

# The **mētrix** package

Tobias Weh\*

Version 1.5 – Released 2019/10/09

## Abstract

— — — — — | — ∪ ∪ — ∪ ∪ —  
et quod temptābam | scribere versus erat

The **mētrix** package can be used to print the prosodics/metrics of (latin) verses. It provides macros to typeset the symbols stand alone and in combination with syllables (including automatic alignment like seen above). Furthermore it defines a new brēvis and a lōnga accent<sup>1</sup> and a bow to contract syllables.

*Thanks to David Carlisle, Marco Daniel, Enrico Gregorio, Bruno Le Floch and Joseph Wright who helped me with starting in L<sup>A</sup>T<sub>E</sub>X3 programming. The verse above is by Ovid in his Tristia 4,10,26.*

## 1 Prerequisites

**mētrix** relies only on a few packages: tikz (including the calc library), xpatch and xparse, which stand for the whole L<sup>A</sup>T<sub>E</sub>X3 bundle.

## 2 Package loading

Load **mētrix** as usual with `\usepackage{metrix}`. At the moment it has no options.

A CWL file `metrix.cwl` for autocompletion in TeXstudio is available in the GitHub repo. To install the CWL file copy it to `~/.config/texstudio/` on Linux and OS X and to `C:\Documents and Settings\User\AppData\Roaming\texstudio/`. See section 1.5 of the TeXstudio manual for more information.

---

\*URL: <http://tobiw.de/en>, Mail: [mail@tobiw.de](mailto:mail@tobiw.de)

<sup>1</sup>I know that these signs are no accents in the liguistic sense, but they are in the T<sub>E</sub>X tradition ...

## 3 Bugs and feedback

### 3.1 Known issues

- At the moment the escaping of hyphen chars is not that good (see section 7.3).
- Unfortunately you can't use the active quotes of `csquotes` inside of `\metrics` syllable list (see section 7.4).

I'm sure there are more bugs and issues let me know if you find them ...

### 3.2 Feedback

Any feedback on **mëtrix** is appreciated. You may use its GitHub repository at <https://github.com/tweh/metricx> to request features and report bugs or send me an e-mail ([mail@tobiw.de](mailto:mail@tobiw.de)).

Please note that I don't speak latin myself and forthat the examples in this manual may be wrong—as long as they show how to use the package I don't consider such errors as bugs ;-).

## 4 Metric symbols

### 4.1 Syntax for symbols

Before I'll show you the central macros for typesetting the symbols, you need to “learn” the syntax for the symbols. All symbols are represented by a single or a combination of characters. The list with all available abbreviations can be found in table 1. Please keep in mind that **mëtrix** uses spaces to separate the abbreviations an something like `_ ' x` will cause an error, the correct input is `_ ' _ x` (where `_` indicates a space/blank).

#### Accents above symbols (ictus)

If you want to add an additional accent above a symbol you may precede the symbol with an slash `/` for an acute or a star `*` for a grave accent. At the moment this only works with breve (`/u` or `*u`) and longum (`/_` or `*_`).

#### Example

An ictus (although out of date).

```
\metricsymbols{/_ u u /_ _ /_}
```

— ∪ ∪ — — —

Table 1: Symbol abbreviations

abbreviation	symbol	name/explanation	accent/ictus?
e		empty (= invisible) symbol	
u	◌	elementum breve	yes
_	—	elementum longum	yes
uu	◌◌	double breve	
uu_	◌◌	elementum biceps	
_uu	◌◌	elementum biceps	
u_uu	◌◌◌	elementum anceps	
x	×	elementum anceps	
n	◌	elementum indifferens	
u_	◌	elementum indifferens	
_u	◌	elementum indifferens	
A	^	*	
v	∨	*	
o	○	*	
oo	○○	aeolic base	
l		caesura or break	
ll		caesura or end of period	
p	/	primary stress	
s	\	secondary stress	
		break (see 4.4)	
		verse break (see 4.4)	
'		shorter break (see 4.4)	
,		shorter break (see 4.4)	

\* I added these symbols as someone might needs them. If you use them please let me know what to add as name/explanation.

## 4.2 Stand alone metric symbols

---

```
\metricsymbols * [highlighting]{symbols}
```

---

This macro typesets stand alone versions of the symbols, i.e. without syllables below (or above) of them. Use the starred version for smaller (in line) symbols and the normal version for bigger symbols. *symbols* must be a list of abbreviations as explained in section 4.1; the abbreviations must be separated by one (or more) spaces.

### Example

The *diphilius* can be shown with this code.

```
\metricsymbols{ _ uu _ uu u_ | x _ u u _ x u_ }
— ∞ — ∞ ∞ | × — ∪ ∪ — × ∞
```

### 4.3 Metric symbols above (or below) syllables

---

```
\metrics * \metrics[highlighting]{symbols}{syllables}
```

---

This command can be used to align the symbols above (or below) syllables. The first argument works as in `\metricsymbols`, the second argument `{syllables}` takes the hyphenated verse.

#### Example

```
\metrics{ _ u u _ _ _ | _ _ u u _ _ _ }
      {flos ve-te-ris vi-ni | meis na-ri-bus ob-iec-tust}
— ∪ ∪ — — — | — — ∪ ∪ — — —
flos veteris vini | meis naribus obiectust
```

You may use multiple spaces to align the abbreviations above the syllables but this is not mandatory and does not affect the output. But mind that the number of syllables equals the number of symbols. If you use the  $\infty$  symbol you may omit the hyphen between the two syllables belonging to this symbol. You can merge multiple words by *embracing* them.

#### Example

```
\metrics{ _ u u _ _ _ _ _ }
      {mol-ta quo-{que et} bel-lo pas-sus}
— ∪ ∪ — — — — —
molta quoque et bello passus
```

The macros `\metrics` and `\metricsymbols` can also be used to typeset single symbols or symbol syllable combinations.

#### Example

The `\metricsymbols*{uu}` shows an `\emph{elementum biceps}`.  
The  $\infty$  shows an *elementum biceps*.

### 4.4 Adding symbols for breaks

As seen in the examples above you can use pipes, i.e. `|` or `||`, to mark breaks. In `\metrics` the markers must appear in `{symbols}` and `{syllables}`.

#### Example

```
\metrics{ _ u u _ _ _ | _ _ u u _ || }
      {flos ve-te-ris vi-ni | meis na-ri-bus ob ||}
```

flos veteris vini | meis naribus ob ||

If you want the breaks to be shown in the symbol line only you can use the shorter break which is represented by an apostrophe (shift + #) or a comma. This mark must be used in `<symbols>` only and is kind of special:

- It *can't* be highlighted and thus doesn't count for the numbers used for highlights,
- it is ignored at the beginning and the end of `<symbols>`,
- in `\metricsymbols` it is treated like the pipe, and
- $\TeX$  needs at least one additional run to get the right positions.

#### Example

```
\metrics{ _ u u ' _ u u ' _ _ ' _ _ | _ u u | _ _ || }
      {Ar-ma vi-rum-que ca-no Tro-iae qui | pri-mus ab | o-ris ||}
_ u u | _ u u | _ _ ' _ _ | _ u u | _ _ ||
Arma virumque cano Troiae qui | primus ab | oris ||
```

The difference between ' and , is that the break defined with an apostrophe is vertically centred between the surrounding symbols while the break set with the comma is vertically centred between the corresponding syllables. They both align horizontally within the row of symbols.

#### Example

```
\emph{apostrophe:}
\metrics{ _ _ ' _ _ }
      {au-ra-{r\bow{um e}st}} \qqquad
\emph{comma:}
\metrics{ _ _ , _ _ }
      {au-ra-{r\bow{um e}st}}
apostrophe: aurarum est      comma: aurarum est
```

## 4.5 Highlight certain symbols/syllables

As you can see above `\metrics` and `\metricsymbols` got an optional argument taking some options to highlight a certain symbol/syllable. The `<highlighting>` list must contain one or more comma separated pairs of `<numbers>=<style>`, where `<numbers>` is the number of a symbol/syllable (e.g. 3) or a list of numbers separated by plus signs (e.g. 2+3+5) in the list and `<style>` is any TikZ style (other TikZ options may not work properly, so you maybe must create your own style, see section 7.9.)

**mëtrix** comes with several predefined highlighting styles:

- **add arrow**

flos veteris vini | meis naribus ob ||

↓  
∩ ∩ × — | ∩ — ∩ ||

This style adds an arrow above the metric symbol. To change the arrow symbol, edit the **mëtrix** variable `arrow`.

- **add text=*text***

flos veteris vini | meis naribus ob || whisper

This style takes a *mandatory* argument to add some text above a symbol. To change the default font change the font of the TikZ node style `every matrix added text`.

- **bold highlight**

flos veteris vini | meis naribus ob ||

- **colored highlight=*color***

flos veteris vini | meis naribus ob ||

This style has an *optional* argument to change the highlighting color on the fly. To change the color in general change the value of the variable `highlightcolor`.

- **dashed highlight**

flos veteris vini | meis naribus ob ||

- **filled highlight=*color***

flos veteris vini | meis naribus ob ||

This style has an *optional* argument to change the filling color on the fly. To change the color in general change the value of the variable `fillcolor`.

- **superscript=*text***

flos veteris vini | meis naribus ob ||<sup>a</sup> |<sup>a</sup> ||<sup>b</sup>

This style takes a *mandatory* argument to add a superscript letter or a number to a symbol. It is designed to work with the break symbols, but works with others too.

**Styles with an argument must be set in braces (see the examples)!**

#### Example

Highlight some syllables with color.

```
\metrics
[
  2=colored highlight,
  4={colored highlight=orange},
  5={colored highlight=blue},
  7=colored highlight,
  11=colored highlight
]
{ _ u u _ _ _ | _ _ u u _ }
{flos ve-te-ris vi-ni | meis na-ri-bus ob}
```

flos veteris vini | meis naribus ob

### Example

The shorter version using the + syntax.

```
\metrics[2+5+9=bold highlight]
  {_ u u _ _ _ | _ _ u u _ }
  {flos ve-te-ris vi-ni | meis na-ri-bus ob}
flos veteris vini | meis naribus ob
```

### Example

Mixing and combining styles is possible too.

```
\metricsymbols[1+4=bold highlight, 3=colored highlight]
  {u_uu x _ || u _ n ||} \
\metricsymbols[2={bold highlight,colored highlight}]
  {u_uu x _ || u _ n ||}
x — || u — n ||
x — || u — n ||
```

### Example

Add some superscripts to the breaks.

```
\metricsymbols[6={superscript=5},10={colored highlight,superscript=bD}]
  {_ _uu _ _uu _ | _uu _ _uu || _ uu _ u_}
— — — |5 — — ||bD — — —
```

## 5 Accents and bows

---

`\brv` \* `\brv{<vowel>}`    `\lng`{<vowel>}    `\acct`{<vowel>}

`\lng` \* The first commands offer an alternative to the standard accent macros `\u` and `\=`. The difference is that `\brv` centers the accent above the vowel or diphthong and `\lng` stretches the bar across the whole vowel or diphthong. `\acct` adds an accent dot below a vowel or diphthong.<sup>2</sup>

---

### Example

Add accents to all vowels.

```
\brv{a}m\acct{\lng{i}}c\brv{u}s pr\acct{\brv{o}}f\brv{u}g\brv{u}s
```

<sup>2</sup>Actually you can use any vowel, diphtong, syllable or word as *<vowel>*, it makes no difference as long as it is text.

ăm̄īcūs prōfūgŭs

**mëtrix** also tries to do some kind of italic correction, and shifts the accents a little to the right when an italic or slanted font is used.

ŭ ŭ ŭ    ĭ ĭ ĭ    æ æ æ    ŭ ŭ ŭ    ĭ ĭ ĭ    æ æ æ  
ū ū ū    ī ī ī    ā ē ā ē    ū ū ū    ī ī ī    ā ē ā ē  
ų ų ų    ï ï ï    æ æ æ    ų ų ų    ï ï ï    æ æ æ

### Fine Tuning

To make some fine tuning for a certain accent possible the three macros actually got some additional, *optional* arguments:

```
\brv(<coordinate>){<vowel>}  
\lng(<coordinate>)[<left length>]{<vowel>}[<right length>]  
\acct(<coordinate>){<vowel>}
```

Where *<coordinate>* must be a valid TikZ coordinate and can be used to move the accent. In addition to that the accent produced by `\lng` can be extended with *<left/right length>* by a certain amount.

#### Example

Prevent collision between accent and descender of an *f*.

```
\itshape somn\acct(-0.05em,-0.45ex){i}fero  
somniafero
```

---

`\bow` ★ `\bow{<syllables>}`

`\bow` can be used to show the contraction of two vowels or syllables.

#### Example

```
mult\bow{um i}lle or d\bow{ei}nde  
multum ille or deinde
```

### Fine Tuning

To make some fine tuning for a certain bow possible the macro actually has some additional, *optional* arguments:

```
\bow(<coordinate>)[<left length>]{<syllable>}[<right length>]
```

Where *<left/right length>* can be used to shorten the bow by a certain amount.

#### Example

Prevent collision between accent and bow.

```
c\acct{oe}-1\bow{um \acct{e}}[2pt]st
```



coe-lum est

## 6 Environments

sympolline

This environment can be used to display a line of stand alone symbols.

### Example

```
Text text text ...
\begin{sympolline}
  \metricsymbols{oo e _ u u _ e u _ e u _ u_}
\end{sympolline}
Text text text ...

Text text text ...

          oo  —  ∪ ∪ —  ∪ —  ∪ — ∪

Text text text ...
```

metricverses

```
\begin{metricverses}[\langle source \rangle]
\langle content optional \verseref{\langle reference \rangle} \rangle
\end{metricverses}
```

Use this environment to display a verse with metric symbols, separate multiple verses by a blank line.

### Example

```
Text text text ...
\begin{metricverses}
  \metrics{ _ u u _ _ _ | _ _ u u _ _ _ }
          {flos ve-te-ris vi-ni | meis na-ri-bus ob-iec-tust}

  \metrics{ _ u u _ u u _ | _ _ _ _ _ u u
           _ u u _ _ }
          {ei-us a-mor cu-pi-dam | {m\bow{e h}uc} pro-li-cit
           per te-ne-bras}
\end{metricverses}
Text text text ...

Text text text ...

  _ ∪ ∪ — — — | — — ∪ ∪ — — —
  flos veteris vini | meis naribus obiectust
  _ ∪ ∪ — ∪ ∪ — | — — — — ∪ ∪ —
  eius amor cupidam | me huc prolicit per tenebras

Text text text ...
```

---

`\verseref` `\verseref{<reference>}`

---

Inside of `{metricverses}` you may use `\verseref` to print a reference.

#### Example

```
Text text text ...
\begin{metricverses}
  \metrics{ _  u  u  _  _  _  |  _  _  u  u  _  _  _  }
           {flos ve-te-ris vi-ni | meis na-ri-bus ob-iec-tust}
  \verseref{Plaut. \emph{Curc.} 96f}

  \metrics{ _  u  u  _  u  u  _  |  _  _  _  _  _  u  u  _  _  }
           {ei-us a-mor cu-pi-dam | {m\bow{e h}uc} pro-li-cit
                                           per te-ne-bras}
\end{metricverses}
Text text text ...

Text text text ...

  _  u  u  _  _  _  |  _  _  u  u  _  _  _
  flos veteris vini | meis naribus obiectust
  _  u  u  _  u  u  _  |  _  _  _  _  _  u  u  _  _
  eius amor cupidam | me huc prolicit per tenebras
Text text text ...
```

Plaut. *Curc.* 96f

## 7 FAQs

### 7.1 How can I display the symbols below the syllables?

Change the variable `symbolshift` to a negative value.

#### Example

```
\setmetrixvar{symbolshift}{-0.6em}
% later ...
\metrics{ _  u  u  _  _  _  |  _  _  u  u  _  _  _  }
           {flos ve-te-ris vi-ni | meis na-ri-bus ob-iec-tust}

flos veteris vini | meis naribus obiectust
  _  u  u  _  _  _  |  _  _  u  u  _  _  _
```

### 7.2 How can I combine two words below one symbol?

Use braces `{}` in the lists to keep them processed as one element.

#### Example

```
\metrics{u  u  _  |  _  _  _  _  _  u  u  }
           {cu-pi-dam | {m\bow{e h}uc} pro-li-cit }
```

cupidam | me huc prolicit

### 7.3 How can I show a hyphen character?

To escape a hyphen - put it inside braces, but you must still add an unbraced hyphen to show **mëtrix** where your syllables split.

#### Example

If you enclose the hyphen in braces together with a syllable, the symbol gets centered above both.

```
\metrics{ _ _ }
          {vi-{-ni}}
```

— —  
vi-ni

You can enclose only the hyphen in braces and treat it as a syllable but then you must add an empty symbol e too.

```
\metrics{ _ e _ }
          {vi-{-}-ni}
```

— —  
vi-ni

### 7.4 How can I use quotes in \metrics?

It should be possible to use all shorthands (or direct input with Unicode) etc. for quotation marks except the active quotes of csquotes, which won't work inside the \metrics syllable list. It is possible to use csquotes besides **mëtrix** though.

#### Example

```
\metrics{ _ u }{ ``si me'' }
\metrics{ _ u }{ \glqq si me\grqq }% with \usepackage[<lang>]{babel}
\metrics{ _ u }{ "si me" }% with \usepackage[ngerman]{babel}
“si me” „si me“ „si me“
```

### 7.5 How can I add a superscript letter to a certain symbol?

Use the superscript highlighting style as described above.

### 7.6 How can I make subscripts instead of superscripts?

The easiest way is to use the superscript style and change a part of its definition to shift the superscripts to subscript positions.

#### Example

```
\metricsymbols[2={superscript=x}]{ u || u } \quad vs. \quad
% ...
\tikzset{
```

```

every superscript picture/.style={
  baseline=1ex,
},
}
% ...
\metricsymbols[2={superscript=x}]{ u || u }

```

$\cup \parallel^x \cup$  vs.  $\cup \parallel_x \cup$

Normally the `\tikzset` should be part of your preamble, I used it this way to show the differences.

## 7.7 How can I highlight all symbols/syllables?

**Way 1** Just call your desired highlighting style before using on of the macros `\metrics` or `\metricsymbols`. You may enclose this in a group to not affect the other following sequences. Mind that the highlighting styles must be in a way changing the `every ...` styles to make this way work.

### Example

```

{% begin group
  \tikzset{colored highlight}
  \metrics{ _ u u _ _ _ }
  {flos ve-te-ris vi-ni}
}% end group
— ∪ ∪ — — —
flos veteris vini

```

**Way 2** Change the `every metrix ...` styles.

### Example

```

{% begin group
  \tikzset{every metrix symbol/.append style={red}}
  \metrics{ _ u u _ _ _ }
  {flos ve-te-ris vi-ni}
}% end group
— ∪ ∪ — — —
flos veteris vini

```

Leave out the grouping (and put this to your preamble) if you want to highlight the symbols in your whole document.

## 7.8 How can I change the size of a symbol?

Change the two base vector units.

### Example

```
\setmetrixvar{baseunit}{1em}
\setmetrixvar{bigbaseunit}{1.6em}
```

If you want to change the size of a single symbol to highlight it you must create your own highlighting style.

### Example

```
\tikzset{
  bigger highlight/.style={
    every metrix symbol/.append style={x=2.5em,y=2.5em,line width=1.5pt},
  },
}
% later
\metricsymbols[2=bigger highlight]{u_u x _ || u _ n x}

u X — || u —  $\cap$  x
```

## 7.9 How can I stop highlighting the syllables too?

**Way 1** Change the highlight styles (in your preamble).

### Example

```
\tikzset{
  colored highlight/.style={
    every metrix symbol/.append style={
      draw=\usemetrixvar{highlightcolor},
    },
  },
}
% later ...
\metrics[3=colored highlight]{_ u u _ _ _ }
                             {flos ve-te-ris vi-ni}

— u u — —
flos veteris vini
```

**Way 2** Create your own highlighting style, which is very similar to way 1, as the following example shows. Every own style should change the appearance by appending the settings to one of the every ... styles.

### Example

```
\tikzset{
  my highlight/.style={
    every metrix symbol/.append style={draw=blue,line width=0.07em},
  }
}
\metrics[5=my highlight]{_ u u _ _ _ }
                        {flos ve-te-ris vi-ni}
```

flos veteris vini

## 7.10 Why got the highlight styles that long names?

To prevent conflict with other packages.

### Example

If you want to shorten it create your own style as described above or use

```
\tikzset{
  hl/.style={colored highlight}
}
```

to map the style to a shorter name. Then you can use it like in

```
\metricsymbols[2=hl]{u _ _ u}
```

## 7.11 How can I change the font of all syllables?

Extend the every `metrix syllable` node style

### Example

Print all syllables in italic with the following extension.

```
\tikzset{
  every metrix syllable node/.append style={font=\itshape},
}
```

## 8 Customization

Some hints were already given in the FAQ section (see section 7) but here I will list all variables and TikZ styles that are in use and can be changed to customize **mëtrix** easily.

### 8.1 Variables

---

```
\setmetrixvar {variable} {value}
```

```
\usemetrixvar
```

---

To customize the rendering of the symbols, accents and bow **mëtrix** has some variables that you can change. Use `\setmetrixvar` to change a value. The variables and the default values are listed in table 2. To access a value you can use `\usemetrixvar{variable}`.

It is highly recommended to use font size depending units, i.e. `em` or `ex`, for all lengthen to keep the symbols usable in different font sizes, for example in headlines or footnotes.

### Example

Change the highlighting color to blue.

```
\setmetrixvar{highlightcolor}{blue}
% later
```

```
\metrics[5=colored highlight]{_ u u _ _ _ }
                             {flos ve-te-ris vi-ni}
_ ˘ ˘ ˘ ˘ ˘
flos veteris vini
```

### Example

Create your own highlighting style but use the default highlighting color.

```
\tikzset{
  my highlight/.style={
    every metrix symbol/.append style={
      draw=\usemetrixvar{highlightcolor},
      line width=0.15em
    },
  },
}
\metrics[5=my highlight]{_ u u _ _ _ }
                             {flos ve-te-ris vi-ni}
_ ˘ ˘ ˘ ˘ ˘
flos veteris vini
```

Table 2: Variables

variable	default	explanation
symbollinewidth	0.04em	line width of symbols above syllables and small stand alone symbols
bigsymbollinewidth	0.06em	line width of big stand alone symbols
accentlinewidth	0.03em	line width of accents ( <code>\lng</code> and <code>\brv</code> )
bowlinewidth	0.03em	line width of bows ( <code>\bow</code> )
symbolsep	0.4em	gap between symbols in stand alone lists
baseunit	0.9em	length of the base vector for drawing symbols above syllables, small stand alone symbols, accents and bows
bigbaseunit	1.4em	length of the base vector for drawing stand alone symbols
shortsyllablelimit	0.8em	all syllables shorter than this can be treated specially, e.g. they'll get a shorter <i>elementum longum</i> .
gap	0.09em	small gap between lines of the symbols, e.g. the distance between the two lines of a verse break
symbolshift	1.1em	length to shift the symbols above or below the syllables (try <code>-0.6em</code> to display the symbols below the base line)
lngshift	0.8em	length to shift the <i>longa</i> accent

...

Table 2: Variables (cont.)

variable	default	explanation
lngshortening	0.075em	length to shorten the longa accent a little
lngminlength	0.25em	minimum width of a longa accent
brvshift	0.9em	length to shift the brevis accent
dotshift	-0.15em	length to shift the dot accent
itcorrection	0.11em	length to shift the accents above italic/slanted letters
accentxshift	-0.025em	length to shift the accents horizontally
bowshift	-0.15em	length to shift the bow below the base line
bowshortening	0.15em	length to shrink the bow a little
bowlooseness	0.75	value to influence the bending of the bow
symbolcolor	. (curr. color)	color of metric symbols
accentcolor	. (curr. color)	color of accents ( <code>\lng</code> and <code>\brv</code> )
bowcolor	. (curr. color)	color of bows ( <code>\bow</code> )
highlightcolor	red	color of highlighted symbols and syllables used in colored highlight style
fillcolor	yellow	color of filled symbol nodes used in filled highlight style
arrow	<code>\$\$\downarrow\$</code>	arrow for highlighting
breakgap	0.6em	gap before and after a (verse) break
emptywidth	1em	gap replacing an empty symbol (abbreviation e)
acute	<code>\textasciiacute</code>	acute accent character/symbol
grave	<code>\textasciigrave</code>	grave accent character/symbol

## 8.2 TikZ styles

Beside the variables you may change the TikZ styles used by **mëtrix**. But please mind that all styles are not empty by default so you should prefer `/.append style` against `/.style`. Otherwise it may cause strange effects. Remind that you can use `\usemetrixvar` to access a variable.

---

```
every_metrix_symbol
every_metrix_big_symbol
every_metrix_symbol_node
```

---

These three styles define the appearance of the metric symbols. They define the line width, the color, the basis vectors and other things.

---

```
every_metrix_syllable_node
every_metrix_break_node
```

---

These styles defines the nodes in which a syllable or a break symbol (the ones spanning across the symbol and the syllable line) is typeset, e.g. it aligns these nodes at their base line.



---

---

`every_metrix_ictus_node`

This style defines the appearance of accents above symbols (ictus, e.g. /u).

---

---

`every_metrix_accent`

This style defines the appearance of accents created by `\lmg` and `\brv`.

---

---

`every_metrix_bow`

This style defines the appearance of bows below symbols.

---

---

`bold_highlight``colored_highlight``dashed_highlight``filled_highlight``superscript`

---

---

These styles can be used to highlight a certain symbol.

---

---

`every_superscript_picture``every_superscript_node``every_superscript_label`

---

---

These styles are used to define the superscript highlighting style.

---

---

`every_metrix_added_text`

---

---

This style is used for text added to a symbol with the `add_text` highlighting.

## 9 Implementation

```
1 <*package>
2 <@@=metrix>
3 \ProvidesExplPackage
4   {\metrixFileName}{\metrixFileDate}{\metrixFileVersion}{\metrixFileDescription}
```

### 9.1 Required packages

```
5 \RequirePackage{xparse}
6 \RequirePackage{xpatch}
7 \RequirePackage{tikz}
8 \ExplSyntaxOff
9 \usetikzlibrary{calc}
10 \ExplSyntaxOn
11 \RequirePackage{textcomp}
```

### 9.2 Constants and internal variables

These constants variables are for internal use only and can't be changed/accessed by the user.

### 9.2.1 Constants

`\c__metrix_acute_accent_tl` Constant holding an acute accent char.  
<sup>12</sup> `\tl_const:Nn \c__metrix_acute_accent_tl { / }`  
(End definition for `\c__metrix_acute_accent_tl`.)

`\c__metrix_acute_accent_tl` Constant holding an grave accent char.  
<sup>13</sup> `\tl_const:Nn \c__metrix_grave_accent_tl { * }`  
(End definition for `\c__metrix_acute_accent_tl`.)

### 9.2.2 Variables

`\l__metrix_words_tl` This list stores the words of the `\metrics` macro.  
<sup>14</sup> `\tl_new:N \l__metrix_words_tl`  
(End definition for `\l__metrix_words_tl`.)

`\l__metrix_syllables_seq` This list stores the words of the `\l__metrix_words_tl` list.  
<sup>15</sup> `\seq_new:N \l__metrix_syllables_seq`  
(End definition for `\l__metrix_syllables_seq`.)

`\l__metrix_symbols_seq` This list stores the metric symbols of `\metrics` and `\metricsymbols`.  
<sup>16</sup> `\seq_new:N \l__metrix_symbols_seq`  
(End definition for `\l__metrix_symbols_seq`.)

`\l__metrix_short_breaks_seq` This list stores the short and foot breaks of `\metrics`.  
`\l__metrix_foot_breaks_seq`  
<sup>17</sup> `\seq_new:N \l__metrix_short_breaks_seq`  
<sup>18</sup> `\seq_new:N \l__metrix_foot_breaks_seq`  
(End definition for `\l__metrix_short_breaks_seq` and `\l__metrix_foot_breaks_seq`.)

`\l__metrix_highlights_prop` This list stores the highlighting styles of `\metrics` and `\metricsymbols`.  
<sup>19</sup> `\prop_new:N \l__metrix_highlights_prop`  
(End definition for `\l__metrix_highlights_prop`.)

`\l__metrix_highlight_seq` This lists are used to evaluate a highlight style.  
`\l__metrix_highlight_pos_seq`  
<sup>20</sup> `\seq_new:N \l__metrix_highlight_seq`  
<sup>21</sup> `\seq_new:N \l__metrix_highlight_pos_seq`  
(End definition for `\l__metrix_highlight_seq` and `\l__metrix_highlight_pos_seq`.)

`\q__metrix_space_marker` This is the marker for spaces inside of the `\l__metrix_words_tl` list.  
<sup>22</sup> `\quark_new:N \q__metrix_space_marker`  
(End definition for `\q__metrix_space_marker`.)

`\l__metrix_process_int` This process counter is used to combine the symbols and syllables.  
<sup>23</sup> `\int_new:N \l__metrix_process_int`  
(End definition for `\l__metrix_process_int`.)

`\l__metrix_short_syllable_bool` This boolean can be used to store that a syllable is short, e.g. *li* will be defined as short whereas *man* is long. That will be used to shorten the |\_| symbol. Furthermore we'll need a box to measure the length of a syllable and a variable to save the limit for short syllables.

```

24 \bool_new:N \l__metrix_short_syllable_bool
25 \box_new:N \l__metrix_syllable_box
26 \tl_new:N \g__metrix_variable_shortsyllablelimit_tl
27 \tl_set:Nn \g__metrix_variable_shortsyllablelimit_tl { 0.8em }

```

(End definition for `\l__metrix_short_syllable_bool`, `\l__metrix_syllable_box`, and `\g__metrix_variable_shortsyllablelimit_tl`.)

`\l__metrix_current_symbol_tl` Variable holding the current symbol abbreviation.

```

28 \tl_new:N \l__metrix_current_symbol_tl

```

(End definition for `\l__metrix_current_symbol_tl`.)

`\l__metrix_current_symbol_head_tl` Variable holding first char of the current symbol abbreviation.

```

29 \tl_new:N \l__metrix_current_symbol_head_tl

```

(End definition for `\l__metrix_current_symbol_head_tl`.)

`\l__metrix_has_acute_accent_bool` Bool for switching on an acute accent of a symbol.

```

30 \bool_new:N \l__metrix_has_acute_accent_bool

```

(End definition for `\l__metrix_has_acute_accent_bool`.)

`\l__metrix_has_grave_accent_bool` Bool for switching on an grave accent of a symbol.

```

31 \bool_new:N \l__metrix_has_grave_accent_bool

```

(End definition for `\l__metrix_has_grave_accent_bool`.)

### 9.3 User variables

These variables save things, the user can change via `\setmetrixvar` and use via `\usemetrixvar`.

`\g__metrix_variable_symbollinewidth_tl` This variable stores the line width for all metric symbols above (or below) syllables.

```

32 \tl_new:N \g__metrix_variable_symbollinewidth_tl
33 \tl_set:Nn \g__metrix_variable_symbollinewidth_tl { 0.04em }

```

(End definition for `\g__metrix_variable_symbollinewidth_tl`.)

`\g__metrix_variable_bigsymbollinewidth_tl` This variable stores the line width for all stand alone metric symbols.

```

34 \tl_new:N \g__metrix_variable_bigsymbollinewidth_tl
35 \tl_set:Nn \g__metrix_variable_bigsymbollinewidth_tl { 0.06em }

```

(End definition for `\g__metrix_variable_bigsymbollinewidth_tl`.)

`\g__metrix_variable_accentlinewidth_tl` This variable stores the line width of the accent like symbols.

```

36 \tl_new:N \g__metrix_variable_accentlinewidth_tl
37 \tl_set:Nn \g__metrix_variable_accentlinewidth_tl { 0.04em }

```

(End definition for `\g__metrix_variable_accentlinewidth_tl`.)

`\g__metrix_variable_bowlinewidth_tl` This variable stores the line width of the bow.

```

38 \tl_new:N \g__metrix_variable_bowlinewidth_tl
39 \tl_set:Nn \g__metrix_variable_bowlinewidth_tl { 0.04em }

```

*(End definition for \g\_\_metrix\_variable\_bowlinewidth\_tl.)*

`\g__metrix_variable_symbolsep_tl` This variable stores the gap between two or more stand alone metric symbols.

```

40 \tl_new:N \g__metrix_variable_symbolsep_tl
41 \tl_set:Nn \g__metrix_variable_symbolsep_tl { 0.4em }

```

*(End definition for \g\_\_metrix\_variable\_symbolsep\_tl.)*

`\g__metrix_variable_baseunit_tl` This variable stores the length of the basis vector for all metric symbols above (or below) syllables and accent like symbols.

```

42 \tl_new:N \g__metrix_variable_baseunit_tl
43 \tl_set:Nn \g__metrix_variable_baseunit_tl { 0.9em }

```

*(End definition for \g\_\_metrix\_variable\_baseunit\_tl.)*

`\g__metrix_variable_bigbaseunit_tl` This variable stores the length of the basis vector for all stand alone metric symbols.

```

44 \tl_new:N \g__metrix_variable_bigbaseunit_tl
45 \tl_set:Nn \g__metrix_variable_bigbaseunit_tl { 1.4em }

```

*(End definition for \g\_\_metrix\_variable\_bigbaseunit\_tl.)*

`\g__metrix_variable_gap_tl` Length for small gaps in the symbols, e.g. the gap between the two bows of an elementum biceps.

```

46 \tl_new:N \g__metrix_variable_gap_tl
47 \tl_set:Nn \g__metrix_variable_gap_tl { 0.09em }

```

*(End definition for \g\_\_metrix\_variable\_gap\_tl.)*

`\g__metrix_variable_symbolshift_tl` This variable stores the value to shift metric symbols above (or below) syllables. Set this variable to approx 1.1em to draw the symbols above the syllable and to -0.6em to draw them below.

```

48 \tl_new:N \g__metrix_variable_symbolshift_tl
49 \tl_set:Nn \g__metrix_variable_symbolshift_tl { 1.1em }

```

*(End definition for \g\_\_metrix\_variable\_symbolshift\_tl.)*

`\g__metrix_variable_lngshift_tl` This variable stores the value to shift the longa accent.

```

50 \tl_new:N \g__metrix_variable_lngshift_tl
51 \tl_set:Nn \g__metrix_variable_lngshift_tl { 0.15em }

```

*(End definition for \g\_\_metrix\_variable\_lngshift\_tl.)*

`\g__metrix_variable_lngshortening_tl` This variable stores the value to shorten the longa accent.

```

52 \tl_new:N \g__metrix_variable_lngshortening_tl
53 \tl_set:Nn \g__metrix_variable_lngshortening_tl { 0.075em }

```

*(End definition for \g\_\_metrix\_variable\_lngshortening\_tl.)*

`\g__metrix_variable_lngminlength_tl` This variable stores the value to shorten the longa accent.

```

54 \tl_new:N \g__metrix_variable_lngminlength_tl
55 \tl_set:Nn \g__metrix_variable_lngminlength_tl { 0.25em }

```

(End definition for `\g__metrix_variable_lngminlength_tl`.)

`\g__metrix_variable_brvshift_tl` This variable stores the value to shift the brevis accent.

```
56 \tl_new:N \g__metrix_variable_brvshift_tl
57 \tl_set:Nn \g__metrix_variable_brvshift_tl { 0.25em }
```

(End definition for `\g__metrix_variable_brvshift_tl`.)

`\g__metrix_variable_dotshift_tl` This variable stores the value to shift the brevis accent.

```
58 \tl_new:N \g__metrix_variable_dotshift_tl
59 \tl_set:Nn \g__metrix_variable_dotshift_tl { -0.15em }
```

(End definition for `\g__metrix_variable_dotshift_tl`.)

`\g__metrix_variable_itcorrection_tl` These variables are used to set the italic correction of accents.

```
\l__metrix_internal_itcorrection_tl
\g__metrix_internal_itcorrection_zero_tl
60 \tl_new:N \g__metrix_variable_itcorrection_tl
61 \tl_set:Nn \g__metrix_variable_itcorrection_tl { 0.11em }
62 \tl_new:N \l__metrix_internal_itcorrection_tl
63 \tl_set:Nn \l__metrix_internal_itcorrection_tl { 0em }
64 \tl_new:N \g__metrix_internal_itcorrection_zero_tl
65 \tl_set:Nn \g__metrix_internal_itcorrection_zero_tl { 0em }
```

(End definition for `\g__metrix_variable_itcorrection_tl`, `\l__metrix_internal_itcorrection_tl`, and `\g__metrix_internal_itcorrection_zero_tl`.)

`\g__metrix_variable_accentxshift_tl` This variable is used to shift the accents horizontally.

```
66 \tl_new:N \g__metrix_variable_accentxshift_tl
67 \tl_set:Nn \g__metrix_variable_accentxshift_tl { -0.025em }
```

(End definition for `\g__metrix_variable_accentxshift_tl`.)

`\g__metrix_variable_bowshift_tl` This variable stores the value to shift the bow.

```
68 \tl_new:N \g__metrix_variable_bowshift_tl
69 \tl_set:Nn \g__metrix_variable_bowshift_tl { -0.15em }
```

(End definition for `\g__metrix_variable_bowshift_tl`.)

`\g__metrix_variable_bowshortening_tl` This variable stores the value to shrink the bow.

```
70 \tl_new:N \g__metrix_variable_bowshortening_tl
71 \tl_set:Nn \g__metrix_variable_bowshortening_tl { 0.15em }
```

(End definition for `\g__metrix_variable_bowshortening_tl`.)

`\g__metrix_variable_bowlooseness_tl` This variable stores the value to shrink the bow.

```
72 \tl_new:N \g__metrix_variable_bowlooseness_tl
73 \tl_set:Nn \g__metrix_variable_bowlooseness_tl { 0.75 }
```

(End definition for `\g__metrix_variable_bowlooseness_tl`.)

`\g__metrix_variable_symbolcolor_tl` These variables store the color of symbols, accents and bows.

```
\g__metrix_variable_accentcolor_tl
\g__metrix_variable_bowcolor_tl
74 \tl_new:N \g__metrix_variable_symbolcolor_tl
75 \tl_set:Nn \g__metrix_variable_symbolcolor_tl { . }
76 \tl_new:N \g__metrix_variable_accentcolor_tl
77 \tl_set:Nn \g__metrix_variable_accentcolor_tl { . }
78 \tl_new:N \g__metrix_variable_bowcolor_tl
79 \tl_set:Nn \g__metrix_variable_bowcolor_tl { . }
```

(End definition for `\g__metrix_variable_symbolcolor_tl`, `\g__metrix_variable_accentcolor_tl`, and `\g__metrix_variable_bowcolor_tl`.)

`\g__metrix_variable_highlightcolor_tl` These variable stores the color used in the colored highlight style.

```
80 \tl_new:N \g__metrix_variable_highlightcolor_tl
81 \tl_set:Nn \g__metrix_variable_highlightcolor_tl { red }
```

(End definition for `\g__metrix_variable_highlightcolor_tl`.)

`\g__metrix_variable_fillcolor_tl` These variable stores the color used in the filled highlight style.

```
82 \tl_new:N \g__metrix_variable_fillcolor_tl
83 \tl_set:Nn \g__metrix_variable_fillcolor_tl { yellow }
```

(End definition for `\g__metrix_variable_fillcolor_tl`.)

`\g__metrix_variable_arrow_tl` These variable stores the color used in the filled highlight style.

```
84 \tl_new:N \g__metrix_variable_arrow_tl
85 \tl_set:Nn \g__metrix_variable_arrow_tl { $\downarrow$ }
```

(End definition for `\g__metrix_variable_arrow_tl`.)

`\g__metrix_variable_breakgap_tl` This variable stores the width of the gap around the two break symbols.

```
86 \tl_new:N \g__metrix_variable_breakgap_tl
87 \tl_set:Nn \g__metrix_variable_breakgap_tl { 0.6em }
```

(End definition for `\g__metrix_variable_breakgap_tl`.)

`\g__metrix_variable_emptywidth_tl` This variable stores the width of the gap caused by an empty symbol (abbreviation e).

```
88 \tl_new:N \g__metrix_variable_emptywidth_tl
89 \tl_set:Nn \g__metrix_variable_emptywidth_tl { 1em }
```

(End definition for `\g__metrix_variable_emptywidth_tl`.)

`\g__metrix_variable_acute_tl` This variable stores acute symbol.

```
90 \tl_new:N \g__metrix_variable_acute_tl
91 \tl_set:Nn \g__metrix_variable_acute_tl { \textasciiacute }
```

(End definition for `\g__metrix_variable_acute_tl`.)

`\g__metrix_variable_grave_tl` This variable stores grave symbol.

```
92 \tl_new:N \g__metrix_variable_grave_tl
93 \tl_set:Nn \g__metrix_variable_grave_tl { \textasciigrave }
```

(End definition for `\g__metrix_variable_grave_tl`.)

## 9.4 Variants

Later we'll need the following variant.

```
94 \cs_generate_variant:Nn \prop_item:Nn { No , Nf , NV , Nx }
95 \cs_generate_variant:Nn \prop_put:Nnn { Nnx , Nxx , Nff , Noo }
96 \cs_generate_variant:Nn \seq_item:Nn { Nf , NV , Nx }
97 \cs_generate_variant:Nn \seq_set_split:Nnn { Nnf , NnV , Nnx }
98 \cs_generate_variant:Nn \tl_remove_once:Nn { NV }
```

## 9.5 Internal main macros

`\__metrix_metrics:nn` This macro processes the two lists of `\metrics` and combines the symbols and syllables.<sup>3</sup>

```

99 \cs_new_protected:Npn \__metrix_metrics:nn #1 #2
100 {

```

```

101   \tl_set:Nx \l__metrix_words_tl { \tl_trim_spaces:n { #2 } }

```

First replace the spaces by a special marker `\q__metrix_space_marker` and add hyphens: a space becomes a syllable.

```

102   \tl_replace_all:Nnn \l__metrix_words_tl { ~ } { - \q__metrix_space_marker - }

```

Then split the word list at hypens.

```

103   \seq_set_split:NnV \l__metrix_syllables_seq { - } \l__metrix_words_tl

```

Split the symbol list at spaces.

```

104   \seq_set_split:Nnx \l__metrix_symbols_seq { ~ } { \tl_trim_spaces:n { #1 } }

```

Search for the short and foot breaks and remove them afterwards.

```

105   \int_zero:N \l__metrix_process_int
106   \seq_clear:N \l__metrix_short_breaks_seq
107   \seq_clear:N \l__metrix_foot_breaks_seq
108   \seq_map_inline:Nn \l__metrix_symbols_seq {
109     \int_incr:N \l__metrix_process_int
110     \tl_if_eq:nnT { ##1 } { ' } {
111       \seq_put_right:Nx \l__metrix_short_breaks_seq { \int_use:N \l__metrix_process_int }
112       \int_decr:N \l__metrix_process_int
113     }
114     \tl_if_eq:nnT { ##1 } { , } {
115       \seq_put_right:Nx \l__metrix_foot_breaks_seq { \int_use:N \l__metrix_process_int }
116       \int_decr:N \l__metrix_process_int
117     }
118   }
119   \seq_remove_all:Nn \l__metrix_symbols_seq { , }
120   \seq_remove_all:Nn \l__metrix_symbols_seq { ' }

```

Test whether both lists got the same length:

```

121   \int_zero:N \l__metrix_process_int
122   \seq_map_inline:Nn \l__metrix_syllables_seq
123   {
124     \tl_if_eq:nnT { ##1 } { \q__metrix_space_marker }
125     { \int_incr:N \l__metrix_process_int }
126   }
127   \int_compare:nTF
128   {
129     \seq_count:N \l__metrix_syllables_seq -
130     \seq_count:N \l__metrix_symbols_seq = \l__metrix_process_int
131   }
132   {

```

---

<sup>3</sup>The framing of this macro was provided by Enrico Gregorio at <http://tex.stackexchange.com/q/124528/4918>, a follow up question was <http://tex.stackexchange.com/q/124698/4918>. David Carlisle and Bruno Le Floch lead me to the implementation of the highlighting mechanism, see <http://tex.stackexchange.com/q/124782/4918>

continue with list processing, if the numbers are equal:

```

133     \int_zero:N \l__metrix_process_int
134     \seq_map_inline:Nn \l__metrix_syllables_seq
135     {
136         \int_incr:N \l__metrix_process_int
137         \tl_if_eq:nnTF { ##1 } { \q__metrix_space_marker }
138         {

```

If the syllable is a space the process counter must be decremented and a space is typeset.

```

139             \int_add:Nn \l__metrix_process_int { -1 }
140             \c_space_token
141         }
142     {

```

Finally typeset the syllable and it's symbol.

```

143         \str_case:nnF { ##1 }
144         {
145             { | }
146             {
147                 \__metrix_break_node:n { \__metrix_l_break: }
148             }
149             { || }
150             {
151                 \__metrix_break_node:n { \__metrix_ll_break: }
152             }
153         }
154         {
155             \__metrix_print_syllable:n { ##1 }
156         }
157     }
158 }

```

And add the short break symbols if necessary:

```

159     \seq_if_empty:NF \l__metrix_short_breaks_seq {
160         \seq_map_inline:Nn \l__metrix_short_breaks_seq {
161             \int_set:Nn \l_tmpa_int { ##1 - 1 }
162             \bool_if:nF {
163                 \int_compare_p:n
164                 { 0 = \l_tmpa_int }
165             ||
166             \int_compare_p:n
167             { \seq_count:N \l__metrix_symbols_seq = \l_tmpa_int }
168         } {
169             \tikz [remember~picture, overlay] {
170                 \node [every~metrix~symbol~node] at
171                 ( $(\l__metrix_symbol_node\_int\_use:N \l_tmpa\_int.east)!
172                 0.5!(\l__metrix_symbol_node\_##1.west)$ )
173                 { \__metrix_short_break: };
174             }
175         }
176     }
177 }

```

And add the foot break symbols if necessary:

```

178     \seq_if_empty:NF \l__metrix_foot_breaks_seq {

```



```

179     \seq_map_inline:Nn \l__metrix_foot_breaks_seq {
180       \int_set:Nn \l_tmpa_int { ##1 - 1 }
181       \bool_if:nF {
182         \int_compare_p:n
183           { 0 = \l_tmpa_int }
184         ||
185         \int_compare_p:n
186           { \seq_count:N \l__metrix_symbols_seq = \l_tmpa_int }
187       } {
188         \tikz [remember~picture, overlay] {
189           \coordinate (l__metrix_tmp_coord) at
190             ($(\l__metrix_syllable_node\_int\_use:N \l_tmpa\_int.east)!
191              0.5!(\l__metrix_syllable\_node\_##1.west)$);
192           \node [every~metrix~symbol~node] at
193             ($(\l__metrix\_symbol\_node\_int\_use:N \l\_tmpa\_int.east)!
194              (\l__metrix\_tmp\_coord)!(\l__metrix\_symbol\_node\_##1.west)$)
195             { \__metrix_foot_break: };
196         }
197       }
198     }
199   }
200 }

```

Send an error, else.

```

201 {
202   \__metrix_error_msg:n
203   {
204     Numbers-of~symbols~(\seq_count:N \l__metrix_symbols_seq)~and~syllables~
205     (\int_eval:n
206       {
207         \seq_count:N \l__metrix_syllables_seq - \l__metrix_process_int
208       }
209     )~mismatch.
210   }
211 }
212 }

```

*(End definition for \\_\_metrix\_metrics:nn)*

`\__metrix_metricsymbols:n` This macro works like `\__metrix_metrics` but is used to print stand alone metric symbols via `\metricsymbols`.

```

213 \cs_new_protected:Npn \__metrix_metricsymbols:n #1
214 {
215   \seq_set_split:Nnx \l__metrix_symbols_seq { ~ } { \tl_trim_spaces:n { #1 } }
216   \int_zero:N \l__metrix_process_int
217   \seq_map_inline:Nn \l__metrix_symbols_seq
218   {
219     \int_incr:N \l__metrix_process_int
220     \int_compare:nT { \l__metrix_process_int > 1 }
221     {
222       \hspace { \usemetrixvar{symbolsep} }
223     }
224     \str_case:nnF { ##1 }
225     {
226       { , }

```

```

227     {
228     \_metrix_break_gap:
229     \_metrix_align_symbol:n { \_metrix_l_bigmark: }
230     \_metrix_break_gap:
231     }
232   { ' }
233   {
234     \_metrix_break_gap:
235     \_metrix_align_symbol:n { \_metrix_l_bigmark: }
236     \_metrix_break_gap:
237   }
238   { | }
239   {
240     \_metrix_break_gap:
241     \_metrix_align_symbol:n { \_metrix_l_bigmark: }
242     \_metrix_break_gap:
243   }
244   { '' }
245   {
246     \_metrix_break_gap:
247     \_metrix_align_symbol:n { \_metrix_ll_bigmark: }
248     \_metrix_break_gap:
249   }
250   { || }
251   {
252     \_metrix_break_gap:
253     \_metrix_align_symbol:n { \_metrix_ll_bigmark: }
254     \_metrix_break_gap:
255   }
256 }
257 {
258   \_metrix_align_symbol:n { \_metrix_print_symbol: }
259 }
260 }
261 }

```

(End definition for \\_metrix\_metricsymbols:n.)

\\_metrix\_print\_syllable:n This macro combines a single syllable and the corresponding metric symbol taken from the symbol list index with the process counter.

```

262 \cs_new_protected:Npn \_metrix_print_syllable:n #1
263 {
264   \group_begin:

```

Check whether the current syllable is short or long and set the corresponding `bbol`.

```

265   \hbox_set:Nn \l__metrix_syllable_box { #1 }
266   \dim_compare:nTF
267     { \box_wd:N \l__metrix_syllable_box < \g__metrix_variable_shortsyllablelimit_tl }
268     { \bool_set_true:N \l__metrix_short_syllable_bool }
269     { \bool_set_false:N \l__metrix_short_syllable_bool }

```

Set up the current highlight if it is defined

```

270   \cs_set:Npx \_metrix_current_highlight: {
271     \prop_item:NV \l__metrix_highlights_prop \l__metrix_process_int
272   }
273   \expandafter\tikzset\expandafter{\_metrix_current_highlight:}

```

Finally print the syllable and the symbol above. Use `{pgfinterruptboundingbox}` so that the symbol doesn't take space and doesn't cause gaps between the syllables.

```

274 \hbox_set:Nn \l_tmpa_box { \__metrix_print_symbol: }
275 \begin{tikzpicture}
276 [
277 remember-picture,
278 baseline=(l__metrix_syllable_node\int_use:N \l__metrix_process_int.base),
279 ]
280 \node [every~metrix~syllable~node]
281 (l__metrix_syllable_node\int_use:N \l__metrix_process_int)
282 { #1 };
283 \begin{pgfinterruptboundingbox}
284 \node [every~metrix~symbol~node]
285 (l__metrix_symbol_node\int_use:N \l__metrix_process_int)
286 at ($
287 (l__metrix_syllable_node\int_use:N \l__metrix_process_int.base)
288 +
289 (0,\usemetrixvar{symbolshift})
290 +
291 (\tl_use:N \l__metrix_internal_itcorrection_tl,0)
292 $)
293 { \box_use:N \l_tmpa_box };
294 \end{pgfinterruptboundingbox}
295 \end{tikzpicture}
296 \group_end:
297 }

```

(End definition for `\__metrix_print_syllable:n`.)

`\__metrix_print_symbol:` This command selects the right symbol by its abbreviation.

```

298 \cs_new_protected:Npn \__metrix_print_symbol:
299 {
300 \tl_set:Nx \l__metrix_current_symbol_tl
301 {
302 \seq_item:Nn \l__metrix_symbols_seq { \l__metrix_process_int }
303 }
304 \tl_set:Nx \l__metrix_current_symbol_head_tl
305 {
306 \tl_head:N \l__metrix_current_symbol_tl
307 }
308 \tl_case:NnT \l__metrix_current_symbol_head_tl
309 {
310 \c__metrix_acute_accent_tl { \bool_set_true:N \l__metrix_has_acute_accent_bool }
311 \c__metrix_grave_accent_tl { \bool_set_true:N \l__metrix_has_grave_accent_bool }
312 }
313 {
314 \tl_remove_once:NV \l__metrix_current_symbol_tl \l__metrix_current_symbol_head_tl
315 }
316 \cs_if_exist_use:cF
317 {
318 __metrix_
319 \tl_use:N \l__metrix_current_symbol_tl
320 _mark:
321 }

```

```

322 {
323   \__metrix_error_msg:n
324   {
325     Unknown~symbol~abbreviation~'\tl_use:N \l__metrix_current_symbol_tl'.
326   }
327 }
328 }

```

(End definition for \\_\_metrix\_print\_symbol:.)

## 9.6 Internal auxiliary macros

\\_\_metrix\_error\_msg:n An abbreviation to throw an error message.

```

329 \cs_new_protected:Npn \__metrix_error_msg:n #1
330 {
331   \PackageError{ \metrixFileName } { #1 }
332   {
333     Please~take~a~look~at~the~manual~or~send~an~email.
334   }
335 }

```

(End definition for \\_\_metrix\_error\_msg:n.)

\\_\_metrix\_warning\_msg:n An abbreviation to throw an error message.

```

336 \cs_new_protected:Npn \__metrix_warning_msg:n #1
337 {
338   \PackageWarning{ \metrixFileName } { #1 }
339 }

```

(End definition for \\_\_metrix\_warning\_msg:n.)

\\_\_metrix\_align\_symbol:n This macro aligns the metric symbols in a stand alone list.

```

340 \cs_new_protected:Npn \__metrix_align_symbol:n #1
341 {
342   \group_begin:
343   \cs_set:Npx \__metrix_current_highlight: {
344     \prop_item:NV \l__metrix_highlights_prop \l__metrix_process_int
345   }
346   \expandafter\tikzset\expandafter{\__metrix_current_highlight:}
347   \begin{tikzpicture}
348     [
349     baseline={(0,-0.25*\usemetrixvar{baseunit})},
350     ]
351     \node [every~metrix~symbol~node] {#1};
352   \end{tikzpicture}
353   \group_end:
354 }

```

(End definition for \\_\_metrix\_align\_symbol:n.)

\\_\_metrix\_break\_gap: This macro typesets the gap around the two break symbols.

```

355 \cs_new_protected:Npn \__metrix_break_gap:
356 {
357   \hspace { \usemetrixvar { breakgap } }
358 }

```

(End definition for `\_metrix_break_gap:.`)

`\_metrix_break_node:n` This macro typsets the gap around the two break symbols.

```
359 \cs_new:Npn \_metrix_break_node:n #1
360 {
361   \group_begin:
362   \cs_set:Npx \_metrix_current_highlight: {
363     \prop_item:NV \l__metrix_highlights_prop \l__metrix_process_int
364   }
365   \expandafter\tikzset\expandafter{\_metrix_current_highlight:}
366   \tikz[baseline=(l__metrix_break_node.base)]
367   \node (l__metrix_break_node) [every~metrix~break~node] { #1 }
368   ;
369   \group_end:
370 }
```

(End definition for `\_metrix_break_node:n`.)

`\_metrix_e_gap:` This macro typsets the gap around the two break symbols.

```
371 \cs_new_protected:Npn \_metrix_e_gap:
372 {
373   \hspace* { \usemetrixvar { emptywidth } }
374 }
```

(End definition for `\_metrix_e_gap:.`)

`\_metrix_evaluate_highlights:N` This macro evaluates and prints the highlighting options.

```
375 \cs_new_protected:Npn \_metrix_evaluate_highlights:n #1
376 {
```

Start with clearing the property list, otherwise the highlights from the last time will survive.

```
377 \prop_clear:N \l__metrix_highlights_prop
```

Then spilt and process the argument as a comma separated list.

```
378 \clist_map_inline:nn { #1 }
379 {
```

The result is a sequence of key value pairs that we store in `\l__metrix_highlight_seq`. The first part of this sequence must be split again at the plus sign—store it in `\l__metrix_highlight_pos_seq`.

```
380 \seq_set_split:Nnn \l__metrix_highlight_seq { = } { ##1 }
381 \seq_set_split:Nnf \l__metrix_highlight_pos_seq { + }
382 {
383   \seq_item:Nn \l__metrix_highlight_seq { 1 }
384 }
```

Process the `\l__metrix_highlight_pos_seq` list and set up the property list:

```
385 \seq_map_inline:Nn \l__metrix_highlight_pos_seq
386 {
387   \prop_put:Nnx \l__metrix_highlights_prop
```

The key is the current item of `\l__metrix_highlight_pos_seq`.

```
388   {
389     #####1
390   }
391 }
```

The value is the second item of `\l__metrix_highlight_seq`.

```
392     \seq_item:Nn \l__metrix_highlight_seq { 2 }
393   }
394 }
395 }
396 }
```

*(End definition for `\__metrix_evaluate_highlights:N`.)*

## 9.7 Patching font macros

To apply the italic correction of the accents we need to patch the font switches.

```
397 \xpretocmd { \itshape }
398 {
399   \tl_set_eq:NN
400   \l__metrix_internal_itcorrection_tl
401   \g__metrix_variable_itcorrection_tl
402 }
403 { }
404 {
405   \__metrix_warning_msg:n { Could-not-patch-\string\itshape. }
406 }
407 \xpretocmd { \slshape }
408 {
409   \tl_set_eq:NN
410   \l__metrix_internal_itcorrection_tl
411   \g__metrix_variable_itcorrection_tl
412 }
413 { }
414 {
415   \__metrix_warning_msg:n { Could-not-patch-\string\slshape. }
416 }
417 \xpretocmd { \upshape }
418 {
419   \tl_set_eq:NN
420   \l__metrix_internal_itcorrection_tl
421   \g__metrix_internal_itcorrection_zero_tl
422 }
423 { }
424 {
425   \__metrix_warning_msg:n { Could-not-patch-\string\upshape. }
426 }
427 \xpretocmd { \normalfont }
428 {
429   \tl_set_eq:NN
430   \l__metrix_internal_itcorrection_tl
431   \g__metrix_internal_itcorrection_zero_tl
432 }
433 { }
434 {
435   \__metrix_warning_msg:n { Could-not-patch-\string\normalfont. }
436 }
```

## 9.8 Internal macros for metric symbols

`\__metrix_e_mark:` The empty symbol.

```
437 \cs_new:Npn \__metrix_e_mark: { \__metrix_e_gap: }
(End definition for \__metrix_e_mark:.)
```

`\__metrix_u_mark:` The brevis symbol  $\breve$ .

```
438 \cs_new:Npn \__metrix_u_mark:
439 {
440   \begin{tikzpicture}[every~metrix~symbol]
441     \draw (0,0) arc [start~angle=0, end~angle=180, radius=-0.225];
442     \bool_if:NT \l__metrix_has_acute_accent_bool
443     {
444       \node [every~metrix~ictus~node] at (0.225,0) { \usemetrixvar { acute } };
445     }
446     \bool_if:NT \l__metrix_has_grave_accent_bool
447     {
448       \node [every~metrix~ictus~node] at (0.225,0) { \usemetrixvar { grave } };
449     }
450   \end{tikzpicture}
451 }
(End definition for \__metrix_u_mark:.)
```

`\__metrix__mark:` The longa symbol  $\text{—}$ .

```
452 \cs_new:Npn \__metrix__mark:
453 {
454   \bool_if:NTF \l__metrix_short_syllable_bool
455   {
456     \begin{tikzpicture}[every~metrix~symbol]
457       \draw (0,0) -- ++(0.4,0);
458       \bool_if:NT \l__metrix_has_acute_accent_bool
459       {
460         \node [every~metrix~ictus~node] at (0.2,0) { \usemetrixvar { acute } };
461       }
462       \bool_if:NT \l__metrix_has_grave_accent_bool
463       {
464         \node [every~metrix~ictus~node] at (0.2,0) { \usemetrixvar { grave } };
465       }
466     \end{tikzpicture}
467   }
468   {
469     \begin{tikzpicture}[every~metrix~symbol]
470       \draw (0,0) -- ++(0.75,0);
471       \bool_if:NT \l__metrix_has_acute_accent_bool
472       {
473         \node [every~metrix~ictus~node] at (0.375,0) { \usemetrixvar { acute } };
474       }
475       \bool_if:NT \l__metrix_has_grave_accent_bool
476       {
477         \node [every~metrix~ictus~node] at (0.375,0) { \usemetrixvar { grave } };
478       }
479     \end{tikzpicture}
480   }
}
```

```
481 }
(End definition for \_metrix\_mark:.)
```

\\_metrix\_uu\_mark: The biceps symbol  $\smile$ .

```
482 \cs_new:Npn \_metrix_uu_mark:
483 {
484   \begin{tikzpicture}[every-metrix-symbol]
485     \draw (0,0) arc [start-angle=0, end-angle=180, radius=-0.2];
486     \draw ($(0.4,0)+(\pgflinewidth,0)+(\usemetrixvar{gap},0)$) arc
487       [start-angle=0, end-angle=180, radius=-0.2];
488   \end{tikzpicture}
489 }
```

(End definition for \\_metrix\_uu\_mark:.)

\\_metrix\_uu\\_mark: The biceps symbol  $\smile$ .

```
490 \cs_new:Npn \_metrix_uu\_mark:
491 {
492   \begin{tikzpicture}[every-metrix-symbol]
493     \draw (0,0) arc [start-angle=0, end-angle=180, radius=-0.2];
494     \draw ($(0.4,0)+(\pgflinewidth,0)+(\usemetrixvar{gap},0)$) arc
495       [start-angle=0, end-angle=180, radius=-0.2];
496     \draw ($(0,-0.2)+(-0.5\pgflinewidth,-\pgflinewidth)-(0,\usemetrixvar{gap})$) --
497       ($(0.8,-0.2)+(1.5\pgflinewidth,-\pgflinewidth)
498         +(\usemetrixvar{gap},-\usemetrixvar{gap})$);
499   \end{tikzpicture}
500 }
```

(End definition for \\_metrix\_uu\\_mark:.)

\\_metrix\\_uu\\_mark: Another biceps symbol  $\smile$ .

```
501 \cs_new:Npn \_metrix\_uu\_mark:
502 {
503   \begin{tikzpicture}[every-metrix-symbol]
504     \draw (0,0) arc [start-angle=0, end-angle=180, radius=-0.2];
505     \draw ($(0.4,0)+(\pgflinewidth,0)+(\usemetrixvar{gap},0)$) arc
506       [start-angle=0, end-angle=180, radius=-0.2];
507     \draw ($(0,0)+(-0.5\pgflinewidth,0.5\pgflinewidth)+(0,\usemetrixvar{gap})$) --
508       ($(0.8,0)+(1.5\pgflinewidth,0.5\pgflinewidth)
509         +(\usemetrixvar{gap},\usemetrixvar{gap})$);
510   \end{tikzpicture}
511 }
```

(End definition for \\_metrix\\_uu\\_mark:.)

\\_metrix\_u\\_uu\\_mark: An another biceps symbol  $\smile$ .

```
512 \cs_new:Npn \_metrix_u\_uu\_mark:
513 {
514   \begin{tikzpicture}[every-metrix-symbol]
515     \draw (0,0) arc [start-angle=0, end-angle=180, radius=-0.2];
516     \draw ($(0.4,0)+(\pgflinewidth,0)+(\usemetrixvar{gap},0)$) arc
517       [start-angle=0, end-angle=180, radius=-0.2];
518     \draw ($(0,0)+(-0.5\pgflinewidth,0.5\pgflinewidth)+(0,\usemetrixvar{gap})$) --
519       ($(0.8,0)+(1.5\pgflinewidth,0.5\pgflinewidth)
```



```

520     +(\usemetrixvar{gap},\usemetrixvar{gap})$);
521     \draw ($(0.2,0.2)+(0.5\pgflinewidth,1.5\pgflinewidth)
522     +(0.5*\usemetrixvar{gap},2*\usemetrixvar{gap})$)
523     arc [start~angle=0, end~angle=180, radius=-0.2];
524     \end{tikzpicture}
525 }

```

(End definition for `\_metrix_u_uu_mark:`)

`\_metrix_x_mark:` The ancepts symbol  $\times$ .

```

526 \cs_new:Npn \_metrix_x_mark:
527 {
528   \begin{tikzpicture}[every-metrix-symbol]
529     \draw (-0.2,0.2) -- (0.2,-0.2);
530     \draw (-0.2,-0.2) -- (0.2,0.2);
531   \end{tikzpicture}
532 }

```

(End definition for `\_metrix_x_mark:`)

`\_metrix_v_mark:` The (yet) unnamed symbol  $\vee$ .

```

533 \cs_new:Npn \_metrix_v_mark:
534 {
535   \begin{tikzpicture}[every-metrix-symbol]
536     \draw (0,0) -- (0.225,-0.225) -- (0.45,0);
537   \end{tikzpicture}
538 }

```

(End definition for `\_metrix_v_mark:`)

`\_metrix_A_mark:` The (yet) unnamed symbol  $\wedge$ .

```

539 \cs_new:Npn \_metrix_A_mark:
540 {
541   \begin{tikzpicture}[every-metrix-symbol]
542     \draw (0,0) -- (0.225,0.225) -- (0.45,0);
543   \end{tikzpicture}
544 }

```

(End definition for `\_metrix_A_mark:`)

`\_metrix_o_mark:` The (yet) unnamed symbol  $\circ$ .

```

545 \cs_new:Npn \_metrix_o_mark:
546 {
547   \begin{tikzpicture}[every-metrix-symbol]
548     \draw (0,0) circle [radius=0.2];
549   \end{tikzpicture}
550 }

```

(End definition for `\_metrix_o_mark:`)

`\_metrix_oo_mark:` The aeolic symbol  $\circ\circ$ .

```

551 \cs_new:Npn \_metrix_oo_mark:
552 {
553   \begin{tikzpicture}[every-metrix-symbol]
554     \draw (0,0) circle [radius=0.2];

```

```

555 \draw ($(0.4,0)+(1\pgflinewidth,0)+(\usemetrixvar{gap},0)$) circle [radius=0.2];
556 \end{tikzpicture}
557 }

```

(End definition for `\_metrix_oo_mark:`)

`\_metrix_u_mark:` The indifferent symbol  $\sphericalangle$ .

```

558 \cs_new:Npn \_metrix_u_mark:
559 {
560 \begin{tikzpicture}[every-metrix-symbol]
561 \draw (0,0) arc [start-angle=0, end-angle=180, radius=-0.2];
562 \draw ($(0,-0.2)+(-0.5\pgflinewidth,-\pgflinewidth)-(0,\usemetrixvar{gap})$) --
563 ($$(0.4,-0.2)+(0.5\pgflinewidth,-\pgflinewidth)
564 +(0,-\usemetrixvar{gap})$);
565 \end{tikzpicture}
566 }

```

(End definition for `\_metrix_u_mark:`)

`\_metrix__u_mark:` The indifferent symbol  $\sphericalcap$ .

```

567 \cs_new:Npn \_metrix__u_mark:
568 {
569 \begin{tikzpicture}[every-metrix-symbol]
570 \draw (0,0) arc [start-angle=0, end-angle=180, radius=-0.2];
571 \draw ($(0,0)+(-0.5\pgflinewidth,0.5\pgflinewidth)+(0,\usemetrixvar{gap})$) --
572 ($$(0.4,0)+(0.5\pgflinewidth,0.5\pgflinewidth)
573 +(0,\usemetrixvar{gap})$);
574 \end{tikzpicture}
575 }

```

(End definition for `\_metrix__u_mark:`)

`\_metrix_n_mark:` An alternative indifferent symbol  $\sphericalcirc$ .

```

576 \cs_new:Npn \_metrix_n_mark:
577 {
578 \begin{tikzpicture}[every-metrix-symbol]
579 \draw (0,0) arc [start-angle=0, end-angle=180, radius=0.225];
580 \fill (-0.225,0.75*\usemetrixvar{symbollinewidth})
581 circle [radius=0.7\pgflinewidth];
582 \end{tikzpicture}
583 }

```

(End definition for `\_metrix_n_mark:`)

`\_metrix_p_mark:` The primary stress symbol  $\sphericaldot$ .

```

584 \cs_new:Npn \_metrix_p_mark:
585 {
586 \begin{tikzpicture}[every-metrix-symbol]
587 \draw (-0.2,-0.2) -- (0.2,0.2);
588 \end{tikzpicture}
589 }

```

(End definition for `\_metrix_p_mark:`)

`\__metrix_s_mark:` The secondary stress symbol  $\backslash$ .

```
590 \cs_new:Npn \__metrix_s_mark:
591 {
592   \begin{tikzpicture}[every-metrix-symbol]
593     \draw (-0.2,0.2) -- (0.2,-0.2);
594   \end{tikzpicture}
595 }
```

*(End definition for \\_\_metrix\_s\_mark:.)*

`\__metrix_l_mark:` The simple break symbol  $|$  (above syllables).

```
596 \cs_new:Npn \__metrix_l_mark:
597 {
598   \begin{tikzpicture}[every-metrix-symbol]
599     \draw (0,0) -- (0,0.5);
600   \end{tikzpicture}
601 }
```

*(End definition for \\_\_metrix\_l\_mark:.)*

`\__metrix_ll_mark:` The verse break symbol  $\parallel$  (above syllables).

```
602 \cs_new:Npn \__metrix_ll_mark:
603 {
604   \begin{tikzpicture}[every-metrix-symbol]
605     \draw (0,0) -- (0,0.5);
606     \draw ($(\pgflinewidth,0)+(1.5*\usemetrixvar{gap},0)$) -- ++(0,0.5);
607   \end{tikzpicture}
608 }
```

*(End definition for \\_\_metrix\_ll\_mark:.)*

`\__metrix_l_bigmark:` The simple break symbol  $|$  (stand alone version).

```
609 \cs_new:Npn \__metrix_l_bigmark:
610 {
611   \begin{tikzpicture}[every-metrix-symbol]
612     \draw (0,0) -- (0,0.8);
613   \end{tikzpicture}
614 }
```

*(End definition for \\_\_metrix\_l\_bigmark:.)*

`\__metrix_ll_bigmark:` The verse break symbol  $\parallel$  (stand alone version).

```
615 \cs_new:Npn \__metrix_ll_bigmark:
616 {
617   \begin{tikzpicture}[every-metrix-symbol]
618     \draw (0,0) -- (0,0.8);
619     \draw ($(\pgflinewidth,0)+(1.5*\usemetrixvar{gap},0)$) -- ++(0,0.8);
620   \end{tikzpicture}
621 }
```

*(End definition for \\_\_metrix\_ll\_bigmark:.)*

`\__metrix_l_break` The simple break symbol | (between syllables with symbols).

```
622 \cs_new:Npn \__metrix_l_break:
623 {
624   \begin{tikzpicture}[every-metrix-symbol,baseline=0.05em]
625     \draw (0,\usemetrixvar{symbolshift}+0.325em)
626       -- (0,-0.05em) -- (0,0.8em) -- (0,\usemetrixvar{symbolshift});
627   \end{tikzpicture}
628 }
```

*(End definition for \\_\_metrix\_l\_break.)*

`\__metrix_ll_break` The verse break symbol || (between syllables with symbols).

```
629 \cs_new:Npn \__metrix_ll_break:
630 {
631   \begin{tikzpicture}[every-metrix-symbol,baseline=0.05em]
632     \draw (0,\usemetrixvar{symbolshift}+0.325em)
633       -- (0,-0.05em) -- (0,0.8em) -- (0,\usemetrixvar{symbolshift});
634     \draw
635       [
636         shift={($(\pgflinewidth,0)+(1.5*\usemetrixvar{gap},0)$)},
637       ]
638       (0,\usemetrixvar{symbolshift}+0.325em) -- (0,-0.05em) -- (0,0.8em)
639       -- (0,\usemetrixvar{symbolshift});
640     \end{tikzpicture}
641 }
```

*(End definition for \\_\_metrix\_ll\_break.)*

`\__metrix_short_break:` The shorter break symbol.

```
642 \cs_new:Npn \__metrix_short_break:
643 {
644   \begin{tikzpicture}[every-metrix-symbol]
645     \draw (0,0.3) -- (0,-0.3);
646   \end{tikzpicture}
647 }
```

*(End definition for \\_\_metrix\_short\_break:.)*

`\__metrix_foot_break:` The shorter break symbol for foot break is the same as the regular short break.

```
648 \cs_set_eq:NN \__metrix_foot_break: \__metrix_short_break:
```

*(End definition for \\_\_metrix\_foot\_break:.)*

## 9.9 User level macros

`\setmetrixvar` This macro saves the value to an internal variable.

```
649 \NewDocumentCommand{ \setmetrixvar }{ m m }
650 {
651   \tl_if_exist:cTF { g__metrix_variable_#1_tl } {
652     \tl_set:cn { g__metrix_variable_#1_tl } { #2 }
653   }
654   {
655     \__metrix_error_msg:n { Unknown-variable-'#1'. }
656   }
657 }
```

(End definition for `\setmetrixvar`. This function is documented on page 14.)

`\usemetrixvar` With this command one can access the value of an internal variable.<sup>4</sup>

```
658 \DeclareExpandableDocumentCommand{ \usemetrixvar }{ m }
659 {
660   \tl_if_exist:cTF { g__metrix_variable_#1_tl } {
661     \tl_use:c { g__metrix_variable_#1_tl }
662   }
663   {
664     \__metrix_error_msg:n { Unknown~variable~'#1'. }
665   }
666 }
```

(End definition for `\usemetrixvar`. This function is documented on page 14.)

`\metrics` This user macro calls `\@_metrics` to typset syllables with symbols.

```
667 \NewDocumentCommand { \metrics } { 0{} m m }
668 {
669   \__metrix_evaluate_highlights:n { #1 }
670   \__metrix_metrics:nn { #2 } { #3 }
671 }
```

(End definition for `\metrics`. This function is documented on page 4.)

`\metricsymbols` This command typesets stand alone symbols. The starred version prints smaller versions.

```
672 \NewDocumentCommand { \metricsymbols } { s 0{} m }
673 {
674   \group_begin:
675   \IfBooleanF { #1 } { \tikzset{every~metrix~symbol/.style={every~metrix~big~symbol}} }
676   \__metrix_evaluate_highlights:n { #2 }
677   \__metrix_metricsymbols:n { #3 }
678   \group_end:
679 }
```

(End definition for `\metricsymbols`. This function is documented on page 3.)

`\lng` This macro prints the longa accent above its argument.

```
680 \NewDocumentCommand { \lng } { D(){} 0{0pt} m 0{0pt} }
681 {
682   \begin{tikzpicture}[
683     baseline = (l__metrix_syllable_node_\int_use:N \l__metrix_process_int.base),
684     every~metrix~accent
685   ]
686   \node [every~metrix~syllable~node]
687     (l__metrix_syllable_node_\int_use:N \l__metrix_process_int)
688     { #3 };
689   \begin{pgfinterruptboundingbox}
690   \draw [shorten-< = -#2, shorten-> = -#4]
691     ($ (l__metrix_syllable_node_\int_use:N \l__metrix_process_int.north)
692     - (\usemetrixvar{lngminlength}/2,0)
693     + (\usemetrixvar{accentxshift}, \usemetrixvar{lngshift})
694     + (\tl_use:N \l__metrix_internal_itcorrection_tl,0)
695     + (#1)$
```

<sup>4</sup>Marco Daniel showed me this hint at <http://tex.stackexchange.com/q/124600/4918>.

```

696     --
697     ($\l__metrix_syllable_node\_int_use:N \l__metrix_process_int.north)
698     + (\usemetrixvar{lngminlength}/2,0)
699     + (\usemetrixvar{accentxshift},\usemetrixvar{lngshift})
700     + (\tl_use:N \l__metrix_internal_itcorrection_tl,0)
701     + (#1)$)
702     ;
703     \draw [shorten-< = -#2, shorten-> = -#4]
704     ($\l__metrix_syllable_node\_int_use:N \l__metrix_process_int.north-west)
705     + (\usemetrixvar{lngshortening}+\usemetrixvar{accentxshift},\usemetrixvar{lngshift})
706     + (\tl_use:N \l__metrix_internal_itcorrection_tl,0)
707     + (#1)$)
708     --
709     ($\l__metrix_syllable_node\_int_use:N \l__metrix_process_int.north-east)
710     + (-\usemetrixvar{lngshortening}+\usemetrixvar{accentxshift},\usemetrixvar{lngshift})
711     + (\tl_use:N \l__metrix_internal_itcorrection_tl,0)
712     + (#1)$)
713     ;
714     \end{pgfinterruptboundingbox}
715     \end{tikzpicture}%
716 }

```

(End definition for \lng. This function is documented on page 7.)

**\brv** This macro prints the brevis accent above its argument.

```

717 \NewDocumentCommand { \brv } { D() {0,0} m }
718 {
719   \begin{tikzpicture}[
720     baseline = (\l__metrix_syllable_node\_int_use:N \l__metrix_process_int.base),
721     every~metrix~accent
722   ]
723   \node [every~metrix~syllable~node]
724     (\l__metrix_syllable_node\_int_use:N \l__metrix_process_int)
725     { #2 };
726   \begin{pgfinterruptboundingbox}
727     \draw ($\l__metrix_syllable_node\_int_use:N \l__metrix_process_int.north)
728     + (-0.15,0)
729     + (\usemetrixvar{accentxshift},\usemetrixvar{brvshift})
730     + (\tl_use:N \l__metrix_internal_itcorrection_tl,0)
731     + (#1)$)
732     arc [start~angle=0, end~angle=180, radius=-0.15];
733   \end{pgfinterruptboundingbox}
734   \end{tikzpicture}
735 }

```

(End definition for \brv. This function is documented on page 7.)

**\acct** This macro prints the dot accent below its argument.

```

736 \NewDocumentCommand { \acct } { D() {0,0} m }
737 {
738   \begin{tikzpicture}[
739     baseline = (\l__metrix_syllable_node\_int_use:N \l__metrix_process_int.base),
740     every~metrix~accent
741   ]
742   \node [every~metrix~syllable~node]

```

```

743     (l__metrix_syllable_node_\int_use:N \l__metrix_process_int)
744     { #2 };
745 \begin{pgfinterruptboundingbox}
746 \fill ($(l__metrix_syllable_node_\int_use:N \l__metrix_process_int.south)
747 + (0,\usemetrixvar{dotshift})
748 + (#1)$)
749 circle [radius=1.25\pgflinewidth];
750 \end{pgfinterruptboundingbox}
751 \end{tikzpicture}
752 }

```

(End definition for `\acct`. This function is documented on page 7.)

**\bow** This macro prints the bow below it's argument.

```

753 \NewDocumentCommand { \bow } { 0{0pt} m 0{0pt} }
754 {
755 \begin{tikzpicture}[
756 baseline = (l__metrix_syllable_node_\int_use:N \l__metrix_process_int.base),
757 every-metrix~bow
758 ]
759 \node [every~metrix~syllable~node]
760 (l__metrix_syllable_node_\int_use:N \l__metrix_process_int)
761 { #2 };
762 \draw [shorten~< = #1, shorten~> = #3]
763 ($ (l__metrix_syllable_node_\int_use:N \l__metrix_process_int.base~west)+
764 (\usemetrixvar{bowshortening},\usemetrixvar{bowshift})$)
765 to [out=-45, in=225, looseness=\usemetrixvar{bowlooseness}]
766 ($ (l__metrix_syllable_node_\int_use:N \l__metrix_process_int.base~east)+
767 (-\usemetrixvar{bowshortening},\usemetrixvar{bowshift})$);
768 \end{tikzpicture}
769 }

```

(End definition for `\bow`. This function is documented on page 8.)

## 9.10 TikZ styles

The **mëtrix** package uses several TikZ styles to draw the macros.

```

770 \ExplSyntaxOff
771 \tikzset {
772 every metrix symbol/.style={
773 line width=\usemetrixvar{symbollinewidth},
774 color=\usemetrixvar{symbolcolor},
775 x=\usemetrixvar{baseunit},y=\usemetrixvar{baseunit},
776 },
777 every metrix big symbol/.style={
778 line width=\usemetrixvar{bigsymbollinewidth},
779 color=\usemetrixvar{symbolcolor},
780 x=\usemetrixvar{bigbaseunit},y=\usemetrixvar{bigbaseunit},
781 },
782 every metrix symbol node/.style={
783 inner sep=0pt, anchor=center,
784 },
785 every metrix ictus node/.style={
786 overlay,

```

```

787 },
788 every metrix break node/.style={
789   inner sep=0pt, anchor=base,
790 },
791 every metrix syllable node/.style={
792   inner sep=0pt, anchor=base,
793 },
794 every metrix bow/.style={
795   line width=\usemetrixvar{bowlinewidth},
796   color=\usemetrixvar{bowcolor},
797   x=\usemetrixvar{baseunit},y=\usemetrixvar{baseunit},
798 },
799 every metrix accent/.style={
800   line width=\usemetrixvar{accentlinewidth},
801   color=\usemetrixvar{accentcolor},
802   x=\usemetrixvar{baseunit},y=\usemetrixvar{baseunit},
803 },
804 bold highlight/.style={
805   every metrix symbol/.append style={line width=2\pgflinewidth},
806   every metrix syllable node/.append style={font=\bfseries},
807   every superscript node/.append style={font/.expand once=\tikz@textfont\bfseries},
808 },
809 colored highlight/.style={
810   every metrix symbol/.append style={draw=#1},
811   every metrix syllable node/.append style={text=#1},
812   every superscript node/.append style={text=#1},
813 },
814 colored highlight/.default={
815   \usemetrixvar{highlightcolor}
816 },
817 dashed highlight/.style={
818   every metrix symbol/.append style={dash pattern=on 1pt off 0.4pt},
819 },
820 filled highlight/.style={
821   every metrix symbol node/.append style={inner sep=2pt,fill=#1},
822 },
823 filled highlight/.default={
824   \usemetrixvar{fillcolor},
825 },
826 every superscript picture/.style={
827   baseline=-3ex,
828 },
829 every superscript node/.style={
830   inner sep=0pt,
831   font=\scriptsize,
832 },
833 every superscript label/.style={
834   inner xsep=0pt,
835   inner ysep=-3ex,
836   label distance=0.5pt,
837 },
838 add superscript/.style={
839   label={[every superscript label]right:}%
840   \tikz[every superscript picture]\node at (0,0) [every superscript node] {#1};%

```



```

841   }},
842 },
843 superscript/.style={
844   every metrix symbol node/.append style={
845     add superscript=#1,
846   },
847   every metrix break node/.append style={
848     add superscript=#1,
849   },
850 },
851 superscript/.value required,
852 add arrow/.style={
853   every metrix symbol node/.append style={
854     label=90:\usemetrixvar{arrow},
855   },
856 },
857 add text/.style={
858   every metrix symbol node/.append style={
859     label={[every metrix added text]#1},
860   },
861 },
862 every metrix added text/.style = {
863   font = \scriptsize\itshape,
864 },
865 add text/.value required,
866 }
867 \ExplSyntaxOn

```

## 9.11 Environments

**sympolline** Environment to display stand alone symbols.

```

868 \NewDocumentEnvironment{sympolline} { }
869 {
870   \par\addvspace{\baselineskip}
871   \centering
872 }
873 {
874   \par\vspace{\baselineskip}
875   \noindent\ignorespacesafterend
876 }

```

*(End definition for sympolline. This function is documented on page 9.)*

**\\_metrix\_print\_vers\_ref:n** The internal macro to print the verse reference inside of {metricvers}

```

877 \cs_new:Npn \_metrix_print_vers_ref:n #1
878 {
879   \hspace*{\fill}\nolinebreak[1] \quad \hspace*{\fill} \mbox{\footnotesize #1}
880 }

```

*(End definition for \\_metrix\_print\_vers\_ref:n.)*

**metricverses** Environment to display a verse with metric symbols and a source. And a macro to print  
**\verseref** a right aligned reference.

```

881 \NewDocumentCommand { \verseref } { m }

```

```

882 {
883   \__metrix_error_msg:n {
884     \string\verseref\space can~only~be~used~in~{metricverses}~env.
885   }
886 }
887 \NewDocumentEnvironment { metricverses } { }
888 {
889   \RenewDocumentCommand { \verseref } { m }
890   {
891     \__metrix_print_vers_ref:n { ##1 }
892   }
893   \par
894   \addvspace { 0.7\baselineskip }
895   \fp_compare:nT { \usemetrixvar { symbolshift } < 0.0 }
896   {
897     \vspace { \usemetrixvar { symbolshift } }
898   }
899   \addtolength { \baselineskip } { 0.6\baselineskip }
900 }
901 {
902   \par
903   \addtolength { \baselineskip } { -0.6\baselineskip }
904   \vspace { \baselineskip }
905   \noindent \ignorespacesafterend
906 }

```

(End definition for *metricverses* and *\verseref*. These functions are documented on page 9.)

```

907 \</package>

```

## 10 Change History

v1.0	General: Initial version . . . . .	42	URL). . . . .	1	
v1.0a	General: Added cw1 file for TeXstudio . . . . .	1	\__metrix_metrics:nn: Replaced deprecated \str_case:nmn with \str_case:nmF. . . . .	24	
v1.1	General: New section about breaks (see 4.4) . . . . .	4	\__metrix_metricsymbols:n: Replaced deprecated \str_case:nmn with \str_case:nmF. . . . .	25	
	New section about the symbol syntax (see 4.1) . . . . .	2	v1.2	\acct: Finetunig for \acct. . . . .	38
	\__metrix_l_break: Made line slightly longer . . . . .	36		\bow: Finetunig for \bow. . . . .	39
	\__metrix_ll_break: Made lines slightly longer . . . . .	36		\brv: Finetunig for \brv. . . . .	38
	\__metrix_metrics:nn: Made short breaks available . . . . .	23		\lng: Finetunig for \lng. . . . .	37
	\__metrix_print_syllable:n: Symbol nodes get individual names now. . . . .	26	v1.2a	General: Replaced deprecated \prop_get variants (Thanks to J. Wright). . . . .	42
	\__metrix_u__mark:: Removed red dot. . . . .	34	v1.3	General: New highlight styles: add text and add arrow. . . . .	42
v1.1a	General: New contact info (mail and			\__metrix_metrics:nn: Extended	

short breaks feature . . . . .	23	stress symbol. . . . .	35
\g__metrix_variable_arrow_tl: New		\__metrix_v_mark:: Added v symbol.	33
variable for arrow . . . . .	22	g__metrix_variable_bowcolor_tl:	
v1.4		Changed symbol and accent color to	
General: Added docs for l and ll		current color. . . . .	21
symbol. . . . .	42	v1.4a	
Added possibility to add		General: Fix: Icuts/accent didn't work	
accents/icutus above symbols. . . . .	42	with unicode. . . . .	42
\__metrix_A_mark:: Added A symbol.	33	New style: every metrix ictus	
\__metrix_o_mark:: Added o symbol.	33	node . . . . .	42
\__metrix_p_mark:: Added primary		Now loads textcomp. . . . .	42
stress symbol. . . . .	34	v1.5	
\__metrix_s_mark:: Added secondary		\__metrix__u_mark:: Added. . . . .	34

## Index

The italic numbers denote the pages where the corresponding entry is described, numbers underlined point to the definition, all others indicate the places where it is used.

<b>A</b>		<b>E</b>	
\acct . . . . .	7, 8, <u>736</u>	\end . . . . .	294,
\addtolength . . . . .	899, 903	295, 352, 450, 466, 479, 488, 499, 510,	
\addvspace . . . . .	870, 894	524, 531, 537, 543, 549, 556, 565, 574,	
<b>B</b>		582, 588, 594, 600, 607, 613, 620, 627,	
\baselineskip . . . . .	870, 874, 894, 899, 903, 904	640, 646, 714, 715, 733, 734, 750, 751, 768	
\begin . . . . .	275,	every_metrix_accent . . . . .	17
283, 347, 440, 456, 469, 484, 492, 503,		every_metrix_added_text . . . . .	17
514, 528, 535, 541, 547, 553, 560, 569,		every_metrix_big_symbol . . . . .	16
578, 586, 592, 598, 604, 611, 617, 624,		every_metrix_bow . . . . .	17
631, 644, 682, 689, 719, 726, 738, 745, 755		every_metrix_break_node . . . . .	16
\bfseries . . . . .	806, 807	every_metrix_ictus_node . . . . .	17
bold_highlight . . . . .	17	every_metrix_syllable_node . . . . .	16
\bow . . . . .	8, 15, 16, <u>753</u>	every_metrix_symbol . . . . .	16
\brv . . . . .	7, 8, 15, 16, 17, <u>717</u>	every_metrix_symbol_node . . . . .	16
<b>C</b>		every_superscript_label . . . . .	17
\centering . . . . .	871	every_superscript_node . . . . .	17
colored_highlight . . . . .	17	every_superscript_picture . . . . .	17
\coordinate . . . . .	189	\expandafter . . . . .	273, 346, 365
<b>D</b>		\ExplSyntaxOff . . . . .	8, 770
dashed_highlight . . . . .	17	\ExplSyntaxOn . . . . .	10, 867
\DeclareExpandableDocumentCommand . . . . .	658	<b>F</b>	
\downarrow . . . . .	16, 85	\fill . . . . .	580, 746, 879
\draw . . . . .	441, 457,	filled_highlight . . . . .	17
470, 485, 486, 493, 494, 496, 504, 505,		\footnotesize . . . . .	879
507, 515, 516, 518, 521, 529, 530, 536,		<b>H</b>	
542, 548, 554, 555, 561, 562, 570, 571,		\hspace . . . . .	222, 357, 373, 879
579, 587, 593, 599, 605, 606, 612, 618,		<b>I</b>	
619, 625, 632, 634, 645, 690, 703, 727, 762		\IfBooleanF . . . . .	675
		\ignorespacesafterend . . . . .	875, 905

<code>\itshape</code> .....	397, 405, 863	<code>\RequirePackage</code> .....	5, 6, 7, 11
<b>L</b>		<b>S</b>	
<code>\lng</code> .....	7, 8, 15, 16, 17, 680	<code>\scriptsize</code> .....	831, 863
<b>M</b>		<code>\setmetrixvar</code> .....	14, 19, 649
<code>\mbox</code> .....	879	<code>\slshape</code> .....	407, 415
<code>\metrics</code> .	2, 4, 5, 11, 12, 18, 18, 18, 18, 23, 667	<code>\space</code> .....	884
<code>\metricsymbols</code> . . .	3, 4, 5, 12, 18, 18, 25, 672	<code>\string</code> .....	405, 415, 425, 435, 884
<code>metricverses</code> .....	9, 881	<code>superscript</code> .....	17
<code>\metrixFileDate</code> .....	4	<code>symbolline</code> .....	9, 868
<code>\metrixFileDescription</code> .....	4	<b>T</b>	
<code>\metrixFileName</code> .....	4, 331, 338	<code>\textasciicute</code> .....	91
<code>\metrixFileVersion</code> .....	4	<code>\textasciigrave</code> .....	93
<b>N</b>		<code>\tikz</code> .....	169, 188, 366, 840
<code>\NewDocumentCommand</code> .....		<code>\tikzset</code> .....	273, 346, 365, 675, 771
..	649, 667, 672, 680, 717, 736, 753, 881	<b>U</b>	
<code>\NewDocumentEnvironment</code> .....	868, 887	<code>\upshape</code> .....	417, 425
<code>\node</code> 170, 192, 280, 284, 351, 367, 444, 448,		<code>\usemetrixvar</code> .....	14, 16, 19, 222,
460, 464, 473, 477, 686, 723, 742, 759, 840		289, 349, 357, 373, 444, 448, 460, 464,	
<code>\noindent</code> .....	875, 905	473, 477, 486, 494, 496, 498, 505, 507,	
<code>\nolinebreak</code> .....	879	509, 516, 518, 520, 522, 555, 562, 564,	
<code>\normalfont</code> .....	427, 435	571, 573, 580, 606, 619, 625, 626, 632,	
<b>P</b>		633, 636, 638, 639, 658, 692, 693, 698,	
<code>\PackageError</code> .....	331	699, 705, 710, 729, 747, 764, 765, 767,	
<code>\PackageWarning</code> .....	338	773, 774, 775, 778, 779, 780, 795, 796,	
<code>\par</code> .....	870, 874, 893, 902	797, 800, 801, 802, 815, 824, 854, 895, 897	
<code>\pgflinewidth</code> . . .	486, 494, 496, 497, 505,	<code>\usetikzlibrary</code> .....	9
507, 508, 516, 518, 519, 521, 555, 562,		<b>V</b>	
563, 571, 572, 581, 606, 619, 636, 749, 805		<code>\verseref</code> .....	9, 10, 881
<code>\ProvidesExplPackage</code> .....	3	<code>\vspace</code> .....	874, 897, 904
<b>Q</b>		<b>X</b>	
<code>\quad</code> .....	879	<code>\xpretocmd</code> .....	397, 407, 417, 427
<b>R</b>			
<code>\RenewDocumentCommand</code> .....	889		