Alberto Spalvieri

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MyDrive

Education

"La Sapienza" University of Rome *September 2020 - July 2023*
B.Sc. in Physics

- Weighted average: 29.84/30
- Final grade: 110/110 cum laude

ETH Zurich *September 2023 - ongoing*
M.Sc. in Physics

- Completed Courses: Quantum Field Theory I, Quantum Information Processing I: Concepts, Quantum Information Processing II: Implementations, General Relativity, Theoretical Cosmology, Quantum Information Theory, Quantum Information Tools for Gravity, Medieval and Early Modern Science and Philosophy.
- Weighted average: 5.67/6

Education Projects

Lattice Gas Simulation *link*

- Simulation of a lattice (reticular) gas using different models and conditions.
- Tools Used: C for the numerical simulations, Processing (Java) for graphical animations

Simulation of a Blast Wave *link*

- Numerical and graphical analysis of an explosion described by Taylor-Sedov-von Neumann's model, with the production of a short thesis.
- Tools Used: C for the numerical simulations, Python for graphical analysis, Processing (Java) for graphical animations

Subtraction of the Background in Non-linear Raman Spectra with Deep Learning *link*

- Development of a U-Net-based neural network for noise and background removal in stimulated Raman spectra, with college colleague Massimo Solians. Final production of a short thesis.
- Tools Used: Python for data manipulation and analysis, pythorc (Python library) for machine learning coding

Bachelor's thesis - The problem of locality in quantum mechanics *link*

Supervisor: Prof. Fabio Sciarrino.
A 30-page dissertation on the problem of locality in quantum mechanics. In particular it contains: an introduction to the concept of locality and the Bell's formalism; the Einstein-Podolsky-Rosen paradox; Bell inequalities and consequences; Aspect's first experiment and the Big Bell Test.

"Proseminar" - Introduction to Modified Gravity models at large scales *link*

Supervisor: Achilleas Lazopoulos;
Tutor: Giovanni Tambalo.
A 45 minutes presentation on modified gravity theories and the different screening mechanisms.

Currently working on Mater Thesis in Quantum Information Theory group at ETH (Prof. Renner's group) on Quantum Information for Gravity

Supervisor: Renato Renner;
Supervisor: Flaminia Giacomini;
Tutor: Sébastien Garmier.
Constructing a toy model to inquire entanglement and LOCC theorem for non-factorizable Hilbert spaces.

Writing Projects

Short Stories collection - "Storie Tese" (Italian) *Catalogue page*

I wrote a collection of 7 sci-fi and fantastic short stories which have been published in July 2023 by publishing house "Montag".

Writer for ETH student magazine "Polykum" (English) *Archive* *Website*

I am writing for student magazine "Polykum", which publishes 3 issues each semester. I write short fiction stories and popular science articles.

I am currently working on my first novel and always love to dedicate some of my free time to train my creative and educational writing.

Skills

Language skills: Italian native speaker, English C1 (IELTS - 7.5).
Programming languages: C, C++, Python, Java (Processing), Javascript, Visual Basic, Matlab, Arduino, LaTex.
Software skills: OfficeSuite, DaVinci Resolve 18, Photoshop.
Technical skills: basic electronics, data analysis abilities, welding, ability to analyze and write technical content.
Soft skills: creative writing, teaching scientific and mathematical subjects, problem solving, quick learning, basic musical knowledge and level of guitar/bass playing.