

Xavier Kervyn

Max-Planck-Institut für Physik, Office A.3.31, Boltzmannstr. 8, 85748 Garching, Germany
Born in May 2001. Belgian | xavier.kervyn@mpp.mpg.de | xavierkervyn.github.io/

CURRENT RESEARCH INTERESTS

String theory, (flat space) holography, scattering amplitudes, conformal bootstrap, twistor theory.

ACADEMIC EMPLOYMENT

Max Planck Institute for Physics Garching, Germany & remote	09/2024
Graduate Researcher, MPI/MPP String Theory Group	09/2025
– Master’s thesis, advised by Dr. Stephan Stieberger	

EDUCATION

Ludwig-Maximilians- & Technische Universität München Munich, Germany	10/2023
Master of Science in Theoretical and Mathematical Physics	–present
Peterhouse, University of Cambridge Cambridge, United Kingdom	10/2022
Master of Advanced Study in Applied Mathematics	06/2023
Ecole Polytechnique Fédérale de Lausanne Lausanne, Switzerland	09/2019
Bachelor of Science in Physics	08/2022

SELECTED AWARDS, GRANTS & SCHOLARSHIPS

Research Grant – Fondation du Domaine de Villette	2023/25
2 × CHF 5’000. Supporting graduate research in Padova, Munich and Copenhagen from 2023-2025	
Erasmus+ Scholarship – Ludwig-Maximilians-Universität Munich	05/2024
5 × €600. Awarded to support an exchange semester at the University of Copenhagen	
College Prize in Applied Mathematics – Peterhouse, University of Cambridge	12/2023
£300. Awarded in recognition of my academic achievements	
Retrospective Scholarship in Mathematics – Peterhouse, University of Cambridge	12/2023
£125. Awarded in recognition of my academic achievements	
Greta Burkill Fund award, Bruckmann Fund award – Peterhouse, University of Cambridge	03/2023
2 × £300. Supporting attendance to conferences	
Annual Scholarship – Swiss Study Foundation	11/2022
CHF 20’000. Financial support for master studies at the University of Cambridge	
Excellence Scholarship – Colbianco Stiftung	08/2022
CHF 2’000. Financial support for master studies at the University of Cambridge	
Fellowship – Swiss Study Foundation & e-fellows.net	05/2022
Awarded for exceptional academic achievements and leadership potential	
Swiss Mobility Program grant – Ecole Polytechnique Fédérale de Lausanne	09/2021
CHF 1’500. Supporting an exchange year at ETH Zurich	
Baccalaureate Merit Award – Région Provence-Alpes Côte d’Azur	07/2019
€400. Awarded for achieving the highest distinction at the French Baccalaureate	

PUBLICATIONS & PREPRINTS [[Inspire HEP](#) / [Google Scholar](#); *=under review] (author ordering is alphabetical in hep-th)

- [1] X. Kervyn and S. Stieberger, *High Energy String Theory and the Celestial Sphere* (to appear).
- [2] *X. Kervyn, D. Polvara and A. Sfondrini, *Thermodynamics of Integrable $\mathcal{N}=2$ Theories, Squared*, [2502.10356](#).
- [3] *X. Kervyn, *BMS Symmetries of Gravitational Scattering*, [2308.12979](#).

THESES & STUDY PROJECTS

5. X. Kervyn, *Bootstrapping $d = 4$, $\mathcal{N} = 4$ Super Yang-Mills in the presence of a $\frac{1}{2}$ -BPS boundary defect*
Individual Study Project, University of Copenhagen, Jan., 2025. Grade: 12/12.
4. X. Kervyn, *Gauge-Gravity Duality*
Individual Study Project, University of Copenhagen, Nov., 2024. Grade: 12/12.
3. X. Kervyn, *BMS Symmetries of Gravitational Scattering*
Part III essay, University of Cambridge, May, 2023. Grade: 86%, Distinction.
2. X. Kervyn, N. Roux, *Towards an automatized analysis framework for the upcoming HL-LHC CMS ECAL*
Student Project, ETH Zürich & CERN CMS collaboration, Jul., 2022. Grade: 6/6.
1. X. Kervyn, *Impact of non-perfect nulls on the detectable population by the LIFE space mission*
Student Project, ETH Zürich, Dec., 2021. Grade: 6/6.

RESEARCH STAYS

Niels Bohr Institute Copenhagen, Denmark	09/2024
Visiting Student, Theoretical High-Energy Physics	01/2025
<ul style="list-style-type: none">– Research on the superconformal bootstrap of gauge theories with defects– Supervised by Prof. Charlotte Kristjansen and Dr. Adam Chalabi	
Università degli Studi di Padova Padova, Italy	07/2023
Visitor, Theoretical Physics	
<ul style="list-style-type: none">– Research on integrability in string theory and AdS/CFT; Thermodynamic Bethe Ansatz– Supervised by Prof. Alessandro Sfondrini and Dr. Davide Polvara	
University of Cambridge Cambridge, United Kingdom	12/2022
Graduate 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– Supervised by Dr. Prahar Mitra	
CERN CMS collaboration Meyrin, Switzerland	06/2022
Undergraduate Researcher, ETH Zürich High-Energy Physics group	07/2022
<ul style="list-style-type: none">– Research on the new CMS electrocalorimeter for the High-Luminosity phase of the LHC– Supervised by Dr. Simone Pigazzini (ETHZ/CERN)– 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 on the LIFE space mission (LIFESim software), characterizing imperfect nulling– Supervised by Dr. Felix Dannert and Prof. Sascha Quanz	

CONFERENCES, SCHOOLS AND WORKSHOPS ATTENDED (*scheduled)

*School on asymptotic symmetries and flat holography, G. Galilei Inst., Florence, Italy [link]	05/2025
*Infrared Surprises of Scattering Amplitudes, CERN, Meyrin, Switzerland [link, online]	05/2025
Physics of Machine Learning & ML for Physics, Nordita, Stockholm, Sweden [link, online]	01/2025
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 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

OUTREACH

Online Seminar, Swiss Study Foundation Organisator, peer event – “The future of CERN and High-Energy Physics”	05/2024
Volunteer Tutor, Village Book Builders 1:1 weekly online tutoring sessions with a 13yo. child in Mukono, Uganda (10 months)	2022/23
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 learning 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–...

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 	

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 Word/Excel/PPT (basics)
Scientific work: \LaTeX (GitHub/Overleaf), Mathematica, scientific writing, funding application

ACADEMIC REFERENCES

- **Dr. Stephan Stieberger** (Max-Planck Institute for Physics): stephan.stieberger@mpp.mpg.de
- **Prof. Alessandro Sfondrini** (University of Padova): alessandro.sfondrini@unipd.it
- **Dr. Prahar Mitra** (University of Amsterdam): p.mitra@uva.nl

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