The **mĕtrix** package

Tobias Weh[*]

Version 1.0 – Released 2013/08/12

Abstract

$$\text{—} \quad \text{—} \qquad \text{—} \quad \text{—} \quad \text{—} \; \Big| \; \text{—} \; \smile \smile \quad \text{—} \quad \smile \quad \smile \; \text{—}$$

eṭ quọd temptạbam │ scrịbere vẹrsus ẹrat

The **mĕtrix** 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 brĕvis and a lōnga accent[1] 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 LᴬTEX3 programming. The verse above is by Ovid in his Tristia 4,10,26.

1   Prerequisites

mĕtrix relies only on a few packages: tikz (including the `calc` library), xpatch and xparse, which stand for the whole LᴬTEX3 bundle.

2   Package loading

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

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 . . .

---

[*]URL: http://www.tweh.de, Mail: mail@tweh.de

[1]I know that these signs are no accents in the liguistic sense, but they are in the TEX tradition . . .

3.2 Feedback

Any feedback on **mĕtrix** is appreciated. You may use its GitHub repository at https://github.com/tweh/metrix to request features or report bugs or send me an e-mail (mail@tweh.de).

4 Metric symbols

4.1 Stand alone metric symbols

`\metricsymbols` ⋆

`\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 listed in table 1;[2] the single 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_}`
>
> — ‿‿ — ‿‿ ◡ │ × — ◡ ◡ — × ◡

4.2 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 ⟨*symbols*⟩ argument works as before. 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 ∘∘ symbol you may omit the hyphen between the two syllables beloning to this symbol. You can merge multiple words by *embracing* them.

---

[2]The break symbols cannot be used above syllables, they must be used together with break symbols in the syllable list, only!

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

abbreviation		symbol	explantion
e			empty symbol
u		◡	elementum breve
_	*(under score)*	—	elementum longum
uu		◡◡	double breve
uu_		⏝⏝	elementum biceps
_uu		⏞⏞	elementum biceps
u_uu		⏝⏞	elementum anceps
x		×	elementum anceps
n		⏜	elementum indifferens
u_		⏝	elementum indifferens
oo	*(two lowercase o's)*	○○	aeolic base
|	*(pipe)*	|	break
||	*(two pipes)*	‖	verse break

Table 1: Symbol abbreviations

4.3   Highlight certain symbols/syllabels

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.)

3

mĕtrix comes with several predefined highlighting styles:

- `bold highlight`

  — ‿ ‿ — — — | — — ‿ ‿ —
  flos **ve**teris **vini** | meis **na**ribus 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⟩`

  — ‿ ‿ — — — |ᵃ — — ‿ ‿ — ‖ᵇ
  flos veteris vini | meis naribus ob

  ‿ ⏓ × — |ᵃ ‿ — ⌒ ‖ᵇ

  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.

Sytles with an agrument must be set in braces (see the examples)**!**

Example

Higlight 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

4

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

— ⏑ ⏑ — — — | — — ⏑ ⏑ —
flos **ve**teris **vini** | meis **na**ribus ob

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

⏓ × — ‖ ⏑ — ⌢ ‖
⏓ × — ‖ ⏑ — ⌢ ‖

```
\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

`\acct` ⋆   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 dipthtong.[3]

---

[3]Actually you can use any vowel, diphtong, syllable or word as ⟨*vowel*⟩, it makes no difference as long as it is text.

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

ămīcŭs prŏfŭgŭs

mĕtrix 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*	ăe *ăe* *ăe*		ŭ *ŭ* *ŭ*	ĭ *ĭ* *ĭ*	ăe *ăe* *ăe*
ū *ū* *ū*	ī *ī* *ī*	āe *āe* *āe*		ū *ū* *ū*	ī *ī* *ī*	āe *āe* *āe*
ụ *ụ* *ụ*	ị *ị* *ị*	ạe *ạe* *ạe*		ụ *ụ* *ụ*	ị *ị* *ị*	ạe *ạe* *ạe*

\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

---

6 Environments

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

Example

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

Text text text ...

<div align="center">○○   — ∪ ∪ —   ∪ —   ∪ — ◡</div>

Text text text ...

---

metricverses   `\begin{metricverses}[`⟨*source*⟩`]`
⟨*content optional* `\verseref{`⟨*reference*⟩`}`⟩
`\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
                                         _  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   Plaut. *Curc.* 96f
    ‒ ⏑ ⏑ ‒ ⏑ ⏑ ‒│ ‒ ‒ ⏑ ⏑ ‒ ⏑ ⏑ ‒
    eius amor cupidam │ me huc prolicit per tenebras

> Text text text ...

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
— ‿ ‿ — ——│ — — ‿ ‿ — — —

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│me͜huc 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 hypen to show **mĕtrix** 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}
```

---

vī-nī

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 **mĕtrix** though.

Example

```
\metrics{ _    u }{ ``si me'' }
\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" „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 } \qquad vs. \qquad
% ...
\tikzset{
    every superscript picture/.style={
        baseline=1ex,
    },
}
% ...
\metricsymbols[2={superscript=x}]{ u || u }
```

⏑ ‖ˣ ⏑   vs.   ⏑ ‖ₓ ⏑

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

9

sequences. Mind that the higlighting 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 yout 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_uu x _ || u _ n 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}
```

— ⏑ ⏑ — — —
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 apperance 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 sytle={font=\itshape},
> }
> ```

8   Customization

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

8.1   Variables

\setmetrixvar   \setmetrixvar{⟨*variable*⟩}{⟨*value*⟩}

\usemetrixvar   To customize the rendering of the symbols, accents and bow **mĕtrix** 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{higlightcolor}{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

8.2 TikZ styles

Beside the variables you may change the TikZ styles used by **mĕtrix**. 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 apperance 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 accent`	This style defines the apperance of accents created by \lng and \brv.
`every metrix bow`	This style defines the apperance 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.

13

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 (\lng and \brv)
bowlinewidth	0.03em	line width of bows (\bow)
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 elementum longum.
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	leght to shift the symbols above or below the syllables (try -0.6em to display the symbols below the base line)
lngshift	0.8em	length to shift the longa accent
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	black	color of metric symbols
accentcolor	black	color of accents (\lng and \brv)
bowcolor	black	color of bows (\bow)
highlightcolor	red	color of highlighted symbols and syllabels used in colored highlight style
fillcolor	yellow	color of filled symbol nodes used in filled highlight style
breakgap	0.6em	gap before and after a (verse) break
emptywidth	1em	gap replacing an empty symbol (abbreviation e)

Table 2: Variables

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
```

9.2   Variables

All variables are internal. The user can change them via \setmetrixvar and use them via \usemetrixvar.

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

```
11 \tl_new:N \g__metrix_variable_symbollinewidth_tl
12 \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.

```
13 \tl_new:N \g__metrix_variable_bigsymbollinewidth_tl
14 \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.

```
15 \tl_new:N \g__metrix_variable_accentlinewidth_tl
16 \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.

```
17 \tl_new:N \g__metrix_variable_bowlinewidth_tl
18 \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.

```
19 \tl_new:N \g__metrix_variable_symbolsep_tl
20 \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.

```
21 \tl_new:N \g__metrix_variable_baseunit_tl
22 \tl_set:Nn \g__metrix_variable_baseunit_tl { 0.9em }
```

15

(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.

```
23 \tl_new:N \g__metrix_variable_bigbaseunit_tl
24 \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.

```
25 \tl_new:N \g__metrix_variable_gap_tl
26 \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.

```
27 \tl_new:N \g__metrix_variable_symbolshift_tl
28 \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.

```
29 \tl_new:N \g__metrix_variable_lngshift_tl
30 \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.

```
31 \tl_new:N \g__metrix_variable_lngshortening_tl
32 \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.

```
33 \tl_new:N \g__metrix_variable_lngminlength_tl
34 \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.

```
35 \tl_new:N \g__metrix_variable_brvshift_tl
36 \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.

```
37 \tl_new:N \g__metrix_variable_dotshift_tl
38 \tl_set:Nn \g__metrix_variable_dotshift_tl { -0.15em }
```

(End definition for `\g__metrix_variable_dotshift_tl`.*)*

`\g__metrix_variable_itcorrection_tl`
`\l__metrix_internal_itcorrection_tl`
`\g__metrix_internal_itcorrection_zero_tl`

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

```
39 \tl_new:N \g__metrix_variable_itcorrection_tl
40 \tl_set:Nn \g__metrix_variable_itcorrection_tl { 0.11em }
41 \tl_new:N \l__metrix_internal_itcorrection_tl
42 \tl_set:Nn \l__metrix_internal_itcorrection_tl { 0em }
43 \tl_new:N \g__metrix_internal_itcorrection_zero_tl
44 \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 ise used to shift the accents horizontally.

```
45 \tl_new:N \g__metrix_variable_accentxshift_tl
46 \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.

```
47 \tl_new:N \g__metrix_variable_bowshift_tl
48 \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.

```
49 \tl_new:N \g__metrix_variable_bowshortening_tl
50 \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.

```
51 \tl_new:N \g__metrix_variable_bowlooseness_tl
52 \tl_set:Nn \g__metrix_variable_bowlooseness_tl { 0.75 }
```

(*End definition for* `\g__metrix_variable_bowlooseness_tl.`)

`\g__metrix_variable_symbolcolor_tl`
`\g__metrix_variable_accentcolor_tl`
`g__metrix_variable_bowcolor_tl`

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

```
53 \tl_new:N \g__metrix_variable_symbolcolor_tl
54 \tl_set:Nn \g__metrix_variable_symbolcolor_tl { black }
55 \tl_new:N \g__metrix_variable_accentcolor_tl
56 \tl_set:Nn \g__metrix_variable_accentcolor_tl { black }
57 \tl_new:N \g__metrix_variable_bowcolor_tl
58 \tl_set:Nn \g__metrix_variable_bowcolor_tl { black }
```

(*End definition for* `\g__metrix_variable_symbolcolor_tl, \g__metrix_variable_accentcolor_tl, and` `g__metrix_variable_bow`

`\g__metrix_variable_highlightcolor_tl`

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

```
59 \tl_new:N \g__metrix_variable_highlightcolor_tl
60 \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.

```
61 \tl_new:N \g__metrix_variable_fillcolor_tl
62 \tl_set:Nn \g__metrix_variable_fillcolor_tl { yellow }
```

(*End definition for* `\g__metrix_variable_fillcolor_tl.`)

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

```
63 \tl_new:N \g__metrix_variable_breakgap_tl
64 \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).

```
65 \tl_new:N \g__metrix_variable_emptywidth_tl
66 \tl_set:Nn \g__metrix_variable_emptywidth_tl { 1em }
```

(End definition for `\g__metrix_variable_emptywidth_tl`.*)*

`\l__metrix_words_tl` This list stores the words of the \metrics macro.

```
67 \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.

```
68 \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.

```
69 \seq_new:N \l__metrix_symbols_seq
```

(End definition for `\l__metrix_symbols_seq`.*)*

`\l__metrix_highlights_prop` This list stores the higlighting styles of \metrics and \metricsymbols.

```
70 \prop_new:N \l__metrix_highlights_prop
```

(End definition for `\l__metrix_highlights_prop`.*)*

`\l__metrix_highlight_seq`
`\l__metrix_highlight_pos_seq` This lists are used to evaluate a higlight style.

```
71 \seq_new:N \l__metrix_highlight_seq
72 \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.

```
73 \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.

```
74 \int_new:N \l__metrix_process_int
```

(End definition for `\l__metrix_process_int`.*)*

`\l__metrix_short_syllable_bool`
`\l__metrix_syllable_box`
`\g__metrix_variable_shortsyllablelimit_tl` This boolean can be used to store that a syllable is short, e.g. *li* will be defined as short wheras *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.

```
75 \bool_new:N \l__metrix_short_syllable_bool
76 \box_new:N \l__metrix_syllable_box
77 \tl_new:N \g__metrix_variable_shortsyllablelimit_tl
78 \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_shortsyllablelimi`

9.3 Variants

Later we'll need the following variant.

```
79 \cs_generate_variant:Nn \prop_get:Nn { No , Nf , NV , Nx }
80 \cs_generate_variant:Nn \prop_put:Nnn { Nnx , Nxx , Nff  , Noo }
81 \cs_generate_variant:Nn \seq_item:Nn { Nf , NV , Nx }
82 \cs_generate_variant:Nn \seq_set_split:Nnn { Nnf , NnV , Nnx }
```

9.4 Internal main macros

`\__metrix_metrics:nn` This macro processes the two lists of `\metrics` and combines the symbols and syllables.[4]

```
83 \cs_new_protected:Npn \__metrix_metrics:nn #1 #2
84   {
85     \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.

```
86     \tl_replace_all:Nnn \l__metrix_words_tl { ~ } { - \q__metrix_space_marker - }
```

Then split the word list at hypens.

```
87     \seq_set_split:NnV \l__metrix_syllables_seq { - } \l__metrix_words_tl
```

Split the symbol list at spaces

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

Test whether both lists got the same length:

```
89     \int_zero:N \l__metrix_process_int
90     \seq_map_inline:Nn \l__metrix_syllables_seq
91       {
92         \tl_if_eq:nnT { ##1 } { \q__metrix_space_marker }
93           { \int_incr:N \l__metrix_process_int }
94       }
95     \int_compare:nTF
96       {
97         \seq_count:N \l__metrix_syllables_seq -
98           \seq_count:N \l__metrix_symbols_seq = \l__metrix_process_int
99       }
100     {
```

continue with list processing, if the numbers are equal:

```
101       \int_zero:N \l__metrix_process_int
102       \seq_map_inline:Nn \l__metrix_syllables_seq
103         {
104           \int_incr:N \l__metrix_process_int
105           \tl_if_eq:nnTF { ##1 } { \q__metrix_space_marker }
106             {
```

---

[4]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

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

```
107          \int_add:Nn \l__metrix_process_int { -1 }
108          \c_space_token
109        }
110        {
```

Finally typeset the syllable and it's symbol.

```
111          \str_case:nnn { ##1 }
112          {
113           { | }
114            {
115             \__metrix_break_node:n { \__metrix_l_break: }
116            }
117           { || }
118            {
119             \__metrix_break_node:n { \__metrix_ll_break: }
120            }
121          }
122          {
123           \__metrix_print_syllable:n { ##1 }
124          }
125        }
126      }
127    }
```

send an error, else.

```
128      {
129       \__metrix_error_msg:n
130        {
131         Numbers~of~symbols~(\seq_count:N \l__metrix_symbols_seq)~and~syllables~
132         (\int_eval:n
133          {
134           \seq_count:N \l__metrix_syllables_seq - \l__metrix_process_int
135          }
136         )~mismatch.
137        }
138      }
139    }
```

(*End definition for* __metrix_metrics:nn.)

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

```
140 \cs_new_protected:Npn \__metrix_metricsymbols:n #1
141  {
142   \seq_set_split:Nnx \l__metrix_symbols_seq { ~ } { \tl_trim_spaces:n { #1 } }
143   \int_zero:N \l__metrix_process_int
144   \seq_map_inline:Nn \l__metrix_symbols_seq
145    {
146     \int_incr:N \l__metrix_process_int
147     \int_compare:nT { \l__metrix_process_int > 1 }
```

20

```
148       {
149        \hspace{\usemetrixvar{symbolsep}}
150       }
151      \str_case:nnn { ##1 }
152       {
153        { | }
154         {
155          \__metrix_break_gap:
156          \__metrix_align_symbol:n { \__metrix_l_bigmark:  }
157          \__metrix_break_gap:
158         }
159        { || }
160         {
161          \__metrix_break_gap:
162          \__metrix_align_symbol:n { \__metrix_ll_bigmark: }
163          \__metrix_break_gap:
164         }
165       }
166       {
167        \__metrix_align_symbol:n { \__metrix_print_symbol: }
168       }
169     }
170   }
```

(*End definition for* __metrix_metricsymbols:n.)

__metrix_print_syllable:n   This macro combines a single syllable and the corrosponding metric symbol taken frome
                             the symbol list index with the process counter.

```
171 \cs_new_protected:Npn \__metrix_print_syllable:n #1
172  {
173    \group_begin:
```

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

```
174      \hbox_set:Nn \l__metrix_syllable_box { #1 }
175      \dim_compare:nTF { \box_wd:N \l__metrix_syllable_box < \g__metrix_variable_shortsyllablelimi
176        { \bool_set_true:N \l__metrix_short_syllable_bool }
177        { \bool_set_false:N \l__metrix_short_syllable_bool }
```

Set up the currend highlight is it is definded

```
178      \cs_set:Npx \__metrix_current_highlight: {
179       \prop_get:NV \l__metrix_highlights_prop \l__metrix_process_int
180      }
181      \expandafter\tikzset\expandafter{\__metrix_current_highlight:}
```

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

```
182      \begin{tikzpicture}
183       [
184        baseline=(l__metrix_syllable_node.base),
185       ]
186       \node [every~metrix~syllable~node] (l__metrix_syllable_node) {#1};
```

21

```
187      \begin{pgfinterruptboundingbox}
188       \node [every~metrix~symbol~node]
189        at ($(l__metrix_syllable_node.base)+(0,\usemetrixvar{symbolshift})
190        +(\tl_use:N \l__metrix_internal_itcorrection_tl,0)$)
191        { \__metrix_print_symbol: };
192      \end{pgfinterruptboundingbox}
193     \end{tikzpicture}
194    \group_end:
195  }
```
(End definition for __metrix_print_syllable:n.)

__metrix_print_symbol: This command selects the right symbol by it's abbreviation.

```
196  \cs_new_protected:Npn \__metrix_print_symbol:
197  {
198    \cs_if_exist_use:cF
199      {
200        __metrix_\seq_item:Nn \l__metrix_symbols_seq
201        { \l__metrix_process_int }_mark:
202      }
203      {
204        \__metrix_error_msg:n
205          {
206            Unknown~symbol~abbreviation~'\seq_item:Nn
207              \l__metrix_symbols_seq { \l__metrix_process_int }'.
208          }
209      }
210  }
```
(End definition for __metrix_print_symbol:.)

9.5   Internal auxiliary macros

__metrix_error_msg:n   An abbreviation to throw an error message.

```
211  \cs_new_protected:Npn \__metrix_error_msg:n #1
212  {
213    \PackageError{ \metrixFileName } { #1 }
214      {
215        Please take a look at the manual or send an email.
216      }
217  }
```
(End definition for __metrix_error_msg:n.)

__metrix_warning_msg:n   An abbreviation to throw an error message.

```
218  \cs_new_protected:Npn \__metrix_warning_msg:n #1
219  {
220      \PackageWarning{ \metrixFileName } { #1 }
221  }
```
(End definition for __metrix_warning_msg:n.)

`\__metrix_align_symbol:n` This macro alings the metric symbols in a stand alone list.

```
222 \cs_new_protected:Npn \__metrix_align_symbol:n #1
223 {
224   \group_begin:
225     \cs_set:Npx \__metrix_current_highlight: {
226       \prop_get:NV \l__metrix_highlights_prop \l__metrix_process_int
227     }
228     \expandafter\tikzset\expandafter{\__metrix_current_highlight:}
229     \begin{tikzpicture}
230       [
231       baseline={(0,-0.25*\usemetrixvar{baseunit})},
232       ]
233       \node [every~metrix~symbol~node] {#1};
234     \end{tikzpicture}
235   \group_end:
236 }
```

(*End definition for* `\__metrix_align_symbol:n`.)

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

```
237 \cs_new_protected:Npn \__metrix_break_gap:
238 {
239   \hspace{\usemetrixvar{breakgap}}
240 }
```

(*End definition for* `\__metrix_break_gap:`.)

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

```
241
242 \cs_new:Npn \__metrix_break_node:n #1
243 {
244   \group_begin:
245     \cs_set:Npx \__metrix_current_highlight: {
246       \prop_get:NV \l__metrix_highlights_prop \l__metrix_process_int
247     }
248     \expandafter\tikzset\expandafter{\__metrix_current_highlight:}
249     \tikz[baseline=(l__metrix_break_node.base)]
250       \node (l__metrix_break_node) [every~metrix~break~node] { #1 }
251     ;
252   \group_end:
253 }
254
255
256
```

(*End definition for* `\__metrix_break_node:n`.)

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

```
257 \cs_new_protected:Npn \__metrix_e_gap:
258 {
259   \hspace*{\usemetrixvar{emptywidth}}
260 }
```

(End definition for __metrix_e_gap:.)

__metrix_evaluate_higlights:N This macro typsets the gap around the two break symbols.

```
261 \cs_new_protected:Npn \__metrix_evaluate_higlights:n #1
262   {
```

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

```
263   \prop_clear:N \l__metrix_highlights_prop
```

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

```
264   \clist_map_inline:nn { #1 }
265     {
```

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`.

```
266       \seq_set_split:Nnn \l__metrix_highlight_seq { = } { ##1 }
267       \seq_set_split:Nnf \l__metrix_highlight_pos_seq { + }
268         {
269           \seq_item:Nn \l__metrix_highlight_seq { 1 }
270         }
```

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

```
271       \seq_map_inline:Nn \l__metrix_highlight_pos_seq
272         {
273           \prop_put:Nnx \l__metrix_highlights_prop
```

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

```
274           {
275             ####1
276           }
277           {
```

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

```
278             \seq_item:Nn \l__metrix_highlight_seq { 2 }
279           }
280         }
281     }
282   }
```

(End definition for __metrix_evaluate_higlights:N.)

9.6   Patching font macros

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

```
283 \xpretocmd { \itshape }
284   {
285   \tl_set_eq:NN
286   \l__metrix_internal_itcorrection_tl
287   \g__metrix_variable_itcorrection_tl
288   }
```

24

```
289  { }
290  {
291    \__metrix_warning_msg:n { Could~not~patch~\string\itshape. }
292  }
293  \xpretocmd { \slshape }
294  {
295    \tl_set_eq:NN
296      \l__metrix_internal_itcorrection_tl
297      \g__metrix_variable_itcorrection_tl
298  }
299  { }
300  {
301    \__metrix_warning_msg:n { Could~not~patch~\string\slshape. }
302  }
303  \xpretocmd { \upshape }
304  {
305    \tl_set_eq:NN
306      \l__metrix_internal_itcorrection_tl
307      \g__metrix_internal_itcorrection_zero_tl
308  }
309  { }
310  {
311    \__metrix_warning_msg:n { Could~not~patch~\string\upshape. }
312  }
313  \xpretocmd { \normalfont }
314  {
315    \tl_set_eq:NN
316      \l__metrix_internal_itcorrection_tl
317      \g__metrix_internal_itcorrection_zero_tl
318  }
319  { }
320  {
321    \__metrix_warning_msg:n { Could~not~patch~\string\normalfont. }
322  }
```

9.7 Internal macros for metric symbols

__metrix_e_mark: The empty symbol.

```
323  \cs_new:Npn \__metrix_e_mark: { \__metrix_e_gap: }
```

(*End definition for* __metrix_e_mark:.)

__metrix_u_mark: The brevis symbol ⌣.

```
324  \cs_new:Npn \__metrix_u_mark:
325  {
326    \begin{tikzpicture}[every~metrix~symbol]
327      \draw (0,0) arc [start~angle=0, end~angle=180, radius=-0.225];
328    \end{tikzpicture}
329  }
```

(*End definition for* __metrix_u_mark:.)

`\__metrix___mark:` The longa symbol —.

```
330 \cs_new:Npn \__metrix___mark:
331 {
332   \bool_if:NTF \l__metrix_short_syllable_bool
333     {
334       \begin{tikzpicture}[every~metrix~symbol]
335         \draw (0,0) -- ++(0.4,0);
336       \end{tikzpicture}
337     }
338     {
339       \begin{tikzpicture}[every~metrix~symbol]
340         \draw (0,0) -- ++(0.75,0);
341       \end{tikzpicture}
342     }
343 }
```

(*End definition for* `\__metrix___mark:`.)

`\__metrix_uu_mark:` The biceps symbol ‿‿.

```
344 \cs_new:Npn \__metrix_uu_mark:
345 {
346   \begin{tikzpicture}[every~metrix~symbol]
347     \draw (0,0) arc [start~angle=0, end~angle=180, radius=-0.2];
348     \draw ($(0.4,0)+(\pgflinewidth,0)+(\usemetrixvar{gap},0)$) arc
349       [start~angle=0, end~angle=180, radius=-0.2];
350   \end{tikzpicture}
351 }
```

(*End definition for* `\__metrix_uu_mark:`.)

`\__metrix_uu__mark:` The biceps symbol ‿‿.

```
352 \cs_new:Npn \__metrix_uu__mark:
353 {
354   \begin{tikzpicture}[every~metrix~symbol]
355     \draw (0,0) arc [start~angle=0, end~angle=180, radius=-0.2];
356     \draw ($(0.4,0)+(\pgflinewidth,0)+(\usemetrixvar{gap},0)$) arc
357       [start~angle=0, end~angle=180, radius=-0.2];
358     \draw ($(0,-0.2)+(-0.5\pgflinewidth,-\pgflinewidth)-(0,\usemetrixvar{gap})$) --
359       ($(0.8,-0.2)+(1.5\pgflinewidth,-\pgflinewidth)
360       +(\usemetrixvar{gap},-\usemetrixvar{gap})$);
361   \end{tikzpicture}
362 }
```

(*End definition for* `\__metrix_uu__mark:`.)

`\__metrix__uu_mark:` Another biceps symbol ‿‿.

```
363 \cs_new:Npn \__metrix__uu_mark:
364 {
365   \begin{tikzpicture}[every~metrix~symbol]
366     \draw (0,0) arc [start~angle=0, end~angle=180, radius=-0.2];
367     \draw ($(0.4,0)+(\pgflinewidth,0)+(\usemetrixvar{gap},0)$) arc
368       [start~angle=0, end~angle=180, radius=-0.2];
```

```
369  \draw ($(0,0)+(-0.5\pgflinewidth,0.5\pgflinewidth)+(0,\usemetrixvar{gap})$) --
370    ($(0.8,0)+(1.5\pgflinewidth,0.5\pgflinewidth)
371    +(\usemetrixvar{gap},\usemetrixvar{gap})$);
372  \end{tikzpicture}
373  }
```
(*End definition for* `\__metrix__uu_mark:`.)

`\__metrix_u_uu_mark:` An another biceps symbol ౼.
```
374 \cs_new:Npn \__metrix_u_uu_mark:
375  {
376    \begin{tikzpicture}[every~metrix~symbol]
377    \draw (0,0) arc [start~angle=0, end~angle=180, radius=-0.2];
378    \draw ($(0.4,0)+(\pgflinewidth,0)+(\usemetrixvar{gap},0)$) arc
379      [start~angle=0, end~angle=180, radius=-0.2];
380    \draw ($(0,0)+(-0.5\pgflinewidth,0.5\pgflinewidth)+(0,\usemetrixvar{gap})$) --
381      ($(0.8,0)+(1.5\pgflinewidth,0.5\pgflinewidth)
382      +(\usemetrixvar{gap},\usemetrixvar{gap})$);
383    \draw ($(0.2,0.2)+(0.5\pgflinewidth,1.5\pgflinewidth)
384      +(0.5*\usemetrixvar{gap},2*\usemetrixvar{gap})$)
385      arc [start~angle=0, end~angle=180, radius=-0.2];
386    \end{tikzpicture}
387  }
```
(*End definition for* `\__metrix_u_uu_mark:`.)

`\__metrix_x_mark:` The anceps symbol ×.
```
388 \cs_new:Npn \__metrix_x_mark:
389  {
390    \begin{tikzpicture}[every~metrix~symbol]
391    \draw (-0.2,0.2) -- (0.2,-0.2);
392    \draw (-0.2,-0.2) -- (0.2,0.2);
393    \end{tikzpicture}
394  }
```
(*End definition for* `\__metrix_x_mark:`.)

`\__metrix_oo_mark:` The aeolic symbol ∘∘.
```
395 \cs_new:Npn \__metrix_oo_mark:
396  {
397    \begin{tikzpicture}[every~metrix~symbol]
398    \draw (0,0) circle [radius=0.2];
399    \draw ($(0.4,0)+(1\pgflinewidth,0)+(\usemetrixvar{gap},0)$) circle [radius=0.2];
400    \end{tikzpicture}
401  }
```
(*End definition for* `\__metrix_oo_mark:`.)

`\__metrix_u__mark:` The indifferent symbol ∪.
```
402 \cs_new:Npn \__metrix_u__mark:
403  {
404    \begin{tikzpicture}[every~metrix~symbol]
405    \draw (0,0) arc [start~angle=0, end~angle=180, radius=-0.2];
```

```
406      \draw ($(0,-0.2)+(-0.5\pgflinewidth,-\pgflinewidth)-(0,\usemetrixvar{gap})$) --
407        ($(0.4,-0.2)+(0.5\pgflinewidth,-\pgflinewidth)
408        +(0,-\usemetrixvar{gap})$);
409      \fill [red] circle (0.2pt);
410    \end{tikzpicture}
411  }
```

(*End definition for __metrix_u__mark:.*)

__metrix_n_mark: An alternative indifferent symbol ⌒.

```
412 \cs_new:Npn \__metrix_n_mark:
413  {
414    \begin{tikzpicture}[every~metrix~symbol]
415      \draw (0,0) arc [start~angle=0, end~angle=180, radius=0.225];
416      \fill (-0.225,0.75*\usemetrixvar{symbollinewidth})
417        circle [radius=0.7\pgflinewidth];
418    \end{tikzpicture}
419  }
```

(*End definition for __metrix_n_mark:.*)

__metrix_l_mark: The simple break symbol ∣ (above syllables).

```
420 \cs_new:Npn \__metrix_l_mark:
421  {
422    \begin{tikzpicture}[every~metrix~symbol]
423      \draw (0,0) -- (0,0.5);
424    \end{tikzpicture}
425  }
```

(*End definition for __metrix_l_mark:.*)

__metrix_ll_mark: The verse break symbol ∥ (above syllables).

```
426 \cs_new:Npn \__metrix_ll_mark:
427  {
428    \begin{tikzpicture}[every~metrix~symbol]
429      \draw (0,0) -- (0,0.5);
430      \draw ($(\pgflinewidth,0)+(1.5*\usemetrixvar{gap},0)$) -- ++(0,0.5);
431    \end{tikzpicture}
432  }
```

(*End definition for __metrix_ll_mark:.*)

__metrix_l_bigmark: The simple break symbol ∣ (stand alone version).

```
433 \cs_new:Npn \__metrix_l_bigmark:
434  {
435    \begin{tikzpicture}[every~metrix~symbol]
436      \draw (0,0) -- (0,0.8);
437    \end{tikzpicture}
438  }
```

(*End definition for __metrix_l_bigmark:.*)

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

```
439 \cs_new:Npn \__metrix_ll_bigmark:
440 {
441   \begin{tikzpicture}[every~metrix~symbol]
442     \draw (0,0) -- (0,0.8);
443     \draw ($(\pgflinewidth,0)+(1.5*\usemetrixvar{gap},0)$) -- ++(0,0.8);
444   \end{tikzpicture}
445 }
```

(End definition for `\__metrix_ll_bigmark:`.*)*

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

```
446 \cs_new:Npn \__metrix_l_break:
447 {
448   \begin{tikzpicture}[every~metrix~symbol,baseline=0.05em]
449     \draw [shorten~<=-0.2em] (0,\usemetrixvar{symbolshift})
450       -- (0,0) -- (0,0.8em) -- (0,\usemetrixvar{symbolshift});
451   \end{tikzpicture}
452 }
```

(End definition for `\__metrix_l_break`.*)*

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

```
453 \cs_new:Npn \__metrix_ll_break:
454 {
455   \begin{tikzpicture}[every~metrix~symbol,baseline=0.05em]
456     \draw [shorten~<=-0.2em] (0,\usemetrixvar{symbolshift})
457       -- (0,0) -- (0,0.8em) -- (0,\usemetrixvar{symbolshift});
458     \draw
459       [
460       shift={($(\pgflinewidth,0)+(1.5*\usemetrixvar{gap},0)$)},
461       shorten~<=-0.2em,
462       ]
463       (0,\usemetrixvar{symbolshift}) -- (0,0) -- (0,0.8em)
464       -- (0,\usemetrixvar{symbolshift});
465   \end{tikzpicture}
466 }
```

(End definition for `\__metrix_ll_break`.*)*

9.8   User level macros

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

```
467 \NewDocumentCommand{ \setmetrixvar }{ m m }
468 {
469   \tl_if_exist:cTF { g__metrix_variable_#1_tl } {
470     \tl_set:cn { g__metrix_variable_#1_tl } { #2 }
471   }
472   {
473     \__metrix_error_msg:n { Unknown~variable~'#1'. }
474   }
475 }
```

(End definition for `\setmetrixvar`*. This function is documented on page 12.)*

\usemetrixvar With this command one can access the value of an internal variable.[5]

```
476  \DeclareExpandableDocumentCommand{ \usemetrixvar }{ m }
477  {
478    \tl_if_exist:cTF { g__metrix_variable_#1_tl } {
479     \tl_use:c { g__metrix_variable_#1_tl }
480    }
481    {
482     \__metrix_error_msg:n { Unknown~variable~'#1'. }
483    }
484  }
```

(End definition for `\usemetrixvar`*. This function is documented on page 12.)*

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

```
485  \NewDocumentCommand { \metrics } { O{} m m }
486  {
487    \__metrix_evaluate_higlights:n { #1 }
488    \__metrix_metrics:nn { #2 } { #3 }
489  }
```

(End definition for `\metrics`*. This function is documented on page 2.)*

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

```
490  \NewDocumentCommand { \metricsymbols } { s O{} m }
491  {
492    \group_begin:
493    \IfBooleanF { #1 } { \tikzset{every~metrix~symbol/.style={every~metrix~big~symbol}} }
494    \__metrix_evaluate_higlights:n { #2 }
495    \__metrix_metricsymbols:n { #3 }
496    \group_end:
497  }
```

(End definition for `\metricsymbols`*. This function is documented on page 2.)*

\lng This macro prints the longa accent above it's argument.

```
498  \NewDocumentCommand { \lng } { m }
499  {
500    \begin{tikzpicture}[baseline=(l__metrix_syllable_node.base),every~metrix~accent]
501    \node [every~metrix~syllable~node] (l__metrix_syllable_node) {#1};
502    \begin{pgfinterruptboundingbox}
503    \draw
504      ($(l__metrix_syllable_node.north)
505      - (\usemetrixvar{lngminlength}/2,0)
506      +(\usemetrixvar{accentxshift},\usemetrixvar{lngshift})
507      + (\tl_use:N \l__metrix_internal_itcorrection_tl,0)$)
508      --
509      ($(l__metrix_syllable_node.north)
510      + (\usemetrixvar{lngminlength}/2,0)
```

---

[5]Marco Daniel showed me this hint at http://tex.stackexchange.com/q/124600/4918.

```
511    +(\usemetrixvar{accentxshift},\usemetrixvar{lngshift})
512    + (\tl_use:N \l__metrix_internal_itcorrection_tl,0)$)
513
514    ($(l__metrix_syllable_node.north~west)
515    +(\usemetrixvar{lngshortening}+\usemetrixvar{accentxshift},\usemetrixvar{lngshift})
516    + (\tl_use:N \l__metrix_internal_itcorrection_tl,0)$)
517    --
518    ($(l__metrix_syllable_node.north~east)
519    +(-\usemetrixvar{lngshortening}+\usemetrixvar{accentxshift},\usemetrixvar{lngshift})
520    + (\tl_use:N \l__metrix_internal_itcorrection_tl,0)$)
521    ;
522    \end{pgfinterruptboundingbox}
523   \end{tikzpicture}%
524  }
```
(*End definition for* \lng. *This function is documented on page 5.*)

\brv   This macro prints the brevis accent above it's argument.

```
525 \NewDocumentCommand { \brv } { m }
526  {
527   \begin{tikzpicture}[baseline=(l__metrix_syllable_node.base),every~metrix~accent]
528    \node [every~metrix~syllable~node] (l__metrix_syllable_node) {#1};
529    \begin{pgfinterruptboundingbox}
530    \draw ($(l__metrix_syllable_node.north)+(-0.15,0)
531    + (\usemetrixvar{accentxshift},\usemetrixvar{brvshift})
532    + (\tl_use:N \l__metrix_internal_itcorrection_tl,0)$)
533    arc [start~angle=0, end~angle=180, radius=-0.15];
534    \end{pgfinterruptboundingbox}
535   \end{tikzpicture}
536  }
```
(*End definition for* \brv. *This function is documented on page 5.*)

\brv   This macro prints the dot accent below it's argument.

```
537 \NewDocumentCommand { \acct } { m }
538  {
539   \begin{tikzpicture}[baseline=(l__metrix_syllable_node.base),every~metrix~accent]
540    \node [every~metrix~syllable~node] (l__metrix_syllable_node) {#1};
541    \begin{pgfinterruptboundingbox}
542    \fill ($(l__metrix_syllable_node.south)
543    + (0,\usemetrixvar{dotshift})$)
544    circle [radius=1.25\pgflinewidth];
545    \end{pgfinterruptboundingbox}
546   \end{tikzpicture}
547  }
```
(*End definition for* \brv. *This function is documented on page 5.*)

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

```
548 \NewDocumentCommand { \bow } { m }
549  {
550   \begin{tikzpicture}[baseline=(l__metrix_syllable_node.base),every~metrix~bow]
```

31

```
551    \node [every~metrix~syllable~node] (l__metrix_syllable_node) {#1};
552    \draw ($(l__metrix_syllable_node.base~west)+
553    (\usemetrixvar{bowshortening},\usemetrixvar{bowshift})$)
554    to [out=-45, in=225,looseness=\usemetrixvar{bowlooseness}] ($(l__metrix_syllable_node.base~
555    (-\usemetrixvar{bowshortening},\usemetrixvar{bowshift})$);
556    \end{tikzpicture}
557  }
```

(*End definition for* \bow. *This function is documented on page* *6*.)

9.9 TikZ styles

The **mĕtrix** package uses several TikZ sytles to draw the macros.

```
558  \ExplSyntaxOff
559  \tikzset {
560  every metrix symbol/.style={
561    line width=\usemetrixvar{symbollinewidth},
562    color=\usemetrixvar{symbolcolor},
563    x=\usemetrixvar{baseunit},y=\usemetrixvar{baseunit},
564  },
565  every metrix big symbol/.style={
566    line width=\usemetrixvar{bigsymbollinewidth},
567    color=\usemetrixvar{symbolcolor},
568    x=\usemetrixvar{bigbaseunit},y=\usemetrixvar{bigbaseunit},
569  },
570  every metrix symbol node/.style={
571    inner sep=0pt, anchor=center,
572  },
573  every metrix break node/.style={
574    inner sep=0pt, anchor=base,
575  },
576  every metrix syllable node/.style={
577    inner sep=0pt, anchor=base,
578  },
579  every metrix bow/.style={
580    line width=\usemetrixvar{bowlinewidth},
581    color=\usemetrixvar{bowcolor},
582    x=\usemetrixvar{baseunit},y=\usemetrixvar{baseunit},
583  },
584  every metrix accent/.style={
585    line width=\usemetrixvar{accentlinewidth},
586    color=\usemetrixvar{accentcolor},
587    x=\usemetrixvar{baseunit},y=\usemetrixvar{baseunit},
588  },
589  bold highlight/.style={
590    every metrix symbol/.append style={line width=2\pgflinewidth},
591    every metrix syllable node/.append style={font=\bfseries},
592    every superscript node/.append style={font/.expand once=\tikz@textfont\bfseries},
593  },
594  colored highlight/.style={
```

```
595    every metrix symbol/.append style={draw=#1},
596    every metrix syllable node/.append style={text=#1},
597    every superscript node/.append style={text=#1},
598  },
599  colored highlight/.default={
600    \usemetrixvar{highlightcolor}
601  },
602  dashed highlight/.style={
603    every metrix symbol/.append style={dash pattern=on 1pt off 0.4pt},
604  },
605  filled highlight/.style={
606    every metrix symbol node/.append style={inner sep=2pt,fill=#1},
607  },
608  filled highlight/.default={
609    \usemetrixvar{fillcolor},
610  },
611  every superscript picture/.style={
612    baseline=-3ex,
613  },
614  every superscript node/.style={
615    inner sep=0pt,
616    font=\scriptsize,
617  },
618  every superscript label/.style={
619    inner xsep=0pt,
620    inner ysep=-3ex,
621    label distance=0.5pt,
622  },
623  add superscript/.style={
624    label={[every superscript label]right:{%
625     \tikz[every superscript picture]\node at (0,0) [every superscript node] {#1};%
626    }},
627  },
628  superscript/.style={
629    every metrix symbol node/.append style={
630      add superscript=#1,
631    },
632    every metrix break node/.append style={
633      add superscript=#1,
634    },
635  },
636  superscript/.value required,
637  }
638  \ExplSyntaxOn
```

9.10 Environments

symbolline Environment to display stand alone symbols.

```
639  \NewDocumentEnvironment{symbolline} { }
```

```
640  {
641      \par\addvspace{\baselineskip}
642      \centering
643  }
644  {
645      \par\vspace{\baselineskip}
646      \noindent\ignorespacesafterend
647  }
```

(*End definition for* symbolline. *This function is documented on page 6.*)

__metrix_print_source:n   The internal macro to print the verse reference inside of {metricvers}

```
648  \cs_new:Npn \__metrix_print_vers_ref:n #1
649  {
650      \hspace*{\fill}\nolinebreak[1] \quad \hspace*{\fill} \mbox{\footnotesize #1}
651  }
```

(*End definition for* __metrix_print_source:n.)

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

```
652  \NewDocumentCommand { \verseref } { m }
653  {
654      \__metrix_error_msg:n {
655          \string\verseref\space can~only~be~used~in~{metricverses}~env.
656      }
657  }
658  \NewDocumentEnvironment{metricverses} { }
659  {
660      \RenewDocumentCommand { \verseref } { m }
661      {
662          \__metrix_print_vers_ref:n { ##1 }
663      }
664      \par
665      \addvspace{0.7\baselineskip}
666      \fp_compare:nT { \usemetrixvar{symbolshift} < 0.0 }
667      {
668          \vspace{\usemetrixvar{symbolshift}}
669      }
670      \addtolength{\baselineskip}{0.6\baselineskip}
671  }
672  {
673      \par
674      \addtolength{\baselineskip}{-0.6\baselineskip}
675      \vspace{\baselineskip}
676      \noindent\ignorespacesafterend
677  }
```

(*End definition for* metricverses *and* \verseref. *These functions are documented on page 7.*)

```
678  ⟨/package⟩
```

Change History

v1.0

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.