

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

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## Education

**University of Cambridge, Institute of Astronomy**, Cambridge, UK 10/2017 - 6/2021

PhD in Cosmology supervised by Prof. Anthony Challinor.

Thesis title: *Polishing the Lenses: Re-ned Modelling of Gravitational Lensing and Delensing of the Cosmic Microwave Background*. Examined by Prof. George Efstathiou and Prof. Antony Lewis.

**University of Cambridge, DAMTP**, Cambridge, UK 2016 - 2017

MASt in Applied Mathematics & Theoretical Physics (*Part III of the Mathematical Tripos*)

Essay title: *Primordial gravitational waves from cosmic inflation*

**Columbia University**, New York, USA 2012 - 2016

B.Sc. Applied Physics, minor in Applied Mathematics. *Magna Cum Laude*

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## Academic appointments

**BCCP fellow**, UC Berkeley & Lawrence Berkeley National Laboratory 9/2021-

Berkeley Center for Cosmological Physics Postdoctoral Fellowship

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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 membership

**Simons Observatory (SO)** 1/2018-

Co-leader of the delensing pipeline working group (2022-)

Member of the analysis working group

**Dark Energy Spectroscopic Instrument (DESI)** 1/2022-

Work on cross-correlations with CMB lensing

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## Professional Activities

Fellow of the Royal Astronomical Society. Member of the European and American Astronomical Societies

Referee for the Journal of Cosmology and Astroparticle Physics (JCAP)

Organizer of CMB lunch and Cosmology Journal Club, UC Berkeley & LBNL (2022-)

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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))

- A. Baleato Lizancos** and M. White (2023) *The Impact of Anisotropic Redshift Distributions on Angular Clustering*, submitted [[2305.15406](https://arxiv.org/abs/2305.15406)]
- A. Baleato Lizancos** and S. Ferraro (2023) *Model Independent Variance Cancellation in CMB Lensing Cross-correlations*, submitted [[arXiv:2301.10242](https://arxiv.org/abs/2301.10242)]
- A. Baleato Lizancos** and S. Ferraro (2022) *The Impact of Extragalactic Foregrounds on Internal Delensing of CMB  $l$ -mode Polarization*, Phys. Rev. D 106, 063534. [[arXiv:2205.09000](https://arxiv.org/abs/2205.09000)]
- T. Namikawa, **A. Baleato Lizancos** et al. (2022) *The Simons Observatory: Constraining Inflationary Gravitational Waves with Multi-tracer B-mode Delensing*, Phys. Rev. D 105(2), 023511. [[arXiv:2110.09730](https://arxiv.org/abs/2110.09730)]
- A. Baleato Lizancos**, A. Challinor, B. Sherwin and T. Namikawa (2021) *Delensing the CMB with the Cosmic Infrared Background: the Impact of Foregrounds*, MNRAS 514(4), 5786-5812 [[arXiv:2102.01045](https://arxiv.org/abs/2102.01045)]
- A. Baleato Lizancos**, A. Challinor and J. Carron (2021) *Impact of Internal-delensing Biases on Searches for Primordial B-modes of CMB Polarisation*, JCAP 03(2021)016, [[arXiv:2007.01622](https://arxiv.org/abs/2007.01622)]
- A. Baleato Lizancos**, A. Challinor and J. Carron (2021) *Limitations of CMB  $l$ -mode Template Delensing*, Phys. Rev. D 103, 023518. Selected as Editor's suggestion. [[arXiv:2010.14286](https://arxiv.org/abs/2010.14286)]

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## Selected Talks

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

- 4/23 LBNL & UC Berkeley. CMB seminar.
- 4/23 Yukawa Institute for Theoretical Physics, Kyoto University. Future Science with CMB x LSS
- 2/23 LBNL. DESI lunch seminar.
- 2/23 CMB-S4 Maps to Other Statistics meeting

*A review of CMB delensing*

- 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  $l$ -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.

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- 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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## Teaching

Supervised Prof Pettini’s *Introduction to Cosmology* undergraduate course. 10/18-1/19, U. of Cambridge.

Supervised Prof Efstathiou’s *The Physics of Cosmology* undergraduate course. 1/20-4/20, U. of Cambridge.

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## Mentoring

2/23- Co-advised undergraduate Sophia Risin on a research project

10/22- Advised undergraduate Hyunoh Yeo on a research project

10/22- Mentored undergraduate Leia Anapaula Chavarria Davila

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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## Public engagement

“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 cosmológicas 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 Cosmoloxía: 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*

“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

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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 outreach talks series. 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. 11/2017- *Institute of Astronomy, University of Cambridge*

“Un Universo en evolución” 11/2016. *Área de Galego. Instituto Español Cañada Blanch. London, UK*