Francesco D'Eugenio - Curriculum Vitæ

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Education

- Ph.D. Astrophysics, Oxford University, 2014
Supervisors: Prof. Roger L. Davies and Dr. Ryan C. W. Houghton
Title: *Kinematics and shape of galaxies in rich clusters*

- M.Sc. Astrophysics, *Summa Cum Laude*, University of Bologna, 2009 Supervisor: Prof. Luca Ciotti

- B.Sc. Astronomy, *Summa Cum Laude*, University of Bologna, 2006 Supervisor: Prof. Luca Ciotti

Research Positions

- Postdoctoral Research Associate in Extragalactic Research, University of Cambridge.
September 2021 – Present
Data analysis and calibration, stellar populations at high redshift.

- Postdoctoral position in Galaxy Evolution, University of Ghent.
April 2018 – September 2021
Data analysis and calibration, resolved stellar populations and mock comparison sample for the LEGA-C extragalactic survey.

- SAMI Postdoctoral Research Fellow, Australian National University.
March 2015 – March 2018
Data reduction and analysis, photometry, quality control and fundamental plane science for the SAMI integral-field spectroscopy survey.

- Postdoctoral Research Assistant in the Evolution of Galaxies in Clusters, University of Oxford.
July 2014 – March 2015
FORS2 observations: design, data reduction and analysis.

Collaborations

I am a team member of the following surveys.
- The *MOONRISE* Survey - Quiescent galaxies, leading sky subtraction optimisation.
- The *JWST NIRSpec/MSA* GTO team - Data analysis pipeline, redshifts, emission-line properties, leading data release 2.
- The *JWST NIRSpec/IFS* GTO team - Data reduction, PSF characterisation, stellar populations, leading stellar kinematics.
- The *SAMI Galaxy Survey.* Data reduction pipeline, data analysis pipeline, leading galaxy sizes and shapes, fundamental plane.
- The *LEGA-C Survey.* Data analysis pipeline, redshift measurement, flux calibration, photometry, Lick indices and stellar populations.
- The MUSE large program *MAGPI.* Leading the stellar kinematics pipeline.
- The GAMA Survey. Leading the stellar kinematics.
- The *WAVES/StePS 4MOST Survey.* Figure of merit, dynamics science case.
- The *4HS 4MOST Survey.* Invited to help with stellar kinematics pipeline.

Conference Talks

"A new era in extragalactic astronomy: early results from the James Webb Space Telescope", 20th - 24th March 2023, Cambridge, UK
"Epoch of Galaxy Quenching", 5th - 9th September 2022, Cambridge, UK
"Resolved stellar population gradients 7 Gyr ago with LEGA-C", 12-16th April 2021, Santiago, Chile
"Evidence of compaction from stellar population gradients in post-starburst galaxies at redshift z∼0.8", 17-21st February 2019, Sydney, Australia
"The SAMI Galaxy Survey Scaling Relations", 19-23rd September 2016, Hobart, Australia
"Early Type Galaxies and their Environment: An IFS Perspective", 2nd March 2015, Oxford, UK
"Fast and Slow Rotators in the densest environments", 23-26th June 2014, Portsmouth, UK
"Evolution of galaxies, their central black holes and their large-scale environment", 20-24th September 2010, Potsdam, Germany

Teaching and supervising experience

Teaching assistant in the 3rd year Undergraduate Astrophysics Laboratory - Oxford University
Teaching assistant in 3 rd year Undergraduate Astrophysics - Australian National University
Teaching assistant in 1 st year Graduate Astrophysics - Universiteit Gent
Co-supervision of Dilyar Barat - Honours Degree in Astrophysics - 2015
Co-supervision of Tania Barone - Honours Degree in Astrophysics - 2016
Co-supervision of Dilyar Barat - PhD in Astrophysics - 2016 - 2021
Co-supervision of Tania Barone - PhD in Astrophysics - 2016 - 2021
Co-supervision of Lester Sandles - PhD in Astrophysics - 2023
Co-supervision of Tobias Looser - PhD in Astrophysics - expected 2024

Funding and research initiative (as principal investigator only)

- 2024 JWST/NIRCam+NIRSpec (54+70 hours; Co-PI: T. J. Looser, Cambridge) – OASIS: Observing All phases of StochastIc Star formation. A census of galaxies at z = 5–8 over the entire SFR–Mass plane
- 2024 JWST/NIRSpec (23 hours; Co-PI: K. Glazebrook, Swinburne) – Weighting the odd: dynamics, assembly history and quenching of the oldest galaxy in the young Universe
- 2024 ALMA (11 hours) – Searching for cold molecular gas in a massive, recently quenched galaxy at z=3
- 2023 JWST/NIRSpec (24 hours) – What quenched the first massive quiescent galaxy? A comprehensive analysis from stellar kinematics to gas emission lines
- 2023 VLT/Xshooter (2 nights) – What powers nebular emission in the most distant galaxies?
- 2018: Keck/KCWI (2 nights) – Scaling relations of low-mass galaxies
- 2018: VLT/FLAMES (6 nights) – The SHαDE Hα kinematics survey
- 2017: Keck/KCWI (4 nights) – Stellar kinematics in low-mass galaxies
- 2013: VLT/FORS2 (4 nights) – Mass-selected fundamental plane at $z = 0.5$

Total observing time worth approximately 1M €.

Programming and IT

- C++, python, shell scripting - *excellent knowledge*

- Fortran, SQL, Java, IDL, GDL - *good knowledge*

- My github page: https://github.com/fdeugenio

Cambridge, UK
May 20, 2024

Publication Record

Selected publications:

- Feedback mechanisms stopping the star formation in a pair of massive galaxies in the early Universe, Pérez-González, Pablo G., **D'Eugenio F.**, et al., 2024arXiv240503744P, (2024)
- GA-NIFS: NIRSpec reveals evidence for non-circular motions and AGN feedback in GN20, Übler H., **D'Eugenio F.**, et al., 2024arXiv240303192U, (2024)
- Discovery of a quiescent galaxy at z=7.3, Looser T., **D'Eugenio F.** et al., Nat, 629, 53, (2024)
- JADES Data Release 3 – NIRSpec/MSA spectroscopy for 4,000 galaxies in the GOODS fields, **D'Eugenio F.**, et al., 2024arXiv240406531D, (2024)
- The stellar Fundamental Metallicity Relation: the correlation between stellar mass, star-formation rate and stellar metallicity, Looser T., **D'Eugenio F.**, et al., 2024arXiv240108769L, (in press)
- JADES: Carbon enrichment 350 Myr after the Big Bang in a gas-rich galaxy, **D'Eugenio F.** et al., 2023arXiv231109908D (2023)
- A fast-rotator post-starburst galaxy quenched by supermassive black-hole feedback at z=3, **D'Eugenio F.** et al., 2023arXiv230806317D (in press)
- The hyperplane of early-type galaxies: using stellar population properties to increase the precision and accuracy of the fundamental plane as a distance indicator, **D'Eugenio F.** et al., (submitted)
- Evolution in the orbital structure of quiescent galaxies from MAGPI, LEGA-C and SAMI surveys: direct evidence for merger-driven growth over the last 7 Gyr, **D'Eugenio F.** et al., MNRAS, 525, 2789 (2023)
- Different higher-order kinematics between star-forming and quiescent galaxies based on the SAMI, MAGPI and LEGA-C surveys, **D'Eugenio F.** et al., MNRAS, 525, 2765 (2023)
- JADES: deep spectroscopy of a low-mass galaxy at redshift 2.3 quenched by environment, Sandles L., **D'Eugenio F.** et al., 2023arXiv230708633S, (2023)
- JADES: Balmer Decrement Measurements at redshifts $4 < z < 7$, Sandles L., **D'Eugenio F.** et al., 2023arXiv230603931S, (2023)
- JADES: Differing assembly histories of galaxies – Observational evidence for bursty SFHs and (mini-)quenching in the first billion years of the Universe, Looser T., **D'Eugenio F.** et al., 2023arXiv230602470L (2023)
- The chemical enrichment in the early Universe as probed by JWST via direct metallicity measurements at $z \sim 8$, Curti M, **D'Eugenio F.** et al., 2023MNRAS.518..425C, (2022)
- The SAMI Galaxy Survey: stellar population and structural trends across the Fundamental Plane, **D'Eugenio F.** et al., MNRAS, 504, 5098, (2021)
- Inverse stellar population age gradients of post-starburst galaxies at $z = 0.8$ with LEGA-C, **D'Eugenio F.** et al., MNRAS, 497, 389, (2020)
- SHαDE: Survey description and mass-kinematics scaling relations for dwarf galaxies, Barat D., **D'Eugenio F.** et al., MNRAS, 498, 5885 (2020)
- Gravitational Potential and Surface Density Drive Stellar Populations. II. Star-forming Galaxies, Barone T. M., **D'Eugenio F.** et al., ApJ, 898, 62 (2020)
- The SAMI Galaxy Survey: mass-kinematics scaling relations, Barat D., **D'Eugenio F.** et al., MNRAS, 487, 2924 (2019)
- The gas-phase metallicities of star-forming galaxies in aperture-matched SDSS samples follow potential rather than mass or average surface density, **D'Eugenio F.** et al., MNRAS, 479, 1807 (2018)
- The SAMI Galaxy Survey: Gravitational Potential and Surface Density Drive Stellar Populations. I. Early-type Galaxies, Barone T. M., **D'Eugenio F.** et al., ApJ, 856, 64 (2018)
- On the distribution of galaxy ellipticity in clusters, **D'Eugenio F.** et al., MNRAS, 451, 827 (2015)
- Fast and slow rotators in the densest environments: a FLAMES/GIRAFFE IFS study of galaxies in Abell 1689 at z=0.183, **D'Eugenio F.** et al., MNRAS, 429, 1258 (2013)

And 49 more refereed articles.