

# 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 -
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## Fellowships & Awards

BCCP (Berkeley Center for Cosmological Physics) Fellowship	2021 -
Data Study Group member, Alan Turing Institute, UK	2019
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
Research assistant in Amber Miller's Experimental Cosmology Lab, Columbia University	2013-2016
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-)	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. J. L. Bernal and **A. Baleato Lizancos** (2024) [arXiv:2406.12979](https://arxiv.org/abs/2406.12979)  
*Removal of interloper contamination to line-intensity maps using correlations with ancillary tracers of the large-scale structure*
2. E. Hertig et al. (incl. **A. Baleato Lizancos**) (2024) [arXiv:2405.01621](https://arxiv.org/abs/2405.01621)  
*The Simons Observatory: Combining cross-spectral foreground cleaning with multi-tracer B-mode delensing for improved constraints on inflation*
3. **A. Baleato Lizancos** and M. White (2023). JCAP05(2024)010.  
*Harmonic analysis of discrete tracers of large-scale structure*
4. **A. Baleato Lizancos** and M. White (2023). JCAP, 2023(7), 044.  
*The Impact of Anisotropic Redshift Distributions on Angular Clustering*
5. **A. Baleato Lizancos** and S. Ferraro (2023). Phys. Rev. D, 107(12), 123532.  
*Model independent variance cancellation in CMB lensing cross-correlations*
6. **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*
7. T. Namikawa, **A. Baleato Lizancos** and SO Collaboration (2022). Phys. Rev. D 105(2), 023511.  
*Simons Observatory: Constraining inflationary gravitational waves with multitracer B-mode delensing*
8. **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*
9. **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*
10. **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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## Invited Talks (unless stated otherwise)

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

- 9/24 *New Physics from Old Light* workshop. Cambridge, UK

*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.
- 7/23 Spotlight talk. Durham, UK. DESI collaboration meeting.
- 7/23 Spotlight talk. Benasque, Spain. Understanding cosmological observations workshop.

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*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 Galaxy & CMB 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.
- 5/22 Poster. Ferrara, Italy. From Planck to the Future of CMB conference.

*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.
- 2/21 LBNL & UC Berkeley. RPM colloquium / BCCP seminar.

*Limitations of CMB B-mode template delensing*

- 1/21 CCA & NYU. Joint cosmology group meeting.
- 1/21 Cambridge-LMU workshop on Large-scale structure cosmology.

*Understanding biases to CMB lensing and delensing on the road to precision science*

- 1/21 237th annual meeting of the AAS. Dissertation talk.
- 12/20 IAS & Princeton University. Joint cosmology lunch.
- 11/20 Harvard University. Cosmology journal club.
- 11/20 Stanford University. Cosmology group meeting.
- 11/20 IAP, Paris. Cosmology group meeting.
- 11/20 UC Berkeley & LBNL. INPA seminar.
- 11/20 University of Geneva. Cosmology seminar.
- 10/20 ICCUB, Barcelona. Cosmology group meeting.
- 10/20 University of Oxford. Cosmology journal club.
- 10/20 UCL. Cosmology and extragalactic astrophysics seminar.
- 9/20 Online Poster. The Royal Astronomical Society's Early Career Poster Exhibition.

*Biases to CMB B-mode delensing on large angular scales*

- 4/20 University of Sussex. Workshop on CMB lensing.
- 10/19 CMB-S4 San Diego meeting. Delensing cross-cut session.

*Delensing CMB B-modes: prospects & challenges for the next generation of experiments*

- 12/19 Contributed talk. Portsmouth, UK. 30th Texas symposium on relativistic astrophysics.
- 9/19 Flash talk & poster. University of Cambridge. KICC 10th Anniversary Symposium.
- 9/19 Student talk. DAMTP, University of Cambridge. Workshop on the non-Gaussian Universe.

*Prospects for CMB polarisation B-mode delensing with the Simons Observatory*

- 3/19 Flash talk & poster. IAP, Paris. Cosmogold 2019 conference.
- 3/19 Institute of Astronomy, University of Cambridge. Wednesday seminar series.

*Massive, compact, relic galaxies in the EAGLE simulation*

- 9/17 Instituto de Astrofísica de Canarias. Summer project presentation series.

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## Professional Activities

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- Referee for the Journal of Cosmology and Astroparticle Physics (JCAP), the Monthly Notices of the Royal Astronomical Society (MNRAS) and the Royal Astronomical Society Techniques and Instruments (RASTI)
- Organizer of the CMB seminar and Cosmology Journal Club, UC Berkeley & LBNL (2022-)
- Fellow of the Royal Astronomical Society. Member of the European and American Astronomical Societies

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## Mentoring

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- 10/23- Co-advised PhD student Emilie Hertig on SO pipeline development, leading to two publications.
- 11/22- Advised undergraduate Alex Wang on a research project as part of the N3AS mentorship program
- 2/23- Co-advised undergraduate Sophia Risin on a research project
- 10/22- 12/23 Advised undergraduate Hyunoh Yeo on a research project
- 10/22- 1/23 Mentored undergraduate Leia Anapaula Chavarria Davila through Berkeley Compass Project
- 6/22- 8/22 Co-advised undergraduate Kennedy Sleet on a summer project in collaboration with the National Society of Black Physicists and the Simons Foundation.

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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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- Staffed a cosmology outreach table at the Berkeley farmer's market. 11/2024.
- "Unha ollada cosmolóxica ao pasado (e futuro) do Universo" 12/2023. Public talk. *Asociación Cultural Alexandre Bóveda. A Coruña, Galicia, Spain*
- "La cosmología: pasado, presente y futuro del Universo" 8/2023. Public talk. *Centro de Ciencias Pedro Pascual. Benasque, Aragón, Spain*
- Interviewed at the "Despierta Aragón" radio show, Radio Aragón. 8/2023. *Aragón, Spain*
- Interviewed for the "QuarkNet - Physics in and Through Cosmology" summer program for high school students. 6/2023. *Lawrence Berkeley National Lab, Berkeley, CA*
- "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*.
- "Noites escuras, ideas brillantes: as revolucións cosmolóxicas do s.XX". 5/2022. Public talk. III Encontro da Noite. *A Coruña, Spain*.
- "Earendel, a estrela máis lonxana". Interviewed at the "Efervesciencia" radio show, episode #591, Radio Galega. 3/2022. *Galicia, Spain*
- "O Universo é un panettone". 2/2022. Interviewed at the "Efervesciencia" radio show, episode #584, Radio Galega. *Galicia, Spain*
- "A Cosmoxía: pasado, presente e futuro do Universo" 12/2021. Public talk. *Planetario da Casa das Ciencias. A Coruña, Galicia, Spain*
- Twice interviewed at the "A noite é necesaria" section of the "Con Voz" radio show, RadioVoz. 11/2021 and 12/2021. *Galicia, Spain*
- "Revealing the origin and fate of the Universe with gravitational lensing" 11/2021. *Lester B. Pearson United World College. BC, Canada*

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- “Nuevos horizontes en la investigación del fondo cósmico de microondas” 10/2021. *XXIV Congreso Estatal de Astronomía. A Coruña, Galicia, Spain*
  - “Revealing the origin and fate of our Universe with gravitational lensing” 2/2021. *Cambridge University Astronomical Society talks series. Cambridge, UK*
  - “Campus de estrelas” Developed virtual reality visualisations ([Galician](#)/[English](#)) for cosmology outreach for the *Aulas Galegas* teaching platform.
  - “Testigos no tempo” podcast participant. 5/2020. *Luis Seoane Foundation. A Coruña, Galicia, Spain*
  - “[Gravitational lensing: a window to the invisible Universe](#)” 2/2020 *Public talk. Institute of Astronomy, Cambridge, UK*
  - “Our Utterly Wonderful Cosmos” 11/2019 *Friday Night Lecture. Atlantic College UWC. Wales, UK* “[Telescopes as time machines](#)” 5/2019 *Public outreach talks series. Institute of Astronomy, Cambridge, UK*
  - Outreach program volunteer. 2017-2021 *Institute of Astronomy, University of Cambridge*
  - “[Un Universo en evolución](#)” 11/2016. *Área de Galego. Instituto Español Cañada Blanch. London, UK*