

The TikZ-Extensions Package

Manual for version 0.6

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

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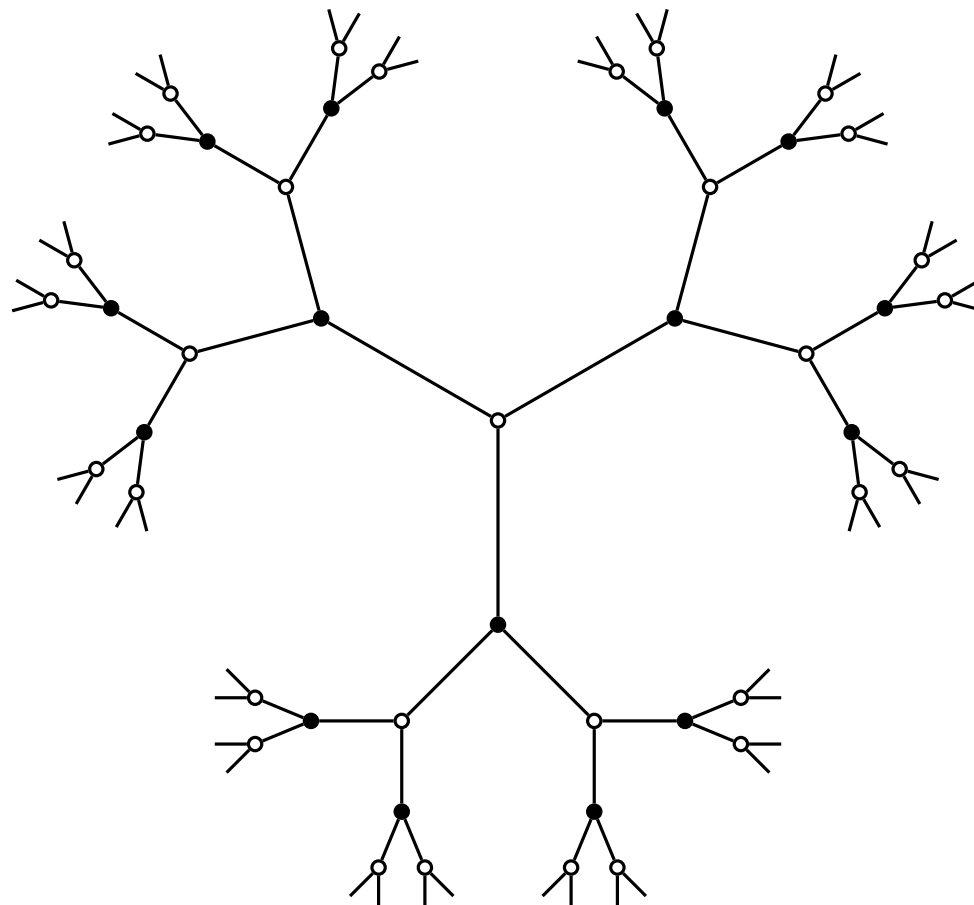
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Part II

TikZ Libraries

These libraries only work with TikZ.



4 Arrow Pics

TikZ Library `ext.arrows-plus`

```
\usetikzlibrary{ext.arrows-plus} % LATEX and plain TEX
\usetikzlibrary[ext.arrows-plus] % ConTEXt
```

This library defines a few pics that can be used to place arrow tips on paths.

The markings library already provides the functionality to place arrow tips along the path. The pics provided by this library serve as an alternative.

Many of the pics share various keys.

`/tikz/pos <=<value>` (no default, initially 0.0)

If the pic type supports it and an start arrow tip sequence is provided this specifies the position of that sequence.

`/tikz/pos >=<value>` (no default, initially 0.5)

This is basically an alias for `/tikz/pos`, if an end arrow tip sequence is provided, it is placed at this position.

`/tikz/arrow shift mode=<shift mode>` (default total length)

This key is used to set the `<shift mode>` for the arrow tip. It can be one of the following.

arrow shift mode=off This disables the shifting.

arrow shift mode=total length The total length of the whole arrow tip sequence will be used.

arrow shift mode=total This is an alias for `total length`.

arrow shift mode=length until line end The length of the whole arrow tip until the line end will be used – as reported by PGF which might not always be the expected one.

arrow shift mode=line end This is an alias for `length until line end`.

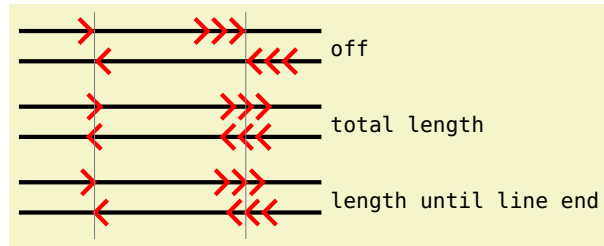
For single arrow tips it might be better to use the Centered arrow tip variants of the arrows library (see sec 17) and disabled arrow shift mode.

When an arrow tip sequence is to be drawn depending on the shift mode its total length or its length until the line end will be determined and multiplied with the arrow shift factor. The result if this evaluation is used to shift the arrow tip sequence in the tip's direction.

`/tikz/arrow shift factor=<value>` (no default, initially 0.5)

This determines the shift factor.

The default value is probably good for most cases.

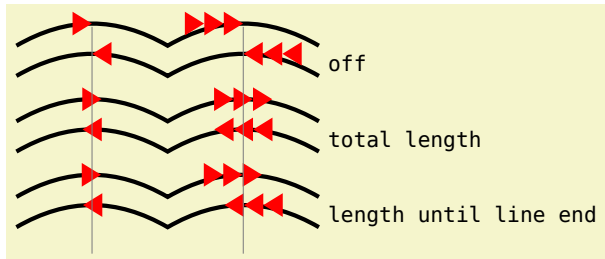


```
\usetikzlibrary {ext.arrows-plus}
\begin{tikzpicture}[>={Straight Barb[color=red]}, ultra thick]
\ttfamily
\foreach[count=\y] \shiftmode in {off, total length, length until line end}
\draw[arrow shift mode=\shiftmode] (0, -\y )
-- pic {arrow=>} ++(right:2)
-- pic {arrow=>.>>} ++(right:2) node[below right] {\shiftmode}
++(down:.4) -- pic {arrow=>.>>} ++( left:2)
-- pic {arrow=>} ++( left:2);
\draw[thin, gray] (1,-.75) -- +(down:3) (3,-.75) -- +(down:3);
\end{tikzpicture}
```

Pic type `arrow=<arrow tip specification>`

This pic draws the given `<arrow tip specification>` (default `>`).

This obviously is best use as a pic along a path segment that supports it. It *does not* support bended arrow tips.



```
\usetikzlibrary {bending, ext.arrows-plus}
\begin{tikzpicture}[>={Triangle[color=red]}, arrows={[bend]}, ultra thick]
\ttfamily
\foreach[count=\y] \shiftmode in {off, total length, length until line end}
\draw[arrow shift mode=\shiftmode] (0, -\y )
to[bend left] pic {arrow=>} ++(right:2)
to[bend left] pic {arrow=>>.}> ++(right:2)
node[below right] {\shiftmode}
++(down:.4) to[bend right] pic {arrow=>>.}> ++( left:2)
to[bend right] pic {arrow=>} ++( left:2);
\draw[thin, gray] (1,-.75) -- +(down:3) (3,-.75) -- +(down:3);
\end{tikzpicture}
```

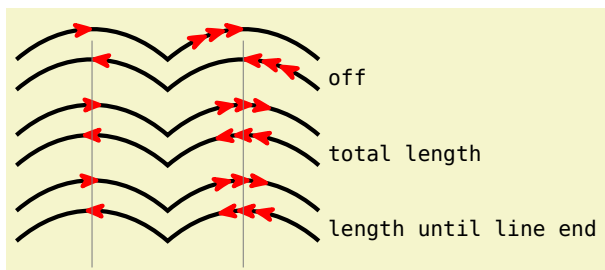
The previous arrow pic can be used with arcs but for bended arrow tips, the following pic is needed.

Pic type arc `arrows=<start tip specification>-<end tip specification>`

This pic draws the given tips along an arc. It supports the `pos <` key.

The shift mode applies to both ends.

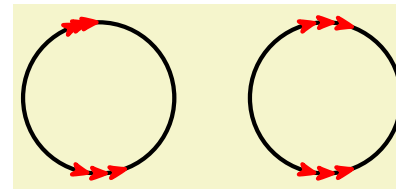
Since arcs don't have a target coordinate a `pos` or a `pos >` needs to be specified explicitly.



```
\usetikzlibrary {bending, ext.arrows-plus}
\begin{tikzpicture}[>={Stealth[color=red, round]}, arrows={[bend]}, ultra thick]
\ttfamily
\foreach[count=\y] \shiftmode in {off, total length, length until line end}
\draw[arrow shift mode=\shiftmode, x radius=2, y radius=3] (0, -\y )
arc[start angle=120, delta angle=-60] pic[midway] {arc arrow=>}
arc[start angle=120, delta angle=-60] pic[midway] {arc arrow=>>.}>
node[below right] {\shiftmode}
++(down:.4) arc[end angle=120, delta angle=60] pic[midway] {arc arrow=>>.}>
arc[end angle=120, delta angle=60] pic[midway] {arc arrow=>};
\draw[thin, gray] (1,-.75) -- +(down:3) (3,-.75) -- +(down:3);
\end{tikzpicture}
```

Tip: Use an arc with the full 360° to place bended arrow tips along a circle or an ellipse.

Tip: Use an empty option specification `[]` after the first arrow tip in the start specification to help it correctly apply the shifting distance.

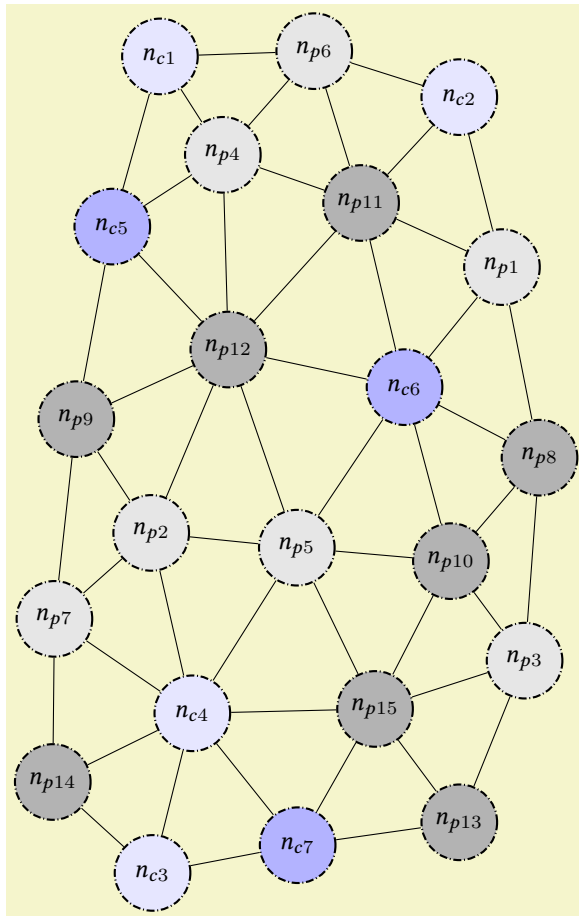


```
\usetikzlibrary {bending, ext.arrows-plus}
\begin{tikzpicture}[>={Stealth[color=red, round]}, arrows={[bend]}, ultra thick]
\draw[start angle=0, end angle=360, radius=1]
(0, 0) arc[] pic[pos <=.25, pos >=.75] {arc arrows=<<<->>>} -- cycle
(3, 0) arc[] pic[pos <=.25, pos >=.75] {arc arrows=<[]<<->>} -- cycle;
\end{tikzpicture}
```

Part III

PGF Libraries

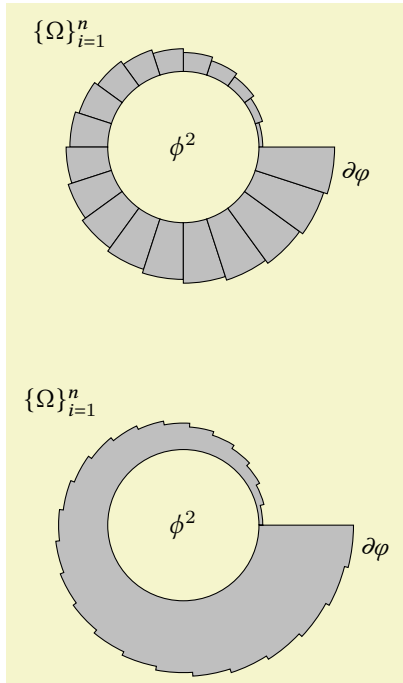
These libraries (should) work with both PGF and TikZ.



```
\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                                {${\phi^2}$};
\node at (north west:{sqrt 2 * bigR(segments/2)}) {${\{\Omega\}_{i=1}^n}$};
\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                                {${\phi^2}$};
\node at (north west:{sqrt 2 * bigR(segments/2)}) {${\{\Omega\}_{i=1}^n}$};
\node[rotate=-.5R, right] at (-.5R: bigR segments) {${\partial \varphi}$};
\end{tikzpicture}
```

Part V

Changelog, Index & References

Changelog

Version 0.6

- Added six new auto placement mechanism: above, below, west, east, north and south.
- Added auto offset for auto placement.
- Added precise auto angle.

Version 0.5.1

- Added PGF library `ext.arrows`.
- Bugfix to `ext.pgfkeys-plus`. [20]

Version 0.5

- Added package `pgffor-ext`.
- Added TikZ library `ext.nodes`.
- Added TikZ library `ext.layers`.
- 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 [19].

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 `to 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`.

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