

Ali Ahmad Khostovan

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RESEARCH INTERESTS	I'm interested in studying galaxy evolution with a background in $z \sim 0.4$ to ~ 9 emission line galaxies traced via narrowband surveys, spectroscopic follow-ups, and broadband nebular color excess surveys. Recently, I've been very much interested in extreme emission line galaxies at various cosmic epochs to understand what physical processes/mechanisms are driving high EWs and what it means in terms of star-formation activity, ionizing photon budget, and implications for Reionization. This also convolves with my interest in studying key statistical and physical properties of star-forming galaxies (LFs, SMFs, EWs), environmental dependencies on star-formation and galaxy, investigations of changing ISM conditions via spectroscopy, and investigating star-formation histories using latest SED fitting suites and spectra. I also am interested in creating large spectroscopic surveys using archived data and developing tools to visualize them.	
PUBLICATION RECORD (OCTOBER 2023)	Number of Publications (first author): 29 (7) . Total citations (first author): 2666 (217) . h -index: 18 . $i10$ -index: 21 . g -index: 30 . m -index: 1.3	
CURRENT POSITION	Postdoctoral Research Associate Rochester Institute of Technology Supervisor: Dr. Jeyhan Kartaltepe Focus: A Public COSMOS Spectroscopic Archive	Sept 2021 – present
	Visiting Researcher NASA Goddard Space Flight Center	Oct 2021 – present
PAST POSITIONS	NASA Postdoctoral Program Fellow Goddard Space Flight Center Supervisors: Dr. Sangeeta Malhotra & Dr. James Rhoads	Sept 2018 – Sept 2021
EDUCATION	University of California, Riverside PhD, Physics Adviser: Prof. Bahram Mobasher & Dr. David Sobral Dissertation: The Evolution of Star-Forming Galaxies using the Largest Narrowband Surveys	2013 – 2018
	University of California, Riverside MS, Physics Adviser: Prof. Bahram Mobasher	2012 – 2013
	University of California, Irvine BS, Physics (Specialization in Astrophysics) <i>Honors - Cum Laude</i> Adviser: Prof. Asantha R. Cooray	2008 – 2012
RESEARCH FELLOWSHIPS	NASA Postdoctoral Program Fellow Astrophysics Science Division	Sept 2018 – Sept 2021

	Goddard Space Flight Center	
	NASA Earth & Space Sciences PhD Fellow Department of Physics & Astronomy, University of California, Riverside	2016 – 2018
	Chancellor’s Distinction Fellow Department of Physics & Astronomy, University of California, Riverside	2012 – 2013
	National Science Foundation REU Intern Center for Astrophysics, Harvard University	June – Aug. 2011
	Undergraduate Research Opportunities Program Fellow Department of Physics & Astronomy, University of California, Irvine	Jan. – June 2011
	Summer Undergraduate Research Program Fellow Department of Physics & Astronomy, University of California, Irvine	June – Sept. 2010
AWARDS	Anne Kernan Award for Outstanding Senior Graduate Student Researcher <i>Prestigious award given to senior PhD students for their research and achievements throughout their graduate school years</i>	June 2018
	Outstanding Teaching Assistant Award <i>Awarded to students for demonstrating effective teaching skills</i>	June 2018
	GSA Conference Travel Grant <i>Funding from Graduate Student Association to attend a conference</i>	June – July 2016
	National Science Foundation Graduate Research Fellowship <i>Honorable Mention (3 times)</i>	2012, 2013, 2014
	Chambliss Astronomy Achievement Student Award <i>Honorable Mention – 219th AAS Meeting</i>	Jan. 2012
GRADUATE CO-SUPERVISION	Santosh Harish, 5th year PhD Student <i>Project:</i> Statistical Properties of H α - and [OIII]-selected emission line galaxies at $z \sim 0.6$ <i>Institution:</i> Arizona State University, Tempe & NASA GSFC <i>Paper:</i> Harish et al., 2020, ApJ, 892, 30	Sept. 2018 – March 2020
UNDERGRADUATE SUPERVISION	Mehruza Zaman, 2nd year Biology student <i>Project:</i> Effects of Nebular Emission Lines in SED fittings using narrowband-selected samples <i>Title:</i> NASA FIELDs Undergraduate Intern	Jan. - June 2017
COMMUNITY OUTREACH	RIT Galaxy Evolution Journal Club <i>Purpose:</i> Lead organizer of RIT journal club	Sept 2022 – present

	Gemini Fast Turnaround TAC <i>Purpose:</i> Reviewed and Graded Short Fast Turnaround Proposals	January 2023
	Emission Lines in Galaxies: Discovery and Diagnostics Main Co-Organizer of Meeting-in-a-Meeting Session 238th AAS meeting – <i>Received Approval 15 Jan 2021</i>	June 2021
	NASA Program Reviewer <i>Purpose:</i> Expert reviewer in a NASA peer review	2021, 2023
	NASA Review Panel <i>Purpose:</i> Review Proposals for Research Funding Purposes	Fall 2020
AWARDED PROPOSALS	Gemini Fast Turnaround GS-2023A-FT-201 <i>Title:</i> Strong Outflows from a $z \sim 2.5$ CIV Emitter: Star-forming or AGN driven? <i>Role:</i> PI <i>Nights:</i> 2 hours Flamingos-2 Observations	
	Keck PI Award (PID 88/2022B_N190) <i>Title:</i> Confirmation of the Highest Redshift [OII] Emitters at $z \sim 5$ <i>Role:</i> PI <i>Nights:</i> 2 half nights <i>Funding:</i> \$13,975	
	JWST Cycle 1 #2321 <i>Title:</i> The first blind H α narrow-band survey of star-formation at $z > 6$ <i>Role:</i> CoI	
	JWST Cycle 1 #1635 <i>Title:</i> Galaxy Protoclusters as Drivers of Cosmic Reionization <i>Role:</i> CoI	
OBSERVING EXPERIENCE	Blanco 4m Telescope – CTIO, Chile DECam (photometry): 1.5 nights W. H. Keck Observatory – Mauna Kea, Hawaii DEIMOS (spectra): 8 nights MOSFIRE (spectra): 8.5 nights Subaru Telescope – Mauna Kea, Hawaii FMOS (spectra): 1 night William Herschel Telescope – La Palma, Canary Islands, Spain ISIS (spectra): 2 nights	
TECHNICAL SKILLS	<i>Programming Skills:</i> Python (main), IDL, Shell Script, C, SQL <i>Computer Skills:</i> Mac OSX, Windows, Ubuntu, LaTeX, PowerPoint <i>Astronomical Tools:</i> DS9, TopCat, SExtractor, IRAF/PyRAF <i>Photo-z Tools:</i> EaZY, LePhare <i>SED & Line Fitting:</i> CIGALE, PROSPECTOR, MAGPHYS, PyQSOFit <i>Data Reduction Experience:</i> Pyeipit (extensive), FIBER-pac, MOSFIRE DRP	

Data Experience: Extensive experience analyzing observer-frame optical and near-IR spectroscopic data. Many year experience creating clean, reliable samples of narrowband-selecting galaxies.

Machine Learning: KDTree, Clustering, Nearest Neighbors

Statistical Analyses: MCMC, Metropolis-Hastings, Bootstrapping, Bayesian Statistics, MLE

PUBLIC
OUTREACH

AST Graduate Skills Seminar 1 Oct 2021
Career Panelist
Discussion of how to succeed in the Postdoc Job Market
School of Physics & Astronomy, Rochester Institute of Technology

Virtual Science Night and Career Panel 10 Febr 2021
Providing mini science lectures and career advice for local students
Ramona High School in Riverside, CA

What is an Astronomer? – Early Childhood Learning Center 3 June 2019
Public talk to Preschoolers at the Irvine Unified School District in California

Public Telescope Observation – UC Riverside 20 Febr 2018
Public event on UCR campus. Prepared/Operated Telescopes

Press Release: “Distant galaxies glow bright in oxygen” Oct 2016
Public outreach of results in Khostovan et al. (2016)
Distributed to UCRToday, Lancaster, Astronomy Now, My Science, and other science media sources

Long Night of Arts and Innovation – Downtown Riverside Oct 2015 & 2017
Large event hosted by City & County of Riverside
Interact with Community and answer astronomy-related questions
Setup/Operate Telescopes

Cosmic Thursday – UC Riverside 2014 – 2016 (monthly)
Setup and Operate Telescopes and answer questions from the community

TEACHING
EXPERIENCE

astroTopics 2017 – 2018; Sept 2022 – present
A get together I first started during my PhD years and restarted at RIT for Jeyhan Kartaltepe’s group. The idea is to select a topic of interest (e.g., Overview of rest-frame optical nebular diagnostics) and we all do our own background search (e.g., papers, books, lectures, youtube videos). After a week, we all get together and share what we have learned about that specific topic. It creates an environment of equals that allows undergrads, PhD students, and postdocs to collectively learn from each other. My role would also include running the weekly get togethers, start/lead the discussion, and ensure a safe environment for everyone to learn (especially students to feel safe and ask questions from senior students, postdocs, and faculty).

TA: The Violent Universe (non-science majors) Winter 2014 & 2015
An introduction to violent phenomena that power the universe, specifically phenomena that illustrate basic astrophysical principles. Topics include impacts in our planetary system: explosions of stars, bursts of star formation, galaxy collisions, black holes, quasars, cosmic jets, and the “Big Bang”

TA: Origins (non-science majors) Fall 2013, 2014, 2015

Explores the most fundamental questions in cosmology, physics, and chemical sciences through their origins. Topics include the origin of the Universe, origin of matter, first generation of stars and galaxies, origin of chemical elements, chemistry of life, and astrobiology.

TA: General Physics Lab (Engineering Students) Spring 2014

Covers topics in mechanics, thermodynamics, and electromagnetism. Includes fluid mechanics, temperature, and heat, the laws of thermodynamics, kinetic theory of gases, electric fields and potentials, current and DC circuits, capacitance and inductance, magnetism, and Faraday's law.

TA: General Physics (Biology Students) Winter 2013

Covers topics in mechanics, thermodynamics, and electromagnetism. Includes fluid mechanics, temperature, and heat, the laws of thermodynamics, kinetic theory of gases, electric fields and potentials, current and DC circuits, capacitance and inductance, magnetism, and Faraday's law.

TA: General Physics Lab (Biology Students) Winter 2013, Spring 2013, Summer 2015

Laboratory course that covers harmonic oscillations, mechanical and electromagnetic waves, geometrical optics, reflection, refraction, interference, diffraction, and polarization, and quantum, atomic, and nuclear physics. Course also covers classical mechanics including Newton's laws of motion, work, energy, and conservation of energy, momentum and collisions, rotational motions, and orbital motion.

TALKS

Roman Science Inspired by Emerging JWST Results 20 – 23 June 2023
Space Telescope Science Institute

Title: Let's Go Extreme with Roman: Observing
 $z \sim 0.5 - 2$ low and high EW ELGs

COSMOS Team Meeting 23 – 26 May 2023

Rochester Institute of Technology

Title: Past Spectra for Future Science:
A Public COSMOS Spectroscopic Archive

COSMOS Team Meeting 11 – 13 July 2022

IAP, Paris, France

Title: Past Spectra for Future Science:
A Public COSMOS Spectroscopic Archive
Virtual Talk due to COVID-19

Astrophysical Sciences & Technology Colloquium 7 Dec 2021

Rochester Institute of Technology

Title: A 13 Billion Year Old Story told by Narrowband Surveys
Invited Colloquium Talk

Roman Science Team Community Briefing 18 Nov 2021

NASA Goddard Space Flight Center

Title: Measurements of $H\alpha$ Equivalent Width Distributions:
The Second Tool in *Roman* Grism Survey Planning
Virtual Talk

Emission Lines in Galaxies: Discovery and Diagnostics June 2021

238th American Astronomical Society Conference

Title: Intrinsic Properties of $H\alpha$ Equivalent Width Distributions
from $z \sim 0.4 - 2$: Implications on Episodic Star Formation Histories
Invited Talk for Meeting-in-a-Meeting Session

NASA Early Career Scientist Forum 10 – 13 Nov 2020

Goddard Space Flight Center

<i>Title:</i> Mapping the Redshift Evolution of $H\alpha$ Equivalent Width Distributions: Implications for NGRST Grism Surveys <i>Virtual Talk</i>	
Galaxy Formation and Evolution in the Era of NGRST Space Telescope Science Insititute, Baltimore, Maryland	5 – 9 Oct 2020
<i>Title:</i> Intrinsic Properties of $H\alpha$ Equivalent Width Distributions <i>Virtual Recorded Talk</i>	
USRA Site Visit	20 Aug 2020
Goddard Space Flight Center	
<i>Title:</i> Evolution of Star-Forming Galaxies using the Largest Narrowband Surveys <i>Virtual Talk</i>	
LAGER Team Workshop	13 – 16 July 2020
Virtual Meeting	
<i>Title:</i> Physical Correlations of $H\alpha$ Equivalent Width Distributions: Real or Selection Driven?	
WFIRST Science Jamboree	2 March 2020
Flatiron Institute, New York City, New York	
<i>Title:</i> Statistical Properties of $z > 0.4$ $H\alpha$, [OIII] and [OII] Emitters: Implications for WFIRST	
235th American Astronomical Society Conference	4 - 8 January 2020
Honolulu, Hawaii	
A large, deep 3 deg ² survey of $H\alpha$, [OIII], and [OII] emitters from LAGER: constraining luminosity functions	
COSMOS 2019	14 - 17 March 2019
Flatiron Institute, New York City, New York	
<i>Title:</i> The $Ly\alpha$ and UV luminosity-dependent clustering of typical $Ly\alpha$ emitters up to $z \sim 6$	
SED Director's Seminar	9 Nov 2018
Goddard Space Flight Center	
<i>Title:</i> Properties of Star-Forming Galaxies with the Largest Narrowband Surveys	
NASA Early Career Scientist Forum	1 Nov 2018
Goddard Space Flight Center	
<i>Title:</i> Clustering Properties of Typical $Ly\alpha$ Emission Line Galaxies	
231st American Astronomical Society Conference	8 - 12 January 2018
Washington, DC	
<i>Title:</i> Clustering Properties of Emission Line Selected Galaxies over the past 12.5 Gyrs	
Astrophysics Seminar – Lancaster University	22 June 2017
<i>Title:</i> Clustering Properties of [OIII] and [OII] emitters over the past 12.5 Gyrs	
Galaxy Evolution Across Time Conference	12 - 16 June 2017
Paris, France	
<i>Title:</i> Clustering Properties of [OIII] and [OII] emitters over the past 12.5 Gyrs	
Astrophysics Seminar – Lancaster University	4 July 2016
<i>Title:</i> Exploring the Young Universe with the Largest Emission Line Surveys	
National Astronomical Meeting	27 June - 1 July 2016
Univ. of Nottingham	
<i>Title:</i> The Nature of $H\beta$ + [OIII] and [OII] emitters to $z \sim 5$ with HiZELS: stellar mass functions and the evolution of EWs	

	228th American Astronomical Society Conference	12 - 16 June 2016
	San Diego, California	
	<i>Title:</i> The Nature of $H\beta$ + $[OIII]$ and $[OII]$ emitters to $z \sim 5$ with HiZELS: stellar mass functions and the evolution of EWs	
	Astronomy Seminar – Univ. of Lisboa	13 Mar. 2015
	<i>Title:</i> Probing the Evolution of $H\beta$ + $[OIII]$ and $[OII]$ emitters up to $z \sim 5$ with HiZELS	
	Master’s Class – Univ. of Lisboa	12 Mar. 2015
	<i>Title:</i> Probing the Evolution of $H\beta$ + $[OIII]$ and $[OII]$ emitters up to $z \sim 5$ with HiZELS	
	Special Astronomy Seminar - UC Irvine	24 Febr. 2015
	<i>Title:</i> Probing the Evolution of $H\beta$ + $[OIII]$ and $[OII]$ emitters with HiZELS	
	Smithsonian Astrophysical Observatory Research Symposium	10 Aug 2011
	Center for Astrophysics, Harvard University	
	<i>Title:</i> Molecular Demographics of the Pipe Nebula: The Chemical Evolution	
	Star Formation Lunch Seminar	8 Aug 2011
	Center for Astrophysics, Harvard University	
	<i>Title:</i> Molecular Demographics of the Pipe Nebula: The Chemical Evolution	
POSTERS	Large-Volume Spectroscopic Analyses of AGN and Star-Forming Galaxies in the Era of JWST	29 Mar – Apr 1 2022
	Space Telescope Science Institute (STScI)	
	<i>Title:</i> Building A Public Spectroscopic Archive of the COSMOS Legacy Field	
	NASA Sciences & Exploration Directorate Poster Party	23 Jan 2020
	Goddard Space Flight Center	
	<i>Title:</i> The $Ly\alpha$ and UV luminosity-dependent clustering of typical $Ly\alpha$ emitters up to $z \sim 6$	
	233rd American Astronomical Society Conference	6 - 10 Jan 2019
	Seattle, Washington	
	<i>Title:</i> The $Ly\alpha$ and UV luminosity-dependent clustering of typical $Ly\alpha$ emitters up to $z \sim 6$	
	Back at the Edge of the Universe Conference	15 - 19 Mar 2015
	Sintra, Portugal	
	<i>Title:</i> Evolution of the $H\beta$ + $[OIII]$ and $[OII]$ Luminosity Functions and the $[OII]$ Star-Formation History of the Universe up to $z \sim 5$	
	219th American Astronomical Society Conference	8 - 12 Jan 2012
	Austin, Texas	
	<i>Title:</i> Herschel HerMES: Identifying Counterparts in CANDELS HST & SpUDS IRAC data	
	Inaugural Center for Galaxy Evolution Workshop	1 - 2 Mar 2011
	Univ. of California, Irvine	
	<i>Title:</i> Spitzer Imaging of Herschel-ATLAS Gravitationally Lensed Submillimeter Sources	
	217th American Astronomical Society Conference	9 - 13 Jan 2010
	Seattle, Washington	
	<i>Title:</i> Spitzer Imaging of Herschel-ATLAS Gravitationally Lensed Submillimeter Sources	