

Employment

2024

Postdoctoral Research Fellow, *National Institute of Astrophysics - Astronomical Observatory of Trieste*, Trieste, Italy

2023-24

Postdoctoral Research Fellow, *Tata Institute of Fundamental Research*, Mumbai, India
Department of Theoretical Physics

Education

2019-23

PhD in Physics, *University of Nottingham*, Nottingham, UK

Supervisors: Dr James S Bolton, Dr Nina Hatch

Thesis: Simulating neutral hydrogen across cosmic time: the 21-cm forest in late reionization models and the global 21-cm signal at cosmic dawn

- Vice-Chancellor's Scholarship for Research Excellence
- Graduated July 2023

2014-19

MPhys in Physics, Astrophysics, *The University of Edinburgh*, Edinburgh, UK

- Graduated July 2019 with the First Class

2016-17

Exchange program, *California Institute of Technology*, Pasadena, USA

- GPA: 3.3

Technical Experience

2018-19

MPhys Project, *The University of Edinburgh*, Edinburgh, UK

Extreme Variability of Active Galactic Nuclei ([report](#))

Supervisor: Prof Andy Lawrence

- Tested black hole accretion disc models in the context of extreme variability of AGN luminosity
- Included a public summary (created a [card game](#))

2018

Cormack Vacation Research Scholarship and Deans' Vacation Scholarship, *The Institute for Astronomy*, Edinburgh, UK

21cm Signal Marking the End of Dark Ages ([report](#), [poster](#))

Supervisor: Dr José Oñorbe

- Mock observations of global 21cm signal with focus on Dark Ages based on Nyx simulations

2018

Senior Honours Project, *The University of Edinburgh*, Edinburgh, UK

Scalar Field Dark Energy

Supervisor: Prof Andy Taylor

- Simulated the expansion of the universe driven by dark energy modeled as a dynamical scalar field

2017-18

Telescope Group Project, *The University of Edinburgh*, Edinburgh, UK

Measurement of the Characterising Properties of Exoplanet TrES-2b and its Host Star

Supervisor: Prof Philip Best

- Transit Photometry and Doppler Spectroscopy methods
- Observations performed with Edinburgh University's Meade MAX 20in ACF telescope

2017

Summer Undergraduate Research Fellowship, *Caltech*, Pasadena, USA

Redefining the Habitable Zone

Supervisor: Prof David J. Stevenson

- Determining conditions under which water in liquid phase can be present on the surface of a planet

2017

Research in Experimental Physics, *Caltech, LIGO*, Pasadena, USA

Signal Processing

Supervisor: Dr Thomas J. Massinger

- Data analysis and investigation of glitches in data

Publications

E Puchwein, J S Bolton, L C Keating, et al. "The Sherwood-Relics simulations: overview and impact of patchy reionization and pressure smoothing on the intergalactic medium", in *MNRAS*, Volume 519, Issue 4, pp.6162-6183, 2023. ([link](#))

T Šoltinský, J S Bolton, M Molaro, et al. "Probing quasar lifetimes with proximate 21-centimetre absorption in the diffuse intergalactic medium at redshifts $z \geq 6$ ", in *MNRAS*, Volume 519, Issue 2, pp.3027-3045, 2023. ([link](#))

T Šoltinský, J S Bolton, N Hatch, et al. "The detectability of strong 21-cm forest absorbers from the diffuse intergalactic medium in late reionization models", in *MNRAS*, Volume 506, pp. 5818-5835, 2021. ([link](#))

C S Cockell, "Astrobiology: Understanding Life in the Universe", *Wiley-Blackwell*, 2015

○ Contributed to and was cited in the Preface to the book

Memberships

2024

SKA-India SWG, [link](#)

2023

LSST-DESC, Large scale structure WG, provisional membership, [link](#)

2019

Sherwood-Relics simulation suite, [link](#)

Conferences, Meetings, Talks, Lectures

2024

The Origin and Evolution of Supermassive Black Holes, *Sexten Center for Astrophysics*, Sexten, Italy, Talk

2024

Cosmic Dawn at High Latitudes Conference, *Royal Swedish Academy of Sciences*, Stockholm, Sweden, Talk

2024

Cosmology in the Alps Conference, Les Diablerets, Switzerland, Talk

2024

Monday Afternoon Talks, *MIT Kavli Institute for Astrophysics and Space Research*, Cambridge, US, Talk

2024

Pune-Mumbai Cosmology and Astro-Particle meeting, *The Inter-University Centre for Astronomy and Astrophysics*, Pune, India, Talk and Chaired a session ([link](#))

2024

Astronomical Society of India meeting, *Indian Institute of Science*, Bengaluru, India, Talk

2024

HEA group meeting, *Masaryk University*, Brno, Czechia, Seminar

2023

Advanced 21-cm Cosmology School and Workshop, *National Institute of Science Education and Research*, Bhubaneswar, India, Lectures ([link](#))

2023

Astrophysics Seminar, *University of Helsinki*, Helsinki, Finland, Seminar

2023

Galaxy coffee, *Max Planck Institute for Astronomy*, Heidelberg, Germany, Talk

2023

21-cm Series Seminar, *University of Cambridge*, Cambridge, UK, Seminar

2023

Colloquium, *National Centre for Radio Astrophysics*, Pune, India, Colloquium

2022

Lunch talk, *The University of Nottingham*, Nottingham, UK, Talk

2022

Physics PG Poster Competition, *The University of Nottingham*, Nottingham, UK, Poster

2022

21-cm Series Seminar, *University of Cambridge*, Cambridge, UK, Seminar

2021

State of the Universe, *Tata Institute of Fundamental Research*, Mumbai, India, Seminar ([link](#))

2021

National Astronomical Meeting (NAM2021), *The University of Bath*, Bath, UK, Talk

2021

SAZERAC 2.0, Recorded talk ([link](#))

2021

Lunch talk, *The University of Nottingham*, Nottingham, UK, Talk

2021

Tessella Poster Competition, *The University of Nottingham*, Nottingham, UK, Poster

2021

Quasars and Galaxies on the Edge of Cosmic Reionisation, *Royal Astronomical Society*, UK, Flash poster

2020

Early Career Poster Exhibition, *Royal Astronomical Society*, UK, Poster ([link](#))

2020

Lunch talk, *The University of Nottingham*, Nottingham, UK, Talk

Schools, Courses

2023

Foundation HPC-Skills Course, *DiRAC*

2023

DP0 Virtual Summer School 2023, *Vera C. Rubin Observatory/LSST*

Extracurricular Activities

2021

Mentoring at GROWNi.sk, Slovakia

- Advising students in their career and study decisions

2016

Outreach talks, Pavol Horov Gymnasium, Michalovce, Slovakia

- "From LA to LA", Topic: gained experience and how to study abroad
- "Science has no borders", Topic: my research experience and ongoing research in the world

2023-24

State of the Universe Seminar Series Organizer, Tata Institute of Fundamental Research, Mumbai, India

2022

Astronomy Postgraduate Student Representative, The University of Nottingham, Nottingham, UK

- Main point of communication between PG students and staff

2021-22

Lunch Talks Organizer, The University of Nottingham, Nottingham, UK

2019-22

Physics Coursework Marker, The University of Nottingham, Nottingham, UK

2017-21

Student Ambassador, The University of Edinburgh and the University of Nottingham, Edinburgh and Nottingham, UK

- Resided over the information desk and gave tours of the campus and the School of Physics and Astronomy at the Open Days, Post-offer Visit Days, Visiting Students Welcome Event

2018

UUKi Parliamentary Reception for the Go International: Stand Out Campaign, Westminster, London, UK

- Ambassador for The University of Edinburgh

Awards

2018

RSE Cormack Undergraduate Astronomy Research Prize, Royal Society of Edinburgh, Edinburgh, UK

For the "21cm Marking the End of Dark Ages" project

2016

Year 2 Physics Class medal, The University of Edinburgh, Edinburgh, UK

For excellent performance during the 2015/16 session

2014

The memorial letter of St. Gorazd, The Ministry of Education, Science, Research and Sport of the Slovak Republic, Bratislava, Slovakia

For successful representation of the Slovak Republic at Austrian Young Physicists' Tournament and achievement of bronze medal

2014

Best in Natural Sciences school award, Pavol Horov Gymnasium, Michalovce, Slovakia

For representation of the school at various Physics and Maths competitions

Skills

Programming Python, Jupyter notebook, C, \LaTeX , Mathematica, basic in IDL
Radiative Transfer, OpenMP parallelisation, 21cmFAST, IRAF, SExtractor
Large data analysis (binary and HDF5 formats)