

# Claudia Rella

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## EDUCATION

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Doctor of Philosophy in Mathematical Physics 2020 – present  
*Department of Theoretical Physics, University of Geneva, Switzerland*  
Thesis: Supervised by Prof Marcos Mariño.  
Affiliations: ERC SyG ReNewQuantum – NCCR SwissMAP.

Master of Science in Mathematical and Theoretical Physics – Distinction 2018 – 2019  
*Mathematical Institute and Department of Physics, University of Oxford, UK*  
Thesis: *Motivic Amplitudes*. Supervised by Prof Francis Brown.  
Affiliations: St John's College.

Bachelor of Science in Physics (\*) – Summa cum Laude 2015 – 2018  
*Department of Physics, Sapienza University of Rome, Italy*  
Thesis: *Photonic Bloch Waves*. Supervised by Prof Fabio Sciarrino.  
(\*): Extra-curricular coursework in Mathematics at the Department of Mathematics.

## RESEARCH EXPERIENCE AND INTERSHIPS

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Research Internship in High Energy Physics Phenomenology 2020, Jul – Sep  
*CERN, Geneva, Switzerland*

Master Class in Mathematical Physics 2019, Sep – 2020, Jun  
*University of Geneva and NCCR SwissMAP, Geneva, Switzerland*

Business Consulting Internship 2019, Jul – Aug  
*Pangea Formazione, Rome, Italy*

Research Internship in Experimental Particle Physics 2017, Sep – Nov  
*PADME @ INFN – LNF, Frascati, Italy*

## OTHER ACTIVITIES

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Cooperation Associate of the Department of Theoretical Physics 2022, May – present  
*CERN, Switzerland*

Junior Member of the Scientific Council of the SRS Conference Centre 2020, Sep – present  
*SwissMAP Research Station (SRS), Switzerland*

Mentee at LeadTheFuture Mentorship Program 2019, Sep – present  
*LeadTheFuture, Italy*

## PUBLICATIONS

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(\*) Strong-weak duality and quantum modularity of resurgent topological strings on local  $\mathbb{P}^2$  2024, Mar  
*With V. Fantini, to appear*

On the structure of wave functions in complex Chern–Simons theory 2023, Dec  
*With M. Mariño, arXiv:2312.00624*  
<https://doi.org/10.48550/arXiv.2312.00624>

Resurgence, Stokes constants, and arithmetic functions in topological string theory 2023, Nov  
*Commun. Number Theory Phys. 17 (2023), No. 3, pp. 709-820*  
<https://dx.doi.org/10.4310/CNTP.2023.v17.n3.a4>

Searching for muonphilic dark sectors with proton beams 2022, Aug  
 With B. Döbrich and T.-T. Yu, *Phys. Rev. D* 106 (2022) 3, 035023  
<https://doi.org/10.1103/PhysRevD.106.035023>

An introduction to motivic Feynman integrals 2021, Mar  
*SIGMA* 17 (2021), 032, 56 pages  
<https://doi.org/10.3842/SIGMA.2021.032>

Characterization and performance of PADME's Cherenkov-based small-angle calorimeter 2019, Mar  
 With A. Frankenthal et al., *Nucl. Instrum. Methods Phys. Res. A* 919 (2019) 89-97  
<https://doi.org/10.1016/j.nima.2018.12.035>

## TALKS AND SEMINARS

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(\*) On the structure of wave functions in complex Chern–Simons theory 2024, Apr  
*String Theory Seminar, CERN, Switzerland*

(\*) Strong-weak duality and quantum modularity of resurgent topological strings 2024, Mar  
*Mathematics Seminar, IHES, France*

Resurgence and Calabi–Yau geometries 2024, Feb  
*Workshop on Positive Geometry in Particle Physics and Cosmology, MPI MiS, Germany*

Strong-weak duality and quantum modularity of resurgent topological strings 2023, Dec  
*Geometry and Physics Seminar, University of Sheffield, UK*

Strong-weak duality and quantum modularity of resurgent topological strings 2023, Nov  
*QM Research Seminar, Centre for Quantum Mathematics, SDU, Denmark*

Resurgence, Stokes constants, and arithmetic functions in topological string theory 2023, Jul  
*29<sup>th</sup> Nordic Congress of Mathematicians with EMS, Aalborg, Denmark*

Resurgence, Stokes constants, and arithmetic functions in topological string theory 2023, Apr  
*Mathematics Seminar, IHES, France*

Resurgence, Stokes constants, and arithmetic functions in topological string theory 2023, Mar  
*Physical Mathematics Seminar, University of Geneva, Switzerland*

Stokes constants in topological string theory 2022, Nov  
*Workshop on Mathematics of Beyond All-Orders Phenomena, University of Cambridge, UK*

An introduction to motivic amplitudes 2019, Nov  
*Seminar on Lie Groups and Moduli Spaces, University of Geneva, Switzerland*

Motivic scattering amplitudes 2019, Aug  
*Conference on Representation Theory and Integrable Systems, ETH Zürich, Switzerland*

Monte Carlo simulation of PADME's small-angle calorimeter 2017, Dec  
*PADME Weekly Seminar, INFN – LNF, Italy*

## TEACHING EXPERIENCE

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Teaching Assistant on Feynman Integrals and Number Theory 2024, Jan  
*Winter School in Mathematical Physics – SwissMAP Research Station, Les Diablerets, Switzerland*

Lecturer on Topological Surfaces 2019, Oct  
*Master Class in Mathematical Physics – Department of Mathematics, University of Geneva, Switzerland*

Lecturer on Riemannian Geometry 2018, Mar – May  
*Excellence Program in Physics – Department of Mathematics, Sapienza University of Rome, Italy*

## ACADEMIC ACHIEVEMENTS AND SCHOLARSHIPS

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Excellence Fellowship <i>NCCR SwissMAP, Switzerland</i>	2019 – 2020
Degree Prize for Distinction <i>St John's College, University of Oxford, UK</i>	2019
Torno Subito Scholarship <i>Department of Education, Research, and University, Lazio, Italy</i>	2018 – 2019
Best Student Award for the Course in Nuclear and Subnuclear Physics <i>Sapienza University of Rome and INFN, Italy</i>	2018
Summer Student Scholarship <i>INFN, Italy</i>	2017
Excellence Program <i>Department of Physics, Sapienza University of Rome, Italy</i>	2016 – 2018
Deserving Student Scholarship <i>Sapienza University of Rome, Italy</i>	2015 – 2018

## SKILLS

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Languages	Italian (native), English
Programming Languages	C, C++, Python, R
Data Analysis Languages	MATLAB, ROOT, Gnuplot
Symbolic Calculus Languages	Mathematica, SageMath, PARI/GP
Version-control Systems	Git
Simulation Software	Geant4

(\*) : forthcoming