

CURRICULUM VITÆ
GOURAV KHULLAR

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EDUCATION & EXPERIENCE Ph.D. Candidate, Astronomy & Astrophysics *Expected: May 2022*
University of Chicago, Chicago, IL, USA
URA Scholar, Radix Fellow, Jerry Rao Fellow

- Thesis: *Star Formation Histories in Galaxy Clusters and High-Redshift Lensed Galaxies*
- Advisor: Michael D. Gladders

Visiting Student, Kavli MIT *2021-present*
Massachusetts Institute of Technology, Cambridge, MA, USA
(Mentor: Michael McDonald)

Masters of Science, Astronomy & Astrophysics *2015-2017*
University of Chicago, Chicago, IL, USA

Masters of Advanced Study (MASt.) in Astrophysics *2014-15*
University of Cambridge, Institute of Astronomy, Cambridge, UK
INLAKS Fellow at Fitzwilliam College

- Thesis: *Characterizing AGN and host galaxies in the Dark Energy Survey*
- Advisor: Richard McMahon

Erasmus Mundus Fellow, Student Exchange Program *2014*
Aalto University Helsinki, Finland
Dept. of Physics and Metsahovi Radio Observatory

Bachelor of Technology (B.Tech.), Engineering Physics *2010-2014*
Indian Institute of Technology Delhi (IITD) New Delhi, India

- Thesis: *Stellar Speckle Interferometry and Adaptive Optics*
- Advisor: Kedar Khare

HONORS & AWARDS

- University Research Association (URA) Visiting Scholars Program, Fermilab *2020, 2021-22*
- Physical Sciences Teaching Prize, University of Chicago *2020-21*
- Radix Fellow, Physical Sciences Division, University of Chicago *2020*
- Graduate Student Leadership Award, University of Chicago *2018, 2021*
- Jerry Rao Fellowship, University of Chicago *2015 - 2016*
- Finalist, Graduate Teaching Assistant Award, University of Chicago *2016*
- Brinson Fellowship, University of Chicago *2015*
- INLAKS Foundation Scholarship, University of Cambridge, UK *2014-15*
- Erasmus Mundus Scholarship, Aalto University, Finland *2014*
- Outstanding Contribution Award, Co-Curricular and Academic Activities, IIT Delhi *2013*
- Semester Excellence Awards, IIT Delhi *2011, 2012, 2013*

PRESENTATIONS

Invited Talks

- STScI Galaxy Lunch *Dec 2021*
- NOIRLab Scientific Lunch *Nov 2021*

- Harvard Galaxy Clusters Meeting *Nov 2021*
- UT Austin Extragalactic Astronomy/Cosmology Seminar Series *Nov 2021*
- Yale Galaxy Lunch *Nov 2021*
- University of Pittsburgh Lunch *Nov 2021*
- MIT Kavli Brown Bag Lunch *Oct 2021*
- Stanford KIPAC Tea *Oct 2021*
- STScI Science Coffee *Oct 2021*
- High Redshift Galaxy Evolution Meeting, Harvard CfA *Oct 2021*
- Institute for Astronomy, UHawaii *Sep 2021*
- University of Massachusetts Amherst Galaxy Lunch *Apr 2021*
- University of Michigan Astronomy Galaxy Meeting *Oct 2020*

Conference Talks

- KIAA Forum on Gas in Galaxies for Early Career Scientists *Nov 2021*
- Spatially Resolved Spectroscopy with Extremely Large Telescopes (recorded) *Sep 2021*
- Multi-Object Spectroscopy for Statistical Measures of Galaxy Evolution (lightning) *May 2021*
- COOL-LAMPS Collaboration Meeting *June 2021*
- 237th American Astronomical Society Meeting : Characterizing the brightest known galaxy in the redshift > 5 Universe *Jan 2021*
- 237th American Astronomical Society Meeting : COOL-LAMPS Collaboration, A proposed model for inclusive undergraduate teaching and research *Jan 2021*
- Galaxy Formation and Evolution in the Era of the Roman Space Telescope *Oct 2020*
- South Pole Telescope Clusters Collaboration Meeting *2017-21*
- Sloan Giant Arcs Survey Collaboration Meetings *2018,2019*
- University of Chicago Astronomy Chalk Talk *Mar 2019*
- 232nd American Astronomical Society Meeting *June 2018*
- Dark Energy Survey Collaboration Meeting *June 2017*

Poster Presentations

- Multi-Object Spectroscopy for Statistical Measures of Galaxy Evolution *May 2021*
- 232nd American Astronomical Society Meeting *June 2018*
- 228th American Astronomical Society Meeting *June 2016*

TELESCOPE
OBSERVING

- 49 nights of observing experience*
- Magellan Telescopes - LDSS3, IMACS, FIRE, FOURSTAR, MIKE (33 nights) *2016-21*
 - Nordic Optical Telescope - ALFOSC (5 nights) *2019-21*
 - CTIO/Blanco Telescope - DECaM (7 nights, Dark Energy Survey) *2017*
 - McDonald Observatory - VIRUS-P (3 nights) *2021*
 - Himalayan Chandra Telescope, Indian Insitute of Astrophysics (1 night) *2012*

TELESCOPE
PROPOSALS

- **JWST - Cycle 1 GO 2566 - PI: Khullar** - Characterizing Stellar Mass Assembly and Physical Properties in the Brightest Galaxy in the Redshift > 5 Universe *20.0 hours*
- **JWST - Cycle 1 GO 2555 - PI: Rivera-Thorsen, Co-I: Khullar** - How Do Ionizing Photons Escape the Sunburst Arc? *24.2 hours*
- HST - Cycle 28 - PI: Dahle, **Co-I: Khullar** - A bright arc behind an extreme cluster lens at $z = 1.5$ *3 orbits*
- HST - Cycle 25 SNAP 15307 - PI: Gladders, **Co-I: Khullar** - Building the SPT-HST Legacy: Imaging Massive Clusters to $z = 1.5$ *115 orbits*
- Gemini-N and Gemini-S Fast Turnaround program **PI: Khullar** - GMOS Spectroscopic follow-up of COOL-LAMPS early type galaxies *2 nights, 2021*
- **Co-I: Khullar** - Magellan (LDSS3, IMACS, FOURSTAR and FIRE) observations of high-redshift gravitationally lensed galaxies *6 nights, 2020,2021*
- **PI: Khullar** - Magellan/PISCO *griz* observations of SPT galaxy clusters *2 nights*

- Co-I: Khullar - Magellan/LDSS3 spectra observations, high-redshift DES clusters *2 nights*

OUTREACH,
EQUITY &
INCLUSION

- **Co-founder, IDEA (Inclusion, Diversity, and Equity in Astronomy)** *2017 - present*
 - Grassroots collective for early-career astronomers at The University of Chicago
 - Has been extremely successful in building community in ECRs, conducting peer-education on equity, inclusion and justice issues, and advocating for low-barrier high impact projects that make the UChicago community more equitable, inclusive and welcoming.
 - Bi-weekly meetings for graduate students and postdoctoral researchers.
 - Organized EDI conferences - IDEA Week and IDEA Day, with talks by experts on mental health, increasing visibility of Black astrophysicists, and supporting first-generation low-income astrophysicists in undergraduate courses, and workshops on inclusive pedagogy. *2019, 2020*
 - Established a mentoring program and guaranteed relocation support for incoming students.
 - Galvanized community effort via an ensemble of working groups towards anti-racist policy-making at UChicago Astronomy and Astrophysics. *2020-present*
 - Received > \$12000 in grant funding, via:
 - UChicago Inclusive Pedagogy Grants
 - UChicago Physical Sciences Division Climate Grant
 - National Science Policy Network DICE Grant
 - UChicago Grad Council Community Wellness Fund
- Astrobites, the astro-ph reader's digest
 - Ombudsperson *2021-22*
 - Chair, AAS matters *2020-21*
 - Co-chair of Administration Committee *2019-20*
 - Media Intern, 232nd AAS Meeting, American Astronomical Society *2018*
 - Co-chair of Diversity Committee *2017-18*
 - Workshop Coordinator for Astrobites in the Classroom Study *2018-19*
 - Writer for Astrobites *2016-21*
- Astronomy Conversations Presenter at Adler Planetarium *2015 - 2020*
- Founding Member of Astronomy on Tap Chicago *2015 - 2017*
- Speaker, Undergraduate Journal Club, Institute of Astronomy, Cambridge *2015*
- Cubs, Brownies and Scouts Outreach, Institute of Astronomy, Cambridge *2015*
- Outreach Speaker, Galaxy formation simulations, Radio astronomy, IIT Delhi *2012, 2013*
- Organizer and Co-founder, AstroWeek, IIT Delhi's astronomy outreach festival *2012, 2013*

PROFESSIONAL
SERVICE &
LEADERSHIP

Founding Member, the COOL-LAMPS collaboration — ChicagO
Optically-selected strong Lenses – Located At the Margins of Public Surveys *2019-present*

Department and University Committees

- Equity and Inclusion Council, A&A, UChicago *2016-2019*
- Dean's Student Advisory Committee, UChicago *2015-2017*
- Teaching Committee and Student Representative, IoA, University of Cambridge *2014-2015*
- Academic Affairs Officer, Fitzwilliam College, University of Cambridge *2014-2015*
- President, Astronomy Club, Indian Institute of Technology Delhi *2012-2013*
- Physics Representative, Academic Committee, IIT Delhi *2012-2013*

Collaboration Meetings, Workshops and Seminars Organized

- COOL-LAMPS Collaboration Meeting *2021*
- UChicago Strong Gravitational Lensing Discussion Group *2018-19*
- Shared Leadership and Consensus Building towards Equity and Inclusion *2021*
- IDEA (Inclusion, Diversity, and Equity in Astronomy) Week *2020*
- Starting Equity and Social Justice Conversations in your STEM Community, National Science Policy Network *2019*
- IDEA (Inclusion, Diversity, and Equity in Astronomy) Day *2019*

TEACHING AND
MENTORING

Lead Instructor

University of Chicago

- [ASTR 11901 94: Physics of Stars](#), UChicago Immersion Program *Summer 2018*

Teaching Assistant, Graduate Mentor, and Co-Instructor

Winter-Summer 2020-2021

- [ASTR 29001 & 29002 Field Course in Astronomy and Astrophysics](#), University of Chicago
- [ChicagO Optically-selected strong Lenses – Located At the Margins of Public Surveys \(COOL-LAMPS\) Collaboration](#) (PI: Michael D Gladders)
- Mentored 19 undergraduate students, including (most recent known affiliation)
 - [Katya Gozman](#) (Graduate student, University of Michigan)
 - [Ezra Sukay](#) (Researcher, SLAC)
 - [Owen Matthews Acuña](#) (Researcher, Gladders Group and COOL-LAMPS)
 - [Jorge Sanchez](#) (Graduate student, New Mexico State University)
 - [Michael Martinez](#) (Graduate student, University of Wisconsin Madison)
 - [Erik Zaborowski](#) (Graduate student, Ohio State University)
 - [Ben Levine](#) (Undergraduate student, UChicago)
 - [Viraj Manwadekar](#) (Undergraduate student, UChicago)
 - [Sebastian Fernandez-Mulligan](#) (Graduate, University of Chicago, 2018)
 - [Hadia Tarik](#) (High School Student, Physics of Stars, UChicago, 2018)

Guest Lecturer

University of Chicago

- [ASTR 11901 94: Physics of Stars](#) *2017-2021*
- [Yerkes Summer Institute](#), Space Explorers Program *2016-2019*

Indian Institute of Technology Delhi

- [Astronomy Club](#) *2014-2015*

Teaching Assistant

University of Chicago

- [ASTR018200: The Origin and Evolution of the Universe](#) *Winter 2018*
- [PHSC12700: Stars](#) *Fall 2015*
- [PHSC12710: Galaxies](#) *Winter 2016*
- [PHSC12720: Exoplanets](#) *Spring 2016*
- [ASTR 18800: Philosophical Problems in Cosmology](#) *Spring 2018*

Teaching Consultant

University of Chicago

- [ASTR 11901 94: Physics of Stars](#) *2019-2021*

PUBLIC PRESS

- [UChicago undergrads discover bright lensed galaxy in the early universe](#), UChicago News
- [University Of Chicago Astrophysics Students Discover Galaxy Dating Back To Early Universe](#), CBS Chicago
- [Graduate students recognized for exceptional teaching of undergraduates](#), UChicago
- [PSD climate grants foster belonging while socially distanced](#), Physical Sciences Division, UChicago
- [Starts With a Bang Podcast with Ethan Siegel](#)
- [Expand Your Perspective Podcast, Ep 1: The Universe: Black Holes, Exoplanets, and the Evolution of Stars](#), UChicago
- [Astrobites White Paper, Women in Astronomy Blog](#)
- [U-M researchers confirm massive hyper-runaway star ejected from the Milky Way Disk](#), Michigan News
- [The Physics of Toys](#), Yerkes Summer Institute, KICP, University of Chicago
- [Spy vs. Spy](#), Yerkes Summer Institute, KICP, University of Chicago

WORKSHOPS	• JWST Webbinar, NIRSpec IFU Data Analysis	<i>2021</i>
	• .AstroX Conference, STScI, Baltimore	<i>2018</i>
	• Data Visualization and Exploration in the LSST Era Workshop, NCSA, Urbana-Champaign	<i>2018</i>
	• SACNAS Midwest Meeting, University of Chicago	<i>2018</i>
	• Using Python to Search NASA's Astrophysics Archives (Remote), IPAC	<i>2018</i>
	• ALMA Proposal Workshop, Northwestern University and NRAO	<i>2018</i>
	• ComSciCon Chicago Science Outreach Workshop,	<i>2017</i>
	• Future Cosmic Surveys Workshop, University of Chicago	<i>2016</i>
	• CMB-S4 Meeting, University of Chicago	<i>2016</i>
	• Cosmology Using Low Resolution Spectroscopy in 2020s, University of Chicago	<i>2016</i>
	• World Wide Telescope Developer Workshop	<i>2015</i>
	• AstroStatistics Workshop, Royal Statistical Society, London	<i>2014</i>
	• Radio Astronomy Winter School, NCRA and Inter-University Centre for Astronomy and Astrophysics (IUCAA), India	<i>2012</i>
	• Workshop on Cosmology, Inter-University Centre for Astronomy and Astrophysics (IUCAA), India	<i>2012</i>

Publications with significant contribution

- [1] **Khullar, G.**, Bayliss, M.B., Gladders, M.D., et al. 2021, "*Synthesizing Stellar Populations in South Pole Telescope Galaxy Clusters: I. Measuring the Ages of Quiescent Members in the SPT-GMOS and SPT Hi-z Clusters*" in prep.: [Link of Draft here](#)
- [2] **Khullar, G.**, Gozman, K., [...], Gladders, M.D., Rigby, J.R., Sharon, K., et al., "*COOL-LAMPS. I. An Extraordinarily Bright Lensed Galaxy at Redshift 5.04*" 2021, ApJ, 906, 107, ADS
- [3] **Khullar, G.**, Bleem, L.E., Bayliss, M.B., Gladders, M.D., et al. "*Spectroscopic Confirmation of Five Galaxy Clusters at $z > 1.25$ in the 2500 sq. deg. SPT-SZ Survey*" 2019, ApJ, 870, 7, ADS
- [4] Florian, M.K., Rigby, J.R., [...] **Khullar, G.** et al., "Spatial Variation in Strong Line Ratios and Physical Conditions in Two Strongly Lensed Galaxies at $z \sim 1.4$ ", 2021, ApJ, 916,50, ADS
- [5] Strazzullo, V., Pannella, M., Mohr, J.J., [...], **Khullar, G.** et al., "*Galaxy populations in the most distant SPT-SZ clusters - I. Environmental quenching in massive clusters at $1.4 < z < 1.7$* ", 2019, AA, 622, A117, ADS
- [6] Hattori, K., Valluri, Monica, [...] and **Khullar, G.**, "*Origin of a Massive Hyper-runaway Subgiant Star LAMOST-HVS1: Implication from Gaia and Follow-up Spectroscopy*" 2019, ApJ, 873, 116, ADS
- [7] **Khullar G.**, Kohler, S., Konchady, T., et al. 2019, "*Astrobites as a Community-led Model for Education, Science Communication, and Accessibility in Astrophysics*", 2020 Decadal Survey on Astronomy and Astrophysics, arXiv:1907.09496

Co-Authored Publications

- [8] Ghirardini, V., Bulbul, E., [...], **Khullar, G.**, "*Evolution of the Thermodynamic Properties of Clusters of Galaxies out to Redshift of 1.8*", 2021, ApJ, 910, 1, ADS
- [9] Armus, L., Megeath, S.T., [...], **Khullar, G.** et al., "*Great Observatories: The Past and Future of Panchromatic Astrophysics*", 2021, 2020 Decadal Survey on Astronomy and Astrophysics, arXiv:2104.00023
- [10] Ruppin, F., McDonald, M., [...], **Khullar, G.**, et al. 2020, "*Stability of Cool Cores During Galaxy Cluster Growth: A Joint Chandra/SPT Analysis of 67 Galaxy Clusters Along a Common Evolutionary Track Spanning 9 Gyr*", ADS
- [11] Bayliss, M.B., McDonald, M., Sharon, K., Gladders, M.D., [...], **Khullar, G.**, "*An X-ray Detection of Star Formation In a Highly Magnified Giant Arc*", 2020, Nature Astronomy, Volume 4, 159, ADS
- [12] Bleem, L.E., Bocquet, S., Stalder, B., Gladders, M.D., [...] **Khullar, G.** et al., "*The SPTpol Extended Cluster Survey*" 2020, ApJS, 247, 25, ADS
- [13] Huang, N., Bleem, L.E., Stalder, B., [...] **Khullar, G.** et al., "*Galaxy Clusters Selected via the Sunyaev-Zel'dovich Effect in the SPTpol 100-Square-Degree Survey*" 2020, AJ, 159, 110, ADS
- [14] Mahler, G., Sharon, K., Gladders, M.D., [...], **Khullar, G.**, "*Strong Lensing Model of SPT-CLJ0356-5337, a Major Merger Candidate at Redshift 1.0359*", 2019, ApJ, 894, 150, ADS
- [15] Bocquet, S., Dietrich, J.P., Schrabback, T., Bleem, L.E., [...] **Khullar, G.** et al., "*Cluster Cosmology Constraints from the 2500 deg² SPT-SZ Survey: Inclusion of Weak Gravitational Lensing Data from Magellan and the Hubble Space Telescope*" 2019, ApJ, 878, 55, ADS

- [16] McDonald, M., Allen, S.W., [...] **Khullar, G.** et al., "*A Detailed Study of the Most Relaxed SPT-Selected Galaxy Clusters: Cool Core and Central Galaxy Properties*" 2019, ApJ, 870, 85, ADS
- [17] Bulbul, E., Chiu, I., Mohr, J.J., [...] **Khullar, G.** et al., "*X-ray Properties of SPT Selected Galaxy Clusters at $0.2 < z < 1.5$ Observed with XMM-Newton*" 2019, ApJ, 871, 50, ADS
- [18] Abbott, T. M. C., Allam, S., [...], **Khullar, G.**, et al. "*The Dark Energy Survey Data Release 1*" 2018, ApJS, 239, 18, ADS

Complete NASA ADS Publication Record