CÉSAR ROJAS-BRAVO

Astronomer, Ph.D.
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PRIMARY RESEARCH INTERESTS

- Cosmology with type Ia Supernovae
- Astronomical surveys: survey planning, daily operations, photometric reductions & calibration.
- Gravitational-wave optical follow-up.
- Astronomy Outreach, Communication and Education. My dream is to make the world a better place through Astronomy. I firmly believe Astronomy can unite Humanity, and help spread kindness and compassion.

RESEARCH POSITIONS

Special Research Assistant (Postdoctoral Scholar) *Sep. 2025 - now*
University of Chinese Academy of Sciences/National Astronomical Observatories, Chinese Academy of Sciences. Beijing, China

Postdoctoral Scholar *March 2025- June 2025*
University of California, Santa Cruz. US

EDUCATION

Ph.D., Astronomy & Astrophysics *Feb. 2025*
Thesis title: *Advancing Type Ia Supernova Science: The Swope Supernova Survey and Relationships Between i- Band Light-Curve Diversity and Spectral Parameters*
Advisor: Ryan J. Foley
University of California, Santa Cruz. US.

M.Sc., Astronomy & Astrophysics *2019*
Advisor: Ryan J. Foley
University of California, Santa Cruz. US.

B.S. in Physics *2016*
Universidad de Costa Rica. Costa Rica.

B.A. Honors in Classical Philology *2016*
Universidad de Costa Rica. Costa Rica.

Exchange Physics student - Erasmus Mundus Scholarship *August 2010 – June 2011*
Universitat Autónoma de Barcelona. Spain.

FELLOWSHIPS AND AWARDS

- Special Research Assistant. University of Chinese Academy of Sciences/National Astronomical Observatories, Chinese Academy of Sciences *2025*
- Travel grant to the *Cosmic Lighthouses: Astrophysical and Cosmological Challenges with Type Ia Supernovae* in Cambridge, England *June 2025*

- Graduate Studies Commencement speaker; University of California, Santa Cruz, USA. *June 2024*
- TEDx speaker, TEDx Santa Cruz, California, USA. *April 2024*
- People's Choice, UC Santa Cruz Grad Slam *March 2023*
- Osterbrock Fellow, UC Santa Cruz *2020-2024*
- LSST travel award for the 2019 LSST DESC meeting *2019*
- Osterbrock Scholar. Trip to Space Telescope Science Institute, Baltimore, to sit at the Hubble Space Telescope's Time Allocation Committee *2018*
- Part of the scientific Breakthrough of the Year discovery. *2017*
- Regents' Fellowship, University of California, Santa Cruz *2017*
- Erasmus Mundus Scholarship *2010*

PUBLICATIONS

- **1 first author, 76 co-author. Total h-index: 36. Total citations: 12544** .
- ADS publication list.

First author Journal Publications:

1. **Rojas-Bravo, C.** et al. , 2026: "Relationships between SN Ia i-band light-curve diversity and spectral parameters". *In prep.*
2. **Rojas-Bravo, C.** et al. , 2026: "Swope Supernova Survey: First Photometric Data Release of 111 Type Ia Supernovae". *In prep.*
3. **Rojas-Bravo, C.** & Araya, M. , 2016: "Search for gamma-ray emission from star-forming galaxies with Fermi LAT". *MNRAS* 463, 1068-1073 [36 citations]. ADS link.

Co-author Journal Publications:

1. Chen, Xiaohan et al. (*incl.* **Rojas-Bravo, C.**), 2026. "SN 2024abfl: A Low-Luminosity Type IIP Supernova in NGC 2146 from a Low-Mass Red Supergiant Progenitor". *A&A* , submitted. ADS link.
2. Tinyanont, Samaporn et al. (*incl.* **Rojas-Bravo, C.**), 2026. "An infrared echo from a circumstellar disk in the hydrogen- and helium-poor SN 2024aecx". *ApJ* , submitted. ADS link.
3. Teixeira, Gabriel et al. (*incl.* **Rojas-Bravo, C.**), 2026. "SN 2022acko and the Properties of its Red Supergiant Progenitor: Direct Detection, Light Curves, and Nebular Spectroscopy". *ApJ* 998..123T. ADS link.
4. Izzo, L. et al. (*incl.* **Rojas-Bravo, C.**), 2026. "Normal or transitional? The evolution and properties of two type Ia supernovae in the Virgo cluster". *A&A* 706A.381I. ADS link.
5. Wu, Junjie et al. (*incl.* **Rojas-Bravo, C.**), 2026. "Direct Detection of Type II-P Supernova Progenitors with the Euclid and CSST Surveys". *A&A* , submitted. ADS link.
6. Niu, Zexi et al. (*incl.* **Rojas-Bravo, C.**), 2026. "Revealing the diversity of Type IIn supernova progenitors through their environments". *ApJ* , submitted. ADS link.
7. Chen, Chun et al. (*incl.* **Rojas-Bravo, C.**), 2026. "SN 2025coe: A Multiple-peaked Calcium-strong Transient from a White-dwarf Progenitor". *ApJ* 997...72C. ADS link.
8. Wang, Qinan et al. (*incl.* **Rojas-Bravo, C.**), 2025. "Feeling Blue: Constructing a Robust SALT3 UV Template and Constraining its Redshift Dependency". *ApJ* , submitted. ADS link.

9. Farias, D. et al. (*incl.* **Rojas-Bravo, C.**), 2025. "Characterization of type Ibn SNe". *A&A* , submitted. ADS link.

10. Dong, Yize et al. (*incl.* **Rojas-Bravo, C.**), 2025. "Spectral Diversity in Type Ibn Supernovae and the Large Host Offset of SN2024acyl". *ApJ* , submitted. ADS link.

11. Bánhidi, D. et al. (*incl.* **Rojas-Bravo, C.**), 2025. "SN 2022xlp: The second-known well-observed, intermediate-luminosity Iax supernova". *A&A* 703A..64B. ADS link.

12. Kwok, Lindsey A. et al. (*incl.* **Rojas-Bravo, C.**), 2025. "JWST Spectroscopy of SN Ia 2022aaiq and 2024gy: Evidence for Enhanced Central Stable Ni Abundance and a Deflagration-to-Detonation Transition". *AAS Journals* , submitted. ADS link.

13. Jacobson-Galan, W. V. et al. (*incl.* **Rojas-Bravo, C.**), 2025. "Final Moments III: Explosion Properties and Progenitor Constraints of CSM-Interacting Type II Supernovae". *ApJ* 992..100J. ADS link.

14. Angulo, Rodrigo et al. (*incl.* **Rojas-Bravo, C.**), 2025. "Optimizing Convolution Direction and Template Selection for Difference Image Analysis ". *ApJS* 280...29A. ADS link.

15. Kwok, Lindsey A. et al. (*incl.* **Rojas-Bravo, C.**), 2025. "JWST and Ground-based Observations of the Type Iax Supernovae SN 2024pxl and SN 2024vjm: Evidence for Weak Deflagration Explosions". *ApJL* 989L:33K. ADS link.

16. Coulter, D.A. et al. (*incl.* **Rojas-Bravo, C.**), 2024. "The Gravity Collective: A Comprehensive Analysis of the Electromagnetic Search for the Binary Neutron Star Merger GW190425". *ApJ* 988..169C. ADS link.

17. Singh, Mridweeka et al. (*incl.* **Rojas-Bravo, C.**), 2025. "Photometry and Spectroscopy of SN 2024pxl: A Luminosity Link Among Type Iax Supernovae". *ApJ*, submitted. ADS link.

18. Jacobson-Galan, W. V. et al. (*incl.* **Rojas-Bravo, C.**), 2025. "An Updated Detection Pipeline for Precursor Emission in Type II Supernova 2020tlf". *RNAAS* 9:5. ADS link.

19. Jacobson-Galan, W. V. et al. (*incl.* **Rojas-Bravo, C.**), 2024. "SN 2024ggi in NGC 3621: Rising Ionization in a Nearby, CSM-Interacting Type II Supernova". *ApJ* 972:177J. ADS link.

20. Jacobson-Galan, W. V. et al. (*incl.* **Rojas-Bravo, C.**), 2024. "Final Moments II: Observational Properties and Physical Modeling of CSM-Interacting Type II Supernovae". *ApJ* 970:189J. ADS link.

21. Wang, Qinan et al. (*incl.* **Rojas-Bravo, C.**), 2024. "A Low-Mass Helium Star Progenitor Model for the Type Ibn SN 2020nxt ". *MNRAS* 1066W. ADS link.

22. Kwok, Lindsey A. et al. (*incl.* **Rojas-Bravo, C.**), 2024. "Ground-based and JWST Observations of SN 2022pul: II. Evidence from Nebular Spectroscopy for a Violent Merger in a Peculiar Type-Ia Supernova". *ApJ* 966:135K. ADS link.

23. Padilla Gonzalez, E. et al. (*incl.* **Rojas-Bravo, C.**), 2024. "SN 2022joj: A Potential Double Detonation with a Thin Helium shell ". *ApJ* 964:196P. ADS link.

24. Wang, Qinan et al. (*incl.* **Rojas-Bravo, C.**), 2024. "Flight of the Bumblebee: the Early Excess Flux of Type Ia Supernova 2023bee revealed by TESS , Swift and Young Supernova Experiment Observations ". *ApJ* 962:17W. ADS link.

25. Tinyanont, Samaporn et al. (*incl.* **Rojas-Bravo, C.**), 2024. "Keck Infrared Transient Survey. I. Survey Description and Data Release 1". *PASP*: 136a4201T. ADS link.

26. Siebert, Matthew R. et al. (*incl.* **Rojas-Bravo, C.**), 2024. "Ground-based and JWST Observations of SN 2022pul. I. Unusual Signatures of Carbon, Oxygen, and Circumstellar Interaction in

a Peculiar Type Ia Supernova". *ApJ* 960:88S. ADS link.

27. Pearson, Jeniveve et al. (*incl.* **Rojas-Bravo, C.**), 2024. "Strong Carbon Features and a Red Early Color in the Underluminous Type Ia SN 2022xkq". *ApJ* 960:29P. ADS link.

28. Siebert, Matthew R. et al. (*incl.* **Rojas-Bravo, C.**), 2023. "An Asymmetric Double-Degenerate Type Ia Supernova Explosion with a Surviving Companion Star". Submitted to *ApJ*. ADS link.

29. Ward, Sam et al. (*incl.* **Rojas-Bravo, C.**), 2023. "Relative Intrinsic Scatter in Hierarchical Type Ia Supernova Sibling Analyses: Application to SNe 2021hpr, 1997bq, and 2008fv in NGC 3147. ". *ApJ*. 956:111W. ADS link.

30. Chen, Yuyang et al. (*incl.* **Rojas-Bravo, C.**), 2023. "Late-Time HST Observations of AT 2018cow II: Evolution of a UV-Bright Underlying Source 2-4 Years Post-Explosion". *ApJ*. 955:43C. ADS link.

31. Chen, Yuyang et al. (*incl.* **Rojas-Bravo, C.**), 2023. "Late-Time HST Observations of AT 2018cow I: Further Constraints on the Fading Prompt Emission and Thermal Properties 50-60 Days Post-Explosion". *ApJ*. 955:42C. ADS link.

32. Jacobson-Galan, W. V. et al. (*incl.* **Rojas-Bravo, C.**), 2023. "SN 2023ixf in Messier 101: Photo-ionization of Dense, Close-in Circumstellar Material in a Nearby Type II Supernova". *ApJL*. 954L:42J. ADS link.

33. Tinyanont, Samaporn et al. (*incl.* **Rojas-Bravo, C.**), 2023. "Supernova 2020wnt: An Atypical Superluminous Supernova with a Hidden Central Engine". *ApJ* 951:34T. ADS link.

34. Coulter, D.A. et al. (*incl.* **Rojas-Bravo, C.**), 2023. "YSE-PZ: A Transient Survey Management Platform that Empowers the Human-in-the-Loop".*PASP* 135:1048. ADS link

35. Vazquez, Jason et al. (*incl.* **Rojas-Bravo, C.**), 2023. "The Type II-P Supernova 2019mhm and Constraints on Its Progenitor System ". *ApJ* 949:75V. ADS link.

36. Aleo, Patrick et al. (*incl.* **Rojas-Bravo, C.**), 2023. "The Young Supernova Experiment Data Release 1 (YSE DR1): Light Curves and Photometric Classification of 1975 Supernovae". *ApJS* 266:9A. ADS link.

37. Fulton, M.D. et al. (*incl.* **Rojas-Bravo, C.**), 2023. "The optical light curve of GRB 221009A: the afterglow and detection of the emerging supernova SN 2022xiw". *ApJL* 946L:22F. ADS link

38. Pastorello, Andrea et al. (*incl.* **Rojas-Bravo, C.**), 2023. "Forbidden hugs in pandemic times. IV. Panchromatic evolution of three luminous red novae ". *A&A*. 671A.158P ADS link.

39. Angus, Charlotte et al. (*incl.* **Rojas-Bravo, C.**), 2022. "A fast-rising tidal disruption event from a candidate intermediate-mass black hole". *Nature Astronomy*: 240A. ADS link.

40. Scolnic, Dan et al. (*incl.* **Rojas-Bravo, C.**), 2022. "The Pantheon+ Analysis: The Full Dataset and Light-Curve Release ". *ApJ*. 938:110B. ADS link.

41. Brout, Dillon et al. (*incl.* **Rojas-Bravo, C.**), 2022. "The Pantheon+ Analysis: Cosmological Constraints ". *ApJ*. 938:110B. ADS link.

42. Kilpatrick, Charles D. et al. (*incl.* **Rojas-Bravo, C.**), 2022. "Updated Photometry of the Yellow Supergiant Progenitor and Late-time Observations of the Type IIb Supernova 2016gkg ". *ApJ*: 936:111K. ADS link.

43. Gagliano, Alexander et al. (*incl.* **Rojas-Bravo, C.**), 2022. "An Early-Time Optical and Ultraviolet Excess in the type-Ic SN 2020oi". *ApJ*. 924:55G. ADS link.

44. Jacobson-Galán, W. V. et al. (*incl.* **Rojas-Bravo, C.**), 2022. "Final Moments. I. Precursor Emission, Envelope Inflation, and Enhanced Mass Loss Preceding the Luminous Type II Supernova 2020tlf ". *ApJ.* 924:15J. ADS link.

45. Kenworthy, W. D. et al. (*incl.* **Rojas-Bravo, C.**), 2021. "SALT3: An Improved Type Ia Supernova Model for Measuring Cosmic Distances". *ApJ.* 923:265K. ADS link.

46. Kilpatrick, Charles D. et al. (*incl.* **Rojas-Bravo, C.**), 2021. "The Gravity Collective: A Search for the Electromagnetic Counterpart to the Neutron Star-Black Hole Merger GW190814". *ApJ.* 923:258K. ADS link.

47. Wang, Qinan et al. (*incl.* **Rojas-Bravo, C.**), 2021. "SN 2018agk: A Prototypical Type Ia Supernova with a Smooth Power-law Rise in Kepler (K2)". *ApJ.* 923:167W. ADS link.

48. Armstrong, Patrick et al. (*incl.* **Rojas-Bravo, C.**), 2021. "SN2017jgh: a high-cadence complete shock cooling light curve of a SN IIb with the Kepler telescope". *MNRAS.* 507, 3125-3138. ADS link.

49. Jencson, Jacob E. et al. (*incl.* **Rojas-Bravo, C.**), 2021. "AT 2019qyl in NGC 300: Internal Collisions in the Early Outflow from a Very Fast Nova in a Symbiotic Binary". *ApJ.* 920:127J. ADS link.

50. Hung, Tiara et al. (*incl.* **Rojas-Bravo, C.**), 2020. "Discovery of a Fast Iron Low-ionization Outflow in the Early Evolution of the Nearby Tidal Disruption Event AT2019qiz". *ApJ.* 917:9H. ADS link.

51. Kilpatrick, Charles D. et al. (*incl.* **Rojas-Bravo, C.**), 2021. "A Cool and Inflated Progenitor Candidate for the Type Ib Supernova 2019yvr at 2.6 Years Before Explosion". *MNRAS.* 504, 2073-2093. ADS link.

52. Stein, Robert et al. (*incl.* **Rojas-Bravo, C.**), 2020. "A high-energy neutrino coincident with a tidal disruption event". *Nature Astronomy.* 5:510S. ADS link.

53. Barna, Barnabás et al. (*incl.* **Rojas-Bravo, C.**), 2021. "SN 2019muj - a well-observed Type Iax supernova that bridges the luminosity gap of the class". *MNRAS.* 501, 1078-1099. ADS link.

54. Hammerstein, Erica et al. (*incl.* **Rojas-Bravo, C.**), 2020. "TDE Hosts are Green and Centrally Concentrated: Signatures of a Post-Merger System". *ApJL.* 908L:20H. ADS link.

55. Jones, D. O. et al. (*incl.* **Rojas-Bravo, C.**), 2020. "The Young Supernova Experiment: Survey Goals, Overview, and Operations". *ApJ.* 908:143J. ADS link.

56. Hinkle, Jason T. et al. (*incl.* **Rojas-Bravo, C.**), 2021. "Discovery and follow-up of ASASSN-19dj: an X-ray and UV luminous TDE in an extreme post-starburst galaxy". *MNRAS.* 500, 1673-1696. ADS link.

57. Hung, Tiara et al. (*incl.* **Rojas-Bravo, C.**), 2020. "Double-peaked Balmer Emission Indicating Prompt Accretion Disk Formation in an X-Ray Faint Tidal Disruption Event". *ApJ.* 903:31H. ADS link.

58. Jacobson-Galan, Wynn V. et al. (*incl.* **Rojas-Bravo, C.**), 2020. "SN 2019ehk: A Double-Peaked Ca-rich Transient with Luminous X-ray Emission and Shock-Ionized Spectral Features". *ApJ.* 898:166J. ADS link.

59. Holoien, Thomas W. -S. et al. (*incl.* **Rojas-Bravo, C.**), 2020. "The Rise and Fall of ASASSN-18pg: Following a TDE from Early To Late Times". *ApJ.* 898:161H. ADS link.

60. Jacobson-Galan, Wynn V. et al. (*incl.* **Rojas-Bravo, C.**), 2019. "Ca hnk: Calcium-rich Transient SN 2016hnk from the Helium Shell Detonation of a Sub-Chandrasekhar White Dwarf". *ApJ.* 896:165J. ADS link.

61. Burns, Christopher R. et al. (*incl.* **Rojas-Bravo, C.**), 2020. "SN 2013aa and SN 2017cbv: Two Sibling Type Ia Supernovae in the spiral galaxy NGC 5643". *ApJ.* 895:118B. ADS link.

62. Neustadt, J. M. M. et al. (*incl.* **Rojas-Bravo, C.**), 2019. "To TDE or not to TDE: The luminous transient ASASSN-18jd with TDE-like and AGN-like qualities". *MNRAS.* 494, 2538–2560. ADS link.

63. Nicholl, M. et al. (*incl.* **Rojas-Bravo, C.**), 2019. "The tidal disruption event AT2017eqx: spectroscopic evolution from hydrogen rich to poor suggests an atmosphere and outflow". *MNRAS.* 488, 1878–1893. ADS link.

64. Dimitriadis, G. et al. (*incl.* **Rojas-Bravo, C.**), 2019. " Nebular Spectroscopy of Kepler's Brightest Supernova. *ApJL.* 870:L14. ADS link.

65. Dimitriadis, G. et al. (*incl.* **Rojas-Bravo, C.**), 2019. "K2 Observations of SN 2018oh Reveal a Two-Component Rising Light Curve for a Type Ia Supernova".*ApJL.* 870:L1. ADS link.

66. Li, W. et al. (*incl.* **Rojas-Bravo, C.**), 2018. "Photometric and Spectroscopic Properties of Type Ia Supernova 2018oh with Early Excess Emission from the Kepler 2 Observations". *ApJ.* 870:12L. ADS link.

67. Kilpatrick, C. et al. (*incl.* **Rojas-Bravo, C.**), 2018. "X-ray Limits on the Progenitor System of the Type Ia Supernova 2017ejb". *MNRAS.* 481, 4123–4132. ADS link.

68. Tartaglia,L. et al. (*incl.* **Rojas-Bravo, C.**), 2018. "The early detection and follow-up of the highly obscured Type II supernova 2016ija/DLT16am". *ApJ.* 853: 62. ADS link.

69. Kilpatrick, C.. et al. (*incl.* **Rojas-Bravo, C.**), 2017: "Electromagnetic Evidence that SSS17a is the Result of a Binary Neutron Star Merger". *Science.* 358, 1583-1587. ADS link.

70. Drout, M.R. et al. (*incl.* **Rojas-Bravo, C.**), 2017: "Light Curves of the Neutron Star Merger GW170817/SSS17a: Implications for R-Process Nucleosynthesis". *Science.* 358, 1570-1574. ADS link.

71. Coulter, D. et al. (*incl.* **Rojas-Bravo, C.**), 2017: "Swope Supernova Survey 2017a (SSS17a), the Optical Counterpart to a Gravitational Wave Source". *Science.* 358, 1556-1558. ADS link.

72. Abbott, B.P. et al. (*incl.* **Rojas-Bravo, C.**), 2017. "A gravitational-wave standard siren measurement of the Hubble constant". *Nature.* 551, 85–88. ADS link.

73. Murguia-Berthier, A. et al. (*incl.* **Rojas-Bravo, C.**), 2017: "A Neutron Star Binary Merger Model For GW170817/GRB170817A/SSS17A". *ApJL* 848: L34. ADS link.

74. Pan, Y-C. et al. (*incl.* **Rojas-Bravo, C.**), 2017: "The Old Host-Galaxy Environment of SSS17A, The First Electromagnetic Counterpart to a Gravitational Wave Source". *ApJL.* 848:L30. ADS link.

75. Siebert, M. et al. (*incl.* **Rojas-Bravo, C.**), 2017: "The Unprecedented Properties ot the First Electromagnetic Counterpart to a Gravitational Wave Source". *ApJL* 848: L26. ADS link.

76. Abbott, B.P. et al (*incl.* **Rojas-Bravo, C.**), 2017. "Multi-messenger Observations of a Binary Neutron Star Merger". *ApJL.* 848: L12. ADS link.

49 Astronomer Telegrams: List.

SCIENTIFIC PRESENTATIONS

1. **Contributed talk:** "New Constraints from ZTF DR2: Early bumps and their possible correlations in Type Ia Supernovae"
   The Third Symposium on the Milky Way and Nearby Galaxies. Beijing, China. *January 2026*

2. **Contributed talk:** "The Swope Supernova Survey SN Ia Data Release and Relationships Between i-Band Light Curve Diversity and Spectral Parameters"
Cosmic Lighthouses: Astrophysical and Cosmological Challenges with Type Ia Supernovae. Cambridge, England. *June 2025*

3. **Contributed talk:** "The Swope Supernova Survey, New i-Band SN Ia Light Curve Relations with Spectral Parameters, and Personal Outreach Insights"
AI-Empowered Astronomy for Open Science. Hangzhou, China. *April 2025*

4. **Contributed talk:** "The Swope Supernova Survey and its first Type la supernova data release"
The Transient and Variable Universe 2023. Urbana-Champaign, Illinois, USA. Talk link. *2023*

5. **Contributed talk** "The Swope Supernova Survey: Cosmology with Type Ia Supernovae"
First Central American Astronomy Meeting (virtual meeting) *2020*

6. **Department talk:** "Type Ia Supernova Cosmology with the Swope Supernova Survey" *2019*
UC Santa Cruz FLASH Seminar; Santa Cruz, USA

7. **Lightning talk:** "The Swope Supernova Survey" *2019*
JuDO Lightning Talk at the DESC Winter Meeting; Berkeley, USA

8. **Contributed talk:** "The Swope Supernova Survey: an Overview" *2018*
UCSC Filippenkopalooza Pre-Meeting; Santa Cruz, USA

9. **Invited talk:** "The experience and discovery of the electromagnetic counterpart of neutron star merger GW170818" *2017*
Invited and closing talk at *24 Hours of Physics* at Universidad de Costa Rica; San Pedro, Costa Rica

10. **Contributed talk:** Search for gamma-ray emission from star-forming galaxies with Fermi LAT" *2016*
School on Dark Matter; São Paulo, Brazil.

11. **Contributed talk:** "Extragalactic Gamma-ray Astronomy with the Fermi Telescope and HAWC" *2015*
37th International School for Young Astronomers, ISYA 2015; Tegucigalpa, Honduras

12. **Contributed talk:** "Search for gamma-ray emission from star-forming galaxies with Fermi LAT" *2015*
6th International Symposium on High-Energy Gamma-ray Astronomy (Gamma2016); Heidelberg, Germany

13. **Poster:** Search for gamma-ray emission from star-forming galaxies with Fermi LAT" *2015*
International School of Cosmic Ray Astrophysics "Maurice M. Shapiro"; Erice, Italy

ASTRONOMY OUTREACH AND SCIENCE COMMUNICATION

1. Public talk *Measuring the Accelerated Expansion of the Universe* (in Spanish), at the 24 Hours of Astronomy, Planetarium of Universidad de Costa Rica, Costa Rica. *February 2025*

2. iPoster at the 245th meeting of the American Astronomical Society: *Uniting Humanity Through the Night Sky: Multilingual and Multicultural Approaches to Astronomy Outreach* (Link to iPoster). *January 2025*

3. **Voices of the Century: César Rojas-Bravo, celebrating our celestial bond**. A short video by UC Santa Cruz that highlights some of my thoughts on how the Night Sky connects Humanity (YouTube link). *August 2024*

4. Graduation speech at the **2024 UC Santa Cruz Graduate commencement ceremony**. I speak about valuable things I have learned in graduate school, such as self-love, resilience, Buddhism, and Stoicism, with Astronomy and companionship insights (YouTube link). *June 2024*

5. Participation in **Native Star Stories Night** at Lick Observatory, an event aimed at indigenous high-school students. Website. *May 2024*

6. Closing talk at **TEDx Santa Cruz 2024**, titled *Shared Humanity, Shared Cosmos: Connecting Through the Night Sky*. I explored how the night sky connects Humanity, and how Astronomy education can help spread kindness and compassion in our world (YouTube link). *April 2024*

7. Talk at the **UC Santa Cruz Grad Slam** competition: I presented my research in a 3-minute talk to a general audience. I won the People's Choice award (YouTube link). *March 2023*

8. Astronomy talks in Spanish and English for the general public at San Francisco State University as part of their **Noche de Estrellas** program, a bilingual activity aimed towards the Spanish-speaking community in San Francisco, California. More information here and here. *2022-2023*

9. Participation at **La Noche de las Estrellas**, outreach Spanish-speaking event at Lick Observatory, sharing my career path with motivated, Spanish-speaking students in Santa Cruz County and their parents. Additionally, giving Astronomy talks and hosting telescope viewings at local Santa Cruz primary schools promoting this event. Website. *2017 - 2022*

10. Talk at **Astronomy on Tap Santa Cruz**, on a special Spanish-speaking night. YouTube link. *2021*

11. Almuerzo en español: organized a weekly of STEM students, professors and administrators in my building to help teach and practice Spanish, pairing up native Spanish speakers with Spanish learners. *2019, 2022*

12. Tutor in Raja GuhaThakurta's PyaR tutorial (Python and Research tutorial). *Spring 2019* Website

13. Invited and closing talk at *24 Hours of Physics* at Universidad de Costa Rica; San Pedro, Costa Rica: "The experience and discovery of the electromagnetic counterpart of neutron star merger GW170817" *2017*

14. Collaborated at the Planetarium of University of Costa Rica in several activities: *2015-2016*
    - giving popular Astronomy talks to local public schools
    - guiding the general public in our "Observational Astronomy Nights" at the Planetarium.
    - taking telescopes to rural communities and guiding them on observation nights.
    - coauthor of the 2017 Astronomical Calendar of the Planetarium of University of Costa Rica.

LEADERSHIP EXPERIENCE

Part of the Osterbrock Leadership Program from 2018-2024, a program aimed to train Astronomy graduate students in leadership and mentorship experiences. My activities have included:

- Co-manager of the Osterbrock Mini-Grant program in 2023: organizing and overseeing the call and selection of proposals, awarding budgets, general oversight. Part of the proposal selection committee in 2022-2024.
- Organizing and moderating talks by distinguished leaders in Astronomy and beyond.

- Panelist at the the *American Astronomical Society*'s 2022 Summer meeting during the National Osterbrock Leadership Program splinter session.
- Visit to the Space Telescope Science Institute and the Carnegie Institution for Science in 2018, interacting with their respective leaders on how to manage their institutions and implement positive leadership environments

PRESS

1. Ten UC Santa Cruz speakers shine bright in TEDxSantaCruz lineup. *2024*
   UC Santa Cruz announcing my talk at TEDx Santa Cruz.
2. A discovery in the dark. *2021*
   Article in the LIGO magazine on my scientific journey and involvement in the kilonova discovery in 2017.
3. Costa Rican Scientific Talent of the Month. *2021*
   Interview for Ticotal, a network of scientists of the Costa Rican Academy of Sciences.
4. Physicist from Alajuela worked in team that discovered collision of neutron stars. *2017*
   Interview in *La Nación*, Costa Rican's most prestigious newspaper, about my experience on the discovery of SSS17a [in Spanish].
5. Costa Rican changed the academia from the University of Costa Rica to join group that observed the binary neutron star (BNS) merger. *2017*
   Radio interview in *Nuestra Voz*, a very popular radio show in Costa Rica. Interview starts at minute 10. Written article found here [in Spanish].
6. Costa Rican was part of the scientific event of the year. *2017*
   Article about my involvement on the BNS merger on *Semenario Universidad*, the newspaper of Universidad de Costa Rica, my alma mater [in Spanish].
7. Giant! Costa Rican was part of key finding in Astronomy. *2017*
   Costa Rican went from working in a call center to achieve a scientific milestone
   A couple of articles from Costa Rican online newspaper *crhoy.com* about the BNS merger [in Spanish].
8. 24 hours of exchanging Physics knowledge. *2017*
   Report on the *24 hours on Physics* event at Universidad Costa Rica, highlighting my contribution as the closing talk [in Spanish].
9. Neutron Stars, Gravitational Waves and all the gold in the Universe. *2017*
   Full media report from UC Santa Cruz regarding the binary neutron star merger event

INTERNATIONAL COLLABORATIONS

- Swope Supernova Survey - Member *2017 - Present*
- Young Supernova Experiment (YSE) - Member *2019 - Present*
- 1 Meter 2 Hemisphere (1M2H) Gravitational Wave Follow-up – Member *2017 - Present*
- Alpha-Cen: Astrofísica Centroamericana y del Caribe *2016 - Present*
- Foundation Supernova Survey - Member *2017 - Present*
- Keck Infrared Transient Survey - Member *2022 - Present*
- LSST Dark Energy Science Collaboration (DESC) - Junior Member *2019 - Present*
- History of Science Society - Member *2015*

OBSERVING EXPERIENCE

- Lick Observatory – Optical Spectroscopy (Kast) *46 nights*
- Keck Observatory – Optical Spectroscopy (LRIS) *6 nights*
- SOAR - National Optical Astronomy Observatory - Optical Spectroscopy (Goodman) *3 nights*
- Kitt Peak Observatory – Optical Spectroscopy (Mayall/KOSMOS) *4 nights*
- Las Campanas Observatory - Optical photometry (Swope) *11 nights*
- Lick Observatory - Optical photometry (Nickel) *5 nights*

TEACHING EXPERIENCE

Teaching Assistant: *Introduction to the Cosmos* *2021*
Professor: Alexie Leauthaud.
Department of Astronomy, UC Santa Cruz.

Teaching Assistant: *Physics of Stars* *2018*
Professor: Ryan Foley.
Department of Astronomy, UC Santa Cruz.

Lecturer: *Fundamentals of Astronomy*, *Physics I*, *Physics III* *2017*
Department of Physics, Universidad de Costa Rica

Teaching Assistant of multiple Physics and Classical Philology courses, such as Physics I, Physics II, Physics III, Calculus II, Latin Literature II, Advanced Greek I, Greek Literature I. *2012-2016*
Universidad de Costa Rica: Department of Physics and Department of Classical Studies

TECHNICAL STRENGTHS

Computer Languages Python

MENTORING

- Mentor in the 2022-2023 GradPath program at UCSC: at least 3 quarterly meetings with a senior undergrad on their path and applications to grad school
- Mentor in the UCSC Grad Peer Mentor program: I mentored two first-year grad students on navigating through grad school

RESEARCH GRANTS

1. **NASA JWST**: *Do Pass z=2, Do Collect Type Ia Supernovae: Breaking Out of Redshift Jail with JWST* as Co-I. PI: Justin Pierel. *2024*
2. **NASA HST**: *Reducing Type Ia Supernova Distance Biases by Separating Reddening and Intrinsic Color* as Co-I. PI: Ryan Foley. *2023*
3. **NASA JWST**: *Detecting the Synthesis of the Heaviest Elements with Photometry of a Kilonova in the Optically Thin Phase* as Co-I. PI: Maria Drout. *2023*
4. **NASA HST**: *Measuring the Effect of Progenitor Metallicity on Type Ia Supernova Distance Estimates* as Co-I. PI: Matthew Siebert. *2022*
5. **NASA HST**: *Reducing Type Ia Supernova Distance Biases by Separating Reddening and Intrinsic Color* as Co-I. PI: Ryan Foley. *2022*
6. **NASA HST**: *Feeling Blue: Creating an Industry Standard SALT3 Model that is Robust at UV Wavelengths* as Co-I. PI: Justin Pierel. *2022*

7. **NASA HST**: *Snapshot Observations of Nearby, Recent Transients and Their Environments* as Co-I. PI: Ryan Foley. *2021*
8. **NASA HST**: *Measuring the Effect of Progenitor Metallicity on Type Ia Supernova Distance Estimates* as Co-I. PI: Ryan Foley. *2021*
9. **NASA JWST**: *Detecting the Synthesis of the Heaviest Elements with Photometry of a Kilonova in the Optically Thin Phase* as Co-I. PI: Maria Drout. *2021*
10. **NASA JWST**: *Nucleosynthesis, Astrophysics, and Cosmology with IR Observations of a Gravitational Wave Counterpart* as Co-I. PI: Ryan Foley. *2021*
11. **NASA JWST**: *Nebular Spectroscopy of a Kilonova with JWST* as Co-I. PI: Charlie Kilpatrick. *2021*
12. **NASA ADAP**: *Building A Holistic Picture of the Host Galaxy Environments of Supernovae with the NASA Archive* as Co-I. PI: David Jones. *2020*
13. **NASA HST**: *Tension at the Breaking Point: Uncovering New Physics Through a Two-Rung Distance Ladder Measurement of the Hubble Constant* as Co-I. PI: David Jones. *2020*
14. **NASA HST**: *Snapshot Observations of Nearby, Recent Supernovae and Their Environments* as Co-I. PI: Ryan Foley. *2020*
15. **NASA HST**: *Measuring the Effect of Progenitor Metallicity on Type Ia Supernova Distance Estimates* as Co-I. PI: Ryan Foley. *2020*
16. **NASA HST**: *Using the full power of the HST Archive to Address the Red Supergiant Problem"* as Co-I. PI: Charlie Kilpatrick. *2020*
17. **NASA HST**: *Ultra-Rapid UV Spectroscopy of an Interacting Supernova Discovered by TESS"* as Co-I. PI: Ryan Foley. *2019*

LANGUAGES

- Native/fluent level: Spanish, English, Portuguese
- Professional working level: Classical Latin, Ancient Greek
- Basic level: Italian, Mandarin 中文, Catalan.

OTHER INTERESTS

- J.R.R. Tolkien admirer & collector. I have a blog related to all things inspired by him: Tolkien inspiration.
- A movie review of mine was published in *Mallorn: The Journal of the Tolkien Society* in 2013. Website.