

Eleni Tsaprazi

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Imperial Centre for Inference and Cosmology (ICIC) & Astrophysics group, Department of Physics, Imperial College, Blackett Laboratory, Prince Consort Road, London SW7 2AZ, UK

Employment

2023 - Research Associate, Imperial College London

Education

2019 - 2023 PhD Cosmology, Stockholm University, The Oskar Klein Centre, Sweden

2018 - 2019 MSc Nuclei, Particles, Astroparticles & Cosmology, Sorbonne University, France

2014 - 2018 BSc Physics, Aristotle University of Thessaloniki, Greece

Internships

2019 Paris Institute of Astrophysics, supervisor: Roya Mohayaee
“The large-scale flow of galaxies: effects on cosmological data”

2018 CEA Paris - Saclay, supervisor: Jean-Luc Sauvageot
“Detection of X-rays of astrophysical origin”

2018 Aristotle University of Thessaloniki, supervisor: Christos Tsagas
“Relativistic approach to the kinematics of large-scale peculiar velocities”

Academic achievements

2023 Travel grant, Balzan Cosmological Studies Program, University of Oxford

2022 Travel grant, Royal Swedish Academy of Sciences

2021 Travel grant, Birger och Gurli Grundströms research stipend

2021 Travel grant, Fonden för främjande av fysisk forskning

2018 Full MSc scholarship, Institut Lagrange de Paris

Research interests

Bayesian statistics; Data analysis of big datasets; Forward modelling; High-order statistics; Field-level inference; Large-scale structure; Galaxy clustering; Nonlinear structure formation; High-dimensional parameter spaces; Photometric redshifts; Spectroscopic redshifts; Peculiar velocities; Galaxy intrinsic alignment; Transients.

Teaching and supervision

2023 Stockholm University, Course note author for “Open questions in Cosmology”

2022 Stockholm University, Assistant supervisor of MSc student Somaya Bakhsh

2015 Mandoulides Schools, Astronomy workshop organiser and demonstrator

2014 - 2015 Mandoulides Schools, Junior high-school Astronomy teacher

2014 Freelance private tutor, Mathematics and Physics

2014 Aristotle University of Thessaloniki, Informatics Lab, Teaching Assistant

Talks

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| 2023 | Hol-IA Workshop, Lorentz Center, Leiden University Field-level inferences of intrinsic alignment |
| 2023 | BIPAC Journal Club, Oxford University High-order statistics of photometric galaxy clustering |
| 2023 | Photometric Redshifts Working Group, LSST Dark Energy Science Collaboration High-order statistics of photometric galaxy clustering |
| 2023 | Additional GC Probes working group, Euclid Collaboration High-order statistics of photometric galaxy clustering |
| 2022 | Advances in Cosmology through Numerical Simulations, MIAPbP Field-level analyses of galaxy surveys |
| 2022 | Machine Learning for Cosmological Simulations, Euclid Collaboration Bayesian inference of intrinsic alignment in the large-scale structure |
| 2022 | Cosmology Seminar Series, Max Planck Institute for Astrophysics Bayesian inference of intrinsic alignment in the large-scale structure |
| 2021 | Cosmology Journal Club, University of Cambridge Tracing the cosmic web with supernovae |
| 2021 | LSST Dark Energy Science Collaboration Meeting Supernova clustering in the large-scale structure |
| 2021 | 3rd ATh Alumni Workshop on Theoretical Physics Improving the accuracy of galaxy redshifts through the large-scale structure |
| 2017 | Modern Physics at All Scales Summer School, Leiden University The accelerating expansion of the Universe for observers in a bulk flow |
| 2016 | The ISM-SPP Olympian School of Astrophysics, Greece The peculiar deceleration parameter |

Science missions & project participation

- Full member of the LSST Dark Energy Science Collaboration (Bayesian pipeline development)
- Member of the Zwicky Transient Facility Collaboration (Transients for cosmological analyses)
- Member of the Aquila Consortium (Software development & data analysis)

Community service

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| 2023 | LSST DESC February Collaboration Meeting Plenary Session chair |
| 2022 - | Elected PhD representative of the Aquila Consortium Contact Unit |
| 2022 - | Co-author of the Aquila Consortium Code of Conduct |
| 2022 | Co-organiser of the Aquila Consortium fall meeting |
| 2021 - 2022 | Co-organiser of the Stockholm University Cosmology & Gravitation meetings |
| 2020 - 2021 | Co-organiser of the Stockholm University Supernova & Cosmology meetings |
| 2016 | Auxiliary staff (XXIth Quark Confinement and the Hadron Spectrum Conference) |

Science communication

- Co-founder of the [Scientia Publica](#) project, a science podcast and article [series](#)
- YouTube [research vlog](#) series
- Creator of [Texts from Space](#)
- Content translator for [TheBeautifulMars](#) project, NASA HiRISE mission

Summer schools

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| 2022 | LSST DESC Summer School (virtual participation) |
| 2021 | Summer School in Statistics for Astronomers, Penn State (virtual participation) |
| 2020 | Cosmology Summer School, University of Michigan (virtual participation) |
| 2017 | Modern Physics at All Scales, Leiden University |

Technical skills

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| Programming languages | Python, C, C++, MATLAB, Fortran, SQL |
| Scientific programming | Shell, High-performance computing, OpenMP, MPI, N-body simulations, Monte Carlo methods |
| Version control | Bitbucket, Github |
| Website building | WordPress, MediaWiki, Indico |
| Languages | Greek (Native), English (C2), French (B2) |

Publication list

1. Lamman C., **Tsaprazi E.**, Shi J., Šarčević N., Pyne S., Legnani E., Ferreira T., The IA Guide: A Breakdown of Intrinsic Alignment Formalisms, submitted to the Open J. of Astrophysics ([ADS](#))
2. Boonkongkird C., Lavaux G., Peirani S., Dubois Y., Porqueres N., **Tsaprazi E.**, LyAl-Net: A high-efficiency Lyman- α forest simulation with a neural network, submitted to A&A ([ADS](#)) - cited: 1
3. **Tsaprazi E.**, Jasche J., Lavaux G., Leclercq F., Higher-order statistics of the large-scale structure from photometric redshifts, submitted to A&A ([ADS](#)) - cited: 3
4. **Tsaprazi E.**, Nguyen N. M., Jasche J., Schmidt S., Lavaux G., Field-level inference of galaxy intrinsic alignment from the SDSS-III BOSS survey, Journal of Cosmology and Astroparticle Physics, vol. 2022, no. 8, 2022 ([ADS](#)) - cited: 9
5. **Tsaprazi E.**, Jasche J., Goobar A., Peiris H. V., Andreoni I., Coughlin M. W., Fremling C. U., Graham M. J., Kasliwal M., Kulkarni S. R., Mahabal A. A., Riddle R., Sollerman J., Tzanidakis A., The large-scale environment of thermonuclear and core-collapse supernovae, Monthly Notices of the Royal Astronomical Society, Volume 510, Issue 1, Feb 2022, 366–372 ([ADS](#)) - cited: 7
6. **Tsaprazi E.**, Tsagas C. G., Relativistic approach to the kinematics of large-scale peculiar motions, The European Physical Journal C, 80, 757, 2020 ([ADS](#)) - cited: 9