europass

Serena Bruzzesi

Nationality: Italian **Date of birth:** 26/10/1999 **Place of birth:** Macerata, Italy

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WORK EXPERIENCE

INFN Roma Tor Vergata – Roma, Italy

City: Roma | **Country:** Italy

6-month scholarship at INFN

[01/10/2024 – 31/03/2025]

- 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.

– Macerata, Italy

City: Macerata | **Country:** Italy

school internship at the Cronache Maceratesi newspaper

EDUCATION AND TRAINING

Master Thesis: Phase transitions in QCD with dynamical fermions: study along the diagonal of the Columbia plot and condensation of thermal monopoles as the pion mass varies

University of Pisa. Supervisor: Massimo D'Elia [01/01/2025 – Current]

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

Master's degree in Theoretical Physics

University of Pisa [2022 – Current]

City: Pisa | **Country:** Italy

National Training Course: "Preparazione e utilizzo delle miscele gassose per i rivelatori di particelle"

INFN Roma Tor Vergata [21/10/2024 – 23/10/2024]

City: Roma | **Country:** Italy

Bachelor's degree in Physics

University of Pisa [2018 – 2022]

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

Scientific School Diploma

Liceo Scientifico Galileo Galilei, Macerata [2018]

Final grade: 95/100

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English	Spanish
LISTENING B2 **READING** B2 **WRITING** B2	**LISTENING** A1 **READING** A1 **WRITING** A1
SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B2	**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.

Exams I intend to take (attended courses)

- Numerical Methods For Physics.

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.

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.

DRIVING LICENCE

Driving Licence: AM

Driving Licence: B