

Davide Cuneo

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Education

Jan 2023 – Apr 2026	Universita' degli studi di Napoli Federico II, Ph.D., Information Technology and Electrical Engineering – Naples, IT Involved in the Innovative Research Infrastructure of Applied Superconductivity (IRIS) project, focusing on the development, prototyping, and testing of instrumentation for high-temperature superconducting (HTS) cables and magnets.
Feb 2020 – Sep 2022	Universita' degli studi della Tuscia, DEIM, M.S. Mechanical Engineering – Viterbo, IT - Thesis: “Simulation and Optimisation of the distributor within ST40s flowing liquid lithium divertor” - Graduation mark: 110/110 with honors
Sep 2017 – Oct 2020	Universita' degli studi della Tuscia, DEIM, B.S. Industrial Engineering – Viterbo, IT - Thesis: “A personalized FEM model for reproducible measurement of antiinflammatory drugs in transdermal administration to knee” - Graduation mark: 107/110

Research Experience

Jun 2026 – current	FREIA Laboratory - Uppsala Universitet – Postdoctoral Researcher In charge of testing superconducting magnets for particle accelerators
Feb 2026 – Apr 2026	Magnetic Future - Area Science Park – Research Fellow - Numerical analysis of the behaviour of an HTS switch for flux pumps - Experimental validation of a dynamo-flux pump to power superconducting magnets
Mar 2024 – Mar 2025	Lawrence Berkeley National Laboratory (LBNL) – Ph.D. Fellow - Developed and validated an ultrasonic waveguide for quench detection and localization for high temperature superconducting cables and magnets - Designed, fabricated and tested the first HTS (CORC®) uni-layer magnet prototype for particle accelerators
Jun 2023 – Mar 2024	Istituto Nazionale di Fisica Nucleare Laboratori Nazionali di Frascati (INFN-LNF) – Ph.D. Fellow Carried out magnetic measurements for normal conducting magnets for particle accelerators using wire and coil based methods such as single-stretched wire, vibrating wire, rotating coil and hall probe
Aug 2022 – Sep 2022	Tokamak Energy Ltd – Research Intern Conducted CFD simulations over the distributor of the spherical tokamak ST40 divertor to characterize the dynamics of liquid lithium as a plasma facing component

Relevant Courses

Jan 2025 – Feb 2025	Superconducting Accelerator Magnets, United States Particle Accelerator School – Knoxville, TN - Covered accelerator physics fundamentals and superconducting magnet technology, including superconducting materials, conductor and cable design, magnetic field harmonics, coil configurations, mechanical design and stress analysis - Studied magnet stability, quench phenomena, detection and protection methods, field quality evaluation, and gained insights from historical examples and practical experiences in accelerator magnet applications
Jan 2025 – Feb 2025	Optimization and Machine Learning for Accelerators, United States Particle Accelerator School – Knoxville, TN - Covered optimization and machine learning techniques applied to particle accelerators, including optimization and classification methods, their relative strengths and limitations, and practical accelerator-related applications - Gained hands-on programming experience using Python-based open-source tools, particularly PyTorch, enabling direct application of these techniques to research problems
Jun 2024	Magnetic Systems for Accelerators, Detectors and Insertion Devices, United States Particle Accelerator School – Rohnert Park, CA Learned magnetics theory and implementation for the design of particle accelerator magnet systems
Nov 2023 – Dec 2023	Normal and Superconducting magnets, CERN Accelerator School – St. Polten, AU - Studied the state of the art technology for both normal and superconducting magnets for particle accelerators - Gained insights on magnet design, materials stability, fabrication and magnetic measurement techniques

Publications & Presentations

2021-2025

- **Cuneo, D.**, Rudeiros Fernández, J. L., Ferracin, P., Arpaia, P., Brouwer, L., Croteau, J.-F., D'Addazio, M., Esposito, A., Higley, H., Marchevsky, M., Saravanan, A., Wang, X. & Yan, Y. Development and testing of the first HTS uni-layer magnet prototype. *Superconductor Science and Technology*. Paper submitted for publication (2025).
- **Cuneo, D.**, Rudeiros Fernandez, J. L., Ferracin, P., Marchevsky, M., Esposito, A. & Arpaia, P. Design and implementation of an acoustic waveguide quench detection and localization sensor for the HTS Uni-layer magnet prototype. English. *Special Issue of IEEE Transactions on applied Superconductivity*, 5. Available at: [10.1109/TASC.2025.3627164](https://doi.org/10.1109/TASC.2025.3627164) (2025).
- Arpaia, P., **Cuneo, D.**, De Matteis, E., Esposito, A. & Ramos, P. Design and Uncertainty Analysis of an AC Loss Measuring Instrument for Superconducting Magnets. *Instruments* **9**, 8. Available at: [10.3390/instruments9020008](https://doi.org/10.3390/instruments9020008) (2025).
- Arpaia, P., **Cuneo, D.**, Esposito, A., Gilardi, A. & Ramos, P. M. Roadmap for Measurement and Applications: An Overview on Quench Detection Techniques for High-Temperature Superconducting Cables and Magnets. *IEEE Instrumentation & Measurement Magazine* **27**, 29–37. Available at: [10.1109/MIM.2024.10772016](https://doi.org/10.1109/MIM.2024.10772016) (2024).
- Trigilio, A., Balossino, I., Capuano, L., **Cuneo, D.**, Del Franco, M., Petrucciani, L., Sabbatini, L. & Selce, A. Measurements of hysteretic effects and eddy currents on a FeCo magnet for the design of a novel ion gantry. *Proc. IPAC'24*, 1766–1769. Available at: [10.18429/JACoW-IPAC2024-TUPS47](https://doi.org/10.18429/JACoW-IPAC2024-TUPS47).
- Vannozi, A., Armenti, G., Balossino, I., Capuano, L., Casamatta, A., **Cuneo, D.**, Iungo, F., Martelli, S., Petrucciani, L., Sabbatini, L., Sardone, F., *et al.* Magnetic measurements for Halbach-type permanent quadrupoles using a single-stretched wire system in *Proceedings of the 15th International Particle Accelerator Conference, IPAC 24*. Available at: [10.18429/JACoW-IPAC2024-THPS54](https://doi.org/10.18429/JACoW-IPAC2024-THPS54).
- Manzo, R., Arpaia, P., Balato, M., **Cuneo, D.**, Mancino, F., Minucci, S., Moccaldi, N. & Petrarca, C. *FEM-based Parametric Optimization of a Measurement Setup for Sensitivity Improvement in Insulin Absorption Assessment in 2024 IEEE International Instrumentation and Measurement Technology Conference (I2MTC) 2024*, 1–6. Available at: [10.1109/I2MTC60896.2024.10560806](https://doi.org/10.1109/I2MTC60896.2024.10560806).
- Arpaia, P., **Cuneo, D.**, Mancino, F. & Moccaldi, N. *A bioimpedance-based transducer for insulin bioavailability assessment after subcutaneous administration in 2022 IEEE International Instrumentation and Measurement Technology Conference (I2MTC) 2022*, 1–5. Available at: [10.1109/I2MTC48687.2022.9806567](https://doi.org/10.1109/I2MTC48687.2022.9806567).
- Arpaia, P., **Cuneo, D.**, Grassini, S., Mancino, F., Minucci, S., Moccaldi, N. & Sannino, I. A finite element model of abdominal human tissue for improving the accuracy in insulin absorption assessment: A feasibility study. *Measurement: Sensors* **18**, 100218. Available at: <https://doi.org/10.1016/j.measen.2021.100218> (2021).
- Arpaia, P., **Cuneo, D.**, Mancino, F., Minucci, S., Moccaldi, N. & Sannino, I. *Preliminary investigation of the impact of mechanical stresses on bioimpedance spectroscopy-based insuline bioavailability assessment in 2021 International Workshop on Impedance Spectroscopy (IWIS) 2021*, 52–55. Available at: [10.1109/IWIS54661.2021.9711756](https://doi.org/10.1109/IWIS54661.2021.9711756).

Skills

Software	ANSYS Workbench – Fluent & Structural, COMSOL Multiphysics, LabView, MATLAB, Python (for ML: Scikit-Learn, Keras), CREO Parametric, SolidWorks, LaTeX
Languages	Italian (Native), English (C1 self assessed)

Scholarships & Awards

Sep 2025	U.S. Particle Accelerator School Scholarship
Aug 2022	FuseNet Scholarship for MSc Internship in Nuclear Fusion

Society Memberships

2023 | Gruppo Misure Elettriche ed Elettroniche (GMEE) – Graduate Student Member