

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

RESEARCHER

Researcher working with Prof. Jens Jasche in Field Level Inference techniques and LSST DESC Pipeline Scientist.

Stockholm, Sweden

March. 2023 - PRESENT

Imperial College London

POST-DOCTORAL RESEARCH ASSOCIATE (CURRENTLY VISITING RESEARCHER)

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

London, United Kingdom

Dec. 2019 - PRESENT

University of Edinburgh

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

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

Edinburgh, United Kingdom

Sept. 2021 - Feb. 2023

University College London

RESEARCH FELLOW (50% FTE FROM SEPT. 2021)

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

London, United Kingdom

Apr. 2020 - Sept. 2022

University College London

POST-DOCTORAL RESEARCH ASSISTANT

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

London, United Kingdom

Dec. 2018 - Dec. 2019

Education

University College London

PHD IN ASTROPHYSICS

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

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

London, United Kingdom

2015 - 2019

University of São Paulo

MASTERS IN MATHEMATICAL PHYSICS

Advisor: Prof. L. Raul Abramo

Thesis: Galaxy Power Spectrum: A Monte-Carlo Approach

São Paulo, Brazil

2013 - 2015

Université de Montréal

UNDERGRADUATE EXCHANGE

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

Montréal, Canada

2012

Universidade Federal do Rio Grande do Sul

UNDERGRADUATE DEGREE IN PHYSICS WITH EMPHASIS IN ASTROPHYSICS

Advisor: Prof. Silvio R. Dahmen

Dissertation: Relativistic Thermodynamics applied to Cosmological Models

Porto Alegre, Brazil

2010 - 2013

Grants & Awards

SWEDISH 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

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

Selected Publications

65 Publications, 42 of which are refereed, of those **6 as first author or *corresponding author**.

Total citations: 772, **h-index: 14**. 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 (68 citations)
2. *KiDS & Euclid: Cosmological implications of a pseudo- C_ℓ analysis of KiDS-1000 cosmic shear tomography*
A. Loureiro, L. Whittaker, A. Spurio Mancini, KiDS Collaboration & Euclid Collab., *A & A*, 665, 2022 (51 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 (15 citations)
4. *Cosmological measurements from angular power spectra analysis of BOSS DR12 tomography*
A. Loureiro, B. Moraes, et al., *MNRAS*, 485, 2019 (51 citations)
5. *GLASS: Generator for Large Scale Structure*
N. Tessore, **A. Loureiro***, B. Joachimi et al., *The Open Journal of Astrop.*, 6, 11, 2023 (17 citations)

Research Supervision

2023	Ivan Sladoljev (MSc Erasmus) , 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	Lisa Goh (MSc) , Co-supervisor together with Dr Lee Whittaker and Dr Benjamin Joachimi on a project "Pseudo- C_ℓ likelihood for the Euclid galaxy survey"	<i>UCL</i>
2018	Andrei Cuceu (undergrad) , 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	Marion Thomas (undergrad) , Co-supervisor on a Summer Internship (12 weeks) project "Synergies between Spectroscopic and Photometric Galaxy Surveys" (Funded by RAS)	<i>UCL</i>
2018	Joshua Lawton (undergrad) , Co-supervisor on a Summer Internship (12 weeks) project "Creating a Galaxy Clustering Catalogue with PanSTARRS"	<i>UCL</i>
2017	Andrei Cuceu (undergrad) , 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

Stockholm, Sweden

SUBSTITUTE LECTURER - MASTERS AND PHD LEVEL

2023

Substitute Lecturer for two lectures on "Statistical Methods for Physics" (2023)

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

Statistical Challenges on 21st Century Cosmology (Cosmo21)

SCIENTIFIC ORGANISING COMMITTEE

Chania, Greece

May/2024

Euclid Collab. Meeting, Session on Field Level Inference

CO-ORGANISER

Copenhagen, DN

May/2023

Euclid Weak Lensing Science Working Group Meeting

CO-ORGANISER

Edinburgh, UK

Dec/2022

London Cosmology Discussion Meeting - “Breaking LCDM”

ORGANISER

(online) London, UK

GR effects in observing the Large-Scale Structure of the Universe

SESSION CHAIR

Feb/2021

Porto, PT

Jun/2022

Cosmology and Extragalactic Seminars at UCL

ORGANISER

London, UK

Jan/2019 - Jan/2021

Euclid CalWG, Garage Day & OU-LE3 Meeting

ORGANISER

London, UK

2017

Euclid Consortium Meeting

ORGANISATIONAL GROUP

London, UK

2017

CosmoClub

ORGANISER

São Paulo, BR

2014

Selected Talks

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

READER IN ASTRONOMY

Contact: b.joachimi@ucl.ac.uk

University College London

Prof. Jens Jasche

ASSOCIATE PROFESSOR OF PHYSICS

Contact: jens.jasche@fysik.su.se

Stockholm University

Prof. Andrew Jaffe

PROFESSOR OF ASTROPHYSICS AND COSMOLOGY AND DIRECTOR OF IMPERIAL CENTER FOR COSMOLOGICAL INFERENCE

Contact: a.jaffe@imperial.ac.uk

Imperial College London