Cristhian J. A. Garcia-Quintero

Department of Physics, The University of Texas at Dallas.
800 West Campbell Road, Richardson, TX, 75080.
Phone: 469-685-6581
gqcristhian@utdallas.edu https://gqcristhian.github.io

Research Interests

- Large scale probes to test dark energy and modified gravity, including data-driven tests.
- Baryon acoustic oscillations and measurements of large-scale-structure using galaxy surveys.
- Data analysis techniques, statistical inference, tension metrics, non-parametric methods and agnostic tests.

Education

2020 – **The University of Texas at Dallas**
Ph.D. in Physics.
Advisor: *Dr. Mustapha Ishak-Boushaki*.

2018 – 2020 **The University of Texas at Dallas**
Master of Science in Physics.
Advisor: *Dr. Mustapha Ishak-Boushaki*.

2012 – 2017 **Universidad Autónoma de Sinaloa**
Bachelor of Science in Physics
Advisor: *Dr. Juan Antonio Nieto Garcia*.

Publications

Selected Publications (Major Contributions)

1. DESI Collaboration, A. G. Adame, J. Aguilar, *et al.*, "Validation of the Scientific Program for the Dark Energy Spectroscopic Instrument," *arXiv e-prints*, arXiv:2306.06307, arXiv:2306.06307, Jun. 2023. DOI: 10.48550/arXiv.2306.06307. arXiv: 2306.06307 [astro-ph.CO].
2. C. Garcia-Quintero and M. Ishak, "Singling out modified gravity parameters and data sets reveals a dichotomy between Planck and lensing,", vol. 506, no. 2, pp. 1704–1714, Sep. 2021. DOI: 10.1093/mnras/stab1773. arXiv: 2009.01189 [astro-ph.CO].
3. C. Garcia-Quintero, M. Ishak, and O. Ning, "Current constraints on deviations from General Relativity using binning in redshift and scale,", vol. 2020, no. 12, 018, p. 018, Dec. 2020. DOI: 10.1088/1475-7516/2020/12/018. arXiv: 2010.12519 [astro-ph.CO].
4. C. Garcia-Quintero, M. Ishak, L. Fox, and J. Dossett, "Testing deviations from GR at cosmological scales including dynamical dark energy, massive neutrinos, functional or binned parametrizations, and spatial curvature,", vol. 100, no. 10, 103530, p. 103 530, Nov. 2019. DOI: 10.1103/PhysRevD.100.103530. arXiv: 1908.00290 [astro-ph.CO].
5. C. Garcia-Quintero, M. Ishak, L. Fox, and W. Lin, "Cosmological discordances. III. More on measure properties, large-scale-structure constraints, the Hubble constant and Planck data,", vol. 100, no. 12, 123538, p. 123 538, Dec. 2019. DOI: 10.1103/PhysRevD.100.123538. arXiv: 1910.01608 [astro-ph.CO].
6. C. Garcia-Quintero, A. Ortiz, and J. A. Nieto, "New Reflections on Higher Dimensional Linearized Gravity," *arXiv e-prints*, arXiv:1904.07019, arXiv:1904.07019, Apr. 2019. DOI: 10.48550/arXiv.1904.07019. arXiv: 1904.07019 [gr-qc].

Other Publications

1. DESI Collaboration, A. G. Adame, J. Aguilar, *et al.*, "The Early Data Release of the Dark Energy Spectroscopic Instrument," *arXiv e-prints*, arXiv:2306.06308, arXiv:2306.06308, Jun. 2023. DOI: 10.48550/arXiv.2306.06308. arXiv: 2306.06308 [astro-ph.CO].
2. B. Hadzhiyska, M. J. White, X. Chen, *et al.*, "Mitigating the noise of DESI mocks using analytic control variates," *arXiv e-prints*, arXiv:2308.12343, arXiv:2308.12343, Aug. 2023. arXiv: 2308.12343 [astro-ph.CO].
3. B. Hadzhiyska, S. Yuan, C. Blake, *et al.*, "Synthetic light cone catalogues of modern redshift and weak lensing surveys with AbacusSummit," *arXiv e-prints*, arXiv:2305.11935, arXiv:2305.11935, May 2023. DOI: 10.48550/arXiv.2305.11935. arXiv: 2305.11935 [astro-ph.CO].
4. J. Moon, D. Valcin, M. Rashkovetskyi, *et al.*, "First Detection of the BAO Signal from Early DESI Data," *arXiv e-prints*, arXiv:2304.08427, arXiv:2304.08427, Apr. 2023. DOI: 10.48550/arXiv.2304.08427. arXiv: 2304.08427 [astro-ph.CO].
5. R. Ruggeri, C. Blake, J. DeRose, *et al.*, "A data compression and optimal galaxy weights scheme for Dark Energy Spectroscopic Instrument and weak lensing datasets,", Jun. 2023. DOI: 10.1093/mnras/stad1651. arXiv: 2208.01031 [astro-ph.CO].
6. DESI Collaboration, B. Abareshi, J. Aguilar, *et al.*, "Overview of the Instrumentation for the Dark Energy Spectroscopic Instrument,", vol. 164, no. 5, 207, p. 207, Nov. 2022. DOI: 10.3847/1538-3881/ac882b. arXiv: 2205.10939 [astro-ph.IM].
7. J. A. Nieto, E. A. León, and C. García-Quintero, "Cosmological-static metric correspondence and Kruskal type solutions from symmetry transformations," *Rev. Mex. Fis.*, vol. 68, no. 4, p. 040 701, 2022. DOI: 10.31349/RevMexFis.68.040701.

Selected talks

08/16/2023 **Cosmology with desilike & other tools.**
1st advanced DESI workshop - UNAM, Mexico. (Virtual talk)

06/24/2022 **DESI lensing likelihood pipelines. (joint talk)**
DESI Collaboration Meeting, DoubleTree Berkeley Marina Hotel, San Francisco, CA, USA.

11/14/2020 **Current constraints on deviations from general relativity using binning in redshift and scale.**
2020 Joint Fall Meeting of the Texas Section of the APS, Texas Section of the AAPT, TX, USA. (Virtual talk)

11/18/2019 **Modified gravity demos using the Core Cosmology Library.**
LSST-DESC collaboration sprint week meeting - Texas A&M University, TX, USA.

10/19/2018 **Constraints on modified gravity parameters from Planck and other data sets.**
2018 Joint Fall Meeting of the Texas Section of the APS, Texas Section of the AAPT - University of Houston, TX, USA.

10/26/2016 **Cosmological parameter constraints using observational data.**
XXIII Week of Science and Technology in Mexico - FCFM UAS, Mexico.

Awards

2018-2023 **The National Council of Science and Technology**, CONACYT Graduate Scholarship.

2016 **U.S. embassy in Mexico; ANUIES; UT-Dallas**, Mexican summer research program.

2015 **Mexican Academy of Science**, Summer research program award.

Scientific Collaborations

2020-present — Member of the Dark Energy Spectroscopic Instrument (DESI).

2018-present — Member of the LSST Dark Energy Science Collaboration.

Research Internships

2016 — University of Texas at Dallas, U.S., with Dr. Mustapha Ishak-Boushaki. (Undergraduate)
Project: Cosmological parameter constraints using CAMB and CosmoMC.

2015 — University of Guadalajara, Mexico, with Dr. Claudia More González. (Undergraduate)
Project: Theoretical study of gravitational waves.

2014 — University of Guanajuato, Mexico, with Dr. Jose Socorro García Díaz. (Undergraduate)
Project: Time-varying cosmological term in anisotropic cosmology.

Leadership and Service

2023-present — Co-Chair of the Dark Energy Spectroscopic Instrument (DESI) Galaxy-Lensing Cross-Correlations Topical Group.

2022-2023 — Member of the Early Career Scientists (ECS) committee of the DESI collaboration.

DESI Meetings Committee-ECS liaison. Organized activities for Early Career Scientists (ECS) in DESI collaboration meetings at Cancun, Mexico (2022) and at Durham, United Kingdom (2023).

January 2019 — Event assistant of the Building Astronomy in Texas Symposium.

2012-2017 — Local organizer of the outreach astronomical event "noche de las estrellas" with the Astronomical Society of Sinaloa, Mexico.

Teaching Experience

Teaching assistant (Summer 2021) — The University of Texas at Dallas. College physics II (PHYS 1302). Supervisor: Dr. Anton Malko.

Teaching Assistant (Fall 2018) — The University of Texas at Dallas. Electromagnetism and waves (PHYS 2326). Supervisor: Dr. Russel Stoneback.

Lecturer (Spring 2018) — Technological University of Culiacán, Mexico.

Students Supervised

Research mentor (Summer 2021) — Assisted Dr. Mustapha Ishak-Boushaki to mentor an undergraduate student (Lael Verace) in a project related to cosmological parameter estimation.

Research mentor (Summer 2018) — Assisted Dr. Mustapha Ishak-Boushaki to mentor an undergraduate student (Lael Verace) in a project related to cosmological parameter constraints and modified gravity using binning methods.