Uendert Andrade

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Professional Appointments

University of Michigan, Ann Arbor, MI — September 2022 – **Present**
Leinweber Postdoctoral Fellow, Department of Physics

Observatório Nacional, Rio de Janeiro, Brazil — March 2022 – August 2022
Postdoctoral Fellow (to complete the PhD academic year)

Education

Observatório Nacional, Rio de Janeiro, Brazil — March 2018 – March 2022
Ph.D., Department of Astronomy; advisor: Jailson Alcaniz
Probing the fundamental hypotheses of the standard cosmology

Observatório Nacional, Rio de Janeiro, Brazil — March 2016 – February 2018
M.Sc., Department of Astronomy; advisor: Jailson Alcaniz
Testing the cosmological isotropy

Federal Rural University of Rio de Janeiro, Seropédica, Brazil — February 2011 – January 2016
B.S., Department of Physics
Canonical Quantization with Constraints

Leadership & Service Roles

Dark Energy Spectropic Instrument (DESI)

Collaboration-internal reviewer — July 2025

DR2 BAO Co-Coordinator, GQC Working Group — August 2024 – October 2025
The Galaxy & Quasar Clustering (GQC) Working Group leads one of the key DESI science programs, delivering precision measurements of cosmic distances, structure growth. As co-coordinator of the DR2 BAO Key Project, I oversaw coordination between the GQC and other Working Groups (e.g., Cosmological Parameter Estimation) to ensure the delivery of the DESI DR2 cosmological results.

Lead, DR2 BAO Topical Group — August 2024 – October 2025
Topical Group charged with carrying out the Baryon Acoustic Oscillation (BAO) analyses within the GQC Working Group. I lead the galaxy clustering measurements, reconstruction, and final distance-scale measurements, performing and supervising systematic validation and robustness tests across all DESI GQC tracers.

Leinweber Institute for Physics, University of Michigan

Organizer, UM Cosmology Group Meeting and Cosmo Seminar — Fall 2025
Scheduled seminar speakers, coordinated details, and maintained and advertised schedule.

Organizer, Michigan Cosmology Summer School 2025, Ann Arbor, MI — June 2025
Co-organized the 3rd Michigan Cosmology Summer School, focused on bridging cosmological data and theory.

Organizer, UM Cosmology Group Meeting — Winter 2024
Organized weekly group meeting and led discussions.

Organizer, Michigan Cosmology Summer School 2023, Ann Arbor, MI — June 2023
Co-organized the 2nd Michigan Cosmology Summer School, a hybrid event focused on interface between data and theory.

Miscellaneous

Referee, Journal of High Energy Astrophysics (JHEAp) — 2025 – **Present**

Referee, Monthly Notices of the Royal Astronomical Society (MNRAS) — 2020 – **Present**

Student Supervision & Mentoring

Research Mentoring (selected)

Andrew Hope (Undergraduate, University of Michigan) — August 2025 – **Present**
Project: Baryonic effects in cosmological observables
Co-supervising with Dragan Huterer.

Isabele Vitorio (Ph.D. student, University of Michigan) May 2025 – **Present**
Full-shape cosmology and halo occupation distribution analysis
Advising on theoretical modeling and parameter inference pipelines.

Ricardo Fernandes (Ph.D. student, Universidade Federal da Bahia) December 2024 – **Present**
Project: Geometry–growth split as a consistency test of ΛCDM
Co-supervising with Rodrigo von Marttens.

Xiaoyun Shao (Ph.D. student, Observatório Nacional, Brazil) 2022 – 2024
Project: Cosmic homogeneity as a cosmological test; Eur. Phys. J. C 84, 655 (2024)
Co-supervised with Rodrigo Gonçalves and Jailson Alcaniz.

Research Presentations (selected)

Invited Talks

Conference on the Intersections of Particle & Nuclear Physics, Madison, WI June 2025
Plenary: *DESI DR2: New Cosmological Constraints and Challenges to the ΛCDM Model*

NASA Cosmic Structure Science Interest Group, Virtual May 2025
DESI DR2: Measurements of Baryon Acoustic Oscillations and Cosmological Constraints

LEPP Journal Club Seminar, Cornell University April 2025
Cosmological Constraints from DESI: DR1 to latest DR2

Cosmology on the Steep Rise, Sexten, Italy February 2025
Cosmology from DESI DR1: Baryon Acoustic Oscillations & Full-Shape Measurements

Cosmology Meeting, Perimeter Institute for Theoretical Physics October 2024
Cosmological constraints from DESI DR1

Cosmology Meeting, University of Waterloo October 2024
An Empirical Consistency Test of Dark Energy Models

CCAPP Seminar, The Ohio State University November 2024
DES Y6 extensions and growth–geometry split analyses

XIII International Conference on New Frontiers in Physics, Crete, Greece August 2024
Cosmology from the DESI Year 1 Baryon Acoustic Oscillations Measurements

DESI Collaboration Meeting, Marseille, France July 2024
Plenary: *Summary of KP7a Results: Cosmological constraints from DESI DR1 and external data*

ICCUB Seminar, University of Barcelona, Barcelona, Spain June 2024
Testing the Consistency of Growth and Expansion with the Dark Energy Survey

Contributed (Conference) Talks

COSMO2025, Pittsburgh, PA October 2025
Validation of DESI DR2 Baryon Acoustic Oscillations Measurements

VII CosmoSul, Salvador, Brazil August 2024
Cosmology from the DESI Year 1 Baryon Acoustic Oscillations Measurements

Cosmology in the Adriatic — From PT to AI, Split, Croatia July 2024
DESI Blinding Methodology and Validation

VIII Essential Cosmology for the Next Generation, Cancún, Mexico December 2022
A Test of the Standard Cosmological Model with Geometry and Growth

XLI Brazilian National Meeting of Particle and Field Physics, Virtual September 2021
A Test of the Standard Cosmological Model with Geometry and Growth

J-PAS Theory Workshop, Virtual September 2020
An empirical consistency test of LCDM cosmology with J-PAS

Skills

Programming	Python, C/C++; some Fortran
Software & Computing	Git/GitHub, LaTeX, Jupyter, Slack, Zoom, Microsoft Office, HPC
Languages	Portuguese (native), English (fluent), Spanish (conversational)

Publications (INSPIRE-HEP)

In preparation

1. **U. Andrade** et al. (DES Collaboration) *DES Y6 final results: Splitting growth and geometry to test ΛCDM.*
   Leading analysis and writing.

Leading contributions

10. **U. Andrade** et al. (DESI Collaboration) *Validation of the DESI DR2 Measurements of Baryon Acoustic Oscillations from Galaxies and Quasars*; 2025, Phys. Rev. D 112, 083512 [Featured in Physics; **Editor's suggestion**.]
    Led analysis and writing.
9. M. Abdul Karim et al. (DESI Collaboration; incl. **U. Andrade**) *DESI DR2 Results II: Measurements of Baryon Acoustic Oscillations and Cosmological Constraints*; 2025, Phys. Rev. D 112, 083515
    DESI Key Paper; alphabetical author list. Credited for contributions as DR2 BAO Topical Group lead; Key Project coordination; BAO analysis on mocks and data; unblinding tests and documentation; plots; writing.
8. **U. Andrade** et al. (DESI Collaboration) *Validating the galaxy and quasar catalog-level blinding scheme for the DESI 2024 analysis*; 2025, JCAP 01:128
    Led analysis and writing.
7. **U. Andrade**, A. J. S. Capistrano, E. Di Valentino, R. C. Nunes. *Exploring modified gravity: constraints on the μ and Σ parametrization with WMAP, ACT, and SPT*; 2024, *MNRAS* 529(2):831–838
    Led analysis and writing.
6. **U. Andrade**, R. S. Gonçalves, G. C. Carvalho, C. A. P. Bengaly, J. C. Carvalho, J. Alcaniz. *The angular scale of homogeneity with SDSS-IV DR16 luminous red galaxies*; 2022, *JCAP* 10:088
    Led analysis and writing.
5. **U. Andrade**, D. Anbajagane, R. von Marttens, D. Huterer, J. Alcaniz. *A test of the standard cosmological model with geometry and growth*; 2021, *JCAP* 11:014
    Led analysis and writing.
4. C. A. P. Bengaly, **U. Andrade**, J. Alcaniz. *How does an incomplete sky coverage affect the Hubble Constant variance?*; 2019, Eur. Phys. J. C 79(9):768
    Co-Led analysis and writing.
3. **U. Andrade**, C. A. P. Bengaly, J. Alcaniz, S. Capozziello. *Revisiting the statistical isotropy of GRB sky distribution*; 2019, *MNRAS* 490(4):4481–4488
    Led analysis and writing.
2. **U. Andrade**, C. A. P. Bengaly, B. Santos, J. Alcaniz. *A Model-independent Test of Cosmic Isotropy with Low-z Pantheon Supernovae*; 2018, *ApJ* 865(2):119
    Led analysis and writing.
1. **U. Andrade**, C. A. P. Bengaly, J. Alcaniz, B. Santos. *Isotropy of low redshift type Ia Supernovae: A Bayesian analysis*; 2018, Phys. Rev. D 97(8):083518
    Led analysis and writing.

Significant Contributions

8. A. G. Adame et al. (DESI Collaboration; incl. **U. Andrade**) *DESI 2024 VI: Cosmological Constraints from the Measurements of Baryon Acoustic Oscillations*; JCAP02(2025)021
    DESI Key Paper; alphabetical author list. Credited for Monte Carlo sampler validation study; infrastructure for cosmology inference pipelines; initial fisher forecast to validate modeling pipeline (`desilike`).
7. A. G. Adame et al. (DESI Collaboration; incl. **U. Andrade**) *DESI 2024 VII: Cosmological constraints from the full-shape modeling of clustering measurements*; JCAP07(2025)028
    DESI Key Paper; alphabetical author list. Credited for validation of blinding with `ShapeFit`; infrastructure for cosmology inference pipeline.
6. A. G. Adame et al. (DESI Collaboration; incl. **U. Andrade**) *DESI 2024 III: Baryon Acoustic Oscillations from Galaxies and Quasars*; JCAP04(2025)012
    DESI Key Paper; alphabetical author list. Credited for leading the supporting paper for this Key Project.
5. A. G. Adame et al. (DESI Collaboration; incl. **U. Andrade**) *DESI 2024 V: Full-Shape galaxy clustering from galaxies and quasars*; JCAP09(2025)008
    DESI Key Paper; alphabetical author list. Credited for leading the supporting paper for this key project.
4. A. G. Adame et al. (DESI Collaboration; incl. **U. Andrade**) *DESI 2024 II: Sample definitions, characteristics, and two-point clustering statistics*; JCAP07(2025)017
    DESI Key Paper; alphabetical author list. Credited for leading the supporting paper for this key project.

3. S. J. Rauhut, C. Blake, **U. Andrade** et al. *Testing gravitational physics by combining DESI DR1 and weak lensing datasets using the E_G estimator*; 2025, OJA, vol. 8, Oct. 2025
   Credited for tests with BGS sample in narrower redshift bins.
2. R. S. Gonçalves, G. C. Carvalho, **U. Andrade**, C. A. P. Bengaly, J. C. Carvalho, J. Alcaniz. *Measuring the cosmic homogeneity scale with SDSS-IV DR16 Quasars*; 2021, JCAP 03:029
   Contributed to initial conception & planning of project. Assisted with analysis, writing.
1. M. Ishak et al. (incl. **U. Andrade**) *Modified gravity constraints from the full-shape modeling of clustering measurements from DESI 2024*; 2025, JCAP 09:053
   First tier author. Credited for analysis of projection effects and contributions to writing.

Contributing Author

18. S. P. Ahlen et al. (DESI Collaboration; incl. **U. Andrade**) *Positive Neutrino Masses with DESI DR2 via Matter Conversion to Dark Energy*; 2025, Phys. Rev. Lett. 135(8):081003.
17. D. Valcin et al. (DESI Collaboration; incl. **U. Andrade**) *Combined tracer analysis for DESI 2024 BAO*; 2025, arXiv: 2508.05467. Submitted to JCAP.
16. C. Garcia-Quintero et al. (DESI Collaboration; incl. **U. Andrade**) *Cosmological implications of DESI DR2 BAO measurements in light of the latest ACT DR6 CMB data*; 2025, arXiv: 2504.18464. Accepted for publication in Phys. Rev. D.
15. L. Casas et al. (DESI Collaboration; incl. **U. Andrade**) *Validation of the DESI DR2 Lyα BAO analysis using synthetic datasets*; 2025, Phys. Rev. D 112, 083512
14. M. Abdul Karim et al. (DESI Collaboration; incl. **U. Andrade**) *Data Release 1 of the Dark Energy Spectroscopic Instrument*; 2025, arXiv: 2503.14745. Submitted to The Astronomical Journal.
13. K. Lodha et al. (DESI Collaboration; incl. **U. Andrade**) *Extended Dark Energy analysis using DESI DR2 BAO measurements*; 2025, Phys. Rev. D 112, 083511
12. A. Brodzeller et al. (DESI Collaboration; incl. **U. Andrade**) *Construction of the Damped Lyα Absorber Catalog for DESI DR2 Lyα BAO*; 2025, Phys. Rev. D 112, 083510
11. W. Elbers et al. (DESI Collaboration; incl. **U. Andrade**) *Constraints on Neutrino Physics from DESI DR2 BAO and DR1 Full Shape*; 2025, Phys. Rev. D 112, 083513
10. M. Abdul Karim et al. (DESI Collaboration; incl. **U. Andrade**) *DESI DR2 Results I: Baryon Acoustic Oscillations from the Lyman-α Forest*; 2025, Phys. Rev. D 112, 083514
9. X. Chen et al. (incl. **U. Andrade**) *Extensive analysis of reconstruction algorithms for DESI 2024 baryon acoustic oscillations*; 2024, arXiv: 2411.19738. Submitted to JCAP.
8. D. Forero-Sánchez et al. (incl. **U. Andrade**) *Analytical and EZmock covariance validation for the DESI 2024 results*; 2025, JCAP 04:055
7. A. Pérez-Fernández et al. (DESI Collaboration; incl. **U. Andrade**) *Fiducial-cosmology-dependent systematics for the DESI 2024 BAO analysis*; 2025, JCAP 01:144
6. J. Mena-Fernández et al. (DESI Collaboration; incl. **U. Andrade**) *HOD-dependent systematics for luminous red galaxies in the DESI 2024 BAO analysis*; 2025, JCAP 01:133
5. M. Rashkovetskyi et al. (incl. **U. Andrade**) *Semi-analytical covariance matrices for the two-point correlation function for DESI 2024 data*; 2025, JCAP 01:145
4. E. Paillas et al. (DESI Collaboration; incl. **U. Andrade**) *Optimal reconstruction of baryon acoustic oscillations for DESI 2024*; 2025, *JCAP* 01:142
3. C. Garcia-Quintero et al. (DESI Collaboration; incl. **U. Andrade**) *HOD-dependent systematics in Emission Line Galaxies for the DESI 2024 BAO analysis*; 2025, JCAP 01:132
2. S.-F. Chen et al. (incl. **U. Andrade**) *Baryon acoustic oscillation theory and modelling systematics for the DESI 2024 results*; 2024, MNRAS 534(1):544–574
1. S. Bonoli et al. (incl. **U. Andrade**) *The miniJPAS survey: A preview of the Universe in 56 colors*; 2021, A&A 653:A31

REFERENCES

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