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# Abstract

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# Chapter 1

## Introduction

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### 1.1 example of equation

$$y = g(z) \quad \forall z \in \mathbb{R} \quad (1.1)$$

#### 1.1.1 example of multiline equations

this is a `gather` environment

$$y = f(x) \quad (1.2)$$

$$z = g(\omega) + \Gamma(\tau) \quad (1.3)$$

this is an `align` environment

$$y = f(x) \quad (1.4)$$

$$z = g(\omega) + \Gamma(\tau) \quad (1.5)$$

this is an `align` environment with text aligned to the left

$$y = f(x) \quad (1.6)$$

$$z = g(\omega) + \Gamma(\tau) \quad (1.7)$$

this is a `dcases` environment

$$\delta(x) = \begin{cases} +\infty, & \text{if } x = 0 \\ 0, & \text{if } x \neq 0 \end{cases} \quad (1.8)$$

A detailed description of multiline math environments is given in [Marco Coraggio's scientist's matchbox](#) (note here an example of how to create a clickable link to a website and how to **colour text**)

### 1.2 example of figure inclusion

#### 1.2.1 multiple figures side by side

we have two main options:

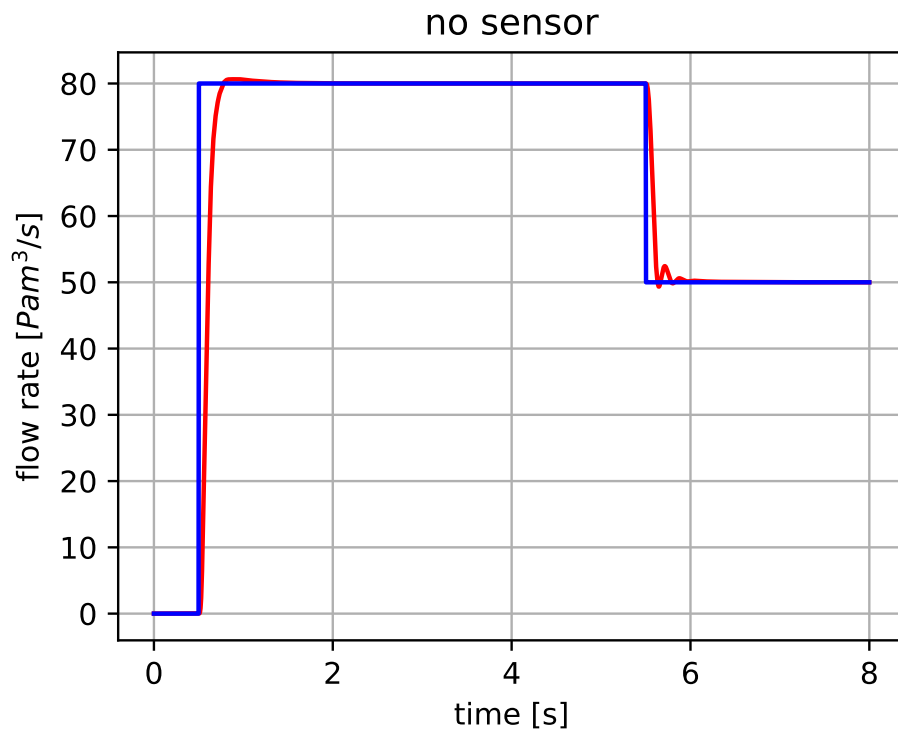
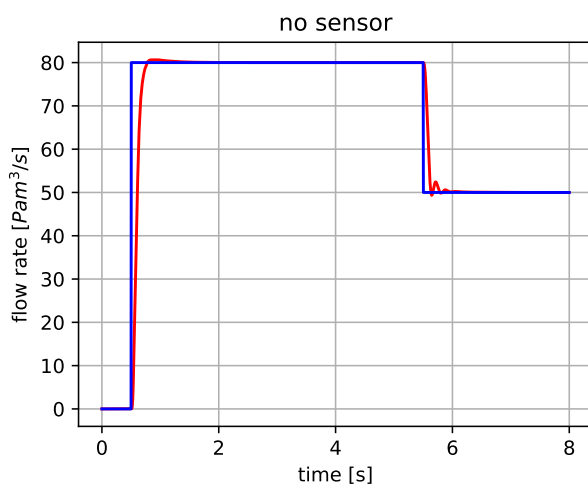
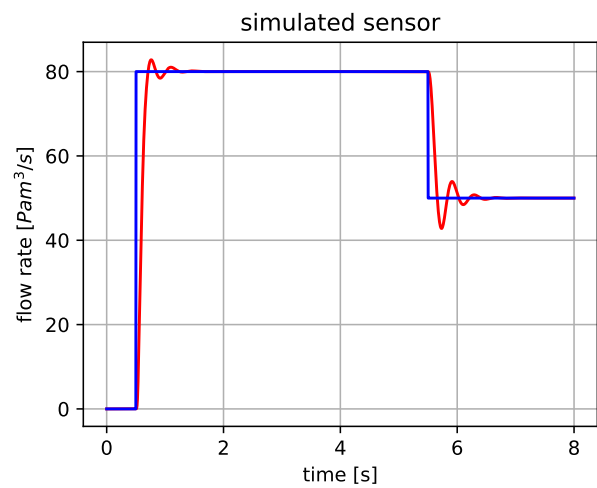


Figure 1.1: controlled valve with no simulated sensor



(a) subfigure 1



(b) subfigure 2

Figure 1.2: subfigure environment gets subcaptions



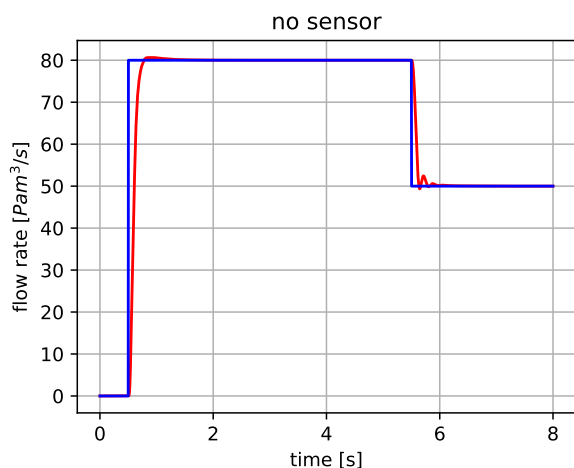


Figure 1.3: minipage 1

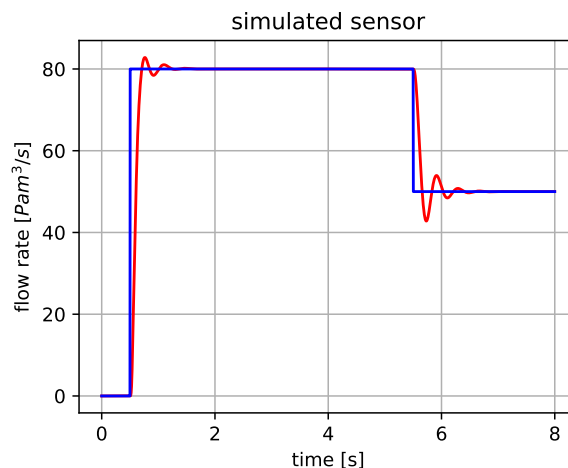


Figure 1.4: minipage 2

Figure 1.5: each figure gets its own caption in minipages, so if you add one for all the images numbering gets messed up!

## 1.3 tables

To make tables you can go to a table generator online to avoid writing out all the boring syntax.

a	b	c	d	e
f	g	h	i	j
k	l	m	n	o
p	q	r	s	t

Table 1.1: the first 20 letters of the alphabet

## 1.4 referencing document elements

here a short and definitely incomplete list of document elements that can be referenced. Necessary condition for something to be referenced is that it be assigned a `\label`

- Chapters: you can click on the number and be sent to chapter 1
- Sections: you can click on the number and be sent to section 1.4
- Figures: you can click on the number and be sent to figure 1.3
- tables: you can click on the number and be sent to table 1.1

### 1.4.1 citations

in order to include citations a `.bib` file is used (here found in `./resources/bibliography.bib`). Some examples are included here, as [3] to learn why being stupid is good for research, or [1] to use as an excuse to show up to work drunk, or [4] to see a biologist reinventing Riemann integration, or finally [2] just to be aware people publish papers about anime tiddies. As you can see citations are ordered alphabetically rather than in the order they appear in the text. Also, they're hyperlinked to the bibliography! (We love the `hyperref` package)



# Bibliography

- [1] Andrew F. Jarosz, Gregory J.H. Colflesh, and Jennifer Wiley. Uncorking the muse: Alcohol intoxication facilitates creative problem solving. *Consciousness and Cognition*, 21(1):487–493, 2012. Beyond the Comparator Model.
- [2] N. Rabino. Analysis and qualitative effects of large breasts on aerodynamic performance and wake of a “miss kobayashi’s dragon maid” character. *no journal would publish this I hope but it is a real article you can look it up*, 01 2018.
- [3] Martin A. Schwartz. The importance of stupidity in scientific research. *Journal of Cell Science*, 121(11):1771–1771, 06 2008.
- [4] Mary M Tai. A mathematical model for the determination of total area under glucose tolerance and other metabolic curves. *Diabetes Care*, 17(2):152–154, 02 1994.