Mahdi Qezlou

Curriculum Vitae

Department of Physics and Astronomy
University of California, Riverside
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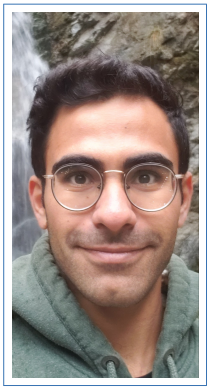
Webpage
Github



Education

2018–present **PhD, Physcis & Astronomy**, *University of California, Riverside*.
Applications of 3D Lyman-α forest tomography. Computational Astrophysics

Advisors : Simeon Bird, UCR. Andrew Newman, Carnegie Observatories. Gwen Rudie, Carnegie Observatories.

2013-2018 : **B.Sc in Physics** , *Sharif University of Technology, SUT*.

Research Advisor : Shant Baghram, SUT

Publications

Journal Articles

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.

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.

Research Experience:

Keywords:

Running Cosmological hydrodynamic simulations (`MP_GADGET`), $Ly-\alpha$ tomography at cosmic noon, Machine Learning & Bayesian statistics.

at UCR and Carnegie Observatories

Jan,2022 – present ***Competitive constraints on CO emission at z $\sim$ 2.5, a joint analysis with $Ly-\alpha$ tomography***, Ly-α tomography IMACS Survey (LATIS) collaboration..
Enhancing the S/N of molecular line intensity detection by joining the power with 3D Ly-α absorption tomographies. Cosmology, Galaxy formation at cosmic noon *Publication :* Qezlou et. al. in prep

Jan,2020 – Dec,2021 ***Characterizing galaxy protoclusters and protogroups in 3D Ly-α tomography surveys.***, Ly-α tomography IMACS Survey (LATIS) collaboration.
Image processing techniques helping detect progenitors of massive galaxies at $z \sim 2.5$ in 3D Lyman-α absorption tomography. *Publication :* Qezlou et. al. 2021

2018 – present ***Fast python package for post-processing extremely large hydrodynamical simulations***.
Collaborating with *Simeon Bird* on fake_spectra project. *Publication :* Qezlou et. al. 2021

Fellowships & Awards

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

Computer Skills Python, C, MPI parallel computing, HPC, Machine learning, Bayesian statistics

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 **CASSI, Summer research program for undergraduates at Carnegie observatory,** , *Teaching python, parallel computing and visualizations to $\sim$ 4o students*.

Talks

Invited:

October 2022 IPAC Talk Series

Contributed

Jun 2022 Cosmology from home conference

Poster sessions:

September 2021 Protoclusters: galaxies in confinement

Professional service

Referee for high-impact journals: **ApJ Letters**

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.