The Ti*k*Z-Extensions Package
Manual for version 0.5.1

`https://github.com/Qrrbrbirlbel/tikz-extensions`

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Part II
Ti*k*Z Libraries

These libraries only work with Ti*k*Z.

Part III
PGF Libraries

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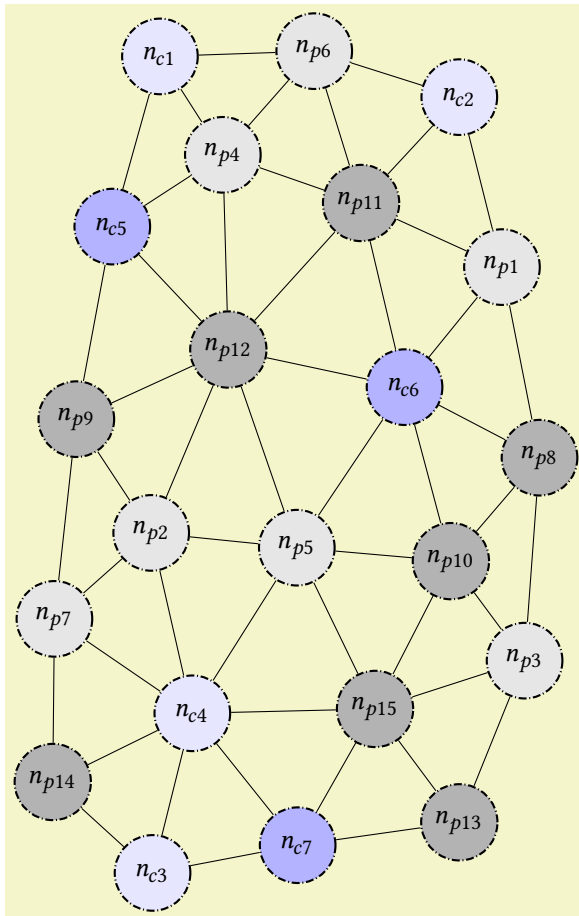

```
\usetikzlibrary {graphs,graphdrawing,ext.misc} \usegdlibrary {force}
\tikzset{
  mynode/.style={
    circle, minimum size=10mm, draw, densely dashdotted, thick,
    decide color/.expand once=#1},
  decide color/.style 2 args={
    /utils/TeX/if=c#1
      {/utils/TeX/ifnum={#2<5}{bluelight}{bluedark}}
      {/utils/TeX/ifnum={#2<8}{light}{dark}}},
  light/.style={fill=gray!20},  bluelight/.style={fill=blue!10},
  dark/.style ={fill=gray!60},  bluedark/.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};
};
```

16 Untipped Arrow Tips

TikZ Library `ext.arrows`

```
\usepgflibrary{ext.arrows}  % LATEX and plain TEX and pure pgf
\usepgflibrary[ext.arrows]  % ConTEXt and pure pgf
\usetikzlibrary{ext.arrows} % LATEX and plain TEX when using TikZ
\usetikzlibrary[ext.arrows] % ConTEXt when using TikZ
```

This library adds arrows to PGF/TikZ.

The arrow tips of the `arrows.meta` library always just touch the end of original line – which is usually what you want.

But for some arrow tips (and when they lie along a path) it makes sense that these tips shoot a bit over the end of the line. This is why these arrow tips exist. They can be categorized into three groups:

1. Centered

2. Untipped

3. Overtipped[7]

Not all original arrow tips got all variants. For a summary, refer to table 1.

As with the original tips of the `arrows.meta` library these can be organized in the following categories.

16.1 Centered

16.1.1 Barbed Arrow Tips

Arrow Tip Kind `Centered Arc Barb`

This is a variant of the `Arc Barb` tip. The center of the arc lies on the original end of the path.

Appearance of the below at line width	*0.4pt*	*0.8pt*	*1.6pt*
`Centered Arc Barb[]`	thin	**thick**	
`Centered Arc Barb[sep] Centered Arc Barb[]`	thin	**thick**	
`Centered Arc Barb[sep] . Centered Arc Barb[]`	thin	**thick**	
`Centered Arc Barb[arc=120]`	thin	**thick**	
`Centered Arc Barb[arc=270]`	thin	**thick**	

	0.4pt	*0.8pt*	*1.6pt*
`Centered Arc Barb[length=2pt]`	thin	**thick**	
`Centered Arc Barb[length=2pt,width=5pt]`	thin	**thick**	
`Centered Arc Barb[line width=2pt]`	thin	**thick**	
`Centered Arc Barb[reversed]`	thin	**thick**	
`Centered Arc Barb[round]`	thin	**thick**	
`Centered Arc Barb[slant=.3]`	thin	**thick**	
`Centered Arc Barb[left]`	thin	**thick**	
`Centered Arc Barb[right]`	thin	**thick**	
`Centered Arc Barb[harpoon,reversed]`	thin	**thick**	
`Centered Arc Barb[red]`	thin	**thick**	

The following options have no effect: `open`, `fill`.

On `double` lines, the arrow tip will not look correct.

Arrow Tip Kind `Centered Bar`

A simple bar. This is a simple instance of `Centered Tee Barb` for length zero.

The middle of the line will lie on original end of the path.

---

[7] The Overtipped arrow tips aren't yet implemented.

Table 1: Variants of the original `arrows.meta` arrow tips. For each example, the order is 1. reversed variant, 2. original, 3. variant. They gray line shows where the line actually ends.

Group	Original	Centered	Untipped	Overtipped
Barbed	Arc Barb			–
	Parenthesis			–
	Hooks		–	–
	Straight Barb		–	–
	Tee Barb			–
	Bar			–
	Bracket			–
Mathematical	Classical TikZ Rightarrow	–	–	–
	Computer Modern Rightarrow	–	–	–
	To	–	–	–
	Implies	–	–	–
Geometric	Circle			–
	Ellipse			–
	Kite		–	–
	Diamond		–	–
	Turned Square		–	–
	LaTeX	–	–	–
	Square		–	–
	Rectangle		–	–
	Stealth		–	–
	Triangle		–	–
Caps		–	–	–
Rays	Rays		–	–

Arrow Tip Kind `Centered Bracket`

This is an instance of the `Centered Tee Barb` arrow tip that results in something resembling a bracket.

The middle of the vertical part will lie on the original end of the path.

Appearance of the below at line width	*0.4pt*	*0.8pt*	*1.6pt*
`Centered Bracket[]`	—— thin	—— **thick**	——
`Centered Bracket[sep] Centered Bracket[]`	—— thin	—— **thick**	——
`Centered Bracket[sep] . Centered Bracket[]`	—— thin	—— **thick**	——

	0.4pt	*0.8pt*	*1.6pt*
`Centered Bracket[reversed]`	—— thin	—— **thick**	——
`Centered Bracket[round]`	—— thin	—— **thick**	——
`Centered Bracket[slant=.3]`	—— thin	—— **thick**	——
`Centered Bracket[left]`	—— thin	—— **thick**	——
`Centered Bracket[right]`	—— thin	—— **thick**	——
`Centered Bracket[harpoon,reversed]`	—— thin	—— **thick**	——
`Centered Bracket[red]`	—— thin	—— **thick**	——

The following options have no effect: `open`, `fill`.

On `double` lines, the arrow tip will not look correct.

Part IV
Utilities
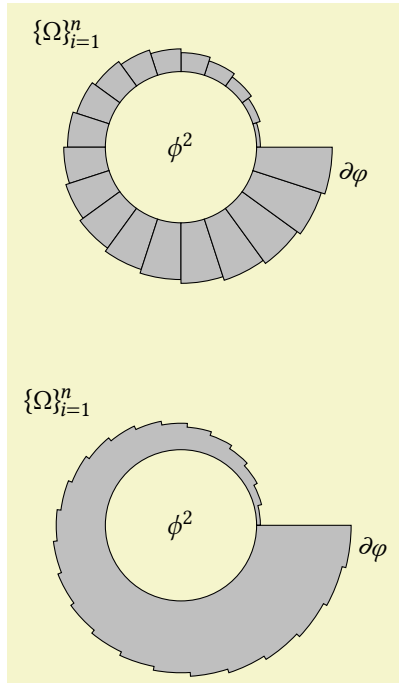

```
\usetikzlibrary {ext.misc}
\begin{tikzpicture}[
  declare function={bigR(\n)=smallR+.05*\n;},
  declare constant={smallR=1; segments=20;},
  full arc=segments]
\foreach \iN[evaluate={\endRadius=bigR(\iN+1);}, use int=0 to segments-1]
  \filldraw[fill=gray!50] (\iN R:\endRadius)
    arc [radius=\endRadius, start angle=\iN R, delta angle=+1R] -- (\iN R+1R:smallR)
    arc [radius=smallR,       end angle=\iN R, delta angle=-1R] -- 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=1R]}
    -- (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 0.5

- Added package `pgffor-ext`.
- Added Ti*k*Z library `ext.nodes`.
- Added Ti*k*Z library `ext.layers`.
- Bugfixes to `ext.calendar-plus`.
- Allow the original `rectangle` timer with `ext.paths.timer`.

Version 0.4.2

- Added Ti*k*Z 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 ᴘɢꜰkeys library `ext.pgfkeys-plus`.
- Added shape `uncentered rectangle` (ᴘɢꜰ library `ext.shapes.uncenteredrectangle`).
- Fixed `ext.paths.arcto` – again [15].

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` (ᴘɢꜰ library `ext.shapes.circlearrow`).
- Added shape `circle cross split` (ᴘɢꜰ library `ext.shapes.circlecrosssplit`).
- Added shape `heatmark` (ᴘɢꜰ library `ext.shapes.heatmark`).
- Added shape `rectangle with rounded corners` (ᴘɢꜰ library `ext.shapes.rectangleroundedcorners`).
- Added shape `superellipse` (ᴘɢꜰ library `ext.shapes.superellipse`).
- Added Ti*k*Z 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 Ti*k*Z library `ext.positioning-plus`.

- Added Ti*k*Z library `ext.node-families`.

Version 0.1

- Added Ti*k*Z library `ext.calendar-plus`.

- Added Ti*k*Z library `ext.misc`.

- Added Ti*k*Z library `ext.paths.arcto`.

- Added Ti*k*Z library `ext.paths.ortho`.

- Added Ti*k*Z library `ext.paths.timer`.

- Added Ti*k*Z library `ext.patterns.images`.

- Added Ti*k*Z library `ext.topaths.arcthrough`.

- Added Ti*k*Z 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/Ti*k*Z and references to functionalities outside of PGF/Ti*k*Z.

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