Mahdi(Sum) Qezlou

Curriculum Vitae

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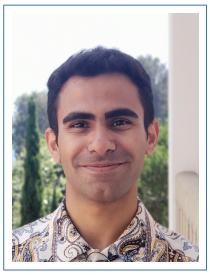
Webpage
Github



Education

2018–present **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 Baghram, SUT

Research Interests:

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

Publications

on ADS https://ui.adsabs.harvard.edu/public-libraries/UjaV3zMmSmGOO7h$_FdRJlA$

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 Lyα 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

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.

2023 Andrew B. Newman, **Mahdi Qezlou**, Nima Chartab, and Gwen C. Rudie. LATIS: Constraints on the Galaxy-halo Connection at z $\sim$ 2.5 from Galaxy-galaxy and Galaxy-Lyα Clustering. *ApJ*, August 2023.

Fellowships & Awards

2022-2023 ***Dissertation-Year Fellowship***, Awarded to only 3 students at UCR among all PhD majors.

2020 – 2021 ***Carnegie-UCR Fellowship*** Graduate researcher fellow at Carnegie observatories to work on Lyα 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 $\sim$ 20 students each year*.

Talks

Fall 2023 Cosmology and galaxy evolution with Ly-alpha tomography and Line Intensity Map
Harvard, 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 Leaning 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.