

# I. L. Garland

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## Research Interests

Galaxy Formation and Evolution • Active Galactic Nuclei • Merger-Free Processes • Galaxy Morphology  
• Science Outreach and Involvement

## Transferable Skills

Spectral Data Reduction • Multi-wavelength Analysis of Complex Samples

## Education

2019 - present **Ph.D., Lancaster University**. Expected completion 2023. Supervisor: Dr. B. D. Simmons

2015 - 2019 **MPhys., Lancaster University** (first class) Supervisor: Dr. B. D. Simmons

## Grants & Scholarships

2016 **Lancaster University Academic Scholarship** awarded £2,000 as a one-off payment to students who obtained  $A^*A^*A$  at A-Level.

2016-2019 **Lancaster University Access Scholarship** awarded £1,000 each academic year to underrepresented students who obtained  $A^*AA$  at A-Level and maintained a high academic standard in subsequent years.

## Research Projects

May 2019 **MPhys Thesis** “Fuelling AGN in the Local Universe”

*I compared a sample of disk-dominated galaxies to a sample of elliptical galaxies, then divided the disk sample into barred and non-barred galaxies to examine how effectively each category can fuel AGN.*

May 2018 **Third Year Group Project** “An Exploration into the Expansion of the Universe”

*We investigated the role of dark energy in the expansion of the Universe following the  $\Lambda$ CDM model, and determined how well future telescopes could further scientific exploration into this concept.*

## Observing Experience

Nov 2018 Two nights (remotely) on the **Kast Double Spectrograph** (Shane-3m Telescope, Lick Observatory). Later completed the data reduction for these observations alongside the remainder of the multi-year Lick campaign.

May 2022 Four nights (on-site) on the **Wide-Field Camera** (INT, ING Observatory)

## Teaching

2019 - present **Graduate Teaching Assistant**, including practical lab demonstrating, and marking

## Outreach and Service

2019 - present **LUniverse Planetarium presenter**, delivering both virtual and in-person planetarium shows to Key Stage 2 (KS2; age 7 -11) children in the local area

2019 - present **Student Ambassador**, delivering activities designed to allow KS2 children to develop an interest in physics

2020-2022 **Seminar Coordinator** for Observational Astrophysics Group

## Scientific Communication

- Jan 2019 **Durham-Edinburgh eXtragalactic Conference**, “AGN fuelling in the merger-free regime”, *Talk*
- Jun 2021 **European Astronomical Society**, Virtual Conference “Bar-driven fuelling as a means of merger-free supermassive black hole growth”, *Poster*
- Jul 2021 **National Astronomy Meeting**, Virtual Conference, title as for EAS, *Poster*
- May 2022 **AGNXIV Conference**, “AGN Fuelling in the Merger-Free Regime”, *Poster*  
“Secular Black Hole Growth, AGN Feedback, and Galaxy Co-evolution”, *Talk*
- Jan 2023 **Durham-Edinburgh eXtragalactic Conference**, “AGN and Bar Presence”, *Talk*

## Broader Skill Development

2016 - present **Girlguiding Volunteer**. *Responsibilities include: safely running units with a balanced and varied programme, financial organisation, coordinating my unit leadership team (Adult Leadership Qualification), planning and leading day trips and residential experiences (Going Away with Guiding License), mentoring other adult members, and assisting all members in achieving their full potential. Demonstrates commitment over an extended period of time, people and project management, responsibility, involvement in the wider community.*

## Peer-Reviewed Publications

7. “The most luminous, merger-free AGN show only marginal correlation with bar presence” **I. L. Garland**, et al., MNRAS, submitted.
6. “Supermassive black holes in merger-free galaxies have higher spins which are preferentially aligned with their host galaxy” R. S. Beckmann, R. J. Smethurst, B. D. Simmons, A. Coil, Y. Dubois, **I. L. Garland**, et al., MNRAS, submitted, arXiv:2211.13614.
5. “Harnessing the Hubble Space Telescope Archives: A Catalogue of 21,927 Interacting Galaxies” D. O’Ryan, B. Merín, B. Simmons, A. Vojteková, A. Anku, M. Walmsley, **I. Garland**, et al., ApJ, in press, 2023.
4. “Evidence for non-merger co-evolution of galaxies and their supermassive black holes” R. J. Smethurst, R. S. Beckman, B. D. Simmons, A. Coil, J. Devriendt, Y. Dubois, **I. L. Garland**, et al., MNRAS, accepted March 2023, arXiv:2211.13677.
3. “Gems of the Galaxy Zoos - a Wide-Ranging Hubble Space Telescope Gap-Filler Program” W. C. Keel, J. Tate, O. I. Wong, J. K. Banfield, C. J. Lintott, K. L. Masters, B. D. Simmons, C. Scarlata, C. Cardamone, R. J. Smethurst, L. Fortson, J. Shanahan, S. Kruk, **I. L. Garland**, C. Hancock, D. O’Ryan, 2022, ApJ, 163(4), 150.
2. “Quantifying the Poor Purity and Completeness of Morphological Samples Selected by Galaxy Colour” R.J. Smethurst, K. L. Masters, B.D. Simmons, **I. L. Garland**, et al., 2022, MNRAS 510(3), 4126.
1. “Kiloparsec-scale AGN outflows and feedback in merger-free galaxies” R. J. Smethurst, B. D. Simmons, A. Coil, C. J. Lintott, K. L. Masters, E. Glikman, G. C. K. Leung, J. Shanahan, **I. L. Garland**, 2021, MNRAS, 507(3), 3985.