

Curriculum Vitae

Dr. Anshu Gupta

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Education

- December 2018 Doctor of Philosophy (Astronomy)
 Australian National University, Canberra
 Thesis: Chemical evolution of star-forming galaxies in the overdense environment
 Supervisor: Prof. Lisa Kewley, Dr. Tiantian Yuan
- May 2013 Dual Bachelor and Master of Science
 Indian Institute of Science Education and Research Mohali, India
 Thesis: ^3He [II] - An alternative probe for Reionization
 Supervisor: Prof. Jasjeet Bagla

Professional Research Experience

- 06/2018 – present Postdoctoral Fellow with Prof. Kim-Vy Tran
 The University of New South Wales, Sydney, Australia
- 10/2013 – 03/2018 PhD thesis Research
 Australian National University, Canberra, Australia

Publications

Underline denotes directly supervised students

REFEREED PUBLICATIONS

12. Harshan, A., Gupta, A., Alcorn, L. Y., Tran, K.-V. H., Alcorn, L. Y., Yuan, T., Kacprzak, G. G., Kewley, L., Glazebrook, K., Labb'e, I., Nanayakkara, T., Papovich, C., Spitler, L. R., Straatman, C. M., in prep, *Measuring electron density with [OII] as a function of environment $z = 1.62$*
11. Gupta, A., Tran, K.-V. H., Cohn, J., Alcorn, L. Y., Harshan, A., Yuan, T., Rodriguez-Gomez, V., Kewley, L., Forrest, B., Glazebrook, K., Straatman, C. M., Kacprzak, G. G., Nanayakkara, T., Labb'e, I., Papovich, C., Cowley, M., submitted, *MOSEL survey: Growth of massive galaxies transitions from in situ to ex situ at $z < 3$*
10. Tran, K.-V. H., Forrest, B., Alcorn, L. Y., Yuan, T., Nanayakkara, T., Cohn, J., Cowley, M., Glazebrook, K., Gupta, A., Kacprzak, G. G., Kewley, L., Labb'e, I., Papovich, C., Spitler, L. R., Straatman, C. M., 2019, submitted, *MOSEL: Strong [OIII]5007Å Emitting Galaxies at ($3 < z < 4$) from the ZFOURGE Survey*
9. Alcorn, L. Y., Gupta, A., Tran, K.-V. H., Cohn, J., Forrest, B., Glazebrook, K., Harshan, A., Kacprzak, G. G., Kewley, L., Labb'e, I., Nanayakkara, T., Papovich, C., Spitler, L. R., Straatman, C. M., 2019, submitted, *A Tale of Two Clusters: An analysis of gas-phase metallicity and nebular gas conditions in proto-clusters galaxies at $z \sim 2$*

8. Watson, C., Tran, K.-V. H., Tomczak, A., Alcorn, L. Y., Salazar, I. V., **Gupta, A.**, Momcheva, I., Papovich, C., Dokkum, P.V., Brammer, G., Lotz, J., 2019, *The Astrophysical Journal*, 874, 63, *Galaxy merger fractions in two clusters at $z \sim 2$ using the hubble space telescope*
7. Sharma, S., Richard, J., Yuan, T., **Gupta, A.**, Kewley, L., Patrcio, V., Leethochawalit, N., Jones, T., 2018, *Monthly Notices of the Royal Astronomical Society*, 481, 1427, *High-resolution spatial analysis of a $z \sim 2$ lensed galaxy using adaptive coadded source-plane reconstruction*
6. **Gupta, A.**, Yuan, T., Torrey, P., Vogelsberger, M., Martizzi, D., Tran, K.-V. H., Kewley, L. J., Federico M., Dylon, N., Pillepich, A., Hernquist, L., Genel, S., and Springel, V., 2018, *Monthly Notices of the Royal Astronomical Society*, 477, L35, *Chemical pre-enrichment of infalling galaxies in dense environment over the past 10 billion years*
5. Yuan, T., Tran, Richard, J., **Gupta, A.**, Federrath, C., Sharma, S., Kewley, L. J., Groves, B., Cen, R., and Birnboim, Y., K.-V. H., 2017, *The Astrophysical Journal*, 850, 18, *The most ancient spiral galaxy: A 2.6 giga-year disk with a tranquil velocity field*
4. **Gupta, A.**, Yuan, T., Martizzi, D., Tran, K.-V. H., and Kewley, L. J. 2017, *The Astrophysical Journal*, 842, 75, *Survival of Massive Star-forming Galaxies in Cluster Cores Drives Gas-phase Metallicity Gradients: The Effects of Ram Pressure Stripping*
3. Kaasinen, M., Bian, F., Groves, B., Kewley, L. J., and **Gupta, A.** 2017, *Monthly Notices of the Royal Astronomical Society*, 465, 3220, *The COSMOS-[OII] survey: evolution of electron density with star formation rate*
2. **Gupta, A.**, Yuan, T., Tran, K.-V. H., Martizzi, D., and Kewley, L. J. 2016, *The Astrophysical Journal*, 831, 104, *Radial distribution of ISM gas-Phase metallicity In CLASH clusters at $z \sim 0.35$: A new outlook on environmental impact on galaxy evolution*
1. Kanekar, N., **Gupta, A.**, Carilli, C. L., Stocke, J. T., and Willett, K. W. 2014, *The Astrophysical Journal*, 782, 56, *A Blind Green Bank Telescope millimeter-wave survey for redshifted molecular absorption*

Press Release

1. *The most ancient spiral galaxy confirmed using cutting-edge technique*, press release 2017: Swinburne University Press; Gemini Observatory; ASTRO 3D; Astronomy.com; Phy.org

Successful telescope Proposals (as PI)

- European Southern Observatory Very Large Telescope, KMOS, 3 nights, P.I. Anshu Gupta, *Galactic-scale Outflows in Nascent Star-forming Galaxies at $z \sim 3.5$*
- Keck Observatory, DEIMOS, 2 nights, 2015A_Z265D, P.I. Anshu Gupta, *Spectroscopic Survey of Strong Lensing Clusters with DEIMOS*

Observational experience

I am very well versed in spectroscopic data reduction, especially from multi-slit spectrographs (DEIMOS and MOSFIRE) and integral field spectrographs (WiFeS and OSIRIS). I developed the telluric correction, flux calibration and emission line extraction codes for the post-pipeline analysis of DEIMOS data. I have extensive experience with data from cosmological hydrodynamical simulations, specifically IllustrisTNG. I am also familiar with the HST and Green Bank Telescope data reduction.

Grants & Awards

2019	International Astronomical Union travel grant for participation in the IAU Symposium 352
2016	Research School of Astronomy & Astrophysics Travel grant to visit Prof. Kim-Vy Tran in Texas A&M, College Station, Texas, USA.
2013 – 2016	University Research fellowship at Australian National University awarded for the duration of PhD in Astronomy and Astrophysics based on academic merit.
2008 – 2013	KVPY Fellowship by Department of Science and Technology, Government of India (A prestigious fellowship for school students with an aptitude towards science and research. Only 100 fellowships per year.)

Supervisory and Mentoring Experience

2018 – present	Co-supervisor of Scientia Ph.D. scholar Anishya Harshan at UNSW
2018 – 2019	Mentored Ph.D. scholar Leo Alcorn at Texas A&M
2018	Taste-of-research 2nd year undergraduate student Keshavi Charde
2018	Work experience school students Rhea Baweja and Tea Worrada

Service Experience

2019 – present	Liaison for “First Galaxies” in ASTRO3D
2019 – present	Member of the MaunaKea Spectroscopic explorer.
2018 – present	Referee of Astronomy & Astrophysics
2018 – present	Organiser, Astro Journal club UNSW
June 2019	ASTRO3D sponsored Astronomer in residence at Ayers rock resort, Uluru
May, 2019	Local Organizing Committee, LSST@Asia conference, Sydney Australia <i>Exploring the Wide, Fast and Deep Universe</i>
2016 – 2018	Organiser, Gears3D group meeting
2017 – 2018	Organiser, Stromlo Weekly Women’s Writing Morning
2015 – 2016	Member, Telescope allocation committee for WiFeS at 2.3 metre telescope
2009 – 2010	Coordinator & Co-founder, IISER Mohali Astronomy & Astrophysics club

Talks

INVITED TALKS

25. Invited to participate in workshop on *Revolutionary Spectroscopy of Today as a Springboard to Webb*; Leiden, The Netherlands, October 2019

CONFERENCE TALKS

24. Kinematics of galaxies at $z \sim 3.5$ via MOSEL survey; Astronomy Society of Australia (ASA) annual general meeting, Perth, Australia, July 2019
23. Kinematics of galaxies at $z \sim 3.5$ via MOSEL survey; ASTRO3D science meeting, Sydney, Australia, May 2019

22. Kinematics of galaxies at $z \sim 3.5$ via MOSEL survey; Exploring the Wide, Fast and Deep Universe, Sydney, Australia, May 2019
21. *MOSEL: Galaxies at $z \sim 3.5$* ; Life and death of star-forming galaxies, Perth, Australia, March 2019
20. *Chemical pre-processing of star-forming cluster galaxies over the past 10 billion years*; Linking galaxies from the Epoch of initial star-formation to today, Sydney, Australia, February 2019
19. *Gas in dense environments: Inflows, outflows and everything in between*; Gas fuelling of galaxy structures across cosmic time, Adelaide, Australia, November 2018
18. *How does environment affect chemical evolution of star-forming galaxies?*; Annual science meeting of American Astronomical Society 2018, Washington, USA, January 2018
17. *IllustrisTNG simulations: Pre-processing of metals in infalling groups*; GMT science meeting: Chemical evolution of the Universe, New York, USA, September 2017
16. *Does environment effect ISM metallicity of star-forming galaxies?*; Early stages of galaxy cluster formation, Garching, Germany, July 2017
15. *Survival of the fittest: Influence of ram pressure stripping on star-forming galaxies*; Galaxy Clusters Across Cosmic Time, Aix-en-Provence, France, July 2017
14. *Origin of a cluster-scale abundance gradient in the gas-phase ISM metallicity*; ITSO symposium 2017, Canberra, Australia, May 2017
13. *Origin of a cluster-scale abundance gradient in the gas-phase ISM metallicity*; Annual science meeting of American Astronomical Society 2017, Grapevine, USA, January 2017
12. *Existence of cluster-scale abundance gradient in the gas-phase ISM metallicity*; CAASTRO science meeting 2017: The Changing face of galaxies, Hobart, Australia, September 2016
11. *Metallicity gradient: Probing galaxy evolution*; Annual science meeting of Australian society of Astronomy 2015, Perth, Australia, July 2015

SEMINARS

10. *Chemical pre-processing of star-forming cluster galaxies over the past 10 billion years*; University of Texas, Austin, USA, January 2019
9. *Chemical pre-processing of star-forming cluster galaxies over the past 10 billion years*; Texas A&M, Texas, USA, January 2019
8. *Chemical evolution of star-forming galaxies in cluster environment*; Thesis colloquium at Research School of Astronomy & Astrophysics, ANU, Australia, February 2018
7. *Chemical evolution of star-forming galaxies in cluster environment*; Macquarie University, Sydney, Australia, September 2018
6. *Chemical evolution of star-forming galaxies in cluster environment*; European Southern Observatory, Santiago, Chile, August 2018
5. *IllustrisTNG simulations: Pre-processing of metals in infalling groups*; Center for Astrophysics - Harvard, Cambridge, USA, September 2017
4. *Origin of a cluster-scale abundance gradient in the gas-phase ISM metallicity*; Carnegie Mellon University, Pittsburg, USA, January 2017

3. *Existence of cluster-scale abundance gradient in the gas-phase ISM metallicity*; University of Austin, Texas, USA, April 2016
2. *Existence of cluster-scale abundance gradient in the gas-phase ISM metallicity*; Texas A&M University, College Station, Texas, USA, April 2016
1. *Radial dependence of global metallicity of star-forming galaxies in giant galaxy clusters*; National Centre for Radio Astrophysics (NCRA), Pune, India, December 2015

Software Experience

IDL , Python, C, C++,

References

Prof. Kim-Vy Tran

School of Physics, The University of New South Wales, Sydney, Australia || Department of Physics & Astronomy, Texas A&M, College station, USA

Email: kimvy.tran@gmail.com

Prof. Lisa Kewley

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Email: lisa.kewley@anu.edu.au

Dr. Tiantian Yuan

ASTRO 3D Fellow || Centre of Astrophysics and Supercomputing, Swinburne University of Technology, Melbourne, Australia

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Prof. Sarah Brough

ARC Future Fellow || School of Physics, The University of New South Wales, Sydney, Australia

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