

MANUEL BARRIENTOS

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EDUCATION

Ph.D. in Astrophysics

University of Oklahoma (OU)
Advisor: Prof. Mukremin Kilic

Aug 2021 - present

M.Sc. in Astrophysics

Pontificia Universidad Católica de Chile (PUC)
Advisor: Prof. Julio Chanamé

Mar 2017 - Jun 2020

B.Sc. in Astronomy

Pontificia Universidad Católica de Chile (PUC)
Advisor: Prof. Julio Chanamé

Mar 2011 - Jul 2016

RESEARCH INTERESTS

- Stellar astrophysics.
- Stellar evolution and stellar remnants. White dwarfs.
- Stellar abundances and chemical evolution of the Galaxy.
- Binary systems.
- Observational astronomy. Spectroscopy.

OBSERVING EXPERIENCE

As PI:

Project: *Wide Double White Dwarfs Binaries for Fundamental Tests of Cooling Physics*

Gemini Telescope, GMOS. Gemini Observatory. **22 hrs**

Feb 2023 - Jul 2023

Project: *Wide Double White Dwarfs Binaries: Using Dead Bodies to Constrain the Initial-to-Final Mass Relation*

VLT, X-SHOOTER. Paranal Observatory. **22 hrs**

Oct 2020 - Mar 2021

Project: *Improved constraints for the Initial-to-Final Mass Relation of White Dwarfs*

Clay Telescope, MIKE. Las Campanas Observatory. **1 night**

Jul 2017

As Co-I:

Project: *Fundamental White Dwarf Masses for the Low-Mass End of the Initial-to-Final Mass Relation*

PI: Prof. Julio Chanamé, PUC

VLT, UVES. Paranal Observatory. **22 hrs**

Apr 2023 - Sep 2023

Project: *Fundamental White Dwarf Masses for the Low-Mass End of the Initial-to-Final Mass Relation*

PI: Prof. Julio Chanamé, PUC

Magellan/Clay Telescope, MIKE. Las Campanas Observatory. **22 hrs**

Apr 2023 - Sep 2023

Project: *The ELM Survey South. II. Two dozen new low mass white dwarf binaries* PI: Prof. Mukremin Kilic, OU

SOAR Telescope, Goodman HST. SOAR Observatory. **2 nights**

Apr 2022

Project: *Wide Double White Dwarf Binaries: A Unique Constraint On the Initial-Final Mass Relation*

PI: Prof. Julio Chanamé, PUC

SOAR Telescope, Goodman HST. SOAR Observatory. **3 nights**

Feb 2019 - May 2019

As Observer:

Project: *The Nature and Astrophysical Site(s) of the r-Process*

PI: Prof. Julio Chanamé, PUC

Clay Telescope, MIKE. Las Campanas Observatory. **7 nights**

Mar 2018 - Jan 2019

Project: *A Transiting Warm Saturn on an Eccentric Orbit*

PI: Dr. Rafael Brahm, PUC

Swiss Telescope, Coralie. La Silla Observatory. **4 nights**

Feb 2017

HONORS AND AWARDS

Avenir Foundation Graduate Student Fellowship, University of Oklahoma 2024

Harwell Scholarship, University of Oklahoma 2023 - 2024

AAS Nova Highlight, Article: "Improved Constraints on the Initial-to-final Mass Relation of White Dwarfs Using Wide Binaries" 2022

M.Sc. Fellowship, PUC 2017 - 2019
- Selected undergraduate students at PUC.

Academic Excellence Scholarship, Chilean Government 2011 - 2016
- Scholarship for university studies awarded to 10 % of the best high school graduates of their establishment's class.

Children of Education Professionals Scholarship, Chilean Government 2011 - 2016
- Scholarship for university studies awarded to top high school students whose parent(s) work in educational establishments as teacher(s).

PUBLICATIONS

First Author:

Fundamental Tests of White Dwarf Cooling Physics with Wide Binaries

Barrientos, M. et al. 2024, ApJ, accepted for publication

Improved Constraints for the Initial-to-Final Mass Relation of White Dwarfs using Wide Binaries

Barrientos, M. & Chanamé J., 2021, ApJ, 923, 181

Co-Author:

The ELM Survey South. II. Two Dozen New Low-mass White Dwarf Binaries

Kozakowski, A. et al. incl. **Barrientos, M.**, 2023, ApJ, 950, 141

OGLE-BLG504.12.201843: a possible extreme dwarf nova

Landry, C. et al. incl. **Barrientos, M.**, 2022, MNRAS, 517, 2746

The R-Process Alliance: Spectroscopic Follow-up of Low-metallicity Star Candidates from the Best & Brightest Survey

Placco, V. M. et al. incl. **Barrientos, M.**, 2019, ApJ, 870, 122

TEACHING EXPERIENCE

Teaching Assistant: General Astronomy, OU

Spring 2022

- Leading discussion for non-major students to create ideas on how the universe and our solar system works. Class of approximately 40 students.

Teaching Assistant: *General Physics II: Electricity, Magnetism, and Thermodynamics*, OU *Fall 2021*

- Leading discussion for engineering students to understand how electricity and magnetism works along with thermodynamics. Class of approximately 40 students.

Laboratory Assistant: *Electricity and Magnetism*, PUC *Spring 2019 - Spring 2020*

- Tutored engineering students to understand how electricity and magnetism works using practical experiences related to this theme. Class of approximately 70 students.

Teaching Assistant: *Space, Time, and Universe*, PUC *Spring 2019*

-Tutored multi-discipline students to understand and learn about the relativity theory. Prepared and conducted weekly tutorials for classes of 100 students.

Teaching Assistant: *Stellar Astrophysics*, PUC *Fall 2016*

- Tutored astronomy students to understand and learn about stellar astrophysics. Prepared and conducted weekly tutorials for classes of 20 students.

WORKSHOPS AND CONFERENCES

EUROWD24 *Barcelona, Spain*

Talk: *Fundamental Tests of White Dwarf Cooling Physics with Wide Binaries* *Jul 2024*

Current Challenges in White Dwarfs Physics *Santa Fe, NM, USA*

Poster: *Fundamental Tests of White Dwarf Cooling Physics with Wide Binaries* *Mar 2024*

EUROWD22 *Tubingen, Germany*

Talk: *Improved constraints for the IFMR of White Dwarfs* *Aug 2022*

Annual Meeting: XVI SOCHIAS *Virtual*

Attendee *Dec 2020*

Workshop: ChaICA II *Virtual*

Attendee *Nov 2020*

Scientific Meeting: CATA *Santiago, Chile*

Talk: *Improved constraints for the IFMR of White Dwarfs* *Nov 2019*

ESO Workshop: High Resolution Spectroscopy *Santiago, Chile*

Attendee *Aug 2019*

Millennium Institute of Astrophysics: Tutorial of Astrostatistics and R *Santiago, Chile*

Course dictated by Dr. Eric D. Feigelson, Pennsylvania State University *Mar 2016*

COMPUTER SKILLS

Programming Languages	Python (advance), Java (advance), C (basic), R (basic)
Used Softwares	IRAF, MOOG, TOPCAT, DS9, DAOSPEC, WDTOOLS, MESA, LCURVE, WDWARFDATE
Pipelines	REFLEX, CARPY, GOODMAN HST, CERES
Other Tools	Latex, MS Office

LANGUAGES

Spanish: Native

English: Fluent

EXTRA-CURRICULAR ACTIVITIES

Professional Basketball Player Currently playing the Chilean national league for Club Deportivo Universidad Católica (Team Captain)	<i>2014 - 2021</i>
University Basketball Team Member of the PUC Basketball Team during the undergraduate and graduate program (Team Captain)	<i>2011 - 2019</i>
University Basketball Player of the Year Awarded as the best basketball player in PUC	<i>2016 & 2018</i>
University Sports Career Award Recognition given to student-athletes who finished their degrees (2016 B.Sc in Astronomy, 2019 M.Sc. in Astrophysics)	<i>2016 & 2019</i>
University National Basketball Team Member of the University National Basketball Team for Universiade (World University Games) in Gwangju, Korea	<i>2015</i>
Motivational Talks Actively giving talks at schools with students in social risk	<i>2018 - present</i>

REFERENCES

- Prof. Mukremin Kilic (kilic@ou.edu), University of Oklahoma
- Prof. Julio Chanamé (jchaname@astro.puc.cl), Pontificia Universidad Católica de Chile.
- Prof. Claudia Aguilera (craguile@uc.cl), Pontificia Universidad Católica de Chile.
- Prof. Marcel Agueros (marcel@astro.columbia.edu), Columbia University.
- Prof. Jeff Andrews (jeffrey.andrews@northwestern.edu), Northwestern University.