Richard Stiskalek: Curriculum Vitae

CONTACT INFORMATION

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NASA ADS: h-index = 6, total citations = 101 (November 13, 2024)

INTERESTS

Local Universe reconstructions, galaxy–halo connection, astrophysical tests of gravity, gravitational-wave astronomy, machine learning

EDUCATION

University of Oxford, Balliol College, Astrophysics DPhil — 2022 – 2026 (expected)
Thesis: "Testing the local Universe with constrained cosmological simulations"
Supervised by *Julien Devriendt*, *Adrianne Slyz* and *Harry Desmond*

Ludwig-Maximilians-Universität München, Physics M.Sc. — 2020 – 2022
Thesis: "Frequency- and polarization-dependent lensing of gravitational waves in strong fields"
Supervised by *Miguel Zumalacárregui*, *Marius A. Oancea* and *Jochen Weller*[1]

Hong Kong University of Science and Technology — 2017 – 2018
Undergraduate Exchange Programme

University of Glasgow, Physics with Astrophysics B.Sc. — 2016 – 2020
Thesis: "Gravitational-wave cosmology"
Supervised by *Martin Hendry*

EMPLOYMENT

Max Planck Institute for Gravitational Physics, Observational Relativity and Cosmology — 2020
Supervised by *Collin Capano*

University of Oxford, Sub-department of Astrophysics — 2019
Supervised by *Harry Desmond*

University of Glasgow, Institute for Gravitational Research — 2018
Supervised by *John Veitch and Chris Messenger*

PUBLICATIONS

[1] "Symmetry in Hyper Suprime-Cam galaxy spin directions", **R. Stiskalek**, H. Desmond [Res. Notes AAS 8 281, arXiv:2410.18884]

[2] "Inferring the Ionizing Photon Contributions of High-Redshift Galaxies to Reionization with JWST NIRCam Photometry", N. Choustikov, **R. Stiskalek**, A. Saxena, H. Katz, J Devriendt, A. Slyz [arXiv:2405.09720]

[3] "Evaluating the variance of individual halo properties in constrained cosmological simulations", **R. Stiskalek**, H. Desmond, J. Devriendt, A. Slyz [MNRAS 534:3120, arXiv:2310:20672]

[4] "Probing general relativistic spin-orbit coupling with gravitational waves from hierarchical triple systems", M. A. Oancea, **R. Stiskalek**, M. Zumalacárregui. [MNRAS 535:L1, arXiv:2307.01903]

[5] "On the fundamentality of the radial acceleration relation for late-type galaxy dynamics", **R. Stiskalek**, H. Desmond [MNRAS 525:6130, arXiv:2305.19978]

[6] "Frequency- and polarization-dependent lensing of gravitational waves in strong gravitational fields", M. A. Oancea, **R. Stiskalek**, M. Zumalacárregui [Phys. Rev. D 109, 124045, arXiv:2209.06459]

[7] "The scatter in the galaxy–halo connection: a machine learning analysis", **R. Stiskalek**, D. J. Bartlett, H. Desmond, D. Anbajagane [MNRAS 514:4026, arXiv:2202.14006]

[8] "The dependence of subhalo abundance matching on galaxy photometry and selection criteria", **R. Stiskalek**, H. Desmond, T. Holvey, M. G. Jones [MNRAS 506:3205, arXiv:2101.02765]

[9] "Are stellar-mass binary black hole mergers isotropically distributed?", **R. Stiskalek**, J. Veitch & C. Messenger [MNRAS 501:970, arXiv:2003.02919]

[1] Internal thesis advisor

Teaching experience

MPhys C1 Astrophysics, University of Oxford, Astrophysics — 2023 – 2024
Tutoring of cosmology, stellar astrophysics, and galaxies

Lumiere Education — 2023 – present
Mentorship of senior high school students conducting a research project

Practical Course - 3rd year, University of Oxford, Astrophysics — 2023
Astrophysics computational practical course demonstrator

Student supervision

Joshua Darne (MPhys, Oxford), — 2024 –
"Radial acceleration relation in the NewHorizon hydrodynamical simulation" (w/ T. Yasin & H. Desmond)

Fedir Boreiko (BSc, Manchester) — 2024
"The correlation between light and dark matter across cosmic time" (w/ T. Yasin & H. Desmond)

Enoch Ko (BSc, Warwick) — 2024
"Dark matter and galaxy dynamics: enduring puzzles" (w/ T. Yasin & H. Desmond)

Catherine Spencer (MPhys, Oxford), — 2023 – 2024
"The influence of cosmic environment on galaxy properties" (w/ T. Yasin & H. Desmond)

James Harvey (BSc, Oxford) — 2023 – 2024
"Machine learning the time of last major merger from spectroscopic data" (w/ T. Yasin & H. Desmond)

Selected Awards and Scholarships

Snell Exhibition, Balliol College — 2022 - 2026
STFC PhD Funding, Science and Technology Facilities Council — 2022 - 2026
DAAD Study Scholarship, German Academic Exchange Service — 2021 - 2022
Kerr Bursary, University of Glasgow — 2020
Lang Scholarship, University of Glasgow — 2019
Undergraduate Summer Bursary, Royal Astronomical Society — 2018
Dean's List, Hong Kong University of Science and Technology — 2018
Astronomy 1 Prize, University of Glasgow — 2017
Matthew A Muir Bursary, University of Glasgow — 2017
South East Asia Study Abroad Scholarship, University of Glasgow — 2017 - 2018

Service

Referee for *ApJ*, *MNRAS*, *PNAS* — 2022 – present
Aquila Consortium Oxford Meeting local organiser — 2023
Aquila Consortium Monthly Telecon organiser — 2023 – present
Organiser of "Middle of Scotland Science Festival" — 2018

Skills

Programming languages
- Python, Julia, Mathematica, C, C++, Fortran, Bash and others

Software
- RAMSES, Gadget, Rockstar, DisPerSe, MPI, git, TensorFlow, JAX, PyTorch, LaTeXand others

Languages
- English, Czech, Slovak, French (intermediate), German (beginner)

Selected Talks

Velocity field of the local Universe — 2024
University of Portsmouth

Search for the optimal dark matter halo density profile — 2023
University of Oxford

Is the radial acceleration relation a fundamental correlation? — 2023
University of Oxford

Frequency and polarisation dependent propagation of gravitational waves — 2022
University of Glasgow

Frequency and polarisation dependent propagation of gravitational waves — 2022
Ludwig-Maximilians-Universität München

Frequency and polarisation dependent propagation of gravitational waves — 2022
Max Planck Institute for Gravitational Physics, Potsdam

The scatter in the galaxy–halo connection — 2022

Baryon Pasters Collaboration meeting

The scatter in the galaxy–halo connection 2021

Ludwig-Maximilians-Universität München

Reversible-jump MCMC in gravitational-wave astronomy 2020

Max Planck Institute for Gravitational Physics, Hannover

Are binary-black hole mergers isotropically distributed? 2020

LIGO Scientific Collaboration Data Analysis telecon

The relation between galaxies and dark matter halos 2019

University of Oxford