



Serena Bruzzesi

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📅 Date of birth: 26/10/1999 📍 Place of birth: Macerata, Italy 🇮🇹 Nationality: Italian

WORK EXPERIENCE

INFN Roma Tor Vergata

City: Roma | Country: Italy

[01/10/2024 – 31/03/2025] **6-month scholarship at INFN**

- training on electronics, gases and **RPC** (Resistive Plate Chambers) functioning;
- training on RPC **front-end electronics**;
- RPC chamber testing at General Tecnica - S.R.L. (dependence of current on voltage, gas flow test);
- data analysis using oscilloscope, **Python** and **ROOT** languages;
- using **LabView** for High Voltage System Application (in particular to control and see acquisitions on a triple RPC apparatus and for testing at General Tecnica - S.R.L.);
- analysis on cosmic rays tower at BB5 at **CERN**;
- implementation of a cosmic ray tracking algorithm in a RPC tower.

City: Macerata | Country: Italy

school internship at the Cronache Maceratesi newspaper

EDUCATION AND TRAINING

Master Thesis: Phase transitions in QCD with dynamical fermions: condensation of thermal monopoles as the pion mass varies and its dependence on smoothing

[01/01/2025 – Current]

University of Pisa. Supervisor: Massimo D'Elia

City: Pisa | Country: Italy | Field(s) of study: Theoretical Physics

[2022 – Current] **Master's degree in Theoretical Physics**

University of Pisa

City: Pisa | Country: Italy |

[21/10/2024 – 23/10/2024] **National Training Course: "Preparazione e utilizzo delle miscele gassose per i rivelatori di particelle"**

INFN Roma Tor Vergata

City: Roma | Country: Italy |

[2018 – 2022] **Bachelor's degree in Physics**

University of Pisa

City: Pisa | Country: Italy | Final grade: 110/110 | Thesis: Neutrinos Oscillations

[2018] **Scientific School Diploma**

Liceo Scientifico Galileo Galilei, Macerata

| Final grade: 95/100

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING B2 READING B2 WRITING B2

SPOKEN PRODUCTION B2 SPOKEN INTERACTION B2

Spanish

LISTENING A1 READING A1 WRITING A1

SPOKEN PRODUCTION A1 SPOKEN INTERACTION A1

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

SKILLS

C, C++, Python, MATLAB, LabVIEW, Arduino, TINA | Basics knowledge of HTML, CSS, JavaScript, Root, Fortran | ability to use Windows and Linux environments | ROOT & pyROOT

PROJECTS

Creation of calibration software (fit with ellipsoid, quaternion formalism and manual calibration) and 3D tracking for the MPU6050 sensor

Modelling the internal resistance of PN junction diodes

Estimation of the maximum frequency via DFT with relative statistical uncertainty

Quantitative analysis of signal anharmonicity and introduction of estimator

UNIVERSITY EXAMS

Exams taken during Master's degree

- Theoretical Physics 1;
- Theoretical Physics 2;
- Statistical Physics;
- General Relativity;
- Quantum Chromodynamics;
- Non-perturbative aspects of Quantum Field Theory;
- Early Universe Cosmology;
- Fundamental Interactions.

Other attended courses

- Effective Field Theories;
- Standard Model and Beyond;
- Fundamentals of radiation-matter interaction;
- Nuclear Physics;
- Astroparticles;
- General Astrophysics;
- Gravitational theories;
- Particle Dark Matter;
- Numerical Methods For Physics.

Exams taken during Bachelor's degree

- Mathematical Analysis 1;

- Physics 1;
- Geometry 1;
- Informatics (where I acquired skills in the C language);
- Laboratory 1 (where I acquired skills in the Python language and data analysis);
- English test B2;
- Group Theory;
- General Chemistry;
- Physics 2;
- Laboratory 2 (where I acquired skills in Python and Arduino languages and in data analysis);
- Classical Mechanics;
- Mathematical Methods 1;
- Complements of Mathematical Analysis;
- Physics 3;
- Quantum Mechanics;
- Mathematical Methods 2;
- Structure of Matter;
- Digital Technologies (where I acquired skills in MATLAB, LabVIEW, Arduino, Python, TINA and data analysis);
- Advanced Quantum Mechanics.