

# Robust Controller Design with $\mathcal{H}_\infty$ Performance: A Data-Driven Frequency-Domain Approach

THIS IS A TEMPORARY TITLE PAGE  
It will be replaced for the final print by a version  
provided by the service academique.

Thèse n. 1234 2011  
présenté le 15 Octobre 2017  
à la Faculté des Sciences et Techniques de L'ingénieur  
laboratoire d'automatique  
programme doctoral en Génie Electrique  
École Polytechnique Fédérale de Lausanne  
pour l'obtention du grade de Docteur ès Sciences  
par

Achille Nicoletti



ÉCOLE POLYTECHNIQUE  
FÉDÉRALE DE LAUSANNE

acceptée sur proposition du jury:

Colin Jones, président du jury  
MER Alireza Karimi, directeur de thèse  
Michele Martino, co-directeur de thèse  
Dominique Bonvin, rapporteur  
Quentin King, rapporteur  
Davide Aguglia, rapporteur

Lausanne, EPFL, 2017



This most beautiful system of the sun, planets, and comets,  
could only proceed from the counsel and dominion of an intelligent and powerful Being  
— Isaac Newton

To my parents. . .



# Acknowledgements

The writing and completion of this dissertation would not have been possible without the assistance, support, and guidance of the many special people in my life. Firstly, I would like to thank God for giving me the capability to contribute to the engineering world and hopefully assist the future civilizations in creating technologies for the good of mankind. I hope that ethical values will be exercised and that the technologies arising from the new frontiers of science are used in conscientious manners.

Secondly, I would like to thank my EPFL advisor, Dr. Alireza Karimi. I have learned many things from him since starting my Ph.D, and I thank him for accepting me into his program. His contributions and patience were key factors in the successful completion of this dissertation. I would also like to thank my CERN supervisor, Dr. Michele Martino. He has been very helpful during my Ph.D studies, and I have enjoyed the numerous technical discussions I had with him; I always learned something from each discussion, and am very appreciative for that. Among my other CERN colleagues, I would like to also thank Miguel Cerqueira Bastos, Quentin King, Olivier Michele, Davide Aguglia, Todor Todorovic, Ivan Jovetic, Olivier Fournier, and Louis De Mallac. The knowledge that I have acquired from Michele and my numerous colleagues will be something that I will foster and cherish for the rest of my life.

In addition to my work colleagues, I would also like to thank Zlatko Emedji and Jose Manuel De Paco Soto for being good friends and providing the emotional support I needed. Also a thank you to Predrag Milosavljevic and Christoph Kammer for being good competitors at Foosball during my time at EPFL. Additionally, I would like to thank Michael Davis, Hugo Lebreton, Miguel Hermo Serans, and Timm Faulwasser for our random technical and non-technical discussions.

Finally, I would like to thank my family for their support during this endeavour. My sisters Carmen, Marie, and Elizabeth have been great inspirations to me; they shaped me into the person I am today and can honestly say that without them, I may not have been so successful. To my mother, I thank you for everything you have done for me during my 33 years on this planet. I will always carry your love in my heart. And finally, to my father, I wish you could have still been with us to witness this moment in my life. I know that you would have been proud of me, and am very grateful for all of the sacrifices you made for the family.

*Geneva, 12 March 2017*

A. N.



# Abstract

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur 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.

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.

Key words:





# Résumé

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur 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.

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.

Mots clefs :



# Contents

<b>Acknowledgements</b>	<b>i</b>
<b>Abstract (English/Français)</b>	<b>iii</b>
<b>List of figures</b>	<b>ix</b>
<b>List of tables</b>	<b>xi</b>
<b>Introduction</b>	<b>1</b>
<b>1 Tables and Figures</b>	<b>3</b>
1.1 Tables . . . . .	3
1.2 Figures . . . . .	4
<b>2 Mathematics</b>	<b>11</b>
2.1 Very important formulas . . . . .	11
<b>3 Another chapter</b>	<b>13</b>
<b>A An appendix</b>	<b>15</b>
<b>Bibliography</b>	<b>17</b>
<b>Curriculum Vitae</b>	<b>19</b>



## List of Figures

1.1	A floating figure . . . . .	4
1.2	Uncertain plot . . . . .	5
1.3	Circle plot . . . . .	5
1.4	A floating figure . . . . .	6
1.5	A floating figure . . . . .	7
1.6	Tu duo titulo debitas latente . . . . .	8





# List of Tables

1.1	A floating table . . . . .	3
-----	----------------------------	---





# Introduction

A non-numbered chapter... [1].

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur 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.



# 1 Tables and Figures

In this chapter we will see some examples of tables and figures.

## 1.1 Tables

Let's see how to make a well designed table.

The table 1.1 is a floating table and was obtained with the following code:

```
1 \begin{table}[tb]
2 \caption[A floating table]{A floating table.}
3 \label{tab:example}
4 \centering
5 \begin{tabular}{ccc}
6 \toprule
7     name      & weight & food  \\
8 \midrule
9     mouse    & 10 g   & cheese \\
10    cat      & 1 kg   & mice  \\
11    dog      & 10 kg  & cats  \\
12    t-rex    & 10 Mg  & dogs  \\
13 \bottomrule
14 \end{tabular}
15 \end{table}
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget,

Table 1.1 – A floating table.

name	weight	food
mouse	10 g	cheese
cat	1 kg	mice
dog	10 kg	cats
t-rex	10 Mg	dogs

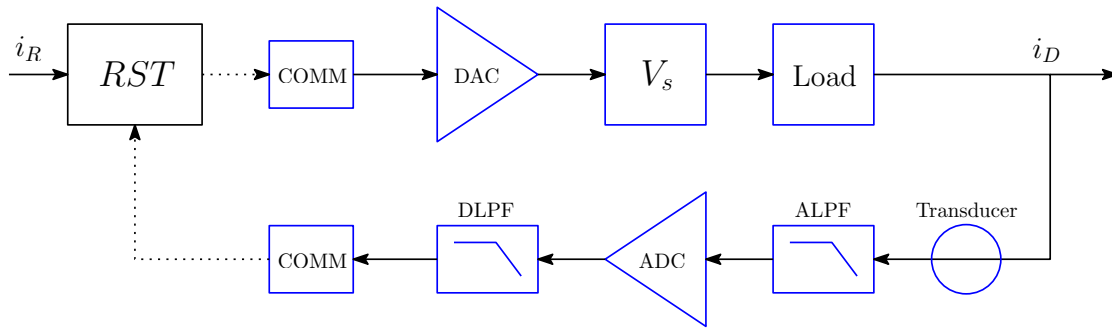


Figure 1.1 – rst

consectetur 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.

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.

## 1.2 Figures

Let's see now how to put one or several images in your text.

**Theorem 1.** *Hello, from [?],ooo*

The figure 1.4 is a floating figure and was obtained with the following code:

```
1 \begin{figure}[tb]
2 \centering
3 \includegraphics[width=0.5\columnwidth]{galleria_stampe}
4 \caption[A floating figure]{A floating figure ... }
5 \label{fig:galleria}
6 \end{figure}
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant

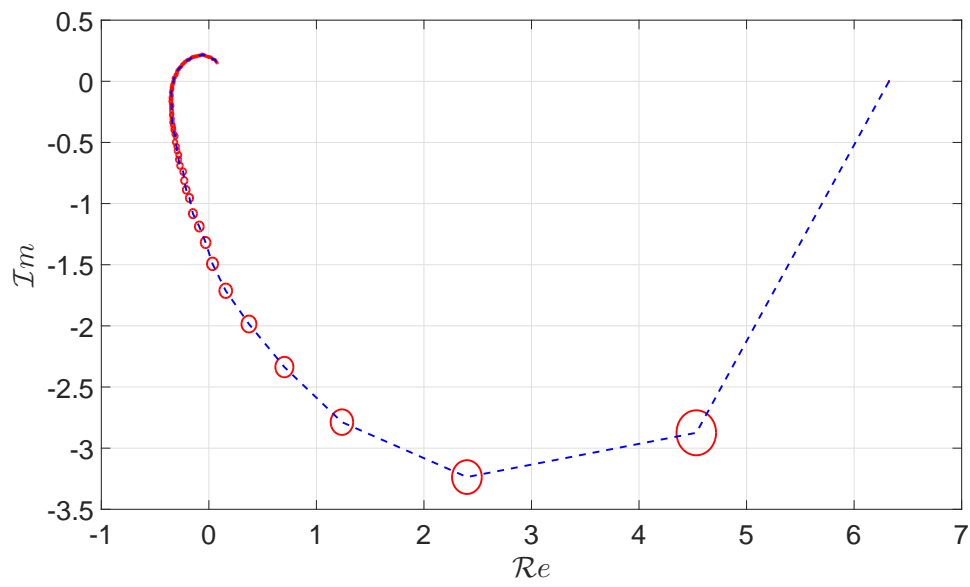


Figure 1.2 – Measured  $G(e^{-j\omega})$  (blue-dashed) and additive uncertainty bounds for the corresponding frequency points (solid-red).

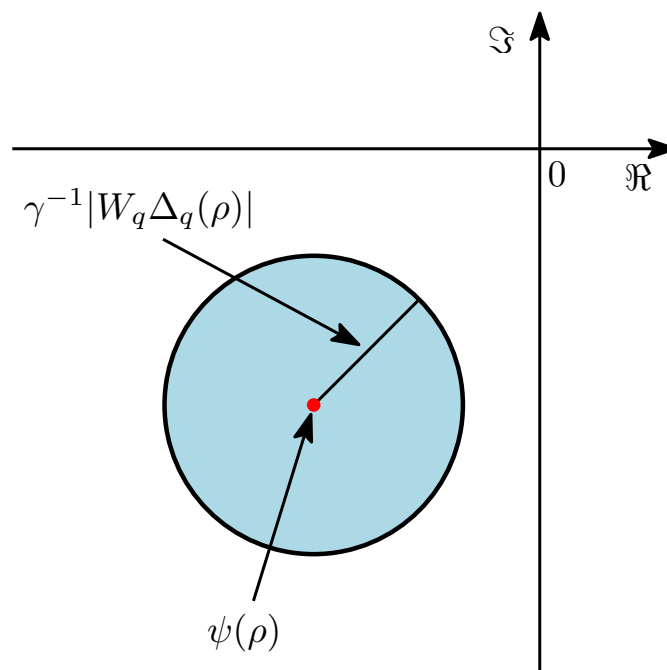


Figure 1.3 – circle

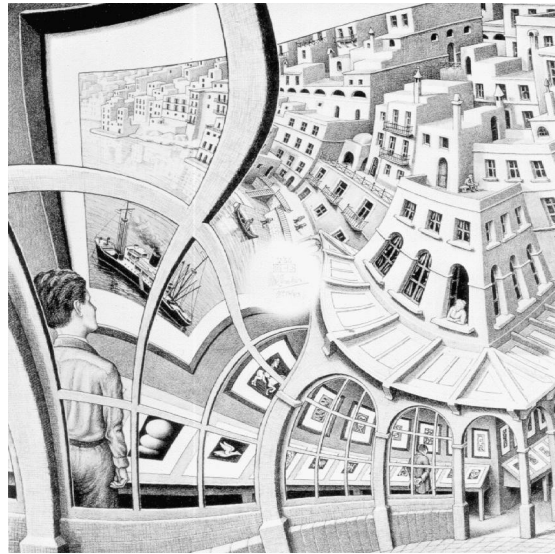


Figure 1.4 – A floating figure (the lithograph *Galleria di stampe*, of M. Escher, got from <http://www.mcescher.com/>).

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.

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.

The figure 1.6 is a floating figure and was obtained with the following code:

```
1 \begin{figure}[tb]
2 \centering
3 \subfloat[Asia personas duo.]
4 {\includegraphics[width=.45\columnwidth]{lorem}} \quad
5 \subfloat[Pan ma signo.]
6 {\label{fig:ipsum}%
7 \includegraphics[width=.45\columnwidth]{ipsum}} \\
8 \subfloat[Methodicamente o uno.]
9 {\includegraphics[width=.45\columnwidth]{dolor}} \quad
10 \subfloat[Titulo debitas.]
11 {\includegraphics[width=.45\columnwidth]{sit}}
12 \caption[Tu duo titulo debitas latente]{Tu duo titulo debitas latente.}
13 \label{fig:esempio}
```

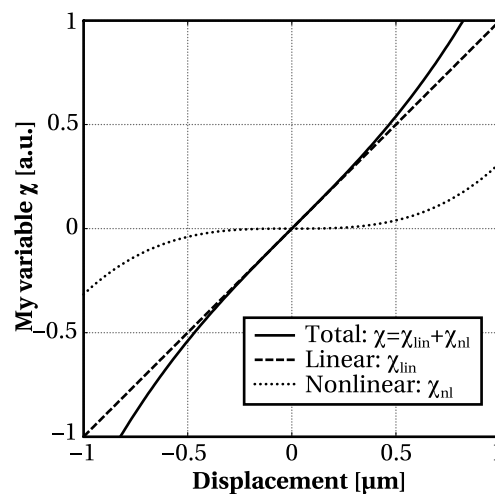


Figure 1.5 – A floating figure with text typeset in "Utopia Latex", a font provided in the template-folder for typesetting figures with greek characters. The text has been "outlined" for best compatibility with the repro during the printing.

14 `\end{figure}`

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, consectetur 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.

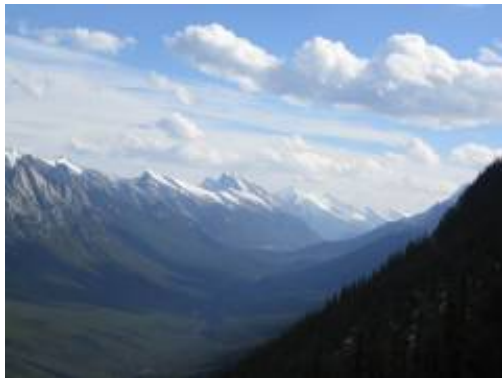
Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam. Aliquam pellentesque, augue quis sagittis posuere, turpis lacus congue quam, in hendrerit risus eros eget felis. Maecenas eget erat in sapien mattis porttitor. Vestibulum porttitor. Nulla facilisi. Sed a turpis eu lacus commodo facilisis. Morbi fringilla, wisi in dignissim interdum, justo lectus sagittis dui, et vehicula libero dui cursus dui. Mauris tempor ligula sed lacus. Duis cursus enim ut augue. Cras ac magna. Cras nulla. Nulla egestas. Curabitur a leo. Quisque egestas wisi eget nunc. Nam feugiat lacus vel est. Curabitur consectetur.



(a) Asia personas duo.



(b) Pan ma signo.



(c) Methodicamente o uno.



(d) Titulo debitas.

Figure 1.6 – Tu duo titulo debitas latente.

Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet vitae, arcu. Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie non, nonummy vel, nisl. Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui, et convallis elit erat sed nulla. Donec luctus. Curabitur et nunc. Aliquam dolor odio, commodo pretium, ultricies non, pharetra in, velit. Integer arcu est, nonummy in, fermentum faucibus, egestas vel, odio.

Sed commodo posuere pede. Mauris ut est. Ut quis purus. Sed ac odio. Sed vehicula hendrerit sem. Duis non odio. Morbi ut dui. Sed accumsan risus eget odio. In hac habitasse platea dictumst. Pellentesque non elit. Fusce sed justo eu urna porta tincidunt. Mauris felis odio, sollicitudin sed, volutpat a, ornare ac, erat. Morbi quis dolor. Donec pellentesque, erat ac sagittis semper, nunc dui lobortis purus, quis congue purus metus ultricies tellus. Proin et quam. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos hymenaeos. Praesent sapien turpis, fermentum vel, eleifend faucibus, vehicula eu, lacus.

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Donec odio elit, dictum in, hendrerit sit amet, egestas sed, leo. Praesent feugiat sapien aliquet odio. Integer vitae justo. Aliquam vestibulum fringilla lorem. Sed neque lectus, consectetur



at, consectetur sed, eleifend ac, lectus. Nulla facilisi. Pellentesque eget lectus. Proin eu metus. Sed porttitor. In hac habitasse platea dictumst. Suspendisse eu lectus. Ut mi mi, lacinia sit amet, placerat et, mollis vitae, dui. Sed ante tellus, tristique ut, iaculis eu, malesuada ac, dui. Mauris nibh leo, facilisis non, adipiscing quis, ultrices a, dui.



## 2 Mathematics

In this chapter we will see some examples of mathematics.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur 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.

### 2.1 Very important formulas

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.

$$\frac{d}{dt} \begin{bmatrix} P_0 \\ P_I \\ P_T \end{bmatrix} = \begin{bmatrix} \frac{P_I}{\tau_{I0}} + \frac{P_T}{\tau_T} - \frac{P_0}{\tau_{ex}} \\ -\frac{P_I}{\tau_{I0}} - \frac{P_I}{\tau_{isc}} + \frac{P_0}{\tau_{ex}} \\ \frac{P_I}{\tau_{isc}} - \frac{P_T}{\tau_T} \end{bmatrix} \quad (2.1)$$

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.

$$\bar{I}_f(\vec{r}) = \gamma(\vec{r}) \left( 1 - \frac{\tau_T P_T^{eq} \left( 1 - \exp\left(-\frac{(T_p - t_p)}{\tau_T}\right) \right)}{1 - \exp\left(-\frac{(T_p - t_p)}{\tau_T} + k_2 t_p\right)} \times \frac{(\exp(k_2 t_p) - 1)}{t_p} \right) \quad (2.2)$$

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.

## 3 Another chapter

Here you can see a citation: [?].

Sed commodo posuere pede. Mauris ut est. Ut quis purus. Sed ac odio. Sed vehicula hendrerit sem. Duis non odio. Morbi ut dui. Sed accumsan risus eget odio. In hac habitasse platea dictumst. Pellentesque non elit. Fusce sed justo eu urna porta tincidunt. Mauris felis odio, sollicitudin sed, volutpat a, ornare ac, erat. Morbi quis dolor. Donec pellentesque, erat ac sagittis semper, nunc dui lobortis purus, quis congue purus metus ultricies tellus. Proin et quam. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos hymenaeos. Praesent sapien turpis, fermentum vel, eleifend faucibus, vehicula eu, lacus.



## A An appendix

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur 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.







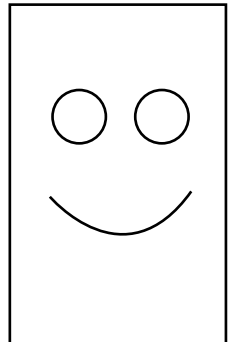
## Bibliography

- [1] M. Gevers, “Towards a joint design of identification and control?” in *Essays on Control, Perspectives in the Theory and its Applications*, H. L. Trentelman and J. Willems, Eds. Boston, USA: Birkhäuser, 1993.



## Personal details:

Name : Mr. Sample CV  
Address : Samplestreet  
70  
6005 Luzern  
Switzerland  
Date of Birth : 2nd of October 1981  
Nationality : Swiss  
Legally work : legally work in EU  
Marital status : with partner  
Children : none  
  
Languages : Chinese/Mandarin, English, French, German  
Education level : Bachelors degree  
Hospitality work experience : 3-5 years  
Special experience : Europe work experience  
  
Date of availability : September 2009  
Current location : Africa  
Travelling Status : will be travelling single status  
Telephone : 0041 41 370 6759  
Email address : jeff@h-g-r.com  
Position(s) sought : Permanent position for graduates  
Department(s) sought : Food & Beverage Bar/Sommelier



## Personal profile:

As a Bachelor of Business Administration and after obtaining first relevant international work experience within the hospitality industry, I am now ready to take on new responsibilities to further my professional career. My key strengths include strong analytical and logical skills, an eye for detail, communication and interpersonal skills.  
I enjoy working in a team and help others progress. At the same time I work well independently.  
As a highly motivated and driven individual I strive on taking up challenges.

## Interests:

Travelling  
Foreign Cultures  
Photography  
Sports

## Educational qualifications:

Oct 99 - Feb 02                      Higher Diploma (Hotel Management)  
Swiss Hotelmanagement School, SHL

## Employment history:

Mar 04 - Ongoing	<p>Assistant Manager (Rooms Division/Food &amp; Beverage)</p> <p>Hotel Atlantic Kempinski Hamburg <a href="http://www.kempinski.com">www.kempinski.com</a> 5 star business hotel, part of Leading Hotels of the World 412 guest rooms, large function facilities, 3 food &amp; beverage outlets</p> <p>Optimization of bar procedures, reinforcing SOPs</p> <p>Developing &amp; implementing promotions</p> <p>Responsible for day-to-day operations</p> <p>Optimization and streamlining of housekeeping and laundry procedures</p> <p>Implementation of new SOPs</p> <p>Analyzing monthly reports for rooms division performance and sub departments</p>
Mar 03 - Mar 04	<p>Management Trainee</p> <p>Hospitality Graduate Recruitment <a href="http://www.h-g-r.com">www.h-g-r.com</a> Leading company for placements within the Hospitality industry.</p> <p>Traineeship covering all aspects of an online recruitment agency.</p>
Mar 02 - Mar 03	<p>Management Trainee (Rooms Division)</p> <p>Hyatt Regency Xian, China <a href="http://www.hyatt.com">www.hyatt.com</a> 5 star business hotel 404 guest rooms, 4 food &amp; beverage outlets</p> <p>Traineeship covering all rooms division departments on operational as well as supervisory level.</p>

## Training courses attended:

Mar 02 - Ongoing	OpenOffice - IT Courses
May 01 - Jan 03	Language Course - Chinese

## References:

Hyatt Regency Xian  
Patrick Sawiri, Phone: 86 22 2330 7654

Hospitality Graduate Recruitment  
Jeff Ross, Phone: 41 41 370 99 88