

Xavier Kervyn

Max-Planck-Institut für Physik,
85748 Garching, Germany
Born on 18 May 2001. Belgian

linkedin.com/in/xavier-kervyn/
xavierkervyn.github.io/
kervyn.xavier@gmail.com

CURRENT RESEARCH INTERESTS

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

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
- Ongoing. Working title: *Towards a String Worldsheet Description of Flat-Space Holography*
- Advisor: [Prof. Stephan Stieberger](#)
- Funding: Fondation du Domaine de Villette

Niels Bohr Institute Copenhagen, Denmark 09/2024
Visiting Student, Theoretical High-Energy Physics 01/2025

- [Study project](#) on the superconformal bootstrap of $\mathcal{N} = 4$ SYM with defects. Grade: 12/12
- Ongoing research project on the superconformal bootstrap of ABJM theory with defects
- Project advisors: [Prof. Charlotte Kristjansen](#) and [Dr. Adam Chalabi](#)
- 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
Project completed; publication of our results pending
- Advisors: [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](#)
- Advisor: [Dr. Prahar Mitra](#)
- Funding: Swiss Study Foundation & Colbianco Stiftung

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

- Research on the new CMS electrocalorimeter for the High-Luminosity phase of the LHC
- Advisor: [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

- Research on the LIFE space mission (LIFEsim software), characterizing imperfect nulling
- Advisors: Dr. Felix Dannert and [Prof. Sascha Quanz](#)
- Funding: Swiss-Mobility Program

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 advisor: Prof. Stephan Stieberger (Max-Planck Institute for Physics)• Erasmus+ exchange semester at the University of Copenhagen, Denmark• Study project on AdS/CFT under Prof. Niels Obers (Niels Bohr Institute). Grade: 12/12	
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)• Essay setter: Dr. Prahar Mitra• 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
<ul style="list-style-type: none">• Final year at ETH Zürich, Switzerland (Swiss-Mobility program)• Awarded a fellowship from the Swiss Study Foundation and e-fellows.net	

PUBLICATIONS & PREPRINTS [[Inspire HEP](#) / [Google Scholar](#)]

2. X. Kervyn, *Bootstrapping $d=4$, $N=4$ Super Yang-Mills in the presence of a 1/2-BPS boundary defect*, Jan., 2025
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

Individual Study Project, Niels Bohr Institute Bootstrapping $d = 4$, $\mathcal{N} = 4$ Super Yang-Mills with a $\frac{1}{2}$ -BPS boundary defect	01/2025
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 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–...

TEACHING EXPERIENCE

Volunteer Tutor remote	06/2022
It Takes a Village / Village Book Builders <ul style="list-style-type: none">1:1 weekly online tutoring sessions with a 13yo. child in Mukono, Uganda (10 months)	03/2023

INDUSTRY & NON-ACADEMIC EXPERIENCE

Research Analyst Munich, Germany	11/2023
180 Degrees Consulting Munich <ul style="list-style-type: none">Team manager. Carrying out research and market analysis; punctual support to consulting teamsBlueprint for the transition of fashion companies to a circular economy in the DACH region	02/2024

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: \LaTeX (Overleaf), Mathematica, scientific writing, funding search and application

SELECTED AWARDS, GRANTS & SCHOLARSHIPS

Research Grant – Fondation du Domaine de Villette CHF 5'000. Supporting graduate research in Munich and Copenhagen in 2024/2025	10/2024
Erasmus+ Scholarship – Ludwig-Maximilians-Universität Munich €600/month, 5 months. Awarded to support an exchange semester at the University of Copenhagen	05/2024
College Prize in Applied Mathematics – Peterhouse, University of Cambridge £300. Awarded in recognition of my academic achievements	12/2023
Retrospective Scholarship in Mathematics – Peterhouse, University of Cambridge £125. Awarded in recognition of my academic achievements	12/2023
Research Grant – Fondation du Domaine de Villette CHF 5'000. Supporting research and attendance to conferences in the summer 2023	06/2023
Greta Burkill Fund award – Peterhouse, University of Cambridge £300. Supporting attendance to conferences	03/2023
Bruckmann Fund award – Peterhouse, University of Cambridge £300. Supporting extracurricular travels	03/2023
Annual Scholarship – Swiss Study Foundation CHF 20'000. Financial support for master studies at the University of Cambridge	11/2022
Excellence Scholarship – Colbianco Stiftung CHF 2'000. Financial support for master studies at the University of Cambridge	08/2022
Swiss Mobility Program grant – Ecole Polytechnique Fédérale de Lausanne CHF 1'500. Supporting an exchange year at ETH Zurich	09/2021
Baccalaureate Merit Award – Région Provence-Alpes Côte d'Azur Awarded for achieving the highest distinction at the French Baccalaureate	07/2019

ACADEMIC REFERENCES

- **Prof. Stephan Stieberger** (MPP master thesis advisor)
Email: stephan.stieberger@mpp.mpg.de
- **Dr. Adam Chalabi** (NBI project advisor)
Email: adam.chalabi@nbi.ku.dk
- **Prof. Niels Obers** (Copenhagen examiner)
Email: obers@nbi.ku.dk
- **Prof. Alessandro Sfondrini** (Padova project advisor)
Email: alessandro.sfondrini@unipd.it
- **Dr. Prahar Mitra** (Cambridge Part III essay setter)
Email: p.mitra@uva.nl

Last updated on Fri 17th Jan, 2025. Certificates, references and transcripts available upon request.