Richard Stiskalek

CONTACT INFORMATION
www.richard-sti.github.io/ richard.stiskalek@protonmail.com
www.github.com/richard-sti +420 720 153 538

INTERESTS

Galaxy formation & evolution, galaxy–halo connection, large-scale structure, gravitational-wave astronomy, Bayesian inference, machine learning

EDUCATION

Ludwig Maximilian University of Munich 2020 –
M.Sc. Physics
Thesis: Strong field propagation of polarised gravitational waves
Supervisor: Dr. Miguel Zumalacárregui

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

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

Gymnazium Jakuba Skody 2008 – 2016
State examination in Czech, Mathematics, Physics, English

EMPLOYMENT

Primer Research[1], Munich 09/2021 - 01/2022
Statistical Modelling Consultant
Project: Development of a Gaussian process-based portfolio optimiser and probabilistic regressors for high-frequency trading

Max Planck Institute for Gravitational Physics (Hannover) 06/2020 – 09/2020
Research Intern
Project: "EPSIE: an Embarrassingly Parallel Sampler for Inference Estimation"
Supervisor: Dr. Collin Capano

University of Oxford 07/2019 – 09/2019
Research Intern
Project: "The dependence of subhalo abundance matching on galaxy photometry and selection criteria"
Supervisor: Dr. Harry Desmond

University of Glasgow 06/2018 – 09/2018
Research Intern
Project: "Are stellar–mass binary black hole mergers isotropically distributed?"
Supervisors: Dr. John Veitch and Dr. Chris Messenger

Amper Market, Prague 06/2017 – 09/2017
Data Analysis Intern
Project: Prediction of imbalances in an electricity distribution system

PUBLICATIONS

1. "The scatter in the galaxy–halo connection: a machine learning analysis" **R. Stiskalek**, Deaglan J. Bartlett, Harry Desmond, Dhayaa Anbajagane. [arXiv:2202.14006]

2. "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]

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

SKILLS

Data analysis & machine learning
Gravitational-wave parameter estimation, Markov chain Monte Carlo & nested sampling diagnostics, decision tree ensemble models, neural networks, Gaussian processes, hierarchical Bayesian models, variational posterior approximation, particle swarm optimisation

[1] part-time

Numerical tools
Galaxy clustering statistics, numerical integration, automatic differentiation

Coding
Python, Julia, Mathematica, C, C++, MPI parallel programming

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

Community Involvement

Middle of Scotland Science Festival 2018
Volunteer organiser

Awards and Scholarships

DAAD Study Scholarship, German Academic Exchange Service 2021
Scholarship for incoming students from the UK to Germany

Kerr Bursary, University of Glasgow, School of Physics & Astronomy 2020
Best 4th year physics student

Lang Scholarship, University of Glasgow, School of Physics & Astronomy 2019
Best 3rd year physics examination results

Undergraduate Summer Bursary, Royal Astronomical Society 2018
Bursary for summer research students

Dean's List, Hong Kong University of Science and Technology, School of Science 2018
Awarded for achieving a term GPA higher than $3.7/4.3$

Astronomy 1 Prize, University of Glasgow, School of Physics & Astronomy 2017
Best 1st year astronomy student

Matthew A Muir Bursary, University of Glasgow, School of Mathematics & Statistics 2017
Best 1st year mathematics examination results (physics students)

South East Asia Study Abroad Scholarship, University of Glasgow 2017
Scholarship supporting exchange students in Hong Kong

Selected talks

The scatter in the galaxy-halo connection: a machine learning analysis 2022
Baryon Pasters collaboration machine learning group meeting

The scatter in the galaxy–halo connection 2021
University Observatory Munich: Astrophysics, Cosmology, and Artificial Intelligence group

Galaxy–halo relation: feature importance analysis 2021
University Observatory Munich (online)

Reversible-jump MCMC in gravitational-wave astronomy 2020
Max Planck Institute for Gravitational Physics Hannover

Are binary-black hole mergers isotropically distributed? 2020
LSC Data Analysis Telecon

The relation between galaxies and dark matter halos 2019
University of Oxford

Selected coursework

Ludwig Maximilian University of Munich
General Relativity (Mukhanov), Quantum Mechanics (Hofmann), Quantum Electrodynamics (Dvali), Information Field Theory (Enßlin), Astro AI (Moster), Cosmology (Mukhanov)

University of Glasgow
Plasma Theory and Diagnostics (Diver, Kontar), Quantum Theory (Miller), Galaxies (Hendry)

Hong Kong University of Science and Technology
Big Bang Cosmology and Inflation (Wang), Classical Mechanics (Cheung), Object-oriented Programming (Horner)