

Xavier Kervyn

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Born on 18 May 2001. Belgian

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CURRENT RESEARCH INTERESTS

String theory, (flat space) holography, asymptotic symmetries, scatt. amplitudes and integrability

EDUCATION

TU München & Ludwig-Maximilians-Universität Munich, Germany 10/2023
Master of Science in Theoretical and Mathematical Physics 08/2025

- Erasmus+ semester at the **University of Copenhagen**, Denmark (Fall/Winter 2024/25)

Peterhouse, University of Cambridge Cambridge, United Kingdom 10/2022
Master of Advanced Study (MASt) in Applied Mathematics 06/2023

- Part III essay: *BMS Symmetries of Gravitational Scattering* (Distinction, set by [Dr. P. Mitra](#))

Ecole Polytechnique Fédérale de Lausanne Lausanne, Switzerland 09/2019
Bachelor of Science in Physics 08/2022

- Final year at **ETH Zürich**, Switzerland in the frame of the Swiss-Mobility program

ACADEMIC RESEARCH EXPERIENCE

Università degli Studi di Padova Padova, Italy & remote 07/2023
Visiting Researcher, Theoretical Physics 06/2024

- Research on integrability in $\text{AdS}_3/\text{CFT}_2$ under [Prof. A. Sfondrini](#)
- Funding: Fondation du Domaine de Villette

University of Cambridge Cambridge, United Kingdom 12/2022
Part III student, Department of Applied Mathematics and Theoretical Physics 08/2023

- Essay on the *BMS Symmetries of Gravitational Scattering*, expanded into a [review article](#)
- Funding: Swiss Study Foundation & Colbianco Stiftung

CERN CMS collaboration Meyrin, Switzerland 06/2022
Undergraduate Researcher, ETH Zürich High-Energy Physics group 07/2022

- Research under [Dr. S. Pigazzini](#) (ETHZ/CERN) on the upgraded CMS ECAL for HL-LHC
- Funding: ETH Zürich, Department of Physics

ETH Zürich Zürich, Switzerland 09/2021
Undergraduate Researcher, Exoplanets and Habitability group 12/2021

- Research under [Prof. S.P. Quanz](#) on the LIFE space mission (LIFEsim simulation software)

PUBLICATIONS & PREPRINTS [[Inspire HEP](#) / [Google Scholar](#)]

1. X. Kervyn, *BMS Symmetries of Gravitational Scattering*, Aug., 2023. 10.48550/arXiv.2308.12979

CONFERENCES, SCHOOLS AND WORKSHOPS ATTENDED (*scheduled)

*School on asymptotic symmetries and flat holography, Galileo Galilei Inst., Florence, Italy [link]	05/2025
*Frontiers in Gravity, Niels Bohr Institute, Copenhagen, Denmark [link]	09/2024
*Quantum Gravity [...] Workshops, Nordita, Stockholm, Sweden [link, online]	08/2024
*Celestial Holography Summer School, Perimeter Institute, Waterloo, Canada [link, online]	07/2024
Strings 2024, CERN, Meyrin, Switzerland [link]	06/2024
Carollian Physics and Holography, ESI, Vienna, Austria [link]	04/2024
Workshop [...] in analysis and mathematical physics, LMU, Munich, Germany [link]	10/2023
Celestial 2023, University of Warsaw, Warsaw, Poland [link]	08/2023
Integrability, Dualities and Deformations, Durham University, Durham, UK [link]	07/2023
Young Researchers Integrability School & Workshop, Durham University, Durham, UK [link]	07/2023
Eurostrings 2023, Universidad de Oviedo, Gijon, Spain [link]	04/2023
Young Physicists Forum 2022, ETH Zürich, Zürich, Switzerland [link]	05/2022

CONTRIBUTED TALKS & SEMINARS (*scheduled)

Seminar on Scattering Amplitudes, LMU Munich Spinor-Helicity Formalism, Twistor Theory and Scattering Amplitudes	05/2024
Seminar on Generalized Symmetries in QFT, LMU Munich Gauging of Discrete Higher Form Symmetries in non-Abelian Yang-Mills theory	12/2023
DAMTP Part III Seminar Series, University of Cambridge Gravitational Scattering and Covariant Phase Space methods in Gravity	03/2023
DAMTP Part III Seminar Series, University of Cambridge Holography and Twistor methods in AdS_5	12/2022
Group Seminar, ETH Zürich HEP group & CERN CMS collaboration Towards an automatized analysis framework for the upcoming HL-LHC CMS ECAL upgrade	07/2022
LIFEsim Seminar, ETH Zürich Exoplanets and Habitability Group Characterisation of the impact of non-perfect nulls on the detectable planet population by LIFE	12/2021

OUTREACH (*scheduled)

Online Seminar, Swiss Study Foundation Organisator, peer event – “The future of CERN and High-Energy Physics”	05/2024
Online Seminar, Swiss Study Foundation Organisator & speaker, peer event – “The role of Symmetries in Physics”	12/2023
Website, online Built a website to share online resources in mathematics and physics with like-minded students	2022–...
Classroom Presentation, Lycée Dominique Villars Presenting my curriculum and advertising STEM university studies to high-school students	2019–...

TEACHING EXPERIENCE

Volunteer Tutor remote	06/2022
It Takes a Village / Village Book Builders <ul style="list-style-type: none">1:1 weekly online tutoring sessions with a 13yo. child in Mukono, Uganda (10 months)	03/2023

SKILLS

Languages: French (native); English, German (work proficiency)

Programming: C++ (OOP), Python (NumPy, Pandas, Matplotlib, Seaborn, Plotly.express, SciPy)

Data Analysis: Python (advanced), MATLAB (intermediate), Microsoft Excel (elementary)

Scientific work: L^AT_EX (Overleaf), Mathematica, scientific writing, funding search and application

Selected Coursework

- **Theoretical physics:** QFT; GR; SUSY; (Super)String Theory & AdS/CFT; Generalized Symmetries; Instantons & Black Holes; TQFT; Scattering Amplitudes in QFT
- **Mathematics:** Differential Geometry; Lie groups & Symmetries
- **Computer Science:** Object-Oriented Programming in C++ & Python; Computational Physics

SELECTED AWARDS, GRANTS & SCHOLARSHIPS

Erasmus+ Scholarship – <i>Ludwig-Maximilians-Universität Munich</i>	05/2024
€600/month, 4 months. Awarded to support an exchange semester at the University of Copenhagen	
College Prize in Applied Mathematics – <i>Peterhouse, University of Cambridge</i>	12/2023
£300. Awarded in recognition of my academic achievements	
Retrospective Scholarship in Mathematics – <i>Peterhouse, University of Cambridge</i>	12/2023
£125. Awarded in recognition of my academic achievements	
Research Grant – <i>Fondation du Domaine de Villette</i>	06/2023
CHF 5'000. Supporting research and attendance to conferences in the summer 2023	
Annual Scholarship – <i>Swiss Study Foundation</i>	11/2022
CHF 20'000. Financial support for master studies at the University of Cambridge	
Excellence Scholarship – <i>Colbianco Stiftung</i>	08/2022
CHF 2'000. Financial support for master studies at the University of Cambridge	
Swiss Mobility Program grant – <i>Ecole Polytechnique Fédérale de Lausanne</i>	09/2021
CHF 1'500. Supporting an exchange year at ETH Zurich	

ACADEMIC REFERENCES

- **Prof. Alessandro Sfondrini** (*Project supervisor*)
Dipartimento di Fisica e Astronomia "Galileo Galilei" - DFA, via F. Marzolo 8, Padova, Italy.
Email: alessandro.sfondrini@unipd.it / alessandro@ias.edu. Phone: +39 49 827 71 13
- **Dr. Prahar Mitra** (*Cambridge Part III essay setter*)
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Postbus 94485, 1090 GL Amsterdam, Netherlands. Email: p.mitra@uva.nl. Phone: +31 20 525 50 03