

Dr Andrew J. Rigby

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Introduction

I am a researcher in astrophysics at the University of Leeds with twelve years of experience in academia. I hope to join an innovative and dynamic company where I can engage the numerical and data analysis skills that I have honed in my research to career to have a real world impact. My research career exemplifies my strengths in mathematics, statistics, data analysis and programming, as well as scientific writing, the communication of results, leadership and mentorship.

Key skills

- Excellent numerical skills as required for a career in astrophysics, including data exploration, statistical analysis (e.g. correlation & hypothesis testing), modelling (e.g. linear and non-linear regression), and image analysis.
- Advanced Python user familiar with packages such as: numpy, matplotlib, pandas, seaborn, scipy, scikit-image, and Machine Learning experience with scikit-learn.
- Version control and publishing packages and scripts with GitHub (e.g. [COLTE](#) and [mwydyn](#))
- Experience with other programming languages such as SQL, Matlab, Java, HTML5, IDL, and shell-scripting languages zsh, bash, and csh.
- Microsoft Office applications: Excel, Word, PowerPoint
- Operating systems: Windows, Linux, Mac OS
- Experienced communicator: presentation of results to peers at international conferences, seminars at universities, and to the general public with talks and exhibits at outreach events.
- Scientific writing in peer-reviewed journal articles and applications for telescope time.
- Leadership within international projects, and supervision and mentorship detailed below.

Experience

Postdoctoral Research Fellow

October 2022 – present

School of Physics and Astronomy, University of Leeds

- Appointed to reduce, clean and publish analysis of the Perseus Arm Molecular Survey (PAMS). I completed this with a modern pipeline whilst securing competitive telescope time to incorporate new observations covering areas with poor data quality. Resulting publication is currently in review.
- Co-author of *The UK Submillimetre-Millimetre Astronomy Roadmap 2024*.
- Chairman of one of the three Key Sessions at the National Astronomy Meeting 2022, Cardiff (large annual UK conference with approx. 700 delegates).
- Supervision of PhD student in Kenya as part of the Development in Africa with Radio Astronomy (DARA) initiative (remote), and three MPhys project students.
- Guest lecturer in *Stars and Galaxies*, and supervisor for *Research Skills in Astrophysics* modules.

Postdoctoral Research Associate

June 2016 – September 2022

School of Physics & Astronomy, Cardiff University

- Appointed to design and execute a survey called GASTON using a cutting-edge instrument in commissioning at the IRAM 30-m telescope in Spain. I led every aspect of this survey: observation design, data reduction, analysis, and publication of first results in a leading journal. Took part in the instrument commissioning effort, engaging closely with the engineers who had built the instrument and developed the accompanying software suite. This resulted in the deepest ever large-scale observations of the Milky Way at millimetre wavelengths.
- Independently led a successful project to obtain follow up observations of sources from GASTON.
- Developed a Python tool called [mwydyn](#) to perform advanced and fully-automated modelling of

astronomical data cubes.

- Led a Science Use Case for the design study for [AtLAST](#), a future billion-dollar radio telescope facility.
- Co-supervised two PhD students, and supervised one MSc project student
- Guest lecturer on *Introduction to Astronomy, Formation and Evolution of Stars*, and *Computational Physics* modules. Deputy Module Organiser for *Observational Techniques in Astronomy*.

Education

Liverpool John Moores University PhD Astrophysics Sept 2012 – May 2016
Astrophysics Research Institute

- Consolidated several separate observational programmes from the James Clerk Maxwell Telescope (JCMT) into a coherent large-scale survey of the Milky Way called CHIMPS. Secured further competitive telescope time to fill in gaps, and processed the data in a uniform manner using a reduction pipeline. Led two peer-reviewed publications presenting the results of the data analysis, and published the survey for the wider community where it maintains a substantial legacy.
- The success of the survey has been instrumental in securing thousands of hours of further investment in follow-up surveys at the JCMT: notably [CHIMPS2](#) and [CLOGS](#).
- Thesis entitled *Molecular clouds and star formation in the Inner Galaxy*.
- Organiser of weekly five-a-side football game.

University of Liverpool and MPhys Astrophysics (1st) Sept 2008 – June 2012
Liverpool John Moores University
(Joint Degree Programme)

- Awarded Isaac Roberts Prize for Best Astrophysics Student.

Key achievements

- Strong track record in obtaining highly competitive telescope time at cutting-edge facilities which involves international collaboration, presenting concise and convincing arguments using insights from data analysis, and working to tight deadlines. Awarded over 170 hours awarded as Principal Investigator (ALMA, IRAM 30-m, JCMT, NOEMA) valued at over £200k, and over 2400 hours as a co-Investigator valued at £2.4M.
- Excellent track-record of publishing scientific results in the main British and European peer-reviewed journals in astronomy and astrophysics, with over 100 peer-reviewed publications at the time of writing, including 7 as lead author, with a combined total of 1700 citations. Publication list [here](#).
- Numerous presentations of scientific results at major international conferences in locations such as Italy, Chile, Vietnam, Finland, and at numerous seminars and workshops within the UK
- Public outreach including talks at high schools, student work experience weeks, clubs such as the Otley Camera Club, the University of the Third Age (U3A), and exhibits at Bradford Science Festival.

Personal interests

- I enjoy playing music in my spare time, mainly playing guitar these days, but I am really a drummer (when circumstances allow), and (lapsed) pianist. I lived the dream in my first job as a teenager as a sales assistant at Cumbria Drums.
- I love to play basketball or five-a-side football, or a bit of 5km running Parkrun when I get the chance. I get ridiculously competitive at ten-pin bowling.
- I love building Lego models and generally horsing around with my two boys.

References

Available on request.