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, *co-Supervisor:* Dr. Tiantian Yuan
May 2013	Dual Bachelor and Master of Science Indian Institute of Science Education and Research Mohali, India Thesis: ^{3}He [II] - An alternative probe for Reionization *Supervisor:* Prof. Jasjeet Bagla

Professional Research Experience

2/2021 – 01/2025	ASTRO3D Fellowship Curtin University, Perth, Australia
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

Research Interests

Epoch of reionization and escape of ionizing photons
Chemical enrichment history of galaxies and environmental effects
Mass assembly history of massive galaxies

Press Release & Media Highlights

4. Interview by Stuart Gary on the SpaceTime Podcast, April 2020 (Click here for link)
3. *Hungry galaxies grow fat on the flesh of their neighbours*, April 2020: ASTRO 3D; UNSW Sydney; Astronomy.com; Phys.org
2. *How to Grow a Giant Galaxy*, Bryanne McDonough, Astrobites: April 2020
1. *The most ancient spiral galaxy confirmed using cutting-edge technique*, press release 2017: Swinburne University Press; Gemini Observatory; ASTRO 3D; Astronomy.com; Phys.org

Grants & Awards

2020	450,000 AUD – The ARC Centre of Excellence in All Sky Astrophysics in 3 Dimensions (ASTRO3D) Fellowship at Curtin University, Perth, Australia
2019	20,000 AUD – Research Grant to build collaboration between UNSW and Manipal Academy of Higher Education, India
2019	400 EUR – International Astronomical Union travel grant for participation in the IAU Symposium 352
2017	1500 USD – Travel grant to attend Giant Magellan Telescope Science meeting, New York, USA
2016	3500 AUD – Research School of Astronomy & Astrophysics Travel grant to visit Prof. Kim-Vy Tran at Texas A&M, College Station, Texas, USA.
2013 – 2016	171,000 AUD – University Research fellowship at the Australian National University awarded for the duration of my 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 high-school students with an aptitude towards science and research. Only 100 fellowships per year.)

Successful Telescope Proposals (as PI)

- European Southern Observatory Very Large Telescope, KMOS, 3 nights - 2019, P.I. Anshu Gupta, *Galactic-scale Outflows in Nascent Star-forming Galaxies at* $z \sim 3.5$
- Keck Observatory, DEIMOS, 1 nights - 2015, 2015A_Z265D, P.I. Anshu Gupta, *Spectroscopic Survey of Strong Lensing Clusters with DEIMOS*

Supervisory and Mentoring Experience

2020 – present	Undergraduate students Asm Shahriar Ifti, Catherine Cheng and Astrid Henderson at UNSW, Sydney
2019 – present	Undergraduate student Divyam Kalra at Punjab University, India
2018 – present	Co-supervisor of Scientia Ph.D. student Anishya Harshan at UNSW
2019 – 2020	Undergraduate student Will Chisholm at Texas A&M
2018 – 2019	Mentored Ph.D. student Leo Alcorn at Texas A&M
2018	Taste-of-research 2nd year undergraduate student Keshavi Charde at UNSW, Sydney
2018	Work experience school students Rhea Baweja and Tea Worrad at UNSW, Sydney

Outreach Experience

September 2020	Presentation at the Sutherland Astronomical Society, *Journey of metals through the Cosmic Web*
June 2020	Presentation at the Sydney City Skywatcher, Sydney Observatory, *Journey of metals through the Cosmic Web*
June 2019	ASTRO3D sponsored Astronomer in residence at Ayers rock resort, Uluru

Service Experience

2019 – present	Liaison for "First Galaxies" in ASTRO3D
2019 – present	Member of the MaunaKea Spectroscopic Explorer.
2018 – present	Referee for Astronomy & Astrophysics
2018 – present	Organiser, Astro Journal club UNSW
May 2019	Local Organizing Committee, LSST@Asia conference, Sydney Australia *Exploring the Wide, Fast and Deep Universe*
2016 – 2018	Organiser, Gears3D group meeting
2017 – 2018	Organiser, Stromlo Weekly Women's Writing Morning
2015 – 2016	Member, Telescope allocation committee for WiFeS on the 2.3 metre telescope
2009 – 2010	Coordinator & Co-founder, IISER Mohali Astronomy & Astrophysics club

Publications

Underline denotes directly supervised students

14. Foster, C., Mendel, J. T., Lagos, C. D. P., Wisnioski, E., Yuan, T., ... **Gupta, A.**, .., Monthly Notices of the Royal Astronomical Society, submitted, *The MAGPI Survey – science goals, design, observing strategy and early results*

13. **Gupta, A.**, Tran, K.-V. H., Pillepich, A., Yuan, T., Harshan, A., Rodriguez-Gomez, V., Genel, S., The Astrophysical Journal, in press, *MOSEL and IllustrisTNG: Massive Extended Galaxies at* $z = 2$ *Quench later Than Normal-sized Galaxies*

12. 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., Labbé, I., Papovich, C., Spitler, L. R., Straatman, C. M., in press, The Astrophysical Journal, *MOSEL: Strong [OIII]5007Å Emitting Galaxies at (*$3 < z < 4$*) from the ZFOURGE Survey*

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., Labbé, I., Papovich, C., Cowley, M., 2020, The Astrophysical Journal, 893, 23, *MOSEL survey: Tracking the growth of massive galaxies at* $2 < z < 4$ *using kinematics and the IllustrisTNG simulations*

10. Harshan, A., **Gupta, A.**, Alcorn, L. Y., Tran, K.-V. H., Alcorn, L. Y., Yuan, T., Kacprzak, G. G., Kewley, L., Glazebrook, K., Labbé, I., Nanayakkara, T., Papovich, C., Spitler, L. R., Straatman, C. M., 2020, The Astrophysical Journal, 892, 77, *Measuring electron density with [OII] as a function of environment* $z = 1.62$

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, The Astrophysical Journal, 883, 153, *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., Patrício, 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*

Data 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 Hubble Space Telescope and Green Bank Telescope data reduction.

Talks

INVITED TALKS & Colloquia

35. Workshop on *Revolutionary Spectroscopy of Today as a Springboard to Webb*; Leiden, The Netherlands, October 2019. (Workshop inviting 55 world experts in spectroscopy of galaxies to design proposal ideas for future JWST proposals)

34. *Understanding galaxy formation and evolution using observations and simulations*; IIA, Bangalore, India, December 2019

CONFERENCE TALKS

33. *Lyman continuum and Lyman alpha emission in epoch of reionisation analogues*; Australia-BlueMUSE workshop, virtual, December 2020

32. *Galaxy Evolution: Tracking the mass assembly history of galaxies* ; ASTRO3D science meeting, virtual, June 2020

31. *Mass assembly history of galaxies at $z > 3$*; 2nd ESO - Australia conference, Perth, February 2020

30. *Kinematics of galaxies at $z \sim 3.5$ via MOSEL survey*; the Astronomical Society of Australia (ASA) annual general meeting, Brisbane, Australia, July 2019

29. *Kinematics of galaxies at $z \sim 3.5$ via MOSEL survey*; ASTRO3D science meeting, Sydney, Australia, May 2019

28. *Kinematics of galaxies at $z \sim 3.5$ via MOSEL survey*; Exploring the Wide, Fast and Deep Universe, Sydney, Australia, May 2019

27. *MOSEL: Galaxies at $z \sim 3.5$*; Life and death of star-forming galaxies, Perth, Australia, March 2019

26. *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

25. *Gas in dense environments: Inflows, outflows and everything in between*; Gas fuelling of galaxy structures across cosmic time, Adelaide, Australia, November 2018

24. *How does environment affect chemical evolution of star-forming galaxies?*; Annual science meeting of the American Astronomical Society 2018, Washington DC, USA, January 2018

23. *IllustrisTNG simulations: Pre-processing of metals in infalling groups*; GMT science meeting: Chemical evolution of the Universe, New York, USA, September 2017

22. *Does environment affect ISM metallicity of star-forming galaxies?*; Early stages of galaxy cluster formation, Garching, Germany, July 2017

21. *Survival of the fittest: Influence of ram pressure stripping on star-forming galaxies*; Galaxy Clusters Across Cosmic Time, Aix-en-Provence, France, July 2017

20. *Origin of a cluster-scale abundance gradient in the gas-phase ISM metallicity*; ITSO symposium 2017, Canberra, Australia, May 2017

19. *Origin of a cluster-scale abundance gradient in the gas-phase ISM metallicity*; Annual science meeting of the American Astronomical Society 2017, Grapevine TX, USA, January 2017

18. *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

17. *Metallicity gradient: Probing galaxy evolution*; Annual science meeting of the Astronomical Society of Australia 2015, Perth, Australia, July 2015

SEMINARS

16. *Understanding galaxy formation and evolution using observations and simulations*; Monash University, Australia, November 2020

15. *Understanding galaxy formation and evolution using observations and simulations*; Macquarie University, Australia, March 2020

14. *Understanding galaxy formation and evolution using observations and simulations*; University of North Carolina, Australia, January 2020

13. *Understanding galaxy formation and evolution using observations and simulations*; IIA, Bangalore, India, December 2019

12. *Understanding galaxy formation and evolution using observations and simulations*; IUCAA, Pune, India, December 2019

11. *Mass assembly of galaxies at $z > 3.0$ via MOSEL survey and IllustrisTNG simulations*; Leiden Observatory, Leiden, Netherlands, October 2019

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 University, Texas, USA, January 2019

8. *Chemical evolution of star-forming galaxies in cluster environment*; Thesis colloquium at Research School of Astronomy & Astrophysics, Australian National University, 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 MA, USA, September 2017

4. *Origin of a cluster-scale abundance gradient in the gas-phase ISM metallicity*; Carnegie Mellon University, Pittsburg PA, 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

Python (primary programming language), IDL, C, C++,

References

Prof. Kim-Vy Tran
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Prof. Lisa Kewley
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