David Ricardo Coria Hernandez

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Education

University of Kansas, Lawrence, KS
PhD in Physics, Advisor: Ian Crossfield — Fall 2020 – June 2025 (Expected)

Kansas State University, Manhattan, KS
Cum Laude, Bachelor of Science in Mathematics — May 2020
Cum Laude, Bachelor of Science in Physics — May 2020

Research Positions

Graduate Research Assistant — Fall 2020 – Present
KU ExoLab, University of Kansas, Advisor: Ian Crossfield

Teaching/Tutoring Experience

- **Graduate Teaching Assistant: Contemporary Astronomy Lab** — Fall 2023

KU ASTR 196 is an introduction to astronomical observations and modern data analysis methods. This is a descriptive rather than mathematical astronomy course focused on qualitative sky observations paired with computational data analysis. In this semester-long lab, students maintain an observing journal where they learn to identify solar system planets, moons and constellations and track how they move over time. I also guide students through several hands-on activities designed to give students a better understanding of how astronomers study planetary orbits, stellar classification, galaxy classification, and cosmic distances.

- **Instructor: Lawrence High School** — Spring 2023

I served as the instructor for a research-based astronomy course at Lawrence High School, a minority-serving institution, where I guided students through the full scientific research process using real astronomical data. The course focused on analyzing data from the Virgo Filament Survey, teaching students how to manipulate large datasets using tools like Excel and TopCat. Students developed essential research skills, including conducting literature reviews, formulating research questions, processing and analyzing data, and interpreting their findings. Emphasizing science communication, I mentored students in designing professional research posters, which they presented at a student-led research symposium. This experience provided hands-on exposure to real astronomical research and fostered critical thinking, problem-solving, and data literacy skills. By creating an inclusive learning environment, I aimed to empower students from underrepresented backgrounds to engage in STEM and build confidence in scientific inquiry.

- **Private Tutor: TRIO, Upward Bound, McNair Scholars Program** — 2021-2023

I tutored several undergraduates from academic success programs like TRIO, Veterans Upward Bound, and the McNair Scholars Program. I covered material from both math & physics courses including College Algebra, Trigonometry, Calculus I, II, and III, Physics I and II.

Service/Outreach

- **Astronomy Outreach Coordinator, KU Physics & Astronomy** Present

As the Astronomy Outreach Coordinator, I lead the department's astronomy public engagement, event organization, and hands-on educational experiences. I am responsible for planning and executing public telescope nights, planetarium shows reaching audiences ranging from K-12 students to the general public.

- **Traveling KU Planetarium: Co-Organizer and Presenter** 2021 -Present

I organize and present planetarium shows to on-campus and other local groups with the Traveling KU Planetarium (a Digitarium Portable Planetarium System).

- **KU Telescope Nights: Co-Organizer** 2021 – Present

I plan and run monthly observing nights on campus for students and the community: telescope observing of the moon, solar system planets, star tours, constellation identification, etc.

- **Pluto Day Celebration: Co-Lead Organizer** February 2025

I co-organized a celebration of the 95th Anniversary of Pluto's discovery, held at the Lawrence Public Library. We hosted lots of arts & crafts, a scale solar system demo, a liquid nitrogen demo, and a build-a-Pluto demo. I also designed Pluto-themed CubeWorlds using maps from Hubble and New Horizons.

- **Cool Stars 22: Splinter Session Co-Organizer (San Diego. CA)** Summer 2024

Planet-Host Cool Dwarfs: Tracing Planetary Formation & Composition with the Star-Planet Connection

In this session, we cover current methods and future improvements for measuring the physical parameters and individual elemental abundances of cool dwarfs. We also discuss how the chemistry of these host stars relates to protoplanetary disk composition and subsequent planetary formation and evolution.

- **CubiMundos: Spanish CubeWorlds** Present

A series of crafty, cube-shaped planets and moons. Now available en Español!

- **NASA SCoPE Project w/ NASA UoL & GSAWN** 2024-Present

Las Estrellas y sus Compañeros: Developing Bilingual Activities & Resources for NASA's Universe of Learning

This project seeks to develop new, engaging ways to share mainstream astronomical discoveries with local Hispanic communities. We build on the Girls STEAM Ahead with NASA (GSAWN) guidebook for educators by developing a new exoplanet-themed section with engaging activities and resources teaching the basics of exoplanet discovery and characterization. The project will also provide a professional Spanish translation of the entire GSAWN guidebook to boost the reach of the resource– not just to Spanish-speakers in Kansas, but across the nation and world.

- **KU Physics & Astronomy Locally Organized Assembly Co-Organizer** 2023-2024

"PALOOZA" is an annual, GSO-sponsored research symposium open to both graduate and undergraduate students within the Geology, and Geography & Atmospheric Science departments to showcase our diverse research in a low-stakes and supportive environment.

Service/Outreach (Continued)

- **Rocks & Rockets: KU Co-Organizer (Colby, KS)** August 2023

Presented planetarium shows for a public science event in one of the most rural places in the US!

- **NASA ExoExplorers: DEI Special Session at AAS** January 2023

A session to dissect how members of marginalized communities navigate unique challenges throughout their scientific careers and what the astronomy community can do to lessen this impact on early career scientists.

- **Advocacy for Kansas-based TRIO/McNair programs** Spring 2022

Wrote letters of support for TRIO staff advocating for continued federal funding of these programs to legislators in Washington, D.C.

Observing Experience

- **Keck I & II 10m Telescopes, W. M. Keck Observatory, HI**

2 nights on NIRSPEC; 2 nights HIRES

- **4m Anglo-Australian Telescope, Siding Spring Observatory, NSW, Australia**

3 nights on Veloce

- **3m NASA Infrared Telescope Facility, HI**

2 nights on iSHELL

- **8.1m Gemini South Observatory, Cerro Pachon, Chile**

PI of a successful proposal: "Elemental Abundances of the Coolest HWO Targets" (3 hours)

Awards and Honors

KU "I Am First Too" Commemorative Poster Feature	Fall 2024
IGEN Travel Grant (An NSF INCLUDES Alliance) Recipient	Summer 2024
NASA SCoPE Seed Grant Recipient	Spring 2024
Barbara J. Anthony-Twarog Outreach Award	Spring 2024
NASA Exoplanet Explorers Program: Inaugural Cohort Member	2021
University of Kansas Graduate Fellow	Fall 2020 – Spring 2021
Hagan Scholarship Foundation Recipient	Fall 2016 – Spring 2020
McNair Scholars Program: Research Assistant	Fall 2018 – Spring 2020
Developing Scholars Program: Research Assistant	Fall 2016 – Spring 2019
Kansas State University Honor Roll	Fall 2016 – Spring 2020
Kansas State University Putnam (Distinguished University) Scholar	Fall 2016 – Spring 2020

Invited, Contributed, and Public Presentations

- **Dissertation Talk: AAS 245 (National Harbor, MD)** January 2025

Galactic Chemical Evolution & Giant Exoplanet Formation: Insights from Volatile Abundances

- **Contributed Talk: Mid-America Regional Astrophysics Conference** December 2024
- **Invited Talk: Cool Stars 22 Splinter Session (San Diego, CA)** June 2024

Exoplanetary Origins: Unraveling Planetary Formation and Accretion Histories with CNO Isotopologues; doi: 10.5281/zenodo.13619959

Invited, Contributed, and Public Presentations (Continued)

- **AstroCoffee: Institute for Astronomy (University of Hawai'i at Mānoa)** April 2024
Tracing Giant Exoplanet Formation: Complementary Host Star Abundances for Sub-Stellar CNO Isotopologue Detections

- **Accepted Talk: KU CREATORS Symposium** February 2024
Cosmic Close-Ups: The Past, Present, and Future of Direct Imaging in Exoplanets

- **Accepted Talk: AAS 243 (New Orleans, LA)** January 2024
Tracing Giant Exoplanet Formation Using Complementary Host Star CNO Abundances

- **Contributed Talk: Mid-America Regional Astrophysics Conference** November 2023
Tracing Giant Exoplanet Formation Using Complementary Host Star CNO Abundances

- **Planetarium Show: Rocks & Rockets (Colby, KS)** August 2023
Intro to Celestial Navigation

- **Contributed Talk: Towards Other Earths III (Porto, Portugal)** July 2023
CNO Isotope Ratios Across Exoplanet Systems: Implications for Planet Formation and Atmospheric Composition

- **iPoster: AAS 241 (Seattle, WA)** January 2023
The Missing Link: Testing Galactic Chemical Evolution Models with the First Multi-Isotopic Abundances in Solar Twin Stars

- **Special Session: AAS 241 (Seattle, WA)** January 2023
It's Giving... Back: Advocating for Minority-Oriented Academic Success Programs as an Alum

- **iPoster: Cool Stars 21 (Toulouse, France)** July 2022
The Missing Link: Testing Galactic Chemical Evolution Models with the First Multi-Isotopic Abundances in Solar Twin Stars

- **Contributed Talk: IR 2022 (Remote)** February 2022
The Missing Link: Connecting Exoplanets and Galactic Chemical Evolution via Stellar Abundances: Isotopic Carbon and Oxygen Abundances in Solar Twin Stars

- **Alumnx Panel: McNair Heartland Research Conference (KC, KS)** September 2021
- **Invited Talk: Exoplanet Explorers Science Series (Remote)** April 2021
The Missing Link: Connecting Exoplanets & Galactic Chemical Evolution via Stellar Abundances

- **Contributed Poster: Cool Stars 20.5 (Remote)** February 2021
Measuring CO Isotopic Abundance Ratios in Solar Twin Stars; doi: 10.5281/zenodo.4563216

- **Contributed Talk: (Kansas City, KS)** September 2019
Ronald E. McNair Heartland Research Conference
Simplified echellogram data reduction and spectral extraction via the Veloce Quick Look App

First Author Projects & Publications

1. **David R. Coria**, N. Hejazi, I. J. M. Crossfield, M. Rhem; *The Wanderer: Charting WASP-77A b's Formation and Migration Using a System-Wide Inventory of Carbon and Oxygen Abundances,* 2024, ApJ, 974, 151, doi: 10.3847/1538-4357/ad7020
2. **David R. Coria**, I. Crossfield, J. Lothringer et al.; *The Missing Link: Testing Galactic Chemical Evolution Models with the First Multi-Isotopic Abundances in Dwarf Stars,* 2023 ApJ, 954, 121, doi: 10.3847/1538-4357/acea5f
3. **David R. Coria**, C. Bergmann, C. Tinney; *Veloce Quick Look App (2019),* Research Practicum, University of New South Wales, Sydney, Australia

Contributing Author Publications

4. Neda Hejazi, J. Xuan, **D. Coria**, et al; *Chemical Links between a Young M-type T Tauri star and its Substellar Companion: Spectral Analysis and C/O Measurement of DH Tau A*, ApJ, 978, 42, doi: 10.3847/1538-4357/ad968c
5. Neda Hejazi, Ian J. M. Crossfield, Diogo Souto et al. **incl. D. Coria**, 2024, *High-resolution Elemental Abundance Measurements of Cool JWST Planet Hosts Using AutoSpecFit: An Application to the Sub-Neptune K2-18b's Host M Dwarf*, ApJ, 973**,** 31, doi: 10.3847/1538-4357/ad61dc
6. Neda Hejazi, I. Crossfield, T. Norlander, M. Mansfield, **D. Coria** et al.; Detailed Elemental Abundances of a Super-Neptune Host Star Using High-Resolution, Near-Infrared Spectroscopy 2023, ApJ, 949, 79, doi: 10.3847/1538-4357/accb97
7. Alex S. Polanski, Jack Lubin, Corey Beard, et al; *The TESS-Keck Survey. XX. 15 New TESS Planets and a Uniform RV Analysis of All Survey Targets*, ApJS*,* 272, 32, doi: 10.3847/1538-4365/ad4484
8. I. Crossfield, M. Malik, M. Hill, S. Kane, B. Foley, A. Polanski, **D. Coria**, et al.; GJ 1252b: A Hot Terrestrial Super-Earth with no Atmosphere, ApJL, 937, L17, 2022. doi:10.3847/2041-8213/ac886b