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Martino Barbieri
Theoretical Physics student
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I am enrolled in a Master's Degree programme in Theoretical Physics at the University of Pisa, and in the *Corso Ordinario* in Physics at Scuola Normale Superiore. I completed my Bachelor's thesis under the supervision of Prof. A. Sagnotti, and my *Colloquium* at SNS under Prof. A. Sagnotti and Prof. N. Mekareeya. Both works focused on the role of symmetries and anomalies in Quantum Field Theory. Currently working on my Master's thesis under Prof. R. Argurio, investigating the IR behaviors of $D = 2$ Gauge Theories and their mapping to CFTs or TQFTs.

I have a strong interest in String Theory and Gauge Theories, both in their phenomenology and in the underlying mathematical structures.

SELECTED COURSES I HAVE TAKEN

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| * Physics | * Math |
| ▶ Statistical Physics
Prof. A. Sagnotti | ▶ Complements of Mathematics
(Set Theory, Topology, Calculus):
Proff. F. Flandoli, G. Mennucci, A. Ferraguti |
| ▶ Effective Field Theory
Proff. E. Trincherini,
G. Pimentel, B. Bucciotti | ▶ Representation Theory
Prof. A. Vistoli, G. Dall'Ara |
| ▶ Standard Model and Beyond
(in prog) Prof. D. Buttazzo | ▶ Differential Geometry
Prof. R. Benedetti |
| ▶ Quantum Chromodynamics
Prof. E. Meggiolaro | |
| ▶ Numerical Methods for
Physics (Monte Carlo
simulations)
Prof. C. Bonati | |
| ▶ QFT in Curved Spacetime
(in prog) Prof. G. Pimentel | |
| ▶ An introduction to string theory
and its spectrum
Prof. C. Markou | |

EDUCATION

- * **Corso Ordinario in Physics** • *Research-oriented postgraduate program with rigorous selection* Oct '21 – Sep '26
Scuola Normale Superiore • Pisa
 - ▶ Participation in PLANCKS 2023: ranked second.
- * **Master's Degree in Theoretical Physics** Sep '24 – Sep '26
University of Pisa
 - ▶ Focused on Quantum Field Theory (primarily in Fundamental Interactions but also in Condensed Matter Physics) and on Gravity. Some of the courses I have taken are reported above.
 - ▶ Thesis project under the supervision of Prof. R. Argurio: «IR behavior of $D = 2$ Gauge Theories» (work in progress).
- * **Bachelor's Degree in Physics** • *110/110 cum laude* Sep '21 – Jun '24
University of Pisa
 - ▶ Thesis project under the supervision of Prof. A. Sagnotti:
[Slides] (in Italian) «Symmetries and Anomalies — From QED to the Standard Model, and recent developments»
- * **High school** • *100/100 cum laude* Sep '16 – Jun '21
Liceo Scientifico op. Scienze Applicate • I.I.S. Galilei – Crema (CR)
 - ▶ Physics Olympiad: EuPhO gold medal and IPhO bronze medal

EXPERIENCE

- * **4th year Colloquium at SNS** • *Generalized Symmetries and Anomalies* May '25
Supervisors: Proff. A. Sagnotti (SNS) and N. Mekareeya (University of Milan-Bicocca)
 - ▶ [Slides]
- * **XXI Avogadro Meetings on Strings, Supergravity and Gauge Theories (conference)** • *Attendee* Dec '25
Catania, Italy
- * **Gravity, Strings and Supersymmetry Breaking (conference)** • *Attendee* Apr '25
SNS

* **Final project of “Numerical methods for Physics”**

Oct ‘25

University of Pisa • Prof. C. Bonati

- [Module A Report] Critical properties of the Ising model
- [Module B Report] Thermodynamics and energy gaps of the anharmonic oscillator
- [GitHub repository]

* **Final exam of “Introduction to Experimental HEP”**

Jul ‘24

SNS • Prof. F. Ligabue

- [Slides] (in Italian)

* **Lecturer at “Stage di Fisica a Pisa” • initiative which aims to train high-school students for the Physics Olympiad**

Scuola Normale Superiore • Pisa

- ed. 2024: «Ottica 2» (Wave Optics and Quantum Mechanics)
- ed. 2025: «Matematica 2» (Techniques for solving ODE and Introduction to Representation Theory)
- ed. 2026: «Relatività 1» (Introduction to Special Relativity)

I served as coordinator of the initiative for academic years 2023–2024 and 2024–2025.

* **Collaborazioni SNS–Galilei Pacinotti**

a.y. 2024–2025

SNS – High School “Galilei–Pacinotti” • Pisa

- Delivered supplementary lessons on Special Relativity as part of an enrichment program run in collaboration with the Scuola Normale Superiore.