Xavier Kervyn

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

Current Research Interests

★ String theory, gravity and quantum field theory. Most recently: holography and string scattering amplitudes in flat and curved backgrounds, non-relativistic strings, twistor theory, positive geometry, Carrollian physics.

Academic Employment

Max Planck Institute for Physics Garching bei München, Germany — 10/2025
Doctoral Researcher, MPP QFT + String Theory Groups — –present

– IMPRS PhD candidate, advised by Stephan Stieberger and Johannes Henn

Max Planck Institute for Physics Garching bei München, Germany & remote — 09/2024
Graduate Researcher, MPP QFT + String Theory Groups — 09/2025

– Master's thesis, advised by Stephan Stieberger

Education

Ludwig-Maximilians-Universität München Munich, Germany — 10/2025
Dr. rer. nat. (PhD) in Theoretical Physics — –present

Ludwig-Maximilians- & Technische Universität München Munich, Germany — 10/2023
Master of Science in Theoretical and Mathematical Physics (TMP, with Distinction) — 09/2025

Peterhouse, University of Cambridge Cambridge, United Kingdom — 10/2022
Master of Advanced Study in Applied Mathematics (Part III, with First Class Honours) — 06/2023

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

Selected Awards, Grants & Scholarships

IMPRS PhD Fellowship – *International Max-Planck Research Schools* // fully funded PhD (3+1 years) — 03/2025
Doctoral Fellowship – *Università di Napoli Federico II* // fully funded PhD (4 years, declined) — 03/2025
Study Grant – *Fondation du Domaine de Villette* // CHF 5'000 — 10/2024
Erasmus+ Scholarship – *Ludwig-Maximilians-Universität München* // 5 × 600€ — 05/2024
College Prize in Applied Mathematics – *Peterhouse, University of Cambridge* // £300 — 12/2023
Retrospective Scholarship in Mathematics – *Peterhouse, University of Cambridge* // £125 — 12/2023
Study Grant – *Fondation du Domaine de Villette* // CHF 5'000 — 06/2023
Greta Burkill Fund Award – *Peterhouse, University of Cambridge* // £300 — 03/2023
Bruckmann Fund Award – *Peterhouse, University of Cambridge* // £300 — 03/2023
Annual Scholarship – *Swiss Study Foundation* // CHF 20'000 — 11/2022
Excellence Scholarship – *Colbianco Stiftung* // CHF 2'000 — 08/2022
Fellowship – *Swiss Study Foundation & e-fellows.net* — 05/2022
Swiss Mobility Program Grant – *Ecole Polytechnique Fédérale de Lausanne* // CHF 1'500 — 09/2021
Baccalaureate Merit Award – *Région Provence-Alpes Côte d'Azur* // 400€ — 07/2019

Publications & Preprints [Inspire HEP; *:under review] (author ordering is alphabetical in hep-th)

Articles:

2. X. Kervyn and S. Stieberger, *High-energy string theory and the celestial sphere*, *Journal of High Energy Physics* **09** (2025) 044 [2504.13738].
1. X. Kervyn, D. Polvara and A. Sfondrini, *Thermodynamics of integrable $\mathcal{N} = 2$ theories, squared*, *Journal of High Energy Physics* **09** (2025) 018 [2502.10356].

Reviews:

1. X. Kervyn, *BMS symmetries of gravitational scattering*, *Nuclear Physics B* **1017** (2025) 116948 [2308.12979].

Research Stays & Long-Term Academic Visits

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

- Study project on the superconformal bootstrap of gauge theories with defects
- Supervised by Charlotte Kristjansen and Adam Chalabi
- Funding: Fondation du Domaine de Villette & LMU Erasmus+ Scholarship

Università degli Studi di Padova Padova, Italy 07/2023
Visitor, Theoretical Physics

- Research on integrability in string theory and AdS/CFT; thermodynamic Bethe Ansatz
- Supervised by Alessandro Sfondrini and Davide Polvara
- Funding: Fondation du Domaine de Villette

University of Cambridge Cambridge, United Kingdom 12/2022
Graduate Student, Department of Applied Mathematics and Theoretical Physics 08/2023

- Essay on the *BMS Symmetries of Gravitational Scattering*, expanded into a review article
- Supervised by 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
- Supervised by 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
- Supervised by Felix Dannert and Sascha Quanz
- Funding: Swiss-Mobility Program, Ecole Polytechnique Fédérale de Lausanne (EPFL)

Technical Skills

Languages: French (native); English, German (full work proficiency); 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+VSCode/Overleaf), `Mathematica`, scientific writing, funding application

Academic References (thesis advisory committee)

- Dr. Stephan Stieberger (Max-Planck Institute for Physics) / stephan.stieberger@mpp.mpg.de
- Prof. Johannes Henn (Max-Planck Institute for Physics) / johannes.henn@mpp.mpg.de
- Prof. Niels Obers (Niels Bohr Institute) / obers@nbi.ku.dk

Last updated on Sun 2nd Nov, 2025. Certificates, references and transcripts available upon request.