Richard Stiskalek

CONTACT INFORMATION

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INTERESTS

Galaxy formation and dynamics, astrophysical tests of gravity, strong-field limit gravitational wave propagation and lensing, gravitational-wave astronomy, Bayesian inference

EDUCATION

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

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

Hong Kong University of Science and Technology 2017 – 2018
Undergraduate Student Exchange Program

University of Glasgow 2016 – 2020
B.Sc. Physics with Astrophysics
Thesis: "Gravitational-wave cosmology"
Supervisor: Martin Hendry

ACADEMIC INTERNSHIPS

Max Planck Institute for Gravitational Physics (Hannover) 2020
Project: "EPSIE: an Embarrassingly Parallel Sampler for Inference Estimation"
Supervisor: Collin Capano

University of Oxford 2019
Project: "The dependence of subhalo abundance matching on galaxy photometry and selection criteria"
Supervisor: Harry Desmond

University of Glasgow 2018
Project: "Are stellar–mass binary black hole mergers isotropically distributed?"
Supervisors: John Veitch and Chris Messenger

PUBLICATIONS

1. "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]

2. "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]

3. "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]

4. "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

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*, *PNAS*	2022 -
"Middle of Scotland Science Festival" organiser	2018

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

Cosmology Group, University of Oxford	2019

Skills

Coding & data analysis

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

Languages

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