

Xavier Kervyn

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Born on 18 May 2001. Belgian

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RESEARCH INTERESTS

Keywords: string theory, asymptotic symmetries, integrability, twistor theory, flat space holography.
Also interested in applying tools from theoretical physics to the field of theoretical neuroscience.

ACADEMIC RESEARCH EXPERIENCE

Università degli Studi di Padova Padova, Italy & remote 07/2023
Visiting Researcher, Theoretical Physics 11/2023

- Research on integrability in AdS/CFT ([Prof. Alessandro Sfondrini](#), Padova/IAS Princeton)
- Publication of our results expected at the start of 2024
- 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

- Part III essay expanded into a review article, uploaded to arXiv: [2308.12979](https://arxiv.org/abs/2308.12979)
- Funding: Swiss Study Foundation, Colbianco Stiftung

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

- Work under [Dr. Simone Pigazzini](#) (ETHZ/CERN) on the upgraded HL-LHC CMS ECAL
- Test of the upgraded ECAL; [Python package](#) to automate the analysis of experiments
- Funding: ETH Zürich – Department of Physics

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

- Work under [Prof. Sascha Quanz](#) on the LIFE space mission (LIFEsim simulation software)
- Study of the impact of imperfect nulling on the detection yield of the mission (code in Python)

EDUCATION

TU München & Ludwig-Maximilians-Universität Munich, Germany 10/2023
Elite Master Course in Theoretical and Mathematical Physics -present

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](#))

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

- Final year at **ETH Zürich** in the frame of the 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)

*Strings 2024, CERN, Switzerland [link]	06/2024
Workshop [...] in analysis and mathematical physics, Munich, Germany [link]	10/2023
Advanced school on [...] celestial holography (Celestial 2023), Warsaw, Poland [link]	08/2023
Integrability, Dualities and Deformations 2023, Durham, UK [link]	07/2023
Young Researchers Integrability School & Workshop 2023, Durham, UK [link]	07/2023
Eurostrings 2023, Gijon, Spain [link]	04/2023
Young Physicists Forum 2022, ETH Zürich, Switzerland [link]	05/2022

CONTRIBUTED TALKS & SEMINARS

Generalized Symmetries in QFT Seminar, LMU Munich	12/2023
Gauging of Discrete Higher Form Symmetries in non-Abelian Yang-Mills theory	
DAMTP Part III Seminar Series, University of Cambridge	03/2023
Gravitational Scattering and covariant phase space methods in Gravity	
DAMTP Part III Seminar Series, University of Cambridge	12/2022
Holography and Twistor methods in AdS ₅	
Group Seminar, ETH Zürich HEP group & CERN CMS collaboration	07/2022
Towards an automatized analysis framework for the upcoming HL-LHC CMS ECAL upgrade	
LIFEsim Seminar, ETH Zürich Exoplanets and Habitability Group	12/2021
Characterisation of the impact of non-perfect nulls on the detectable planet population by LIFE	

OUTREACH

Online Seminar, Swiss Study Foundation	12/2023
Peer event – “The role of Symmetries in Physics”	

TEACHING EXPERIENCE

Volunteer Tutor, Village Book Builders (remote)	
• 1:1 weekly online tutoring sessions for 10 months with a 13yo. child in Mukono, Uganda	2022-23

INDUSTRY EXPERIENCE

Research Analyst Munich, Germany	11/2023
180 Degrees Consulting Munich	-present
• Team manager. Carrying out research and market analysis; punctual support to consulting teams	
• Blueprint for the transition of fashion companies to circular economy in the DACH region	
Consulting Workshop Zürich, Switzerland	05/2022
Roland Berger	
• One of 20 students selected from top Swiss universities to take part to the program	
• Case study: product portfolio transformation, strategies in the industrial market	
Recovery Team Leader Lausanne, Switzerland	09/2021
EPFL Rocket Team	07/2022
• 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)	

SKILLS

Languages: French (native); English, German (full working proficiency); Spanish, Norwegian (beginner)

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, Mathematica, scientific writing, funding search and application

AWARDS, GRANTS & SCHOLARSHIPS

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	
Elite Netzwerk Membership – <i>Elite Netzwerk Bayern</i>	10/2023
Awarded upon admission to the Elite MSc. in Theoretical and Mathematical Physics	
Research Grant – <i>Fondation du Domaine de Villette</i>	06/2023
CHF 5'000. Supporting research and attendance to conferences in the summer 2023	
Greta Burkill Fund award – <i>Peterhouse, University of Cambridge</i>	03/2023
£300. Supporting attendance to conferences	
Bruckmann Fund award – <i>Peterhouse, University of Cambridge</i>	03/2023
£300. Supporting extracurricular travels	
Cross Keys Membership – <i>Peterhouse Cross Keys</i>	01/2023
Awarded for my sporting achievements with CUH&H (cross-country, athletics)	
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	
Online Scholarship – <i>e-fellows.net</i>	06/2022
Awarded for my (extra)curricular achievements	
Swiss Study Foundation Fellowship – <i>Swiss Study Foundation</i>	05/2022
Awarded for my (extra)curricular achievements	
Swiss Mobility Program grant – <i>Ecole Polytechnique Fédérale de Lausanne</i>	09/2021
CHF 1'500. Supporting an exchange year at ETH Zurich	
Baccalaureate Merit Award – <i>Région Provence-Alpes Côte d'Azur</i>	07/2019
Awarded for achieving the highest distinction at the French Baccalaureate	
GH2A Athlete Award – <i>Gap Hautes Alpes Athletisme</i>	07/2018
€120. Awarded for my sporting achievements throughout the 2017-18 season (cross-country, athletics)	
Prix Maupassant de la Jeune Nouvelle – <i>Assoc. des Membres d'Or de la Palme Académique</i>	07/2016
Literary prize, awarded for an essay on the First World War	

ACADEMIC REFERENCES

- **Prof. Alessandro Sfondrini** (*Project supervisor*)
Dipartimento di Fisica e Astronomia "Galileo Galilei" - DFA, via F. Marzolo 8, Padova, Italy.
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- **Dr. Prahar Mitra** (*Cambridge Part III essay setter*)
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