

Stefano Nuzzo, PhD

SHORT BIOGRAPHY

Stefano Nuzzo (S'17-M'18) received the B.Sc. and M.Sc. degrees in Electrical Engineering from the University of Pisa, Pisa, Italy, in 2011 and 2014, respectively. He received his Ph.D. degree in Electrical Engineering in 2018 from the University of Nottingham, Nottingham, U.K, where he worked also as a Research Fellow within the Power Electronics, Machines and Control (PEMC) Group. In January 2019, he moved to Modena, Italy, where he has worked as a Research Fellow at the Department of Engineering "Enzo Ferrari" at University of Modena and Reggio Emilia. Since August 2022, he is an Assistant Professor at University of Modena and Reggio Emilia, Modena, Italy.

His research interests are the analysis, modelling and optimizations of electrical machines, with focus on machines for industrial power generation and traction applications. He is currently involved in a number of European projects on the more electric aircraft and vehicles initiatives, focusing on high torque density, reliability and sustainability electrical machines.

Stefano Nuzzo is a Member of the IEEE, the IEEE Industrial Electronics Society (IES) and the IEEE Industry Applications Society (IAS). He constantly serves the scientific community as a reviewer for several journals and conferences and he is currently an Associate Editor for the IEEE Transactions on Transportation Electrification. He has also co-organized the 2021 IEEE Workshop on Electrical Machine Design, Control and Diagnosis (WEMDCD), held in Modena, Italy, where he has served as a technical program chair for the "Machine design and modelling" track. He is the author or co-author of more than 80 papers, with an H-index equal to 17 and more than 900 citations, according to Scopus.

EDUCATION

Apr. 2014 - 2018: PhD in Electrical Machines

Power Electronics, Machines and Control Group, Faculty of Engineering, University of Nottingham, UK

Thesis title: "On the Damper Cage of Salient-Pole Synchronous Generators"

Application: Diesel-Engine Driven Synchronous Generators, mainly used for standalone applications – collaboration with Cummins Generator Technologies (CGT)

Sep. 2011 – Apr. 2014: MSc in Electrical Engineering

Department of Energy, Systems, Territory and Construction Engineering, University of Pisa, Italy

Sep. 2006 – Mar. 2011: BSc in Electrical Engineering

Department of Electrical Systems and Automation, University of Pisa, Italy

PROFESSIONAL EXPERIENCE

Aug. 2022 – date: Assistant Professor at University of Modena and Reggio Emilia, Italy

Jan 2019 – Sep. 2022: Research Fellow at University of Modena and Reggio Emilia, Italy

May 2018 – Aug. 2018: Visiting Fellow at University of Pisa, Italy

Oct. 2017- date: Research Fellow at University of Nottingham, Nottingham, UK

Apr. 2014 - Jan. 2018: PhD Student at University of Nottingham, Nottingham, UK

Aug. 2016 – Oct. 2016: Visiting PhD at University of Pisa, Italy

Jul. 2015 – Dec. 2015: PhD Placement at Cummins Generator Technologies Stamford, UK

AREAS OF INTEREST AND EXPERTISE

- Electrical Machines and Drives
 - Analysis, modelling and simulation
 - Multi-physics optimisations
 - Reliability-oriented design of electric drives
 - Multi-phase windings
 - Effects of fast switching power electronics devices on insulation systems of electrical machines
 - High-frequency modelling of converters-cable-motors systems
 - Sustainability-oriented design of electrical machines
 - Use and research of advanced sustainable materials for machine windings and cores
 - Design, modelling and optimisation rare-earth permanent magnet free electrical machines, e.g. electrically-excited machines for industrial and transport applications

PUBLICATIONS

80 International peer-reviewed publications, 20 IEEE Journals (Q1), 2 IEEE Magazines (Q1), 1 IET Journal (Q1), 4 MDPI Journal (Q2). H-Index 19 (Google).

Google scholar profile: <https://scholar.google.com/citations?user=2DbNT6MAAAAJ&hl=it&oi=ao>

RESEARCH MANAGEMENT

- Leader of 2 Work Packages for H2020 Clean Sky 2 project “**AUTO-MEA**” (**AUTO**ated **M**anufacturing of wound components for next generation **E**lectrical **m**Achines)
- Representative for the University of Modena of the Technical Committee of the MSCA-RISE - Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE) project DORNA - Development of high reliability motor drives for next generation propulsion applications
- Tutor or co-tutor of 5 PhD students at the University of Modena and Reggio Emilia (current).
- Co-tutor of 2 PhD students at the University of Nottingham (past).

TEACHING ACTIVITIES

- Motorvehicle University of Emilia Romagna - “Electric Propulsion Systems” for 1st year MSc students in Advanced Automotive Engineering (current)
- University of Modena and Reggio Emilia - “Electric Drives” for 2nd year MSc students in Vehicle Engineering (current)
- University of Modena and Reggio Emilia - “High Performance Electric Drives and Laboratory” for 2nd year MSc students in Electronics Engineering (past)
- University of Modena and Reggio Emilia - “Advanced Electrical Machines for Green Transportation” for 2nd year MSc students in Vehicle Engineering (past)

- Free University of Bozen, “Industrial Automation and Mechatronics/Electric drives and machines” for 1st year MSc students in Mechanical and Logistic Engineering (current)
- Free University of Bozen, “Electric and hybrid mobility/Electric powertrains and batteries” for 1st year MSc students in Energy Engineering (past)

EDITORIAL ACTIVITIES

- Associate Editor of the IEEE Transactions on Transportation Electrification (current)
- Technical committee member as a special session chair for the special session “Hairpin Windings in Electrical Machines for Transportation” at ICEM'2022 – XXVth International Conference on Electrical Machines, Valencia (Spain), 5-8 September 2022.
- Technical program co-chair for the “Machine design and modelling” track at the 2021 IEEE Workshop on Electrical Machine Design, Control and Diagnosis (WEMDCD), 8-9 April 2021, Modena, Italy.
- Topic Editor of MDPI Electronics journal
- Technical committee member as a topic chair at the 2019 IEEE International Electric Machines & Drives Conference (IEMDC), 12-15 May 2019, San Diego (USA).
- Technical committee member as a special session chair for the special session “Ultra-Reliable Power Conversion for More Electric Transports” at IECON 2019 – 45th Annual Conference of the IEEE, Lisbon (Portugal), 14-17 October 2019.
- Reviewer for IEEE and MDPI Journals.

EDITORIAL AWARDS

- Star Reviewer of IEEE Transactions on Energy Conversion for 2021
- Outstanding Reviewer award at the 2020 IEEE International Conference on Electrical Machines (ICEM), 23rd-26th April 2021, Gothenburg, Sweden.
- Star Reviewer of IEEE Transactions on Energy Conversion for 2020

PAPER AWARDS

- Co-author of the scientific publication "Multi Three-Phase Hairpin Windings For Electrical Machine High Speed Application: Possible Implementations", awarded as Best Student Paper at the international 5th IEEE Workshop on Electrical Machine Design, Control and Diagnosis (WEMDCD), 8-9 April 2021.
- Co-author of the scientific publication "Improved Propulsion Motor Design for a Twelve Passenger All-Electric Aircraft", awarded as Best Student Paper at the international 5th IEEE Workshop on Electrical Machine Design, Control and Diagnosis (WEMDCD), 8-9 April 2021.
- Co-author of the scientific publication “Investigation of Resistivity Impact on AC Losses in Hairpin Conductors”, presented at the international 47th Annual Conference of the IEEE Industrial Electronics Society (IECON 2021), which was awarded Second Prize Paper Award of the Electrical Machines Technical Committee (EMTC) of the Industrial Electronics Society.
- Co-author of the scientific publication "Refined Structural Design and Thermal Analyses of a High-Speed Wound-Field Generator for the More Electrical Aircraft", awarded the Second Prize Best Student Paper at the international 6th IEEE Workshop on Electrical Machine Design, Control and Diagnosis (WEMDCD), 13-14 April 2023.
- Co-author of the scientific publication “Optimal Sizing of Hairpin Conductors in highway operation with PWM power supply”, awarded the First Prize Best Student Paper at the

international 6th IEEE Workshop on Electrical Machine Design, Control and Diagnosis (WEMDCD), 13-14 April 2023.

PATENTS

Owner as Inventor of the Chinese Patent CN112865376A (Application number CN202110020702.6), deposited by the University of Nottingham Ningbo, Ningbo, China, entitled “INTEGRAL DAMPING WINDING, ROTOR AND MOTOR”.