MicroTypographic Extensions for OpTEX

Petr Olšák, 2021

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 `\enablemte` 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 \_def \_mte_version {0.1, 2021-05-23}
6 \_codedecl \enablemte {MicroTypographic Extension <\_mte_version>}
7 \_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.

```
28  \_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.

```
38  \_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`

```
47  \.trydef \_mte_AlphabetPR {% Alphabets, Protrusion, Regular fonts
48      \_mte  A = {.05,.05},
49      \_mte  Æ = {.05,  0},
50      \_mte  F = {0  ,.05},
51      \_mte  J = {.05,  0},
52      \_mte  K = {0  ,.05},
53      \_mte  L = {0  ,.05},
54      \_mte  T = {.05,.05},
55      \_mte  V = {.05,.05},
56      \_mte  W = {.05,.05},
57      \_mte  X = {.05,.05},
58      \_mte  Y = {.05,.05},
59  }
```

`\.alphabetPR`

```
64  \.trydef \_mte_alphabetPR {% alphabets, Protrusion, Regular fonts
65      \_mte  k = {0  ,.05},
66      \_mte  r = {0  ,.05},
67      \_mte  t = {0  ,.07},
68      \_mte  v = {.05,.05},
69      \_mte  w = {.05,.05},
70      \_mte  x = {.05,.05},
71      \_mte  y = {.05,.07},
72  }
```

`\.digitsPR`

```
77  \.trydef \_mte_digitsPR {% digits, Protrusion, Regular fonts
78      \_mte  0 = {0  ,.05},
79      \_mte  1 = {.1 ,.2 },
80      \_mte  2 = {.05,.05},
81      \_mte  3 = {.05,.05},
82      \_mte  4 = {.07,.07},
83      \_mte  5 = {0  ,.05},
84      \_mte  6 = {0  ,.05},
85      \_mte  7 = {.05,.1 },
86      \_mte  8 = {0  ,.05},
87      \_mte  9 = {0  ,.05},
88      [0xF731] = {.1, .1},   % /one.oldstyle
89      [0xF732] = {.05, .05}, % /two.oldstyle
90      [0xF733] = {.03, .08}, % /three.oldstyle
91      [0xF734] = {.05, .05}, % /four.oldstyle
92      [0xF737] = {.05, .08}, % /seven.oldstyle
93  }
```

`\.punctPR`

```
 98  \.trydef \_mte_punctPR {% punctuations, Protrusion, Regular fonts
 99     \_mte  .  = {0  , .7},
100     \_mte  ,  = {0  , .5},
101     \_mte  :  = {0  , .5},
102     \_mte  ;  = {0  , .5},
103     \_mte  !  = {0  , .1},
104     \_mte  ?  = {0  , .2},
105     \_mte  @  = {.05,.05},
106     \_mte  ~  = {.2, .25},
107     \_mte \% = {.05,.05}, % /percent
108     \_mte  *  = {.3, .3},
109     \_mte  +  = {.25,.25},
110     \_mte  -  = {.4, .5},   % /hyphen
111     \_mte  –  = {.4, .3},   % /endash
112     \_mte  —  = {.3, .2},   % /emdash
113     \_mte  _  = {.2, .2},   % /underscore
114     \_mte  /  = {.2, .3},
115     \_mte \\ = {.2, .3},  % /backslash
116     \_mte  ¡  = {.1, 0}, \_mte  ¿  = {.1, 0},
117  }
```

```
122  \.trydef \_mte_quotPR {% quotation marks, Protrusion, Regular fonts
123     \_mte  '  = {.3,.4},   % /quotesingle
124     \_mte  ‘  = {.5,.7}, \_mte  ’  = {.5,.6},
125     \_mte  "  = {.5,.3}, \_mte  "  = {.2,.6},
126     \_mte  ‚  = {.4,.4}, \_mte  „  = {.4,.4},
127     \_mte  ‹  = {.4,.4}, \_mte  ›  = {.3,.5},
128     \_mte  «  = {.3,.2}, \_mte  »  = {.1,.4},
129  }
```

```
134  \.trydef \_mte_othersPR {% other characters, Protrusion, Regular fonts
135     \_mte  (  = {.3, 0},  \_mte  )  = {0 ,.3},
136     \_mte  <  = {.2, .1}, \_mte  >  = {.1, .2},
137     \_mte \{ = {.4, .2}, \_mte \} = {.2, .4}, % /braceleft, /braceright
138     [0x2329] = {.4,  0}, [0x232A] = {0 ,.4},  % /angleleft, /angleright
139     \_mte  †  = {.1,.1},
140     \_mte  ‡  = {.08, .08},
141     \_mte  •  = {.2, .2},
142     \_mte  ·  = {.4, .45}, % /periodcentered
143     \_mte  ℂ  = {.08, .05},
144     \_mte  ₵  = {0 , .05},
145     \_mte  °  = {.4, .4},
146     [0x2122] = {.1, .2}, % /trademark
147     \_mte  ©  = {.1, .1},
148     \_mte  ®  = {.1, .1},
149     \_mte  ª  = {.1, .2},
150     \_mte  º  = {.1, .2},
151     \_mte  ¹  = {.2, .25},
152     \_mte  ²  = {.05, .1},
153     \_mte  ³  = {.05, .1},
154     \_mte  ¬  = {.2,   0},
155     \_mte  –  = {.3, .3},
156     \_mte  ±  = {.15, .2},
157     \_mte  ×  = {.15, .25},
158     \_mte  ÷  = {.15, .25},
159     \_mte  €  = {.1,   0},
160     \_mte  Γ  = {0   ,.180}, % /Gamma
161     \_mte  Δ  = {.1, .1},    % /Delta
162     \_mte  Θ  = {.05, .05},  % /Theta
163     \_mte  Λ  = {.1,.1},     % /Lambda
164     \_mte  Σ  = {.05, .05},  % /Sigma
165     \_mte  Υ  = {.1,.1},     % /Upsilon
166     \_mte  Φ  = {.05, .05},  % /Phi
167     \_mte  Ψ  = {.05, .05},  % /Psi
168  }
```

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

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```
175  \.trydef \_mte_AlphabetPI {% Alphabets, Protrusion, Italic fonts
176     \_mte  A = {.125,.1},
177     \_mte  Æ = {.125,-.055},
178     \_mte  B = {.09,-.04},
179     \_mte  C = {.145,-.075},
180     \_mte  D = {.075,-.028},
181     \_mte  E = {.08,-.055},
182     \_mte  F = {.085,-.08},
183     \_mte  G = {.153,-.015},
184     \_mte  H = {.073,-.06},
185     \_mte  I = {.14,-.12},
186     [0x0132] = {.14,-.08}, % IJ
187     \_mte  J = {.135,-.08},
188     \_mte  K = {.07,-.03},
189     \_mte  L = {.087,.04},
190     \_mte  M = {.067,-.045},
191     \_mte  N = {.075,-.055},
192     \_mte  O = {.15,-.03},
193     \_mte  Œ = {.15,-.055},
194     \_mte  P = {.082,-.05},
195     \_mte  Q = {.15,-.03},
196     \_mte  R = {.075, .015},
197     \_mte  S = {.09,-.065},
198     \_mte  $ = {.1,-.02}, % $
199     \_mte  T = {.22,-.085},
200     \_mte  U = {.23,-.055},
201     \_mte  V = {.26,-.06},
202     \_mte  W = {.185,-.055},
203     \_mte  X = {.07,-.03},
204     \_mte  Y = {.25,-.06},
205     \_mte  Z = {.09,-.06},
206  }
```

\.alphabetPI

```
211  \.trydef \_mte_alphabetPI {% alphabets, Protrusion, Italic fonts
212     \_mte  a = {.15,-.01},
213     \_mte  b = {.17, 0},
214     \_mte  c = {.173,-.01},
215     \_mte  d = {.15,-.055},
216     \_mte  e = {.18, 0},
217     \_mte  f = {0   ,-.25},
218     \_mte  g = {.15,-.01},
219     \_mte  h = {.1,  0},
220     \_mte  i = {.21, 0},
221     [0x17C9] = {.21,-.04}, % ij
222     \_mte  j = {0   ,-.04},
223     \_mte  k = {.11,-.05},
224     \_mte  l = {.24,-.11},
225     \_mte  m = {.08, 0},
226     \_mte  n = {.115, 0},
227     \_mte  o = {.155, 0},
228     \_mte  q = {.17,-.04},
229     \_mte  r = {.155,-.04},
230     \_mte  s = {.13, 0},
231     \_mte  t = {.23,-.01},
232     \_mte  u = {.12, 0},
233     \_mte  v = {.14,-.025},
234     \_mte  w = {.098,-.02},
235     \_mte  x = {.065,-.04},
236     \_mte  y = {.13,-.02},
237     \_mte  z = {.110,-.08},
238  }
```

\.digitsPI

```
243  \.trydef \_mte_digitsPI {% digits, Protrusion, Italic fonts
244     \_mte  0 = {.17,-.085},
245     \_mte  1 = {.23,.11},
246     \_mte  2 = {.13,-.07},
```

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```
247    \_mte  3 = {.14,-.07},
248    \_mte  4 = {.13,.08},
249    \_mte  5 = {.16, 0},
250    \_mte  6 = {.175,-.03},
251    \_mte  7 = {.25,-.15},
252    \_mte  8 = {.13,-.04},
253    \_mte  9 = {.155,-.08},
254    [0xF730] = {.05,.05}, % /zero.oldstyle
255    [0xF731] = {.1, .1},  % /one.oldstyle
256    [0xF732] = {.1,.08},  % /two.oldstyle
257    [0xF733] = {.08,.05}, % /three.oldstyle
258    [0xF734] = {.08,.08}, % /four.oldstyle
259    [0xF735] = {.05,  0}, % /five.oldstyle
260    [0xF736] = {.05,  0}, % /six.oldstyle
261    [0xF737] = {.08,.08}, % /seven.oldstyle
262    [0xF738] = {.05,  0}, % /eight.oldstyle
263    [0xF739] = {0  ,.05}, % /nine.oldstyle
264  }
```

\.punctPI

```
269  \.trydef \_mte_punctPI {% punctuations, Protrusion, Italic fonts
270    \_mte  . = {0 ,.5},
271    \_mte  , = {0 ,.45},
272    \_mte  : = {0 ,.3},
273    \_mte  ; = {0 ,.3},
274    \_mte  & = {.13,.03},
275    \_mte \% = {.18,.05},
276    \_mte  * = {.38,.02},
277    \_mte  + = {.18,.2},
278    \_mte  @ = {.18,.01},
279    \_mte  ~ = {.2,.15},
280    \_mte  ( = {.3, 0},   \_mte ) = {0  ,.07},
281    \_mte  / = {.1,.1},
282    \_mte  - = {.5,.3}, % /hyphen
283    \_mte  – = {.5,.3}, % /endash
284    \_mte  — = {.4,.17}, % /emdash
285    \_mte  _ = {.1,.2}, % /underscore
286    \_mte  ¡ = {.2,  0},   \_mte ¿ = {.2,  0},
287  }
```

\.quotPI

```
292  \.trydef \_mte_quotPI {% quotation marks, Protrusion, Italic fonts
293    \_mte  ' = {.3,.4}, % /quotesingle
294    \_mte  " = {.5,.3},
295    \_mte  ‘ = {.8,.2},   \_mte  ’ = {.8,-.02},
296    \_mte  “ = {.54,.1}, \_mte  ” = {.5,.1},
297    \_mte  ‚ = {.3,.7},   \_mte  „ = {.2,.6},
298    \_mte  ‹ = {.5,.3},   \_mte  › = {.4,.4},
299    \_mte  « = {.4,.1},   \_mte  » = {.2,.3},
300  }
```

\.othersPI

```
305  \.trydef \_mte_othersPI {% other characters, Protrusion, Italic fonts
306    \_mte  < = {.3,.1},   \_mte > = {200,100},
307    \_mte \\ = {.3,.3},
308    \_mte \{ = {.4,.1},   \_mte \}  = {200,200},
309    \_mte  † = {.2,.08},
310    \_mte  ‡ = {.12,.08},
311    \_mte  • = {.22,.1},
312    \_mte  · = {.55,.3}, % /periodcentered
313    \_mte  ℃ = {.17, 0},
314    \_mte  ¢ = {.1,.05},
315    \_mte  ¶ = {.2, 0},
316    \_mte  ° = {.5,.3},
317    [0x2122] = {.2,.07}, % /trademark
318    \_mte  © = {.05,.07},
319    \_mte  ® = {.05,.07},
```

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```
320    \_mte  ª = {.14,.1},
321    \_mte  º = {.14,.1},
322    \_mte  ¹ = {.40,.15},
323    \_mte  ² = {.25,.08},
324    \_mte  ³ = {.25,.08},
325    \_mte  ¬ = {.25,.08},
326    \_mte  – = {.3,.2},
327    \_mte  ± = {.15,.17},
328    \_mte  × = {.2,.2},
329    \_mte  ÷ = {.2,.2},
330    \_mte  € = {.15, 0},
331    \_mte  Γ = {.1,.12}, % /Gamma
332    \_mte  Δ = {.12,.1}, % /Delta
333    \_mte  Θ = {.12,.05}, % /Theta
334    \_mte  Λ = {.13,.1}, % /Lambda
335    \_mte  Ξ = {.1, 0}, % /Xi
336    \_mte  Π = {.1, 0}, % /Pi
337    \_mte  Σ = {.1,.05}, % /Sigma
338    \_mte  Υ = {.18,.1}, % /Upsilon
339    \_mte  Φ = {.13,.07}, % /Phi
340    \_mte  Ψ = {.13,.05}, % /Psi
341    \_mte  Ω = {.05, 0}, % /Omega
342  }
```

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

mte.opm

```
350  \.trydef \_mte_AlphabetX {% Alphabets, eXpansion
351    \_mte  A = .5,
352    \_mte  Æ = .5,
353    \_mte  B = .7,
354    \_mte  C = .7,
355    \_mte  D = .5,
356    \_mte  E = .7,
357    \_mte  F = .7,
358    \_mte  G = .5,
359    \_mte  H = .7,
360    \_mte  K = .7,
361    \_mte  M = .7,
362    \_mte  N = .7,
363    \_mte  O = .5,
364    \_mte  Œ = .5,
365    \_mte  P = .7,
366    \_mte  Q = .5,
367    \_mte  R = .7,
368    \_mte  S = .7,
369    \_mte  U = .7,
370    \_mte  W = .7,
371    \_mte  Z = .7,
372  }
```

`\.alphabetX`

mte.opm

```
377  \.trydef \_mte_alphabetX {% alphabets, eXpansion
378    \_mte  a = .7,
379    \_mte  æ = .7,
380    \_mte  b = .7,
381    \_mte  c = .7,
382    \_mte  d = .7,
383    \_mte  e = .7,
384    \_mte  g = .7,
385    \_mte  h = .7,
386    \_mte  k = .7,
387    \_mte  m = .7,
388    \_mte  n = .7,
389    \_mte  o = .7,
390    \_mte  œ = .7,
391    \_mte  p = .7,
392    \_mte  q = .7,
393    \_mte  s = .7,
```

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```
394    \_mte  u = .7,
395    \_mte  w = .7,
396    \_mte  z = .7,
397  }
```

`\.digitsX`

```
402  \.trydef \_mte_digitsX {% digits, eXpansion
403    \_mte  2 = .7,
404    \_mte  3 = .7,
405    \_mte  6 = .7,
406    \_mte  8 = .7,
407    \_mte  9 = .7,
408  }
```

`\.othersX`

```
413  \.trydef \_mte_othersX {% others, eXpansion
414  }
```

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.

```
424  \.trydef \_mte_P {} % user specific, Protrusion
425  \.trydef \_mte_X {} % user specific, eXpansion
426
427  \_def \.allPR {\.AlphabetPR \.alphabetPR \.digitsPR \.punctPR \.quotPR \.othersPR \.P}
428  \_def \.allPI {\.AlphabetPI \.alphabetPI \.digitsPI \.punctPI \.quotPI \.othersPI \.P}
429  \_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.

```
438  \_addto\_fontfeatures{\.features}
439  \_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.

```
454  \_def\.enablemte {%
455    \_initunifonts
456    \.initprotrusion  % luacode, pr and pi tables initialized
457    \.initexpansion   % luacode, ex table initialized
458    \_protrudechars=2
459    \_adjustspacing=2
460    \_def\.features{protrusion=p\.var;expansion=ex}% pr/pi and ex tables used
461    \_reloading \_currvar
462  }
463  \_def\.disablemte {%
464    \_protrudechars=0
465    \_adjustspacing=0
466    \_def\.features{}%
467    \_reloading \_currvar
468  }
469  \_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.

```
477  \_def\.it{it}\_def\.bi{bi}
478  \_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.

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```
487 \_def\.initprotrusion {%
488    \_directlua {%
489       fonts.protrusions.setups['pr']={
490          factor=\.fpfactor,
491          \.leftright,
492          \.allPR
493       }
494       fonts.protrusions.setups['pi']={
495          factor=\.fpfactor,
496          \.leftright,
497          \.allPI
498 }}}
499 \_def\.initexpansion {%
500    \_directlua {%
501       fonts.expansions.setups['ex']={
502          \.stretchshrinkstep,
503          factor=\.fxfactor,
504          \.allX
505 }}}
```

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):

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

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

```
522 \_def\.setfpfactor #1 {\_def\.fpfactor{#1}}
523 \_def\.setfxfactor #1 {\_def\.fxfactor{#1}}
524 \_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.

```
541 \_def\_newfontloaded#1{\_ifx\.features\_empty \_else \.setequivs#1\_fi}
542
543 \_def\.setequivs #1{\_let\.f=#1\_ea\.setequivsA\.equalcodes,,={},}
544 \_def\.setequivsA#1#2=#3#4,{\_ifx^#3^\_else
545    \_afterfi{\_tmpnum=`#1 \.setequivsB#3#4\_end\.setequivsA}\_fi}
546 \_def\.setequivsB#1{\_ifx\_end#1\_else
547    \_lpcode\.f`#1=\_lpcode\.f\_tmpnum
548    \_rpcode\.f`#1=\_rpcode\.f\_tmpnum
549    \_efcode\.f`#1=\_efcode\.f\_tmpnum
550    \_ea\.setequivsB\_fi
551 }
```

`\.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.

```
563 \_def\.equalcodes {%
564    A = ÀÁÂÃÄÅĀĂĄǍÀÀÀÁÁÂÂÂÃÃÄÄÅÅ,
565    B = ƁB,
566    C = ÇĆĈĊČ,
567    D = ĎĐḊḌ,
568    E = ÈÉÊËĒĔĖĘĚÈĖÈÈÉÉÊÊÉE,
569    G = ĜĞĠĢǦǴ,
570    H = ĤĦḦḢḤ,
571    I = ÌÍÎÏĨĪĬİĮİÌÍİ,
572    J = Ĵ,
573    K = ĶK,
```

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```
574    L = ĹĽĻŁĿ,
575    M = M,
576    N = ÑŃŅŇŊN̈,
577    O = ÒÓÔÕÖØŌŎŐǪǬØ̈Ŏ̀Ŏ́Ô̂Ồ̃Ö̃Ǫ̈ŏ̃Ǒ̃ǾQ̧o,
578    P = P,
579    R = ŔŖŘR̃ŘR̄R̲,
580    S = ŚŜŞŠŞS̱,
581    T = ŢŤṬT̲ȚT,
582    U = ÙÚÛÜŪŬŮŰŲÙ̈Ų̈Ů́ŰṺŰŲ̃,
583    W = ŴẀẂ̈Ẅ,
584    X = X,
585    Y = ÝŶŸẎY̧Ỳ̊Ỹ,
586    Z = ŹŻŽẒZ̧,
587    a = àáâãäåāăąǻä̀ä̧å̄ắấầẫ̃ãâ̂â̧à̊ã̊ã̃,
588    æ = ǽ,
589    c = çćĉċč,
590    d = đḑḍ, % ď has different right side
591    e = èéêëēĕėęě̀ē̃ẽ̈ȩ̂ế̂ề̃ẽ̂ề̂ẽ̃ȩ̂,
592    g = ĝğ̈ğģ̇ğ̃ğ́,
593    h = ĥ̃ḣ̈ḥ̈ḩ̣ḥ̱,
594    i = ìíîïīĭİ̧ịıìĭ̧î̧ị̣,
595    j = ĵ,
596    k = ķ,
597    l = ļ́ļ̱ł̧ĺ̄, % ľ has different right side
598    n = ñńņňṅ̈ṇ,
599    o = òóôõöøōŏőǫ̧ọ̧øǿ̈ò̊ồ̂ố̃ổ̂ộ̃õ̂ờ̃ờ̂õ̃ðǫ̧,
600    r = ŕŗŗ̌ŗ̣ṛ̱ŕ̄ř̄,
601    s = śŝşšş̣ṣ,
602    t = ţ̧țţ̱ẗṭẗ́,
603    u = ùúûüūŭůűǔǔ̧ųů̃ụ̇ù̧ů̄ủ̂ǔ̃ŭ̃ǔ̃,
604    w = ŵẁẃ̈ẅ,
605    y = ýŷÿ̈ỳy̧ỳ̊ỹ̃,
606    z = źżž̧ẓ,
607 }
608 \_endnamespace
```

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