

# Arthur Loureiro

RESEARCHER · ASTROPHYSICS & COSMOLOGY

The Oskar Klein Centre for Cosmoparticle Physics, Department of Physics, Stockholm University, Stockholm SE-106 91, Sweden  
Visitor at Imperial Centre for Cosmology and Inference, Imperial College London, Physics Department, London, UK

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## Research & Work Experience

### Stockholm University

Stockholm, Sweden

PI RESEARCHER

March. 2023 - PRESENT

Research Fellow on a Swedish National Space Agency Grant “Measuring the lightest neutrino mass with Euclid and the Planck”

### Imperial College London

London, United Kingdom

POST-DOCTORAL RESEARCH ASSOCIATE (CURRENTLY VISITING RESEARCHER)

Dec. 2019 - PRESENT

PDRA (2019-2020) and visiting researcher (currently) working with Profs. Heavens & Jaffe on Field Level Inference for Cosmic Shear on the sphere.

### University of Edinburgh

Edinburgh, United Kingdom

SENIOR SCIENTIST/DEVELOPER (50% FTE UNTIL OCT. 2022)

Sept. 2021 - Feb. 2023

Euclid SGS Senior Scientist/Developer working with Prof. Andy Taylor on weak lensing shape measurement calibration and sensitivity.

### University College London

London, United Kingdom

RESEARCH FELLOW (50% FTE FROM SEPT. 2021)

Apr. 2020 - Sept. 2022

UCL Research Fellow working with Prof. Benjamin Joachimi on Bayesian methods for cosmological galaxy surveys such as the Euclid Satellite.

### University College London

London, United Kingdom

POST-DOCTORAL RESEARCH ASSISTANT

Dec. 2018 - Dec. 2019

Euclid SGS PDRA working with Prof. Benjamin Joachimi on pipeline development, testing, and validation for Weak Lensing power spectra.

## Education

### University College London

London, United Kingdom

PHD IN ASTROPHYSICS

2015 - 2019

Advisors: Dr. F. Abdalla and Prof. Ofer Lahav

Thesis: The Universe in Harmonic Space: Neutrinos and Dark Energy

### University of São Paulo

São Paulo, Brazil

MASTERS IN MATHEMATICAL PHYSICS

2013 - 2015

Advisor: Prof. L. Raul Abramo

Thesis: Galaxy Power Spectrum: A Monte-Carlo Approach

### Université de Montréal

Montréal, Canada

UNDERGRADUATE EXCHANGE

2012

Exchange program as a bachelor student in Physics under the Science without Borders Scholarship.

### Universidade Federal do Rio Grande do Sul

Porto Alegre, Brazil

UNDERGRADUATE DEGREE IN PHYSICS WITH EMPHASIS IN ASTROPHYSICS

2010 - 2013

Advisor: Prof. Silvio R. Dahmen

Dissertation: Relativistic Thermodynamics applied to Cosmological Models

## Grants & Awards

### SWEDISH NATIONAL SPACE AGENCY

2025-2028 (PI) Career Grant: “Measuring the Lightest Neutrino Mass with Euclid and Planck”, Stockholm University

€473 243

### UKRI, EDINBURGH PARALLEL COMPUTING CENTRE

2024-2026 (Co-I) ARCHER2 eCSE: “GLASS: A GPU-enable ecosystem for simulating the universe”, UCL

£284 000

### UNIVERSITY COLLEGE LONDON (UNITED KINGDOM)

2020-2022 UCL Provost Strategic Fund Fellowship, University College London

£112 554

## NATIONAL COUNCIL FOR SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT (BRAZIL)

2015-2018 **Science without Borders PhD Fellowship**, University College London

£131 378

2013-2015 **CNPq Masters Scholarship**, University of São Paulo

R\$30 000

2012 **Science without Borders Exchange Scholarship**, Université de Montréal

CAN\$6700

## Skills & Professional Services

<b>Programming</b>	Advanced Python, Jupyter, Bash, and Slurm for HPC; intermediate C/C++, Julia, jax, torch, SQL.
<b>Cosmological Codes</b>	CLASS, Hi-CLASS, CAMB, Monte Python, CCL, Healpix, BORG, and Glass (co-developer)
<b>Peer Reviewer</b>	Journal of Cosmology and Astroparticle Physics, Monthly Notices of the Royal Astronomic Society, The Open Journal of Astrophysics
<b>Scientific Collaborations</b>	LSST Dark Energy Science Collaboration (1.0+ FTE), Euclid Consortium (3.5 FTE), Kilo Degree Survey, Aquila Consortium OKC Cosmology & Gravitation Working Group Coordinator (2024-)
<b>Leadership Roles</b>	Pipeline Scientist for the Dark Energy Science Collaboration (2023-2025) Co-Lead Euclid LE3 Weak Lensing Pre-Launch Key Project (2021-2023) PDRA Representative at UCL's Astro Group (2020-2022),
<b>Languages</b>	<b>English:</b> Fluent (speaking, reading, writing); <b>Portuguese:</b> Native; <b>French:</b> Intermediate (speaking, reading) and basic (writing); <b>Spanish:</b> Basic (writing, speaking, reading); <b>Swedish:</b> < Basic (writing, speaking, reading);

## Selected Publications

**116 Publications**, 69 of which are refereed, of those **6 as first author or \*corresponding author**.

Total citations: 2036, **h-index: 21**. An up-to-date list of publications and citations can be found in [ADS here](#).

1. [Upper Bound of Neutrino Masses from Combined Cosmological Observations and Particle Physics Experiments](#)  
**A. Loureiro**, A. Cuceu, et al., *Physical Review Letters*, 123, 2019 (80 citations)
2. [KiDS & Euclid: Cosmological implications of a pseudo- \$C\_\ell\$  analysis of KiDS-1000 cosmic shear tomography](#)  
**A. Loureiro**, L. Whittaker, A. Spurio Mancini, KiDS Collaboration & Euclid Collab., *A & A*, 665, 2022 (63 citation)
3. [Almanac: Weak Lensing power spectra and map inference on the masked sphere](#)  
**A. Loureiro**, L. Whiteway, E. Sellentin, et al., *The Open J. of Astroph.*, 6, 6, 2023 (19 citations)
4. [Cosmological measurements from angular power spectra analysis of BOSS DR12 tomography](#)  
**A. Loureiro**, B. Moraes, et al., *MNRAS*, 485, 2019 (52 citations)
5. [GLASS: Generator for Large Scale Structure](#)  
N. Tessore, **A. Loureiro\***, B. Joachimi et al., *The Open Journal of Astrop.*, 6, 11, 2023 (28 citations)

## Research Supervision

2025-2026	<b>Xander Nooderloos (MSc Erasmus)</b> , Co-supervisor for Exchange Research Masters from U. of Utrecht on a project "Neutrino masses from cross-correlations between LSST and CMB Lensing"	<i>Stockholm University</i>
2024-2025	<b>Pedro Henrique Ribeiro (MSc)</b> , Co-supervisor for Masters student at Federal University of Rio de Janeiro on a thesis "Forecasting the impact of linear 3x2pt systematics on constraints of neutrino mass for LSST"	<i>UFRJ</i>
2023	<b>Ivan Sladoljev (MSc Erasmus)</b> , Supervisor for Erasmus Exchange Research Trainee from U. of Zagreb on a project "Field Level Inference for PNGs in the CMB"	<i>Stockholm University</i>
2020 - 2021	<b>Lisa Goh (MSc)</b> , Co-supervisor together with Dr Lee Whittaker and Dr Benjamin Joachimi on a project "Pseudo- $C_\ell$ likelihood for the Euclid galaxy survey"	<i>UCL</i>
2018	<b>Andrei Cuceu (undergrad)</b> , Co-supervisor with Dr Bruno Moraes on a Summer Internships (12 weeks) project "Simultaneous constraints of Cosmology and redshift distribution from galaxy surveys and CMB data" (Funded by RAS)	<i>UCL</i>
2018	<b>Marion Thomas (undergrad)</b> , Co-supervisor on a Summer Internship (12 weeks) project "Synergies between Spectroscopic and Photometric Galaxy Surveys" (Funded by RAS)	<i>UCL</i>
2018	<b>Joshua Lawton (undergrad)</b> , Co-supervisor on a Summer Internship (12 weeks) project "Creating a Galaxy Clustering Catalogue with PanSTARRS"	<i>UCL</i>
2017	<b>Andrei Cuceu (undergrad)</b> , Co-supervisor with Dr Bruno Moraes on a Summer Internship (12 weeks) project "Cosmological Constraints from Supernova Surveys and Planck CMB data"	<i>UCL</i>

## Teaching Experience

### Stockholm University

LECTURER - UNDERGRADUATE, MASTERS, AND PHD LEVEL

Lecturer on "Statistical Methods for Physics" (2023, 2025) and "Nuclear and Particle Physics, Astrophysics and Cosmology" (2025)

Stockholm, Sweden

2023, 2025

### University of Edinburgh

TEACHING ASSISTANT - PHD LEVEL

Teaching assistant at the PhD Hackathon on data analysis (2022)

Edinburgh, UK

2022

### University College London

TEACHING ASSISTANT - UNDERGRADUATE LEVEL

Practical Astronomy 2 (2017, 2018), Observational Astronomy 1 (2017), Practical Physics 2 (2017), Practical Skills for Astronomy (2016)

London, UK

2016 - 2018

### University of São Paulo

TEACHING ASSISTANT - UNDERGRADUATE LEVEL

Physical Cosmology (2014/2), Advanced Quantum Mechanics (2014/1)

São Paulo, BR

2014 - 2015

### Universidade Federal do Rio Grande do Sul

TEACHING ASSISTANT - UNDERGRADUATE LEVEL

Basic Astronomy (2011, 2013), Psychology of Education (2010)

Porto Alegre, BR

2010 - 2013

### Private

TUTOR - HIGH-SCHOOL LEVEL

Physics & Mathematics for high-school

Porto Alegre, BR

2011 - 2013

## Outreach

### Cover Article about the Euclid Telescope

Cover Article about the Euclid Telescope and the Early Released Images for the Brazilian Astronomy Magazine, organised by the Brazilian Astronomical Society. [Link](#)

Brazil

2023

### Guest on the Podcast "Missão Exoplaneta"

Guest scientist in the Brazilian astronomy podcast Missão Exoplaneta (Exoplanet Mission) communicating about the Euclid Satellite Launch and my experience attending it at ESA Mission Control Centre. [Link](#)

Spotify

2023

### Project Collaborator for #AstroThreadBR and #AstroMiniBR

Social Media engagement with the science enthusiasts community in Brazil via the #AstroThreadBR and #AstroMiniBR projects to educate the general public about astronomy. Some threads reaching around 10-20k impressions.

Twitter

2019-2022

### Public Engagement Talk: "Weighing Ghost Particles with the Universe"

Public outreach talk for Astronomy on Tap London, live on YouTube due to COVID restrictions. URL: <https://youtu.be/MLwBvdc675A>

YouTube

2020

### Press Release Article: "Ghost particles: how galaxies helped us weigh the lightest neutrino"

Article published at The Conversation portal related to Loureiro et al. 2019 PRL, informing the general public about the main results in the paper.

The Conversation

2019

### Public Engagement Talk: "Hunting Ghosts with Galaxies"

Outreach talk at a high school about Cosmology, Neutrinos, and careers in academia and data science.

Porto Alegre, BR

2018

### Art Exhibition: If a Tree falls in the Forrest, Cosmology meets Art

Art exhibition in collaboration with the Royal College of Arts. Presentation of a workpiece "Confirmation of Time" in collaboration with the artist Franziska Hatton. URL: <http://ifatreefalls.rca.ac.uk>

Grizdale Forest, UK

2018

### Royal Academy of Arts Lates: L'Observatoire Bizarre

Public engagement in collaboration with the Royal College of Arts at the Dada & Surrealism RA Late. Organised by Dr. Andrew Pontzen and Michaela French.

London, UK

2018

### Public Engagement Talk at Physics Club: "Time in Cosmology"

Outreach talk at the Physics Club about how time is perceived in Cosmology, Universidade Federal do Rio Grande do Sul.

Porto Alegre, BR

2015

## Event Organisation

### Kilo Degree Survey - 6x2pt Workshop

ORGANISER

Stockholm, Sweden

June/2025

## Statistical Challenges on 21st Century Cosmology (Cosmo21)

SCIENTIFIC ORGANISING COMMITTEE

### Euclid Collab. Meeting, Session on Field Level Inference

CO-ORGANISER

### Euclid Weak Lensing Science Working Group Meeting

CO-ORGANISER

### London Cosmology Discussion Meeting - “Breaking LCDM”

ORGANISER

### Cosmology and Extragalactic Seminars at UCL

ORGANISER

### Euclid CalWG, Garage Day & OU-LE3 Meeting

ORGANISER

### Euclid Consortium Meeting

ORGANISATIONAL GROUP

### CosmoClub

ORGANISER

Chania, Greece

May/2024

Copenhagen, DN

May/2023

Edinburgh, UK

Dec/2022

(online) London, UK

Feb/2021

London, UK

Jan/2019 - Jan/2021

London, UK

2017

London, UK

2017

São Paulo, BR

2014

## Selected Talks

2024	<b>CMB/LSS Discussion Group Seminar</b> , Institute of Astronomy, University of Cambridge	Cambridge, UK
2023	<b>Dark Sector Cosmology Talk</b> , Jet Propulsion Lab, NASA/Caltech	Passadena, US
2023	<b>Cosmology Talk</b> , The Oskar Klein Centre, Stockholm University	Stockholm, SE
2022	<b>Talk at GR effects in observing the Large-Scale Structure of the Universe</b> , Universidade do Porto	Porto, PT
2022	<b>Cosmology Seminar</b> , Queen Mary University of London	London, UK
2022	<b>Cosmology Seminar</b> , University of Portsmouth	Portsmouth, UK
2021	<b>Cosmology Group Talk</b> , University of São Paulo	São Paulo, BR
2021	<b>Stobie Talk on Science Funding Crisis in Brazil</b> , University of Edinburgh	Edinburgh, UK
2021	<b>Cosmology Seminar at the PPGCosmo</b> , Federal University of Espirito Santo	Vitória, BR
2021	<b>Talk at the DES Harmonic Space Working Group</b> , Dark Energy Survey	Online
2021	<b>Cosmology Seminar</b> , CosmoStat, Commissariat à l'énergie atomique (CEA)	Saclay, FR
2021	<b>Cosmology Seminar</b> , Max Planck Institute for Astrophysics	Munich, GE
2020	<b>Talk at the Kilo Degree Survey Busy Week</b> , German Centre for Cosmological Lensing	Bochum, GE
2019	<b>Seminar at the Royal Observatory's Coffee Talks</b> , University of Edinburgh	Edinburgh, UK
2019	<b>Seminar at the EEP Group Meeting</b> , University of Sussex	Brighton, UK
2019	<b>Talk at the Euclid Consortium Meeting</b> , University of Helsinki	Helsinki, FN
2018	<b>Astrophysics Seminar</b> , Universidade Federal do Rio Grande do Sul	Porto Alegre, BR
2018	<b>Department of Mathematical Physics Seminar</b> , University of São Paulo	São Paulo, BR
2018	<b>Astrophysics Seminar</b> , National Institute for Space Research	SJ dos Campos, BR
2018	<b>Seminar for UCL's Lunch Talks</b> , University College London	London, UK
2017	<b>Talk at the Dark Energy Survey Collaboration Meeting</b> , University of Chicago	Chicago, US
2017	<b>Talk at the Euclid UK Collaboration Meeting</b> , University of Portsmouth	Portsmouth, UK
2017	<b>Talk at the Euclid OU-LE3 Meeting</b> , Royal Astronomical Society	London, UK
2016	<b>Talk at the Dark Energy Collaboration Meeting</b> , Cambridge University	Cambridge, UK
2015	<b>Talk at the J-PAS Warm-up Meeting</b> , University of São Paulo	São Paulo, BR

## References

### Prof. Alan Heavens

CHAIR IN ASTROSTATISTICS

Contact: a.heavens@imperial.ac.uk

Imperial College London

### Prof. Benjamin Joachimi

PROFESSOR IN ASTRONOMY

Contact: b.joachimi@ucl.ac.uk

University College London

### Prof. Elisa Chisari

ASSOCIATE PROFESSOR OF PHYSICS

Contact: n.e.chisari@uu.nl

Utrecht University