseline, not at the bottom of the glyph.

```
25 \newcommand\ltx@sh@ft[1]{%
26   \dimen@ #1%
27   \multiply\dimen@\m@ne
28   \kern\strip@pt\fontdimen\@ne\font\dimen@}
```

`\setlogokern`

```
29 \newcommand\setlogokern[2]{%
30   \edef\@tempa{#1}%
31   \edef\@tempb{#2}%
32   \def\@tempc{default}%
33   \ifx\@tempb\@tempc
34     \@x1@defaulttrue
```

```

35 \fi
36 \def\@tempb{aT}%
37 \ifx\@tempa\@tempb
38   \def\xl@kern@LaTeX@aT{#2}%
39   \if@xl@default
40     \def\xl@kern@LaTeX@aT{-.15em}%
41   \fi
42 \else
43   \def\@tempb{eL}%
44   \ifx\@tempa\@tempb
45     \def\xl@kern@XeLaTeX@eL{#2}%
46     \if@xl@default
47       \def\xl@kern@XeLaTeX@eL{-.125em}%
48     \fi
49   \else
50     \def\@tempb{eT}%
51     \ifx\@tempa\@tempb
52       \def\xl@kern@XeTeX@eT{#2}%
53       \if@xl@default
54         \def\xl@kern@XeTeX@eT{-.1667em}%
55       \fi
56     \else
57       \def\@tempb{eX}%
58       \ifx\@tempa\@tempb
59         \def\xl@kern@TeX@eX{#2}%
60         \if@xl@default
61           \def\xl@kern@TeX@eX{-.125em}%
62         \fi
63       \else
64         \def\@tempb{La}%
65         \ifx\@tempa\@tempb
66           \def\xl@kern@La@La{#2}%
67           \if@xl@default
68             \def\xl@kern@La@La{-.36em}%
69           \fi
70         \else
71           \def\@tempb{Te}%
72           \ifx\@tempa\@tempb
73             \def\xl@kern@TeX@Te{#2}%
74             \if@xl@default
75               \def\xl@kern@TeX@Te{-.1667em}%
76             \fi
77           \else
78             \def\@tempb{X2}%
79             \ifx\@tempa\@tempb
80               \def\xl@kern@LaTeXe@Xii{#2}%
81               \if@xl@default
82                 \def\xl@kern@LaTeXe@Xii{.15em}%
83             \fi
84           \else

```

```

85         \def\@tempb{Xe}%
86         \ifx\@tempa\@tempb
87           \def\xl@kern@Xe@Xe{#2}%
88           \if@xl@default
89             \def\xl@kern@Xe@Xe{- .125em}%
90           \fi
91         \fi
92       \fi
93     \fi
94   \fi
95 \fi
96 \fi
97 \fi
98 \fi
99 \@xl@defaultfalse}

```

\setlogodrop

```

100 \newcommand\setlogodrop[2][XeTeX]{%
101   \edef\@tempa{#1}%
102   \edef\@tempb{#2}%
103   \def\@tempc{default}%
104   \ifx\@tempb\@tempc
105     \@xl@defaulttrue
106   \fi
107   \def\@tempb{XeTeX}%
108   \ifx\@tempa\@tempb
109     \def\xl@drop@TeX@e{#2}%
110     \let\xl@drop@Xe@e\xl@drop@TeX@e
111     \if@xl@default
112       \def\xl@drop@TeX@e{0.5ex}%
113       \let\xl@drop@Xe@e\xl@drop@TeX@e
114     \fi
115   \else
116     \def\@tempb{TeX}%
117     \ifx\@tempa\@tempb
118       \def\xl@drop@TeX@e{#2}%
119       \if@xl@default
120         \def\xl@drop@TeX@e{.5ex}%
121       \fi
122     \else
123       \def\@tempb{Xe}%
124       \ifx\@tempa\@tempb
125         \def\xl@drop@Xe@e{#2}%
126         \if@xl@default
127           \def\xl@drop@Xe@e{.5ex}%
128         \fi
129       \fi
130     \fi
131   \fi
132   \@xl@defaultfalse}

```


`\setLaTeXa`

```
I33 \newcommand\setLaTeXa[1]{%
I34   \def\@tempa{#1}%
I35   \def\@tempb{default}%
I36   \ifx\@tempa\@tempb
I37     \def\xl@LaTeX@a{%
I38       \check@mathfonts\fontsize\sf@size\z@
I39       \math@fontsfalse\selectfont A}%
I40   \else
I41     \def\xl@LaTeX@a{#1}%
I42   \fi}
```

`\setLaTeXee`

```
I43 \newcommand\setLaTeXee[1]{%
I44   \def\@tempa{#1}%
I45   \def\@tempb{default}%
I46   \ifx\@tempa\@tempb
I47     \def\xl@LaTeX@e{\textstyle\varepsilon}%
I48   \else
I49     \def\xl@LaTeX@e{#1}%
I50   \fi}
```

`\seteverylogo`

```
\everylogo I51 \newcommand\seteverylogo[1]{%
I52   \xl@everylogo{#1}%
I53   \xl@@everylogo{#1}}
I54 \newcommand\everylogo[1]{%
I55   \addto@hook\xl@everylogo{#1}%
I56   \addto@hook\xl@@everylogo{#1}}
I57 \newtoks\xl@everylogo
I58 \newtoks\xl@@everylogo
I59 \newcommand\@xl@everylogo{%
I60   \the\xl@everylogo
I61   \xl@everylogo{}}
```

`\TeX`

```
I62 \DeclareRobustCommand\TeX{%
I63   \@xl@everylogo
I64   T\kern\xl@kern@TeX@Te
I65   \lower\xl@drop@TeX@e\hbox{%
I66     \xl@sh@ft\xl@drop@TeX@e
I67     E%
I68     \ltx@sh@ft\xl@drop@TeX@e}%
I69   \kern\xl@kern@TeX@eX X%
I70   \the\xl@@everylogo}
```

`\LaTeX`

```
I71 \DeclareRobustCommand\LaTeX{%
I72   \@xl@everylogo
```

```

173 L\kern\xl@kern@La@La
174 {\ifxetex
175   \XeTeXuseglyphmetrics@ne
176   \fi
177   \sbox\z@ T%
178   \sbox@ne{\xl@LaTeX@a}%
179   \vbox to\ht\z@{%
180     \hbox{%
181       \ltx@sh@ft{\ht\z@}%
182       \xl@sh@ft{\ht@ne}%
183       \xl@LaTeX@a
184       \xl@sh@ft{\ht\z@}%
185       \ltx@sh@ft{\ht@ne}}%
186     \vss}}%
187 \kern\xl@kern@LaTeX@aT\TeX}

```

`\LaTeXe`

```

188 \DeclareRobustCommand\LaTeXe{%
189   \mbox{\m@th
190     \if b\expandafter\@car\@series\@nil
191       \boldmath
192       \fi
193       \LaTeX
194       \kern\xl@kern@LaTeXe@Xii 2$_{\xl@LaTeXe@e}$}}

```

`\Xe`

```

195 \DeclareRobustCommand\Xe{%
196   \@xl@everylogo%
197   X\kern\xl@kern@Xe@Xe
198   \lower\xl@drop@Xe@e
199   \hbox{%
200     \xl@sh@ft\xl@drop@Xe@e
201     \xl@Xe@e
202     \ltx@sh@ft\xl@drop@Xe@e}}

```

`\XeTeX`

```

203 \DeclareRobustCommand\XeTeX{\Xe\kern\xl@kern@XeTeX@eT\TeX}

```

`\XeLaTeX`

```

204 \DeclareRobustCommand\XeLaTeX{\Xe\kern\xl@kern@XeLaTeX@eL\LaTeX}

```

This command typesets ‘ \mathbb{F} ’. It contains some code from Will Robertson’s `xltxtra`.

```

205 \DeclareRobustCommand\xl@Xe@e{%
206   \ifxetex
207     X $\mathbb{F}$ TEX.
208     \ifnum\XeTeXfonttype\font>\z@
209       Modern font.
210     \ifnum\XeTeXcharglyph"018E>\z@

```

Use glyph directly.

```
209     \char"018E%
210     \else
```

Use transformed ‘E’.

```
211     \ifdim\fontdimen\@ne\font=\z@
```

Unslanted. Use reflected ‘E’.

```
212     \reflectbox{E}%
213     \else
```

Slanted. Use FakeSlanted upright ‘E’.

```
214     \reflectbox{%
215         \addfontfeature{FakeSlant=-\strip@pt\fontdimen\@ne\font}%
216         \upshape E}%
217     \fi
218     \fi
219     \else
```

Traditional T_EX font. Use transformed ‘E’.

```
220     \ifdim\fontdimen1\font=\z@
```

Unslanted. Use reflected ‘E’.

```
221     \reflectbox{E}%
222     \else
```

Slanted. Use rotated ‘E’ because a shear transformation is unavailable.

```
223     \XeTeXuseglyphmetrics\@ne
224     \setbox\z@\hbox{E}%
225     \dimen@ \ht\z@
226     \advance\dimen@\dp\z@
227     \ltx@sh@ft\dimen@
228     \raise\dimen@\hbox{\rotatebox{180}{\box\z@}}%
229     \x1@sh@ft\dimen@
230     \fi
231     \fi
232     \else
```

Not X_ƎT_EX. Traditional T_EX font. Use transformed ‘E’.

```
233     \ifdim\fontdimen1\font=\z@
```

Unslanted. Use reflected ‘E’.

```
234     \reflectbox{E}%
235     \else
```

Slanted. Use rotated ‘E’ because a shear transformation is unavailable.

```
236     \setbox\z@\hbox{E}%
237     \dimen@ \ht\z@
238     \advance\dimen@\dp\z@
239     \ltx@sh@ft\dimen@
240     \raise\dimen@\hbox{\rotatebox{180}{\box\z@}}%
241     \x1@sh@ft\dimen@
242     \fi
243     \fi}
```