Xavier Kervyn

Peterhouse, 2 Trumpington St.
CB2 1RD Cambridge, Cambridgeshire, UK
Born on 18 May 2001. Belgian

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Research Interests

Keywords: quantum gravity, supergravity, formal string theory, black holes, asymptotic symmetries, symmetries and dualities, SUSY, integrability, twistor theory, celestial amplitudes, holography.

Academic Timeline

Università degli Studi di Padova, Padova, Italy
Summer Research Student, Department of Physics and Astronomy – Theoretical Physics 2023

- Will join Prof. Alessandro Sfondrini to study the spectrum of a new integrable 2D QFT, deriving its Bethe Ansatz and looking at its relations to string theory & the holographic conjecture in AdS_3
- Funding: Swiss Study Foundation

Education

Peterhouse, University of Cambridge, Cambridge, United Kingdom
Master of Advanced Study (MASt) in Applied Mathematics 2022-23

- Part III essay (thesis): *BMS Symmetries of Gravitational Scattering*
- Advisor: Dr. Prahar Mitra (University of Cambridge)
- **Mayhew Prize**: obtained the greatest distinction in applied mathematics in the MASt examinations
- Coursework in theoretical physics: QFT; GR; string theory; SUSY; symmetries, particles and fields

Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland
Bachelor of Science in Physics 2019-22

- Final year at ETH Zürich (Zurich, Switzerland) in the frame of the Swiss-Mobility programme
- Final year summer project within the CMS collaboration at CERN (Dr. Simone Pigazzini)
- Semester project within the Exoplanets and Habitability group: LIFE mission (Prof. Sascha Quanz)

Selected Awards, Grants & Scholarships

Annual Scholarship – *Swiss Study Foundation* 2022
CHF 20'000 awarded for Masters studies at the University of Cambridge [press statement]

Excellence Scholarship – *Colbianco Stiftung* 2022
CHF 2'000 awarded for Masters studies at the University of Cambridge

Scholarship – *e-fellows.net* 2022
Admitted to the career and student network due to my results and extracurricular commitment

Swiss Study Foundation Fellowship – *Swiss Study Foundation* 2022
The SSF supports supports outstanding students willing to contribute to science and society

Swiss Mobility Program grant – *EPF Lausanne* 2021
CHF 1'500 awarded due to my results to pursue my studies at ETH Zurich

Baccalaureate Merit Award – *Région Provence-Alpes Côte d'Azur* 2019
Awarded for achieving the highest distinction at the French Baccalaureate

Publications & Preprints

1. No peer-reviewed publications yet, working on it!

Conferences, Schools and Workshops attended (*scheduled)

*XIX Modave Summer School in Mathematical Physics, Modave, Belgium [link]	09/2023
*Advanced school on [...] celestial holography, 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

1. **Kervyn, X.** (Mar. 2023) Gravitational scattering and covariant phase space methods in gravity
   (Talk, given in the frame of the Cambridge DAMTP Part III Seminars series)
2. **Kervyn, X.** (Dec. 2022) Holography and Twistor methods in AdS_5
   (Talk, given in the frame of the Cambridge DAMTP Part III Seminars series)
3. **Kervyn, X.**, Roux, N. (Jul. 2022) Towards an automatized analysis framework for the upcoming CMS ECAL upgrade, aiming at improved amplitude and time resolution with HL-LHC
   (Bachelor project, *viva voce* examination)
4. **Kervyn, X.** (Dec. 2021) Measure and characterisation of the impact of non-perfect nulls on the detectable planet population by LIFE, based on different stellar and planetary properties
   (Semester project, *viva voce* examination)

Teaching Experience

Tutor (volunteer), Village Book Builders

- 1:1 weekly online tutoring sessions with a 13yo. child in Mukono, Uganda 2022-23

Specific Skills

Languages: French (native); English, German (full working proficiency)
Programming: C++ (OOP), Python (NumPy, Pandas, Matplotlib, Seaborn, Plotly.express, SciPy)
Data Analysis: Python (advanced), MATLAB (intermediate), Microsoft Excel (elementary)
Scientific work: LaTeX, `Mathematica`, scientific writing, funding search and application

Academic Referees

- **Dr. Prahar Mitra** (*Part III essay setter*). Office B0.02, Department of Applied Mathematics & Theoretical Physics, University of Cambridge, Wilberforce Road, Cambridge CB3 0WA, UK. Email: pm729@damtp.cam.ac.uk
- **Prof. Matthias Gaberdiel** (*Lecturer for Quantum Mechanics I*). Office HIT K 23.1, Institut für Theoretische Physik, ETH Zürich, Wolfgang-Pauli-Str. 27, CH-8093 Zürich, Switzerland. Email: gaberdim@ethz.ch. Phone: +41 44 633 25 82

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