Curriculum Vitae et Studiorum

Luca Papini *(Ph.D, Ms.C)*

Personal Information

Citizenship: Italian
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Education

- **PhD** ('18) in Electrical Engineering at the University of Nottingham.
  Thesis: **Performance Calculation of High Speed Solid Rotor Induction Machine**. Relator: Prof. Christopher Gerada, External Examiner: Pia Lindh, Viva 15^{th} *December 2017*, Graduation 17^{th} *July 2018*

- **Master Degree** ('11) in Electrical Engineering at the University of Pisa.
  Thesis: **Advanced Modelling and Analysis of Unconventional Permanent Magnet Machines**. Relator: Prof. Ing. Bolognesi Paolo, Prof. Christopher Gerada, Pisa 18^{th} *April 2011*
  Final Marks: 110 cum laude

- **Bachelor Degree** ('09) in Electrical Engineering at the University of Pisa.
  Thesis: **Modelling and linearisation of a asynchronous machine**. Relator: Prof. Ing. Zini Giancarlo, Prof. Ing. Bolognesi Paolo, Pisa 15^{th} *June 2009*
  Final Marks: 110 cum laude

Working experience

- 1^{st} October 2022 - Present: **Associate Professor** in electrical machines and drives for green applications with the Department of Energy, System, Territory, and Construction at the University of Pisa.

  Teaching activities:

  - "*Electrical Machines & Drives for Energy, Industry, and Transportation*" (2022 / 2025, in english) [$6\,CFU$], Bachelor Degree in Energy Engineering, University of Pisa

  - "*Laboratory of Electrical Machines, Power Electronics & Drives*" (2022 / 2025, in english) [3 CFU], Master Degree in Electrical Engineering, University of Pisa

  Roles & Other

  - Session chair at the ICEM 2024 conference; member of the *Alessandro Costabeber Award* at the WEMDCD 2025 workshop
  - Formula SAE Electric Powertrain academic supervisor (2022 / 2025)
  - Circle-U selected module for sustainability - matchmaking event (Bruxelles - January 2025)
  - Climate science and System Thinking communication.

- 1^{st} October 2019 - 30^{th} September 2022: **Assistant Professor with Tenure and Senior Researcher** in electrical machines and drives for green applications with the Department of Energy, System, Territory, and Construction at the University of Pisa. Research topics related to bearingless drives, levitation system, multi-physics design of electrical machines, high power density drives, and analytical electro-magneto-mechanical modelling.
  Teaching activities:

  - "*Electrical Machines & Drives for Energy, Industry, and Transportation*" (2021-2022, in english) [6 CFU], Bachelor Degree in Energy Engineering, University of Pisa
  - "*Sistemi di Utilizzazione dell'Energia Elettrica*" (2020-2021) [6 CFU], Bachelor Degree in Energy Engineering, University of Pisa

  Roles & Other

  - Session chair at the ICEM 2022 conference
  - Electromechanical Actuators Session Chair for the MDPI IeCat conference (International Electronic Conference on Actuator Technology) on Materials, Drives and Applications, online [23 - 27 November 2020]
  - Collaboration with Prof. Bolognesi in the research project with ABB (2020-2021, 2021-2022) on the analysis and development of linear actuators. Member of COST ACTION Hi-Scale project (CA19108). Co-PI of EU-ITN Academic program (Hipo).
  - Formula SAE Electric Powertrain academic supervisor
  - Climate science communication.

- 15^{th} March 2019 - 1^{st} October 2019: **Post-Doctorate Research Fellow** at the Department of Energy, System, Territory, and Construction at the University of Pisa.

Study and experimental analysis of a multifunctional charging station for urban installation (SUMA project - Tuscany Regional funding).

- 1^{st} January 2019 - 15^{th} March 2019: **Post-Doctorate Research Fellow** at the University of Nottingham.
  Research activities mainly focused on the aerospace sector. Modelling of high power density machine for aircraft propulsion and advance modelling of bearingless machines and magnetic bearings.

- 1^{st} September 2018 - 1^{th} December 2018: **JSPS** (Japanese Society for Promotion of Science) **Post-Doctorate Research Fellow** at the University of Shizuoka, Japan (ID no. PE18024).
  Proposed research project title: "Feasibility Study of Supersonic Bearingless Permanent Magnet Electrical Machine". Study oon ultra high speed - high power density bearingless machine for improved reliability and efficiency.

- October 2012 - July 2018: **Research Assistant/Associate** at the University of Nottingham.
  Research activities mainly focused on the aerospace sector. Responsible of the electrical machine for the Helicopter Electromechanical Actuation System (HEMAS) project (Clean Sky JTI) in collaboration with Airbus Group Innovation, Airbus Helicopter and Liebherr.

  Design of Active Magnetic Bearing system in collaboration with Rolls Royce.

  Responsible of balancing machine and electrical discharge machine (EDM) at the University of Nottingham workshop.

  Investigation of different machine topologies and development of high power density - high speed generator for aircraft propulsion system (Siemens).

  Visiting researcher at the University of Athens (Athens, Greece) focusing on materials for aerospace applications (May 2016-August 2016).

  Visiting researcher at Aalto University (Helsinky, Finalnd) working on electrical machine design for hybrid electro-hydraulic system for off-road vehicles (August 2018).

- October 2011-July 2018: **Ph.D. student** at the University of Nottingham.
  Research activity on solid rotor induction machine for high speed application funded by the Cummins Innovation Center (University of Nottingham). Development of multi-physics environment for high speed machine modelling. Electromagnetic analytical model for magnetic field and losses distribution, numerical (Finite Difference) thermal model, rotor-dynamic model and structural model. Electromagnetic properties measurement of solid material.

- August 2011-February 2012: **Junior Researcher** at the department of Electrical and Electronic Engineering, University of Pisa.

Research activity on novel permanent magnet machine topology for vehicular application.

Dissemination, Grants & Projects

Publications [Scopus, H-index: 14, Citations: 955]:
60 indexed publications (16 Journals, 43 Conferences, 1 book chapter).
Reviewer for IEEE journals (TIE, TM, TPE, TIA), MDPI

Dissemination & Training

- Bright Researcher Nights
- CoilTech fair conference presentation *Digital Twin for electrical machine* [Pordenone - September 2024]
- Seminar on *Short story of electrical machines* at the International conference [Santiago del Chile - October 2023]
- Ph.D. course *Python for electrical engineering* (10 hrs) at the DESTEC Ph.D. school [April 2023]
- JMAG Training (online): Generalised approach and analysis of electro-magneto-mechanical devices [April 2022]
- Seminar on levitating system (Tokio, Shizuoka, Matsumoto): presentation of research activities in the field of levitating system and bearingless machines. [September - October 2018]
- Collaborator in laboratories activities and examination in Electronic Construction for M.Sc. Electrical and Electrocnic Engineering - University of Nottingham (Prof. Alberto Castellazzi) [a.a. 2011-12, 2012-13, 2013-14]
- Resposable for computer aided excercises and examination in Advanced Electrical Machines for M.Sc. Electrical and Electrocnic Engineering - University of Nottingham (Prof. Chris Gerada) [a.a. 2011-12, 2012-13, 2013-14, 2014-15]

Grants

- PRIN 2022 (MIUR): EMOTEC project - Modular Power Train - University of Pisa coordinator. [February 2025 - present]
- 2024 Teaching Project program (Academic): LabInClass, development of laboratory experience for the testing and control of PM-DC motor in the context of the teaching module - PI. [February 2024]

- 2023 Teaching Project program (Academic): LabInClass, development of laboratory experience for the testing and control of PM-DC motor in the context of the teaching module - PI. [February 2023]
- 2022 Teaching Project program (Academic): CoilTech & Malnisio visit. Organized in collaboration with Dr.Ing. Bolognesi, the project aims to bring the Ba and MsC students to visit the Coiltech fair and the Malnisio power station - co-PI. [February 2022]
- 2022 ITN (Academic): HIPO project - European PhD program (Marie Curie) - University of Pisa co-PI. [April 2022 - present]
- 2022 BIHO (Academic): BIHO program (University of Pisa) for high quality EU proposal (ITN - SUSANE: sustainability in the EU manufacturing industry for green energy transition) - University of Pisa PI. [April 2022]
- 2021 BIHO (Academic): BIHO program (University of Pisa) for high quality EU proposal (Shift2Rail - REMMI: novel topologies of electrical machines based on SMC for next generation of green transportation) - PI. [April 2021]

Certificates

- Micro-credential certificate for *Thinking and modelling Systems-Oriented Solutions for Sustainability*, Level 7 European Qualifications Framework (EQF), SYDIC (System Dynamics Italian Chapter), [September 2022]
- Teaching (starting and advanced) training certificate (University of Pisa) [July 2022 - July 2025]
- ASN certification (MIUR, Italian Ministry of Education) [June 2022]
- Superconductivity in electrical machines for green energy transition (PhD summer school - University of Lorraine) [September 2020]
- Contamination Lab (self-entrepreneurship and startup course) [June 2020]

Awards

- Best Paper Award, ICEM 2022 Conference, Valencia (8^{th} September 2022)
- UK - Magnetic Society Bursary *Dennis Hadfield Memorial Prize*, *UK-MAGSOC*
- Prize for the Master Thesis *EAT* (15^{th} *January 2013*)
- Prize for the Master Thesis *Premio Pacinotti* (2^{nd} September 2012)