

Mahdi(Sum) Qezlou

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 [Webpage](#)
 [Github](#)



Curriculum Vitae

Employment history and Education

- 2024–present **Postdoctoral Fellow**, *University of Texas, Austin*.
Inference on cosmological parameters through modeling the observed distribution of galaxies with the HETDEX observations
- 2018–2024 **PhD, Physcis & Astronomy**, *University of California, Riverside*.
Computational Astrophysics: Lyman- α forest tomography, Line Intensity Map, Machine Learning
- Advisors and mentors: Simeon Bird, UCR. Andrew Newman, Carnegie Observatories. Gwen Rudie, Carnegie Observatories, Adam Lidz, UPenn
- 2013–2018 : **B.Sc in Physics** , *Sharif University of Technology, SUT*.
Research Advisor : Shant Baghran, SUT

Research Interests:

Cosmological hydrodynamic simulations (MP_GADGET), $Ly - \alpha$ forest tomography at cosmic noon, Modeling Line Intensity Map Signal, Machine Learning, Artificial Intelligence, Bayesian statistics.

Publications

on ADS <https://ui.adsabs.harvard.edu/public-libraries/UjaV3zMmSmGOO7hFdRjIA>

Selected Published

- 2023 **Mahdi Qezlou**, Simeon Bird, Adam Lidz, Guochao Sun, Andrew B. Newman, Gwen C. Rudie, Yueying Ni, Rupert Croft, and Tiziana Di Matteo. Boosting line intensity map signal-to-noise ratio with the Ly- α forest cross-correlation. , volume 524, pages 1933–1945, September 2023.
- 2022 **Mahdi Qezlou**, Andrew B. Newman, Gwen C. Rudie, and Simeon Bird. Characterizing Protoclusters and Protogroups at z 2.5 Using Ly α Tomography. , volume 930, page 109, May 2022.
- 2022 Andrew B. Newman, Gwen C. Rudie, Guillermo A. Blanc, **Mahdi Qezlou**, Simeon Bird, Daniel D. Kelson, Victoria Pérez, Enrico Congiu, Brian C. Lemaux, Alan Dressler, and John S. Mulchaey. A population of ultraviolet-dim protoclusters detected in absorption. , volume 606, pages 475–478, June 2022.

Other Published

- 2024 Andrew B. Newman, **Mahdi Qezlou**, Nima Chartab, Gwen C. Rudie, Guillermo A. Blanc, Simeon Bird, Andrew J. Benson, Daniel D. Kelson, and Brian C. Lemaux. LATIS: Constraints on the Galaxy-Halo Connection at z 2.5 from Galaxy-Galaxy and Galaxy-Ly α Clustering. , volume 961, page 27, January 2024.
- 2023 Simeon Bird, Martin Fernandez, Ming-Feng Ho, **Mahdi Qezlou**, Reza Monadi, Yueying Ni, Nianyi Chen, Rupert Croft, and Tiziana Di Matteo. PRIYA: A New Suite of Lyman-alpha Forest Simulations for Cosmology. *arXiv e-prints*, page arXiv:2306.05471, June 2023.
- 2022 Taro Matsuo, Thomas P. Greene, **Mahdi Qezlou**, Simeon Bird, Kiyotomo Ichiki, Yuka Fujii, and Tomoyasu Yamamuro. Densified Pupil Spectrograph as High-precision Radial Velocimetry: From Direct Measurement of the Universe's Expansion History to Characterization of Nearby Habitable Planet Candidates. , volume 163, page 63, February 2022.

Submitted Articles

- 2023 Hurum Tohfa, Simeon Bird, Ming-Feng Ho, **Mahdi Qezlou**, and Martin Ferandez. Forecast Cosmological Constraints with the 1D Wavelet Scattering Transform and the Lyman- α forest. *arXiv e-prints*, page arXiv:2310.06010, October 2023.

Fellowships & Awards

- 2023 – 2024 **Dissertation-Year Fellowship**, Awarded to only 3 students at UCR among all PhD majors.
- 2020 – 2022 **Carnegie-UCR Fellowship** Graduate researcher fellow at Carnegie observatories to work on Ly α tomography IMACS survey (LATIS) project.
- 2018 – 2019 **UCR Graduate Dean Fellowship**, for Fall, spring and Summer quarters

Computing skills

- Computational Machine learning, Bayesian Statistics
- Programming Python, C, MPI parallel computing, High-performance computing
- Visualization Virtual Reality engines, e.g. *Blender* and *Unity*, [YouTube Channel](#)

Mentorship Experience

- Fall-Winter 2022-23 **High-school science fair project, student: Joseph Zenarosa (Martin Luther King High, Riverside)**,
Reionization in ASTRID , a cosmological hydrodynamic simulation.
Mentoring the student for science fair competition
- summer 2022 **Undergraduate summer project, student: Kevin Hong (UCLA)**, *3D Visualization of cosmological hydrodynamical simulations*.
Mentoring student, visualizations using Blender open-source software
- summer 2021 and 2022 and 2023 **CASSI, Summer research program for undergraduates at Carnegie observatory**, , *Teaching python, high-performance computing, and scientific visualizations to ~ 20 students each year*.

Talks

- Fall Cosmology and galaxy evolution with Ly-alpha tomography and Line Intensity Map
- 2023 Harvard, MIT, University of Pennsylvania, University of California Irvine, University of California Santa Barbara, University of Texas Austin
- February 2023 Presenting Tutorial on Machine Learning approaches in large-scale galaxy formation simulations
[KITP Program, Data Driven Astronomy](#)
- December 2023 Boosting Line Intensity Map Signal-to-Noise with the Ly- α Forest Cross-Correlation
Flatiron Institute, Cosmology and Astrophysics with Machine Learning Simulations(CAMELS) [workshop](#)
- October 2022 Characterizing Protoclusters and Protogroups at $z \sim 2.5$ Using Ly- α Tomography
[IPAC Talk Series](#)
- Jun 2022 Characterizing Protoclusters and Protogroups at $z \sim 2.5$ Using Ly- α Tomography
[Cosmology from home conference](#)
- September 2022 Characterizing Protoclusters and Protogroups at $z \sim 2.5$ Using Ly- α Tomography
[Protoclusters: galaxies in confinement](#)

Professional service

- Referee for high-impact journals: **ApJ Letters** **Physical Review D**
- Review panelist : **Gemini telescope** Canadian time allocation committee (CanTAC)

Teaching Assistantship

- 2018 : **Physics lab I**, UCR.
- 2017-18 : **Quantum mechanics I & II**, SUT.
- 2016 : **Special relativity**, SUT.