CURRICULUM VITAE

Grecco Álvaro Oyarzún Martínez
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RESEARCH INTERESTS
Galaxy Formation and Evolution; The Galaxy-Halo Connection; Galaxy Stellar Populations; The Baryon Cycle and the Circum-Galactic Medium; Statistical Methods for Astronomy Research

ACADEMIC CAREER
- **Postdoctoral Fellow of Physics and Astronomy** 2025 – present
  University of Oklahoma
- **Postdoctoral Fellow of Physics and Astronomy** 2022 – 2025
  Johns Hopkins University
- **Doctor of Philosophy in Astronomy and Astrophysics** 2016 – 2022
  UC Santa Cruz
- **Master of Science in Astronomy** 2013 – 2016
  Universidad de Chile
- **Bachelor of Science in Astronomy with Highest Honors** 2010 – 2013
  Universidad de Chile

REFERENCES
- Nikki Nielsen (nnielsen@ou.edu)
- Marc Rafelski (mrafelski@stsci.edu)
- Kevin Bundy (kbundy@ucsc.edu)

AWARDS
- **Regents' Fellowship** at UC Santa Cruz 2016
- **MSc. Fellowship** awarded by the Chilean Science Foundation 2014

AWARDED PROPOSALS
- **Three Successful Keck/KCWI Proposals** as Principal Investigator 2023 – 2025
- **Over 5 Successful Proposals** as Co-investigator (Keck, HST, JWST, ALMA) 2023 – 2026

RESEARCH EXPERIENCE
- **Total of 21 Papers** (9 as First Author) 2016 – present
  Hyperlink to the SAO/NASA ADS Abstract Service library
- **Invited Reviewer for Nature Astronomy, ApJ, MNRAS, and A&A** 2020 – present
  Seven Manuscripts
- **Invited Speaker at Scientific Conferences** 2019
  Review Talk on Galaxy Stellar Populations: MaNGA Collaboration Meeting 2019
- **Expert Presenter at Scientific Conferences** 2016 – present
  Over 15 research presentations (listed in the second page of this document)
- **Vast Observational Experience** 2014 – present
  10+ Nights of Observation at Keck 10m and Magellan 6.5m
  Expert at the reduction of spectroscopic data

MENTORING EXPERIENCE
- **Undergraduate Research at UC Santa Cruz** 2018
  Students: Sahar Ahmadi, Leah George, Norhan Osman, Joseph Velásquez
- **Research Experience for Undergraduates at University of Oklahoma** 2026
  Student: Natalie Meyer
- **Post-baccalaureate Research at Maria Mitchell Observatory** 2023 – 2026
  Students: Marie E. Wisz, Fiona Powers-Ozyurt
  Publications: Wisz et al., 2026; Oyarzún et al., 2025
- **PhD Research at University of Oklahoma** 2026 – present
  Student: Jacob Callebs
  Publications: Callebs et al., in prep.

TEACHING EXPERIENCE
- **Astrostatistics Workshop** 2026
  Host, organizer, and instructor (University of Oklahoma)
- **Teaching Assistant** 2014 – 2017
  The Formation and Evolution of the Universe (UC Santa Cruz)
  Introduction to the Cosmos (UC Santa Cruz)
  Experimental Astronomy (4 times, Universidad de Chile)
  General Astronomy (Universidad de Chile)

INVITED TALKS (3 total)

- **Observing the Elusive Components of Galaxies** 2026
  University of Oklahoma Seminar Series
  Norman, Oklahoma, United States
- **The HI gas reservoirs of galaxies at $z \approx 2$** 2024
  Johns Hopkins Seminar Series
  Baltimore, Maryland, United States
- **Review Talk on Galaxy Stellar Populations** 2019
  MaNGA Collaboration Meeting 2019
  Oxford, United Kingdom

OTHER TALKS (14 total)

- **Constraining the Baryon Cycle with Damped Lyα Absorbers** 2025
  Baryon Cycle from Reionization to Cosmic Noon
  Puerto Varas, Chile
- **Constraining the Baryon Cycle with Damped Lyα Absorbers** 2025
  MMC2025: Multi-phase, Multi-temperature, and Complex
  Olbia, Italy
- **Constraining the Baryon Cycle with a UV Integral-field Spectrograph at HWO** 2025
  Towards the Habitable Worlds Observatory
  Washington DC, United States
- **Constraining the Baryon Cycle with Damped Lyα Absorbers** 2024
  Resolving the Circum-Galactic Medium and Its Impact on Galaxy Evolution
  Santa Cruz, Chile
- **Constraining the Baryon Cycle with Damped Lyα Absorbers** 2024
  Keck Science Meeting 2024
  Pasadena, California, United States
- **A Survey of Lyα Emission around Damped Lyα Absorbers at $z \approx 2$ with KCWI** 2024
  STScI Spring Symposium 2024
  Baltimore, Maryland, United States
- **Probing Hierarchical Galaxy Formation with SDSS-IV MaNGA** 2023
  A Life Devoted to Stellar populations:
  A Tribute to the Personal and Scientific Contributions of Alexandre Vazdekis
  Tenerife, Spain
- **Probing Hierarchical Galaxy Formation with SDSS-IV MaNGA** 2023
  A Journey Through Galactic Environments:
  From Halo Assembly Bias to Satellite Quenching
  Porto Ercole, Italy
- **The assembly histories of passive central and satellite galaxies** 2021
  European Astronomical Society Annual Meeting 2021
  Virtual Meeting
- **The impact of environment on the formation of passive central galaxies** 2020
  The Epoch of Galaxy Quenching 2020
  Virtual Meeting
- **The Stellar Metallicity Gradients of Early-type Galaxies** 2018
  Summer Galaxy Workshop 2018
  Santa Cruz, California, United States
- **Diagnosing Variations in Early-type Galaxy Stellar Populations** 2017
  MaNGA Collaboration Meeting 2017
  Campeche, Mexico
- **Searching for Chemical Signatures of Accreted Stellar Envelopes** 2016
  MaNGA Collaboration Meeting 2016
  Shanghai, China
- **How Lyman Alpha Emission Depends on Galaxy Stellar Mass** 2016
  Escape of Lyman Radiation from Galactic Labyrinths
  Crete, Greece

LIST OF PUBLICATIONS

Grecco Álvaro Oyarzún Martínez
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FIRST AUTHOR PUBLICATIONS (9 total)

• **The KAGG survey: KCWI Analysis of Gas around Galaxies at $z \approx 3-5$**
Oyarzún, G.A.; Rafelski, M.; Prochaska, J. X.; Kanekar N.; Neeleman, M.; Wisz, M.E.; Fumagalli, M.; Jorgenson, R.A.:
2026, *Accepted for publication in The Astrophysical Journal*

• **The Qz5 Survey (I): How the HI Mass Density of the Universe Evolves With Cosmic Time**
Oyarzún, G.A.; Rafelski, M.; Christensen, L.; Ozyurt, F.; Jorgenson, R.A.; Neeleman, M.; Fumagalli, M.; Prochaska, J.X.; Worseck, G.; Wisz, M.E.; Becker, G.D.; López, S.:
2025, *The Astrophysical Journal* **983**, 10.

• **Galaxy Assembly Bias in the Stellar-to-halo Mass Relation for Red Central Galaxies from SDSS**
Oyarzún, G.A.; Bundy, K.; Tinker, J.L.; Xhakaj, E.; Wyithe, J.S.B.:
2024, *The Astrophysical Journal* **974**, 29.

• **A Survey of Lyα Emission Around Damped Lyα Absorbers at $z \approx 2$ with the Keck Cosmic Web Imager**
Oyarzún, G.A.; Rafelski, M.; Kanekar N.; Prochaska, J.X.; Neeleman, M.; Jorgenson, R. A.:
2024, *The Astrophysical Journal* **962**, 72.

• **SDSS-IV MaNGA: The Effect of Stellar Mass and Halo Mass on the Assembly Histories of Satellite Galaxies**
Oyarzún, G.A., Bundy, K.; Westfall, K.B.; Lacerna, I.; Yan, R.; Brownstein, J.R.; Drory, N.; and Lane, R.R.:
2023, *The Astrophysical Journal* **947**, 13.

• **SDSS-IV MaNGA: How the Stellar Populations of Passive Central Galaxies Depend on Stellar and Halo Mass**
Oyarzún, G.A.; Bundy, K.; Westfall, K.B.; Tinker, J.; Belfiore, F.; Argudo-Fernández, M.; Zheng, Z.; Conroy, C.; Masters, K.L.; Wake, D.; Law, D.R.; McDermid, R.M.; Aragón-Salamanca, A.; Zheng, Z.; Parikh, T.; Yan, R.; Bershady, M.; Sánchez, S.F.; Andrews, B.H.; Fernández-Trincado J.G.; Lane, R.R.; Bizyaev, D.; Boardman N.F.; Lacerna, I.; Brownstein, J.R.; Drory, N.; and Zhang, K.:
2022, *The Astrophysical Journal* **933**, 88.

• **Signatures of Stellar Accretion in MaNGA Early-type Galaxies**
Oyarzún, G.A.; Bundy, K.; Westfall, K.B.; Belfiore, F.; Thomas, D.; Maraston, C.; Lian, J.; Aragón-Salamanca, A.; Zheng, Z.; Gonzalez-Perez, V.; Law, D.R.; Drory, N.; and Andrews, B.H.:
2019, *The Astrophysical Journal* **880**, 111.

• **A Comprehensive Study of Lyα Emission in the High-redshift Galaxy Population**
Oyarzún, G.A.; Blanc, G.A., González, V.; Mateo, M.; and Bailey, J.I.:
2017, *The Astrophysical Journal* **843**, 133.

• **How Lyman Alpha Emission Depends on Galaxy Stellar Mass**
Oyarzún, G.A.; Blanc, G.A.; González, V.; Mateo, M., Bailey, J.I.; Finkelstein, S.L.; Lira, P.; Crane, J.D.; and Olszewski, E.W.:
2016, *The Astrophysical Journal* **821**, L14.

SIGNIFICANT CONTRIBUTION PUBLICATIONS (4 total)

• **MXDFz4.4: A LyC emitter 250Myr after the epoch of reionization and a first test of Ly-alpha morphology as a tracer of LyC escape at high redshift**
Goovaerts, I.; Rafelski, M.; Beckett, A.; **Oyarzún, G. A.**; Citro, A.; Hasan, F.; Nedkova, K. V.; Hawcroft, C.; Koekemoer, A. M.; Revalski, M.; Hayes, M. J.; Scarlata, C.; Lucas, R. A.; Grogin, N. A.; Stark, D. V.; Suin, P.; Pirzkal, N.:
Accepted for publication in *The Astrophysical Journal*

• **The Qz5 Survey. II. Metallicity Evolution of Damped Lyα Systems Out to $z \sim 5$**
Wisz, M. E.; Rafelski, M.; **Oyarzún, G. A.;** Jorgenson, R. A.; Fumagalli, M.; Neeleman, M.; Prochaska, J. X.; Christensen, L.; Fobbs, E.; Becker, G. D.; Hennawi, J.; Worseck, G.; López, S.:
2026, *The Astrophysical Journal* **1003**, 222.

• **The contribution of in-situ and ex-situ star formation in early-type galaxies: MaNGA versus IllustrisTNG**
Cannarozzo, C.; Leauthaud, A.; **Oyarzún, G.A.**; Nipoti, C.; Diemer, B.; Huang, S.; Rodriguez-Gomez, V.; Sonnenfeld, A.; Bundy, K.:
2023, *Monthly Notices of the Royal Astronomical Society* **520**, 5651.

• **A Magellan M2FS Spectroscopic Survey of Galaxies at 5.5 < z < 6.8: Program Overview and a Sample of the Brightest Lyα Emitters**
Jiang, L.; Shen, Y.; Bian, F.; Zheng, Z.-Y.; Wu, J.; **Oyarzún, G.A.**; Blanc, G.A.; Fan, X.; Ho, L.C.; Infante, L.; Wang, R.; Wu, X.-B.; Mateo, M.; Bailey, J.I. III; Crane, J.D.; Olszewski, E.W.; Shectman, S.; Thompson, I.; Walker, M.G.:
2017, *The Astrophysical Journal* **846**, 134.

OTHER PUBLICATIONS (8 total)

• **Impact of Cosmic Filaments on Galaxy Morphological Evolution And Predictions of Early Cosmic Web Structure for Roman**
Hasan, F.; Zhang, H.; Pandya, V.; Rafelski M.; Burchett J. N.; Hellinger, D.; Nedkova, K. V. Goovaerts, I.; Mandelker N.; Nagai D.; **Oyarzún, G. A.**; Primack, J. R.; Woo, J.:
Accepted for publication in *The Astrophysical Journal*

• **UVCANDELS: The role of dust on the stellar mass−size relation of disk galaxies at $0.5 \leq z \leq 3.0$**
Nedkova, K.V.; Rafelski, M.; Teplitz, H.I.; Mehta, V.; DeGroot, L.; Ravindranath, S.; Alavi, A.; Beckett, A.; Grogin, N.A.; Häußler, B.; Koekemoer, A.M.; **Oyarzún, G.A.**; Prichard, L.; Revalski, M.; Snyder, G.F.; Sunnquist, B.; Wang, X.; Windhorst, R.A.; Chartab, N.; Conselice, C.J.; Guo, Y.; Hathi, N.; Hayes, M.J.; Ji, Z.; Kim, K.J.; Lucas, R.A.; Mobasher, B.; O'Connell, R.W.; Sattari, Z.; Smith, B.M.; Taamoli, S.; Yung, L.Y.A.:
2024, *The Astrophysical Journal* **974**, 29.

• **SDSS-IV MaNGA: Radial Gradients in Stellar Population Properties of Early and Late-Type Galaxies**
Parikh, T.; Thomas D.; Maraston C.; Westfall K.B.; Andrews B.H.; Boardman N.F.; Drory N.; **Oyarzún, G.A.**:
2021, *Monthly Notices of the Royal Astronomical Society* **502**, 5508.

• **SDSS-IV MaNGA: Environmental Dependence of the $Mgb/\langle \mathbf{Fe} \rangle - \boldsymbol{\sigma}_*$ Relation for Nearby Galaxies**
Zheng, Z.; Li, C.; Mao, S.; Wang, H.; Liu, C.; Mo, H.; Yuan, Z.; Maraston, C.; Thomas, D.; Yan, R.; Bundy, K.; Long, R.J.; Parikh, T.; **Oyarzún, G.A.**; Bizyaev, D.; Lacerna, I.:
2019, *The Astrophysical Journal* **873**, 63.

• **A giant protocluster of galaxies at redshift 5.7**
Jiang, L.; Wu, J.; Bian, F.; Chiang, Y.-K.; Ho, L.C.; Shen, Y.; Zheng, Z.-Y.; Bailey, J.I.; Blanc, G.A.; Crane, J.D.; Fan, X.; Mateo, M.; Olszewski, E.W.; **Oyarzún, G. A.**; Wang, R.; and Wu, X.:
2018, *Nature Astronomy* **2**, 962.

• **SDSS IV MaNGA - sSFR profiles and the slow quenching of discs in green valley galaxies**
Belfiore, F.; Maiolino, R.; Bundy, K.; Masters, K.; Bershady, M.; **Oyarzún, G.A.**; Lin, L.; Cano-Diaz, M.; Wake, D.; Spindler, A.; Thomas, D.; Brownstein, J.R.; Drory, N.; Yan, R.:
2018, *Monthly Notices of the Royal Astronomical Society* **477**, 3.

• **A MegaCam Survey of Outer Halo Satellites. III. Photometric and Structural Parameters**
Muñoz, R.R.; Côté, P.; Santana, F.A.; Geha, M.; Simon, J.D.; **Oyarzún, G.A.**; Stetson, P.B.; Djorgovski, S.G.:
2018, *The Astrophysical Journal* **860**, 66.

• **A MegaCam Survey of Outer Halo Satellites. I. Description of the Survey**
Muñoz, R.R.; Côté, P.; Santana, F.A.; Geha, M.; Simon, J.D.; **Oyarzún, G.A.**; Stetson, P.B.; Djorgovski, S.G.:
2018, *The Astrophysical Journal* **860**, 65.