Kit Fraser-Taliente

Curriculum Vitæ

Education

2021–2025 **DPhil in Theoretical Physics**, *Oxford University, Lady Margaret Hall*, Oxford, *Supervised by Prof. Andre Lukas in the fields of machine learning and high energy theory.* Awarded fully-funded Gould-Watson scholarship.

2020–2021 **MMathPhys in Mathematical and Theoretical Physics**, *Oxford University, Magdalen College*, Oxford, *High first in every individual paper, ranked 3/67 in the year averaging 90%.* Awarded scholarship by Magdalen College.

2017–2020 **BA in Physics**, *Oxford University, Magdalen College*, Oxford, *Placed first on entry. High firsts in every year, and in every individual paper, ranked 3/160 in the year averaging 89%.* Physics Prize for Practical Work every year. Awarded scholarship by Magdalen College every year..

Publications (* in preparation)

Rodrigo Alonso, Cristofero Fraser-Taliente, Chris Hays, and Michael Spannowsky. Prospects for direct CP tests of hqq interactions. *JHEP*, 08:167, 2021.

Aditi Chandra, Andrei Constantin, Cristofero S. Fraser-Taliente, Thomas R. Harvey, and Andre Lukas. Enumerating Calabi-Yau Manifolds: Placing Bounds on the Number of Diffeomorphism Classes in the Kreuzer-Skarke List. *Fortsch. Phys.*, 72(5):2300264, 2023.

Andrei Constantin, Cristofero S. Fraser-Taliente, Thomas R. Harvey, Andre Lukas, and Lucas T. Y. Leung. Fermion Masses and Mixing in String-Inspired Models. *Submitted* Oct, 2024.

Andrei Constantin, Cristofero S. Fraser-Taliente, Thomas R. Harvey, Andre Lukas, and Burt Ovrut. Computation of Quark Masses from String Theory. *Nucl. Phys. B*, 02 2024.

Cristofero S. Fraser-Taliente, Thomas R. Harvey, Manki Kim. Not So Flat Metrics. *Submitted* Nov, 2024.

**Andrei Constantin, Cristofero S. Fraser-Taliente, Thomas R. Harvey, Andre Lukas, and Burt Ovrut.* TBD, Numerical metrics and Yukawa couplings in heterotic string theory. (TBD, Feb 2024/5.)

**Cristofero S. Fraser-Taliente, Michael Douglas.* TBD, Discrete diffusion on Cayley graphs. *Advances in Theoretical and Mathematical Physics: proceedings of the CMSA Mathematics and Machine Learning Program*, (Feb 2025).

**Cristofero S. Fraser-Taliente. Andrew Sutherland, Michael Douglas, Thomas Harvey.* Evolutionary generative modelling in mathematics. *Advances in Theoretical and Mathematical Physics*, (Feb 2025).

**Cristofero S. Fraser-Taliente and Ludovic U. Fraser-Taliente.* TBD, Relative entropy, optimal transport, and the renormalization group. (TBD, March 2025)

Teaching experience

2021–Present **Teaching graduates/undergraduates**, *Oxford University*, Oxford.

Taught problem classes for graduate courses in Groups and Representations (x3), General Relativity I and II (x3), Conformal Field Theory, String Theory I and II, QFT in curved spacetime, with 6-20 students. Taught third year undergraduate courses in General and Special Relativity.

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Talks

2025 **Invited plenary speaker**, *String Phenomenology conference 2025*, Boston.

October 2024 **Invited speaker**, *Mathematics and Machine Learning Workshop*, Harvard, CMSA.

October 2024 **Talk**, *Northeastern University*, Boston.

October 2024 **Talk**, *Cornell University*, Ithaca.

October 2024 **Talk**, *MIT, Institute for AI and Fundamental Interactions*, Boston.

July 2024 **Talk**, *String Phenomenology conference 2024*, Padua.

June 2024 **Talk**, Utrecht University.

May 2024 **Talk**, Liverpool.

May 2024 **Talk**, Queen Mary University.

May 2024 **Talk**, *String Pheno Seminar Series*, Online.

Jan 2024 **Talk**, *Fields, Strings, and Deep Learning workshop*, Aspen Institute.

June 2023 **Talk**, *String Pheno Seminar Series*, Online.

June 2023 **Talk**, *String Phenomenology conference 2023*, Liverpool.

Other skills

- **Languages:** Italian (Fluent), French (Conversational).
- **Programming Languages:** C/C++, Python, Mathematica, ROOT, others.

Other

- **Project Access** - volunteering, tutoring disadvantaged students for application to university ('16-present)
- **Highland Cross 23/24** - fundraised for charity, 20 mile/30 mile duathlon across Scotland in '23 and '24.
- **London to Mongolia** drive (2019), 11,000 miles in 7 weeks, fundraising for CR UK and Cool Earth.
- Founded college obstacle course racing team. Pianist and flautist.

Prior research/experience

May-August 2020 **Research intern**, *Particle Physics Group*, Oxford.
A 3 month research internship with the Oxford Particle Physics group, primarily focussed on the feasibility of searching for CP violation in Higgs decays. Extensive C++ and ROOT development.

2020-2021 **Dissertation**, *Mathematical Institute*, Oxford.
Dissertation on Calabi-Yau manifolds, supervised by Prof. Philip Candelas. Reviewed the geometry of Calabi-Yau manifolds, and examined the realisation of some examples as hypersurfaces in Fano varieties.

2019–2020 **Treasurer**, *Quantum Information Society*, Oxford.
Founded and held executive role in the UK's first student-run quantum information and computing society, holding weekly events and talks. Grew the society to more than 200 members.

2019–2021 **Secretary**, *Physics Joint Consultative Committee*, Oxford.
An associate member of the Teaching Faculty, executive role liaising between the students and senior faculty. Managed the voices of 700 students in response to COVID-19, and consulted with the department on exam format changes.

Jul-Aug 2016 **Research assistant**, *High Energy Physics Group, Imperial College*, London.
Five week internship working under a professor from Imperial on the SoLid short baseline reactor neutrino experiment. Awarded a Crest Gold award for a resulting research paper.

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