

# The TikZ-Extensions Package

Manual for version 0.5

<https://github.com/Qrrbrbirlbel/tikz-extensions>

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## Contents

<b>I</b>	<b>Introduction</b>	<b>4</b>
1	Usage	4
2	Why do we need it?	4
3	Having problems?	4
<b>II</b>	<b>TikZ Libraries</b>	<b>5</b>
4	Calendar	6
4.1	Value-keys and nestable if key . . . . .	6
4.2	PGFmath functions . . . . .	6
4.3	Week numbering (ISO 8601) . . . . .	6
5	Node Families	7
5.1	Text Box . . . . .	7
5.2	Minimum Width/Height . . . . .	8
5.3	More shapes that support the keys width and height . . . . .	9

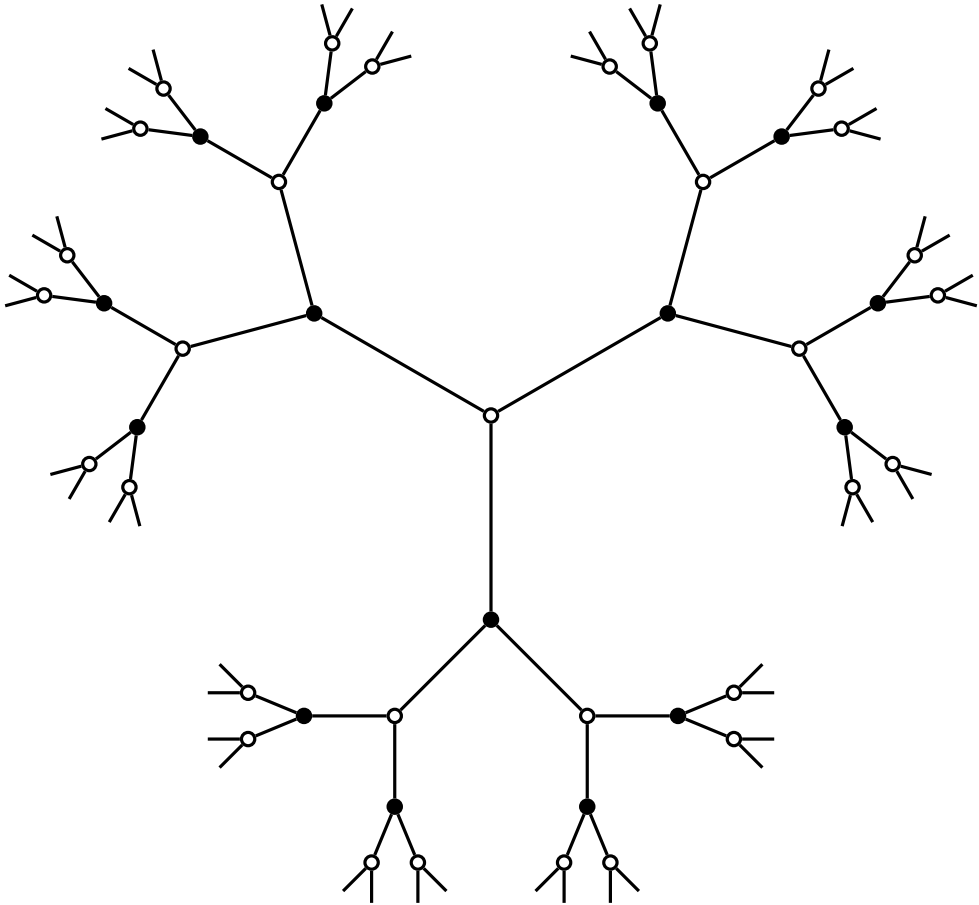
<b>6</b>	<b>Nodes</b>	<b>10</b>
<b>7</b>	<b>Arc to a point</b>	<b>11</b>
<b>8</b>	<b>More Horizontal and Vertical Lines</b>	<b>13</b>
8.1	Zig-Zag . . . . .	13
8.2	Zig-Zig . . . . .	15
8.3	Even more Horizontal and Vertical Lines . . . . .	16
<b>9</b>	<b>Extending the Path Timers</b>	<b>18</b>
9.1	Rectangle . . . . .	18
9.2	Parabola . . . . .	19
9.3	Sine/Cosine . . . . .	19
<b>10</b>	<b>Using Images as a Pattern</b>	<b>21</b>
<b>11</b>	<b>Positioning Plus</b>	<b>22</b>
11.1	Useful corner anchors . . . . .	22
11.2	Useful placement keys for vertical and horizontal alignment . . . . .	23
<b>12</b>	<b>Scaling Pictures to a Specific Size</b>	<b>27</b>
12.1	Keeping the aspect ratio . . . . .	27
12.2	Changing the aspect ratio. . . . .	27
<b>13</b>	<b>Arcs through Three Points</b>	<b>29</b>
<b>14</b>	<b>Mirror, Mirror on the Wall</b>	<b>30</b>
14.1	Using the reflection matrix . . . . .	30
14.2	Using built-in transformations . . . . .	31
<b>III</b>	<b>PGF Libraries</b>	<b>33</b>
<b>15</b>	<b>Transformations: Mirroring</b>	<b>34</b>
15.1	Using the reflection matrix . . . . .	34
15.2	Using built-in transformations . . . . .	34
<b>16</b>	<b>Shape: Circle Arrow</b>	<b>36</b>
<b>17</b>	<b>Shape: Circle Cross Split</b>	<b>39</b>

18	Shape: Heatmark	42
19	Shape: Rectangle with Rounded Corners	45
20	Shape: Superellipse	47
21	Shape: Uncentered Rectangle	50
<b>IV</b>	<b>Utilities</b>	<b>53</b>
22	Calendar: Weeknumbers and more conditionals	54
22.1	Extensions . . . . .	54
22.2	Week numbering (ISO 8601) . . . . .	55
23	Repeating Things and Other Things	56
24	And a little bit more	58
24.1	PGFmath . . . . .	58
24.1.1	Postfix operator R . . . . .	58
24.1.2	Functions . . . . .	58
24.1.3	Functions: using coordinates . . . . .	59
24.2	PGFfor . . . . .	59
24.3	PGFkeys . . . . .	60
24.3.1	Conditionals . . . . .	60
24.3.2	Handlers . . . . .	60
25	TikZ	62
<b>V</b>	<b>Changelog, Index &amp; References</b>	<b>63</b>
	Changelog	63
	Index	65
	References	66

Part II

# TikZ Libraries

These libraries only work with TikZ.



## 6 Nodes

### TikZ Library `ext.nodes`

```
\usetikzlibrary{ext.nodes} % LATEX and plain TEX
\usetikzlibrary[ext.nodes] % ConTEXt
```

`/tikz/node on line=<anchor specification>`

(style, default `{}`)

This installs a `/tikz/to` path that places *one* node along a straight line but connect the line with it.

This allows a node to be placed *on* a straight line without having to use `fill = white` or similar tricks to make the line disappear beneath the node.

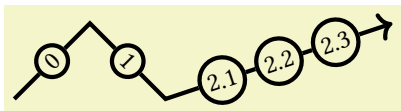
The optional `<anchor specification>` allows to specify the anchors to which the line should connect. It allows one or two anchors divided by `and` to be specified.

`/tikz/nodes on line`

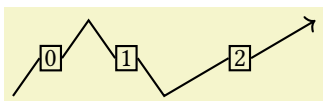
(style, no value)

This is similar to the previous key but allows multiple nodes to be placed on a straight line *if* they are in the correct order (from start to target), don't overlap with each other, the start or the target.

It allows *no* anchor specification.



```
\usetikzlibrary {ext.nodes, quotes}
\tikz[inner sep=.15em, circle, nodes=draw, sloped]
\draw[ultra thick, ->, node on line] (0,0) to["0"] (1,1)
                                         to["1"] (2,0)
                                         to[nodes on line, "2.1" near start, "2.2", "2.3" near end] (5,1);
```



```
\usetikzlibrary {ext.nodes, quotes}
\tikz[inner sep=.15em, nodes=draw]
\draw[thick, ->, node on line=west and east] (0,0) to["0"] (1,1)
                                                to["1"] (2,0)
                                                to["2"] (4,1);
```

The following keys need the intersections and the `spath3` [2] library to be loaded. They will not be automatically loaded by this library.

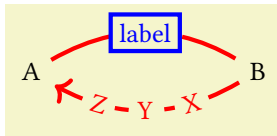
`/tikz/nodes on curve=<to path>`

(style, default `line to`)

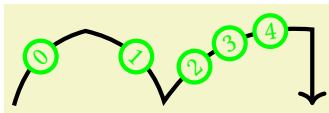
Similar to `/tikz/nodes on line`, this key allows to have nodes on arbitrary paths

`/tikz/nodes on curve'=<to path>`

(style, default `line to`)



```
\usetikzlibrary {ext.nodes, intersections, quotes, spath3}
\begin{tikzpicture}[ultra thick]
  \node (A) at (0, 0) {A} ;
  \node (B) at (3, 0) {B} ;
  \draw [red, ->, nodes on curve'=bend left]
    (A) to node[blue,draw]{label} (B)
    to ["X" {sloped, near start},
        "Z" {sloped, near end},
        "Y"] (A);
\end{tikzpicture}
```

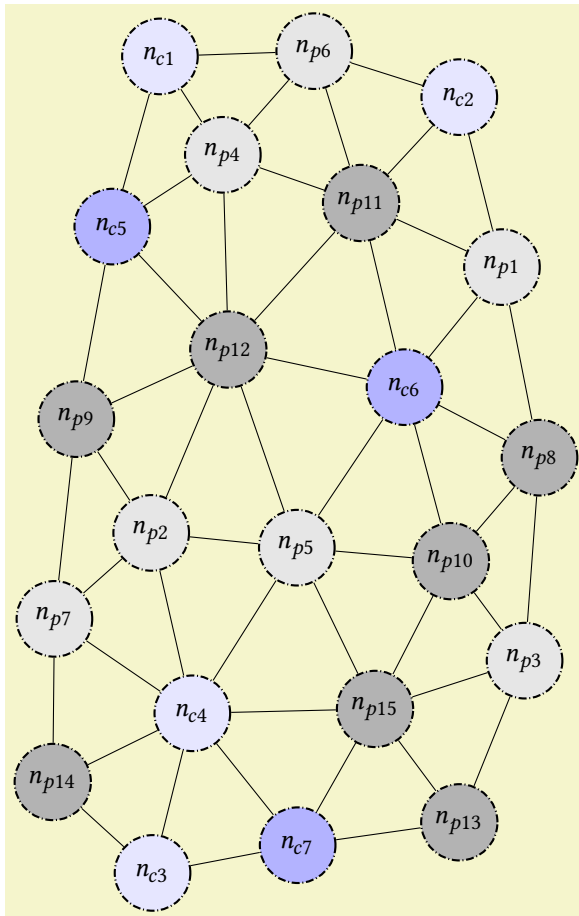


```
\usetikzlibrary {ext.nodes, intersections, quotes, spath3}
\tikz[inner sep=.15em, circle, nodes={draw, green}, sloped, ultra thick]
\draw[->, nodes on curve=bend left] (0,0) to["0"] (1,1)
                                         to["1"] (2,0)
                                         to["2" near start, "3", "4" near end] (4,1)
                                         -- ++(down:1);
```

## Part III

# PGF Libraries

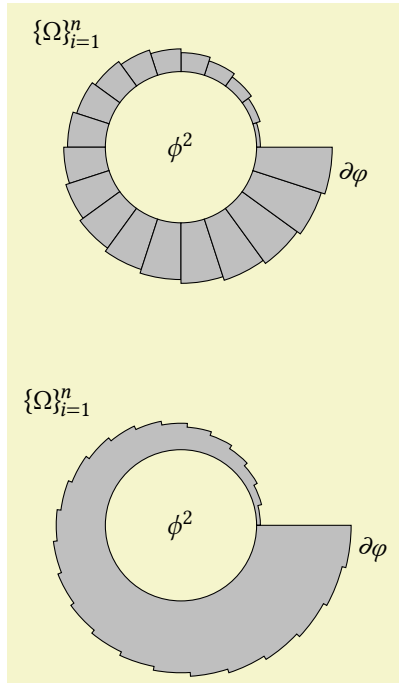
These libraries (should) work with both PGF and TikZ.



```
\usetikzlibrary {graphs,graphdrawing,ext.misc} \usegdlibrary {force}
\tikzset{
  mynode/.style={
    circle, minimum size=10mm, draw, densely dashdotted, thick,
    decide color/.expand once=#1,
    decide color/.style 2 args={
      /utils/TeX/if=c#1
      {/utils/TeX/ifnum={#2<5}{blue!light}{blue!dark}}
      {/utils/TeX/ifnum={#2<8}{light}{dark}}},
    light/.style={fill=gray!20}, blue!light/.style={fill=blue!10},
    dark/.style={fill=gray!60}, blue!dark/.style={fill=blue!30}}
\tikz\graph[
  spring electrical layout, vertical=c2 to p13,
  node distance=1.5cm, typeset=$n_{\tikzgraphnodetext}$,
  nodes={mynode=\tikzgraphnodetext}] {
  % outer ring
  c2 -- {p1, p11, p6};
  p1 -- {p8, c6, p11};
  p8 -- {p3, p10, c6};
  p3 -- {p13, p15, p10};
  p13 -- {p15, c7};
  c7 -- {c3, c4, p15};
  c3 -- {p14, c4};
  p14 -- {p7, c4};
  p7 -- {p9, p2, c4};
  p9 -- {c5, p12, p2};
  c5 -- {c1, p4, p12};
  c1 -- {p6, p4};
  p6 -- {p11, p4};
  % inner ring
  p11 -- {c6, p12, p4};
  p5 -- {c6 -- {p10, p12}, p10 -- p15, p15 -- c4, c4 -- p2, p2 -- p12, p12 -- p4};
};
```

## Part IV

# Utilities



```
\usetikzlibrary {ext.misc}
\begin{tikzpicture}[
  declare function={bigR(\n)=smallR+.05*\n;},
  declare constant={smallR=1; segments=20;},
  full arc=segments]
\foreach \iN[evaluate={\endRadius=bigR(\iN+1);}, use int=0 to segments-1]
\filldraw[fill=gray!50] (\iN R:\endRadius)
  arc [radius=\endRadius, start angle=\iN R, delta angle=+IR] -- (\iN R+1R:smallR)
  arc [radius=smallR, end angle=\iN R, delta angle=-IR] -- cycle;

\node at (north west:{sqrt 2 * bigR(segments/2)}) {$\phi^2$};
\node[rotate=-.5R, right] at (-.5R: bigR segments) {$\partial\varphi$};

\tikzset{yshift=-.5cm, declare constant={segments=25;}, full arc=segments}
\filldraw[fill=gray!50] (right:smallR)
  \foreach \iN[evaluate={\endRadius=bigR(\iN+1);}, use int=0 to segments-1] {
    -- (\iN R:\endRadius) arc[radius=\endRadius, start angle=\iN R, delta angle=IR]}
    -- (right:smallR) arc[radius=smallR, start angle=0, delta angle=-360];

\node at (north west:{sqrt 2 * bigR(segments/2)}) {$\phi^2$};
\node[rotate=-.5R, right] at (-.5R: bigR segments) {$\partial\varphi$};
\end{tikzpicture}
```



## Part V

# Changelog, Index & References

## Changelog

### Version 0.5

- Added package `pgffor-ext`.
- Bugfixes to `ext.calendar-plus`.
- Allow the original rectangle timer with `ext.paths.timer`.

### Version 0.4.2

- Added TikZ library `ext.scalepicture`.
- Bugfixes to `shapes.uncenteredrectangle`, `paths.ortho`, `positioning-plus` and `pgfcalender-ext`.

### Version 0.4.1

- Cleaned up directory structure of documentary.
- Added PGFkeys library `ext.pgfkeys-plus`.
- Added shape `uncentered rectangle` (PGF library `ext.shapes.uncenteredrectangle`).
- Fixed `ext.paths.arcto` – again [1].

### Version 0.4

- CTAN version of 0.3.1

### Version 0.3.1

- Fixed `ext.paths.ortho` keys `only vertical first` and `only horizontal first`.
- Moved all (except the `paths`) to namespace `/tikz/ortho`. `/tikz/hvvh` and `/tikz/udlr` are considered deprecated.

- Fixed `\pgfcalendarjulianyeartoweek`.
- Added more calendar tests.
- Added directory structure.

### Version 0.3

- Added shape `circle arrow` (PGF library `ext.shapes.circlearrow`).
- Added shape `circle cross split` (PGF library `ext.shapes.circlecrosssplit`).
- Added shape `heatmark` (PGF library `ext.shapes.heatmark`).
- Added shape `rectangle with rounded corners` (PGF library `ext.shapes.rectangleroundedcorners`).
- Added shape `superellipse` (PGF library `ext.shapes.superellipse`).
- Added TikZ library `ext.node-families.shapes.geometric`.
- Fixed `ext.node-families'` key size.
- Renamed internal macros to use custom namespace starting with `\tikzext@`.
- Added some references.

### Version 0.2

- Added TikZ library `ext.positioning-plus`.
- Added TikZ library `ext.node-families`.

#### Version 0.1

- Added TikZ library `ext.calendar-plus`.
- Added TikZ library `ext.misc`.
- Added TikZ library `ext.paths.arcto`.
- Added TikZ library `ext.paths.ortho`.
- Added TikZ library `ext.paths.timer`.
- Added TikZ library `ext.patterns.images`.
- Added TikZ library `ext.topaths.arctthrough`.
- Added TikZ library `ext.transformations.mirror`.
- Added PGF library `ext.transformations.mirror`.

# Index

This index contains automatically generated entries as well as [references](#) to original functionalities of `PGF/TikZ` and [references](#) to functionalities outside of `PGF/TikZ`.

`ext.nodes` library, [10](#)

`intersections` library, [10](#)

## Libraries

`ext.nodes`, [10](#)

`intersections`, [10](#)

`spath3`, [10](#)

node on line key, [10](#)

nodes on curve key, [10](#)

nodes on curve' key, [10](#)

nodes on line key, [10](#)

`spath3` library, [10](#)

## /tikz/

node on line, [10](#)

nodes on curve, [10](#)

nodes on curve', [10](#)

nodes on line, [10](#)

to path, [10](#)

to path key, [10](#)

## References

- [1] marmotghost. *clockwise/counter clockwise does not seem to work reliably*. Oct. 2022. URL: <https://github.com/Qrrbrbirlbel/tikz-extensions/issues/2> (visited on 10/23/2022) (cit. on p. 63).
- [2] Andrew Stacey. *spath3 TikZ library*. original-date: 2014-05-26T12:08:12Z. Dec. 2022. URL: <https://github.com/loopspace/spath3> (visited on 12/10/2022) (cit. on p. 10).