

Mahdi Qezlou

Curriculum Vitae

Department of Physics and Astronomy
University of California, Riverside

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📄 [Webpage](#)

🐙 [Github](#)



Education

- 2018–present **PhD, Physics & Astronomy**, *University of California, Riverside*.
Applications of 3D Lyman- α forest tomography. Primordial black holes. Machine Learning and Bayesian statistics in Astronomy.
- Advisors : Simeon Bird, UCR. Andrew Newman, Carnegie Observatories. Gwen Rudie, Carnegie Observatories.
- 2013–2018 : **B.Sc in Physics** , *Sharif University of Technology, SUT*.
Research : Shant Baghran, SUT
Advisor :

Publications

Journal Articles

- 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.
- 2021 **Mahdi Qezlou**, Andrew B. Newman, Gwen C. Rudie, and Simeon Bird. Characterizing protoclusters and protogroups at $z \sim 2.5$ using Lyman- α Tomography. *arXiv e-prints*, page arXiv:2112.03930, December 2021.

Research Experience:

Keywords:

Machine Learning & Bayesian statistics in theoretical and observational Astrophysics, Cosmological hydrodynamic simulations.

UCR and Carnegie Observatories

- Jan,2022 – present ***Constraining the primordial black hole merger rates using AI assisted super-resolution techniques.*** .
A potential order of magnitude improvement in merger rate estimates using super resolution techniques (e.g. Generative Adversarial Networks, GAN) and cosmological simulations. *Publication Qezlou et. al. in prep*
- Jan,2022 – present ***Unleashing the joint power of 3D Ly- α tomography and molecular line intensity map surveys in upcoming decade***, 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 and End Of Reionization *Publication : Qezlou et. al. in prep*

- Jan,2020 – **Characterizing galaxy protoclusters and protogroups in 3D Ly- α tomography surveys.**,
Dec,2021 Ly- α tomography IMACS Survey (LATIS) collaboration.
Image-recognition techniques helping detect progenitors of massive galaxies at $z \sim 2.5$ in 3D Lyman- α absorption tomography. *Publication* : [Qezlou et. al. 2021](#)
- 2018 – **Fast python package for post-processing extremely large hydrodynamical simulations.**
present 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 Ly α tomography IMACS survey (LATIS) project.
- 2018-2019 **UCR Graduate Dean Fellowship**, for Fall, spring and Summer quarters

Computer skills

Computer Skills Python, C, MPI parallel computing, Big Data, HPC

Mentoring Experience

- 2020–2021 **CASSI, Summer research program for undergraduates at Carnegie observatory**, , *Teaching python, parallel computing and visualizations to ~ 40 students.*

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**, SU, SUT.