

Luigi Solimene



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- 🌐 PoliT0 Webpage
- 🌐 LinkedIn profile
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- 🎓 Google Scholar profile

Work experience

- 2023 – ···· 📌 **Assistant professor with time contract.** Energy Department, Politecnico di Torino.
- 2022 – 2023 📌 **Research assistant** Energy Department, Politecnico di Torino.

Education

- 2019 – 2022 📌 **Ph.D. in Electrical, Electronics and Communications Engineering**, Politecnico di Torino.
Thesis title: *Investigation of inductive components for power electronics applications*
- 2016 – 2019 📌 **M.Sc. in Electrical Engineering**, Politecnico di Torino.
Thesis title: *Theoretical and experimental analysis of ferrite inductors for applications in DC-DC converters.*
- 2013 – 2016 📌 **B.Sc. in Electrical Engineering**, Politecnico di Torino.
Thesis title: *Production and testing of traction lithium battery packs.*

Research Publications




Journal Articles

- 1 L. Solimene, F. Corti, S. Musumeci, F. J. López-Alcolea, A. Reatti, and C. S. Ragusa, “Experimental validation of magnetic control strategy in LCC-S compensated wireless power transfer systems,” en, *IET Power Electronics*, vol. 17, no. 8, pp. 919–929, 2024, ISSN: 1755-4543. 🔗 DOI: 10.1049/pe12.12718.
- 2 G. Lorenti, C. S. Ragusa, M. Repetto, and L. Solimene, “Data-Driven Constraint Handling in Multi-Objective Inductor Design,” en, *Electronics*, vol. 12, no. 4, p. 781, Jan. 2023, ISSN: 2079-9292. 🔗 DOI: 10.3390/electronics12040781.
- 3 L. Solimene, D. Cittanti, F. Mandrile, S. Musumeci, and R. Bojoi, “Optimal Air Gap Length Design in Powder Core Inductors,” *IEEE Transactions on Magnetics*, vol. 59, no. 11, pp. 1–5, Nov. 2023, ISSN: 1941-0069. 🔗 DOI: 10.1109/TMAG.2023.3289391.
- 4 L. Solimene, F. Corti, S. Musumeci, C. S. Ragusa, A. Reatti, and E. Cardelli, “Design and modelling of a controlled saturable inductor for an LCC-S compensated WPT system,” en, *Journal of Magnetism and Magnetic Materials*, vol. 564, p. 170 056, Dec. 2022, ISSN: 0304-8853. 🔗 DOI: 10.1016/j.jmmm.2022.170056.
- 5 L. Solimene, C. S. Ragusa, and S. Musumeci, “The role of materials in the optimal design of magnetic components for DC–DC converters,” en, *Journal of Magnetism and Magnetic Materials*, vol. 564, p. 170 038, Dec. 2022, ISSN: 0304-8853. 🔗 DOI: 10.1016/j.jmmm.2022.170038.
- 6 A. Canova, F. Freschi, L. Giaccone, M. Repetto, and L. Solimene, “Identification of Material Properties and Optimal Design of Magnetically Shielded Rooms,” en, *Magnetochemistry*, vol. 7, no. 2, p. 23, Feb. 2021, Number: 2 Publisher: Multidisciplinary Digital Publishing Institute, ISSN: 2312-7481. 🔗 DOI: 10.3390/magnetochemistry7020023.




- 7 S. Musumeci, L. Solimene, and C. S. Ragusa, "Identification of DC Thermal Steady-State Differential Inductance of Ferrite Power Inductors," en, *Energies*, vol. 14, no. 13, p. 3854, Jan. 2021, ISSN: 1996-1073. [DOI: 10.3390/en14133854](https://doi.org/10.3390/en14133854).
- 8 C. Ragusa, L. Solimene, S. Musumeci, *et al.*, "Computation of current waveform in ferrite power inductors for application in buck-type converters," en, *Journal of Magnetism and Magnetic Materials*, vol. 502, p. 166 458, May 2020, ISSN: 0304-8853. [DOI: 10.1016/j.jmmm.2020.166458](https://doi.org/10.1016/j.jmmm.2020.166458).

Conference Proceedings




- 1 G. Lorenti, C. S. Ragusa, M. Repetto, and L. Solimene, "Support Vector Classifier for Constraints Handling in the Design of Inductors for DC-DC Converters," in *2023 24th International Conference on the Computation of Electromagnetic Fields (COMPUMAG)*, May 2023, pp. 1–4. [DOI: 10.1109/COMPUMAG56388.2023.10411814](https://doi.org/10.1109/COMPUMAG56388.2023.10411814).
- 2 V. S. Meshram, F. Corti, L. Solimene, S. Musumeci, C. S. Ragusa, and A. Reatti, "Variable Inductor Control Strategy in LCC-S Compensated Wireless Power Transfer Application," in *2023 AEIT International Annual Conference (AEIT)*, Oct. 2023, pp. 1–6. [DOI: 10.23919/AEIT60520.2023.10330337](https://doi.org/10.23919/AEIT60520.2023.10330337).
- 3 C. Ragusa, L. Solimene, S. Musumeci, *et al.*, "Energy loss and constitutive equation of soft magnetic materials for broadband applications in power electronics," in *2023 IEEE International Magnetic Conference - Short Papers (INTERMAG Short Papers)*, May 2023, pp. 1–2. [DOI: 10.1109/INTERMAGShortPapers58606.2023.10228709](https://doi.org/10.1109/INTERMAGShortPapers58606.2023.10228709).
- 4 L. Solimene, F. Corti, S. Musumeci, A. Reatti, and C. S. Ragusa, "Class-E₂ Capacitive Wireless Power Transfer DC-DC Converter for LED Lighting Applications," in *2023 International Conference on Clean Electrical Power (ICCEP)*, ISSN: 2474-9664, Jun. 2023, pp. 652–656. [DOI: 10.1109/ICCEP57914.2023.10247374](https://doi.org/10.1109/ICCEP57914.2023.10247374).
- 5 L. Solimene, D. Cittanti, F. Mandrile, C. S. Ragusa, and R. Bojoi, "Optimum Air Gap Selection in Powder Core Inductors," in *2023 IEEE International Magnetic Conference - Short Papers (INTERMAG Short Papers)*, May 2023, pp. 1–2. [DOI: 10.1109/INTERMAGShortPapers58606.2023.10228525](https://doi.org/10.1109/INTERMAGShortPapers58606.2023.10228525).
- 6 V. Barba, L. Solimene, M. Palma, S. Musumeci, C. S. Ragusa, and R. Bojoi, "Modelling and Experimental Validation of GaN Based Power Converter for LED Driver," in *2022 IEEE International Conference on Environment and Electrical Engineering and 2022 IEEE Industrial and Commercial Power Systems Europe (EEEIC / I&CPS Europe)*, Prague, Czech Republic: IEEE, Jun. 2022, pp. 1–6, ISBN: 978-1-66548-537-1. [DOI: 10.1109/EEEIC/ICPSEurope54979.2022.9854660](https://doi.org/10.1109/EEEIC/ICPSEurope54979.2022.9854660).
- 7 L. Solimene, F. Corti, S. Musumeci, C. S. Ragusa, and A. Reatti, "Magnetic Control of LCC-S Compensated Wireless Power Transfer System," in *2022 International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM)*, Sorrento, Italy: IEEE, Jun. 2022, pp. 160–165, ISBN: 978-1-66548-459-6. [DOI: 10.1109/SPEEDAM53979.2022.9842241](https://doi.org/10.1109/SPEEDAM53979.2022.9842241).
- 8 L. Solimene, F. Corti, S. Musumeci, A. Reatti, and C. Ragusa, "Extended ZVS/ZCS operation of Class-E Inverter for Capacitive Wireless Power Transfer," in *2022 IEEE International Conference on Environment and Electrical Engineering and 2022 IEEE Industrial and Commercial Power Systems Europe (EEEIC / I&CPS Europe)*, Prague, Czech Republic: IEEE, Jun. 2022, pp. 1–6, ISBN: 978-1-66548-537-1. [DOI: 10.1109/EEEIC/ICPSEurope54979.2022.9854655](https://doi.org/10.1109/EEEIC/ICPSEurope54979.2022.9854655).
- 9 L. Solimene, F. Corti, S. Musumeci, A. Reatti, and C. S. Ragusa, "A controlled variable inductor for an LCC-S compensated Wireless Power Transfer system," in *IECON 2022 – 48th Annual Conference of the IEEE Industrial Electronics Society*, ISSN: 2577-1647, Oct. 2022, pp. 1–6. [DOI: 10.1109/IECON49645.2022.9968576](https://doi.org/10.1109/IECON49645.2022.9968576).
- 10 S. Musumeci, C. S. Ragusa, M. Palma, and L. Solimene, "Low-Voltage GaN FET in High Power Density Half-Bridge LED Driver," in *2021 AEIT International Annual Conference (AEIT)*, Oct. 2021, pp. 1–6. [DOI: 10.23919/AEIT53387.2021.9626936](https://doi.org/10.23919/AEIT53387.2021.9626936).

- 11 S. Musumeci, L. Solimene, C. Ragusa, M. Palma, and O. d. I. Barriere, "Saturable Inductor Modelling in GaN FETs Based Synchronous Buck Converter," in *2020 International Symposium on Power Electronics, Electrical Drives, Automation and Motion (SPEEDAM)*, Jun. 2020, pp. 396–401.  DOI: 10.1109/SPEEDAM48782.2020.9161961.
- 12 L. Solimene, S. Musumeci, and C. Ragusa, "Saturable Ferrite Inductor Parameters Obtained Through a Double Step Optimization," in *2020 55th International Universities Power Engineering Conference (UPEC)*, Sep. 2020, pp. 1–6.  DOI: 10.1109/UPEC49904.2020.9209887.
- 13 L. Solimene, C. Ragusa, S. Musumeci, O. de la Barriere, and F. Fiorillo, "Modeling of Saturable Inductors for Application in DC-DC Converters," in *2019 26th IEEE International Conference on Electronics, Circuits and Systems (ICECS)*, Nov. 2019, pp. 839–842.  DOI: 10.1109/ICECS46596.2019.8964948.





Research

- Research interests
-  Design of magnetic devices for electrical energy conversion.
 -  Characterization of soft magnetic materials.
 -  Wireless power transfer systems.

Teaching

- 2024 – ····  Circuit theory - *Head of the course*
- 2020 – ····  Applied electromagnetism - *Course collaborator*
- 2019 – 2024  Circuit theory - *Course collaborator*

Skills

- Languages  **Italian:** mother tongue
English: C1
- Coding  C, Python, Matlab, \LaTeX .
- Software  Microsoft Office, Matlab, Simulink, Pspice, Plecs, Comsol, CST, Solidworks.
- Misc.  Academic research, teaching, training.

Miscellaneous Experience

Awards and Achievements

- 2024  **Honorable Mention**, 1st IEEE PELS-Google-Enphase-Princeton MagNet Challenge.

Certification

- 2020  **Professional qualification in Engineering**. Section A.
- 2016  **IELTS**. Grade 7.