

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 fascinating field of neuroscience.

ACADEMIC RESEARCH EXPERIENCE

- | | |
|---|----------|
| University of Cambridge & LMU Munich remote | 11/2023 |
| Independent graduate research (no official affiliation) | -present |
| <ul style="list-style-type: none">• Reading on twistor theory, twisted holography and ambitwistor strings under S. Heuveline | |
| Università degli Studi di Padova Padova, Italy & remote | 07/2023 |
| Visiting Researcher, Theoretical Physics | 11/2023 |
| <ul style="list-style-type: none">• Research on integrability in AdS/CFT (Prof. Alessandro Sfondrini, Padova/IAS Princeton)• 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">• Part III essay expanded into a review article, uploaded to arXiv: 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 |
| <ul style="list-style-type: none">• 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 |
| <ul style="list-style-type: none">• 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 | 08/2025 |
| 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> (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 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)

*Amsterdam String Workshop, Amsterdam, Netherlands [link]	06/2024
*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 , <i>Village Book Builders</i> (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> £300. Awarded in recognition of my academic achievements	12/2023
Restrospective Scholarship in Mathematics – <i>Peterhouse, University of Cambridge</i> £125. Awarded in recognition of my academic achievements	12/2023
Elite Netzwerk Membership – <i>Elite Netzwerk Bayern</i> Awarded upon admission to the Elite MSc. in Theoretical and Mathematical Physics	10/2023
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 Membership – <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
Online Scholarship – <i>e-fellows.net</i> Awarded for my (extra)curricular achievements	06/2022
Swiss Study Foundation Fellowship – <i>Swiss Study Foundation</i> Awarded for my (extra)curricular achievements	05/2022
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, awarded for an essay on the First World War	07/2016

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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