

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
<ul style="list-style-type: none">• MSc. thesis @ Max-Planck Institute, supervised by Prof. Stephan Stieberger (in progress)• 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
<ul style="list-style-type: none">• Part III essay: <i>BMS Symmetries of Gravitational Scattering</i> (Distinction, set by Dr. Prahar Mitra)	
Ecole Polytechnique Fédérale de Lausanne Lausanne, Switzerland	09/2019
Bachelor of Science in Physics	08/2022
<ul style="list-style-type: none">• Final year at ETH Zürich, Switzerland in the frame of the Swiss-Mobility program	

ACADEMIC RESEARCH EXPERIENCE

Max-Planck Institute for Physics Garching, Germany & remote	08/2024
Student Assistant, MPI String Theory Group	–present
<ul style="list-style-type: none">• MSc. thesis; research in string theory, flat space holography and amplitudes	
Università degli Studi di Padova Padova, Italy & remote	07/2023
Visiting Researcher, Theoretical Physics	06/2024
<ul style="list-style-type: none">• Research on integrability in $\text{AdS}_3/\text{CFT}_2$ under Prof. Alessandro 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
<ul style="list-style-type: none">• Essay on the <i>BMS Symmetries of Gravitational Scattering</i>, 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
<ul style="list-style-type: none">• 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
<ul style="list-style-type: none">• Research under Prof. Sascha Quanz on the LIFE space mission (LIFEsim simulation software)	

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
PhD School: “Towards Gravity”, 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	03/2023
<ul style="list-style-type: none">1:1 weekly online tutoring sessions with a 13yo. child in Mukono, Uganda (10 months)	

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
£800. 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.
- Dr. Prahar Mitra** (*Cambridge Part III essay setter*)
Room C4.202, Science Park 904, Institute for Theoretical Physics, University of Amsterdam,
Postbus 94485, 1090 GL Amsterdam, Netherlands. Email: p.mitra@uva.nl.

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