

Ali Ahmad Khostovan

CONTACT INFORMATION	School of Physics & Astronomy Rochester Institute of Technology Rochester, NY 14623	Phone: +1 (415) 308-7465 E-mail: akhostov@gmail.com
RESEARCH INTERESTS	Galaxy Formation and Evolution; Narrowband and Emission Line Surveys; $H\alpha$, $H\beta$, $[OIII]$, $[OII]$, and $Ly\alpha$ emitters; Statistical and Physical Properties of Star-forming galaxies (LFs, SMFs, EWs); Clustering/Large-Scale Structure and Environmental Influences on Star-Formation; Changing ISM Conditions of Star-Forming Galaxies; Investigating Star Formation Histories (e.g. burstiness/episodic vs smooth/steady star-formation); Cosmic Noon and Reionization (two major epochs of galaxy evolution); Large Survey planning; Number count modeling for future surveys	
CURRENT POSITION	Postdoctoral Research Associate Rochester Institute of Technology Supervisor: Dr. Jeyhan Kartaltepe Focus: An Archival Survey of Spectroscopic Observations in COSMOS	Sept 2021 – present
	Visiting Researcher NASA Goddard Space Flight Center Supervisor: Dr. Sangeeta Malhotra	Oct 2021 – present
PUBLICATION RECORD (NOVEMBER 2021)	Number of Publications (first author): 27 (6) . Total citations (first author): 2035 (167) . h -index: 14 . $i10$ -index: 16 . g -index: 25 . m -index: 1.2	
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 Goddard Space Flight Center	Sept 2018 – Sept 2021
	NASA Earth & Space Sciences PhD Fellow	2016 – 2018

Department of Physics & Astronomy,
University of California, Riverside

Chancellor's Distinction Fellow 2012 – 2013
Department of Physics & Astronomy,
University of California, Riverside

National Science Foundation REU Intern June – Aug. 2011
Center for Astrophysics,
Harvard University

Undergraduate Research Opportunities Program Fellow Jan. – June 2011
Department of Physics & Astronomy,
University of California, Irvine

Summer Undergraduate Research Program Fellow June – Sept. 2010
Department of Physics & Astronomy,
University of California, Irvine

AWARDS **Anne Kernan Award for Outstanding Senior Graduate Student Researcher** June 2018
Prestigious award given to senior PhD students for their research and achievements throughout their graduate school years

Outstanding Teaching Assistant Award June 2018
Awarded to students for demonstrating effective teaching skills

GSA Conference Travel Grant June – July 2016
Funding from Graduate Student Association to attend a conference

National Science Foundation Graduate Research Fellowship 2012, 2013, 2014
Honorable Mention (3 times)

Chambliss Astronomy Achievement Student Award Jan. 2012
Honorable Mention – 219th AAS Meeting

GRADUATE CO-SUPERVISION **Santosh Harish, 5th year PhD Student** Sept. 2018 – March 2020
Project: Statistical Properties of H α - and [OIII]-selected emission line galaxies at $z \sim 0.6$
Institution: Arizona State University, Tempe & NASA GSFC
Paper: Harish et al., 2020, ApJ, 892, 30

UNDERGRADUATE SUPERVISION **Mehruza Zaman, 2nd year Biology student** Jan. - June 2017
Project: Effects of Nebular Emission Lines in SED fittings using narrowband-selected samples
Title: NASA FIELDs Undergraduate Intern

COMMUNITY OUTREACH **Emission Lines in Galaxies: Discovery and Diagnostics** June 2021
Main Co-Organizer of Meeting-in-a-Meeting Session
238th AAS meeting – *Received Approval 15 Jan 2021*

NASA FINESST Program Reviewer Winter 2021
Purpose: Reviewed and Graded PhD Proposals for Fellowship Awards

	NASA Review Panel	Fall 2020
	<i>Purpose:</i> Review Proposals for Research Funding Purposes	
AWARDED PROPOSALS	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): 6.5 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, 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 Fitting:</i> MAGPHYS <i>Data Experience:</i> Reduced data from Subaru/FMOS, Keck/DEIMOS and MOSFIRE. Analyzed archival spectroscopic data from various surveys (e.g., flux calibration and emission line fitting). Made catalogs of narrowband-selected galaxies matched with multiwavelength photometry <i>Machine Learning:</i> KDTree and Clustering <i>Statistical Analyses:</i> MCMC, Metropolis-Hastings, Bootstrapping, Bayesian Statistics, MLE	
PUBLIC OUTREACH	AST Graduate Skills Seminar Career Panelist Discussion of how to succeed in the Postdoc Job Market School of Physics & Astronomy, Rochester Institute of Technology	1 Oct 2021
	Virtual Science Night and Career Panel Providing mini science lectures and career advice for local students Ramona High School in Riverside, CA	10 Febr 2021
	What is an Astronomer? – Early Childhood Learning Center Public talk to Preschoolers at the Irvine Unified School District in California	3 June 2019
	Public Telescope Observation – UC Riverside Public event on UCR campus. Prepared/Operated Telescopes	20 Febr 2018

	<p>Press Release: “Distant galaxies glow bright in oxygen” Oct 2016</p> <p>Public outreach of results in Khostovan et al. (2016)</p> <p>Distributed to UCRToday, Lancaster, Astronomy Now, My Science, and other science media sources</p>
	<p>Long Night of Arts and Innovation – Downtown Riverside Oct 2015 & 2017</p> <p>Large event hosted by City & County of Riverside</p> <p>Interact with Community and answer astronomy-related questions</p> <p>Setup/Operate Telescopes</p>
	<p>Cosmic Thursday – UC Riverside 2014 – 2016 (monthly)</p> <p>Setup and Operate Telescopes and answer questions from the community</p>
TEACHING EXPERIENCE (DISCUSSION SECTIONS; 20 HRS/WEEK)	<p>The Violent Universe (non-science majors) Winter 2014 & 2015</p> <p>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”</p> <p>Origins (non-science majors) Fall 2013, 2014, 2015</p> <p>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.</p> <p>General Physics Lab (Engineering Students) Spring 2014</p> <p>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.</p> <p>General Physics (Biology Students) Winter 2013</p> <p>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.</p> <p>General Physics Lab (Biology Students) Winter 2013, Spring 2013, Summer 2015</p> <p>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.</p>
TALKS	<p>Astrophysical Sciences & Technology Colloquium 7 Dec 2021</p> <p>Rochester Institute of Technology</p> <p><i>Title: A 13 Billion Year Old Story told by Narrowband Surveys</i></p> <p><i>Invited Colloquium Talk</i></p> <p>Roman Science Team Community Briefing 18 Nov 2021</p> <p>NASA Goddard Space Flight Center</p>

Title: Measurements of H α 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 α 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

Title: Mapping the Redshift Evolution of H α Equivalent
Width Distributions: Implications for NGRST Grism Surveys
Virtual Talk

Galaxy Formation and Evolution in the Era of NGRST 5 – 9 Oct 2020
Space Telescope Science Insititute, Baltimore, Maryland

Title: Intrinsic Properties of H α Equivalent Width Distributions
Virtual Recorded Talk

USRA Site Visit 20 Aug 2020
Goddard Space Flight Center

Title: Evolution of Star-Forming Galaxies using
the Largest Narrowband Surveys
Virtual Talk

LAGER Team Workshop 13 – 16 July 2020
Virtual Meeting

Title: Physical Correlations of H α Equivalent Width
Distributions: Real or Selection Driven?

WFIRST Science Jamboree 2 March 2020
Flatiron Institute, New York City, New York

Title: Statistical Properties of $z > 0.4$ H α , [OIII]
and [OII] Emitters: Implications for WFIRST

235th American Astronomical Society Conference 4 - 8 January 2020
Honolulu, Hawaii

A large, deep 3 deg² survey of H α , [OIII], and [OII]
emitters from LAGER: constraining luminosity functions

COSMOS 2019 14 - 17 March 2019
Flatiron Institute, New York City, New York

Title: The Ly α and UV luminosity-dependent clustering
of typical Ly α emitters up to $z \sim 6$

SED Director's Seminar 9 Nov 2018
Goddard Space Flight Center

Title: Properties of Star-Forming Galaxies with
the Largest Narrowband Surveys

NASA Early Career Scientist Forum 1 Nov 2018
Goddard Space Flight Center

Title: Clustering Properties of Typical Ly α Emission Line Galaxies

231st American Astronomical Society Conference 8 - 12 January 2018
Washington, DC

Title: Clustering Properties of Emission Line Selected
Galaxies over the past 12.5 Gyrs

Astrophysics Seminar – Lancaster University 22 June 2017

Title: Clustering Properties of [OIII] and [OII] emitters
over the past 12.5 Gyrs

Galaxy Evolution Across Time Conference 12 - 16 June 2017
Paris, France

Title: Clustering Properties of [OIII] and [OII] emitters
over the past 12.5 Gyrs

Astrophysics Seminar – Lancaster University 4 July 2016

Title: Exploring the Young Universe with the Largest
Emission Line Surveys

National Astronomical Meeting 27 June - 1 July 2016
Univ. of Nottingham

Title: The Nature of H β + [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

Title: The Nature of H β + [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

Title: Probing the Evolution of H β + [OIII] and [OII] emitters
up to $z \sim 5$ with HiZELS

Master's Class – Univ. of Lisboa 12 Mar. 2015

Title: Probing the Evolution of H β + [OIII] and [OII] emitters
up to $z \sim 5$ with HiZELS

Special Astronomy Seminar - UC Irvine 24 Febr. 2015

Title: Probing the Evolution of H β + [OIII] and [OII]
emitters with HiZELS

Smithsonian Astrophysical Observatory Research Symposium 10 Aug 2011
Center for Astrophysics, Harvard University

Title: Molecular Demographics of the Pipe Nebula: The Chemical Evolution

Star Formation Lunch Seminar 8 Aug 2011
Center for Astrophysics, Harvard University

Title: Molecular Demographics of the Pipe Nebula: The Chemical Evolution

POSTERS

NASA Sciences & Exploration Directorate Poster Party 23 Jan 2020
Goddard Space Flight Center

Title: The Ly α and UV luminosity-dependent clustering
of typical Ly α emitters up to $z \sim 6$

233rd American Astronomical Society Conference 6 - 10 Jan 2019
Seattle, Washington

Title: The Ly α and UV luminosity-dependent clustering
of typical Ly α emitters up to $z \sim 6$

Back at the Edge of the Universe Conference 15 - 19 Mar 2015
Sintra, Portugal

Title: Evolution of the H β + [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

Title: Herschel HerMES: Identifying Counterparts in CANDELS HST & SpUDS
IRAC data

Inaugural Center for Galaxy Evolution Workshop 1 - 2 Mar 2011
Univ. of California, Irvine

Title: Spitzer Imaging of Herschel-ATLAS Gravitationally Lensed Submillimeter
Sources

217th American Astronomical Society Conference 9 - 13 Jan 2010
Seattle, Washington

Title: Spitzer Imaging of Herschel-ATLAS Gravitationally Lensed Submillimeter
Sources

FIRST-AUTHOR
REFERRED
PUBLICATIONS

A. A. Khostovan, S. Malhotra, J. Rhoads, et al. (2021)
Correlations between H α Equivalent Width and Galaxy Properties at $z = 0.47$:
Physical or Selection-Driven?
MNRAS, 503, 5115

A. A. Khostovan, S. Malhotra, J. Rhoads, et al. (2020)
A large, deep 3 deg² survey of H α , [OIII], and [OII] emitters from LAGER: con-
straining luminosity functions
MNRAS, 493, 3966

***A. A. Khostovan**, D. Sobral, B. Mobasher, et al. (2019)
The clustering of typical Ly α emitters from $z \sim 2.5 - 6$: host halo masses depend
on Ly α and UV luminosities
MNRAS, 489, 555

A. A. Khostovan, D. Sobral, B. Mobasher, et al. (2018)
The clustering of H β + [OIII] and [OII] emitters since $z \sim 5$: dependencies with line
luminosity and stellar mass
MNRAS, 478, 2999

***A. A. Khostovan**, D. Sobral, B. Mobasher, et al. (2016)
The nature of H β + [OIII] and [OII] emitters to $z \sim 5$ with HiZELS: stellar mass
functions and the evolution of EWs
MNRAS, 463, 2363
[Press Release Hyperlink](#)

***A. A. Khostovan**, D. Sobral, B. Mobasher, et al. (2015)
Evolution of the H β + [OIII] and [OII] Luminosity Functions
and the [OII] Star-Formation History of the Universe up to $z \sim 5$
MNRAS, 452, 3948

- OTHER REFERRED PUBLICATIONS S. Harish, I. Wold, S. Malhotra, ..., **A. A. Khostovan** et al. *submitted*
New spectroscopic confirmations of Ly α emitters at $z \sim 7$ from the LAGER survey
ApJ, *submitted*; *astro-ph*: 2111.01173
- I. Wold, S. Malhotra, J. Rhoads, ..., **A. A. Khostovan** et al. *submitted*
LAGER Fields WIDE12 and GAMA15A: the 8 deg² Ly α Luminosity Function at $z = 6.9$
ApJ, *submitted* – response given to referee; *astro-ph*: 2105.12191
- S. Rezaee, N. Reddy, ... **A. A. Khostovan** et al. (2021)
Variation of the nebular dust attenuation curve with the properties of local star-forming galaxies
MNRAS, 506, 3588
- S. Santos, D. Sobral, ..., **A. A. Khostovan** et al. (2021)
The Evolution of the UV luminosity and Stellar Mass Functions of Ly α emitters from $z \sim 2$ to $z \sim 6$
MNRAS, 505, 1117
- W. Hu, J. Wang, L. Infante, ..., **A. A. Khostovan** et al. (2021)
A Lyman- α protocluster at redshift 6.9
Nature, 5, 485
- S. Harish, A. Coughlin, J. Rhoads, ..., **A. A. Khostovan** et al. (2020)
A Comprehensive Study of H α Emitters at $z \sim 0.62$ in the DAWN Survey: the Need for Deep and Wide Regions
ApJ, 892, 30
- W. Hu, J. Wang, Z. Zheng, ..., **A. A. Khostovan** et al. (2019)
The Ly α Luminosity Function and Cosmic Reionization at $z \sim 7.0$: a Tale of Two LAGER Fields
ApJ, 886, 90
- M. Jafariyazani, B. Mobasher, ..., **A. A. Khostovan** et al. (2019)
Spatially Resolved Properties of Galaxies from CANDELS+MUSE: Radial Extinction Profile and Insights on Quenching
ApJ, 887, 204
- Z. Zheng, J. Rhoads, J. Wang, ..., **A. A. Khostovan** et al. (2019)
Design for the First Narrowband Filter for the Dark Energy Camera: Optimizing the LAGER Survey for $z \sim 7$ Galaxies
PASP, 131, 4502
- D. Sobral, S. Santos, J. Matthee, ..., **A. A. Khostovan** et al. (2018)
Slicing COSMOS with SC4K: the evolution of typical Ly α emitters and the Ly α escape fraction from $z \sim 2$ to $z \sim 6$
MNRAS, 476, 4725
- T. Suzuki, T. Kodama, M. Onodera, ..., **A. A. Khostovan** et al. (2017)
The interstellar medium in [OIII]-selected star-forming galaxies at $z \sim 3.2$
ApJ, 849, 39
- J. Matthee, D. Sobral, P. N. Best, **A. A. Khostovan** et al. (2017)
The production and escape of Lyman-Continuum radiation from star-forming galaxies at $z \sim 2$ and their redshift evolution
MNRAS, 465, 3637
- H. Nayyeri, S. Hemmati, B. Mobasher, ..., **A. A. Khostovan** et al. (2017)

CANDELS Multi-wavelength Catalogs: Source Identification and Photometry in the CANDELS COSMOS Survey Field
ApJS, 228, 7

- T. Suzuki, T. Kodama, D. Sobral, **A. A. Khostovan** et al. (2016)
 [O III] emission line as a tracer of star-forming galaxies at high redshifts: comparison between H α and [OIII] emitters at $z = 2.23$ in HiZELS
MNRAS, 462, 181
- D. Sobral, J. Matthee, P. N. Best, I. Smail, **A. A. Khostovan** et al. (2015)
 CF-HiZELS, a 10 deg² emission-line survey with spectroscopic follow-up: H α , [OIII], and [OII] luminosity functions and sample variance at $z = 0.8, 1.4$, and 2.2
MNRAS, 451, 2303
- S. Kim, J. Wardlow, A. Cooray, S. Fleuren, W. Sutherland, **A. A. Khostovan**, et al. (2012)
 Spitzer IRAC Identification of Herschel-ATLAS SPIRE Sources
Astrophysical Journal, 756, 28
- R. Hopwood, J. Wardlow, A. Cooray, **A. A. Khostovan**, et al. (2011)
 Spitzer Imaging of Herschel-ATLAS Gravitationally Lensed Submillimeter Sources
Astrophysical Journal Letter, 728, L4+
- A. M. Koekemoer, S. M. Faber, ... **A. A. Khostovan**, et al. (2011)
 CANDELS: The Cosmic Assembly Near-infrared Deep Extragalactic Legacy Survey - The Hubble Space Telescope Observations, Imaging Data Products and Mosaics
Astrophysical Journal Supplement, 197, 36K
- A. Amblard, A. Cooray, ... **A. A. Khostovan**, et al. (2011)
 Sub-millimetre galaxies reside in dark matter halos with masses greater than 3×10^{11} solar masses
Nature, 470, 510
- A. Cooray, ... **A. A. Khostovan**, et al. (2010)
 The Herschel-SPIRE Legacy Survey (HSLs): the scientific goals of a shallow and wide submillimeter imaging survey with SPIRE
White Paper
- A. Cooray, ... **A. A. Khostovan**, et al. (2010)
 HerMES: Halo Occupation Number and Bias Properties of Dusty Galaxies from Angular Clustering Measurements
Astronomy & Astrophysics, 518, L22+
- A. A. Khostovan**, S. Malhotra, J. Rhoads, et al. *in prep*
 The Evolution of H α Equivalent Width Distributions: Implications for Star Formation Histories and Future Slitless Grism Surveys
- A. A. Khostovan**, D. Sobral, et al. *in prep*
 Slicing COSMOS with H α , [OIII], and [OII] Lines Survey (SCHOOLS): The Extreme End of Star-forming Galaxies

IN PREP
 PUBLICATIONS

REFERENCES

***Prof. Bahram Mobasher**

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Prof. Asantha R. Cooray

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