



Nicola Zaupa

Mechatronics Engineering (M. Sc.)

Contact

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Skills

Matlab	7+ yrs.
LaTex	6+ yrs.
C – C++	3 yrs.
FPGA - Verilog	3 yrs

Languages

Italian	L1
English	B2+
French	B2
Spanish	B1
Catalan	A1

Personal Profile

1st September 2024

Throughout my academic journey, I have deepened my expertise in modeling and controlling physical systems, with a strong foundation in Mechatronics Engineering. My coursework has provided me with a **multidisciplinary** understanding, covering a wide range of topics within this field. I have also cultivated specialized knowledge in power electronics, beginning in high school and further developed during my master's thesis and Ph.D., particularly through collaboration with URV in Tarragona. I thrive on applying my technical skills to tackle new challenges, always seeking simple and effective solutions. My passion lies in **practical, application-oriented** projects where I can engage in hands-on activities. I enjoy DIY projects and the opportunity to work on stimulating tasks. Beyond academia, I am enthusiastic about outdoor activities, traveling, and meeting new people, which allows me to create meaningful connections.

Education

PhD in Automatic Control

Université Toulouse III - Paul Sabatier
LAAS-CNRS – MAC team

10/2021 - 10/2024
(expected end)

Thesis title: "Hybrid limit Cycles: from theory to practice"; in collaboration with the GAEI group of Universitat Rovira i Virgili. The objective is to develop new control laws for the resonant converters applied to a battery charger. Beside the main thesis topic, I had the opportunity to collaborate with other people and explore different topics.

Mechatronics Engineering (M. Sc)

Department of Industrial Engineering
University of Trento

09/2018 - 03/2021

Master's thesis: "A hybrid approach to second-order resonant inverters design: analysis and experiments"; in collaboration with the GAEI group of Universitat Rovira i Virgili.

Industrial Engineering (B. Sc)

Department of Industrial Engineering
University of Trento

09/2015 - 07/2018

Bachelor's thesis: "Temperature control with TEC (Termo Electric Cooler)".

High School diploma

ITIS Alessandro Rossi
Vicenza, Italy

09/2010 - 07/2015

"Diploma" in Electronics and Electrotechnics, field Automation.

Work experience

Postgraduate position

Universitat Rovira i Virgili
Tarragona, Spain

05/2021 - 07/2021

I continued with my master project to work on resonant converters with hybrid approach to develop a resonant converter for a battery charging application.

Formation

EECI - Mario Sznaier

LAAS-CNRS, Toulouse, France

16-20/05/2022

Sparsity and Big Data in Control, Systems Identification and Machine Learning.

EECI - Florian Dörfler and Saverio Bolognani

KTH, Stockholm, Sweden

20-23/06/2022

Control and Optimization of Autonomous Power Systems.

SIDRA PhD Summer School

Bertinoro, Italy

4-9/07/2022

Andrea Serrani: Nonlinear and Adaptive Control Techniques for Advanced Aerospace Systems.

Francesco Bullo: Network Systems in Science and Technology.

Publications

- N. Zaupa, L. Martinez-Salamero, C. Olalla, and L. Zaccarian. "Results on hybrid control of self-oscillating resonant converters". In: *IFAC Conference on Analysis and Design of Hybrid Systems (ADHS)*, Brussels, Belgium, July 2021.
- N. Zaupa, L. Martinez-Salamero, C. Olalla, and L. Zaccarian. "Hybrid control of self-oscillating resonant converters". In: *IEEE - Transactions on Control System Technology*, 2022.
- N. Zaupa, C. Olalla, I. Queinnec, L. Martinez-Salamero, and L. Zaccarian. "Hybrid Control of Self-Oscillating Resonant Converters With Three-Level Input". In: *IEEE - Control Systems Letters*, 2023.
- N. Zaupa, L. Zaccarian, S. Tarbouriech, I. Queinnec, and G. Giordano. "Controlling Identical Linear Multi-Agent Systems Over Directed Graphs". In: *2023 62nd IEEE Conference on Decision and Control (CDC)*, 2023.
- N. Zaupa, G. Giordano, I. Queinnec, S. Tarbouriech, and L. Zaccarian. "Equivalent Conditions for the Synchronization of Identical Linear Systems over Arbitrary Interconnections". In: *European Journal of Control*, 2024 (to appear).
- M. Doré, and N. Zaupa. "Control of the RMS Output Current in Series Resonant Converters". In: *4th IFAC Conference of Modelling, Identification and Control of nonlinear systems (MICNON 2024)*, 2024.