

Dr. Fernando Gutiérrez Canales

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Professional Summary

PhD-trained Data Scientist and Python Developer with 5+ years of experience building robust, scalable data pipelines and analytical tools in scientific research environments. Skilled in automating data workflows, designing metrics and monitoring systems, and collaborating across technical and customer-facing teams. Proven ability to turn complex datasets into reliable, maintainable solutions. Eager to contribute to mission-driven organizations like Cozero, where data innovation drives sustainability impact.

Technical Skills

Programming: Python (NumPy, SciPy, Pandas, Matplotlib, Scikit-learn, Astropy), C, Fortran, Bash, R and Shell scripting

Tools & Workflow: Git, Subversion, Docker, Conda, Jupyter, DS9

Data Pipelines: Modular ETL workflows, Data cleaning/monitoring, Custom simulation pipelines

Data Science & Analytics: A/B Testing, Machine Learning, Time-Series Analysis, Bayesian Inference, Monte Carlo Methods and Large Datasets

AI & Automation: LLM-based tools (in progress), AI-assisted analysis, Python automation

Software & Productivity: LaTeX, Microsoft Office, LibreOffice, Vim and nano

Languages: Spanish (native), English (C1), French (good) and German (basic)

Soft Skills

- Cross-functional Collaboration in International Teams
- Technical Project Management & Agile Practices
- Clear Communication of Analytical Results
- Mentorship and Leadership in Scientific Programming
- Creative Problem Solving with Noisy or Incomplete Data

Experience

PhD Researcher

Paris Observatory & Max Planck Institute for Solar System Research

Mar 2022 – Mar 2025

- Developed Python-based simulation pipeline to estimate detection efficiency for planetary transit vetting methods (centroid shifts and double-aperture photometry) in the PLATO space mission.
- Integrated C and Bash modules; published results as part of the PLATO international science consortium.
- Collaborated with over 15 institutions in mission-critical software development and instrument calibration.

Research Intern

ESTEC (European Space Agency), The Netherlands

Summer 2023

- Conducted in-situ CCD measurements for PLATO detector calibration.
- Estimated Charge Transfer Inefficiency (CTI) parameters using DS9 and Python analysis scripts.

Education

PhD in Astrophysics

Paris Observatory & MPS Göttingen

With Honors (Expected 2025)

MSc in Astrophysics

University of Guanajuato, Mexico

GPA: 9.5/10, With Honors (2021)

- Thesis: Analysis of K2 planetary systems using the `pyaneti` scientific code

BSc in Physics

University of Guanajuato, Mexico

GPA: 9.0/10, With Honors (2019)

Conferences & Publications

- Presented at EAS (2024), PLATO Weeks #14 & #15, Journée des Thèses (2022)
- Co-author on peer-reviewed publications on planetary systems and photometric signal analysis
- Submitted: Gutierrez-Canales et al., *Detecting False Positives with PLATO using Double-Aperture photometry and Centroid Shifts*, Dec 2024

Awards

- Erasmus+ Fellowship – ESTEC Internship (2023)
- Full Scholarships & Honors Degrees (2019, 2021, 2025)