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Matteo Lanza

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ABOUT ME

PhD student at Università di Modena e Reggio Emilia, Dipartimento di Scienze Fisiche Informatiche e Matematiche, via G. Campi 213/a 41125 Modena, Italy
Affiliated to Istituto Nanoscienze - CNR, S3, Via G. Campi 213/A, Modena, Italy

EDUCATION AND TRAINING

PHD in Physics - Physics and Nanoscience (XL cycle)

Università degli studi di Modena e Reggio Emilia - UNIMORE [10/2024 – Current]

Website: https://www.unimore.it/ | **Field(s) of study:** Experimental Physics | **Thesis:** Low temperature experiments for qubit encoding with Molecular Spins

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Master Degree in Physics - Experimental Nanoscience and Quantum Technologies

Università degli studi di Modena e Reggio Emilia - UNIMORE [09/2022 – 10/2024]

Website: https://www.unimore.it/ | **Final grade:** 110 Cum Laude | **Thesis:** Design and testing of protocols for quantum sensing of magnetic fields with molecular spins

- **Master Thesis Project:** Protocols for quantum sensing with molecular spins, *Supervisor: Marco Affronte,* https://personale.unimore.it/rubrica/dettaglio/affronte, Co-supervisor: *Claudio Bonizzoni*, https://personale.unimore.it/rubrica/dettaglio/cbonizzoni.
- **Knowledge of the English language** developed during lectures, exams and communication with classmates.
- **Teamwork skills** developed during laboratory experiences and during the group writing of the reports.
- **Knowledge of laboratory instruments and apparatus** developed during the courses (Laboratory of electron microscopy and holography; Laboratory of nanostructures, Nano-mechanics; Magnetism, spintronics and quantum technologies; Synchrotron radiation: basics and applications, Advanced spectroscopic and imaging methods).
- **Programming Python knowledge** further developed during the master thesis project.

Bachelor Degree in Physics

Università degli studi di Modena e Reggio Emilia - UNIMORE [10/2017 – 04/2022]

Website: https://www.unimore.it/ | **Final grade:** 103/110 | **Thesis:** Cu and Cu/MgO Nanoparticles films: physical synthesis, morphology and optical properties

- **Bachelor Thesis Project:** physical synthesis of nanoparticles, XPS analysis and optical measurement. *Supervisor: Sergio D'Addato,* https://personale.unimore.it/rubrica/dettaglio/daddato.
- **Laboratory work skills** related to the development and execution of experiments acquired through the courses (Laboratory of Physics I; Laboratory of Physics II; Laboratory of Physics III; Spectroscopy; Electronics and data acquisition).
- **Programming knowledge related to data analysis** acquired through the courses (Introduction to programming for Physicists, Numerical Calculus, Laboratory of computational physics).
- **Teamwork skills** acquired during the laboratory experiences.

High School Scientific Diploma - Applied Sciences

Liceo Scientifico Statale "Manfredo Fanti" [2012 – 2017]

Final grade: 78/100

PUBLICATIONS

[2026]

Quantum sensing of time-dependent magnetic signals with molecular spins Lanza, M.; Bonizzoni, C.; Mironova, O.; Santanni, F.; Nicolini, A.; Ghirri, A.; Cornia, A.; Affronte, M., Phys. Rev. Applied **25**, 034045

[2022]

Morphology and Optical Properties of Gas-Phase-Synthesized Plasmonic Nanoparticles: Cu and Cu/MgO D'Add ato, S.; Lanza, M.; Boiani, A.; Spurio, E.; Pelatti, S.; Paolicelli, G.; Luches, P. Morphology and Optical Properties of Gas-Phase-Synthesized Plasmonic Nanoparticles: Cu and Cu/MgO. *Materials* **2022**, *15*, 4429

CONFERENCES, WORKSHOPS, SCHOOLS AND PROJECTS

[03/02/2026 – 06/02/2026]

Magnet 2026 - IX Italian conference on magnetism

Attended as a PhD student to deliver an oral communication (15 min) concerning the results obtained on the detection of time-dependent magnetic fields with the use of molecular spins.

[19/09/2025 – 29/09/2025]

EXPO Osaka 2025 - Emilia Romagna regional project with ART-ER

Attended as a PhD student to present a brief oral pitch (5 min) at the Italy Pavillion of the 2025 Osaka EXPO regarding my PhD activity. The presentation is framed in the context of a regional project involving the universities of Emilia-Romagna for sharing the doctoral activities of the region.

[17/08/2025 – 22/08/2025]

spinQueST 2025 - Spin Based Quantum Science and Technology Conference

Attended as a PhD student to deliver an oral communication (25 min) regarding the experiments performed for quantum sensing of time-dependent magnetic fields with the use of molecular spins at cryogenic temperatures.

[18/05/2025 – 23/05/2025]

ESMolNa 2025 - 18th European School on Molecular Nanoscience

Attended as a PhD to present the results obtained during the first months of my work. Contributed with an oral communication (10 min) regarding the use of molecular spins for quantum sensing.

[20/02/2025 – 21/02/2025]

MolSQIT 2025 - Molecular Spins for Quantum Information Technologies

Attended the workshop as a PhD student to see the state of the art of molecular spins in the field of quantum information technologies and to discuss with the experts in the field.

[04/07/2024 – 05/07/2024]

ICM 2024 - International Conference on Magnetism

Attended as a student to deepen my knowledge on the latest development in the field of molecular magnetism. Particular attention was given to the sessions concerning the use of molecular spins in spintronics, quantum sensing and quantum information.

WORK EXPERIENCE

Tutoring at UNIMORE

[03/2026 – 04/2026]

Course details

- Total number of hours: 20
- Supervisor: Stefano Frabboni, https://personale.unimore.it/rubrica/dettaglio/frabboni
- Course code: [MN2-01712], disciplinary scientific sector: FIS/01

Activity

- Assistance during experiments of laboratory of physics I (pendulum, spring, standing waves,...)
- Assistance in the use of IgorPro software for data analysis and images production
- Answering student's questions

Tutoring at UNIMORE

[03/2025 – 04/2025]

Course details

- Total number of hours: 20
- Supervisor: Stefano Frabboni, https://personale.unimore.it/rubrica/dettaglio/frabboni
- Course code: [MN2-01712], disciplinary scientific sector: FIS/01

Activity

- Assistance during experiments of laboratory of physics I (pendulum, spring, standing waves,...)
- Answering student's questions

Tutoring at UNIMORE

[10/2024 – 02/2025]

Course details

- Total number of hours: 20
- Supervisor: Alice Ruini, https://personale.unimore.it/rubrica/dettaglio/aruini
- Course code: [MN2-00420], disciplinary scientific sector: FIS/03

Activity

- Selecting and solving exercises of Physics II (electromagnetism and optics) for the preparation of students enrolled in chemistry at UNIMORE.
- Management of the Teams platform (uploading tutoring material, answering student's questions).

Online tutoring at UNIMORE

[10/2023 – 06/2024]

Course details

- Total number of hours: 25
- Supervisor: Elena Degoli, https://personale.unimore.it/rubrica/dettaglio/degoli
- Course code: [IG-008], disciplinary scientific sector: FIS/03

Activity

- Selecting and solving exercises of Physics II (electromagnetism and optics) for the preparation of students enrolled in management and mechatronics engineering at UNIMORE.
- Management of the Teams platform (uploading tutoring material, scheduling meetings, answering student's questions).

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING B2 **READING** B2 **WRITING** B2

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

Programming languages

Python: basic knowledge, data analysis and plotting (Pandas, Matplotlib) / Matlab: basic knowledge / Fortran: basic knowledge / C++: basic knowledge

Markup Languages

LaTex: ability to write a complex text (Thesis)

Operative Systems

Windows: OS navigation, file management, Office suite / Linux: OS navigation, file management, Unix Commands

DRIVING LICENCE

Driving Licence: AM
Driving Licence: B