# Tomáš Šoltinský

# Curriculum Vitae

Nationality: Slovak  $\Box$  +421 915840400

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**Employment** 2024 Postdoctoral Research Grant Holder, 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 Refereeing scientific papers, for A&A 202<u>3-</u>24 In-Kind Directable Software Development for the LSST-DESC, Tata Institute of Fundamental Research, Mumbai, India Development of a code for calculating 3D trispectrum from N-body simulations 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

O 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

2017

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

Redefining the Habitable Zone

Supervisor: Prof David J. Stevenson

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

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

Signal Processing

Supervisor: Dr Thomas J. Massinger

Data analysis and investigation of glitches in data

#### **Publications**

**T Šoltinský**, G Kulkarni, S P Tendulkar, et al., "Prospects of a statistical detection of the 21-cm forest and its potential to constrain the thermal state of the neutral IGM during reionization", published in *MNRAS*, Volume 537, Issue 1, pp.364-378, 2025. (link)

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", published 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  $z \ge 6$ ", published 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", published in *MNRAS*, Volume 506, pp. 5818-5835, 2021. (link)

C S Cockell, "Astrobiology: Understanding Life in the Universe", *Wiley-Blackwell*, 2015 O Contributed to and was cited in the Preface to the book

## Memberships

SKA Cosmology and Epoch of Reionization SWGs, link Cosmology, link EoR

21-cm Cosmology Group (India), link

LSST-DESC, Large scale structure WG, provisional membership, link

Sherwood-Relics simulation suite, link

### Conferences, Meetings, Talks, Lectures

The galaxy-IGM connection in the first billion years, Institute for Fundamental Physics of the Universe, Trieste, Italy, Talk

Radio Cosmology and Continuum Observations in the SKA Era: A Synergic View, International Centre for Theoretical Sciences, Bengaluru, India, Talk (link)

SKA Cosmology SWG Meeting, Observatoire de la Cote d'Azur, Nice, France, Talk

IFPU colloquium, Institute for Fundamental Physics of the Universe, Trieste, Italy, Colloquium

The First Gigayear(s), Hilo Hawaiian Hotel, Hilo, Hawai'i, Talk

The Origin and Evolution of Supermassive Black Holes, Sexten Center for Astrophysics, Sexten, Italy, Talk (link 1,link 2)

Cosmic Dawn at High Latitudes Conference, Royal Swedish Academy of Sciences, Stockholm, Sweden, Talk (link)

State of the Universe, Tata Institute of Fundamental Research, Mumbai, India, Seminar (link)

**Cosmology in the Alps Conference**, Les Diablerets, Switzerland, Talk (link)

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

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

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

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

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

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

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

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

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

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

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

2024

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2021 2021 2021 2021 2021 2020	State of the Universe, Tata Institute of Fundamental Research, Mumbai, India, Seminar (link) National Astronomical Meeting (NAM2021), The University of Bath, Bath, UK, Talk SAZERAC 2.0, Recorded talk (link) Lunch talk, The University of Nottingham, Nottingham, UK, Talk Lunch talk, The University of Nottingham, Nottingham, UK, Talk
	Schools, Courses
2023	Foundation HPC-Skills Course, DiRAC
	DP0 Virtual Summer School 2023, Vera C. Rubin Observatory/LSST
	Extracurricular Activities
2021	Mentoring at GROWNi.sk, Slovakia
2016	O Advising students in their career and study decisions
	Outreach talks, Pavol Horov Gymnasium, Michalovce, Slovakia  o "From LA through half the globe to simulated universe", Topic: career path and simulations in astrophysics  "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
	Astronomy Postgraduate Student Representative, The University of Nottingham, Nottingham, UK  O 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	<b>Student Ambassador</b> , <i>The University of Edinburgh and the University of Nottingham</i> , Edinburgh and Nottingham, UK
2018	O 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
	<ul> <li>UUKi Parliamentary Reception for the Go International: Stand Out Campaign,</li> <li>Westminster, London, UK</li> <li>Ambassador for The University of Edinburgh</li> </ul>
	Awards
2018	RSE Cormack Undergraduate Astronomy Research Prize, Royal Society of Edinburgh, Edinburgh, UK
2016	For the "21cm Marking the End of Dark Ages" project
•	<b>Year 2 Physics Class medal</b> , <i>The University of Edinburgh</i> , 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
2014	For successful representation of the Slovak Republic at Austrian Young Physicists' Tournament and achievement of bronze medal  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
2 0	Radiative Transfer, 21cmFAST, IRAF, SExtractor
	Large data analysis (binary and HDF5 formats), MCMC, OpenMP parallelisation, Slurm