Tikz

Johann Laconte

October 22, 2021

What is tikz?

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A long time ago, PGF (portable graphics format) was invented.

- *TikZ ist kein Zeichenprogramm*

```latex
\documentclass{standalone}
\usepackage[utf8]{inputenc}
\usepackage[dvipsnames]{xcolor}
\usepackage{tikz}
\usetikzlibrary{calc}
\usetikzlibrary{patterns}
% !\usepackage{kpfonts}

\newcommand{\length}[4][]{
    \draw[#1, stealth-] #2 -- ($#2!0.5!#3!0.15cm!#2$);
    \draw[#1, stealth-] #3 -- ($#3!0.5!#2!0.15cm!#3$);
    \node[#1, font=\scriptsize] at ($#2!0.5!#3$) {#4};
}

\begin{document}
\def\R{8}%
\def\rot{-90}%
\def\rotRobot{-80}%
\def\rotL{45}%
\def\L{1}%
\begin{tikzpicture}
\tikzset{robot/.pic={
    \draw[fill=white] (-0.15, 0.25) rectangle (0.15, -0.25);
    \draw (-0.15, 0.25) -- (0.15, -0.25);
    \draw (0.15, 0.25) -- (-0.15, -0.25);
    \fill (-0.15, 0.25) -- (0,0) -- (0.15,0.25) -- cycle;
    \draw[fill=black] (-.18,.2) rectangle (-.15,.1);
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```

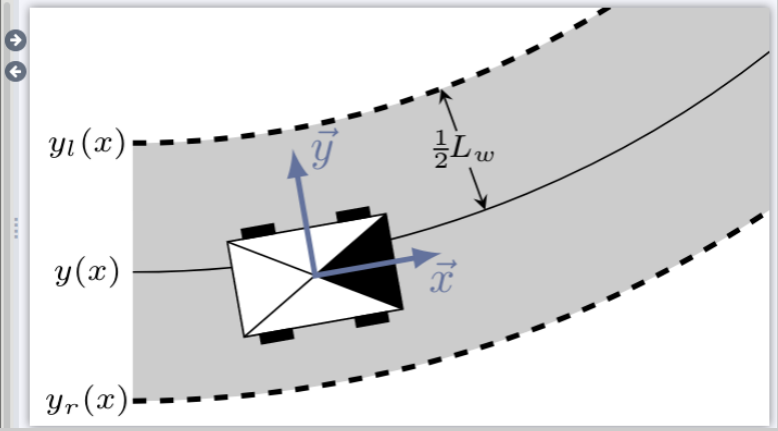

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- *TikZ ist kein Zeichenprogramm*
- Tikz is a set of higher-level macros that use PGF

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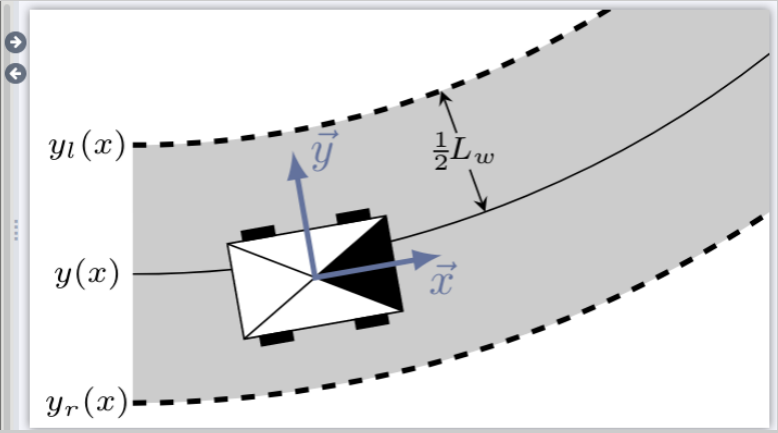
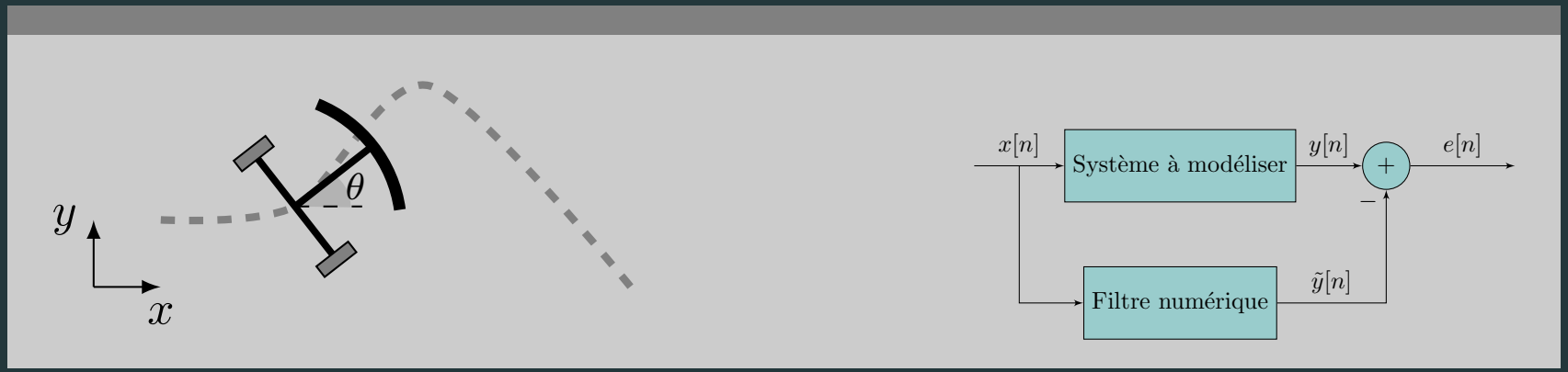


What can tikz do?

It is perfect to draw

- Diagrams, like

It is not meant to draw



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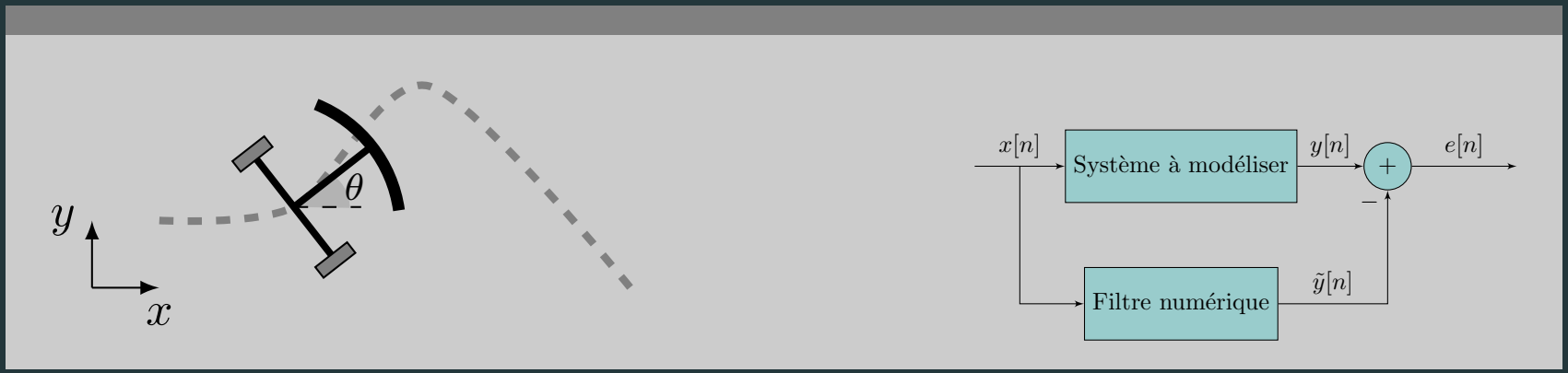

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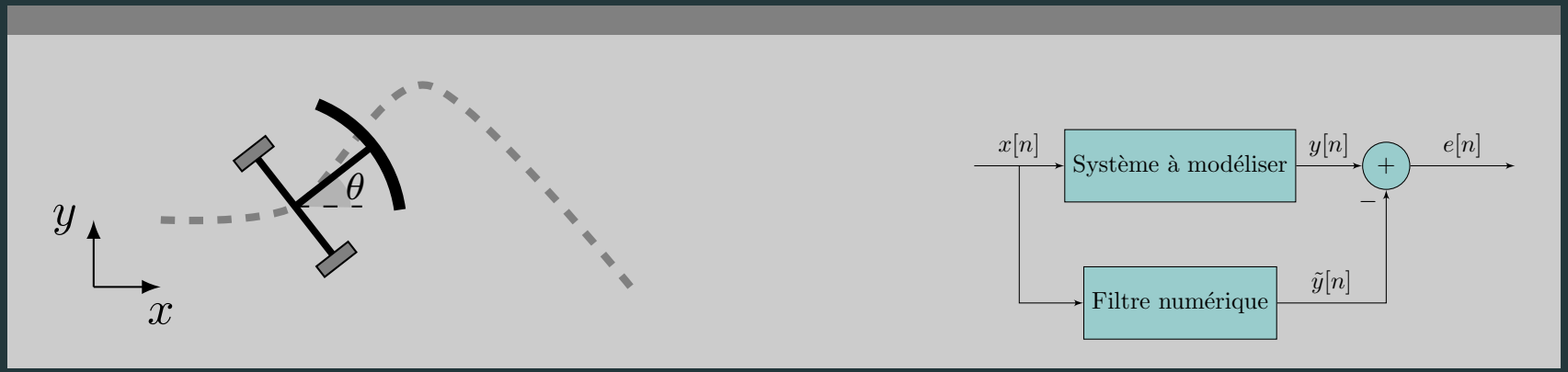

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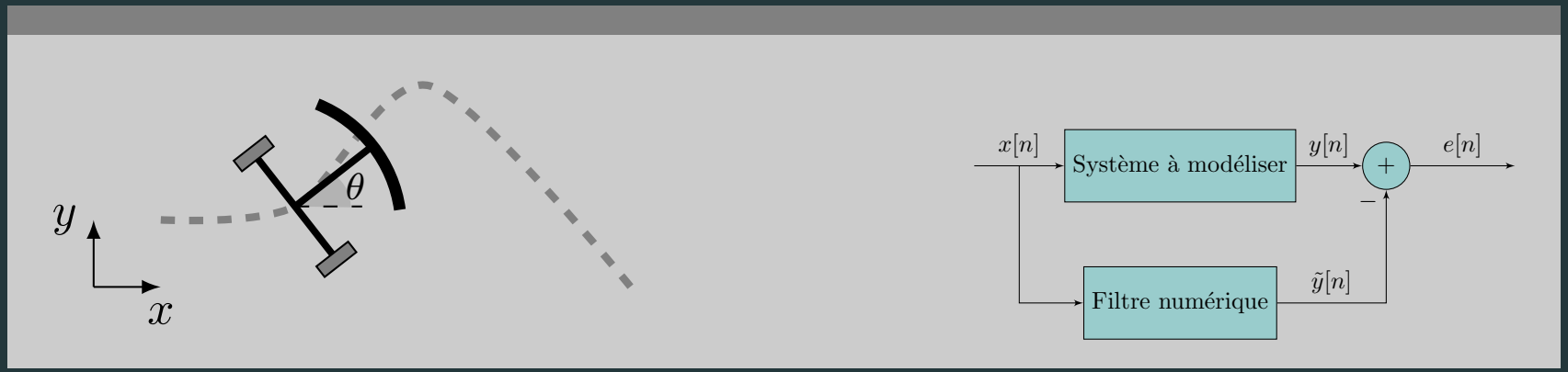

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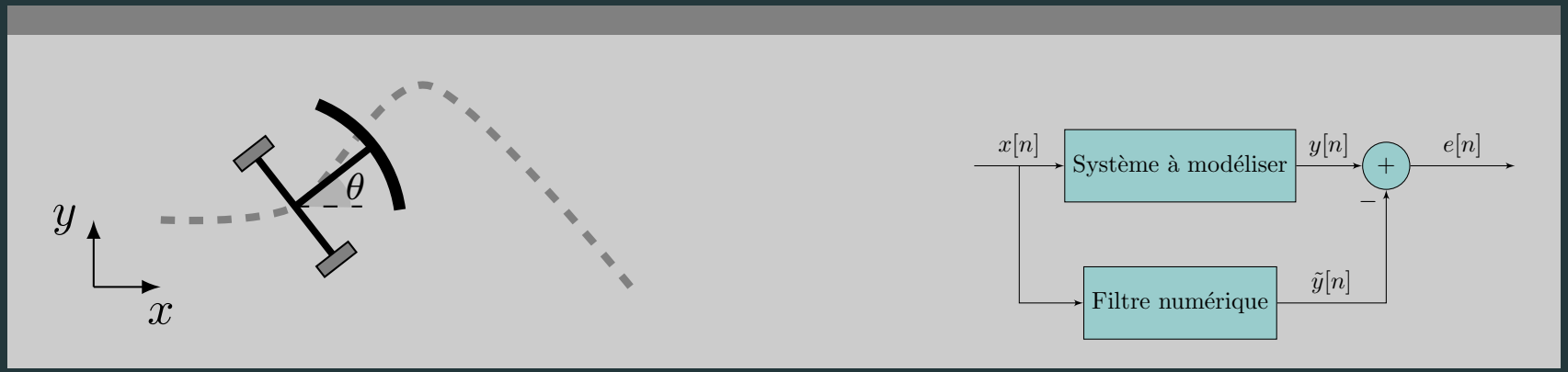

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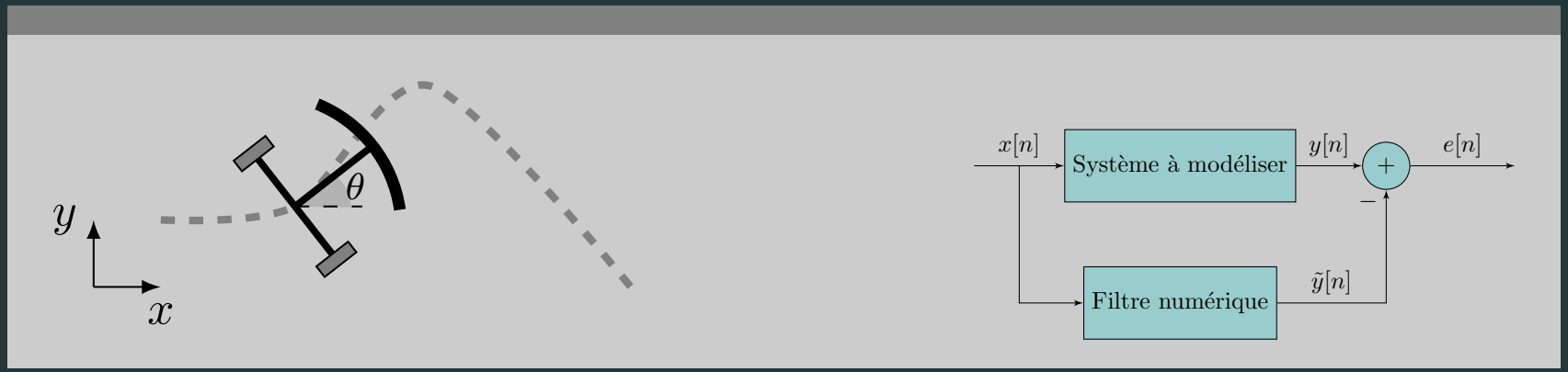

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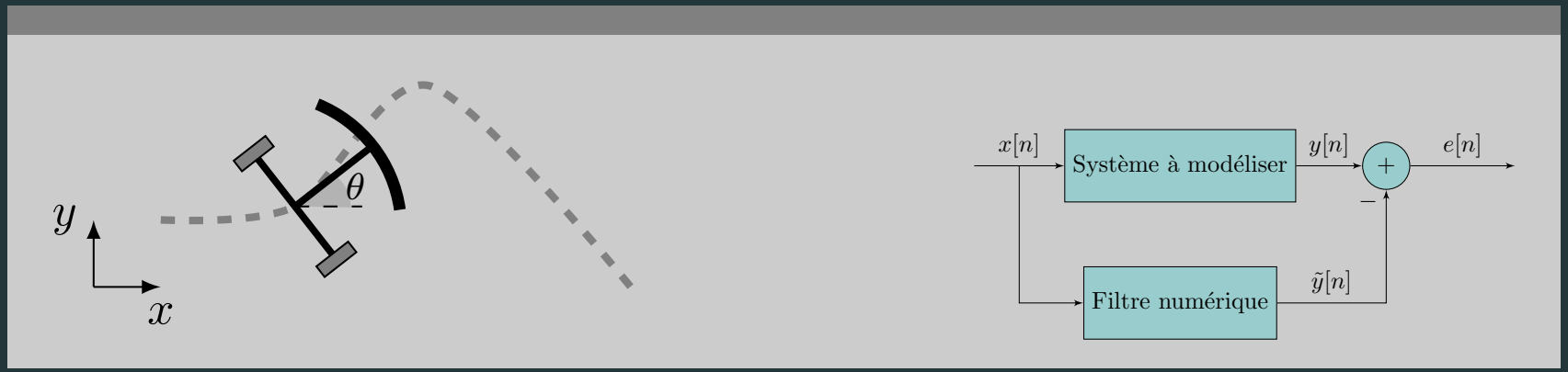

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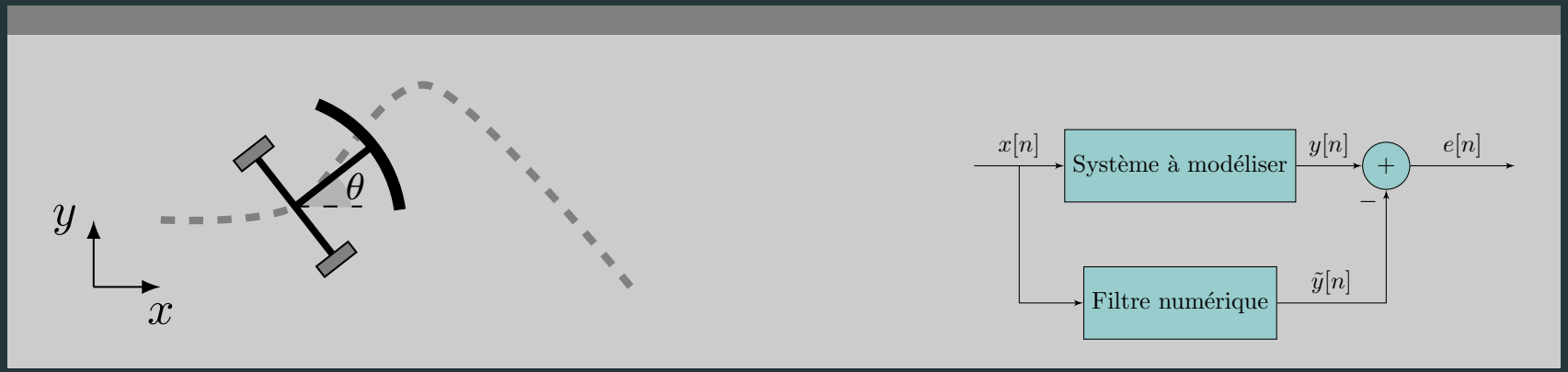

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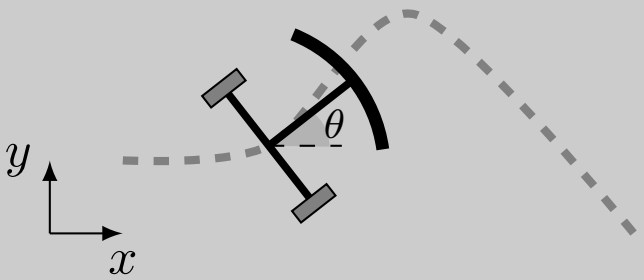
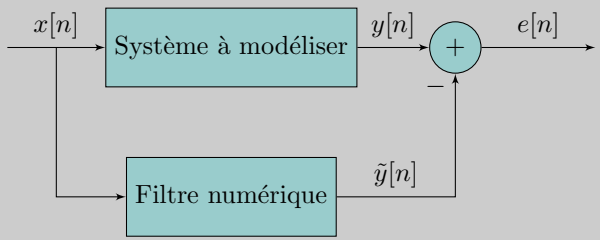
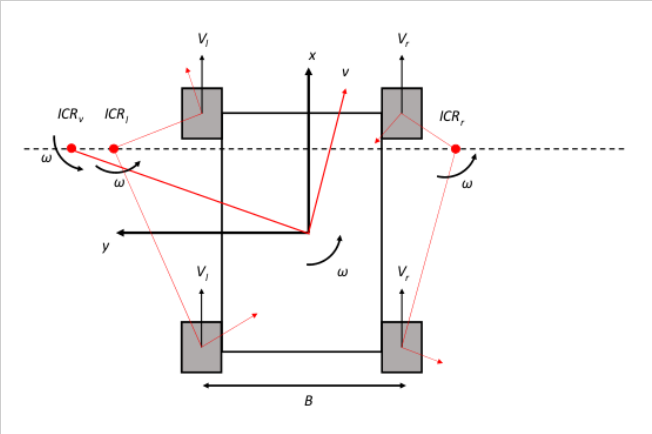
- functions plots. PGFplot<<matplotlib
- 3D figures. You can, but it is basically always a bad idea.

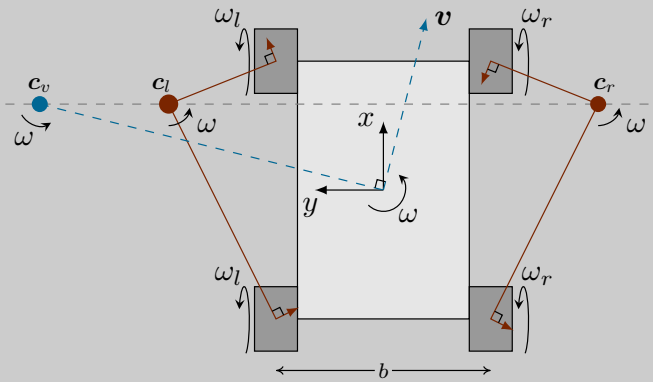




Why use tikz?

- Pretty figures
- If done well, it's very easy to modify a diagram
- You can use loops and if/else statements
  - Very useful when you want to draw N times the same thing
- Easy to collaborate (with Overleaf/github)





How to use tikz?

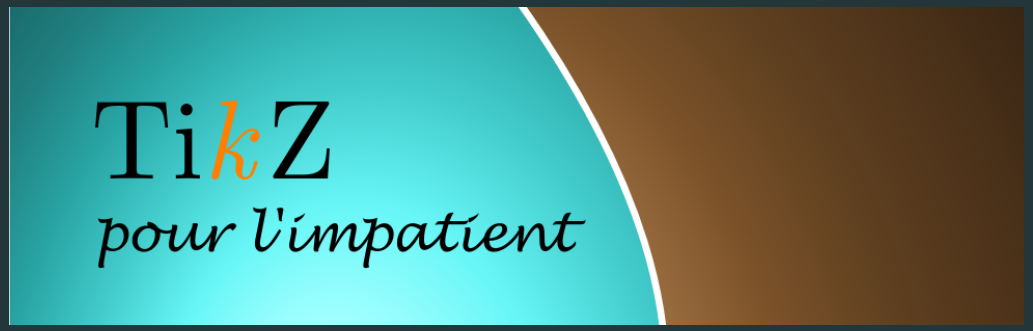
Overleaf is great to store/share all you tikz drawings.

Three golden rules:

- **Never** forget that tikz is a programming langage. If something seems gruesome, you're probably not using the right tool or library!
- **Never** write two times the same thing (coordinate, color...).

If something does not look good, it's because you didn't do a draft on a sheet of paper before or you're using too many colors

Draft something and do it in tikz!



http://www.texample.net/tikz/examples/