MicroTypographic Extensions for OpTEX

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You can do `\load[mte]` followed by `\enablemte`. The microtypographic extensions (protrusions, expansions) of all fonts are available after `\enablemte`. The LaTeX package Microtype does similar effect.

The `\enablemte` macro reloads the current font with microtypographic extensions (mte) enabled and all new fonts loaded by the Font Selection System have mte enabled too, because they are added to the `\_fontfeatures` macro used by OpTEX.

The `\enablemte` macro does only local settings. If it is used in a group then only fonts used in this group have mte.

The `\enablemte` macro sets (among other things) `\protrudechars=2` (protrusion is enabled) and `\adjustspacing=2` (font expansion is enabled). You can disable these features by setting these primitive registers to zero value (it is default if `\enablemte` is not used). Note, that the values of these registers are checked when paragraph is finalized although the fonts were loaded with mte enabled. It means that you have to use `\par` before end of group if you use `\enablemte` inside a group. For example:

```
{\enablemte
  Roman font with mte enabled, \it italic font with mte enabled.
  \par % mte features are used
}
```

Or, simply use `\enablemte` at beginning of your document.

On the other hand, you can use `\disablemte` macro which reloads current font with mte disabled and all newly loaded fonts have mte disabled too. The macro has local validity. For example, `{\disablemte text}` prints `text` by a font with mte disabled. It works locally in the middle of the paragraph (unlike setting `\protrudechars` and `\adjustspacing` to zero).

You can define your own protrusion or expansion values: copy macros `\_mte_AlphabetPR`, `\_mte_quotPR`, etc. from this package and define them as you wish using `\def`. Such definition has precedence. Similar definitions can be in some font family files too, so: do your definition after all `\fontfam` if you want to keep the precedence. All such definitions must be performed before the `\mteinit` command.

You can use `\def\_mte_P` for data of protrusion for all fonts which has general precedence. For example, if you want to protrude hyphen char with factor one at the right side and by factor 0.5 at the left side, use

```
\def\_mte_P {% user specification, Protrusion, Regular fonts
 \_mte - = {.5, 1},  % /hyphen
}
```

Analogical macro can be used for expansion data `\_mte_X`.

You can use `\setfpfactor` ⟨*factor*⟩⟨*space*⟩ to set the factor by which all protrusion data are scaled. The ⟨*factor*⟩ is decimal number and its default value is 1. This macro can be used before `\enablemte`. You can use `\setfxfactor` ⟨*factor*⟩⟨*space*⟩ with analogical meaning, expansion data are scaled by given ⟨*factor*⟩.

If you feel that default microtypographic data are wrong in a particular case, please let me know. I can correct it in this package. If you feel that a specific font family needs different microtypographic data, please let me know. I can add extra definitions to appropriate font family file.

mte.opm

```
5 \_codedecl \enablemte {MicroTypographic Extension <2021-05-23>}
6 \_namespace{mte}
```

First, we define default protrusion values. They are saved in the macros `\.AlphabetPR`, `\.alphabetPR`, `\.digitsPR`, `\.punctPR`, `\.quotPR`, `\.othersPR` for regular and bold fonts. The analogous macros `\.AlphabetPI`, `\.alphabetPI`, `\.digitsPI`, `\.punctPI`, `\.quotPI`, `\.othersPI` store data for italic and bold italic fonts. We are using long names of these macros (without the dot shortcut in the code) because

user can copy these macros to his/her macro file and do modifications.
User (or a font family file) can define other values, for example by `\def\_mte_quotPR{...}`. If such definition is done before loading this package, it has precedence. This is the reason why we are using `\.trydef` which defines given macro only if it is not defined already.

mte.opm
```
\_def\.trydef #1{\_ifx#1\_undefined \_afterfi{\_def#1}\_else \_ea\_ignoreit \_fi}
```

We want to save size of the following macros with data tables, so we don't write `[`⟨*code of char*⟩`]` `=` but only `\_mte` ⟨*char*⟩ `=`. We use OpTEX name space for `\_mte` (no package name space) because user may copy these macros to other macro files and modify them. We hope that the name `\_mte` will be never used in another meaning in OpTEX.

mte.opm
```
\_def\_mte #1{[\_immediateassignment\_tmpnum=`#1 \_the\_tmpnum]}
```

The protrusion data follow. The values are coefficients of total width of declared character. First value gives left protrusion, second value is right protrusion. `\.AlphabetPR`

mte.opm
```
\.trydef \_mte_AlphabetPR {% Alphabets, Protrusion, Regular fonts
   \_mte  A = {.05,.05},
   \_mte  Æ = {.05,  0},
   \_mte  F = {0  ,.05},
   \_mte  J = {.05,  0},
   \_mte  K = {0  ,.05},
   \_mte  L = {0  ,.05},
   \_mte  T = {.05,.05},
   \_mte  V = {.05,.05},
   \_mte  W = {.05,.05},
   \_mte  X = {.05,.05},
   \_mte  Y = {.05,.05},
}
```

`\.alphabetPR`

mte.opm
```
\.trydef \_mte_alphabetPR {% alphabets, Protrusion, Regular fonts
   \_mte  k = {0  ,.05},
   \_mte  r = {0  ,.05},
   \_mte  t = {0  ,.07},
   \_mte  v = {.05,.05},
   \_mte  w = {.05,.05},
   \_mte  x = {.05,.05},
   \_mte  y = {.05,.07},
}
```

`\.digitsPR`

mte.opm
```
\.trydef \_mte_digitsPR {% digits, Protrusion, Regular fonts
   \_mte  0 = {0  ,.05},
   \_mte  1 = {.1 ,.2 },
   \_mte  2 = {.05,.05},
   \_mte  3 = {.05,.05},
   \_mte  4 = {.07,.07},
   \_mte  5 = {0  ,.05},
   \_mte  6 = {0  ,.05},
   \_mte  7 = {.05,.1 },
   \_mte  8 = {0  ,.05},
   \_mte  9 = {0  ,.05},
   [0xF731] = {.1, .1},   % /one.oldstyle
   [0xF732] = {.05, .05}, % /two.oldstyle
   [0xF733] = {.03, .08}, % /three.oldstyle
   [0xF734] = {.05, .05}, % /four.oldstyle
   [0xF737] = {.05, .08}, % /seven.oldstyle
}
```

`\.punctPR`

mte.opm
```
\.trydef \_mte_punctPR {% punctuations, Protrusion, Regular fonts
   \_mte  . = {0 , .7},
   \_mte  , = {0 , .5},
   \_mte  : = {0 , .5},
```

```
    \_mte  ; = {0 , .5},
    \_mte  ! = {0 , .1},
    \_mte  ? = {0 , .2},
    \_mte  @ = {.05,.05},
    \_mte  ~ = {.2, .25},
    \_mte \% = {.05,.05}, % /percent
    \_mte  * = {.3, .3},
    \_mte  + = {.25,.25},
    \_mte  - = {.4, .5},   % /hyphen
    \_mte  - = {.4, .3},   % /endash
    \_mte  - = {.3, .2},   % /emdash
    \_mte  _ = {.2, .2},   % /underscore
    \_mte  / = {.2, .3},
    \_mte \\ = {.2, .3},  % /backslash
    \_mte  ¡ = {.1, 0}, \_mte  ¿ = {.1, 0},
}
```

\.quotPR

mte.opm

```
\.trydef \_mte_quotPR {% quotation marks, Protrusion, Regular fonts
    \_mte  ' = {.3,.4},   % /quotesingle
    \_mte  ‘ = {.5,.7}, \_mte  ’ = {.5,.6},
    \_mte  " = {.5,.3}, \_mte  " = {.2,.6},
    \_mte  ‚ = {.4,.4}, \_mte  „ = {.4,.4},
    \_mte  ‹ = {.4,.4}, \_mte  › = {.3,.5},
    \_mte  « = {.3,.2}, \_mte  » = {.1,.4},
}
```

\.othersPR

mte.opm

```
\.trydef \_mte_othersPR {% other characters, Protrusion, Regular fonts
    \_mte  ( = {.3, 0},  \_mte  ) = {0 ,.3},
    \_mte  < = {.2, .1}, \_mte  > = {.1, .2},
    \_mte \{ = {.4, .2}, \_mte \} = {.2, .4}, % /braceleft, /braceright
    [0x2329] = {.4,  0}, [0x232A] = {0 ,.4},  % /angleleft, /angleright
    \_mte  † = {.1,.1},
    \_mte  ‡ = {.08, .08},
    \_mte  • = {.2, .2},
    \_mte  · = {.4, .45}, % /periodcentered
    \_mte  ₡ = {.08, .05},
    \_mte  ₵ = {0 , .05},
    \_mte  ° = {.4, .4},
    [0x2122] = {.1, .2}, % /trademark
    \_mte  © = {.1, .1},
    \_mte  ® = {.1, .1},
    \_mte  ª = {.1, .2},
    \_mte  º = {.1, .2},
    \_mte  ¹ = {.2, .25},
    \_mte  ² = {.05, .1},
    \_mte  ³ = {.05, .1},
    \_mte  ¬ = {.2,  0},
    \_mte  - = {.3, .3},
    \_mte  ± = {.15, .2},
    \_mte  × = {.15, .25},
    \_mte  ÷ = {.15, .25},
    \_mte  € = {.1,  0},
    \_mte  Γ = {0   ,.180}, % /Gamma
    \_mte  Δ = {.1, .1},    % /Delta
    \_mte  Θ = {.05, .05},  % /Theta
    \_mte  Λ = {.1,.1},     % /Lambda
    \_mte  Σ = {.05, .05},  % /Sigma
    \_mte  Υ = {.1,.1},     % /Upsilon
    \_mte  Φ = {.05, .05},  % /Phi
    \_mte  Ψ = {.05, .05},  % /Psi
}
```

The protrusion data for italic and bold italic fonts follow. \.AlphabetPI

mte.opm

```
\.trydef \_mte_AlphabetPI {% Alphabets, Protrusion, Italic fonts
    \_mte  A = {.125,.1},
```

```
    \_mte  Æ = {.125,-.055},
    \_mte  B = {.09,-.04},
    \_mte  C = {.145,-.075},
    \_mte  D = {.075,-.028},
    \_mte  E = {.08,-.055},
    \_mte  F = {.085,-.08},
    \_mte  G = {.153,-.015},
    \_mte  H = {.073,-.06},
    \_mte  I = {.14,-.12},
    [0x0132] = {.14,-.08}, % IJ
    \_mte  J = {.135,-.08},
    \_mte  K = {.07,-.03},
    \_mte  L = {.087,.04},
    \_mte  M = {.067,-.045},
    \_mte  N = {.075,-.055},
    \_mte  O = {.15,-.03},
    \_mte  Œ = {.15,-.055},
    \_mte  P = {.082,-.05},
    \_mte  Q = {.15,-.03},
    \_mte  R = {.075, .015},
    \_mte  S = {.09,-.065},
    \_mte  $ = {.1,-.02}, % $
    \_mte  T = {.22,-.085},
    \_mte  U = {.23,-.055},
    \_mte  V = {.26,-.06},
    \_mte  W = {.185,-.055},
    \_mte  X = {.07,-.03},
    \_mte  Y = {.25,-.06},
    \_mte  Z = {.09,-.06},
}
```

\.alphabetPI

mte.opm

```
\.trydef \_mte_alphabetPI {% alphabets, Protrusion, Italic fonts
    \_mte  a = {.15,-.01},
    \_mte  b = {.17, 0},
    \_mte  c = {.173,-.01},
    \_mte  d = {.15,-.055},
    \_mte  e = {.18, 0},
    \_mte  f = {0  ,-.25},
    \_mte  g = {.15,-.01},
    \_mte  h = {.1,  0},
    \_mte  i = {.21, 0},
    [0x17C9] = {.21,-.04}, % ij
    \_mte  j = {0  ,-.04},
    \_mte  k = {.11,-.05},
    \_mte  l = {.24,-.11},
    \_mte  m = {.08, 0},
    \_mte  n = {.115, 0},
    \_mte  o = {.155, 0},
    \_mte  q = {.17,-.04},
    \_mte  r = {.155,-.04},
    \_mte  s = {.13, 0},
    \_mte  t = {.23,-.01},
    \_mte  u = {.12, 0},
    \_mte  v = {.14,-.025},
    \_mte  w = {.098,-.02},
    \_mte  x = {.065,-.04},
    \_mte  y = {.13,-.02},
    \_mte  z = {.110,-.08},
}
```

\.digitsPI

mte.opm

```
\.trydef \_mte_digitsPI {% digits, Protrusion, Italic fonts
    \_mte  0 = {.17,-.085},
    \_mte  1 = {.23,.11},
    \_mte  2 = {.13,-.07},
    \_mte  3 = {.14,-.07},
    \_mte  4 = {.13,.08},
```

```
    \_mte  5 = {.16, 0},
    \_mte  6 = {.175,-.03},
    \_mte  7 = {.25,-.15},
    \_mte  8 = {.13,-.04},
    \_mte  9 = {.155,-.08},
    [0xF730] = {.05,.05}, % /zero.oldstyle
    [0xF731] = {.1, .1},  % /one.oldstyle
    [0xF732] = {.1,.08},  % /two.oldstyle
    [0xF733] = {.08,.05}, % /three.oldstyle
    [0xF734] = {.08,.08}, % /four.oldstyle
    [0xF735] = {.05,  0}, % /five.oldstyle
    [0xF736] = {.05,  0}, % /six.oldstyle
    [0xF737] = {.08,.08}, % /seven.oldstyle
    [0xF738] = {.05,  0}, % /eight.oldstyle
    [0xF739] = {0  ,.05}, % /nine.oldstyle
}
```

\.punctPI

mte.opm

```
\.trydef \_mte_punctPI {% punctuations, Protrusion, Italic fonts
    \_mte  . = {0 ,.5},
    \_mte  , = {0 ,.45},
    \_mte  : = {0 ,.3},
    \_mte  ; = {0 ,.3},
    \_mte  & = {.13,.03},
    \_mte \% = {.18,.05},
    \_mte  * = {.38,.02},
    \_mte  + = {.18,.2},
    \_mte  @ = {.18,.01},
    \_mte  ~ = {.2,.15},
    \_mte  ( = {.3, 0},   \_mte ) = {0  ,.07},
    \_mte  / = {.1,.1},
    \_mte  - = {.5,.3}, % /hyphen
    \_mte  - = {.5,.3}, % /endash
    \_mte  - = {.4,.17}, % /emdash
    \_mte  _ = {.1,.2}, % /underscore
    \_mte  ¡ = {.2,  0},  \_mte ¿ = {.2,  0},
}
```

\.quotPI

mte.opm

```
\.trydef \_mte_quotPI {% quotation marks, Protrusion, Italic fonts
    \_mte  ' = {.3,.4}, % /quotesingle
    \_mte  " = {.5,.3},
    \_mte  ‘ = {.8,.2},  \_mte  ’ = {.8,-.02},
    \_mte  " = {.54,.1}, \_mte  " = {.5,.1},
    \_mte  ‚ = {.3,.7},  \_mte  „ = {.2,.6},
    \_mte  ‹ = {.5,.3},  \_mte  › = {.4,.4},
    \_mte  « = {.4,.1},  \_mte  » = {.2,.3},
}
```

\.othersPI

mte.opm

```
\.trydef \_mte_othersPI {% other characters, Protrusion, Italic fonts
    \_mte  < = {.3,.1},  \_mte > = {200,100},
    \_mte \\ = {.3,.3},
    \_mte \{ = {.4,.1},  \_mte \}  = {200,200},
    \_mte  † = {.2,.08},
    \_mte  ‡ = {.12,.08},
    \_mte  • = {.22,.1},
    \_mte  · = {.55,.3}, % /periodcentered
    \_mte  ₡ = {.17, 0},
    \_mte  ₵ = {.1,.05},
    \_mte  ¶ = {.2, 0},
    \_mte  ° = {.5,.3},
    [0x2122] = {.2,.07}, % /trademark
    \_mte  © = {.05,.07},
    \_mte  ® = {.05,.07},
    \_mte  ª = {.14,.1},
    \_mte  º = {.14,.1},
```

```
    \_mte  ¹ = {.40,.15},
    \_mte  ² = {.25,.08},
    \_mte  ³ = {.25,.08},
    \_mte  ¬ = {.25,.08},
    \_mte  − = {.3,.2},
    \_mte  ± = {.15,.17},
    \_mte  × = {.2,.2},
    \_mte  ÷ = {.2,.2},
    \_mte  € = {.15, 0},
    \_mte  Γ = {.1,.12}, % /Gamma
    \_mte  Δ = {.12,.1}, % /Delta
    \_mte  Θ = {.12,.05}, % /Theta
    \_mte  Λ = {.13,.1}, % /Lambda
    \_mte  Ξ = {.1, 0}, % /Xi
    \_mte  Π = {.1, 0}, % /Pi
    \_mte  Σ = {.1,.05}, % /Sigma
    \_mte  Υ = {.18,.1}, % /Upsilon
    \_mte  Φ = {.13,.07}, % /Phi
    \_mte  Ψ = {.13,.05}, % /Psi
    \_mte  Ω = {.05, 0}, % /Omega
}
```

The expansion data follow in macros \.AlphabetX, \.alphabetX, \.digitsX and \.othersX. They are common for all fonts. \.AlphabetX

mte.opm

```
\.trydef \_mte_AlphabetX {% Alphabets, eXpansion
    \_mte  A = .5,
    \_mte  Æ = .5,
    \_mte  B = .7,
    \_mte  C = .7,
    \_mte  D = .5,
    \_mte  E = .7,
    \_mte  F = .7,
    \_mte  G = .5,
    \_mte  H = .7,
    \_mte  K = .7,
    \_mte  M = .7,
    \_mte  N = .7,
    \_mte  O = .5,
    \_mte  Œ = .5,
    \_mte  P = .7,
    \_mte  Q = .5,
    \_mte  R = .7,
    \_mte  S = .7,
    \_mte  U = .7,
    \_mte  W = .7,
    \_mte  Z = .7,
}
```

\.alphabetX

mte.opm

```
\.trydef \_mte_alphabetX {% alphabets, eXpansion
    \_mte  a = .7,
    \_mte  æ = .7,
    \_mte  b = .7,
    \_mte  c = .7,
    \_mte  d = .7,
    \_mte  e = .7,
    \_mte  g = .7,
    \_mte  h = .7,
    \_mte  k = .7,
    \_mte  m = .7,
    \_mte  n = .7,
    \_mte  o = .7,
    \_mte  œ = .7,
    \_mte  p = .7,
    \_mte  q = .7,
    \_mte  s = .7,
    \_mte  u = .7,
    \_mte  w = .7,
```

```
    \_mte  z = .7,
}
```

\.digitsX

mte.opm

```
\.trydef \_mte_digitsX {% digits, eXpansion
    \_mte  2 = .7,
    \_mte  3 = .7,
    \_mte  6 = .7,
    \_mte  8 = .7,
    \_mte  9 = .7,
}
```

\.othersX

mte.opm

```
\.trydef \_mte_othersX {% others, eXpansion
}
```

The _mte_P (for protrusion, all fonts) and _mte_X (for expansion, all fonts) are empty by default but user can declare specific values here. These macros are used last in the \.allPR, \.allPI, \.allX macros (used in the lua code bellow), so it has general precedence.

mte.opm

```
\.trydef \_mte_P {} % user specific, Protrusion
\.trydef \_mte_X {} % user specific, eXpansion

\_def \.allPR {\.AlphabetPR \.alphabetPR \.digitsPR \.punctPR \.quotPR \.othersPR \.P}
\_def \.allPI {\.AlphabetPI \.alphabetPI \.digitsPI \.punctPI \.quotPI \.othersPI \.P}
\_def \.allX  {\.AlphabetX  \.alphabetX  \.digitsX  \.othersX \.X}
```

We add a new macro \.features to the OpTEX's _fontfeatures. It is empty by default but it will be changed by \enablemte to read protrusion and expansion data using Lua code.

mte.opm

```
\_addto\_fontfeatures{\.features}
\_def\.features{}
```

\enablemte initializes protrusion data by the \.initprotrusion macro and expansion data by the \.initexpansion macro. Then it sets \protrudechars and \adjustspacing primitives and sets the \.features macro to use the protrusion tables pr (for regular or bold fonts) or pi (for italic or bold italic fonts). The table ex is used for expansion data. These tables are declared in the Lua code below. \disablemte disables font \.features and sets appropriate primitive registers to zero.

mte.opm

```
\_def\.enablemte {%
    \_initunifonts
    \.initprotrusion  % luacode, pr and pi tables initialized
    \.initexpansion   % luacode, ex table initialized
    \_protrudechars=2
    \_adjustspacing=2
    \_def\.features{protrusion=p\.var;expansion=ex}% pr/pi and ex tables used
    \_reloading \_currvar
}
\_def\.disablemte {%
    \_protrudechars=0
    \_adjustspacing=0
    \_def\.features{}%
    \_reloading \_currvar
}
\_nspublic \enablemte \disablemte ;
```

The \.var macro expands ro r when regular or bold font is loaded and it expands to i if italic or bold italic font is loaded. The pr or pi data table is selected using this macro.

mte.opm

```
\_def\.it{it}\_def\.bi{bi}
\_def\.var{\_ifx\_whatresize\.it i\_else \_ifx\_whatresize\.bi i\_else r\_fi\_fi}
```

The pr and pi data tables are created using lua code in the \.initprotrusion macro. The data from \.allPR or \.allPI are used here. The analogical concept is used in the \.initexpansion macro.

mte.opm

```
\_def\.initprotrusion {%
   \_directlua {%
      fonts.protrusions.setups['pr']={
         factor=\.fpfactor,
         \.leftright,
         \.allPR
      }
      fonts.protrusions.setups['pi']={
         factor=\.fpfactor,
         \.leftright,
         \.allPI
}}}
\_def\.initexpansion {%
   \_directlua {%
      fonts.expansions.setups['ex']={
         \.stretchshrinkstep,
         factor=\.fxfactor,
         \.allX
}}}
```

The \.leftright, \.stretchshrinkstep, \.fpfactor, and \.fxfactor macros are used in the Lua code above and they have following default values (you can re-define them, if you want):

mte.opm

```
\_def \.fpfactor{1}
\_def \.leftright {left=1, right=1}
\_def \.fxfactor{1}
\_def \.stretchshrinkstep {stretch=3, shrink=2, step=.5}
```

\setfpfactor and \setfxfactor simply define \.fpfactor and \.fxfactor.

mte.opm

```
\_def\.setfpfactor #1 {\_def\.fpfactor{#1}}
\_def\.setfxfactor #1 {\_def\.fxfactor{#1}}
\_nspublic \setfpfactor \setfxfactor ;
```

There are similar letters: A, Á, Á, Â, Ã, Ä, Å, they need the same setting. But only the basic letter (A in this example) has protrusion and/or expansion setting using Lua code. The equivalent settings are done by the macro \.setequivs⟨*font-switch*⟩. This macro is used in _newfontloaded ⟨*font-switch*⟩ which is called by OpTEX if the font is loaded first. The \.setequivs macro uses data from \.equalcodes (see bellow) and sets equal \lpcode, \rpcode, and \efcode for variant characters. It is called only if \.features is non-empty, i.e. if the font includes mte data.

mte.opm

```
\_def\_newfontloaded#1{\_ifx\.features\_empty \_else \.setequivs#1\_fi}

\_def\.setequivs #1{\_let\.f=#1\_ea\.setequivsA\.equalcodes,,={},}
\_def\.setequivsA#1#2=#3#4,{\_ifx^#3^\_else
   \_afterfi{\_tmpnum=`#1 \.setequivsB#3#4\_end\.setequivsA}\_fi}
\_def\.setequivsB#1{\_ifx\_end#1\_else
   \_lpcode\.f`#1=\_lpcode\.f\_tmpnum
   \_rpcode\.f`#1=\_rpcode\.f\_tmpnum
   \_efcode\.f`#1=\_efcode\.f\_tmpnum
   \_ea\.setequivsB\_fi
}
```

\.equalcodes includes comma separated equivalences. The same \lpcode, \rpcode, and \efcode for all characters given at right side is set as these codes of the character given at the left side of equal sign. You can do \addto_mte_equalcodes{⟨*your additional settings*⟩} if you want.

mte.opm

```
\_def\.equalcodes {%
   A = ÀÁÂÃÄÅĀĂĄǍǞẠẢẤẦẨẪẬẮẰẲẴẶǺA,
   B = ɃB,
   C = ÇĆĈĊČC,
   D = ĎĐḌḐḒD,
   E = ÈÉÊËĒĔĖĘĚẸẺẾỀỂỄỆE,
   G = ĜĞĠĢǦG,
   H = ĤḤḦḨḪH,
   I = ÌÍÎÏĨĪĬĮǏỈỊI,
   J = ĴJ,
   K = ĶK,
```

```
    L = ĹĽĻŁḶ,
    M = M,
    N = ÑŃŅŇṄṆN,
    O = ÒÓÔÕÖØŌŎŐỌƠǪǾȌỎỐỒỔỖỘỚỜỠỞỢO,
    P = P,
    R = ŔŖŘȐṚṘṜ,
    S = ŚŜŞŠȘṢ,
    T = ŢŤȚṬṮT,
    U = ÙÚÛÜŨŪŬŮŰŲƯȔỤỦỨỪỬỮỰ,
    W = ŴẀẂẄ,
    X = X,
    Y = ÝŶŸỴỶỸ,
    Z = ŹŻŽẒZ,
    a = àáâãäåāăąǻȁạảấầẩẫậắằẳẵ,
    æ = ǽ,
    c = çćĉċč,
    d = đḍḏ, % ď has different right side
    e = èéêëēĕėęěȅẹẻẽếềểễệ,
    g = ĝğġģǧǵ,
    h = ĥħḥḧẖ,
    i = ìíîïĩīĭįıȉỉị,
    j = ĵ,
    k = ķ,
    l = ĺļłḷḻ, % ľ has different right side
    n = ñńņňṅṇ,
    o = òóôõöøōŏőọơǫǿȍỏốồổỗộớờỡởợ,
    r = ŕŗřȑṛṙṝ,
    s = śŝşšșṣ,
    t = ţțṭṯẗť,
    u = ùúûüũūŭůűųưȕụủứừửữự,
    w = ŵẁẃẅ,
    y = ýŷÿỳỵỷỹ,
    z = źżžẓ,
}
\_endnamespace
```

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