

# Antón Baleato Lizancos (*he/him/his*)

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## Education

<b>University of Cambridge, Institute of Astronomy</b> , Cambridge, UK PhD in Cosmology advised by Prof. Anthony Challinor Thesis: <i>Polishing the Lenses: Refined Modelling of Gravitational Lensing and Delensing of the CMB</i> Examined by Prof. George Efstathiou and Prof. Antony Lewis	2017 - 2021
<b>University of Cambridge, DAMTP</b> , Cambridge, UK MASt in Applied Mathematics & Theoretical Physics ( <i>Part III of the Mathematical Tripos</i> )	2016 - 2017
<b>Columbia University</b> , New York, USA B.Sc. Applied Physics, minor in Applied Mathematics. <i>Magna Cum Laude</i>	2012 - 2016

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## Academic appointments

<b>BCCP fellow</b> , UC Berkeley & Lawrence Berkeley National Laboratory Berkeley Center for Cosmological Physics Postdoctoral Fellowship	2021 - 2026
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## Fellowships & Awards

BCCP (Berkeley Center for Cosmological Physics) Fellowship	2021 -
Isaac Newton PhD Scholarship, University of Cambridge	2017 - 2021
Marie Skłodowska-Curie/ Inphinit La Caixa graduate fellowship (declined)	2017
Instituto de Astrofísica de Canarias Summer Studentship	2017
Trinity College Cambridge Studentship in Mathematics	2016 - 2017
Perimeter Institute PSI scholarship (declined)	2016
University of Oxford bursary for summer research in Astrophysics	2014
Columbia University Egleston Scholar	2012 - 2016
Davis UWC Scholar at Columbia University	2012 - 2016
United World Colleges Scholarship	2010 - 2012

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## Collaboration work

Simons Observatory (SO) – Delensing working group lead and member of the analysis team (2022-)	1/2018 -
Dark Energy Spectroscopic Instrument (DESI) – DESI-CMB cross-correlations topical group lead (2024-) – Co-coordinator of Key Project combining DESI clustering with lensing (2024-)	1/2022 -
CMB Stage-4 (CMB-S4)	6/2023 -

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## Public Codes

[DirectSHT](#): Direct Spherical Harmonic Transform code for point sets on the sphere  
[CARDiAC](#): Code for Anisotropic Redshift Distributions In Angular Clustering  
[COSMOBLENDER](#): Cosmological Biases to LENsing Due to Extragalactic Radiation

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## Selected publications

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For a complete, up-to-date list, please see my ORCID page ([0000-0002-0232-6480](https://orcid.org/0000-0002-0232-6480))

1. M. Maus et al. (incl. **A. Baleato Lizancos**) (2025) [arXiv:2505.20656](https://arxiv.org/abs/2505.20656), submitted to JCAP  
*A joint analysis of 3D clustering and galaxy  $\times$  CMB-lensing cross-correlations with DESI DR1 galaxies*
2. **A. Baleato Lizancos**, U. Seljak, M. Karamanis, M. Bonici and S. Ferraro (2025). [arXiv:2501.10587](https://arxiv.org/abs/2501.10587)  
*Selecting samples of galaxies with fewer Fingers-of-God*
3. J. L. Bernal and **A. Baleato Lizancos** (2025) Phys. Rev. D 111, 043539  
*Removal of interloper contamination to line-intensity maps using correlations with ancillary tracers of the large-scale structure*
4. E. Hertig et al. (incl. **A. Baleato Lizancos**) (2024) Phys. Rev. D 110, 043532  
*The Simons Observatory: Combining cross-spectral foreground cleaning with multi-tracer B-mode delensing for improved constraints on inflation*
5. **A. Baleato Lizancos** and M. White (2024). JCAP05(2024)010.  
*Harmonic analysis of discrete tracers of large-scale structure*
6. **A. Baleato Lizancos** and M. White (2023). JCAP, 2023(7), 044.  
*The Impact of Anisotropic Redshift Distributions on Angular Clustering*
7. **A. Baleato Lizancos** and S. Ferraro (2023). Phys. Rev. D, 107(12), 123532.  
*Model independent variance cancellation in CMB lensing cross-correlations*
8. **A. Baleato Lizancos** and S. Ferraro (2022). Phys. Rev. D, 106(6), 063534.  
*Impact of extragalactic foregrounds on internal delensing of the CMB B-mode polarization*
9. T. Namikawa, **A. Baleato Lizancos** and SO Collaboration (2022). Phys. Rev. D 105(2), 023511.  
*Simons Observatory: Constraining inflationary gravitational waves with multitracers B-mode delensing*
10. **A. Baleato Lizancos**, A. Challinor, B. Sherwin and T. Namikawa (2022). MNRAS, 514(4), 5786–5812.  
*Delensing the CMB with the cosmic infrared background: the impact of foregrounds*
11. **A. Baleato Lizancos**, A. Challinor and J. Carron (2021). JCAP, 2021(3), 016.  
*Impact of internal-delensing biases on searches for primordial B-modes of CMB polarisation*
12. **A. Baleato Lizancos**, A. Challinor and J. Carron (2021). Phys. Rev. D 103, 023518. *Editor’s suggestion.*  
*Limitations of CMB B-mode template delensing*

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## References

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**Dr. Anthony Challinor**  
Professor & Director  
Kavli Institute for Cosmology  
University of Cambridge  
[a.d.challinor@ast.cam.ac.uk](mailto:a.d.challinor@ast.cam.ac.uk)

**Dr. Simone Ferraro**  
Staff Scientist  
LBNL  
[sferraro@lbl.gov](mailto:sferraro@lbl.gov)

**Dr. Uroš Seljak**  
Professor & Director  
Berkeley Center for Cosmological Physics  
UC Berkeley & LBNL  
[useljak@berkeley.edu](mailto:useljak@berkeley.edu)

**Dr. Martin White**  
Professor of Physics & Astronomy  
UC Berkeley & LBNL  
[mwhite@berkeley.edu](mailto:mwhite@berkeley.edu)

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## Selected talks post-PhD (invited unless stated otherwise)

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### *Cross-correlation studies with DESI*

- 8/25 Review talk. *iTHEMS Cosmology Forum Workshop*. Saitama, Japan.

### *A patchwork of ideas at the interface of CMB and LSS analyses*

- 9/24 *New Physics from Old Light* workshop. Cambridge, UK
- 2/25 Theoretical Astrophysics and Cosmology Seminar. University of Arizona

### *Harmonic analysis of discrete tracers of large-scale structure*

- 7/24 *Cosmology in the Adriatic* workshop. Split, Croatia
- 6/24 University of Pennsylvania
- 6/24 *Cosmology from Home* conference.
- 1/24 LBNL. CMB lunch seminar.
- 1/24 LBNL. DESI lunch seminar.

### *New data, new methods, new challenges in CMB lensing and angular clustering*

- 9/23 Instituto de Física de Cantabria
- 9/23 Donostia International Physics Center

### *The Impact of Anisotropic Redshift Distributions on Angular Clustering*

- 8/23 Dark Energy Science Collaboration Photo-z meeting

### *New techniques for precision cosmology from angular clustering*

- 9/23 Contributed talk. IFT Madrid, Spain. COSMO '23 conference.
- 6/23 SLAC & Stanford Rubin meeting.

### *Model independent variance cancellation in CMB lensing cross-correlations*

- 6/23 SLAC & Stanford CMB meeting.
- 4/23 LBNL & UC Berkeley. CMB seminar.
- 4/23 Contributed talk. Kyoto, Japan. Future Science with CMB x LSS workshop.
- 2/23 LBNL. DESI lunch seminar.
- 2/23 CMB-S4 Maps to Other Statistics meeting

### *A review of CMB delensing*

- 7/23 Discussion organizer. Benasque, Spain. Understanding cosmological observations workshop.
- 7/22 Review talk & chair of panel discussion. Cambridge, UK. Key Challenges in Lensing Workshop

### *Halo model approach to characterizing CMB lensing biases*

- 7/22 Talk & panel discussion. Cambridge, UK. Key Challenges in Galaxy & CMB Lensing Workshop

### *The impact of galaxies and clusters on delensing of CMB B-mode polarization*

- 7/22 Vipolže, Slovenia. BCCP summer workshop.
- 6/22 Stanford University. Cosmology seminar.

### *CMB lensing & delensing for fundamental physics: the good, the bad & the systematics*

- 3/22 University of Hawaii. Cosmology seminar.
- 10/21 Institute of Physics of the Czech Academy of Sciences. Physics seminar.

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## Service

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- Referee for JCAP, Phys. Rev. D, MNRAS, RASTI and internal reviewer of DESI publications
- Organizer of the CMB seminar and Cosmology Journal Club, UC Berkeley & LBNL (2022 - 24)
- Chair/organizer of sessions in DESI & SO collaboration meetings and international workshops (e.g. Benasque, Cambridge).
- Lead organizer of *New Frontiers in Cosmology 2026* conference jointly organized by Berkeley, Simons Foundation & Universidade da Coruña.

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## Mentoring

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- Advised five undergraduate students on research projects in collaboration with National Society of Black Physicists, the Simons Foundation and Berkeley N3AS. One project lead to a first-author publication.
- Co-advised two graduate students at Cambridge and Berkeley on SO and DESI pipeline development, leading to three publications.
- Acted as career mentor for three undergraduate students through Berkeley Compass Project and N3AS.

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## Teaching

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- Tutored Prof Pettini's *Introduction to Cosmology* undergraduate course. 10/18 - 1/19, U. of Cambridge.
- Tutored Prof Efstathiou's *The Physics of Cosmology* undergraduate course. 1/20 - 4/20, U. of Cambridge.

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## Public engagement

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### Interviews & Podcasts

- Printed press interviews with [La Voz de Galicia](#) and [GCIencia](#) on DESI DR2 results. 3/2025.
- Recurring participant on the "Efervescencia" radio show of the Radio Galega: [on DESI DR2 results](#) (3/25), "Earendel, a estrela máis lonxana" (3/2022), "O Universo é un panettone" (2/2022) *Galicia, Spain*.
- Interviewed at the "Despierta Aragón" radio show, Radio Aragón. 8/2023.
- Interviewed for the "QuarkNet - Physics in and Through Cosmology" summer program for high school students. 6/2023. *Lawrence Berkeley National Lab, Berkeley, CA*
- Twice interviewed at the "A noite é necesaria" section of the "Con Voz" radio show, RadioVoz. 11/2021 and 12/2021. *Galicia, Spain*
- "Testigos no tempo" podcast participant. 5/2020. *Luis Seoane Foundation. A Coruña, Spain*
- "[Un Universo en evolución](#)" – talk & conversation with middle school kids. 11/2016. *Área de Galego. Instituto Español Cañada Blanch. London, UK*

### Public talks

- "Unha ollada cosmolóxica ao pasado (e futuro) do Universo" 12/2023. *Asociación Cultural Alexandre Bóveda. A Coruña, Spain*
- "Pasado, presente y futuro del Universo" 8/2023. *Centro de Ciencias Pedro Pascual. Benasque, Spain*
- "Noites escuras, ideas brillantes: as revolucións cosmolóxicas do s.XX". 5/2022. III Encontro da Noite. *A Coruña, Spain*.
- "Pasado, presente e futuro do Universo" 12/2021. *Planetario da Casa das Ciencias. A Coruña, Spain*
- "Revealing the origin and fate of the Universe with gravitational lensing" 11/2021. *Lester B. Pearson United World College. BC, Canada*
- "Nuevos horizontes en la investigación del fondo cósmico de microondas" 10/2021. *XXIV Congreso Estatal de Astronomía. A Coruña, Spain*
- "Revealing the origin and fate of our Universe with gravitational lensing" 2/2021. *Cambridge University Astronomical Society talks series. Cambridge, UK*
- "[Gravitational lensing: a window to the invisible Universe](#)" 2/2020 *Public talk. IoA, Cambridge, UK*
- "Our Utterly Wonderful Cosmos" 11/2019 *Friday Night Lecture. Atlantic College UWC. Wales, UK*
- "[Telescopes as time machines](#)" 5/2019 *Outreach talks series. IoA, Cambridge, UK*

### Other

- Staffed a cosmology outreach table at the Berkeley farmer's market. 11/2024.
- "The Microwave Secrets of Our Universe, Young and Old: Virtual Reality visualizations of data from the Planck Space Observatory". 2/2023. Chabot Space & Science Center. *Oakland, CA*.
- "Campus de estrelas" Developed virtual reality visualisations ([Galician/English](#)) for cosmology outreach for the *Aulas Galegas* teaching platform.
- Outreach program volunteer. 2017-2021 *Institute of Astronomy, University of Cambridge*