

# Rohan Naidu

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## RESEARCH INTERESTS

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Galactic archaeology, near-field cosmology, dark matter;  
cosmic reionization, cosmic dawn, galaxy formation & evolution

## EDUCATION

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<b>Harvard University, U.S.A.</b> , Ph.D. in Astronomy Advisor: Prof. Charlie Conroy Thesis: <i>Unraveling the Galactic Halo with the H3 Survey</i>	2017–2022 (expected)
<b>Yale-NUS College, Singapore</b> , B.S. in Physical Sciences <i>magna cum laude</i> , inaugural class of 150 of “Asia’s first liberal arts college” Capstone Advisor: Prof. Pascal Oesch, Capstone: <i>Insights into Cosmic Reionization</i>	2013–2017

## ACADEMIC HONORS

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Ashford Fellowship, Harvard University awarded to six students across entire Graduate School of Arts & Sciences	2017–2022
Peirce Fellowship, Astronomy Department, Harvard University awarded to 1–3 incoming graduate students	2017–2020
Outstanding Capstone Project in Physical Sciences, Yale-NUS College	2017
Chambliss Medal, AAS Winter Meeting, American Astronomical Society	2016

## PUBLICATIONS

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10 first/second author papers, 200+ citations, h-index 7, [ADS library](#).  
23 total papers, 300+ citations, h-index 11, [ADS library](#).  
First/second author papers below, contributing author papers in following section.

10. **R.P. Naidu**, C. Conroy, A. Bonaca, et al., *Reconstructing the Last Major Merger of the Milky Way with the H3 Survey*, [arXiv:2103.03251](#), ApJ in review.
9. C. Conroy, **R.P. Naidu**, N. Garavito-Camargo, et al., *All-Sky Dynamical Response of the Galactic Halo to the Magellanic clouds*, [Nature](#), **592**, 534–536, 2021
8. M.T. Gialluca, **R.P. Naidu**, A. Bonaca, *Velocity Dispersion of the GD-1 Stellar Stream*, [ApJL](#), 2021.
7. A. Bonaca, **R.P. Naidu**, C. Conroy, et al., *Orbital Clustering Identifies the Origins of Galactic Stellar Streams*, [ApJL](#), **909**, 26, 2021.
6. **R.P. Naidu**, C. Conroy, A. Bonaca, et al., *Evidence from the H3 Survey That the Stellar Halo Is Entirely Comprised of Substructure*, [ApJ](#), **901**, 48, 2020.

5. **R.P. Naidu**, S. Tacchella, C.A. Mason, et al., *Rapid Reionization by the Oligarchs: The Case for Massive, UV-bright, Star-forming Galaxies with High Escape Fractions*, **ApJ**, **892**, 109, 2020.
4. C.A. Mason, **R.P. Naidu**, S. Tacchella, J.R. Leja, *Model-independent constraints on the hydrogen-ionizing emissivity at  $z > 6$* , **MNRAS**, **489**, 2669, 2019.
3. C. Conroy, **R.P. Naidu**, D. Zaritsky, et al., *Resolving the Metallicity Distribution of the Stellar Halo with the H3 Survey*, **ApJ**, **887**, 237, 2019.
2. **R.P. Naidu**, B. Forrest, P.A. Oesch, et al., *A low Lyman Continuum escape fraction of  $< 10\%$  for extreme [OIII] emitters in an overdensity at  $z \sim 3.5$* , **MNRAS**, **478**, 791, 2018.
1. **R.P. Naidu**, P.A. Oesch, N. Reddy, et al., *The HDUV Survey: Six Lyman Continuum Emitter Candidates at  $z \sim 2$  Revealed by HST UV Imaging*, **ApJ**, **847**, 12, 2017.

## CONTRIBUTING AUTHOR PUBLICATIONS

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13. J. Matthee et al., *The X-SHOOTER Lyman- $\alpha$  survey at  $z = 2$  (XLS- $z2$ ) I: the panchromatic spectrum of typical Lyman- $\alpha$  emitters*, **MNRAS**, in press.
12. R.J. Bouwens et al., *New Determinations of the UV Luminosity Functions from  $z \sim 9$  to  $z \sim 2$  Show a Remarkable Consistency with Halo Growth and a Constant Star Formation Efficiency*, **ApJ**, in press.
11. C. Carter et al., *Ancient Very Metal-poor Stars Associated with the Galactic Disk in the H3 Survey*, **ApJ**, **908**, 208, 2021.
10. D. Zaritsky et al., *Discovery of Magellanic Stellar Debris in the H3 Survey*, **ApJL**, **905**, 3, 2020.
9. B.D. Johnson et al., *A Diffuse Metal-poor Component of the Sagittarius Stream Revealed by the H3 Survey*, **ApJ**, **900**, 103, 2020.
8. A. Bonaca et al., *Timing the Early Assembly of the Milky Way with the H3 Survey*, **ApJL**, **897**, 18, 2020.
7. A. Bonaca et al., *High-resolution Spectroscopy of the GD-1 Stellar Stream Localizes the Perturber near the Orbital Plane of Sagittarius*, **ApJL**, **892**, 37, 2020.
6. D. Zaritsky et al., *A Lower Limit on the Mass of Our Galaxy from the H3 Survey*, **ApJ**, **888**, 114, 2020.
5. C. Conroy et al., *Mapping the Stellar Halo with the H3 Spectroscopic Survey*, **ApJ**, **883**, 107, 2019.
4. X. Fan et al., *The Discovery of a Gravitationally Lensed Quasar at  $z = 6.51$* , **ApJL**, **870**, 11, 2019.
3. L.H. Jones et al.,  *$z \sim 2.5 - 3$  Ionizers in the GOODS-N Field*, **ApJ**, **862**, 142, 2018.
2. P.A. Oesch et al., *HDUV: The Hubble Deep UV Legacy Survey*, **ApJS**, **237**, 12, 2018.
1. C. Conroy et al., *They Might Be Giants: An Efficient Color-based Selection of Red Giant Stars*, **ApJL**, **861**, 16, 2018.

## OBSERVING PROGRAMS AS PRINCIPAL INVESTIGATOR

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PI: Naidu, James Webb Space Telescope, NIRCам WFSS

7 hours, 2022/23

*Where Cosmic Dawn Breaks First:*

*Mapping the Primordial Overdensity Powering a  $z \sim 9$  Ionized Bubble*

PI: Naidu (co-PI with J. Matthee), James Webb Space Telescope <i>Anatomy of an Ionized Bubble at <math>z = 6.6</math>: Which Galaxies Reionized the Universe?</i>	18 hours, 2022/23
PI: Naidu, Magellan MIKE <i>Extending the Chemical Reach of the H3 Survey with MIKE</i>	8 nights, 2021-
PI: Naidu, Magellan FIRE <i>Rest-UV Spectroscopy of Galaxies Reionizing the Universe at <math>z = 6 - 7</math></i>	10 nights, 2019-20
PI: Naidu, Hubble Space Telescope WFC3/UVIS <i>Confirming Extreme Lyman Continuum Emission in a <math>z = 3.27</math> Star-Forming Galaxy</i>	5 orbits, 2018
PI: Naidu, Magellan IMACS <i>A Ly<math>\alpha</math> Survey to Harvest Lyman Continuum and Prepare for JWST</i>	4 nights, 2018
PI: Naidu, Magellan FIRE <i>Spectroscopic Exploration of a Lyman Continuum Emitter at <math>z = 3.27</math></i>	1.5 nights, 2018

## OBSERVING PROGRAMS AS CO-INVESTIGATOR

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PIs: Charlie Conroy, Dennis Zaritsky, MMT/Hectochelle <i>The H3 Spectroscopic Survey of the Stellar Halo. Core survey team member.</i>	140 nights, 2018-
PI: Pascal Oesch, James Webb Space Telescope NIRCam/WFSS <i>FRESCO: The First Reionization Epoch Spectroscopic COmplete Survey</i>	53 hours, 2022/23
PI: Sirio Belli, James Webb Space Telescope NIRSpec/MOS <i>The Stellar and Gas Content of Galaxies at Cosmic Noon</i>	46+37.5 hours, 2022/23
PI: GyuChul Myeong, Magellan/MIKE <i>Chemical Characterisation of Milky Way Halo Substructures</i>	3 nights, 2020-
PI: Charlotte Mason, MMT/Binospec <i>Unraveling Reionization with Resolved Lyman Alpha</i>	15.5 nights, 2019-
PI: Sandro Tacchella, MMT/MMIRS <i>Consensus on low-mass galaxies: how do low-mass galaxies grow?</i>	12 nights, 2019-21
PI: Pascal Oesch, VLT/X-Shooter <i>Physical Properties of Lyman Continuum Emitter Candidates at <math>z \approx 2 - 3</math></i>	22 hrs, 2017-18

## INVITED TALKS

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Tufts University, <i>Rapid Reionization by the Oligarchs</i>	Astronomy seminar, 2021
AIP Potsdam, <i>Reconstructing the Last Major Merger</i>	Milky Way seminar, 2021
University of Minnesota, <i>Unraveling the Galactic Halo with the H3 Survey</i>	Colloquium, 2020
IAS, Princeton, <i>Unraveling the Galactic Halo with the H3 Survey</i>	Astro Coffee, 2020

Flatiron CCA, <i>Reconstructing the Last Major Merger</i>	Dynamics meeting, 2020
U. of Arizona, <i>Unraveling the Galactic Halo with the H3 Survey</i>	Galaxy Crawl seminar, 2020
MPIA, Heidelberg, <i>Unraveling the Galactic Halo with the H3 Survey</i>	Galaxy Coffee, 2020
UPenn, <i>Unraveling the Galactic Halo with the H3 Survey</i>	Sanderson group meeting, 2020
Harvard, <i>Connecting the Milky Way to High-<math>z</math> Galaxy Evolution</i>	HiGEM seminar, 2020
U. of Arizona, <i>Rapid Reionization by the Oligarchs</i>	EURECA seminar, 2020
ESO Chile, <i>Rapid Reionization by the Oligarchs</i>	Thirty Minutes Talk, 2019

## CONFERENCE TALKS

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SAZERAC2, <i>Double Bubble Lyman Trouble: Indirect tracers of LyC for the JWST Era</i>	2021
Streams21, <i>The Accretion Origins of Stellar Streams</i>	2021
AAS Winter Meeting, <i>Unraveling the Galactic Halo with the H3 Survey</i>	2021
Harvard-Heidelberg Star-Formation Meeting, <i>Starburst (Sgrburst) in our Backyard</i>	2020
SAZERAC, <i>Rapid Reionization by the Oligarchs</i>	2020
Early Galaxy Evolution in the ALMA & JWST Era, <i>Rapid Reionization by the Oligarchs</i>	2019
Escape of Lyman Radiation, OAC Crete, <i>LyC at <math>z \approx 2 - 3</math> with the HDUV Survey</i>	2018

## TEACHING & ADVISING

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### Teaching

Head Teaching Fellow, <i>Stellar &amp; Planetary Astronomy</i> , Harvard University	Spring 2021
Instructor: Prof. John Johnson	
Teaching Fellow, <i>Galaxies &amp; Cosmology</i> , Harvard University	Fall 2019
Instructor: Prof. Charlie Conroy	
Teaching Assistant, <i>Intro. to Observational Astronomy</i> , Yale-NUS College	Spring 2017
Instructor: Prof. Bryan Penprase	

### Undergraduate Advising

Jerrick Wee (Yale-NUS College)	2017-18
advised on all aspects of Astronomy research, published two first-author ApJ papers	
Lavonna Mark (Yale-NUS College)	2020-21
advised on PhD applications & interviews, Stanford Neuroscience PhD on prize fellowship	
Megan Gialluca (Northern Arizona University, SAO REU Program)	2020-21
co-advised with Ana Bonaca, published one ApJL paper, NSF Graduate Research Fellow	

## DIVERSITY, EQUITY, INCLUSION

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- Python instructor & STEM Mentor, SAO's Latino Initiatives Program (2021)
  - Three month internship program for students from under-represented communities.
  - Will introduce students to *anaconda* and notebooks with a focus on scientific computing.
  - Will hold weekly one-to-one meetings for informal mentoring.
- Volunteer, Harvard Banneker Institute summer program (2018, 2020)
  - Ten week research and study experience to prepare students of color for grad school.
  - Held weekly office hours on various aspects of research, provided catch-all Python assistance.
- Department Point-Person & Volunteer, Harvard Graduate Students Union (2017-19)
  - Fair pay, affordable healthcare, and protection from abuse are core goals of the union.
  - Canvassed STEM departments ( $\approx 200$  calls + in-person conversations) and international students (e.g., [Harvard Crimson Op-Ed](#)) for union formation election.
  - Organized action with a focus on international student issues (e.g., Muslim ban, visa rule changes, pandemic pay).

## PROFESSIONAL SERVICE

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- Journal referee for the Astrophysical Journal (ApJ)
- Chief Coordinator, Harvard Astronomy's Prospective Student Visit Week (2019)
  - One of two grad students in-charge of every aspect of recruitment events (e.g., designing the overall program, travel/restaurant arrangements, liaising with faculty/admin).
  - Developed new programming (e.g., closed-door student panel fielding anonymous questions) and conducted an entry/exit survey to understand the visit's successes/failures.
  - Produced a detailed report for faculty identifying areas of weakness (e.g., poor CfA web portals) that spurred action.

## OTHER INTERESTS

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- Quizzing/Trivia/Quiz-bowl
  - Won several national & international events – youngest gold medalist at the Asia-Pacific Quizzing Championships and four-time national champion (Singapore), one-time international champion of the Tata Crucible campus quiz (among the world's largest university tournaments with 38 cities, 5000+ teams).
- Poetry
  - Published in journals including Helter Skelter Magazine's New Indian Writing, the Quarterly Literary Review Singapore, and Softblow. Longlisted for prizes including the Poetry Society of India's All-India Prize, University of Canberra's International Poetry Prize, and the Wingword Poetry Prize. [Portfolio](#).
- Data-science for social good

- Led the team behind the viral electoral literacy website, [electionaire.info](http://electionaire.info) (>500,000 unique hits, > 10% of Singapore's population). Conceptualized the project, recruited team members, oversaw research on the stances of political parties, handled press inquiries.
- Data miner for studies focused on domestic maids' rights in Singapore. Studies based on these data found live-in domestic maids from the Philippines, Indonesia and India who work in 1-of-4 Singaporean households often enter contracts with zero off days per month.