Reza Monadi

Department of Physics, California Polytechnic State University,
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Research Interests

- Quasar absorption lines (C IV, Mg II)
- Intergalactic/CGM physics
- Machine learning and Bayesian inference
- Large spectroscopic surveys (SDSS/BOSS/DESI)

Teaching Interests

- Introductory and upper-division courses in physics and astronomy
- Computational physics and scientific programming
- Data analysis and statistics for physicists
- Observational astronomy and astrophysics

Education

University of California, Riverside Ph.D., Physics Aug 2023

Dissertation: Statistical Studies of Quasar Spectra
Advisor: Simeon Bird

University of California, Riverside M.Sc., Physics Mar 2023

Shahid Beheshti University, Tehran, Iran M.Sc., Astrophysics 2013

Thesis: Statistical Studies of Glitches in Pulsars

University of Guilan, Rasht, Iran B.Sc., Physics 2009

Academic Appointments

Lecturer Department of Physics, California Polytechnic State University, San Luis Obispo Sep 2023–present

Teaching Experience

Lecturer (Cal Poly)

PHYS 141 (General Physics I) Fall 2025

PHYS 122 Lab Fall 2025

PHYS 143 (General Physics III) Fall 2023; Winter 2024; Spring 2024; Spring 2025

PHYS 142 Lab (General Physics II Lab) Winter 2025

PHYS 121 (College Physics I) Fall 2024

ASTRO 101 (Introductory Astronomy) Winter 2024; Spring 2024; Summer 2024; Fall 2024; Winter 2025

ASTRO 102 Summer 2024

Teaching Assistant (UC Riverside)

PHYS 40C (Electricity & Magnetism) Spring 2022; Fall 2017; Winter 2018

PHYS 2LB (Physics for Life Sciences Lab) Fall 2021; Winter 2022

PHYS 20 (Adventures in Astronomy & Astrophysics) Spring 2021

PHYS 7 (Space-Time, Relativity & Cosmology) Winter 2021

Advising & Mentoring

Research Advisor, Frost Summer Research, four undergraduates, Cal Poly Summer 2024 and 2025

Senior Project Advisor, three undergraduates, Cal Poly (Winter 2025–present)

REU Advisor, one undergraduate, UC Riverside Summer 2023

Senior Project Advisor, University of Guilan (Iran) Summer 2017

Publications (peer-reviewed)

1. **Monadi, R.**, Ho, M.-F., Cooksey, K., Bird, S. (2023). Machine learning uncovers the Universe's hidden gems: A comprehensive catalogue of C IV absorption lines in SDSS DR12. *Monthly Notices of the Royal Astronomical Society*, 526(3), Dec 2023. [Lead author]

2. Bird, S., Fernandez, M., Ho, M.-F., Qezlou, M., **Monadi, R.**, Ni, Y., Chen, N., Croft, R., Di Matteo, T. (2023). PRIYA: A new suite of Lyman-α forest simulations for cosmology. *Journal of Cosmology and Astroparticle Physics*, Oct 2023.

3. **Monadi, R.**, Bird, S. (2022). Improved selection of extremely red quasars with boxy C IV lines in BOSS. *Monthly Notices of the Royal Astronomical Society*, 511(3), 3501–3513. [Lead author]

4. Panahi, H., **Monadi, R.**, Eghdami, I. (2016). A Gaussian model for anisotropic strange quark stars. *Chinese Physics Letters*, 33(7), 072601.

Conference Presentations & Talks

American Astronomical Society 245, National Harbor, MD, Jan 12–16, 2025 — Undergraduate posters (advisor):
Detecting C IV Absorbers Through Gaussian Processes and Bayesian Analysis (Wilson-Goodwin*, Hughes, **Monadi**)
Detecting Mg II Absorbers in the Intergalactic Medium Using SDSS DR7 Quasar Catalog (Hughes*, Wilson-Goodwin, **Monadi**)

N3AS Workshop, UC Santa Cruz, Summer 2023 — Talk: Metal lines catalog for the intergalactic medium
AAS 242, Albuquerque, NM, Jun 2023 — Talk: Machine learning uncovers the hidden gems of the Universe
IID 2022 Conference, Alabama, Nov 2022 — Talk: Cataloging metal lines using machine learning
Debating the Potential of Machine Learning in Astronomical Surveys, Institut d'Astrophysique de Paris, 2021 — Talk: Detecting C IV absorption lines in SDSS spectra with Gaussian Processes
Statistical Challenges in Modern Astronomy VII, Penn State, 2021 — Poster: Improved selection of extremely red quasars with boxy C IV lines
Keck Science Meeting, UCLA, 2019 — Talk + Poster: Precise selection of extremely red quasars

Grants & Internal Funding

Frost Fund, **PI**, $1,000 — Fall 2023. AWS computing credits for quasar absorption research (used by Jun 2024).
Frost Fund, **PI**, $2,800 — Winter 2024. Desktop workstation for undergraduate researchers (used by Jun 2024).
Instructionally Related Activity (IRA) Fund, **PI**, $750 — Spring 2025. Raspberry Pi and radio-telescope antenna for astronomy teaching; acquired two educational radio telescopes.

Service & Outreach

Astronomy Commitee Memeber 2023–present

Cal-Bridge Mentor Sep. 2025–present

Refrences

Simeon Bird, Associate Professor, UC Riverside
Email: sbird@ucr.edu
Phone: 951–827–5108

Matt Molter, Professor, Cal Poly
Email: mmoelter@calpoly.edu
Phone: 805–756–2656

Robert Echols, Professor, Cal Poly
Email: rechols@calpoly.edu
Phone: 805–756–7649