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 Majors: Physics (GPA: 9.2/10) Thesis: ^{3}He [II] - An alternative probe for Reionization *Supervisor:* Prof. Jasjeet Bagla
July 2008	AISSCE (12th)–CBSE D.A.V. Public School, Yamuna Nagar, Haryana, India Marks: 91.6%

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

* Denotes most important first author publications

IN PREPARATION

13. Harshan, A., **Gupta, A.**, Alcorn, L. Y., Tran, K.-V. H., in prep, *Environmental effects on electron density at* $z = 1.62$

12. Sharma, S., Richard, J., Yuan, T., **Gupta, A.**, Kewley, L., Patrcio, V., Leethochawalit, N., Jones, T., in prep, *SDSS1958+5950 at z =2.225: A test case for pixelated source plane reconstruction in Lenstool*

REFEREED PUBLICATIONS

11. **Gupta, A.**, Tran, K.-V. H., Alcorn, L. Y., Cohn, J., 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, *Galctic-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

- Two 0.5 nights on MOSFIRE, Keck observatory, 2019 (PI: Tiantian Yuan)
- 1 night on FourStar, Magellan, 2018 (PI: Stephanie Bernard)
- 0.5 night on OSIRIS, Keck observatory, 2017 (PI: Soniya Sharma)
- 7 nights on ANU 2.3 metre, WiFeS, 2013

Data Expertise: I am very well versed in spectroscopic data reduction from all previously listed instruments, especially 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.
2012	VSRP summer research fellowship (*Analysis of CO absorption features in GBT observations*, host: National Center for Radio Astrophysics, Pune, India).
2011	Visiting Student Research Program (VSRP) Fellowship and Indian Academy of Science (IAS) Fellowship (host: Tata Institute of Fundamental Research, Mumbai, India)
2008 – 2009	C.N.R. Rao Foundation Award (Received Twice) for outstanding academic achievement in the first and second semester of the Dual BS-MS.
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 Worrad

Team/Collaboration Membership

2018 – present	Member of the Multi-Object Spectroscopic Emission Line Survey (MOSEL, PI: Kim-Vy Tran)
2019 – present	Liaison for "First Galaxies" in ASTRO3D
2019 – present	Member of the MaunaKea Spectroscopic explorer.

Service Experience

2018 – present	Referee of 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 at 2.3 metre telescope
2009 – 2010	Coordinator & Co-founder, IISER Mohali Astronomy & Astrophysics club
2009 – 2013	Member & Co-founder, YATN (Youths Attempt To Nurture) - IISER Mohali: To teach under-privileged kids.

Public Outreach

June 2019	ASTRO3D sponsored Astronomer in residence at Ayers rock resort, Uluru

Talks

COLLOQUIA & INVITED TALKS

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

25. *Chemical evolution of star-forming galaxies in cluster environment*; Thesis colloquium at Research School of Astronomy & Astrophysics, ANU, Australia, February 2018

24. *Radial dependence of global metallicity of star-forming galaxies in giant galaxy clusters*; National Centre for Radio Astrophysics (NCRA), Pune, India, December 2015

CONFERENCE TALKS

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

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

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

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

19. *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

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

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

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

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

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

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

12. *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

11. *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

10. *Metallicity gradient: Probing galaxy evolution*; Annual science meeting of Australian society of Astronomy 2015, Perth, Australia, July 2015

SEMINARS

9. *Chemical pre-processing of star-forming cluster galaxies over the past 10 billion years*; University of Texas, Austin, USA, January 2019

8. *Chemical pre-processing of star-forming cluster galaxies over the past 10 billion years*; Texas A&M, Texas, USA, January 2019

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. *Existence of cluster-scale abundance gradient in the gas-phase ISM metallicity*; Research School of Astronomy & Astrophysics, ANU, Canberra, Australia, March 2016

Software Experience

IDL (primary programming language), Python (primary programming language), C, C++, mySQL, HTML, Fortran; LaTeX word processing; basic IRAF

Astronomy Softwares; PROSPECTOR, FAST, GALFIT, LePhare, SExtractor, Lenstool

Language Skills

Hindi (*native speaker*); English (*fluent*).

References

Prof. Kim-Vy Tran
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