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UNIVERSITY ZIANE ACHOUR OF DJELFA

Faculty of Sciences and Technology

Department of Electrical Engineering

Dissertation

Submitted in partial fulfillment of the requirements for Doctorate degree in Electrical Engineering

Option: Structures

Presented by **Kamel GUESMI**

Theme

Notes on the Preparation of the Master/PhD Manuscript

Jury:

President	Aaaaa AAAAA	Professor	University of Djelfa
Director	Bbbbb BBBBB	Professor	University of Djelfa
Co-Director	Ccccc CCCCC	Professor	University of Djelfa
Examiner	Ddddd DDDDD	Professor	University of Biskra
Examiner	Eeeee EEEEE	Associate Prof.	University of Laghouat
Examiner	Fffff FFFFF	Associate Prof.	University of Djelfa

September 2020

Acknowledgements

Praise be to the Almighty God who has given me faith, courage, and patience to carry out this work.

I want to express my deep gratitude to my supervisor Pr. Bbbbb BBBBB from Djelfa university, for the confidence he has placed in me, through his presence always with me, by his direction, his modesty, his advice, and constructive remarks for the good progress of this work.

I thank Dr. Ccccc CCCCCC from Djelfa university for having co-supervised me, for his orientation, availability, listening, and patience during the realization of this job.

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I express my deep gratitude to my parents, my brothers, my sisters, and my whole family for their encouragement and prayers that allowed me to achieve this modest job. I am very grateful for the confidence they have placed in me.

Finally, I express my gratitude to all those who have contributed in one way or another to the development of this work.

O Allah, send your blessings on your noble messenger, his family, and companions, and bless us in our life.

Dedication

I dedicate this work to my parents:

May they find here the testimony of my deep gratitude and acknowledgment

To my brothers and my sisters, my grandparents and my family who give love and liveliness.

To all those who have helped me - directly or indirectly - and those who shared with me the emotional moments during the accomplishment of this work and who warmly supported and encouraged throughout my journey.

To all my friends who have always encouraged me, and to whom I wish more success.

Thanks!

Kamel GUESMI

ملخص

ملخص .
كلمات مفتاحية: ملخص، ملخص، ملخص، ملخص، ملخص.

Abstract

Abstract Abstract.
Key words: *Abstract, Abstract, Abstract, Abstract, Abstract.*

Résumé

Résumé Résumé.
Mots clés : *Résumé, Résumé, Résumé, Résumé.*

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List of Abbreviations

MPC: Model Predictive Control
PFC: Predictive functional control
GPC: Generelized predictive control
DMC: dynamic matrix control
MPC: Model Predictive Control
PFC: Predictive functional control
GPC: Generelized predictive control
DMC: dynamic matrix control
MPC: Model Predictive Control
PFC: Predictive functional control
GPC: Generelized predictive control
DMC: dynamic matrix control
MPC: Model Predictive Control
PFC: Predictive functional control
GPC: Generelized predictive control
DMC: dynamic matrix control

General introduction

Here goes the general introduction.

Our main goal is to give you some basic elements of LaTeX text processing tool.

Chapter 1

Text Formatting

1.1 Introduction

This part is dedicated to some basic manipulations of the text using LaTeX. We need, generally, the following levels in a chapter of a thesis manuscript.

1.2 Section

1.2.1 Sub-section

1.2.1.1 Sub-sub-section

Paragraph comes without numeration

Subparagraph comes without numeration

1.3 Sizes for short sentences

UPPERCASE TEXT;
Huge Text; LARGE Text; Large Text; large Text; Normal Size Text; Small Text; Footnote Size Text;Script Size Text; Tiny text. Normal Size Text;

1.4 Lists

Items without numbers:

- item A
- item B

Items with numbers:

1. item 1
2. item 2

Hybrid mode:

- 1
    1. item 1a
    2. item 1b
- item 2
- item 3

1.5 Text alignment

From the standard LaTeXlibrary we can use:

flushright to align the text to the right. Bla Bla Bla

flushleft to align the text to the left. Bla Bla Bla Bla Bl
More preferment commands can be found in the package "ragged2e"

1.6 Colored Text

and this text is in blue and now we return to the black color Text colored in red

1.7 Colored boxes

My box.

My title

My box with my title.

Upper part of my box.

Lower part of my box.

My title

I can do this also with a title.

Lower part of my box.

Now, we play hide and seek. Where is the lower part?

Here I am

I'm invisible until you find me.

Funny settings.

My title

This box is filled with an external image.
Title and interior are made partly transparent to show the image.

My title

This box uses a *boxed title*. The box of the title can be formatted independently from the main box.

1.8 LaTeX-Examples

```
This is a \LaTeX\ example:
\begin{equation}
\sum\limits_{i=1}^n i = \frac{n(n+1)}{2}.
\end{equation}
```

This is a LaTeX example:

$$\sum_{i=1}^{n} i = \frac{n(n+1)}{2}. \tag{1.1}$$

Side by side

```
This is a \LaTeX\ example:
\begin{equation}
\sum\limits_{i=1}^n i =
   \frac{n(n+1)}{2}.
\end{equation}
```

This is a LaTeX example:

$$\sum_{i=1}^{n} i = \frac{n(n+1)}{2}. \tag{1.2}$$

1.9 Theorems

Theorem 1.9.1: Summation of Numbers

For all natural number n it holds:

$$\sum_{i=1}^{n} i = \frac{n(n+1)}{2}. \tag{1.3}$$

We have given Theorem 1.9.1 on page 6.

1.9.2 Theorem (Summation of Numbers): *For all natural number n it holds:*

$$\sum_{i=1}^{n} i = \frac{n(n+1)}{2}. \tag{1.4}$$

1.10 Watermarks

Box with a watermark picture

Here, you see my nice box with a picture as a watermark. This picture is automatically resized to fit the dimensions of my box. Instead of a picure, some text could be used or arbitrary graphical code. See the documentation for more options.

1.11 Boxes in boxes

Box

Box inside box

Box inside box inside box

And now for something completely different: Boxes!

This | is | another | box.

1.12 Breakable Boxes

Breakable box

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

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aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

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1.13 Fit Boxes

Fit box (10cm)

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Fit box (5cm)

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Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.
Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa. Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. In hac habitasse platea dictumst. Integer tempus convallis augue. Etiam facilisis. Nunc elementum fermentum wisi. Aenean placerat. Ut imperdiet, enim sed gravida sollicitudin, felis odio placerat quam, ac pulvinar elit purus eget enim. Nunc vitae tortor. Proin tempus nibh sit amet nisl. Vivamus quis tortor vitae risus porta vehicula.

1.14 Verbatim environment

This environment is dedicated to write codes.

```
\documentclass[11pt,a4paper,oneside]{report}
\begin{document}
\title{Practical Typesetting}
\author{Peter Flynn\\Silmaril Consultants}
\date{December 2004}
```

```
\maketitle
\end{document}
```

1.15 Conclusion

If something is missing, do not hesitate to contact us at guesmika@yahoo.fr or read the document from the beginning section 1.1. You can also read from the overleaf site www.overleaf.com

Chapter 2

Mathematics formula

2.1 Introduction

This chapter presents the basic elements for mathematics formula under LaTeX.

2.2 Inline math

The first is $x^n + y^n = z^n$ or (xn + yn = zn) for inline expression.
The second one, in separate line, is:

$$x^n + y^n = z^n$$

The third one is:

$$x^n + y^n = z^n$$

2.3 Environment "math"

$x^n + y^n = z^n$

2.4 Environment "displaymath"

$$x^2 + y^2 = z^2$$

2.5 Environment "equation"

Numbered equation

$$x^2 + y^2 = z^2 \tag{2.1}$$

You can cite in the text the equation using "ref" like "Equation 2.1" without () or using "eqref" "Equation (2.1)" with ().
Non-numbered equation:

$$x^2 + y^2 = z^2$$

2.6 Environment "eqnarray"

Different styles under "eqnarray" environment:

$$f(x) = \sum_{i=0}^{n} \frac{a_i}{1+x}$$
$$f(x) = \textstyle\sum_{i=0}^{n} \frac{a_i}{1+x}$$
$$f(x) = \textstyle\sum_{i=0}^{n} \frac{a_i}{1+x}$$
$$f(x) = \textstyle\sum_{i=0}^{n} \frac{a_i}{1+x}$$

Or more sophisticated:

$$a_0 + \cfrac{1}{a_1 + \cfrac{1}{a_2 + \cfrac{1}{a_3 + \cfrac{1}{a_4}}}}$$

2.7 Environment "cases"

$$X(m,n) = \begin{cases} x(n) & \text{if} \quad m = n \\ x(n-1) & \text{if} \quad m > n \\ x(n-1) & \text{if} \quad m < n. \end{cases}$$

2.8 Environment "multline"

$$Q(\lambda, \hat{\lambda}) = -\frac{1}{2} P(O \mid \lambda) \sum_s \sum_m \sum_t \gamma_m^{(s)}(t) \Bigg(n \log(2\pi) + \log \left| C_m^{(s)} \right| + \left(\mathbf{o}_t - \hat{\mu}_m^{(s)} \right)^T C_m^{(s)-1} \left(\mathbf{o}_t - \hat{\mu}_m^{(s)} \right) \Bigg) \tag{2.2}$$

2.9 Environment "align"

$$Q(\lambda,\hat{\lambda}) = -\frac{1}{2}P(O \mid \lambda)\sum_{s}\sum_{m}\sum_{t}\gamma_m^{(s)}(t)\Bigg(n\log(2\pi) + \log\left|C_m^{(s)}\right| + \left(\mathbf{o}_t - \hat{\mu}_m^{(s)}\right)^T C_m^{(s)-1}\left(\mathbf{o}_t - \hat{\mu}_m^{(s)}\right)\Bigg) \tag{2.3}$$

2.10 Environment "split"

$$\begin{aligned}\vec{A}\cdot\vec{B} &= (A_x\hat{x} + A_y\hat{y} + A_z\hat{z})\cdot(B_x\hat{x} + B_y\hat{y} + B_z\hat{z}) \\ &= A_xB_x(\hat{x}\cdot\hat{x}) + A_yB_y(\hat{y}\cdot\hat{y}) + A_zB_z(\hat{z}\cdot\hat{z}) \\ &= A_xB_x + A_yB_y + A_zB_z\end{aligned} \tag{2.4}$$

2.11 Environment "alignat"

$$\begin{aligned}\frac{d\tilde{x}}{dt} &= -(\tilde{x}+x_0)\{\tilde{x}^2 + (2x_0-2)\tilde{x} + (x_0^2 - 2x_0 - \mu_0 - \tilde{\mu})\} \\ \frac{d\tilde{x}}{dt} &= -\{\tilde{x}^3 + (3x_0-2)\tilde{x}^2 + (3x_0^2 - 4x_0 - \mu_0 - \tilde{\mu})\tilde{x} \\ &\quad + (x_0^3 - 2x_0^2 - x_0\mu_0 - x_0\tilde{\mu})\}\end{aligned} \tag{2.5}$$

2.12 Environment "gather"

$$2x - 5y = 8$$
$$3x^2 + 9y = 3a + c$$

2.13 Conclusion

There is also the environment "dmath" from the package "breqn".

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The Comprehensive LaTeX Symbol List is available at this address:

https://www.overleaf.com/articles/the-comprehensive-latex-symbol-list/czzxggzcyyqj

Chapter 3

Tables

3.1 Introduction

We show in this chapter how to use LaTeX to create and customize tables.

3.2 Environment "tabular"

with the environment "tabular" we can create our first table:

1	2	3
4	5	6
7	8	9

We can center it using "center"

1	2	3
4	5	6
7	8	9

For horizontal lines "hline" and vertical lines "|"

	A	B
1	A1	B1
2	A2	B2

3.3 Environment "table

We use it to add "caption" and "label" to the tabular : we can cite the table 3.4 in the text.

	A	B
1	A1	B1
2	A2	B2

Table 3.1: Table's caption

3.4 Merging cells

3.4.1 Merging columns

Merged 4 columns			
XXX	1	2	3
A	A1	A2	A3
B	B1	B2	B3
C	C1	Merged 2 columns	

3.4.2 Merging lines

To merge lines you need to add the "multirow" package to your document preamble.

col1	col2	col3
Merged lines	cell 2	cell 3
	cell 5	cell 6
	cell 8	cell 9

3.5 Positioning tables

As a floating element you can specify the table position using one commutator of the following: (h=here, t=top, b=bottom, p=special page, !=Override internal LaTeXparameters, H=Place the table at this precise location=!h)

	A	B
1	A1	B1
2	A2	B2

Table 3.2: Table on top

3.5.0.1 Examples

In this page two tables at the top and the bottom of the page.

	A	B
1	A1	B1
2	A2	B2

Table 3.3: Table on here

	A	B
1	A1	B1
2	A2	B2

Table 3.4: Table on bottom

3.6 Columns with fixed length

we use the package "array" to fix the columns length. 1st column of width=5em centered (m=middle) the 2nd of length=5cm

Bla Bla Bla Bla	cell2	cell3
Bla Bla Bla Bla Bla	cell5	cell6
cell7	cell8	cell9

Table 3.5: Columns with fixed length

We can fix also the whole table length and this last will equi-dispatched between columns. This is possible using "tabularx" package.

item 11	item 12	item 13
item 21	item 22	item 23

3.7 List of tables

To create a list of tables use the command "listoftables" (see result on the next page) .

List of Tables

3.8 Conclusion

Any missing information, do not hesitate to contact us at guesmika@yahoo.fr or read the document from the beginning section 3.1. You can also read from the overleaf site `www.overleaf.com`.

More materials are available at:

`https://latex-tutorial.com/tutorials/tables/`

Or

`https://www.overleaf.com/learn/latex/Tables`

Chapter 4

Figures

4.1 Introduction

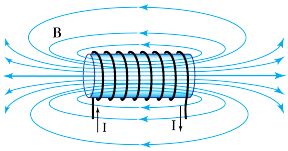
This chapter is dedicated to the float element: Figure. Of course you need "graphicx" package to create a figure and "float" to give it a position. (h=here, t=top, b=bottom, p=special page, !=Override internal LaTeXparameters, H=Place the figure at this precise location=!h)

4.2 First figure

Figure 4.1: Djelfa university logo

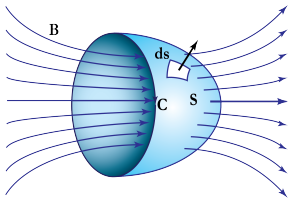
4.2.1 Subfigures

You need the "subcaption" package



(a) Sub Fig 1

(b) Sub Fig 2



(c) Sub Fig 3

Figure 4.2: Set of Sub Figures

You can create also a matrix of sub figures:

(a) Sub Fig 1

(b) Sub Fig 2

(c) Sub Fig 3

(d) Sub Fig 4

Figure 4.3: Matrix of Sub Figures

4.3 List of figures

You can add to your document the list of figures using the command "listoffigures". See result on the next page.

List of Figures

4.4 Dimensions of figure

To specify the dimension of a figure, you need some commands and to know about units such as:

Command	Use for	Expl of use
`\columnsep`	distance between columns	10.0pt
`\columnwidth`	width of the column	472.03123pt
`\linewidth`	width of the line in the current environment	472.03123pt
`\paperwidth`	width of the page	614.295pt
`\paperheight`	height of the page	794.96999pt
`\textwidth`	width of the text	472.03123pt
`\textheight`	height of the text	652.70622pt
`\unitlength`	units of length in the picture environment	1.0pt

Table 4.1: Dimensions

To specify the unit you can use one of the following:

Unite	meaning
pt	point
mm	millimetre
cm	centimetre
in	inch
ex	height of an x in the current font
em	width of an m in the current font

Table 4.2: Units

4.5 Plots

To plot in LaTeXyou need packages "Tikz" and "pgfplots".

4.5.1 2D Plots

We start by an example of 2D illustration of the functions $y_1 = 1 - x^2$ "blue colored" and $y_2 = x^2$ "red colored".

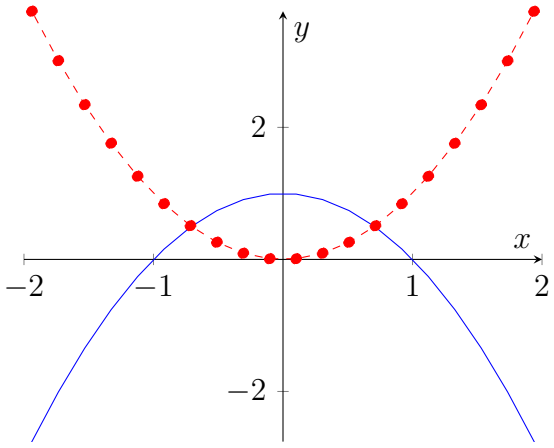


Figure 4.4: 2D plot of $y_1 = 1 - x^2$ and $y_2 = x^2$

4.5.2 3D plots

Here is an example of 3D illustration of the function $z = cos(y) + sin(x)$.

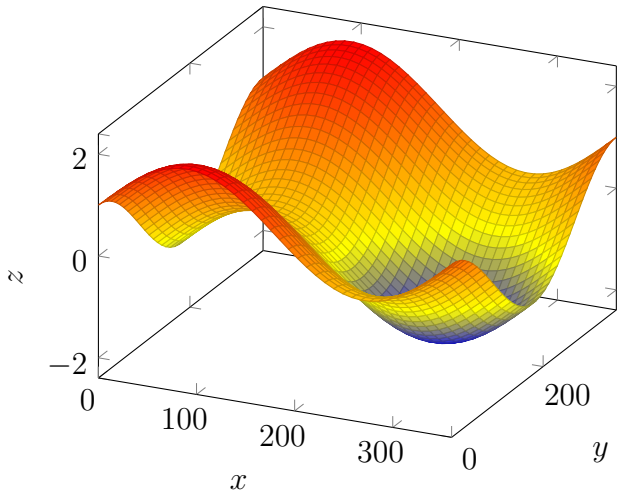


Figure 4.5: 3D plot of the function $Z = cos(y) + sin(x)$

4.6 Conclusion

For any missing information, do not hesitate to contact us at guesmika@yahoo.fr or read the document from the beginning section 4.1. You can also read from the overleaf site `www.overleaf.com`.

More materials are available at:

`https://www.overleaf.com/learn/latex/Inserting_Images`

Chapter 5

Bibliography management

5.1 Introduction

This part is dedicated to the main ways to insert a bibliography in your document.

5.2 First way

This is probably the simplest way. We have an external file "Biblio.bib" that contains the bibliography items. For example, this is the first item of our bibliography [1] from the whole bibliography that we can print it (for this action you need the "biblatex" package) as follows (to see the result on the next page activate `\printbibliography` in the next line):

5.3 Second way

This way allows you to be free to define the bibliography style; however it is preferred for short reports with few bibliography items. In this way the same file contains the main document and the bibliography items under the environement "thebibliography" We can cite the second reference as: [2]

Bibliography

[1] K. GUESMI (2000), Contribution to the control of DC motor, *Djelfa University Press.*

[2] A. REBAI (2021) *Asymptotic Stabilization of Fractional Order Fuzzy Time-Varying Delay Systems*,2021 Global Congress on Electrical Engineering.

5.4 Third way

This way is the most professional and used by scientists. It consists of an external file "Biblio.bib" and we insert before the `\end{document}` the following lines:

```
\nocite{*} % to insert all bibliography items cited in the text or not
\bibliographystyle{unsrt} % Order of items is by appearance
\bibliography{Biblio} % indicate the file containing bibliography items
```

now you return to the document to cite bibliography items like the first one [1], the second one [2] or the fifth one [3]. That's all.
Unlike the previous way, here you will find the bibliography list at the end of your document.

5.5 Conclusion

If anything is missing, do not hesitate to contact us at guesmika@yahoo.fr or re-read the document from the beginning section 5.1. You can also read the documentation from the web site `www.overleaf.com`.
More materials are available at:
`https://www.overleaf.com/learn/latex/Bibliography_management_with_bibtex`

General conclusion

Here goes the general introduction.

Our main goal is to give you some basic elements of LaTeX text processing tool.

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Appendix A

Title of Appendix A

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2nd page of appendix A

Appendix B

Title of Appendix B

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2nd page of appendix B