

Rebecca McElroy

Sydney Institute for Astronomy, School of Physics, University of Sydney, NSW 2006, Australia

☎ (+61) 421 882 513 | ✉ rebecca.mcelroy@sydney.edu.au | 🏠 physics.usyd.edu.au/~rmcelroy | 🐦 @re_mcelroy

Scientific interests & Achievements

- Research interests: **active galactic nuclei, emission and absorption line physics, galaxy evolution.**
- I am passionate about **teaching** and **outreach**.
- Discovery of changes in Mrk 1018 published in two papers (McElroy et al. 2016 & Husemann et al. 2016) and featured in joint **ESO & CAASTRO press release**.

Education

University of Sydney

Sydney, Australia

PHD IN ASTROPHYSICS (ESTIMATED COMPLETION AUG 2017)

2014 - present

- Ph.D Supervisors : Prof. Scott Croom & Dr. Michael Pracy
- Thesis: *Investigating the host galaxies of luminous AGN in the local universe with integral field spectroscopy*

University of Sydney

BSC AND GRADUATE DIPLOMA OF SCIENCE

2010 - 2013

- Received 1st class honours
- Major in Physics, minors in Mathematics and Ancient History
- Honours Supervisors: Dr. Scott Croom & Dr. Michael Pracy
- Honours Thesis: *The Host Galaxies of Active Galactic Nuclei: Winds, Morphology, and Star Formation.*

Honours & Awards

2016	Best student poster , The Changing Face of Galaxies Conference	Tasmania, Australia
2016	Best student talk , Annual meeting of the Astronomical Society of Australia	Sydney, Australia
2015	Australian Postgraduate Award (APA) Scholarship , University of Sydney	
2014	Best poster prize , CAASTRO annual retreat	Mooloolaba, Australia

Academic roles

Administrative officer

SYDNEY INSTITUTE FOR ASTRONOMY

- Managed ordering of equipment for the offices.
- Dealt with any problems within the office, such as coordinating maintenance.
- Set up for events, conferences, workshops.

Seminar organiser

SYDNEY INSTITUTE FOR ASTRONOMY

- Organised department seminars, introduced and hosted the speakers.

Local organising committee

GAS ACCRETION ONTO GALAXIES WORKSHOP

- Assisted in organisation and logistics of the workshop.

Observation and data analysis

- **Experienced user of integral field spectroscopic data**
 - SAMI, SPIRAL, WiFeS, MUSE, VIMOS.
 - Written software to study complex emission lines, using frequentist and Bayesian methods (MCMC, Nested Sampling).
 - Used various tools to study absorption line properties (e.g. PPXF), such as stellar populations and kinematics.
- Experience **reducing IFU data**.
- **Capable observer**.
 - 19 nights on the Anglo-Australian Telescope.
 - 16 hours on the Australian Telescope Compact Array.
- Co-investigator on several accepted proposals as part of the CARS team (including HST and Chandra).

Teaching & Outreach

Undergraduate astronomy and physics

- **I have taught first year Astronomy and Physics (2014-2016, both semesters).**
- I taught both **tutorials and labs**
 - Led classes of up to 45 students.
 - Presented short talks on the class topic
 - Helped students with problems and explained complex ideas to students of all abilities.
- **I coordinated Astronomy tutorials**
 - Managed other tutors
 - Organised and led meetings, coordinated logistics.
 - Addressed concerns about the teaching content.
- **I developed several new Astronomy tutorials**, devised new concepts and designed new teaching material.
- **I supervised Astronomy Night Viewings** for first year students.
 - Managed a large group of students
 - Operated a small telescope
 - Explained objects visible in the sky.
- I have marked both Physics and Astronomy exams (2014-2016 in both semesters).

Outreach activities

- Appeared on the **ABC Australia's national televised news** (16/09/2016) and ABC 702 (16/09/2016) and 744 (19/09/2016) **radio** to discuss the discovery of a 'starving' supermassive black hole.
- Contributed significantly to CAASTRO and ESO press releases which resulted in over 15 online news articles.
- Participated in the **CAASTRO Astronomer in Residence** program. This role involved assisting with night tours, telescope operation, giving public talks, and public Q&A sessions.

Professional affiliations

Societies

- Astronomical Society of Australia
- American Astronomical Society

Collaborations

- **The SAMI Galaxy Survey** - the first massively multiplexed spatially resolved survey of galaxies, based at the Anglo-Australian Telescope.
- **The Close AGN Reference Survey** - a multi-wavelength survey of nearby type 1 active galaxies based on MUSE, Chandra, VLA, and SOFIA data.
- Australian Research Council Centre of Excellence for All-Sky Astrophysics (**CAASTRO**).

Talks

I am an **experienced public speaker**. I have presented talks at **five conferences**, given talks at **five institutions in the US and Europe**, and presented **several outreach talks**.

1. '*QSO returns to the shadows after 30 years as a Seyfert 1*', **conference talk**, Annual Meeting of the Astronomical Society of Australia, Sydney, 2016
2. '*Kinematics of type II AGN: Winds, Shocks, and Mergers*', **seminar**, European Southern Observatory, 2016
3. '*SAMI Galaxy Survey: Kinematics, Outflows, and AGN*', **seminar**, European Southern Observatory, 2016
4. '*SAMI Galaxy Survey: Kinematics, Outflows, and AGN*', **seminar**, Durham University, 2016
5. '*Host galaxies of luminous type II AGN*', **conference talk**, 227th Meeting of the American Astronomical Society, Florida, 2016
6. '*SAMI Galaxy Survey: Kinematics, Outflows, and AGN*', **seminar**, University of Illinois, 2015
7. '*SAMI Galaxy Survey: Kinematics, Outflows, and AGN*', **seminar**, Ohio State University, 2015
8. '*SAMI Galaxy Survey: Kinematics, Outflows, and AGN*', **seminar**, University of Wisconsin, 2015
9. '*Accreting super-massive black holes: The monsters at the centres of galaxies*', **outreach talk**, Uluru, 2015
10. '*Winds and shocks in luminous type II AGN*', **conference talk**, Black Hole Accretion and AGN Feedback, Shanghai, 2015
11. '*Feedback in luminous type II AGN: winds, star formation, and morphology*', **conference talk**, Powerful AGN and their Host Galaxies, Port Douglas, 2014

Skills

Computing and programming

- Experienced in a range of programming languages
 - Python
 - IDL
 - MATLAB
 - HTML

Languages

- Near fluent French, conversational German and AUSLAN.

Referees

Professor Scott Croom

PI OF THE SAMI GALAXY SURVEY, UNIVERSITY OF SYDNEY

Email: scott.croom@sydney.edu.au

Phone: +61 2 9036 5311

Dr Bernd Husemann

PI OF THE CLOSE AGN REFERENCE SURVEY, MPIA

Email: husemann@mpia.de

Phone: +49 6221528-406

Professor Joss Bland-Hawthorn

DIRECTOR, SYDNEY INSTITUTE FOR ASTRONOMY, UNIVERSITY OF SYDNEY

Email: jbh@physics.usyd.edu.au

Phone: +61 2 9351 2621

1. **R. E. McElroy**, B. Husemann, T. A. Davis, V. N. Bennert, G. Busch, F. Combes, A. Eckart, M. Perez- Torres, M. Powell, J. Scharwächter, G. R. Tremblay, and T. Urrutia.
'The Close AGN Reference Survey (CARS). Mrk 1018 returns to the shadows after 30 years as a Seyfert 1'
A&A, 593:L8, September 2016. doi: 10.1051/0004-6361/201629102. **Citations - 1.**
2. B. Husemann, T. Urrutia, G. R. Tremblay, M. Krumpke, J. Dexter, G. Busch, F. Combes, S. M. Croom, T. A. Davis, A. Eckart, **R. E. McElroy**, M. Perez-Torres, M. Powell, and J. Scharwächter.
'The Close AGN Reference Survey (CARS). What is causing Mrk 1018's return to the shadows after 30 years?'
A&A, 593:L9, September 2016. doi: 10.1051/0004-6361/201629245. **Citations - 0.**
3. **R. E. McElroy**, S. M. Croom, M. Pracy, R. Sharp, I.-T. Ho, and A. M. Medling.
'IFU observations of luminous type II AGN - I. Evidence for ubiquitous winds.'
MNRAS, 446:2186–2204, January 2015. doi: 10.1093/mnras/stu2224. **Citations - 22.**
4. J. T. Allen, S. M. Croom, I. S. Konstantopoulos, J. J. Bryant, R. Sharp, G. N. Cecil, L. M. R. Fogarty, C. Foster, A. W. Green, I.-T. Ho, M. S. Owers, A. L. Schaefer, N. Scott, A. E. Bauer, I. Baldry, L. A. Barnes, J. Bland-Hawthorn, J. V. Bloom, S. Brough, M. Colless, L. Cortese, W. J. Couch, M. J. Drinkwater, S. P. Driver, M. Goodwin, M. L. P. Gunawardhana, E. J. Hampton, A. M. Hopkins, L. J. Kewley, J. S. Lawrence, S. G. Leon-Saval, J. Liske, Á. R. López-Sánchez, N. P. F. Lorente, **R. McElroy**, A. M. Medling, J. Mould, P. Norberg, Q. A. Parker, C. Power, M. B. Pracy, S. N. Richards, A. S. G. Robotham, S. M. Sweet, E. N. Taylor, A. D. Thomas, C. Tonini, and C. J. Walcher.
'The SAMI Galaxy Survey: Early Data Release.'
MNRAS, 446:1567–1583, January 2015. doi: 10.1093/mnras/stu2057. **Citations - 41.**
5. J. J. Bryant, M. S. Owers, A. S. G. Robotham, S. M. Croom, S. P. Driver, M. J. Drinkwater, N. P. F. Lorente, L. Cortese, N. Scott, M. Colless, A. Schaefer, E. N. Taylor, I. S. Konstantopoulos, J. T. Allen, I. Baldry, L. Barnes, A. E. Bauer, J. Bland-Hawthorn, J. V. Bloom, A. M. Brooks, S. Brough, G. Cecil, W. Couch, D. Croton, R. Davies, S. Ellis, L. M. R. Fogarty, C. Foster, K. Glazebrook, M. Goodwin, A. Green, M. L. Gunawardhana, E. Hampton, I.-T. Ho, A. M. Hopkins, L. Kewley, J. S. Lawrence, S. G. Leon-Saval, S. Leslie, **R. McElroy**, G. Lewis, J. Liske, Á. R. López-Sánchez, S. Mahajan, A. M. Medling, N. Metcalfe, M. Meyer, J. Mould, D. Obreschkow, S. O'Toole, M. Pracy, S. N. Richards, T. Shanks, R. Sharp, S. M. Sweet, A. D. Thomas, C. Tonini, and C. J. Walcher.
'The SAMI Galaxy Survey: instrument specification and target selection.'
MNRAS, 447:2857–2879, March 2015. doi: 10.1093/mnras/stu2635. **Citations - 63.**
6. R. Sharp, J. T. Allen, L. M. R. Fogarty, S. M. Croom, L. Cortese, A. W. Green, J. Nielsen, S. N. Richards, N. Scott, E. N. Taylor, L. A. Barnes, A. E. Bauer, M. Birchall, J. Bland-Hawthorn, J. V. Bloom, S. Brough, J. J. Bryant, G. N. Cecil, M. Colless, W. J. Couch, M. J. Drinkwater, S. Driver, C. Foster, M. Goodwin, M. L. P. Gunawardhana, I.-T. Ho, E. J. Hampton, A. M. Hopkins, H. Jones, I. S. Konstantopoulos, J. S. Lawrence, S. K. Leslie, G. F. Lewis, J. Liske, Á. R. López-Sánchez, N. P. F. Lorente, **R. McElroy**, A. M. Medling, S. Mahajan, J. Mould, Q. Parker, M. B. Pracy, D. Obreschkow, M. S. Owers, A. L. Schaefer, S. M. Sweet, A. D. Thomas, C. Tonini, and C. J. Walcher.
'The SAMI Galaxy Survey: cubism and covariance, putting round pegs into square holes.'
MNRAS, 446:1551–1566, January 2015. doi: 10.1093/mnras/stu2055. **Citations - 30.**