Luca Fenzi

Curriculum vitae

Strijdersstraat 66/103
3000 Leuven (BE)
(+32) 488 959558
fenzi.luca@gmail.com
lucafe.github.io
🅂 *luca.fenzi91*

Personal Information

Address	Strijdersstraat 66 bus 103 3000 Leuven (BE)	Nationality	Italian
Birth	February 24, 1991. Verona (IT)	Gender	Male

Curriculum studiorum

2020   **PhD in Engineering Science**, *KU Leuven*, (BE), Computer Science Department - Numerical Analysis and Applied Mathematics research unit.
PhD Thesis: Looking for stability: Advances on spectrum-based stability and stabilization of uncertain linear time-delay systems (Supervisor: Prof. Wim Michiels).

2015   **Master's Degree in Mathematics**, *Università degli Studi di Udine*, (IT), Grade 110/110 with honors.

2015   **Diploma of Scuola Superiore**, *Università degli Studi di Udine*, (IT), Official diploma - Grade 110/110 with honors.
5-year board and lodging merit bursary for excellence, involving:
- an entrance examination for 10 places in all the scientific subjects, with a further failing rate of 50% of the students in the following five years
- dedicated courses and additional two exams every year, consisting of the dissertation of a research essay after delivering a speech

For further information www.scuolasuperiore.uniud.it

2015   **Erasmus exchange program**, *Norwegian University of Science and Technology (NTNU)*, Trondheim (NO).

2013   **Bachelor's Degree in Mathematics**, *Università degli Studi di Udine*, (IT), Grade 110/110 with honors.

2010   **High school diploma - Specialization in Mathematics and Computer Science**, *Scientific Lyceum "Galileo Galilei"*, Verona (IT), Grade 93/100.

Work experience

2015–2020   **Graduate research assistant**, *KU Leuven*, (BE).
Further information in Curriculum studiorum

2010–2015   **Raft guide**, *Verona Rafting, Adige Rafting and Alpin Action FVG*, (IT).

2010   **Slalom Kayak Trainer**, *Canoa Club Verona*, (IT).

2008–2009   **Waiter**, *Pizzeria n5*, Verona (IT).

2007 **Technical worker**, *Digital Network*, Verona (IT).
Digital Network rents, sells and installs technical equipments for events, conventions and exhibitions. For further information www.digitalnetwork.it.

Publications

2020 Luca Fenzi. *Looking for stability, advances on spectrum-based stability and stabilization of uncertain time-delay systems*. PhD thesis, KU Leuven, 2020.

2019 W. Michiles and Luca Fenzi. Spectrum-based stability analysis and stabilization of a class of time-periodic time-delay systems. *arXiv:1908.10280*, 2019.

2019 Luca Fenzi and W. Michiels. Polynomial (chaos) approximation of maximum eigenvalue functions. *Numerical Algorithms*, 82:1143–1169, 2019.

2018 Luca Fenzi and W. Michiels. Experiments on polynomial (chaos) approximation of maximum eigenvalue functions: Tutorial. Technical report, TW 688, Department of Computer Science, KU Leuven, 2018.

2017 Luca Fenzi, D. Pilbauer, W. Michiels, and T. Vyhlídal. A probabilistic approach towards robust stability optimization, with application to vibration control. In F. Stépán and G. Csernák, editors, *Proceedings of the 9th European Nonlinear Dynamics Conference*, 2017.

2017 Luca Fenzi and W. Michiels. Robust stability optimization for linear delay systems in a probabilistic framework. *Linear Algebra and its Applications*, 526:1–26, 2017.

Computer skill

Matlab	Advanced knowledge	*Gained during the PhD and MathWorks workshop and advanced courses in Linear Algebra & Control Theory.*
R	Advanced knowledge	*Gained during advanced courses in Statistics.*
LaTeX	Advanced knowledge	*Gained during the PhD and exploited in several projects.*
HTML	Advanced knowledge	*Gained during the PhD program.*
C	Good knowledge	*Gained during the course of "Computer Science 1".*
Photoshop & Lightroom	Good knowledge	*Gained as an amateur photographer and with a course on Image Editing.*
Office Package	Good knowledge	*Gained from several projects.*
Mathematica	Basic knowledge	*Gained during the course of "Laboratory of Computational Mathematics".*
Geogebra	Basic knowledge	*Gained during the course of "Laboratory of Computational Mathematics".*

Languages

Italian	Native speaker	*Mother tongue*
English	Excellent command	*Level C1 (CEF), Certified by Scuola Superiore, improved by Pronunciation and Academic Writing PhD courses.*
Norwegian	Basic communication skills	*Level A1 (CEF), Certified by NTNU.*
Dutch	Basic communication skills	*Level A2 (CEF), Certified by Leuven Language Institute.*

Posts of responsibility

2019–present **Executive Board of Scuola Superiore Alumni Association**, *Udine*, (IT).

2017–2019 **Contributor in the Society of Industrial and Applied Mathematics (SIAM) student chapter**, *KU Leuven*, (BE).
For further information siam.cs.kuleuven.be

2015 **Reference group member for "Computer intensive statistical methods" and "Numerical solution of differential equations by difference methods"**, *Norwegian University of Science and Technology (NTNU)*, Trondheim (NO).

2013–2014 **Elected member inScuola Superiore Board**, *Università degli Studi di Udine*, (IT).

2013–2014 **Elected member in the Italian Network of Excellent Universitary Students Board**, *Italian Network of Excellent Universitary Students Board*.

2011–2014 **Elected member in Mathematics and Computer science Departmental Board and in the University Student Board**, *Università degli Studi di Udine*, (IT).
In office for two terms

2011–2012 **Elected member in Academic Senate**, *Università degli Studi di Udine*, (IT).

Awards and achievement

2019 **Datathon: Data Analysis competition**, *Awarded by KU Leuven*, (BE).
Best Pitch and Second best PhD Team

2016 **Giulio Chiesi memorial prize for the best master's thesis with engineering applications**, *Awarded by Università degli Studi di Udine*, (IT).

2016 **Prize for the best graduate student in Mathematics**, *Awarded by Università degli Studi di Udine*, (IT).
For further information www.uniud.it/merito.

2013 **Winner of a master scholarship in Engineering Mathematics**, *National Institute of Nuclear Physics (INFN), Gran Sasso Science Institue (GSSI) and University of L'Aquila (Univaq)* , (IT).
For further information www.gssi.inf.it. Proscribed in favor of Scuola Superiore scholarship.

2013 **Winner of the announcement for the study trip to CERN**, *ATLAS Udine Group*, Geneva (CH).
For further information www.atlas.uniud.it

2011 **Winner of the announcement of the Italian foreign minister for a English course in Malta**, *Embassy of Malta in Rome*, Valletta (MT).

2009–2010 **"National Olympics of Mathematics" - Team Competition & Individual finals**, *Project Olympics of Mathematics*, Cesenatico (IT).

Hobbies

Sports   *River kayak; Alpinism; Mountaineering; Cycling; Running.*

Miscellaneous   *Travel; Analog and Digital Photography.*

Attachments

1st Attachment: PhD Thesis

Title	**Looking for stability** Advances on spectrum-based stability and stabilization of linear uncertain time-delay systems
Supervisor	Prof. Wim Michiels
Examination Committee	Prof. O. Van der Biest, Prof. D. Nuyens, Prof. G. Pipeleers, Prof. T. Vyhlídal & Dr. M. Voigt
Defence	February 2020
Language	English
Pages	130
Keywords	Linear time-delay systems (autonomous and periodic); Dynamical systems stability and Control Theory; Uncertain Quantification; Eigenvalue problems; Polynomial approximation.

2nd Attachment: Teaching Experience

2017–2020	**Teaching assistant of the master course Numerical Linear Algebra**, *KU Leuven*, (BE).
2016	**Teaching Assistant of the master course Optimization**, *KU Leuven*, (BE).
2013	**Training lesson in preparation of the "National Olympics of Mathematics"**, *Mathesis*, Udine (IT).

3rd Attachment: Conferences and Seminars

2019 **Talk: Alla ricerca della stabilità: migliorare la stabilità di sistemi dinamici con ritardo ottimizzando gli autovalori**, *1° Ritrovo Matematico degli Alumni della Scuola Superiore dell'Università degli Studi di Udine*, (IT).

2019 **Seminar: Periodic time-delay systems: stability and stabilization by spectrum-based approach**, *NUMA seminar at KU Leuven*, (BE).

2018 **Seminar: LaTeX Tips and Tricks**, *Society of Industrial and Applied Mathematics (SIAM) workshop*, Leuven (BE).

2018 **Talk: Polynomial (chaos) approximation of the spectral abscissa: efficiency and limitations**, *Time Delay Systems (TDS) 2018*, Budapest (HU).

2017 **Talk: A probabilistic approach towards robust stability optimization, with application to vibration control**, *European Nonlinear Dynamics Conference (ENOC) 2017*, Budapest (HU).

2017 **Talk: A probabilistic approach towards robust stability optimization, with applications**, *Workshop on Computational aspects of Time Delay System theory with Applications at CTU*, Prague (CR).

2017 **Talk: A probabilistic approach towards robust stability optimization, with applications**, *NUMA seminar at KU Leuven*, Leuven (BE).

2016 **Talk: Robust stability optimization for delay differential algebraic equations in a probabilistic framework**, *European Conference on Computational Optimization (EUCCO)*, Leuven (BE).

2016 **Attendance**, *Dynamical Systems, Control and Optimization (DYSCO) Study Day*, Louvain-la-Neuve (BE).

2016 **Attendance**, *System Structure and Control (SSSC) 2016 & Time Delay Systems (TDS) 2016*, Istanbul (TU).

2016 **Technical Assistant**, *International Linear Algebra Society (ILAS) 2016*, Leuven (BE).

2015 **Talk: Pedestrian Flows, Un nuovo modello**, *Rete di Idee*, Scuola Normale di Pisa and Sant'Anna (IT).

2012 **Talk: Esistenza del Trascendente, Dimostrazioni dell'esistenza di numeri e serie formali trascendenti**, *Rete di Idee*, ISUFI Lecce (IT).

4th Attachment: Doctoral Training

Professional training courses

An Introduction to Machine Learning and Deep Network Architectures	SOCN PhD course
Large scale convex and non-convex optimization	SOCN PhD course
Controlling Delayed Dynamics: Advances in Theory, Methods and Applications	CISM PhD course
Uncertainty Quantification Summer school	WIASS/GAMM/TUM PhD course
Sequential Monte Carlo Methods	SOCN PhD course
Robust Statistics	KU Leuven master course
Orthogonal Polynomials & Random Matrices	KU Leuven master course

Generic Skills courses

Seminar on Scientific Integrity	KU Leuven
Teacher Assistant training	KU Leuven
Pronunciation and Intonation	ILT & KU Leuven
Image Editing	Somersault & KU Leuven
Academic Writing	ILT & KU Leuven
Effective Graphical Displays	Principiae
Seminar: Getting the message across	Principiæ & KU Leuven
Seminar: Creating effective poster	Principiæ & KU Leuven
Photography courses *beginner-intermediate-advance*	Photography Club KU Leuven

5th Attachment: Master thesis

Title	**Polynomial Chaos Theory:** *Application to the stability of Uncertain Delay Differential Equations*
Supervisor	Prof. Rossana Vermiglio
Year	2015
Grade	110/110 with honor
Language	English
Pages	140
Nature	Research work
Keywords	Polynomial Chaos Theory; Uncertain Delay Differential Equations; Stability; Non-intrusive methods; Sparse and tensor grids.

6th Attachment: Bachelor thesis

Title	**Relativistic Thermodynamics**
Supervisor	Prof. Sebastiano Sonego
Year	2013
Grade	110/110 with honor
Language	English
Pages	80
Nature	Research work
Keywords	Thermodynamics; Special theory of Relativity; Distributions; Temperature and Lorentz transformations.

7th Attachment: Compositions and projects for Scuola Superiore

Title	**Pedestrian Flow: *Controlled Random Walk Model***
Supervisors	**Prof. Cristian Marchioli** and **Prof. Francesco Zonta**
Grade (Date)	30/30 with honor (2014)
Keywords	Pedestrian flow; Random walk; Particle flow; Simulation; Dynamic programming.

Title	**Pseudo Random Number Generator**
Supervisor	**Prof. Dimitri Breda**
Grade (Date)	30/30 with honor (2014)
Keywords	Pseudo Random Number Generators; Alghorithms; Congruence; Primitive root.

Title	**Boltzmann's Equation**
Supervisor	**Prof. Sebastiano Sonego**
Grade (Date)	Approved (2014)
Keywords	Boltzmann equation; H-theorem; non-relativistic and relativistic elastic collision.

Title	**Non-standard Analysis**
Supervisor	**Prof. Stefano Ansoldi**
Grade (Date)	30/30 with honor (2013)
Keywords	Non-standard Analysis; Mathematics education; hyper-real field; topology.

Title	**Exorcisms of a Demon**
Supervisor	**Prof. Sebastiano Sonego**
Grade (Date)	30/30 (2012)
Keywords	Maxwell's demon; Second law of thermodynamics; Quantum mechanics; Entropy and Information.

Title	**Existence of transcendental numbers and formal power series**
Supervisor	**Prof. Pietro Corvaja**
Grade (Date)	28/30 (2011)
Keywords	Transcendental numbers; formal power series; Liouville's, Cantor's, and Lindemann-Weierstrass' theorems.

8th Attachment: Master degree transcript

Weighted average 29,714/30 on 120 ECTS

Statistics 1	30/30 with honor
Statistics 2	30/30 with honor
Probability 2	30/30
Numerical Analysis 2	28/30
Numerical Analysis 4	30/30 with honor
Laboratory of Computational Mathematics	30/30 with honor
Advanced Algorithms	30/30
Differential Equations	30/30
Institution of Superior Calculus	29/30
Institution of Superior Geometry	30/30
Laboratory of Mathematics	Approved
Numerical solution of differential equations by difference methods	A (30/30 with honor)
Computer Intensive Statistical Methods	A (30/30 with honor)
Stochastic Population Models	A (30/30 with honor)
Thesis	Approved

9th Attachment: Scuola Superiore diploma transcript

Disciplinary courses

Introduction to Number Theory and Applications to Computer Science
Transport Phenomena in Biological Systems
Introduction to Bifurcation Theory
Probability in Physics
Theoretical Physics
Game Theory
Numerical Methods for Transport Equations
Computational Analytic Geometry
Stochastic Methods in Physics

Interdisciplinary courses

Introduction to Philological Method
Philosophy of Religion - The Experience of the Divine
History of Science
Introduction to DNA structure
Physics and Philosophy

10th Attachment: Bachelor degree transcript

Weighted average 28,593/30 on 180 ECTS

Physics 1	30/30 with honor
Physics 2	30/30 with honor
Physics 3	30/30 with honor
Modern Physics	30/30
Particles and Fundamental Interactions	30/30 with honor
Rational Mechanics	25/30
Calculus 1	30/30 with honor
Calculus 2	30/30
Differential Equations	30/30
Computer Science 1	30/30
Computer Science 2	30/30
Numerical analysis 1	30/30
Optimization 1	30/30
Arithmetic	30/30
Algebra 1	30/30
Galois'Theory	24/30
Probability 1	28/30
Logical Mathematics	28/30
Geometry 1	27/30
Geometry 2	25/30
Efficient Communication	Approved
Knowledge about business	Approved
English Language	Approved
Computer tools for Mathematics	Approved
Thesis	Approved