Angelo George

Ph.D., Postdoctoral Fellow in Astronomy

Academia Sinica Institute of Astronomy & Astrophysics (ASIAA), Taipei

— Ex astris, veritas —

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Research Profile

I am an observational extragalactic astronomer studying how galaxies grow, change shape, and quench their star formation over the past seven billion years, with a particular emphasis on the role of environment. My work combines deep multi-wavelength imaging from *HST*, *JWST*, Subaru/HSC, CFHT, ALMA, and Magellan with parallelised profile-fitting pipelines (GALFIT, GALFITM, SourceXtractor++) to measure galaxy sizes and bulge–disk structure simultaneously in the rest-frame ultraviolet and optical. This dual-wavelength approach allows me to disentangle inside-out growth from genuine structural transformation, and to compare quenching pathways in galaxy clusters and the field.

Research Interests: galaxy evolution • environmental quenching • structural and morphological evolution • bulge–disk decomposition • multi-wavelength imaging surveys • initial mass function variations • star-forming main sequence

Education

Ph.D. in Astronomy, *Saint Mary's University, Halifax, NS, Canada* 2020 – 2025
Thesis: *Two rest-frame wavelength analysis of galaxy size evolution in the field and cluster environments.* Advisors: Dr. Ivana Damjanov and Dr. Marcin Sawicki.

M.Sc. in Astronomy, *Saint Mary's University, Halifax, NS, Canada* 2018 – 2020
Thesis: *Evolution of galaxy morphology in the field and cluster environment since* $z \sim 1$. Advisors: Dr. Ivana Damjanov and Dr. Marcin Sawicki.

B.Sc. (Honours) in Physics, *Goa University, Goa, India* 2014 – 2017
Thesis: *Understanding the Sub-atomic World.* Advisor: Dr. Ananya Das. Awarded the Physics Medal for the highest score in Physics in the 2017 graduating class.

Diploma in Philosophy, *Gyandhara Institute of Philosophy, Goa, India* 2012 – 2014
Thesis: *Views of Thomas Aquinas on the Immaculate Conception.* Advisor: Fr. Daniel Veigas. First Rank in the 2014 graduating class.

Academic Appointments

Postdoctoral Fellow *Nov 2025 – present*
Academia Sinica Institute of Astronomy & Astrophysics (ASIAA) Taipei, Taiwan

- Lead investigator on the connection between galaxy structure and quenching using the KILOGAS survey of nearby star-forming galaxies.
- Probing variations in the stellar initial mass function (IMF) using *JWST* NIRSpec and Subaru Prime Focus Spectrograph (PFS) data.
- Modelling the star-forming main sequence and disentangling structural drivers of galaxy size–mass

evolution using the IllustrisTNG suite of cosmological simulations.
- Member of the ASIAA galaxy-evolution group.

Course Instructor *2023 – 2025*
Saint Mary's University, Department of Astronomy & Physics Halifax, NS, Canada

- Instructor of record for second-year B.Sc. Physics laboratory courses (PHYS 2300 Electricity & Magnetism; PHYS 2400 Thermodynamics).

Graduate Teaching Assistant *2018 – 2024*
Saint Mary's University, Department of Astronomy & Physics Halifax, NS, Canada

- Six years of TA experience across introductory and second-year physics laboratories, problem-solving sessions, and grading.

Honours, Awards & Scholarships

- **Durland Family Chancellor's Doctoral Convocation Award** (2025), Saint Mary's University. Conferred upon successful defence and approval of the Ph.D. dissertation. *Value: CA$2,000.*
- **Faculty of Graduate Studies & Research Graduate Award** (2018–2024), Saint Mary's University.
  Multi-year merit-based award supporting doctoral research. *Cumulative value: CA$67,946.*
- **Faculty of Graduate Studies & Research Fellowship** (2018–2024), Saint Mary's University.
  Competitive fellowship recognising research excellence among graduate students. *Cumulative value: CA$48,000.*
- **NSERC Discovery Grant Research Fellowship** (2018–2024), Saint Mary's University.
  Research fellowship funded through faculty NSERC Discovery Grants. *Cumulative value: CA$84,459.*
- **People's Choice Award** (2021), Saint Mary's University.
  Awarded for best science communicator, based on an audience poll across the Faculty of Science.
- **Physics Medal** (2017), Smt. Parvatibai Chowgule College of Arts and Science, Goa University.
  Awarded for the highest score in Physics in the 2017 graduating class.
- **First Rank** (2014), Gyandhara Institute of Philosophy.
  Awarded for the highest grades in Philosophy in the 2014 graduating class.

Observing Programs & Telescope Time

- **PI – Magellan/ROSIE (Baade 6.5 m)**, 2026B, 1.0 night allocated. "Galaxy Cluster Selection via Emission Line Galaxies: Preparing for the Prime Focus Spectrograph Cosmology Survey."
- **PI – Magellan/ROSIE (Baade 6.5 m)**, 2026B, 0.5 nights allocated. "Beyond Field Gas Scaling Laws: Empirical CO Predictions versus Actual CO Observations in Cluster Environments Over Cosmic Time."
- Collaborator on numerous large imaging and spectroscopic survey programmes, including *JWST*, CFHT (CLAUDS), Subaru/HSC-SSP, Subaru/PFS, ALMA, MaNGA, and SAMI.

Publications

Peer-reviewed Journal Articles — First Author

1. **A. George**, I. Damjanov, M. Sawicki, D. Williams, M. Annunziatella, L. Chen, G. Desprez, S. Gwyn, T. Moutard, et al. (2025). "Effects of Environment on the Size Evolution of Quiescent Galaxies:

Comparing Galaxies in Clusters and in the Field at Two Rest-frame Wavelengths." *The Astrophysical Journal* **987**, 45. doi:10.3847/1538-4357/addc6b.

2. **A. George**, I. Damjanov, M. Sawicki, S. Arnouts, G. Desprez, S. Gwyn, V. Picouet, S. Birrer, & J. Silverman (2024). "Two rest-frame wavelength measurements of galaxy sizes at $z < 1$: the evolutionary effects of emerging bulges and quenched newcomers." *Monthly Notices of the Royal Astronomical Society* **528**, 4797–4828. doi:10.1093/mnras/stae154.

Peer-reviewed Journal Articles — Co-author

3. D. Williams, I. Damjanov, M. Sawicki, H. Souchereau, L. Chen, G. Desprez, **A. George**, et al. (2025). "The Growth of Galaxy Stellar Haloes Over $0.2 \leq z \leq 1.1$." *The Astrophysical Journal* **989**, 107. doi:10.3847/1538-4357/ade9a8.
4. L. Kawinwanichakij, J. Silverman, X. Ding, **A. George**, et al. (2021). "Hyper Suprime-Cam Subaru Strategic Program: A mass-dependent slope of the galaxy size–mass relation at $z < 1$." *The Astrophysical Journal* **921**, 38. doi:10.3847/1538-4357/ac1f21.

Manuscripts Submitted (First Author)

5. **A. George**, I. Damjanov, M. Sawicki, M. Annunziatella, S. Arnouts, L. Chen, G. Desprez, S. Gwyn, D. Marchesini, et al. (2026). "Bulge+Disk Morphology in Rest-frame UV and Optical: Size–Mass Relations Reveal Distinct Growth Paths for Star-forming and Quiescent Galaxies." Submitted to *The Astrophysical Journal*.

Books

6. **A. George** et al. (2017). *A Brief Journey to the World of Elementary Particles.* ISBN: 1521886768.
7. **A. George** (2017). *St. Thomas Aquinas on the Immaculate Conception of Mary.* ISBN: 1973390604.

Invited Talks & Colloquia

- **National Central University (NCU)**, Taoyuan, Taiwan — "Contrasting UV and Optical Evolution: The Structural Transformation of Galaxies Since $z \sim 1$." Colloquium, Apr 10, 2026.
- **National Tsing Hua University (NTHU)**, Hsinchu, Taiwan — "Two Wavelengths, One Story: UV and Optical Views of 7 Billion Years of Galaxy Growth." Colloquium, Mar 6, 2026.
- **Indian Institute of Astrophysics (IIA)**, Bengaluru, India — "Two Wavelengths, Two Perspectives: UV and Optical Views of the Structural Evolution of Galaxies over the Last 7 Billion Years." Colloquium, Feb 10, 2026.
- **Academia Sinica Institute of Astronomy & Astrophysics (ASIAA)**, Taipei, Taiwan — "Two Wavelengths, Two Perspectives: UV and Optical Views of Galaxy Structure and Growth Since $z \sim 1$." Lunch talk, 2025.

Contributed Conference Talks

- **CASCA 2026** — Canadian Astronomical Society Annual Meeting, Montréal, Canada (Jun 2026). "Two Wavelengths, Two Components: A New View of Galaxy Growth."
- **KILOGAS Workshop 2026** — Victoria, BC, Canada (May 2026). Contributed talk on galaxy quenching from KILOGAS.
- **APRIM 2026** — Asia–Pacific Regional IAU Meeting, Hong Kong (May 2026). "Two Wavelengths, Two Stories: How Bulges and Disks Grow."
- **Symposium for Early-Career Astronomers**, ASIAA, Taipei (2025). "Structural Evolution of Galaxies: UV vs. Optical."

- **ICA Symposium 2025**, Halifax, Canada. "Evolution of Massive Quiescent Galaxies in Clusters and Field."
- **CASCA-TO 2024**, Toronto, Canada. "From UV to Visible Light: Unveiling the Secrets of Galaxy Size Evolution in the COSMOS Field."
- **ICA Symposium 2024**, Halifax, Canada. "From UV to Visible Light: Galaxy Size Evolution in the COSMOS Field Since $z \sim 1$."

Conference Posters

- **APRIM 2026** — Asia–Pacific Regional IAU Meeting, Hong Kong (May 2026). "Environmental Effects on the Size Growth of Quiescent Galaxies from UV–Optical Perspectives in Clusters vs. the Field."
- **CL2025** — 1st East Asian Workshop on Galaxy Clusters, ASIAA, Taipei (2025). "Unveiling the Size Growth of Quiescent Galaxies: Environmental Effects from UV–Optical Perspectives in Clusters vs. the Field."
- **DEEP24** — Sintra, Portugal (2024). "Galaxy Size Evolution in Field vs. Clusters."
- **CASCA 2022** — Waterloo, Canada. "Evolution of Galaxy Morphology Since $z \sim 1$."

Teaching & Mentoring

- **PHYS 2300 – Electricity & Magnetism Laboratory** (Instructor of record), Saint Mary's University, 2023–2025. Second-year B.Sc. laboratory: Coulomb's law, RC/RL/RLC circuits, electromagnetic induction, oscilloscopes.
- **PHYS 2400 – Thermodynamics Laboratory** (Instructor of record), Saint Mary's University, 2023–2025. Second-year B.Sc. laboratory: calorimetry, gas laws, heat-engine experiments.
- **Teaching Assistant**, Saint Mary's University, 2018–2024. Introductory and second-year physics laboratories, problem-solving sessions, grading.
- **Mentor, ASIAA Summer Student Program (SSP) 2026** — two-month structured research mentoring of undergraduate students at ASIAA:
  - *Brian Sng* (Durham University) — "How Do Galaxies Grow? Tracking Size Evolution in Simulated Galaxies."
  - *Cheng-Te Chung* (National Tsing Hua University) — "Why Do Galaxies Stop Forming Stars? A Radial View of Star Formation in Cosmological Simulations."
- **Undergraduate Research Mentor,** provided informal mentoring to undergraduate summer research students in the Damjanov/Sawicki group at Saint Mary's University.

Public Outreach

- **Public Tour Guide**, Burke–Gaffney Observatory, Saint Mary's University (2018–2025). Led public observatory tours and narrated live observations of the Moon, planets, and bright deep-sky objects for general-audience visitors.
- Active promoter of dialogue at the intersection of faith and science through community outreach in Halifax (2019–2025).

Service & Professional Activities

- **Lunch-Talk Co-organizer**, Academia Sinica Institute of Astronomy & Astrophysics, Taipei (2025–present). One of three organizers coordinating ASIAA's weekly lunch-talk series.
- **Colloquium Committee Member**, Academia Sinica Institute of Astronomy & Astrophysics, Taipei (2025–present). Contribute to the selection, invitation, and hosting of external colloquium speakers.
- **Graduate Advisory Committee Member**, Saint Mary's University (2024–2025). Sole representative from the Faculty of Science; advised the University on graduate-student welfare and on the implementation of Diversity, Equity, and Inclusion (DEI) strategies on campus.
- **Vision Mate**, CNIB (Canadian National Institute for the Blind), Halifax (2023–2025). Long-term volunteer companion supporting a community member with vision loss.
- **Volunteer Knight**, Knights of Columbus, Halifax (2019–2025). Organised fund-raising for local charities, food drives, and support for the unhoused.
- **Volunteer & Catechist**, Saint Benedict Parish, Halifax (2019–2025). Liturgical and community service, adult faith formation, and faith–science outreach.
- **Referee,** peer review of submitted manuscripts for international astronomy journals (galaxy evolution and extragalactic astronomy).

Technical Skills

Programming & analysis (Advanced): Python (NumPy, SciPy, pandas, AstroPy, Matplotlib), Shell scripting.

Galaxy-fitting & imaging tools (Expert): GALFIT, GALFITM, SourceXtractor++, SExtractor, PSFEx.

High-performance computing: Parallel pipelines, SLURM job arrays, multi-core optimisation, cloud computing.

Methods: Single- and multi-Sérsic profile fitting, bulge–disk decomposition, image-simulation–based error characterisation, multi-wavelength size analyses.

Other languages: C++ (intermediate).

Languages

Malayalam: Native speaker.

English: Full professional proficiency (research, teaching, and publication).

Hindi: Basic conversational.

References

Available upon request. Suggested referees include Dr. Ivana Damjanov (Saint Mary's University, doctoral co-supervisor), Dr. Marcin Sawicki (Saint Mary's University, doctoral co-supervisor), and additional referees at ASIAA on request.

Last updated: May 2026.