

FEDERICO RAPUZZI

Curriculum Vitae

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ISTRUZIONE

PhD Course (PhD) | 11/2024 - present

University of Modena and Reggio Emilia, Italy

Title: Low dimensional material-enabled probes for particle-beam detection.

Supervisor: Prof. Francesco Rossella

Master of Science | AA.2021/2022 – AA.2022/2023

University of Modena and Reggio Emilia, Italy

16/04/2024 Laurea Magistrale Internazionale in Physics, 110/110

Title: Implementation of a confocal microscopy set-up for magnetic resonance spectroscopy of nitrogen-vacancy centers in diamond.

Supervisor: Prof. Marco Affronte; Co-Supervisor: Dott. Alberto Ghirri

Bachelor of Science | AA.2017/2018 -AA. 2020/2021

University of Modena and Reggio Emilia, Italy

10/12/2021 Laurea Triennale in Fisica

Title: Implementazione di un sistema per misure di risonanza magnetica su impurezze di spin in diamante

Supervisor: Prof. Marco Affronte; Co-Supervisor: Dott. Alberto Ghirri

ARTICLES

- Baridi, G., Liaquat, A., Martini, L., Nappi, L., Rapuzzi, F., Clericò, V., ... & Rossella, F. (2026). Graphene-Based Chemical Field-Effect Transistors: Impact of Electric Double Layer Model and Quantum Capacitance on Na⁺ Detection Capabilities. *Micromachines*, 17(4), 433.
- Baridi, G., Liaquat, A., Martini, L., Rapuzzi, F., Clericò, V., Amado, M., ... & Rovati, L. (2026). Computational Simulation of a Surface Plasmonic Resonance Biosensor for β 2-Microglobulin Based on Electrolyte-Gated Graphene. *Sensors*, 26(9), 2815.
- Baridi, G., Liaquat, A., Martini, L., Rapuzzi, F., Herath, H. M. K. G. A., Abidi, E. H., ... & Rossella, F. (2026). Multiscale Molecular Dynamics and Quantum–Electrostatic Modelling of Graphene Electric Double-Layer Transistors for β 2-Microglobulin Biosensing. *Electronics*, 15(13), 2837.
- Baridi, G., Liaquat, A., Rapuzzi, F., Herath, H. M. K. G. A., Maschio, M. C., Abidi, E. H., ... & Rossella, F. (2026). Nonlinear Optical Detection of β 2-Microglobulin Exploiting Graphene-Enhanced Terahertz Third-Harmonic Generation.

CONFERENCES, WORKSHOP AND SCHOOLS

8-11/09/2026 **EU-FIB.net workshop 2026**, Marseille, France, oral contribution

Engineering a Novel Carbon Nanotubes-Based Detector for Low-Perturbation Monitoring of Diluted Ion Beams

5-10/07/2026 **ICNMTA2026**, Sendai, Japan, oral contribution

Carbon nanotube-based low perturbation detector for diluted Ion Beams

4-5/07/2026 **Pre-school ICNMTA2026** Sendai, Japan

15-16/06/2026 **Annual Workshop on Ion and Particle Beams 2026**, Munich, Germany, oral contribution

A Low-Perturbation Carbon Nanotube Detection System for diluted Ion Beams

24-27/03/2026 **IOCO2026**, Online, oral contribution

Advanced nanomanipulation and nanofabrication for silicon photonic waveguide-based polarization modulators enabled by semiconductor nanomaterials

18-21/11/2025 **Bi-nationa conference on Detector R&D INFN IN2P3**, Paris, France, poster contribution

Carbon nanotube assemblies for low-perturbation detection of diluted ion beams

7-11/07/2025 **FISMAT25**, Venice, Italy, Poster contribution

Low dimensional material-enabled probes for particle-beam detection

23-27/06/2025 **XXXIII Bonaudi-Chiavassa International School on Particle Detectors**, Cogne, Italy, Poster contribution

Carbon nanotube assemblies for the low-perturbation detection of diluted ion beams

TEACHING ACTIVITIES

03-06/2025 Tutor activity

University of Modena and Reggio Emilia, Italy

Laboratorio di Fisica II, Laurea Triennale in Fisica, Prof. Valentina De Renzi

03-06/2026 Tutor activity

University of Modena and Reggio Emilia, Italy

Laboratorio di Fisica II, Laurea Triennale in Fisica, Prof. Valentina De Renzi

8-14/07/2026

Liceo statale "D.Manin", Cremona, Italy

Delivered remedial courses to high school students (grades 9–12 / 1st to 4th year).

DISSEMINATION

3/02/2026 **Speaker**

A tu per tu con la scienza, UniMoRE, Modena

29/01/2026 **Speaker**

Stage studenti delle superiori di modena e Reggio emilia, UniMoRE, Modena

10/06/2025 **Speaker**

A tu per tu con la scienza, UniMoRE, Modena

4/02/2025 **Speaker**

A tu per tu con la scienza, UniMoRE, Modena