

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

- Thesis Advisor: [Prof. Stephan Stieberger](#) (Max-Planck Institute for Physics)
- Erasmus+ exchange semester at the **University of Copenhagen**, Denmark

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* ([Dr. Prahar Mitra](#), Distinction)
- Graduated with First Class Honours (Merit). Awarded 3 scholarships and 3 prizes

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

- Final year at **ETH Zürich**, Switzerland (Swiss-Mobility program)
- Awarded a fellowship from the Swiss Study Foundation and e-fellows.net

ACADEMIC RESEARCH EXPERIENCE

Max-Planck Institute for Physics Garching, Germany & remote 09/2024
Graduate Researcher / Master Thesis, MPI String Theory Group –present

- Research on string amplitudes and flat space holography; twisted intersection theory
- Funding: Fondation du Domaine de Villette

Niels Bohr Institute Copenhagen, Denmark 09/2024
Visiting Student, Theoretical High-Energy Physics –present

- Research on correlation functions in SUSY gauge theories with defects;
 $\mathcal{N} = 4$ SYM, ABJM theory & AdS/CFT; superconformal bootstrap; superspace formalism
- Advisors: [Prof. Charlotte Kristjansen](#) and [Dr. Adam Chalabi](#)
- Study project on AdS/CFT under [Prof. Niels Obers](#). Grade: 12/12.
- Funding: LMU Erasmus+ Scholarship, Fondation du Domaine de Villette

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

- Research on integrability in string theory and $\text{AdS}_3/\text{CFT}_2$, Thermodynamic Bethe Ansatz
- Supervisors: [Prof. Alessandro Sfondrini](#) and [Dr. Davide Polvara](#)
- 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. Simone Pigazzini](#) (ETHZ/CERN) on the new HL-LHC CMS ECAL
- Funding: ETH Zürich, Department of Physics

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

- Research under [Prof. Sascha Quanz](#) on the LIFE space mission (LIFEsim software)
- Funding: Swiss-Mobility Program

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
*Infrared Surprises of Scattering Amplitudes, CERN, Meyrin, Switzerland [link]	05/2025
*Physics of Machine Learning & ML for Physics, Nordita, Stockholm, Sweden [link , <i>online</i>]	01/2025
Frontiers in Gravity, Niels Bohr Institute, Copenhagen, Denmark [link]	09/2024
PhD School: "Towards Gravity", Nordita, Stockholm, Sweden [link , <i>online</i>]	08/2024
Celestial Holography Summer School, Perimeter Institute, Waterloo, Canada [link , <i>online</i>]	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 2023, 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

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	
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	03/2023
<ul style="list-style-type: none"> • 1:1 weekly online tutoring sessions with a 13yo. child in Mukono, Uganda (10 months) 	
INDUSTRY & NON-ACADEMIC EXPERIENCE	
Research Analyst Munich, Germany	11/2023
180 Degrees Consulting Munich	02/2024
<ul style="list-style-type: none"> • Team manager. Carrying out research and market analysis; punctual support to consulting teams • Blueprint for the transition of fashion companies to a circular economy in the DACH region 	
Recovery Team Leader Lausanne, Switzerland	09/2020
EPFL Rocket Team	07/2021
<ul style="list-style-type: none"> • Managed a team of 10 students, coordinated the project with other subsystems • Test/manufacturing procedures; parachutes, altimeter and ejection, drogue chute for ‘Bella Lui II’ • 1st place at EuRoc 2021, 2nd at the 2021 Spaceport America Cup (category SRAD-10K) 	
TECHNICAL SKILLS	
Languages: French (native); English, German (full work proficiency); Norwegian, Danish (basics)	
Programming: C++ (OOP), Python (NumPy, Pandas, Matplotlib, Seaborn, Plotly.express, SciPy)	
Data Analysis: Python (advanced), MATLAB (intermediate), Microsoft Excel (elementary)	
Scientific work: L ^A T _E X (Overleaf), Mathematica, scientific writing, funding search and application	

SELECTED AWARDS, GRANTS & SCHOLARSHIPS

Research Grant – <i>Fondation du Domaine de Villette</i> CHF 5'000. Supporting graduate research in Munich and Copenhagen in 2024/2025	10/2024
Erasmus+ Scholarship – <i>Ludwig-Maximilians-Universität Munich</i> €600/month, 5 months. Awarded to support an exchange semester at the University of Copenhagen	05/2024
College Prize in Applied Mathematics – <i>Peterhouse, University of Cambridge</i> £300. Awarded in recognition of my academic achievements	12/2023
Retrospective Scholarship in Mathematics – <i>Peterhouse, University of Cambridge</i> £125. Awarded in recognition of my academic achievements	12/2023
Research Grant – <i>Fondation du Domaine de Villette</i> CHF 5'000. Supporting research and attendance to conferences in the summer 2023	06/2023
Greta Burkill Fund award – <i>Peterhouse, University of Cambridge</i> £300. Supporting attendance to conferences	03/2023
Bruckmann Fund award – <i>Peterhouse, University of Cambridge</i> £300. Supporting extracurricular travels	03/2023
Cross Keys – <i>Peterhouse Cross Keys</i> Awarded for my sporting achievements with CUH&H (cross-country, athletics)	01/2023
Annual Scholarship – <i>Swiss Study Foundation</i> CHF 20'000. Financial support for master studies at the University of Cambridge	11/2022
Excellence Scholarship – <i>Colbianco Stiftung</i> CHF 2'000. Financial support for master studies at the University of Cambridge	08/2022
Swiss Mobility Program grant – <i>Ecole Polytechnique Fédérale de Lausanne</i> CHF 1'500. Supporting an exchange year at ETH Zurich	09/2021
Baccalaureate Merit Award – <i>Région Provence-Alpes Côte d'Azur</i> Awarded for achieving the highest distinction at the French Baccalaureate	07/2019
GH2A Athlete Award – <i>Gap Hautes Alpes Athletisme</i> €120. Awarded for my sporting achievements throughout the 2017-18 season (cross-country, athletics)	07/2018
Prix Maupassant de la Jeune Nouvelle – <i>Assoc. des Membres d'Or de la Palme Académique</i> Literary prize, essay on WWI	07/2016

ACADEMIC REFERENCES

- **Prof. Alessandro Sfondrini** (*Padova project advisor*)
Email: alessandro.sfondrini@unipd.it
- **Dr. Prahar Mitra** (*Cambridge Part III essay setter*)
Email: p.mitra@uva.nl