# Michele Fumagalli

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#### Scientific Interests

Gas flows around galaxies, galaxy formation and evolution, the role of environment, absorption line systems, physics of the interstellar medium, star formation, stellar initial mass function.

#### Academic History

- 2020- **Professor**, University of Milano Bicocca.
- 2020- Associate, INAF Osservatorio Astronomico di Trieste.
- 2020- Visiting Professor, Durham University.
- 2018-2020 **Professor**, Durham University.
- 2017-2018 Associate Professor (Reader), Durham University.
- 2014-2017 Assistant Professor (Lecturer), Durham University.
- 2013-2014 **Postdoctoral Fellow**, Carnegie Observatories, Princeton University.

#### Education

- 2016 Postgraduate Certificate in Academic Practice, Durham University, UK.
- 2012 **Ph.D. in astrophysics**, *University of California, Santa Cruz, USA*.
- 2010 Master in astrophysics, University of California, Santa Cruz, USA.
- 2008 Laurea specialistica (MSc), University of Milano Bicocca, Italy.
- 2006 Laurea triennale (BSc), University of Milano Bicocca, Italy.

#### Selected Awards and Fellowships

- 2017 Abilitazione Nazionale Italiana, Professore Associato e Ordinario.
- 2015 Fellow of the Higher Education Academy.
- 2014-2015 **Carnegie Visiting Associate**, Carnegie Observatories.

Visiting fellowship at Carnegie Observatories.

- 2012 **Lyman Spitzer Fellowship**, Princeton University. Postdoctoral fellowship in theoretical astrophysics.
- 2012 **Carnegie-Princeton Fellowship**, Carnegie Observatories, Princeton University. Postdoctoral fellowship in observational astrophysics.

- 2012 **Hubble Fellowship**, Carnegie Observatories.

  Awarded to highly qualified recent postdoctoral scientists to conduct independent research.
- 2012 **CfA Fellowship**, (declined), The Harvard-Smithsonian Center for Astrophysics. Awarded to an outstanding researcher displaying significant promise in theory or observation.
- 2012 **Miller Research Fellowship**, (declined), University of California, Berkeley. Awarded to exceptional young scientists of great promise.
- 2011 **Price Prize in Cosmology and AstroParticle Physics**, CCAPP, Ohio State University. Awarded in recognition of research excellence in cosmology and astro-particle physics.
- 2011 **Chancellor's Dissertation Year Fellowship**, UCSC. Awarded based on the academic achievement of the nominee.
- 2010 Whitford Prize, Department of Astronomy, UCSC. Awarded for outstanding performance during the first and second years.
- 2008 **Regents' fellowship**, UCSC. Awarded to promising first-year graduate students.

# Grant History (principal investigator or primary co-investigator)

- 2022 Dipartimenti di Eccellenza 2023-2027, MUR, (Deputy PI).
- 2020 **Durham Astronomy Consolidated Grant**, STFC, (Project co-PI).
- 2019 NASA grant, HST-GO-15637, (Science Co-PI).
- 2018 ERC Attrattività, Fondazione Cariplo, (PI).
- 2017 ERC Starting Grant, ERC, (PI).
- 2017 Durham Astronomy Consolidated Grant, STFC, (Project PI).
- 2015 NASA grant, HST-GO-14127, (Science PI).
- 2012 NASA Hubble Fellowship, grant HF-51305.01-A, (PI).
- 2010 HIPACC grant, University California, (PI).

#### Talks and Seminars

- Apr., 2023 **The Department of Astronomy Colloqium Series**, *Tsinghua University*, Invited. The gas environment of galaxies across 10 billion years
- Mar., 2023 **The Circum-Galactic Medium across cosmic time: an observational and modeling challenge**, *The 52nd "Saas-Fee Advanced Course"*, Invited lecturer. The multiphase CGM in absorption and emission
- Feb., 2023 **The Multiphase Circumgalactic Medium**, *Ringberg Castle, Germany*, Invited. The gas environment of galaxies across 10 billion years
- Nov., 2022 **IoA colloqium**, *Cambridge*, *UK*, invited. The gas environment of galaxies across 10 billion years
- Sep., 2022 What Matter(s) Around Galaxies 2022, *Italy*, SOC chair and lead organizer. Connecting the dots between the CGM and the larger-scale environment
- Jun., 2021 KIAA Forum on Gas in Galaxies for Early Career Scientists, Kavli Institute for Astronomy and Astrophysics, invited.

  Flows around galaxies: advancements, challenges and opportunities
- May., 2021 Multi-object Spectroscopy for Statistical Measures of Galaxy Evolution Workshop, Space Telescope Science Institute, invited review.

  Studying gas flows around galaxies with multi object spectroscopy
- May., 2021 **Extragalactic Seminar Series**, *University of Victoria*, invited. Shedding light on gas around galaxies across cosmic times

Apr., 2021	<b>Astronomy Colloquium</b> , <i>University of California, Santa Cruz</i> , invited. Shedding light on gas around galaxies across cosmic times
Mar., 2021	<b>Physics Colloquium</b> , <i>North Carolina State University</i> , invited. Shedding light on gas around galaxies across cosmic times
Nov., 2020	Kapteyn Institute Colloquium, University of Groningen, invited. Shedding light on gas around galaxies across cosmic times
Jun., 2020	<b>EAS 2020</b> , <i>Leiden</i> , invited review. Flows around galaxies in 2020: advancements, challenges and opportunities
Jun., 2020	<b>Insights into the CGM and ICM</b> , <i>IAP</i> , <i>France</i> , invited.  MUSE observations of the CGM of distant galaxies
Apr., 2020	<b>Astronomy Colloquium</b> , <i>Royal Observatory/Edinburgh</i> , invited. Shedding light on gas around galaxies across cosmic times
Mar., 2020	<b>Astronomy Colloquium</b> , <i>INAF/Arcetri</i> , invited. Shedding light on gas around galaxies across cosmic times
Dec., 2019	<b>Joint Astronomy Colloquium</b> , <i>MPA-MPE-ESO</i> , invited. Shedding light on gas around galaxies across cosmic times
Oct., 2019	<b>CGM in Berlin 2019</b> , <i>Max Planck Society</i> , invited. Gas around galaxies at $z\sim 2-3$ : linking emission and absorption with large surveys
Jun., 2019	What Matter(s) Between Galaxies, Abbazia di Spineto, SOC. Gas around galaxies: connecting emission and absorption with large surveys
Mar., 2019	<b>Astronomy Seminar</b> , <i>Nottingham University</i> , invited. Shedding light on gas around galaxies across cosmic time
Dec., 2018	Twenty years of science at Bicocca, $Milano$ -Bicocca $University$ , invited review. Astrophysics $\pm 20$ : Deeper, Sharper, and Bigger
Nov., 2018	<b>CASTOR UV space observatory</b> , <i>The Royal Observatory Edinburgh</i> , invited review The galaxy-IGM connection
Jun., 2017	What Matter(s) Around Galaxies, <i>Durham University</i> , SOC/LOC co-chair. Probing the gaseous environment of star-forming galaxies in absorption and emission
Apr., 2017	<b>Seminar, Department of Physics</b> , <i>University of Milano-Bicocca</i> , invited. MUS(E)ing over gas flows as drivers of galaxy evolution
May., 2016	Cavendish Astrophysics Seminar, <i>University of Cambridge</i> , invited.  Gas flows as fuel for star formation: a spotlight on strong absorption line systems
Apr., 2016	<b>Astronomy Seminar</b> , <i>ETH Zurich</i> , invited.  Gas flows as fuel for star formation: a spotlight on strong absorption line systems
Mar., 2016	<b>Astronomy Seminar</b> , <i>Stockholm University</i> , invited.  Gas flows as fuel for star formation: a spotlight on strong absorption line systems
Sep., 2015	<b>Astronomy Seminar</b> , <i>INAF/Trieste</i> , invited.  Gas flows as fuel for star formation: a spotlight on strong absorption line systems
Jun., 2015	IGM@50, INAF/Firenze, invited.  Probing gas flows near galaxies: a spotlight on Lyman Limit Systems
Jun., 2014	Intergalactic Matters, MPIA, Heidelberg, invited. A shot in the dark: the star formation rates of DLAs at $z\sim 2-3$
Apr., 2014	Colorful galaxies: a conference for Peppo Gavazzi's birthday, $Como$ , $Italy$ , invited Can we use $H\alpha$ to trace star formation rates?
Apr., 2014	<b>Exploiting VST ATLAS</b> and its sister surveys, <i>Durham University</i> , invited. ATLAS search for Lyman Limit Systems in quasar pairs.
Mar., 2014	<b>Astronomy Friday Lunch Talks</b> , <i>Durham University</i> .  The importance of stochastic effects in stellar population synthesis.

Jan., 2014	<b>DEX meeting</b> , <i>Durham University</i> .  Investigations on the gaseous environment of distant galaxies.
Dec., 2013	<b>TAPIR seminar</b> , <i>Caltech</i> , invited.  Investigations on the gaseous environment of distant galaxies.
Oct., 2013	Metal Production and Distribution in a Hierarchical Universe, Rencontres de l'Observatoire de Paris 2013 - ESO Workshop, invited review. IGM abundances in the high-redshift universe.
Aug., 2013	Santa Cruz Galaxy Workshop, $UCSC$ . Lyman limit systems and the circumgalactic medium at $z\sim 2-3$ .
Jun., 2013	Intergalactic Interactions, Higgs Centre, Edinburgh, invited. Lyman limit systems and the circumgalactic medium at $z\sim 2-3$ .
Jun., 2013	<b>ENIGMA workshop</b> , <i>MPIA</i> , invited. Lyman limit systems and the circumgalactic medium at $z\sim 2-3$ .
Apr., 2013	Lunch Talk, Carnegie Observatories.  Beyond the disk: The role of halo gas in galaxy formation.
Mar., 2013	<b>Hubble Fellows Symposium</b> , <i>STScl</i> , <i>Baltimore</i> .  Optically-thick hydrogen in the z=3 universe
Dec., 2012	University of Milano-Bicocca, Milan, invited.  The gaseous environment of distant galaxies
Nov., 2012	UT Astronomy Colloquium, Austin, invited. The gaseous environment of distant galaxies
Sep., 2012	Keck Science Meeting, San Diego. Pristine gas two billion years after the Big Bang
Jun., 2012	Metals in Tuscany, INAF/Firenze, invited.  Pristine gas two billion years after the Big Bang
May., 2012	Price Prize lecture, CCAPP Ohio State University, invited. Cosmology with absorption line systems
Apr., 2012	<b>Astronomy Colloquium</b> , Osservatorio Astronomico di Brera, invited. Cosmology with absorption line systems
Mar., 2012	<b>Turbulence in Cosmic Structure Formation</b> , <i>Arizona State University</i> .  Detection of pristine gas two billion years after the Big Bang
Jan., 2012	DARK Cake Meeting, DARK Cosmology Centre.  Detecting cold accretion and metal poor gas around galaxies
Jan., 2012	<b>219th AAS Meeting</b> , <i>Austin</i> , <i>TX</i> .  Exploring the gas cycle in high-redshift galaxies: a joint effort of theory and observations
Dec., 2011	Theory meeting of the Galaxy and Cosmology group, MPIA Heidelberg.  Probing inflow in high-redshift galaxies
Oct., 2011	<b>Theoretical Astrophysics Center seminar</b> , <i>UC Berkeley</i> , invited. Exploring the gas cycle in high-redshift galaxies: a joint effort of theory and observations
Oct., 2011	Lunch Talk, Carnegie Observatories.  Exploring the gas cycle in high-redshift galaxies: a joint effort of theory and observations
Oct., 2011	<b>Astronomy Tea Talk</b> , <i>Caltech</i> .  Exploring the gas cycle in high-redshift galaxies: a joint effort of theory and observations
Aug., 2011	Santa Cruz galaxy workshop, Santa Cruz. Cold streams and primordial gas at high redshift
Jul., 2011	Celebrating the career of A. Wolfe, Schloss Ringberg, invited.  Detecting cold streams with absorption line systems

Jul., 2011	MPIA, Heidelberg. Stochastic star formation and IMF (non) variation
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Jun., 2011	Odyssey of cosmic baryons, Marseille.  Detecting cold streams with absorption line systems
Jun., 2011	Gas in galaxies, Kloster Seeon, Germany.  Detecting cold streams with absorption line systems
Dec., 2010	CASS, UCSD, San Diego. Gas in and around galaxies
Aug., 2010	Santa Cruz galaxy workshop, Santa Cruz. Gas in simulations of $z>2$ galaxies
May, 2010	<b>Como+Milano+Heidelberg+Marseille</b> . Images and simulations to connect gas and stars in $z>2$ galaxies
Apr., 2010	UCSC, Santa Cruz. Hunting gas and stars in galaxies across the Universe
Aug., 2009	Santa Cruz Galaxy Workshop, Santa Cruz. A shot in the dark: probing galaxies giving rise to DLAs at $z>2$
Aug., 2009	UCSC Friday Lunch Talk, Santa Cruz.  Molecular gas deficiency in HI poor galaxies
Jun., 2009	University of Chicago, Chicago. A shot in the dark: imaging of DLAs
Mar., 2009	Università dell'Insubria, Como, Italy. Star formation $z=0-3$
Dec., 2008	CASS, UCSD, San Diego. The star formation rate and gas content in local spiral galaxies
Jul., 2008	Università di Milano-Bicocca, Milano, Italy.

# Proposal History (principal investigator or primary co-investigator)

The relationship between gas content and star formation rate in spiral galaxies

- 2022 ALMA; 9 hours, cycle 9.
- 2022 ESO/VLT; 16 hours, P109.
- 2021 ALMA; 9 hours, cycle 8.
- 2019 ESO/VLT; 25 hours, P105.
- 2019 Hubble Space Telescope; 8 orbits, cycle 27.
- 2019 JCMT/SCUBA-2; 30 hours, 2019B.
- 2018 Hubble Space Telescope; 90 orbits, cycle 26 (LP).
- 2017 ESO/VLT; 250 hours, P101 (LP).
- 2018 JCMT/SCUBA-2; 16 hours, 2018A.
- 2017 ESO/VLT; 36 hours, P100.
- 2017 JCMT/SCUBA-2; 9 hours, 2017B.
- 2016 ESO/VLT; 18 hours, P99.
- 2016 Keck Telescope; 2 nights, 2016B.
- 2016 Hubble Space Telescope; 96 orbits, cycle 24 (LP).
- 2016 JCMT/SCUBA-2; 9 hours, 2016B.
- 2016 Keck Telescope; 1 night, 2016A.
- 2016 WHT; 12 nights, 2016A.

- 2016 ESO/VLT; 106 hours, P97-100 (LP).
- 2015 WHT; 9 nights, 2015B.
- 2015 ESO/VLT; 9 hours, P96.
- 2015 Hubble Space Telescope; 55 orbits, cycle 23.
- 2014 ESO/VLT; 28 hours, P95.
- 2014 ESO/VLT; 5 hours, P94.
- 2014 Gemini-S Telescope; 30 hours, 2014A.
- 2014 Magellan Telescope; 4 nights, 2014A.
- 2013 Magellan Telescope; 5 nights, 2013B.
- 2013 Keck Telescope; 1 night, 2013B.
- 2012 Keck Telescope; 1 night, 2013A.
- 2012 Magellan Telescope; 4 nights, 2013A.
- 2012 Magellan Telescope; 4 nights, 2012B.
- 2011 IRAM 30m Telescope; 64 hours, 2011B.

# Teaching and Advising

- 2021- Medical Physics; School of Medicine, University of Milano-Bicocca.
- 2019- Astrophysics Laboratory; MSc at University of Milano-Bicocca.
- 2018-2019 Radiative processes in astrophysics; PhD lecture series at Durham University.
  - The role of baryonic process in galaxy formation and evolution; PhD lecture series at University of Milano-Bicocca.
- 2016-2017 PHYS2651: Physics in Society, BSc at Durham University.
- 2014-2019 PHYS1081: Introduction to Astronomy, BSc at Durham University.
- 2014-2018 PHYS1101: Discovery Skills in Physics, BSc at Durham University.
  - 2009 Ay2: Overview of the Universe, BSc at UCSC.

#### PhD Students Mr. Georg Herzog (2020-), University of Milano-Bicocca.

- Mr. Calvin Sykes (2017-2021), Durham University (PhD, 2021).
- Ms. Louise Welsh (2017-2021), Durham University (PhD, 2021).
- Mr. Ruari Mackenzie (2014-2018), Durham University (PhD, 2018).
- Mr. Greg Ashworth (2014-2018), Durham University (PhD, 2018).

#### PDRAs Dr. Trystyn Berg (2021-), University of Milano-Bicocca.

- Dr. Louise Welsh (2021-), University of Milano-Bicocca.
- Dr. Alessia Longobardi (2021-2023), University of Milano-Bicocca.
- Dr. Emma Lofthouse (2018-2023), Durham University, University of Milano-Bicocca.
- Dr. Rajeshwari Dutta (2019-2022), Durham University, University of Milano-Bicocca.
- Dr. Alejandro Benitez Llambay (2021-2022), University of Milano-Bicocca.
- Dr. Matteo Fossati (2018-2021), Durham University, University of Milano-Bicocca.
- Dr. Elisabeta Lusso (2017-2019), Junior Research Fellow, Durham University.
- Dr. Richard Bielby (2017-2019), Durham University.

# Membership and Activities

- 2023- Co-lead of the outreach project "Un nuovo sguardo sul cielo di Milano" funded by NextGenerationEU
- 2023- Steering Committee, Bicocca Centre for Quantitative Cosmology, Dipartimenti di Eccelenza 2023
- 2022- Member of the International Astronomical Union
- 2021- Member of the Euclid Consortium
- 2021- Member of the MOSAIC/ELT Science working groups "First Light" and "Inventory of matter"
- 2021- Member of the Science Working Group, WEAVE survey
- 2020- Coordinator of Absorption Line Studies in the Quasar Working Group, WEAVE survey
- 2020 Chair of PhD Admission Committee, Physics Department, University of Milano-Bicocca
- 2020 Panel Member, USA National Science Foundation
- 2018- Peer reviewer, Nature
- 2018- Peer reviewer, European Research Council
- 2017- Peer reviewer, Nature Astronomy
- 2016-2018 Member of Van Mildert College Council, Durham University
  - 2016- HIRES/ELT Galaxy and IGM Working Group
  - 2012- Peer reviewer, Astrophysical Journal
  - 2012- Peer reviewer, Monthly Notices of the Royal Astronomical Society
  - 2012- Peer reviewer, Astronomy and Astrophysics
- 2011-2012 Graduate Student Mentor, UCSC Astronomy & Astrophysics Department
- 2011-2015 Member, European Physical Society
- 2011-2012 Member, American Astronomical Society
- 2008-2015 Member, Società Italiana di Fisica

# Refereed publications

- 1. Saccardi, A., Salvadori, S., D'Odorico, V. et al. 2023, ApJ, 948, 35, *Evidence of First Stars-enriched Gas in High-redshift Absorbers*.
- 2. Beckett, A., Morris, S.L., **Fumagalli, M.** et al. 2023, MNRAS, 521, 1113. *Modelling gas around galaxy pairs and groups using the Q0107 quasar triplet.*
- 3. Dutta, R., Fossati, M., **Fumagalli, M.** et al. 2023, MNRAS, 508, 4573 submitted (arXiv:2302.09087). *Metal line emission from galaxy haloes at*  $z \approx 1$ .
- 4. Revalski, M., Rafelski, M., **Fumagalli, M.**, Fossati, M. et al. 2023, ApJS, 265, 40. The MUSE Ultra Deep Field (MUDF) III: Hubble Space Telescope WFC3 Grism Spectroscopy and Imaging.
- 5. Galbiati, M., **Fumagalli, M.**, Fossati, M. et al. 2023, MNRAS submitted (arXiv:2302.00021). *MUSE Analysis of Gas around Galaxies (MAGG) V: Linking ionized gas traced by CIV and SiIV absorbers to Ly\alpha emitting galaxies at z \approx 3.0-4.5.*
- 6. Cook, D.O., et al. 2023, MNRAS, 519, 3749. Fraction of Stars in Clusters for the LEGUS Dwarf Galaxies.

- 7. Jin, S., et al. 2023, MNRAS in press (arXiv:2212.03981). The wide-field, multiplexed, spectroscopic facility WEAVE: Survey design, overview, and simulated implementation.
- 8. Luo, R., et al. 2023, MNRAS in press (arXiv:2212.03891). Tracing the kinematics of the whole ram pressure stripped tails in ESO 137-001.
- 9. Lofthouse, E., **Fumagalli, M.**, Fossati, M. et al. 2023, MNRAS, 518, 305. *MUSE Analysis of Gas around Galaxies (MAGG) IV: The gaseous environment of*  $z \approx 3-4$   $Ly\alpha$  *emitting galaxies.*
- Herzog, G., Benitez-Llambay, A. Fumagalli, M. 2023, MNRAS, 518, 6305. The present-day gas content of simulated field dwarf galaxies.
- 11. Boselli, A. et al. 2023, A&A 669, 73. A Virgo Environmental Survey Tracing Ionised Gas Emission (VESTIGE).XIV. The main sequence relation in a rich environment down to  $M_{star} \approx 10^6~M_{\odot}$ .
- 12. Siressi, M. et al. 2022, AJ, 164, 208. CLusters in the UV as EngineS (CLUES). I. Survey Presentation and FUV Spectral Analysis of the Stellar Light.
- 13. Beckett, A., Morris, S.L., **Fumagalli, M.** et al. 2022, MNRAS 517, 1020. Signatures of extended discs and outflows in the circumgalactic medium using the Q0107 quasar triplet.
- 14. Mintz, A., Rafelski, M., Jorgenson, R.A., **Fumagalli, M.** 2022, AJ, 164, 51. *Constraining the Size of the Circumgalactic Medium Using the Transverse Autocorrelation Function of C IV Absorbers in Paired Quasar Spectra.*
- 15. Robert, P.F., Murphy, M.T., O'Meara, J.M, Crighton, N.H.M, **Fumagalli, M.** 2022, MNRAS, 514, 3559. *Discovery of three new near-pristine absorption clouds at* z=2.6-4.4.
- 16. Dalton, T., Morris, S.L., **Fumagalli, M.**, Gatuzz, E. 2022, MNRAS, 513, 822. *Probing the physical properties of the intergalactic medium using quasars.*
- 17. Welsh, L., Cooke, R., **Fumagalli, M.**, Pettini, M., 2022, ApJ, 929, 158. *Oxygenenhanced extremely metal-poor DLAs: A signpost of the first stars?*
- 18. Lehner, N. et al. 2022, ApJ, 936, 156. KODIAQ-Z: Metals and Baryons in the Cool Intergalactic and Circumgalactic Gas at 2.2<z<3.6.
- 19. Arrigoni Battaia, F. et al. 2022, ApJ, 930, 72. A Multiwavelength Study of ELAN Environments (AMUSE<sup>2</sup>): Mass budget, satellites spin alignment and gas infall in a massive  $z\sim 3$  quasar host halo.
- 20. Pedrini, A. et al. 2022, MNRAS, 511, 5180. MUSE sneaks a peek at extreme rampressure stripping events V. Towards a complete view of the galaxy cluster A1367
- 21. Nowotka, M. et al. 2022, A&A, 658, 77. A Multiwavelength Study of ELAN Environments (AMUSE<sup>2</sup>): Ubiquitous dusty star-forming galaxies associated with enormous  $Ly\alpha$  nebulae on megaparsec scales.
- 22. Orozco-Duarte, R. et al. 2022, MNRAS, 509, 522. Synthetic photometry of OB star clusters with stochastically sampled IMFs: analysis of models and HST observations.
- 23. Benitez-Llambay, A., **Fumagalli, M.** 2021, ApJL, 921, 9. *The Tail of Late-Forming Dwarf Galaxies in ΛCDM.*
- 24. Dutta, R., **Fumagalli, M.**, Fossati, M. et al. 2021, MNRAS, 508, 4573. *Metal-enriched halo gas across galaxy overdensities over the last 10 billion years.*
- 25. Dalton, T., Morris, S.L., **Fumagalli, M.**, Gatuzz, E. 2021, MNRAS, 508, 1701. *Probing the physical properties of the intergalactic medium using blazars.*

- 26. Menon, S.H. et al. 2021, MNRAS, 507, 5542. The Dependence of the Hierarchical Distribution of Star Clusters on Galactic Environment.
- 27. Beckett, A., Morris, S.L., **Fumagalli, M.** et al. 2021, MNRAS, 506, 2574. The relationship between gas and galaxies at z < 1 using the Q0107 quasar triplet.
- 28. Della Bruna, L. et al., 2021, A&A, 650, 103. Studying the ISM at  $\sim 10$  pc scale in NGC 7793 with MUSE II. Constraints on the oxygen abundance and ionising radiation escape.
- 29. Fossati, M., **Fumagalli, M.**, Lofthouse, E.K. et al. 2021, MNRAS, 503, 3044. *MUSE Analysis of Gas around Galaxies (MAGG) III: The gas and galaxy environment of* z=3-4.5 quasars.
- 30. Dalton, T., Morris, S.L., **Fumagalli, M.**. 2021, MNRAS, 502, 5981. *Probing the physical properties of the intergalactic medium using gamma-ray bursts.*
- 31. Berg, T.A.M, **Fumagalli, M.**, D'Odorico, V. et al. 2021, MNRAS, 502, 4009. Subdamped Lyman alpha systems in the XQ-100 survey II Chemical evolution at 2.4 < z < 4.3.
- 32. Joshi, R., **Fumagalli, M.**, Srianand, R. et al. 2021, ApJ, 908, 129. *Discovery of a damped Ly\alpha galaxy at z\sim3 towards the quasar SDSS J011852+040644.*
- 33. Welsh, L., Cooke, R., Fumagalli, M.. 2021, MNRAS, 500, 5214. The stochastic enrichment of Population II stars.
- 34. Dutta, R., **Fumagalli, M.**, Fossati, M. et al. 2020, MNRAS, 499, 5022. *MUSE Analysis of Gas around Galaxies (MAGG) II: Metal-enriched halo gas around z 1 galaxies.*
- 35. Decataldo, D., Lupi, A., Ferrara, A., Pallottini, A. **Fumagalli, M.** 2020, MNRAS, 497, 4718. *Shaping the structure of a GMC with radiation and winds.*
- 36. **Fumagalli, M.**, Fotopoulou, S., Thomson, L. 2020, MNRAS, 498, 1951. *Detecting neutral hydrogen at* z > 3 *in large spectroscopic surveys of quasars.*
- 37. Stott, J.P. et al. 2020, MNRAS, 497, 3083. Quasar Sightline and Galaxy Evolution (QSAGE) survey II. Galaxy overdensities around UV luminous quasars at z=1-2.
- 38. Bielby, R., **Fumagalli, M.**, Fossati, M. et al. 2020, MNRAS, 493, 5336. Into the Ly $\alpha$  jungle: exploring the circumgalactic medium of galaxies at  $z \sim 4-5$  with MUSE.
- 39. Cooke, R., Welsh, L., **Fumagalli, M.**, Pettini, M. 2020, MNRAS, 494, 4884. *A limit on Planck-scale froth with ESPRESSO*.
- 40. Welsh, L., Cooke, R., **Fumagalli, M.**, Pettini, M. 2020, MNRAS, 494, 1411. *A bound on the 12C/13C ratio in near-pristine gas with ESPRESSO.*
- 41. Della Bruna, L., Adamo, A., Bik A., **Fumagalli M.** et al. 2020, A&A, 635, 134. Studying the ISM at 10 pc scale in NGC 7793 with MUSE I. Data description and properties of the ionised gas.
- 41. Buie, E., **Fumagalli, M.**, Scannapieco, E. 2020, 890, 33. *Interpreting Observations of Absorption Lines in the Circumgalactic Medium with a Turbulent Medium.*
- 42. Lofthouse, E.K., **Fumagalli, M.**, Fossati, M. et al. 2020, MNRAS, 491, 2057. *MUSE Analysis of Gas around Galaxies (MAGG) I: Survey design and the environment of a near pristine gas cloud at z 3.5.*
- 43. Sykes, C., **Fumagalli, M.**, Cooke, R., Theuns, T. 2020, MNRAS, 492, 2151. Determining the primordial helium abundance and UV background using fluorescent emission in star-free dark matter haloes.

- 44. Fossati, M., **Fumagalli, M.**, Lofthouse, E.K. et al. 2019, MNRAS, 490, 1451. The MUSE Ultra Deep Field (MUDF). II. Survey design and the gaseous properties of galaxy groups at 0.5 < z < 1.5.
- 45. Umehata, H., **Fumagalli, M.**, Smail, I. et al. 2019, Science, 366, 97. *Gas filaments of the cosmic web located around active galaxies in a proto-cluster.*
- 46. Becker, G.D. et al. 2019, ApJ, 883, 163. The Evolution of OI over 3.2 < z < 6.5: Reionization of the Circumgalactic Medium.
- 47. Jachym, P. et al. 2019, ApJ, 883, 145. ALMA unveils widespread molecular gas clumps in the ram pressure stripped tail of the Norma jellyfish galaxy.
- 48. **Fumagalli, M.** 2019, Nature Astronomy, 3, 796. *Thirsty galaxies thriving on gas streams.*
- 49. Sykes, C., **Fumagalli, M.**, Cooke, R., Theuns, T., Benitez-Llambay, A. 2019, MNRAS, 487, 609. *Fluorescent rings in star-free dark matter haloes*.
- 50. Mackenzie, R., **Fumagalli, M.**, Theuns, T. et al. 2019, MNRAS, 487, 5070. *Linking gas and galaxies at high redshift: MUSE surveys the environments of six damped Ly* $\alpha$  galaxies at  $z\sim3$ .
- 51. Welsh, L., Cooke, R., **Fumagalli, M.** 2019, MNRAS, 487, 3363. *Modelling the chemical enrichment of Population III supernovae: The origin of the metals in near-pristine gas clouds.*
- 52. Bielby, R.M. et al. 2019, MNRAS, 86, 21. Quasar Sightline and Galaxy Evolution (QSAGE) Survey I. The Galaxy Environment of OVI Absorbers up to z=1.4 around PKS 0232-04.
- 53. Lusso, E., **Fumagalli, M.**, Fossati, M., et al. 2019, MNRAS, 485, 62. The MUSE Ultra Deep Field (MUDF). I. Discovery of a group of Ly $\alpha$  nebulae associated with a bright  $z \approx 3.23$  quasar pair.
- 54. Furniss, A., Worseck, G., **Fumagalli, M.** et al. 2019, AJ, 157, 41. *Spectroscopic Redshift of the Gamma-Ray Blazar B2 1215+30 from Lyα Emission*.
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