

# Arthur Loureiro

RESEARCH FELLOW · ASTROPHYSICS & COSMOLOGY

University College London, Physics & Astronomy Department, London, UK

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## Research Experience

### University College London

London, United Kingdom

RESEARCH FELLOW

Mar. 2020 - PRESENT

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

### Imperial College London

London, United Kingdom

POST-DOCTORAL RESEARCH ASSOCIATE (CURRENTLY VISITING RESEARCHER)

Dec. 2019 - PRESENT

PDRA working with Prof. Alan Heavens and Prof. Andrew Jaffe on Bayesian Hierarchical Models for Cosmic Shear on the sphere.

### University College London

London, United Kingdom

POST-DOCTORAL RESEARCH ASSISTANT

Dec. 2018 - Dec. 2019

Euclid PDRA working with Dr. 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. Filipe 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

## Skills & Professional Services

<b>Programming</b>	Advanced Python, Jupyter Notebook, Bash/TCSHELL and Slurm for HPC; intermediate C/C++, Mathematica, SQL.
<b>Cosmological Codes</b>	CLASS, Hi-CLASS, CAMB, CosmoMC, Monte Python, Flask, CCL, Healpix.
<b>Peer Reviewer</b>	Journal of Cosmology and Astroparticle Physics
<b>Others</b>	Post-Doc Representative at UCL's Astrophysics Group (2020)

## Languages

<b>English</b>	Fluent (speaking, reading, writing)
<b>Portuguese</b>	Native speaker
<b>French</b>	Intermediate (speaking, reading) and basic (writing)

## Grants & Awards

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

2015-2018	<b>Science without Borders PhD Fellowship</b> , University College London	£131,378
2012	<b>Science without Borders Exchange Scholarship</b> , Université de Montréal	CAN\$6700

## Publications

- 1 Upper Bound of Neutrino Masses from Combined Cosmological Observations and Particle Physics Experiments  
**A. Loureiro**, A. Cuceu, et al., *Physical Review Letters*, 123 (8), 2019
- 2 Cosmological measurements from angular power spectra analysis of BOSS DR12 tomography  
**A. Loureiro**, B. Moraes, et al., *Mon. Notices of the Royal Astronomical Soc.*, 485 (1), 2019
- 3 Fourier analysis of multitracer cosmological surveys  
L. R. Abramo, L. F. Secco & **A. Loureiro**, *Mon. Notices of the Royal Astronomical Soc.*, 455 (4), 2016

### Under internal review:

- Cosmological implications of a pseudo angular power spectrum analysis of KiDS-1000 cosmic shear tomography  
**A. Loureiro**, L. Whittaker, A. Spurio Mancini & KiDS Collaboration (*To be submitted to A&A*)

## Teaching Experience

### University College London

London, UK

TEACHING ASSISTANT - UNDERGRADUATE LEVEL

2016 - 2018

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

### University of São Paulo

São Paulo, BR

TEACHING ASSISTANT - UNDERGRADUATE LEVEL

2014 - 2015

Physical Cosmology (2015), Advanced Quantum Mechanics (2014)

### Universidade Federal do Rio Grande do Sul

Porto Alegre, BR

TEACHING ASSISTANT - UNDERGRADUATE LEVEL

2010 - 2013

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

## Research Supervision

Oct 2020 -	<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"	UCL
Oct 2020 -	<b>Vincent Yariv (undergrad)</b> , 3rd Year Literature Review supervisor on a project "A multi-messenger approach to the cosmic expansion tension"	UCL
Summer 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)	UCL
Summer 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)	UCL
Summer 2018	<b>Joshua Lawton (undergrad)</b> , Co-supervisor on a Summer Internship (12 weeks) project "Creating a Galaxy Clustering Catalogue with PanSTARRS"	UCL
Summer 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"	UCL

## Outreach

### Project Collaborator for #AstroThreadBR and #AstroMiniBR

Twitter

SOCIAL MEDIA ENGAGEMENT

2019-PRESENT

Engagement with the science enthusiasts community in Brazil via the #AstroThreadBR and #AstroMiniBR projects using twitter threads to educate the general public about astronomy. Threads have, on average, a reach of 10-20k impressions.

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

YouTube

PUBLIC ENGAGEMENT TALK

2020

Outreach talk for Astronomy on Tap London, live on YouTube. URL: <https://youtu.be/MLwBvdc675A>

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

The Conversation

PRESS RELEASE

2019

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

## Talk: “Hunting Ghosts with Galaxies”

PUBLIC ENGAGEMENT TALK

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

Porto Alegre, BR

2018

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

ART EXHIBITION

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

## L’Observatoire Bizarre

ROYAL ACADEMY OF ARTS LATES

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

## Physics Club: “Time in Cosmology”

PUBLIC ENGAGEMENT TALK

Outreach talk at the Physics Club, Universidade Federal do Rio Grande do Sul.

Porto Alegre, BR

2015

## Invited Talks

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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 Spectroscopic Surveys Meeting</b> , University College London	London, UK
2019	<b>Talk at the Euclid Consortium Meeting</b> , University of Helsinki	Helsinki, FN
2018	<b>Talk at the Dark Energy Survey Collaboration Meeting</b> , University of Campinas	Campinas, BR
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 Sao Paulo	Sao Paulo, BR
2018	<b>Astrophysics Seminar</b> , National Institute for Space Research	S J dos Campos, BR
2018	<b>Seminar for UCL’s Lunch Talks</b> , University College London	London, UK
2018	<b>Talk at TESTDE Final Workshop</b> , Royal Astronomical Society	London, UK
2017	<b>Talk at the Dark Energy Survey Collaboration Meeting</b> , University of Chicago	Chicago, US
2018	<b>Talk at the Euclid Consortium Meeting</b> , University College London	London, UK
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 Sao Paulo	Sao Paulo, BR

## Event Organisation

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### London Cosmology Discussion Meeting (LCDM)

ORGANISER

Organiser for a London Cosmology Discussion Meeting online with the theme: “Breaking LCDM”.

London, UK

2021

### Cosmology and Extragalactic Seminars at UCL

ORGANISER

UCL’s Cosmology and Extragalactic weekly seminars

London, UK

Jan/2019 - Jan/2021

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

ORGANISER

Four day meeting at the Royal Astronomical Society and University College London.

London, UK

2017

### Euclid Consortium Meeting

ORGANISATIONAL GROUP

Meeting at University College London

London, UK

2017

## Euclid Level 3 Simulations Meeting

ORGANISER

One day meeting at University College London

*London, UK*

2017

## CosmoClub

ORGANISER

Journal club and weekly seminars at the Department of Mathematical Physics, University of Sao Paulo

*Sao Paulo, BR*

2014

## References

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### Dr. Benjamin Joachimi

READER IN ASTRONOMY

Contact: b.joachimi@ucl.ac.uk

*University College London*

### Prof. Alan Heavens

CHAIR IN ASTROSTATISTICS AND DIRECTOR OF IMPERIAL CENTER FOR COSMOLOGICAL INFERENCE

Contact: a.heavens@imperial.ac.uk

*Imperial College London*

### Prof. Andrew Jaffe

PROFESSOR OF ASTROPHYSICS AND COSMOLOGY

Contact: a.jaffe@imperial.ac.uk

*Imperial College London*

### Prof. Ofer Lahav

PROFESSOR AT THE DEPARTMENT OF PHYSICS AND ASTRONOMY

Contact: o.lahav@ucl.ac.uk

*University College London*

### Prof. L. Raul Abramo

PROFESSOR AT THE MATHEMATICAL PHYSICS DEPARTMENT

Contact: abramo@if.usp.br

*University of Sao Paulo*