

Philip Winchester



Personal Details

27 years old
Swedish and British citizen

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Languages

English - Native or bilingual
Swedish - Native or bilingual

Programming

♥ Python, R, Tableau,
MATLAB, Fortran

Markup

♥ \LaTeX , HTML, CSS

Curriculum Vitae

Highly motivated student currently studying for a DPhil in Mathematics with the Industrial and Applied Research Group at the University of Oxford. After my degree, I wish to pursue a career in quantitative finance. My primary interests are in non-linear systems, numerical analysis, mathematical modelling, scientific computing, data science, and quantitative finance. My blog, philipwinchester.github.io and website fplbuddy.github.io, is where I gather some of my ideas on these subjects. I have excellent communication skills and a demonstrated ability of working well in a team.

Education

- 2019–2023 **DPhil in Mathematics** University of Oxford, UK
Oxford Centre for Industrial and Applied Mathematics
I am a final year DPhil student at the Mathematical Institute in Oxford. My research concerns the problem of Rayleigh-Bénard convection. I have studied dynamics within the turbulent regime and steady states and their stability over a large parameter space (see publications below). At Oxford, I have developed a broad skill-set, both in theoretical (asymptotic theory, weakly non-linear analysis, dynamical systems, statistics) and numeral methods (direct numerical simulation, optimisation, numerical linear algebra).
- 2014–2018 **M.Sci. Mathematics and Physics** Durham University, UK
Grade: First Class
Final Year Project: Theoretical Formulation of the Magnetic Monopole. Analysing the theoretical formulation of the magnetic monopole. I studied the Yang-Mills equation and learnt about soliton solutions and their topological nature in (1+3)d. 88%.
Modules included:
- Partial Differential Equations, 85%
 - Dynamical Systems, 86%
 - Continuum Mechanics, 84%
 - Solitons, 85%
- 2012–2014 **High School** Eastbourne College, UK
A-levels: Mathematics, Further Mathematics, Physics, Chemistry, 4A*

Work Experience

- 2022 **Goldman Sachs** London, UK
Summer Associate - Quantitative Model Risk Management
I spent 10 weeks with the Quantitative Model Risk Management team at Goldman Sachs that oversees all pricing models used by the bank. My research project was on machine learning modelling approaches for buybacks.
- 2018–2019 **Barnett Waddingham** London, UK
Trainee Consultant
Following a successful internship with Barnett Waddingham during the summer of 2017, I spent a year working as a Trainee Consultant with the firm. I worked across trustee and investment consulting teams valuing pensions and providing advice to clients on how to fund their pension schemes.
- 2014–2016 **Rydeback School** Helsingborg, Sweden
Science and Mathematics Teacher
During holidays from my university studies, I worked as a teacher and tutor at Rydeback School in Helsingborg, Sweden - writing lesson plans and conducting lessons in mathematics and the sciences to classes of up to 30 students.

Publications

- 2021 **Zonal flow reversals in two-dimensional Rayleigh-Bénard convection**
Physical Review Fluids, issue 3 volume 6
In this paper we studied the reversals of the large scale zonal flow in Rayleigh-Bénard convection, a system in which a fluid is heated from below and cooled from the top. We were surprised to find rich dynamics in the zonal direction, perpendicular to the buoyancy force that drives the flow. Rayleigh-Bénard convection has applications in atmospheres, oceans and geoscience.
- 2022 **The onset of zonal modes in two-dimensional Rayleigh-Bénard convection**
JFM, volume 939
In this paper we studied the stability of a particular steady state in Rayleigh-Bénard convection and find that the eigenfunction to which it becomes unstable depends strongly on the Prandtl number of the fluid. We derive a low-order system which accurately captures the non-linear relaxation oscillations found at small Prandtl number.

Interests

- Blogging I write a programming blog on topics that interest me. In particular, sports betting and quantitative finance. philipwinchester.github.io. See also my website fplbuddy.github.io.
- Volunteering I volunteer at the Oxford Gatehouse on a weekly basis. We provide food, mental and administrative support to the homeless in Oxfordshire.
- Fitness Run over 15 miles every week along with a regular gym schedule.

References

- Prof. P Howell **DPhil Supervisor at Oxford**
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- Dr V Dallas **DPhil Supervisor at Oxford**
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- Dr D Dorigoni **Project Supervisor at Durham**
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- Mr M Lawson **Team Leader at Barnett Waddingham**
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