Richard Stiskalek

Contact Information

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Research Interests

Galaxy formation and dynamics, gravitational-wave astronomy, tests of gravity, Bayesian inference

Education

Ludwig-Maximilians-University, Munich, Germany 2020 – present
M.Sc. Physics, with a thesis on gravitational-wave birefringence

University of Glasgow, Glasgow, United Kingdom 2016 – 2020
B.Sc. Physics with Astrophysics with Honours of the First Class, GPA 21.3/22.0 (1st in class)

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

Gymnazium Jakuba Skody, Prerov, Czech Republic 2008 – 2016

Research Experience

Research Intern, Max Planck Institute for Gravitational Physics (Hannover) 06/2020 - 09/2020
Project: "EPSIE: an Embarrassingly Parallel Sampler for Inference Estimation"
Supervisor: *Dr Collin Capano*
- Co-developed EPSIE, a (reversible) Markov chain Monte Carlo sampler

Research Intern, University of Oxford 07/2019 - 09/2019
Project: "The dependence of subhalo abundance matching on galaxy photometry and selection criteria"
Supervisor: *Dr Harry Desmond*
- Tested fundamental assumptions of clustering-fitted parametrised subhalo abundance matching modelling in both optically and HI-selected regimes

Research Intern, University of Glasgow 06/2018 - 09/2018
Project: "Are stellar–mass binary black hole mergers isotropically distributed?"
Supervisors: *Dr John Veitch* and *Dr Chris Messenger*
- Developed a Bayesian model of the isotropy of the distribution of the detected black hole mergers

Work Experience

Statistical Modelling Consultant 09/2021 - present
- Development & application of algorithms to predict future states of financial markets (hierarchical Bayesian models, Gaussian processes, genetic algorithms)

Data Analysis Intern, Amper Market, Prague, Czech Republic 06/2017 - 09/2017
- Studied imbalances in the electricity network and designed a model predicting the future imbalances

Seafood Processor, Silver Bay Seafoods, Naknek, Alaska, USA 06/2016 - 09/2016
- Shipping and operating the freezer in a salmon processing plant while working 16-hour shifts

Publications

1. "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]
2. "Are stellar-mass binary black hole mergers isotropically distributed?" **R. Stiskalek**, J. Veitch & C. Messenger. MNRAS 501:970. [arXiv:2003.02919]

Awards and Certificates

DAAD Study Scholarship, German Academic Exchange Service, 2021
Kerr Bursary, University of Glasgow, School of Physics & Astronomy 2020
Lang Scholarship, University of Glasgow, School of Physics & Astronomy 2019
Undergraduate Summer Bursary, Royal Astronomical Society 2018
Dean's List, Hong Kong University of Science and Technology, School of Science 2018
Astronomy 1 Prize, University of Glasgow, School of Physics & Astronomy 2017
Matthew A Muir Bursary, University of Glasgow, School of Mathematics & Statistics 2017
South East Asia Study Abroad Scholarship, University of Glasgow 2017

Community Involvement

Middle of Scotland Science Festival, Volunteer organiser 2018

Skills and knowledge

Theoretical: General relativity, quantum field theory, information field theory, statistical inference
Technical: Numerical & symbolic programming, machine learning
Programming languages: Python, Mathematica, C++, C, Shell, LaTeX
Natural languages: English, Czech, Slovak, French (intermediate), German (beginner)

Interests

Long-distance running, history of physics, sci-fi and fantasy novels