

*Tik*Zische Erlebnisse

Dante Frühjahrstagung 2025

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Inhalt

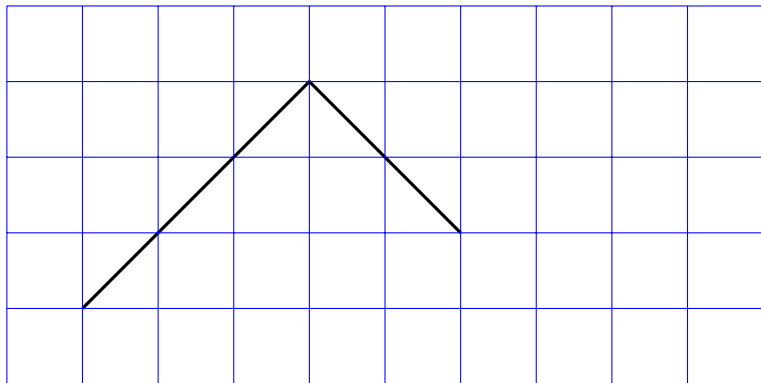
- ▶ Kurze (nicht vollständige) Vorstellung von TikZ-Grundlagen
- ▶ Beispiele, Beispiele, Beispiele. . .

Geschichte

- ▶ TikZ = „TikZ ist kein Zeichenprogramm“
- ▶ TikZ = „Frontend“ für PGF („portable graphics format“)
- ▶ Entwickler Till Tantau, Christian Feuersänger
- ▶ Erscheinungsjahr 2005

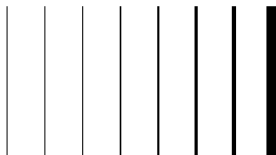
Einfache Linien

```
1 \begin{tikzpicture}  
2 \draw[very thick] (1,1) -- (4,4) -- (6,2);  
3 \draw[step=1cm,blue,thin] (0,0) grid (10,5);  
4 \end{tikzpicture}
```



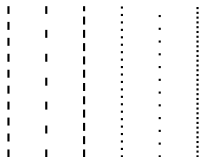
Liniendicken

```
1 \begin{tikzpicture}
2 \draw[ultra thin] (2,1) -- (2,3);
3 \draw[very thin] (2.5,1) -- (2.5,3);
4 \draw[thin] (3,1) -- (3,3);
5 \draw[semithick] (3.5,1) -- (3.5,3);
6 \draw[thick] (4,1) -- (4,3);
7 \draw[very thick] (4.5,1) -- (4.5,3);
8 \draw[ultra thick] (5,1) -- (5,3);
9 \draw[line width=4pt] (5.5,1) -- (5.5,3);
10 \end{tikzpicture}
```



Linienstile

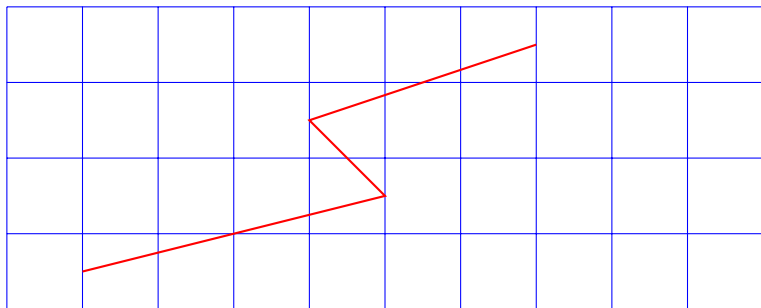
```
1 \begin{tikzpicture}
2 \draw[thick, dashed] (2,1) -- (2,3);
3 \draw[thick, loosely dashed] (2.5,1) -- (2.5,3);
4 \draw[thick, densely dashed] (3,1) -- (3,3);
5 \draw[thick, dotted] (3.5,1) -- (3.5,3);
6 \draw[thick, loosely dotted] (4,1) -- (4,3);
7 \draw[thick, densely dotted] (4.5,1) -- (4.5,3);
8 \end{tikzpicture}
```



Rel. Koordinaten I

mit Update der Koordinaten

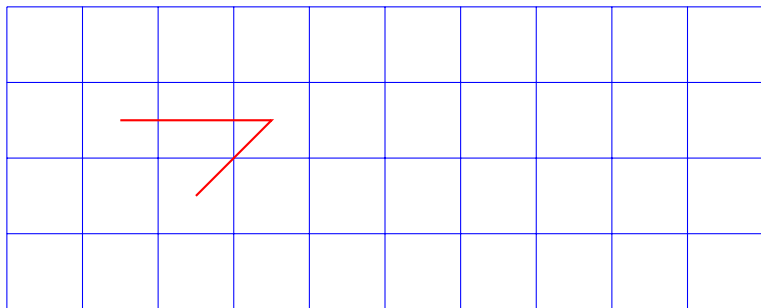
```
1 \begin{tikzpicture}  
2 \draw[step=1cm,blue,thin] (0,0) grid (10,4);  
3  
4 \draw[thick, red] (1,0.5) -- ++(4,1) -- ++(-1,1) -- ++(3,1);  
5 \end{tikzpicture}
```



Rel. Koordinaten II

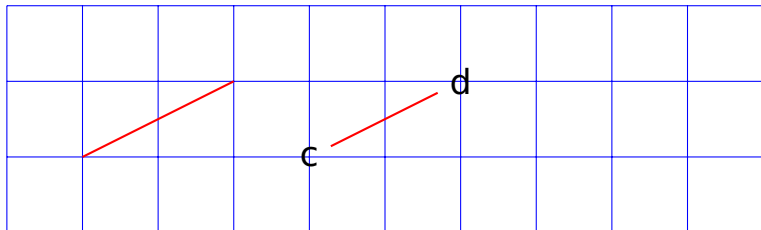
ohne Update der Koordinaten

```
1 \begin{tikzpicture}  
2 \draw[step=1cm,blue,thin] (0,0) grid (10,4);  
3  
4 \draw[thick, red] (1,0.5) -- ++(4,1) -- ++(-1,1) -- ++(3,1);  
5 \end{tikzpicture}
```



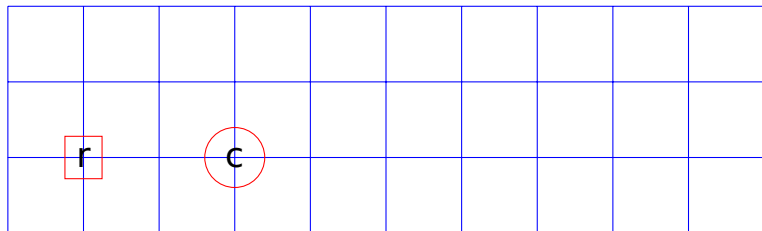
Nodes und Coordinates

```
1 \begin{tikzpicture}
2 \draw[step=1cm,blue,thin] (0,0) grid (10,3);
3
4 \coordinate (a) at (1,1);
5 \coordinate (b) at (5,3);
6 \draw[red, thick] (a) -- (b);
7
8 \node (c) at (3,1){c};
9 \node (d) at (7,3){d};
10 \draw[red, thick] (c) -- (d);
11 \end{tikzpicture}
```



Node Shapes

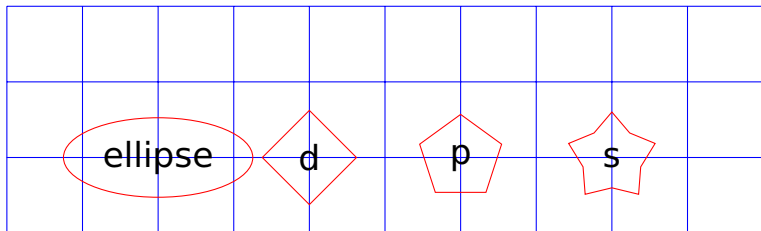
```
1 \begin{tikzpicture}
2 \draw[step=1cm,blue,thin] (0,0) grid (10,3);
3
4 \node[rectangle,draw = red] (r) at (1,1){r};
5 \node[circle,draw = red] (c) at (3,1){c};
6 \end{tikzpicture}
```



► more with `\usetikzlibrary{shapes}`

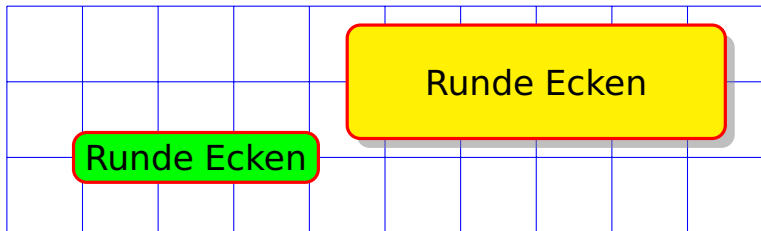
Mehr Node Shapes

```
1 \begin{tikzpicture}
2 \draw[step=1cm,blue,thin] (0,0) grid (10,3);
3
4 \node[ellipse,draw = red] (e) at (2,1){ellipse};
5 \node[diamond,draw = red] (d) at (4,1){d};
6 \node[regular polygon,regular polygon sides=5,draw=red](p) at (6,1){p
7   };
8 \node[star,star points=5,draw = red] (s) at (8,1){s};
9 \end{tikzpicture}
```



Shapes formatieren

```
1 \begin{tikzpicture}
2 \draw[step=1cm,blue,thin] (0,0) grid (10,3);
3
4 \node[rectangle,draw = red,very thick,rounded corners=5pt,fill=green]
   (r) at (2.5,1){Runde Ecken};
5
6 \node[rectangle,draw = red,very thick,rounded corners=5pt,minimum
   width=5cm, minimum height=15mm, fill=yellow] (r) at (7,2){Runde
   Ecken};
7 \end{tikzpicture}
```



Grundlagen II

Anchors

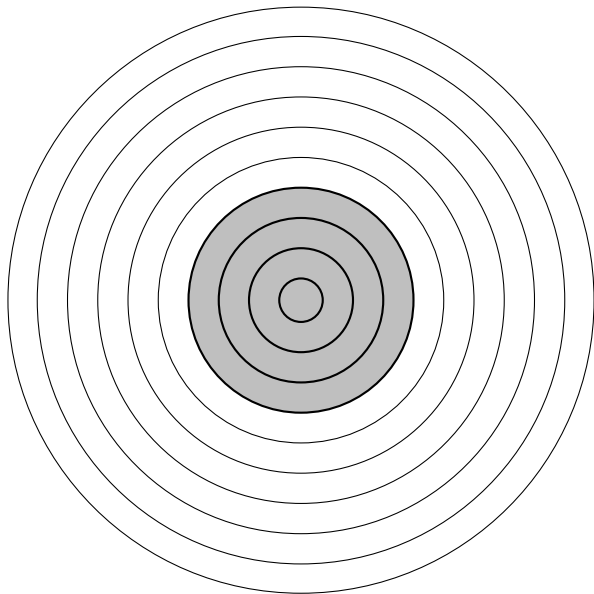
Anwendungen

- ▶ Zielscheibe 10m Luftpistole
- ▶ Matrix
- ▶ Kalender
- ▶
- ▶
- ▶

Zielscheibe Luftpistole I

```
1 \begin{tikzpicture}
2 \coordinate (o) at (8,8);
3 \draw[black] (o) circle (77.5mm);
4 \draw[black] (o) circle (69.75mm);
5 \draw[black] (o) circle (61.75mm);
6 \draw[black] (o) circle (53.75mm);
7 \draw[black] (o) circle (45.75mm);
8 \draw[black] (o) circle (37.75mm);
9 \draw[black,thick,fill=lightgray] (o) circle (29.75mm);
10 \draw[black,thick] (o) circle (21.75mm);
11 \draw[black,thick] (o) circle (13.75mm);
12 \draw[black,thick] (o) circle (5.75mm);
13 \end{tikzpicture}
```

Zielscheibe Luftpistole II



Zielscheibe Luftpistole III

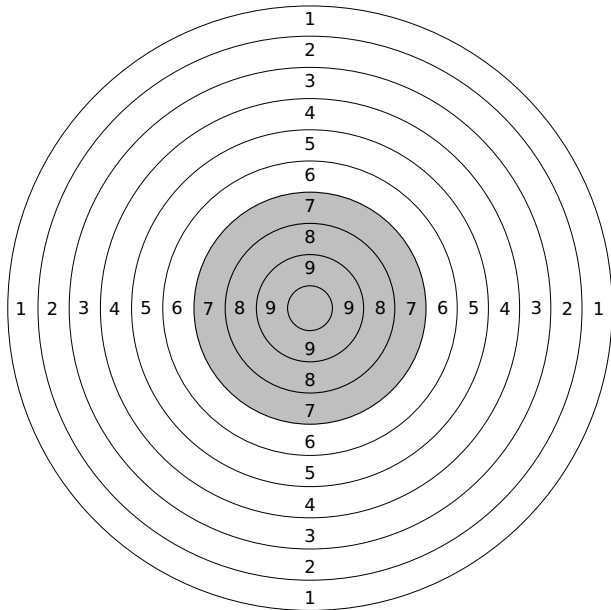
► Positioning-Bibliothek laden

```
1 \usetikzlibrary{positioning}
```

```
1 \begin{tikzpicture}
2 \node[right=0.7cm of o] {9};
3 \node[right=1.5cm of o] {8};
4 \node[right=2.3cm of o] {7};
5 \node[right=3.1cm of o] {6};
6 \node[right=3.9cm of o] {5};
7 \node[right=4.7cm of o] {4};
8 \node[right=5.5cm of o] {3};
9 \node[right=6.3cm of o] {2};
10 \node[right=7.1cm of o] {1};
11 \end{tikzpicture}
```

► wiederholen für left, above, below

Zielscheibe Luftpistole IV



Zielscheibe Luftpistole V

► Code vereinfachen mit listofitems Paket

```
1 \usepackage{listofitems}
2 \setsepchar{;}
3 \coordinate (o) at (8,8);
4 \draw[black,thick,fill=lightgray] (o) circle (29.75mm);
5 \readlist\distances
   {77.5;69.75;61.75;53.75;45.75;37.75;21.75;13.75;5.75}
6 \foreachitem\distance\in\distances{
7   \draw[black] (o) circle (\distance mm);
8 }
9 \readlist\distances{7.1;6.3;5.5;4.7;3.9;3.1;2.3;1.5;0.7}
10 \readlist\directions{right;above;left;below}
11 \foreachitem\direction\in\directions{
12   \foreachitem\distance\in\distances{
13     \node[\direction=\distance cm of o] {\distancecnt};
14   }}
```