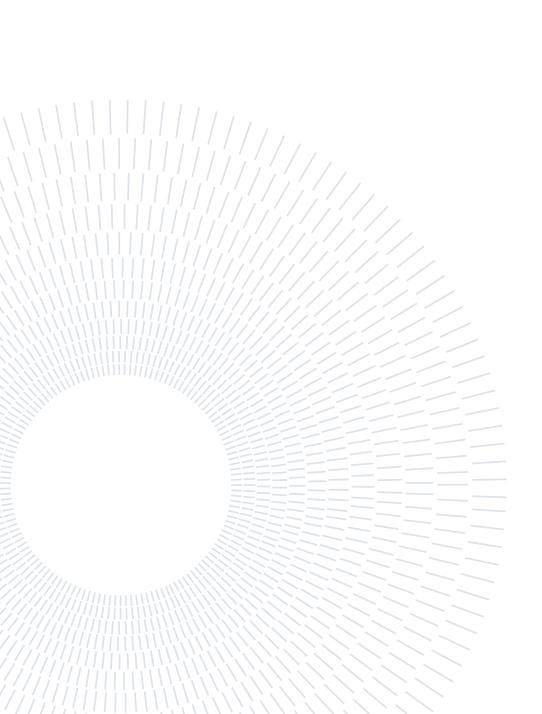


SCUOLA DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE

### elegant-polimi-thesis manual

Doctoral Dissertation of: Vittorio Robecchi



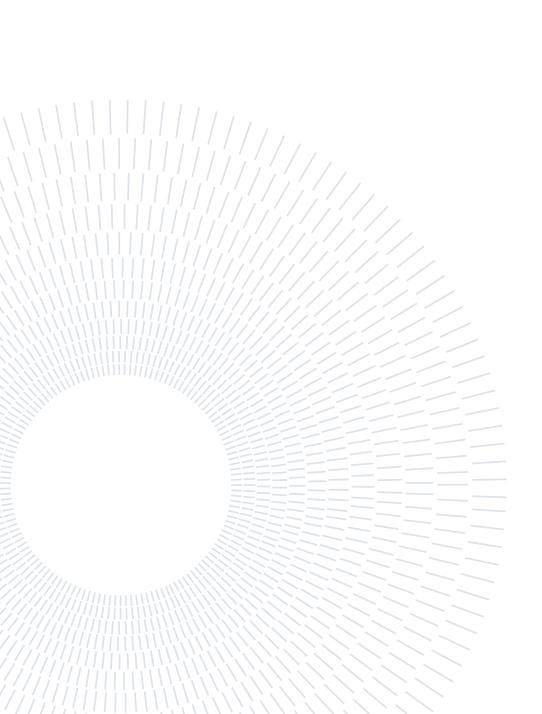
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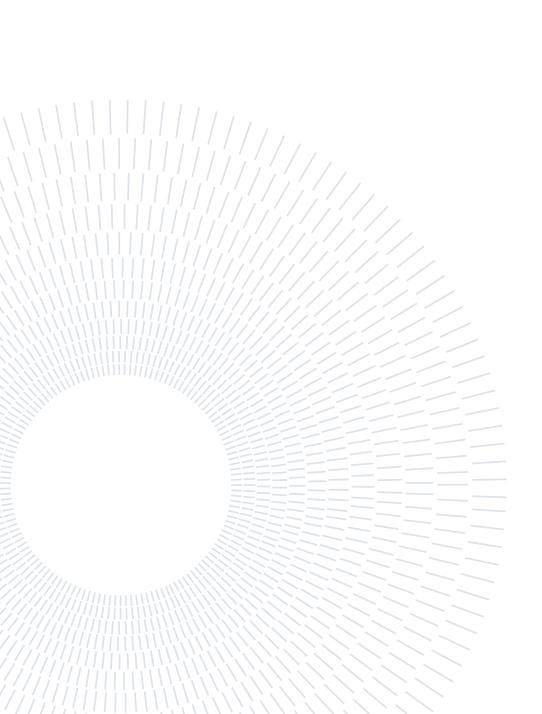
## List of Figures

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## List of Tables

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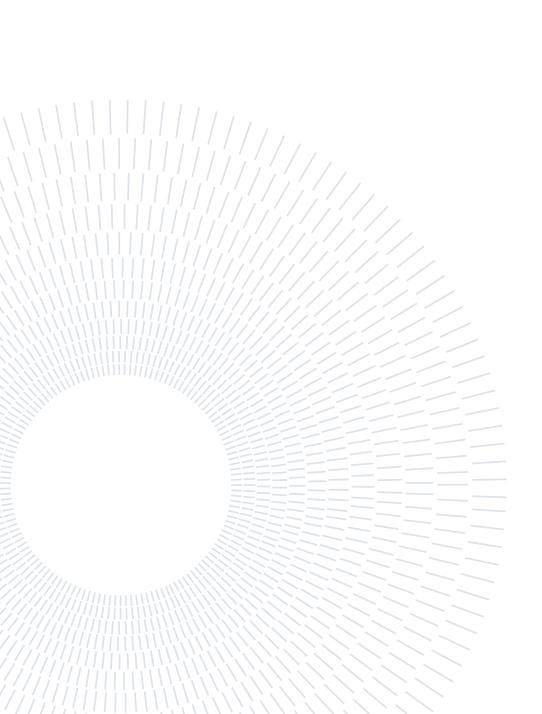
## Nomenclature

POLIMI Politecnico di Milano

CDL Corso di Laurea

CCS Consigli di Corsi di Studio

CFU Crediti Formativi Universitari



## 1 | Chapter one

In this section there will be useful information about how to style chapters, sections and so on. Be sure to read the typst guide for LATEX users [1].

#### 1.1 Sections and subsection

In LATEX, the canonical sections division is as follows:

```
\chapter{}
\section{}
\subsection{}
\subsubsection{}
```

in **typst**, there are just headings [2] (similarly to Markdown) – so the LaTeX system maps to:

If you need to turn off the numbering you will call the heading function:

```
#heading("Heading Title", level: n, numbering: none)
```

#### 1.2 Equations

In LaTeX, there are many environments (equation, equation\*, aligned) – in typst there is just the equation environment called with dollars [3]:

• Inline math, same as  $\LaTeX$ :

$$a^2 + b^2 = c^2$$

• Block math, by adding spaces before and after the content:

1 Chapter one

\$ a^2 + b^2 = c^2 \$ 
$$a^2 + b^2 = c^2$$

For a more complex equation the LATEX code is:

\$

```
\begin{subequations}
  \label{eq:maxwell}
  \begin{align}[left=\empheqlbrace]
  \nabla\cdot \bm{D} & = \rho, \label{eq:maxwell1} \\
  \nabla \times \bm{E} + \frac{\partial \bm{B}}{\partial t} & = \bm{0},
\label{eq:maxwell2} \\
  \abla\cdot \bm{B} \& = 0, \abel{eq:maxwell3} \
  \nabla \times \bm{H} - \frac{\pi (D}}{\pi I bm{D}}.
\label{eq:maxwell4}
  \end{align}
\end{subequations}
while the typst version:
  $
  lr(\{
     #block[$
                                                                            \begin{cases} \Delta \cdot \boldsymbol{D} = \rho, \\ \Delta \times \boldsymbol{E} + \frac{\partial \boldsymbol{B}}{\partial t} = 0, \\ \Delta \cdot \boldsymbol{B} = 0, \\ \Delta \times \boldsymbol{H} - \frac{\partial \boldsymbol{D}}{\partial t} = \boldsymbol{J}. \end{cases}
        Delta dot bold(D) &= rho\, \
        Delta times bold(E)
           + display((partial bold(B))/(partial t))
           &= 0\,\
        Delta dot bold(B) &= 0\, \
        Delta times bold(H)
           display((partial bold(D))/(partial t))
           \&= bold(J).
     $]
  )
```

This is quite an advanced way to get things done. To put it simply, this is the typst equivalent of LaTeX's \left{ equation \right. — though if you don't understand how/ why it works, that's ok — I'll break it down, but first have a read at the lr() function documentation [4].

- The equations must be aligned to the center and I achieve that with &, the same as  $\LaTeX$
- Then, the left part must have a { to wrap around it: in order to do, typst needs to have an element to compute the size for, which will be the block[] part
- In the block, I'll insert all the equations by linebreaking with \ (in LATEX this is done via \\, a double backslash)
- Finally, I'll wrap both the parenthesis AND the block in the same lr() call, effectively sizing everything

1 Chapter one

I highly encourage you to mess with the above code to see how it changes. It will dramatically help you to understand how typst works.

The "normal" representation would have been just to use the cases() function:

```
$
cases(
   Delta dot bold(D) &= rho\, \
   Delta times bold(E) + display((partial bold(B))/(partial t)) &= 0\, \
   Delta dot bold(B) &= 0\, \
   Delta times bold(H) - display((partial bold(D))/(partial t)) &= bold(J).
)
$
```

$$\begin{cases} \Delta \cdot \boldsymbol{D} &= \rho, \\ \Delta \times \boldsymbol{E} + \frac{\partial \boldsymbol{B}}{\partial t} &= 0, \\ \Delta \cdot \boldsymbol{B} &= 0, \\ \Delta \times \boldsymbol{H} - \frac{\partial \boldsymbol{D}}{\partial t} &= \boldsymbol{J}. \end{cases}$$

By default, the equations are **not** numbered – however if you need to:

$$\begin{cases}
\Delta \cdot \mathbf{D} = \rho, \\
\Delta \times \mathbf{E} + \frac{\partial \mathbf{B}}{\partial t} = 0, \\
\Delta \cdot \mathbf{B} = 0, \\
\Delta \times \mathbf{H} - \frac{\partial \mathbf{D}}{\partial t} = \mathbf{J}.
\end{cases}$$
(1)

And to reference it just type Equation 1.

#### 1.3 Figures, Tables and Algorithms

#### 1.3.1 Figures

Via the figure environment [5], as you would done in LATEX:



SCUOLA DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE

Figure 1.1: Caption in the List of Figures.

4 1 Chapter one

However, since **typst** does not *natively* support subfigures, one could make use of the subpar package [6]:





(a) Left Polimi logo.

(b) Right Polimi logo.

Figure 1.2: A figure composed of two sub figures, similar to \subfloat{}.

#### **1.3.2** Tables

	Column 1	Column 2	Column 3
row 1	1	2	3
row 2	$\alpha$	eta	$\gamma$
row 3	alpha	beta	gamma

Table 1.1: Caption of the Table to appear in the List of Tables

As you can see, it could be useful to implement a default style for every table [7].

#### 1.3.3 Algorithms

For algorithms, there are a lot of packages on **typst** universe [8]. The following are my recommendations.

• lovelace [9]

#### **Algorithm 1:** My cool algorithm

- 1 Initial instructions
- 2 for for condition do
- 3 | Some instructions
- 4 | if if condition then
- 5 Some other instructions
- 6 end if
- 7 end for
- 8 while while condition do
- 9 | Some further instructions
- 10 end while
- 11 Final instructions

See Algorithm 1.

1 Chapter one

• algo [10]

```
Name of Algorithm
 1 Initial instructions
    for for - condition do
 3
        Some instructions
 4
        if if - condition then
           Some other instructions
 5
 6
        end if
    end for
 8
    while while - condition do
 9
        Some further instructions
    end while
10
    Final instructions
```

#### 1.4 Theorems, propositions and lists

Theorem 1.1. Write here your theorem.

**Proposition 1.1.** Write here your proposition.

*Proof.* If useful you can report here the proof.

Powered by [11].

Normal list:

- First item
- Second item

Numbered list:

- 1. First item
- 2. Second item

#### 1.5 Plagiarism

You have to be sure to respect the rules on Copyright and avoid an involuntary plagiarism. It is allowed to take other persons' ideas only if the author and his original work are clearly mentioned. As stated in the Code of Ethics and Conduct, Politecnico di Milano promotes the integrity of research, condemns manipulation and the infringement of intellectual property, and gives opportunity to all those who carry out research activities to have an adequate training on ethical conduct and integrity while doing research. To be sure to respect the copyright rules, read the guides on Copyright legislation and citation styles available at:

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https://www.biblio.polimi.it/en/tools/courses-and-tutorials

You can also attend the courses which are periodically organized on "Bibliographic citations and bibliography management".

#### 1.6 Bibliography and citations

Your thesis must contain a suitable Bibliography which lists all the sources consulted on developing the work. The list of references is placed at the end of the manuscript after the chapter containing the conclusions. We suggest to use the BibTeX package [12] and save the bibliographic references in the file Thesis\_bibliography.bib. This is indeed a database containing all the information about the references.

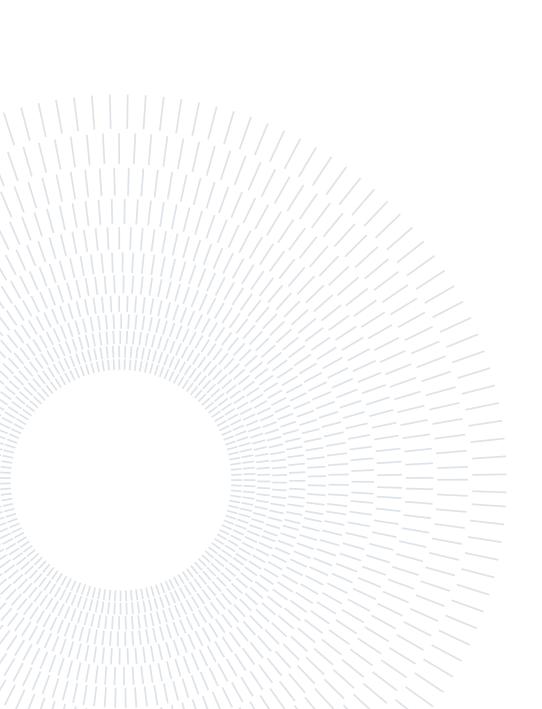
To cite in your manuscript, use the cite [13] command as follows:

Here is how you cite bibliography entries: [14] or chained [15], [16].

As it would have been in LATEX, the bibliography [17] is automatically generated.

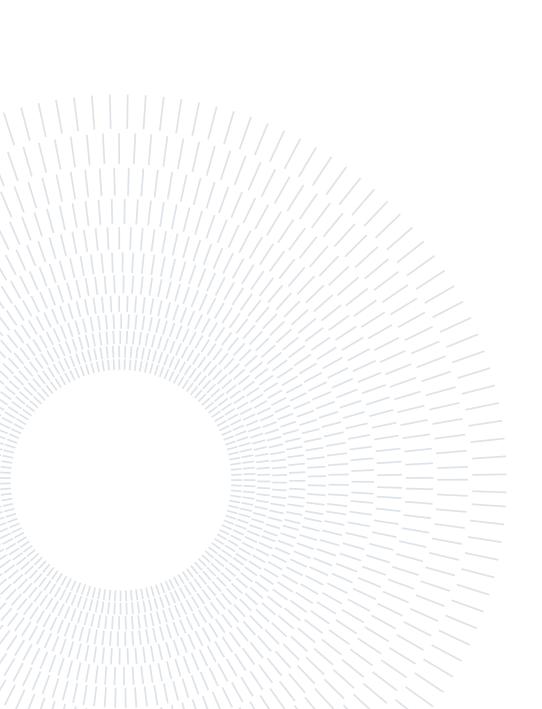
## | Second chapter

Future development.



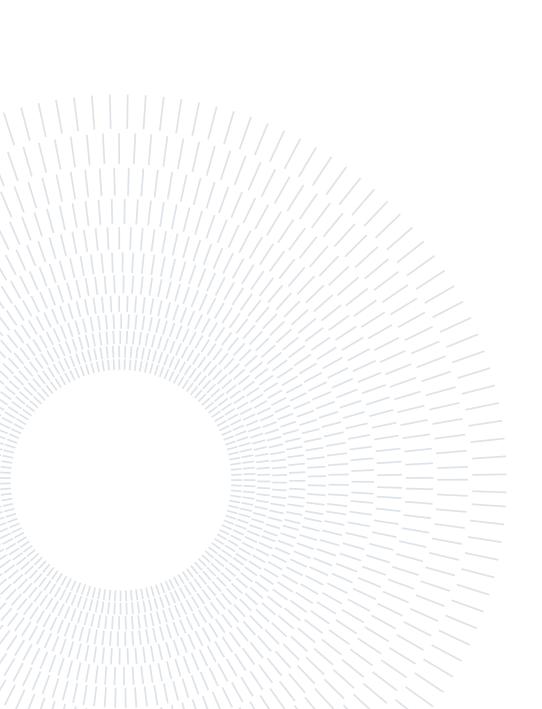
# $\mathbf{A} \mid \mathbf{A}$

This is the Appendix section.



## Acknowledgements

This is the Acknowledgements section.



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