### Título de la tesis



### Nombre Apellido Apellido

Director:

Dr. A. Nombre Apellido Apellido

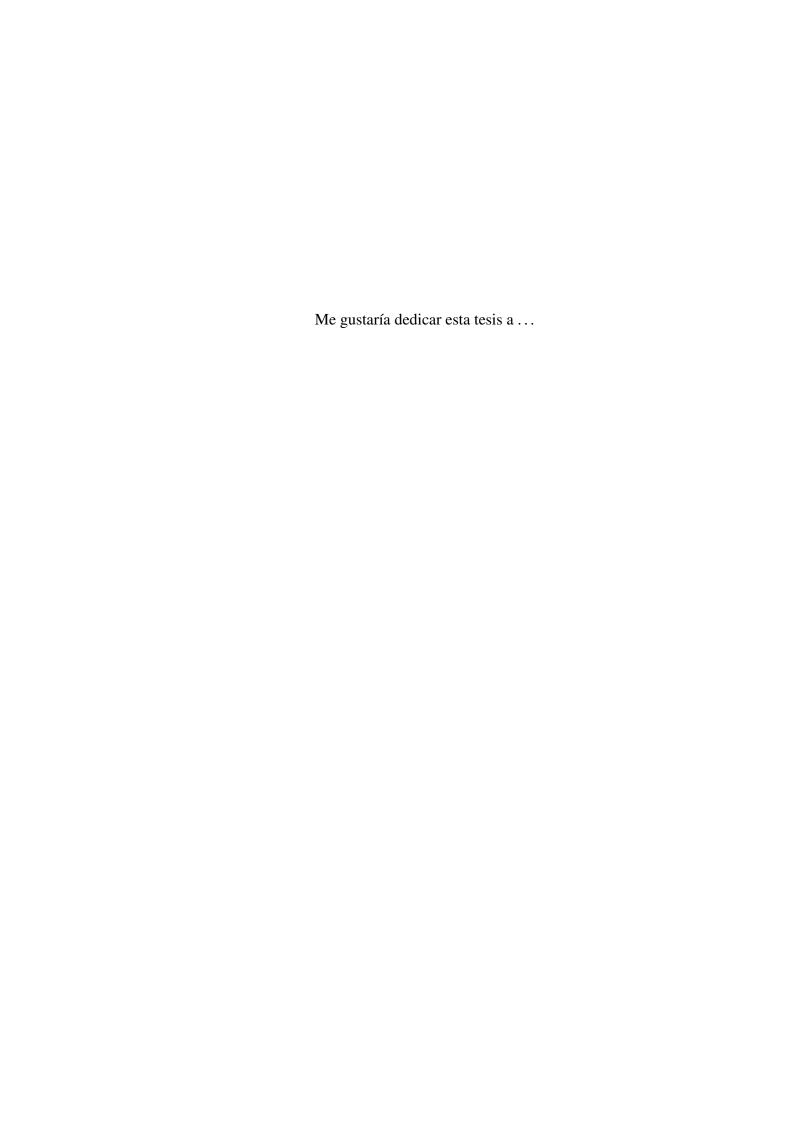
Co-Director:

Dr. A. Nombre Apellido Apellido

Universidad Tecnológica Nacional

Esta tesis se presenta para la obtención del título de Magíster en Ingeniería Estructural

Ciudad Autónoma de Buenos Aires, octubre de 2022



### Agradecimientos

Y me gustaría reconocer...

### Resumen

Aquí es donde escribes tu resumen...

# Índice general

Ín	dice d	le figura	as	VI
Ín	dice d	le tablas	S	VII
No	meno	clatura		VIII
1.	Intr	oducció	on.	1
	1.1.	Objetiv	vo	1
		1.1.1.	Ejemplo de índice	1
		1.1.2.	Ejemplo de símbolos y abreviaturas	1
		1.1.3.	Ejemplo de notas y cambios	1
2.	Segu	ındo ca	pítulo	2
	2.1.	Reason	nably long section title	2
3.	Terc	er capít	tulo	6
	3.1.	First se	ection of the third chapter	6
		3.1.1.	First subsection in the first section	6
		3.1.2.	Second subsection in the first section	6
		3.1.3.	Third subsection in the first section	6
	3.2.	Second	d section of the third chapter	7
	3.3.	The lay	yout of formal tables	7
Ín	dice a	lfabétic	20	9
Αŗ	éndio	e Prim	er apéndice	10
Ar	éndio	e Segui	ndo apéndice	11

# Índice de figuras

2 1	Best Animations.															4
Z.I.	Dest Annhauons.															

# Índice de tablas

3.1.	. A badly formatted table	 	8
3.2.	. A nice looking table	 	8
3.3.	. Even better looking table using booktabs	 	8

### Nomenclatura

#### Símbolos Romanos

F complex function

#### Símbolos Griegos

```
\gamma a simply closed curve on a complex plane
```

*i* unit imaginary number  $\sqrt{-1}$ 

 $\pi \simeq 3.14...$ 

#### **Superíndices**

*j* superscript index

#### **Subíndices**

0 subscript index

crit Critical state

#### **Otros Símbolos**

 $\oint_{\gamma}$  integration around a curve  $\gamma$ 

#### Acrónimos/Abreviaciones

BEM Boundary Element Method

CIF Cauchy's Integral Formula

**DEM** Discrete Element Method

DKT Draft Kiss Tumble

FEM Finite Element Method

FVM Finite Volume Method

LBM Lattice Boltzmann Method

Nomenclatura IX

MPM Material Point Method

PCI Peripheral Component Interconnect

PFEM Particle Finite Element Method

PPC Particles per cell

USL Update Stress Last

### Capítulo 1

### Introducción

#### 1.1. Objetivo

Poner contenido

#### 1.1.1. Ejemplo de índice

Para resolver varios problemas de física, puede ser ventajoso expresar cualquier función arbitraria uniforme por partes como una Serie de Fourier compuesta por múltiplos de funciones seno y coseno.

El índice alfabético solo se puede ver compilando la tesis con el archivo compilar-tesis-windows.bat ubicado en la carpeta de la tesis.

#### 1.1.2. Ejemplo de símbolos y abreviaturas

CIF: 
$$F_0^j(a) = \frac{1}{2\pi i} \oint_{\gamma} \frac{F_0^j(z)}{z - a} dz$$
 (1.1)

La nomenclatura de símbolos y abreviaturas solo se puede ver compilando la tesis con el archivo compilar-tesis-windows.bat ubicado en la carpeta de la tesis.

#### 1.1.3. Ejemplo de notas y cambios

Las notas y cambios solo se pueden ver con la opción "draft" de la tesis.

Ejemplo de nota por el autor.

Ejemplos de subrayado y nota con cambio de texto específico.

Ejemplo de resaltado 1: Ejemplo de resaltado 2: reen]Texto a resaltar en color verde Ejemplo destacado 3:

### Capítulo 2

### Segundo capítulo

#### 2.1. Reasonably long section title

#### Enumeration

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed vitae laoreet lectus. Donec lacus quam, malesuada ut erat vel, consectetur eleifend tellus. Aliquam non feugiat lacus. Interdum et malesuada fames ac ante ipsum primis in faucibus. Quisque a dolor sit amet dui malesuada malesuada id ac metus. Phasellus posuere egestas mauris, sed porta arcu vulputate ut. Donec arcu erat, ultrices et nisl ut, ultricies facilisis urna. Quisque iaculis, lorem non maximus pretium, dui eros auctor quam, sed sodales libero felis vel orci. Aliquam neque nunc, elementum id accumsan eu, varius eu enim. Aliquam blandit ante et ligula tempor pharetra. Donec molestie porttitor commodo. Integer rutrum turpis ac erat tristique cursus. Sed venenatis urna vel tempus venenatis. Nam eu rhoncus eros, et condimentum elit. Quisque risus turpis, aliquam eget euismod id, gravida in odio. Nunc elementum nibh risus, ut faucibus mauris molestie eu. Vivamus quis nunc nec nisl vulputate fringilla. Duis tempus libero ac justo laoreet tincidunt. Fusce sagittis gravida magna, pharetra venenatis mauris semper at. Nullam eleifend felis a elementum sagittis. In vel turpis eu metus euismod tempus eget sit amet tortor. Donec eu rhoncus libero, quis iaculis lectus. Aliquam erat volutpat. Proin id ullamcorper tortor. Fusce vestibulum a enim non volutpat. Nam ut interdum nulla. Proin lacinia felis malesuada arcu aliquet fringilla. Aliquam condimentum, tellus eget maximus porttitor, quam sem luctus massa, eu fermentum arcu diam ac massa. Praesent ut quam id leo molestie rhoncus. Praesent nec odio eget turpis bibendum eleifend non sit amet mi. Curabitur placerat finibus velit, eu ultricies risus imperdiet ut. Suspendisse lorem orci, luctus porta eros a, commodo maximus nisi.

Nunc et dolor diam. Phasellus eu justo vitae diam vehicula tristique. Vestibulum vulputate cursus turpis nec commodo. Etiam elementum sit amet erat et pellentesque. In eu augue sed tortor mollis tincidunt. Mauris eros dui, sagittis vestibulum vestibulum

vitae, molestie a velit. Donec non felis ut velit aliquam convallis sit amet sit amet velit. Aliquam vulputate, elit in lacinia lacinia, odio lacus consectetur quam, sit amet facilisis mi justo id magna. Curabitur aliquet pulvinar eros. Cras metus enim, tristique ut magna a, interdum egestas nibh. Aenean lorem odio, varius a sollicitudin non, cursus a odio. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae;

- 1. The first topic is dull
- 2. The second topic is duller
  - a) The first subtopic is silly
  - b) The second subtopic is stupid
- 3. The third topic is the dullest

Morbi bibendum est aliquam, hendrerit dolor ac, pretium sem. Nunc molestie, dui in euismod finibus, nunc enim viverra enim, eu mattis mi metus id libero. Cras sed accumsan justo, ut volutpat ipsum. Nam faucibus auctor molestie. Morbi sit amet eros a justo pretium aliquet. Maecenas tempor risus sit amet tincidunt tincidunt. Curabitur dapibus gravida gravida. Vivamus porta ullamcorper nisi eu molestie. Ut pretium nisl eu facilisis tempor. Nulla rutrum tincidunt justo, id placerat lacus laoreet et. Sed cursus lobortis vehicula. Donec sed tortor et est cursus pellentesque sit amet sed velit. Proin efficitur posuere felis, porta auctor nunc. Etiam non porta risus. Pellentesque lacinia eros at ante iaculis, sed aliquet ipsum volutpat. Suspendisse potenti.

Ut ultrices lectus sed sagittis varius. Nulla facilisi. Nullam tortor sem, placerat nec condimentum eu, tristique eget ex. Nullam pretium tellus ut nibh accumsan elementum. Aliquam posuere gravida tellus, id imperdiet nulla rutrum imperdiet. Nulla pretium ullamcorper quam, non iaculis orci consectetur eget. Curabitur non laoreet nisl. Maecenas lacinia, lorem vel tincidunt cursus, odio lorem aliquet est, gravida auctor arcu urna id enim. Morbi accumsan bibendum ipsum, ut maximus dui placerat vitae. Nullam pretium ac tortor nec venenatis. Nunc non aliquet neque.

#### **Itemize**

- The first topic is dull
- The second topic is duller
  - The first subtopic is silly
  - The second subtopic is stupid
- The third topic is the dullest

### **Description**

The first topic is dull

The second topic is duller

The first subtopic is silly

The second subtopic is stupid

**The third topic** is the dullest

2.2 Hidden section 5

#### 2.2. Hidden section

Lorem ipsum dolor sit amet, consectetur adipiscing elit. In magna nisi, aliquam id blandit id, congue ac est. Fusce porta consequat leo. Proin feugiat at felis vel consectetur. Ut tempus ipsum sit amet congue posuere. Nulla varius rutrum quam. Donec sed purus luctus, faucibus velit id, ultrices sapien. Cras diam purus, tincidunt eget tristique ut, egestas quis nulla. Curabitur vel iaculis lectus. Nunc nulla urna, ultrices et eleifend in, accumsan ut erat. In ut ante leo. Aenean a lacinia nisl, sit amet ullamcorper dolor. Maecenas blandit, tortor ut scelerisque congue, velit diam volutpat metus, sed vestibulum eros justo ut nulla. Etiam nec ipsum non enim luctus porta in in massa. Cras arcu urna, malesuada ut tellus ut, pellentesque mollis risus. Morbi vel tortor imperdiet arcu auctor mattis sit amet eu nisi. Nulla gravida urna vel nisl egestas varius. Aliquam posuere ante quis malesuada dignissim. Mauris ultrices tristique eros, a dignissim nisl iaculis nec. Praesent dapibus tincidunt mauris nec tempor. Curabitur et consequat nisi. Quisque viverra egestas risus, ut sodales enim blandit at. Mauris quis odio nulla. Cras euismod turpis magna, in facilisis diam congue non. Mauris faucibus nisl a orci dictum, et tempus mi cursus.

Etiam elementum tristique lacus, sit amet eleifend nibh eleifend sed <sup>1</sup>. Maecenas dapibu augue ut urna malesuada, non tempor nibh mollis. Donec sed sem sollicitudin, convallis velit aliquam, tincidunt diam. In eu venenatis lorem. Aliquam non augue porttitor tellus faucibus porta et nec ante. Proin sodales, libero vitae commodo sodales, dolor nisi cursus magna, non tincidunt ipsum nibh eget purus. Nam rutrum tincidunt arcu, tincidunt vulputate mi sagittis id. Proin et nisi nec orci tincidunt auctor et porta elit. Praesent eu dolor ac magna cursus euismod. Integer non dictum nunc.

#### **Subplots**

I can cite Wall-E (see Fig. 2.1b) Figura 2.1c and Figura 2.1a Minions in despicable me (Fig. 2.1c) or I can cite the whole figure as Fig. 2.1

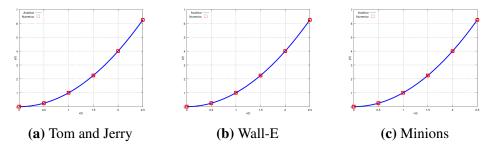


Figura 2.1 Best Animations

<sup>&</sup>lt;sup>1</sup>My footnote goes blah blah blah! ...

### Capítulo 3

### Tercer capítulo

#### 3.1. First section of the third chapter

And now I begin my third chapter here ... <sup>1</sup>
And now to cite some more people **Rea85**; **Ancey1996empty citation** 

#### **3.1.1.** First subsection in the first section

 $\dots$  and some more <sup>2</sup>

#### 3.1.2. Second subsection in the first section

... and some more ...

#### First subsub section in the second subsection

... and some more in the first subsub section otherwise it all looks the same doesn't it? well we can add some text to it ...

#### 3.1.3. Third subsection in the first section

... and some more ...

#### First subsub section in the third subsection

... and some more in the first subsub section otherwise it all looks the same doesn't it? well we can add some text to it and some more ...

<sup>&</sup>lt;sup>1</sup>Otra nota al pie.

<sup>&</sup>lt;sup>2</sup>Otra nota al pie.

#### Second subsub section in the third subsection

... and some more in the first subsub section otherwise it all looks the same doesn't it? well we can add some text to it ...

#### 3.2. Second section of the third chapter

and here I write more ...

#### 3.3. The layout of formal tables

This section has been modified from "Publication quality tables in LATEX\*" by Simon Fear.

The layout of a table has been established over centuries of experience and should only be altered in extraordinary circumstances.

When formatting a table, remember two simple guidelines at all times:

- 1. Never, ever use vertical rules (lines).
- 2. Never use double rules.

These guidelines may seem extreme but I have never found a good argument in favour of breaking them. For example, if you feel that the information in the left half of a table is so different from that on the right that it needs to be separated by a vertical line, then you should use two tables instead. Not everyone follows the second guideline:

There are three further guidelines worth mentioning here as they are generally not known outside the circle of professional typesetters and subeditors:

- 3. Put the units in the column heading (not in the body of the table).
- 4. Always precede a decimal point by a digit; thus 0.1 not just .1.
- 5. Do not use 'ditto' signs or any other such convention to repeat a previous value. In many circumstances a blank will serve just as well. If it won't, then repeat the value.

A frequently seen mistake is to use '\begin{center}' ... '\end{center}' inside a figure or table environment. This center environment can cause additional vertical space. If you want to avoid that just use '\centering'

**Tabla 3.1** A badly formatted table

	Spec	ies I	Species II				
Dental measurement	mean	SD	mean	SD			
I1MD	6.23	0.91	5.2	0.7			
I1LL	7.48	0.56	8.7	0.71			
I2MD	3.99	0.63	4.22	0.54			
I2LL	6.81	0.02	6.66	0.01			
CMD	13.47	0.09	10.55	0.05			
CBL	11.88	0.05	13.11	0.04			

Tabla 3.2 A nice looking table

Dental measurement	Spec	ies I	Species II			
Dentai measurement	mean	SD	mean	SD		
I1MD	6.23	0.91	5.2	0.7		
I1LL	7.48	0.56	8.7	0.71		
I2MD	3.99	0.63	4.22	0.54		
I2LL	6.81	0.02	6.66	0.01		
CMD	13.47	0.09	10.55	0.05		
CBL	11.88	0.05	13.11	0.04		

**Tabla 3.3** Even better looking table using booktabs

Dental measurement	Spec	ies I	Species II			
	mean	SD	mean	SD		
I1MD	6.23	0.91	5.2	0.7		
I1LL	7.48	0.56	8.7	0.71		
I2MD	3.99	0.63	4.22	0.54		
I2LL	6.81	0.02	6.66	0.01		
CMD	13.47	0.09	10.55	0.05		
CBL	11.88	0.05	13.11	0.04		

# Índice alfabético

Serie de Fourier, 1

## Primer apéndice

Este es el primer apéndice.

## Segundo apéndice

Este es el segundo apéndice.