

# Constanza Echiburú Trujillo

## Curriculum Vitae

Department of Astrophysical and Planetary Sciences  
University of Colorado Boulder  
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## RESEARCH INTERESTS

Stellar dynamics around supermassive black holes, X-ray binaries including neutron stars and stellar-mass black holes, accretion physics and its connection to relativistic jet launching, compact objects, high-energy astrophysical phenomena.

## EDUCATION

2021–present: PhD (c) in Astrophysics, University of Colorado Boulder, United States

*Advisors:* Ann-Marie Madigan, Jason Dexter

2019–2021: MSc in Physics, McGill University, Canada

*Advisors:* Daryl Haggard, Alexandra Tetarenko; *Thesis:* A broad-band view of the black hole binary MAXI J1820+070

2014–2018: Licentiate in Astronomy, Universidad Católica de Chile (UC)

*Advisor:* Sebastien Guillot; *Thesis:* X-ray spectral analysis of the quiescent low-mass X-ray binary in the globular cluster M30

## FELLOWSHIPS & AWARDS

2025 Figueroa Family Fellowship, CU Boulder Graduate School

2024 Public and Community-Engaged Scholarship Grants 2024-2025 (co-Applicant), Office for Public and Community-Engaged Scholarship at CU Boulder

2024 GPSG Excellence Award in Diversity, Equity and Inclusion, CU Boulder

2024 Astrophysics Fellowship, APS Department at CU Boulder

2023 CU Boulder Outreach Award 2023-2024 (co-Applicant), Office for Outreach and Engagement at CU Boulder

2020 Science Graduate Student Travel Awards, McGill University

2019 & 2020 Trottier Graduate Award, McGill University

2019 Wolfe Fellowship in Scientific and Technological Literacy, McGill University

2019 CONICYT Becas-Chile Study Abroad Graduate Fellowship, Government of Chile (declined)

2018 *Gratuidad* Scholarship, Chilean Ministry of Education

2016, 2017 & 2018 Summer Research Awards, Vicerrectoría de Investigación, Universidad Católica de Chile

2014 *Familia UC* Scholarship, Universidad Católica de Chile

## ALLOCATED OBSERVING TIME

2024 PI Chandra proposal: *Searching for pulsating neutron stars inside the globular cluster M28* (61 h)

2020 co-I NICER proposal: *Searching for soft X-ray pulsations in the quiescent low-mass X-ray binary inside the globular cluster M30* (69 h)

## TEACHING EXPERIENCE

### At CU Boulder; Teaching Assistant

ASTR 3710: Formation and Dynamics of Planetary Systems, Fall 2024

ASTR 1000: The Solar System, Spring 2022 & 2023

ASTR 2030: Black Holes, Fall 2021 & 2022, Spring 2024 & 2025

### At McGill; Teaching Assistant

PHYS 320: Introductory Astrophysics, Fall 2020

PHYS 181: Everyday Physics, Guest Lecture on Neutron Stars

PHYS 181: Everyday Physics, Winter 2020

PHYS 131: Mechanics & Waves, Fall 2019

PHYS 101: Introductory Physics, Fall 2019

### At UC; Undergraduate Student Instructor

[PACE UC](#): Astronomy, Understanding the Universe From Our Home. Main Lecturer, Fall 2019

FIS 153: Electricity and Magnetism Laboratory, Fall 2019

AST 0321: Stellar Astrophysics Tutorial, Spring 2018

[PACE UC](#): Astronomy, Understanding the Universe From Our Home. Teaching Assistant, Fall & Spring 2018

FIS 109C: Physical for Science Tutorial, Fall 2017

FIS 109: Physical for Science Laboratory, Spring 2016, Fall & Spring 2017, Fall 2019

FIS 151: Statics and Dynamics Laboratory, Spring 2015, Fall 2018

## OUTREACH

2024 Spanish Narrator for the educational film [Chasing Polymele's Shadow](#) produced by the Fiske Planetarium

2023–present Co-founder of *Hispanic Astronomy for Learning and Observation* (HALO). We collaborate with the local Hispanic community with the goal of opening the spaces, resources, and general astronomical knowledge housed at CU Boulder

2021–2022 Co-founder of *Multiculturalism at the Observatory*. I mentored an undergraduate student to lead a [bilingual open house](#) at CU Boulder's Sommers Bausch Observatory

2020 *Academic Enrichment Clips*, a 15 min [video](#) about my experience in STEM aimed for PACE UC students

2020 [Journey Through the Universe](#), Hilo, Hawaii. I assisted Dr. Alex Tetarenko in classroom activities for grade 4-6 students

2019 Neutron star talk and training for [University of Santiago Planetarium](#) guides

2019 Guide at the [University of Santiago Planetarium](#) (5 months)

2018–2019 Member of the [PACE](#) program teaching team for astronomy course (see Teaching Experience section)

2017 Astronomy program ambassador at the *Prospective Student Expo* at UC

2016 & 2017 Astronomy program ambassador at the *Week for Applicants* at UC

## PRESENTATIONS

### Invited Seminars

03/2025 Probing the accretion flow around M87\* with Faraday rotation;

GAHEC Seminar at the Institut de Recherche en Astrophysique et Planétologie

02/2020 Spectral analysis of the quiescent low-mass X-ray binary in the globular cluster M30;  
East Asian Observatory Seminar series

### Conference talks and posters

05/2020 American Astronomical Society Annual Meeting; Poster

05/2020 American Astronomical Society Annual Meeting; Oral

04/2020 PHAROS 2020: Multi-messenger Physics Of Neutron Stars; Greece, Oral (canceled)

### PUBLICATIONS

5. (2025) Hughes, A. et al. (including **Echiburú-Trujillo, C.**) “Comprehensive Radio Monitoring of the Black Hole X-ray Binary Swift J1727.8-1613 during its 2023-2024 Outburst”, accepted for publication in ApJ.
4. (2025) **Echiburú-Trujillo, C.** & Dexter, J. “Revealing the Accretion Flow in M87\*: Insights from Faraday Rotation”, ApJ, 985, 260.
3. (2024) **Echiburú-Trujillo, C.**, Tetarenko, A. J., Haggard, D., et al. “Chasing the Break: Tracing the Full Evolution of a Black Hole X-Ray Binary Jet with Multiwavelength Spectral Modeling”, ApJ, 962, 116.
2. (2020) Zhao, Y. et al. (including **Echiburú, C.**) “A deep Chandra survey for faint X-ray sources in the Galactic globular cluster M30, and searches for optical and radio counterparts”, MNRAS, 499, 3338.
1. (2020) **Echiburú, C. S.**, Guillot, S., Zhao, Y., et al. “Spectral analysis of the quiescent low-mass X-ray binary in the globular cluster M30”, MNRAS, 495, 4508.