Claudia Rella

Nationality	Italian
Place and date of birth	Rome, Italy - 19 December 1996
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Education

2015-2018 **BSc in Physics** at Department of Physics, University of Rome La Sapienza, Italy.
- Degree awarded on 25/07/2018 with final grade *Summa cum Laude*
- Thesis on *Photonic Bloch Waves* under supervision of Prof. Fabio Sciarrino
- Attainment of extra-curricular exams in the fields of Algebra and Geometry at Department of Mathematics

2018-2019 **MSc in Mathematical and Theoretical Physics** at Mathematical Institute and Department of Physics, University of Oxford, UK.
- Degree awarded on 11/07/2019 with final grade *Distinction*
- Thesis on *Motivic Amplitudes* under supervision of Prof. Francis Brown
- Affiliation with St John's College

2019-2020 **Master Class in Mathematical Physics** at Department of Mathematics, University of Geneva, Switzerland.
- Excellence Fellow of the National Centre of Competence in Research SwissMAP.

Research Experience and Internships

2017, Sep - Nov **Research Intern** at INFN (National Institute of Nuclear Physics), LNF (National Laboratories of Frascati), Italy. Participation in the experimental project PADME (Positron Annihilation into Dark Matter Experiment) under supervision of Prof. Mauro Raggi. Implementation of a Monte Carlo simulation of a prototype of the Small-Angle Calorimeter using software Geant4. Characterisation of the performance of a single PbF_2 crystal attached to a Hamamatsu R13478UV photomultiplier tube in terms of energy and timing resolutions.

2019, Jul **Software Engineering Intern** at Pangea Formazione, Rome, Italy. Participation in a Machine Learning project finalised to developing a predictive model for planned preventative maintenance of large infrastructures equipped with alarm nets, fitting the specific automation processes of the network Open Fiber. Project implemented with Bayesian Neural Networks in Deep Learning.

Academic Distinctions

2015 **Scholarship for Undergraduate Applicants in Mathematics** by INdAM (National Institute of High Mathematics), declined as a consequence of the enrolment to the BSc in Physics.

2015-2018 **Scholarship Deserving Student** by University of Rome La Sapienza. Exemption from University Tuition Fees for the duration of the BSc in Physics.

2016-2018 **Excellence Program** by Department of Physics, University of Rome La Sapienza. Completion of four Advanced Modules under individual supervision:
- Numerical Semigroups (Prof. Valentina Barucci)
- Real Analysis (Prof. Eugenio Montefusco)
- Riemannian Geometry (Prof. Gabriele Mondello)

- Lie Groups and Lie Algebras (Prof. Paolo Papi)

2017 **Summer Student Scholarship** by INFN.

2018 **Award to Best Student of the Course in Nuclear and Subnuclear Physics** held at University of Rome La Sapienza in 2017-18, jointly offered by University of Rome La Sapienza and INFN.

2018 **Scholarship Torno Subito** by Department of Education, Research and University, Organization for the Right to Higher Education in Regione Lazio, Italy.

2019 **Degree Prize for Distinction** by St. John's College, University of Oxford.

2019 **Excellence Scholarship** by NCCR SwissMAP.

Conferences, Workshops, Seminars and Schools

2017, May **Attendee** of the *Workshop Quantum Foundations: The physics of "what happens" and the measurement problem,* INFN-LNF, Frascati, Italy.

2017, Nov **Attendee** of the *Workshop Quantum Foundations: New frontiers in testing quantum mechanics from underground to the space*, INFN-LNF, Frascati, Italy.

2017, Dec **Speaker** at *PADME Weekly Meeting*, INFN-LNF, Frascati, Italy. Invited talk on the Geant4 Monte Carlo simulation of PADME's Small-Angle Calorimeter.

2018, Sep **Visiting student** at CERN (European Organization for Nuclear Research), Switzerland.

2019, Feb **Attendee** of the *School on Modular Forms, Periods and Scattering Amplitudes*, ETH-ITS, Zurich, Switzerland.

2019, Aug **Speaker** at the *Conference on Representation Theory and Integrable Systems*, ETH, Zurich, Switzerland. Contributed talk on Motivic Amplitudes.

2019, Sep **Attendee** of the 6^{th} *SwissMAP General Meeting*, Villars-sur-Ollon, Switzerland.

2019, Nov **Speaker** at the *Seminar on Lie Groups and Moduli Spaces*, University of Geneva, Switzerland. Invited talk on Motivic Amplitudes. (*)

2020, Feb **Attendee** of the *SwissMAP Winter School in Mathematical Physics*, Les Diablerets, Switzerland. (*)

Publications

2019, Mar *Characterization and Performance of PADME's Cherenkov-Based Small-Angle Calorimeter*, with the PADME Collaboration, A. Frankenthal at al., published in Nuclear Instruments and Methods in Physics Research A, (vol. **919**, 1 March 2019, pages 89-97), https://doi.org/10.1016/j.nima.2018.12.035.

Teaching Experience

2018, Mar - May Lectures on Riemannian Geometry to the students of the Excellence Program in Physics at Department of Mathematics, University of Rome La Sapienza, Italy, on dates 27 March and 11 May 2018. Topics of the lectures:

- Introduction to Riemannian Geometry
- Riemannian Manifolds with Non-Positive Curvature
- Jacobi Fields and Conjugate Points

- Cartan-Hadamard Theorem
- Killing Fields

2019, Oct — Lecture on Topological Surfaces to the students of the Master Class in Mathematical Physics at Department of Mathematics, University of Geneva, Switzerland, on date 02 October 2019. Topics of lecture:
- Introduction to Topological Spaces
- Hausdorff Separation Axiom
- Connectedness and Compactness
- Abstract Topological Manifolds and Surfaces
- Normal Forms for Surfaces
- Real Projective Plane $\mathbb{R}\mathbf{P}^2$ in detail

Work Experience

2018, Nov — Marker of the Mathematics Admission Test 2018. Employed by Mathematical Institute, University of Oxford, UK, on dates 10-11 November 2018.

Memberships

Since 2018 — Alumna of University of Rome La Sapienza
Since 2019 — Invited Fellow of Italian Physics Society (SIF)
Since 2019 — Alumna of University of Oxford
Since 2019 — Excellence Fellow of NCCR SwissMAP
Since 2019 — Mentee at LeadTheFuture

IT Knowledge

Operating Systems	OS, Windows, Linux
Programming Languages	C, C++, HTML, PEARL, R, Python
Typesetting Systems	LaTeX
Data Analysis Software	MATLAB, ROOT, gnuplot
Simulation Software	Geant4
Machine Learning	Deep Learning, Bayesian Neural Networks

Language Skills

Italian — Native
English — Level C2 (CEFRL) certified by Cambridge ESOL Level 3 Certificate released by University of Cambridge on 10 Oct 2013.

Artistic Skills

Classical ballet student from 2005 to 2015.
Piano student with mainly classical and jazz interests since 2012.

(*): expected