Richard Stiskalek

CONTACT INFORMATION

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INTERESTS

Constrained cosmological simulations, astrophysical tests of gravity, large-scale structure, galaxy formation and dynamics, gravitational-wave astronomy, machine learning & Bayesian inference

EDUCATION

University of Oxford, DPhil Astrophysics — 2022 – 2026 (expected)
"New tests of physics with constrained large-scale structure simulations"
Supervised by *Julien Devriendt*, *Adrianne Slyz* and *Harry Desmond*

Ludwig-Maximilians-Universität München, M.Sc. Physics — 2020 – 2022
"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, Undergraduate Exchange — 2017 – 2018

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

PUBLICATIONS

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

[2] "*From the gates of the abyss: Frequency- and polarization-dependent lensing of gravitational waves in strong gravitational fields*" M. A. Oancea, **R. Stiskalek**, M. Zumalacárregui. [arXiv:2209.06459]

[3] "*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]

[4] "*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]

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

ACADEMIC INTERNSHIPS

Max Planck Institute for Gravitational Physics (supervised by *Collin Capano*) — 2020
University of Oxford (supervised by *Harry Desmond*) — 2019
University of Glasgow (supervised by *John Veitch & Chris Messenger*) — 2018

AWARDS AND SCHOLARSHIPS

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*
Organiser of "Middle of Scotland Science Festival 2018"

SKILLS

Coding & data analysis
- Python, Julia, Mathematica, C++, MPI parallel programming
- Bayesian statistics, machine learning, symbolic programming, numerical methods for differential equations, automatic differentiation

[1] Internal thesis advisor

Languages

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

SELECTED TALKS

Frequency and polarisation dependent propagation of gravitational waves

University of Glasgow 2022

Ludwig-Maximilians-Universität München 2022

Max Planck Institute for Gravitational Physics, Potsdam 2022

The scatter in the galaxy–halo connection

Baryon Pasters Collaboration meeting 2022

Ludwig-Maximilians-Universität München 2021

Reversible-jump MCMC in gravitational-wave astronomy

Max Planck Institute for Gravitational Physics, Hannover 2020

Are binary-black hole mergers isotropically distributed?

LIGO Scientific Collaboration Data Analysis telecon 2020

The relation between galaxies and dark matter halos

University of Oxford 2019