

CURRICULUM VITAE:

PROF JOSEPH C. CARUANA

ADDRESS

Department of Physics
Institute of Space Sciences & Astronomy
Room 205, Maths & Physics Building
University of Malta
Msida MSD 2080
Malta

Webpage: www.josephcaruana.net

Email: UM e-mail

Online publication profiles:

[Google Scholar](#) - [NASA ADS](#) - [ORCID](#)

PERSONAL INFORMATION

Nationality: Maltese

EMPLOYMENT

- 2016 - present:
Department of Physics and Institute of Space Sciences & Astronomy
UNIVERSITY OF MALTA
Associate Professor (2019-present); **Lecturer** (2016-2019)
- November 2012 - January 2016:
LEIBNIZ-INSITUT FÜR ASTROPHYSIK POTSDAM (AIP)
Postdoctoral Researcher, Galaxies & Quasars Group

EDUCATION

- 2009-2012: UNIVERSITY OF OXFORD
D.Phil. Astrophysics, Marie Curie Fellow
- 2005-2009: UNIVERSITY OF MALTA
B.Sc. (Hons.) Physics & Mathematics

GRANTS & AWARDS

- 2021:
 - Malta Council for Science and Technology (MCST) **Technology Development Programme (TDP)** funding (~200K Eur).
- 2019-2020:
 - MCST **Internationalisation Partnership Awards Scheme (IPAS)**.
 - MCST **FUSION Research and Innovation National Funding Programme - Commercialisation Voucher Programme (CVP)** for the development of a new technology; successfully passed all 3 stages:
 - CVP Voucher 3: Economic Impact and Risk Profile.

CVP Voucher 2: Market Research and Product Development.

CVP Voucher 1: Intellectual Property Check.

- Project proposer and coordinator on behalf of the Institute of Space Sciences and Astronomy (ISSA) for the signing of a Memorandum of Understanding between ISSA and the Eco-Gozo directorate within MGOZ for the **awarding of ~160K Eur for the construction of an astronomical observatory in Gozo** to serve as a research, teaching, and public outreach facility.

■ 2016:

- **Lindau Nobel Laureate Meeting alumnus**; accepted as young researcher representing the University of Malta, co-funded by the Deutsche Forschungsgemeinschaft (DFG).

■ 2009-2012:

- EarLy UnIverse EXploration with NIRspec (ELIXIR) **Marie Curie Initial Training Network** 3-year Research fellowship (2009-2012).

MEMBERSHIP OF PROFESSIONAL BODIES

■ Fellow of the **Royal Astronomical Society**

■ Member of the **International Astronomical Union**

Affiliations:

- Division B: Facilities, Technologies and Data Science
- Division C: Education, Outreach and Heritage
- Division H: Interstellar Matter and Local Universe
- Division J: Galaxies and Cosmology
- Commission C2: Communicating Astronomy with the Public
- Commission C3: History of Astronomy
- Commission C4: World Heritage and Astronomy
- Inter-Division B-H-J: Commission Intergalactic Medium
- Commission J3: Galaxies at the Epoch of Reionization

■ Member of the **European Astronomical Society**

PUBLICATIONS (PEER-REVIEWED)

Current total number of citations: **4170** (as of 04/05/2024)

Current h-index: **30** (NASA Astrophysics Data System)

In the below list, asterisked () publication titles denote first- or second-author papers, or papers published as part of a PhD project under my supervision.*

Astrophysics

1. *Emission-line galaxies at $z \sim 1$ from near-IR HST slitless spectroscopy: metallicities, star formation rates and redshift confirmations from VLT/FORS2 spectroscopy.*
K. Boyett, A.J. Bunker, J. Chevallard, A. Battisti, A.L. Henry, S. Wilkins, M.A. Malkan, **J. Caruana**, H. Atek, I. Baronchelli, J. Colbert, J.P. Gardner, M. Rafelski, C. Scarlata, H.I. Teplitz, X. Wang, 2024. *Submitted to MNRAS.*

2. *Like a candle in the wind: The embers of once aflame, now smouldering galaxies at $5 < z < 8$.*
J.A.A. Trussler, C.J. Conselice, N. Adams, D. Austin, **J. Caruana**, T. Harvey, Q. Li, C.C. Lovell, L. Seeyave, A.P. Vijayan, S.M. Wilkins, 2024. *Submitted to MNRAS*.
3. *EPOCHS V: The dependence of galaxy formation on galaxy structure at $z < 7$ from JWST observations*
C.J. Conselice, J.T.F. Basham, D.O. Bettaney, L. Ferreira, N. Adams, T. Harvey, K. Ormerod, **J. Caruana**, A.F.L. Bluck, Q. Li, W.J. Roper, J. Trussler, D. Irodotou, D. Austin, 2024. *Accepted for publication in MNRAS*.
4. *EPOCHS IV: SED Modelling Assumptions and their Impact on the Stellar Mass Functions at $6.5 < z < 13.5$ using PEARLS and public JWST observations.*
T. Harvey et al., 2024. *Submitted to ApJ*.
5. *EPOCHS III: Unbiased UV continuum slopes at $6.5 < z < 13$ from combined PEARLS GTO and public JWST NIRCcam imaging.*
D. Austin et al., 2024. *Submitted to ApJ*.
6. *EPOCHS VIII. An Insight into MIRI-selected Galaxies in SMACS-0723 and the Benefits of Deep MIRI Photometry in Revealing AGN and the Dusty Universe.*
Q. Li, C.J. Conselice, N. Adams, J.A.A. Trussler, D. Austin, T. Harvey, L. Ferreira, **J. Caruana**, K. Ormerod, I. Juodžbalis, 2024. *Accepted for publication in MNRAS*.
7. **The role of stellar breaks in driving edge modes in disc galaxies.*
K. Fiteni, S. De Rijcke, V.P. Debattista, **J. Caruana**, 2024. *MNRAS*, 529, 4879–4895.
8. *Galaxy quenching at the high redshift frontier: a fundamental test of cosmological models in the early universe with JWST-CEERS.*
A.F.L. Bluck, C.J. Conselice, K. Ormerod, J.M. Piotrowska, N. Adams, D. Austin, **J. Caruana**, K.J. Duncan, L. Ferreira, P. Goubert, T. Harvey, J. Trussler, R. Maiolino, 2024. *ApJ*, 961, 163.
9. *EPOCHS VI: The Size and Shape Evolution of Galaxies since $z \sim 8$ with JWST Observations.*
K. Ormerod, C.J. Conselice, N.J. Adams, T. Harvey, D. Austin, J. Trussler, L. Ferreira, **J. Caruana**, G. Lucatelli, Q. Li, W.J. Roper, 2024. *MNRAS*, 527(3), 6110–6125.
10. *Seeing sharper and deeper: JWST’s first glimpse of the photometric and spectroscopic properties of galaxies in the epoch of reionisation.*
J.A.A. Trussler, N.J. Adams, C.J. Conselice, L. Ferreira, D. Austin, R. Bhatawdekar, **J. Caruana**, C.C. Lovell, W.J. Roper, A. Verma, A.P. Vijayan, S.M. Wilkins, 2023. *MNRAS*, 523(3), 3423–3440.
11. *The Interplay between accretion, Galaxy Downsizing and the Formation of Box/Peanut bulges in TNG50.*
S.R. Anderson, S. Gough-Kelly, V.P. Debattista, M. Du, P. Erwin, V. Cuomo, **J. Caruana**, L. Hernquist, M. Vogelsberger, 2024. *MNRAS*, 527(2), 2919–2939.
12. *First Light And Reionisation Epoch Simulations (FLARES) XI: [OIII] emitting galaxies at $5 < z < 10$.*
S.M. Wilkins, C.C. Lovell, A.P. Vijayan, D. Irodotou, N.J. Adams, W.J. Roper, **J. Caruana**, J. Matthee, L.T.C. Seeyave, C.J. Conselice, P.G. Pérez-González, J.C. Turner, J.M.S. Donnellan, 2023. *MNRAS*, 522(3), 4014–4027.
13. *First Light And Reionisation Epoch Simulations (FLARES) V: The redshift frontier.*
S.M. Wilkins, A.P. Vijayan, C.C. Lovell, W.J. Roper, D. Irodotou, **J. Caruana**, L.T.C. Seeyave, J.K. Kuusisto, P.A. Thomas, S.A.K. Parris, 2023. *MNRAS*, 519(2), 3118–3128.
14. *Discovery and properties of ultra-high redshift galaxies ($9 < z < 12$) in the JWST ERO SMACS 0723 Field.*
N.J. Adams, C.J. Conselice, L. Ferreira, D. Austin, J. Trussler, I. Juodžbalis, S.M. Wilkins, **J. Caruana**, P. Dayal, A. Verma, 2023. *MNRAS*, 518(3), 4755–4766.
15. *First Light And Reionisation Epoch Simulations (FLARES) XIV: The Balmer/4000 Å Breaks of Distant Galaxies.*
S.M. Wilkins, C.C. Lovell, D. Irodotou, A.P. Vijayan, A. Vikaeus, E. Zackrisson, **J. Caruana**, E.R. Stanway, C.J. Conselice, L.T.C. Seeyave, W.J. Roper, K. Chworowsky, S.L. Finkelstein, 2024. *MNRAS*, 527, 7965–7973.

16. *The JWST Hubble Sequence: The Rest-Frame Optical Evolution of Galaxy Structure at $1.5 < z < 8$*
L. Ferreira, C.J. Conselice, E. Sazonova, F. Ferrari, **J. Caruana**, C.B. Tohill, G. Lucatelli, N. Adams, D. Irodotou, M.A. Marshall, W.J. Roper, C.C. Lovell, A. Verma, D. Austin, J. Trussler, S.M. Wilkins, 2023. *ApJ*, 955(2), 94.
17. *Panic! At the Disks: First Rest-frame Optical Observations of Galaxy Structure at $z > 3$ with JWST in the SMACS 0723 Field.*
L. Ferreira, N. Adams, C.J. Conselice, E. Sazonova, D. Austin, **J. Caruana**, F. Ferrari, T. Broadhurst, J. Diego, B.L. Frye, M. Pascale, S.M. Wilkins, R.A. Windhorst, A. Zitrin, 2022. *ApJL*, 938, L2.
18. *First Light And Reionisation Epoch Simulations (FLARES) VII: The Star Formation and Metal Enrichment Histories of Galaxies in the early Universe.*
S.M. Wilkins, A.P. Vijayan, C.C. Lovell, W.J. Roper, E. Zackrisson, D. Irodotou, L.T.C. Seeyave, J.K. Kuusisto, P.A. Thomas, **J. Caruana**, C.J. Conselice, 2022. *MNRAS*, 518, 3935–3948.
19. *First Light And Reionisation Epoch Simulations (FLARES) VI: The colour evolution of galaxies $z = 5 - 15$.*
S.M. Wilkins, A.P. Vijayan, C.C. Lovell, W.J. Roper, D. Irodotou, **J. Caruana**, L.T.C. Seeyave, J.K. Kuusisto, P.A. Thomas, 2022. *MNRAS*, 517, 3227–3235.
20. *Exploration of the high-redshift universe enabled by THESEUS.*
N. Tanvir, E. Le Floch, L. Christensen, **J. Caruana**, et al., 2021. *Experimental Astronomy*, 52, 219–244.
21. *Synergies of THESEUS with the large facilities of the '30s and GO opportunities.*
P. Rosati et al., 2021. *Experimental Astronomy*, 52, 407–437.
22. **The relative efficiencies of bars and clumps in driving disc stars to retrograde motion.*
K. Fiteni, **J. Caruana**, J. A. S. Amarante, V. P. Debattista, L. Beraldo e Silva, 2021. *MNRAS*, 503, 1418–1430.
23. **A Photometric Mapping of the Night Sky Brightness of the Maltese Islands.*
J. Caruana, R. Vella, D. Spiteri, M. Nolle, S. Fenech, N. Aquilina, 2020. *Journal of Environmental Management*, 261, 110196.
24. *The Formation of Compact Elliptical Galaxies in the Vicinity of a Massive Galaxy: The Role of Ram-Pressure Confinement.*
M. Du, V. P. Debattista, L. C. Ho, P. Côté, C. Spengler, P. Erwin, J. W. Wadsley, M. A. Norris, S. W. F. Earp, T. R. Quinn, K. Fiteni, **J. Caruana**, 2019. *ApJ*, 875, 58.
25. *The MUSE-Wide Survey: Survey Description and First Data Release.*
T. Urrutia, L. Wisotzki, J. Kerutt, K. B. Schmidt, E. C. Herenz, J. Klar, R. Saust, M. Werhahn, C. Diener, **J. Caruana**, et al., 2019. *A&A*, 624, A141.
26. *THESEUS: a key space mission concept for Multi-Messenger Astrophysics.*
G. Stratta et al., 2018. *Advances in Space Research*, 62, 662–682.
27. *Recovering the systemic redshift of galaxies from their Lyman-alpha profile.*
A. Verhamme, T. Garel, E. Ventou, T. Contini, N. Bouche, E. C. Herenz, J. Richard, R. Bacon, K. B. Schmidt, M. Maseda, R. A. Marino, J. Brinchmann, S. Cantalupo, **J. Caruana**, B. Clement, C. Diener, A. B. Drake, T. Hashimoto, H. Inami, J. Kerutt, W. Kollatschny, F. Leclercq, V. Patricio, J. Schaye, L. Wisotzki, J. Zabl, 2018. *MNRAS*, 478, L60–L65.
28. *The THESEUS space mission concept: science case, design and expected performances.*
L. Amati et al., 2018. *Advances in Space Research*, 62, 191.
29. *Kinematics, Turbulence and Star Formation of $z \sim 1$ Strongly Lensed Galaxies seen with MUSE.*
V. Patricio, J. Richard, D. Carton, T. Contini, B. Epinat, J. Brinchmann, K. B. Schmidt, D. Krajnovic, N. Bouche, P. M. Weilbacher, R. Pello, **J. Caruana**, M. Maseda, H. Finley, F. E. Bauer, J. Martinez, G. Mahler, D. Lagattuta, B. Clement, G. Soucail, L. Wisotzki, 2018. *MNRAS*, 477, 18.

30. *Dark Galaxy Candidates at Redshift 3.5 Detected with MUSE.*
R. A. Marino, S. Cantalupo; S. Lilly, S.G. Gallego, L.A. Straka, E. Borisova, R. Bacon, J. Brinchmann, M.C. Carollo, **J. Caruana**, S. Conseil, T. Contini, C. Diener, H. Finley, H. Inami, F. Leclercq, S. Muzahid, J. Richard, J. Schaye, M. Wendt, L. Wisotzki, 2018. ApJ, 859, 53.
31. **The MUSE-Wide survey: A measurement of the Ly α emitting fraction among $z > 3$ galaxies.*
J. Caruana, L. Wisotzki, E. C. Herenz, J. Kerutt, T. Urrutia, K. B. Schmidt, R. Bouwens, J. Brinchmann, S. Cantalupo, M. Carollo, C. Diener, A. Drake, T. Garel, R. A. Marino, J. Richard, R. Saust, J. Schaye, A. Verhamme, 2018. MNRAS, 473, 30–37.
32. *The MUSE Hubble Ultra Deep Field Survey X: Ly α Equivalent Widths at $2.91 < z < 6.64$.*
T. Hashimoto, T. Garel, B. Guiderdoni, A.B. Drake, R. Bacon, J. Blaizot, J. Richard, F. Leclercq, H. Inami, A. Verhamme, R. Bouwens, J. Brinchmann, S. Cantalupo, M. Carollo, **J. Caruana**, E.C. Herenz, J. Kerutt, R.A. Marino, P. Mitchell, J. Schaye, 2017. A&A, 608, A10.
33. *The MUSE Hubble Ultra Deep Field Survey VI: The Faint-End of the Ly α Luminosity function at $2.91 < z < 6.64$ and Implications for Reionization.*
A. B. Drake, T. Garel, L. Wisotzki, F. Leclercq, T. Hashimoto, J. Richard, R. Bacon, J. Blaizot, **J. Caruana**, S. Conseil, T. Contini, B. Guiderdoni, E.C. Herenz, H. Inami, J. Lewis, G. Mahler, R.A. Marino, R. Pello, J. Schaye, A. Verhamme, E. Ventou, P.M. Weilbacher, 2017. A&A, 608, A6.
34. *The MUSE-Wide Survey: A first catalogue of 831 emission line galaxies*
E.C. Herenz, T. Urrutia, L. Wisotzki, J. Kerutt, R. Saust, M. Werhahn, K.B. Schmidt, **J. Caruana**, C. Diener, R. Bacon, J. Brinchman, J. Schaye, M. Maseda, P. M. Weilbacher, 2017. A&A, 606, A12.
35. *The Lyman-Continuum Photon Production Efficiency ξ_{ion} of $z \sim 4$ -5 Galaxies from IRAC-based H α Measurements: Implications for the Escape Fraction and Cosmic Reionization*
R.J. Bouwens, R. Smit, I. Labbe, M. Franx, **J. Caruana**, P. Oesch, M. Stefanon, N. Rasappu, 2016. ApJ, 831, 176.
36. *Ubiquitous giant Lyman α nebulae around the brightest quasars at $z \sim 3.5$ revealed with MUSE.*
E. Borisova, S. Cantalupo, S.J. Lilly, R.A. Marino, S.G. Gallego, R. Bacon,..., **J. Caruana**, et al., 2016. ApJ, 831, 39.
37. *Extended Lyman alpha haloes around individual high-redshift galaxies revealed by MUSE.*
L. Wisotzki, R. Bacon, J. Blaizot,..., **J. Caruana**, et al., 2015. A&A, 587, 98.
38. *Quantifying the UV continuum slopes of galaxies to $z \sim 10$ using deep Hubble+Spitzer/IRAC observations.*
S.M. Wilkins, R.J. Bouwens, P. Oesch, I. Labbe, M. Sargent, **J. Caruana**, J. Wardlow, S. Clay, W. Zheng, 2016. MNRAS, 455, 659.
39. *Cosmic reionization after Planck: The derived growth of the ionizing background now matches the growth of the galaxy UV luminosity density.*
R.J. Bouwens, R. J., G.D. Illingworth, P.A. Oesch, **J. Caruana**, B. Holwerda, R. Smit, S. Wilkins, 2015. ApJ, 811, 140.
40. **Spectroscopy of Galaxies in the Early Universe.*
J. Caruana, 2015. A&G, 56(3), 3.44–3.46.
41. *A MUSE map of the central Orion Nebula (M 42).*
P. Weilbacher, A. Monreal-Ibero, W. Kollatschny,..., **J. Caruana**, et al., 2015. A&A, 582, 114.
42. *The MUSE 3D view of the Hubble Deep Field South.*
R. Bacon, J. Brinchmann, J. Richard,..., **J. Caruana**, et al., 2015. A&A, 575, 75.
43. **Spectroscopy of $z \sim 7$ galaxies: Using Lyman α to constrain the neutral fraction of hydrogen in the high-redshift universe.*
J. Caruana, A.J. Bunker, S.M. Wilkins, E.R. Stanway, S. Lorenzoni, M.J. Jarvis, H.E. Elbert, 2014. MNRAS, 443, 2831.
44. *MUSE Commissioning.*
R. Bacon, J. Vernet, E. Borisova,..., **J. Caruana**, et al., 2014. The Messenger, 157, 13.

45. *Theoretical predictions for the effect of nebular emission on the broad band photometry of high-redshift galaxies.*
S.M. Wilkins, W. Coulton, **J. Caruana**, R. Croft, T. Di Matteo, N. Khandai, Y. Feng, A. J. Bunker, H. Elbert, 2013. MNRAS, 435, 2885.
46. **VLT/XSHOOTER & Subaru/MOIRCS Spectroscopy of HUDF-YD3: No Evidence for Lyman- α Emission at $z = 8.55$.*
A.J. Bunker, **J. Caruana**, S.M. Wilkins, E. R. Stanway, S. Lorenzoni, M. Lacy, M. J. Jarvis, S. Hickey, 2013. MNRAS, 430, 3314.
47. *Constraining the bright-end of the UV luminosity function for $z \approx 7 - 9$ galaxies: results from CANDELS/GOODS-South.*
S. Lorenzoni, A.J. Bunker, S.M. Wilkins, **J. Caruana**, E. R. Stanway, M. J. Jarvis, 2013. MNRAS, 429, 150.
48. **No Evidence for Lyman α emission in spectroscopy of $z > 7$ galaxy candidates.*
J. Caruana, A.J. Bunker, S.M. Wilkins, E.R. Stanway & S. Lorenzoni, 2012. MNRAS, 427, 3055.
49. *The ultraviolet properties of star-forming galaxies I: HST WFC3 observations of very high redshift galaxies.*
S. Wilkins, A. J. Bunker, E. Stanway, S. Lorenzoni, **J. Caruana**, 2011. MNRAS, 417, 717–729.
50. *Star-forming galaxies at $z \approx 8-9$ from Hubble Space Telescope/WFC3: implications for reionization.*
S. Lorenzoni, A. J. Bunker, S. Wilkins; E. Stanway; M. J. Jarvis; **J. Caruana**, 2011. MNRAS, 414, 1455.
51. *New star-forming galaxies at $z \approx 7$ from Wide Field Camera Three imaging.*
S. M. Wilkins, A. J. Bunker, S. Lorenzoni, **J. Caruana**, 2011. MNRAS, 411, 23–36.

Miscellaneous Applied Physics & Mathematics

52. **A Microstrip Patch Antenna Immersed in Water – A Preliminary Investigation.*
J. Farrugia, I. Farhat, **J. Caruana**, C. V. Sammut, 2023. XXXVth General Assembly and Scientific Symposium of the International Union of Radio Science (URSI GASS), Sapporo, Japan, 1–4. DOI: <https://doi.org/10.23919/URSIGASS57860.2023.10265438>
53. *Effectiveness of hyperbaric chamber ventilation.*
L. Matity, F. Burman, J. Kot, **J. Caruana**, 2023. Diving and Hyperbaric Medicine, 53(2), 85–91.
54. **Reconstruction of the collapse of the ‘Azure Window’ natural arch via photogrammetry.*
J. Caruana, J. Wood, E. Nocerino, F. Menna, A. Micallef, T. Gambin, 2022. Geomorphology, 408, 108250.
55. **Increasing prevalence of vestibulo-cochlear decompression illness in Malta - an analysis of hyperbaric treatment data from 1987–2017.*
C. Azzopardi, **J. Caruana**, L. Matity, S. Muscat, W.A.J. Meintjes, 2019. Diving and Hyperbaric Medicine, 49(3), 161–166.

AWARDED TELESCOPE TIME

- **Exploring Reionization and Interacting Systems at $z \sim 8$.**
ESO.0100.A-0870 (2017) 18 hours with XSHOOTER (VLT)
- **Probing the Chemical Composition of EELs.**
ESO.096.B-0632 (2016), XSHOOTER (VLT)
- **MUSE-Wide: A (not so) Shallow Survey in Deep Fields.**
(2012-2016) Bi-annual observing proposals for GTO with VLT/MUSE

- **MUSE-Deep: MUSE investigation of the Hubble Ultra Deep Field.**
(2012-2016) Bi-annual observing proposals for GTO with VLT/MUSE
- **HST/WFC3-GRISM Emission-Line Selected Galaxies - Ultra Metal Poor Galaxies at $z=0.5-1.5$**
GS-2012A-C-2 (through Gemini exchange time) (2012), 3 nights on Gemini South
- **Exploring reionization at $6 < z < 10$: Star Formation at the end of the dark ages.**
ESO.088.A-1013 (2011), 26 hours with FORS2 (VLT)
- **Exploring reionization at $6 < z < 10$: Star Formation at the end of the dark ages.**
ESO.086.A-0968 (2010), 13 hours with FORS2 (VLT), 18 hours with XSHOOTER (VLT)
- **Exploring reionization at $7 < z < 10$: Star Formation at the end of the dark ages.**
UK G/2010B/072 via Gemini exchange time (2010), 2 nights with MOIRCS (SUBARU)

CONFERENCES, MEETINGS, WORKSHOPS, AND TRAINING SCHOOLS

- Participated in the European Astronomical Society SATCON webinar. (Online, May 2024.)
- Participated in *THESEUS/M7 Consortium Meeting*, THESEUS consortium. (Paris and online, March 2024.)
- Participated in *The Cultural Relevance of Dark and Quiet Sky Protection* seminar, IAU Office for Astronomy Outreach. (Online, May 2023.)
- Participated in a series of meetings of the *Pan-Survey SED Forum: spectral energy distribution modelling for galaxy evolution studies with surveys in the JWST era*. (Online.)
 - SED fitting with JWST data (January 2024).
 - Dust & SED fitting (May 2022).
 - Photometric Redshifts (March 2022).
 - The Future of SED Fitting (February 2022).
- Participated in the *SAZERAC: Learning the high-redshift Universe* meeting. (Online. February 2022.)
- Participated in the *Dark and Quiet Skies for Science and Society* workshop, United Nations Office for Outer Space Affairs, Government of Spain, and the International Astronomical Union. (Online, October 2021.)
- Invited speaker, delivering a talk titled **Exploring the high- z universe via Lyman α Emission** for the research groups of Prof Pratika Dayal and Prof Karina Caputi. (Kapteyn Astronomical Institute, Groningen, October 2020.)
- Participated in the *Dark and Quiet Skies for Science and Society* workshop, United Nations Office for Outer Space Affairs, Government of Spain, and the International Astronomical Union. (Online, October 2020.)
- Participated in the *Summer All Zoom Epoch of Reionisation Astronomy Conference (SAZERAC)*. (Online, July 2020.)
- Invitee to the *Hyperbaric Medicine & the Brain conference*, European Underwater and Baromedical Society Annual Meeting, Tel Aviv (September 2019). **Invited Member of the Discussion Panel on Hyperbaric Oxygen and the Brain.**
- Participated in *The Gaia Treasure Hunt Workshop*, Institute of Astronomy (IoA), University of Cambridge. (Cambridge, September 2019.)
- Invitee to the *Department of Archeology Seminar Series*, University of Malta, contributing a talk on celestial navigation titled **Navigating the Seas via an Ocean of Stars**. (Malta, April 2019.)

- Invitee to the forum *7th LE:NOTRE Landscape Forum: Gozo goes Landscape*, University of Malta (in cooperation with Anhalt University of Applied Sciences), and contributed the talk: **Dwejra's skyscape**. (Malta, March 2018.)
- Participated in the conference *The Role of Gas in Galaxy Dynamics*, University of Malta, Valletta, and contributed the talk: **Probing galaxy formation and evolution with Lyman alpha emitters**. (Malta, October 2017.)
- Participated in biannual/triannual MUSE consortium meetings (2013–2015) focused on both preparation for and exploitation of the MUSE instrument at the VLT and **contributed various specialised talks**. (Various locations; 2013–2015.)
- Participated in a high-redshift meeting at the University of Warwick, U.K., and contributed the talk: **Initial MUSE Results and Lyman-alpha at $z > 7$** . (Warwick, April 2014.)
- Invited speaker at AIP colloquium, Leibniz Institut für Astrophysik Potsdam (AIP), delivering a talk titled: **The search for the most distant galaxies in the Universe**. (Potsdam, 1st November 2013.)
- Participated in the conference *Lyman Alpha as an Astrophysical Tool*, NORDITA, Stockholm, and contributed the talk: **Lyman-alpha at $z > 7$: Constraints on the Neutral fraction of Hydrogen**. (September 2013.)
- Attended the EarLy UnIverse EXploration with NIRSpec (ELIXIR) Network meeting 2011, Sterrenwachtlaan Leiden, Netherlands and contributed the talk: **Spectroscopic Analysis of Primeval Galaxy Candidates: Final Results**. (Leiden, November 2012.)
- Attended the *Philip Wetton Workshop: Realising the Astronomy of the Future*. (University of Oxford, June 2012.)
- Attended the EarLy UnIverse EXploration with NIRSpec (ELIXIR) Network school *Simulation of NIRSpec Observations*, European Space Agency / European Space Research and Technology Centre (ESA/ESTEC). (Noordwijk, Netherlands, September 2011.)
- Attended the EarLy UnIverse EXploration with NIRSpec (ELIXIR) Network meeting 2011, Consejo Superior de Investigaciones Científicas (CSIC), and contributed the talk: **Exploring the early universe through spectroscopy of distant galaxy candidates**. (Madrid, October 2011.)
- Participated in the conference *Young & Bright*, Leibniz Institute for Astrophysics (AIP), Potsdam, Berlin, and contributed the talk: **Spectroscopic Analysis of $z > 7$ galaxy candidates**. (Potsdam, September 2011.)
- Participated in the *Feeding the Giants: ELTs in the ERA of Surveys* conference. (Ischia, Naples, August 2011.)
- Participated in the *New Horizons for High Redshifts* conference, Institute of Astronomy (IoA), University of Cambridge, U.K. (Cambridge, July 2011.)
- Participated in the *Galaxy Formation* conference, University of Durham, U.K. (Durham, July 2011.)
- Attended the EarLy UnIverse EXploration with NIRSpec (ELIXIR) Network school *How does a Space Project Work?*, European Space Agency / European Space Research and Technology Centre (ESA/ESTEC). (Noordwijk, Netherlands, May 2011.)
- Attended the EarLy UnIverse EXploration with NIRSpec (ELIXIR) Network meeting 2010 and NIRSpec Science Team meeting, Institut d'Astrophysique de Paris, France and contributed the talk: **Spectroscopic Analysis of Primeval Galaxy Candidates**. (Paris, November, 2010.)
- Attended the 5th International Max Planck Research School for Astronomy and Cosmic Physics, University of Heidelberg (IMPRS-HD) on *The First Stars and Cosmic Reionization*. (Heidelberg, September 2010.)
- Attended the EarLy UnIverse EXploration with NIRSpec (ELIXIR) Network School *JWST / NIRSpec Project*, EADS/Astrium GmbH, Ottobrunn. (Munich, May/June 2010.)

- Attended the EarLy UnIverse EXploration with NIRspec (ELIXIR) Network meeting 2009, Department of Astrophysics, University of Oxford and contributed the talk:
Non-supervised learning algorithms for spectroscopic analysis. (Oxford, December 2009.)

REFEREEING WORK

- Reviewer for the Royal Society Newton International Fellowships.
- Referee for *Monthly Notices of the Royal Astronomical Society*.
- Referee for *The Astrophysical Journal* (Institute of Physics).
- Referee for *Sustainability* (MDPI).
- Referee for *Energies* (MDPI).
- Peer reviewer for the Lindau Nobel Laureate Meeting Review Committee.
- Reviewer of grant applications of the Leverhulme Trust.

TEACHING

■ Department of Physics, University of Malta:

- PHY2220: Optics (2023–present)
- PHY1123: Foundations of Modern Physics (2021–present)
- PHY3289: Advanced Astrophysics & Cosmology (2020–present)
- PHY3110: Physical Optics (2018–present)
- PHY3208: Philosophy of Science and Short Review Paper (2018–present)
(Designer, coordinator and lecturer of a new course in Philosophy of Science and Philosophy of Physics)
- PHY1145: Electricity and Magnetism, and Optics (2017–present)
- PHY3281: Introduction to Astronomy and Cosmology (2016–present)
- PHY3209: Seminar (2017–present)
- SSA5025: Introduction to Astronomy and Cosmology (2018–present)
- SSA5040: Project Seminar (2016–2019)
- BLH5109: Research Methods (2020–2021)
- PHY1160: Waves and Optics (2017–2018)
- PHY3101: Practical Lab (2016–2017)
- PHY3202: Practical Lab (2016–2017)
- PHY3230: Nuclear Physics (2016)

■ Mater Dei Hospital, Malta:

- Designed and delivered a course on Decompression Theory for Hyperbaric Physicians (2017).

■ Christ Church, University of Oxford:

- Tutor in *Cosmology & General Relativity* (2011–2012).

■ Ministry for Education and Employment (MEDE), Malta:

- Lecturer at the Continuous Professional Development (CPD) training course for teachers of Physics (2017–2020).
- Lecturer at the In-Service Training Course for teachers of Physics, Mathematics and Science. Course entailed designing both lectures and workshops (Malta, 2007–2008).

STUDENT SUPERVISION

■ PhD students:

- Connor Sant-Fournier (**Co-Supervisor**, 2023–)
- Jonathan Farrugia (**Supervisor**, 2021–)
- Karl Fiteni (**Supervisor**, 2019–2024)
Secular Evolution in the Milky Way Galaxy.
- **Co-supervisor** for one semester of 1st year PhD student (data reduction using VLT/FORS2), AIP, Potsdam (2012–2013).

■ MSc students:

- Lisa Marie Aquilina (**Supervisor**, Oct 2023–present)
Optimal Calibration of an Astronomical Observatory.
- Connor Sant-Fournier (**Co-supervisor**, 2021-2022)
Continuous Light Pollution Monitoring for Mapping of the Maltese Islands' Night Sky Brightness.
- Karl Fiteni (**Supervisor**, 2017–2018)
The Impact of Bars on Stellar Density Profiles.

■ B.Sc. (Hons) Students: *In the below list, asterisked (*) entries denote awardees of certificate for high standards reached in their dissertation.*

- Lisa Marie Aquilina (**Supervisor**, 2022–2023)
- Maria Aquilina (**Supervisor**, 2022–2023)
- *David Attard (**Supervisor**, 2022–2023)
- *Francesca Borg (**Supervisor**, 2022–2023)
- *Denise Buttigieg (**Supervisor**, 2022–2023)
- *Micole Miceli (**Supervisor**, 2022–2023)
- Francesca Sant (**Supervisor**, 2021–2022)
The Impact of Bars and Spirals on the Radial Extent of a Star-forming Galactic Disc.
- *Keith Bajada (**Supervisor**, 2021–2022)
The Night Sky Brightness of Gozo.
- Jonathan Farrugia (**Co-supervisor**, 2020–2021)
Dielectric properties of liquids.
- Rachel Muscat (**Co-supervisor**, 2020–2021)
Preliminary Analysis of the Coastal Hydrodynamics around the Maltese Islands from High Resolution Numerical Models.
- Christina Julia Pisani (**Supervisor**, 2019–2020)
The Night Sky Brightness of Gozo.
- Daniel Spiteri (**Supervisor**, 2018–2019)
The Night Sky Brightness of the Maltese Islands: Spatial Resolution and Time-variation.
- Ryan Vella (**Supervisor**, 2017–2018)
Assessing the Night Sky Brightness of the Maltese Islands.
Recipient of the award for the Best Final Year Project in the Numerate Sciences (sponsored by MCA).
- Karl Fiteni (**Supervisor**, 2016–2017)
Obtaining Variable Star Light-curves with a View to Characterising Equipment Feasibility for Future Time Series Photometric Studies.

EXAMINING BOARDS

■ PhD students:

- Josef Borg (**Examiner**, 2021)
Precision Calibration of Radio Interferometers.
- Gabriel Farrugia (**Examiner**, 2020)
Modified Gravity: Cosmological Tests.
- Deandra Cutajar (**Examiner**, 2017)
Bayesian Data Analysis Techniques in Noisy Environments.
- Ian Fenech Conti (**Examiner**, 2017)
Point Spread Function Modelling and Shear Calibration for Weak Lensing Surveys.

■ MSc students:

- Matteo Aquilina [MSc] (**Examiner**, 2024)
Entanglement within a Uni-Directionally Coupled System.
- Maria Caruana [Mphilto PhD transfer] (**Examiner**, 2022)
Cosmological Predictions of Physics beyond General Relativity.
- Jeremy Paul Sacco (**Chair**, 2022)
Thermodynamics of a Locally Driven Quantum Network.
- Miguel Zammit [MPhil to PhD transfer] (**Chair**, 2021)
The Search for Habitable Extrasolar Planetary Systems and Possible Signs of Intelligent Life.
- Georgios Viktor Gakis [MPhil to PhD transfer] (**Examiner**, 2020)
Extended Teleparallel Cosmology.
- Christopher Schaefer (**Examiner**, 2020)
Gravitational Waves in Hordenski Gravity.
- Dimitr Kodjaandreev (**Examiner**, 2019)
Single-sided Collimation and the Effects on Beam Cleaning and Impedance in the LHC.
- Wayne Jordan Chetcuti (**Chair**, 2019)
Charging a Quantum Battery in the Presence of an Environment.
- Timothy Debono (**Chair**, 2019)
The Framework of a Modular Vehicle Dynamics Simulator.
- Julian Bonello [MPhil to PhD transfer] (**Examiner**, 2018)
Effects of Temperature, Hydration and Perfusion on Biological Tissue Dielectric Properties.
- Bernard Costa (**Examiner**, 2018)
Identification & Reconstruction of Particle Collision Events in the ALICE Experiment at CERN.
- Filippos Nachmias (**Examiner**, 2018)
Extended Theories of Galaxies in Compact Stars.
- Mark Pace (**Examiner**, 2017)
Extreme Stars in Modified Gravity.

SCIENCE OUTREACH

- **Member of the Outreach Committee** of the Faculty of Science, University of Malta (present).
- **Supervisor / Mentor** of students participating in the *Go4Research* Summer Internship at the Department of Physics and ISSA, University of Malta (2017).

- Over the past 6 years, I have been **invited as speaker on astronomy (giving in excess of 60 talks)** for a number of societies and associations, and have contributed a number of articles for magazines, newspapers, and other public media. A selected list of organisations and published media include:
 - University of Oxford Alumni Society, Berlin
 - Cafe Scientifique (Regular Speaker)
 - Astronomical Society of Malta
 - Malta Humanist Association
 - Ministry of Education
 - Ministry for Gozo
 - Various local schools, from primary to sixth form level
 - Astronomy & Geophysics (Quarterly Magazine of the Royal Astronomical Society)
- Was involved in **public engagement with astronomy** for programs of the **Oxford Department of Astrophysics Outreach Group**. I have lectured on astronomy as part of the outreach programme, served as telescope operator for some of the organised events (2009 - 2012), assisted with the annual *Stargazing Oxford* event, and written articles for the department’s online blog.
- **Videographer for *Lab, Camera, Action***, a series of physics outreach videos for the **University of Oxford** (videos available online on YouTube).
- **Participated in the organization of the UNIQ Academic Physics Summer School at the University of Oxford** and delivered a talk as part of the school (2010).
- **Participated in several news features** and other programme series in Malta to discuss and explain current research to the general public.
- **Organised and participated in numerous night-sky viewing events** (both of my own initiative and in collaboration with societies/organisations, such as The Astronomical Society of Malta).
- **Designed posters and artwork** for several popular astronomy events, professional conferences and talks.
- **Maintained an astronomy website** (‘Exploring the Universe’), which was awarded the [Griffith Observatory Star Award](#) (Jan 16–22, 2005).
- **Designed and built websites** in HTML, Wordpress, and Adobe Flash.

ACTIVE COLLABORATIONS

- **First Light and Assembly of GalaxieS (FLAGS)**
- **First Light and Reionisation Epoch Simulations (FLARES)**
- **Transient High-Energy Sky and Early Universe Surveyor (THESEUS)**
- **Wide-field Spectroscopic Telescope (WST)**

BOARD & COMMITTEE WORK

- **Astronomy and Physics**
 - **Member of the Doctoral Committee**, Institute of Space Sciences & Astronomy, University of Malta (2023–present).
 - **Co-organiser** of the *First Light and Assembly of GalaxieS (FLAGS)* Meeting, Malta (May 2023).
 - **Committee Member** of The Astronomical Society of Malta (March 2023–present).

- **Vice President** of The Astronomical Society of Malta (March 2022–March 2023).
- **Member of the Inclusiveness Target Country (ITC) Conference Grants Panel**, MW-Gaia COST-Network (CA18104) (2021–present).
- **Management Committee (MC) Member** of the COST Action *Revealing the Milky Way with Gaia* (2019–present).
- **Member of the Faculty of Science Board**, Faculty of Science, University of Malta (2019–present).
- **Course Coordinator for the Physics B.Sc. (Joint Hons.) degree**, Department of Physics, University of Malta (2019–present).
- **Member of the Board of Studies**, B.Sc. (Hons.) Physics, Medical Physics and Radiation Protection, University of Malta (2020–present).
- **Member of the Board of Studies**, Department of Physics, University of Malta (2016–present).
- **Member of the Board of Examiners**, Department of Physics, University of Malta (2016–present).
- **Member of the Board**, Institute of Space Sciences & Astronomy (ISSA), University of Malta (2014–present).
- **Coordinator** for the restructuring of the physics undergraduate programme & curriculum (2016–2017).
- **Member of the Local Organising Committee** for the international conference *Gravity@Malta 2018: COST Action “Gravitational Waves, Black Holes and Fundamental Physics”*.
- **Member of the Local Organising Committee** for the international conference *The Role of Gas in Galaxy Dynamics*, Malta (2017).
- **Organiser and Chair of the Scientific Organising Committee** for the international conference *Signals from the Deep Past: Unveiling Early Cosmic Structures*, Malta (2016).
- **Co-chair of the European Week of Astronomy Special Session** *Theory and Observation of the First Galaxies*, Tenerife (2015).
- **Member of the Local Organising Committee** for the international conference *Square Kilometre Array Design Studies (SKADS)*, Malta (2009).
- **Member of the Local Organising Committee** for the international conference *Hunting for the Dark: The Hidden Side of Galaxy Formation*, Malta (2009).
- **Committee member** of *The International Year of Astronomy 2009 (IYA2009)* Malta national node committee (2008-2010).
- **Committee member** of *The Astronomical Society of Malta*, serving the roles of webmaster and assistant Public Relations Officer (2004-2009).

■ Other

- **President** of *Wirt Ghawdex* (2021–present).
- **Committee chair** of *Dwejra Steering Committee* (2019–present).
- **Committee chair** of *Dwejra Stakeholders Forum* (2016–2017 and 2021–2022).
- **Observing member** of *Dwejra Steering Committee* (2016–2017).
- **Committee member** of *The Graduate Common Room of Christ Church*, University of Oxford (2011).
- **Committee member** of *Friends of the Earth* (Malta), serving the role of newsletter editor (2005–2007).

LANGUAGES

- Maltese & English (both 1st languages)
- Italian (Fluent in reading, writing and speaking)
- German (Fair)

HOBBIES & OTHER INTERESTS

- Photography (extensively published in books, websites, and magazines, e.g. *National Geographic Traveller*; *Sky & Telescope*)
- Cinematography (have produced a number of short features)
- Scuba Diving (Certifications: PADI Open Water Diver, PADI Advanced Open Water Diver, PADI Rescue Diver, TDI Advanced Nitrox & Decompression Procedures, TDI Rebreather (JJ-CCR) Air Diluent Decompression Diver, TDI Rebreather (JJ-CCR) Mixed Gas Diver)
- Piano playing
- Reading
- Web & computer graphic design