

TOBY BROWN

tobiashenrybrown@gmail.com

Department of Physics and Astronomy
McMaster University, Hamilton, Canada

RESEARCH INTERESTS

Extragalactic astronomy, galaxy evolution, star formation, observational astronomy

PROFESSIONAL EXPERIENCE

Post Doctoral Fellow

October 2017 - Present

Department of Physics and Astronomy

McMaster University, Hamilton, Canada

- Devising, leading and completing successful research into the star formation cycle of galaxies
- Supervising PhD and undergraduate students in astrophysics and data science
- Speaking at international conferences, research institutions and public lectures
- Collaborating with experts to form productive research partnerships
- Developing data analysis, machine learning and visualisation software (primarily Python)
- 7 publications in world-leading academic journals

EDUCATION

Business Administration with Management

May 2018 - Present

McMaster University CCE

Hamilton, Canada

- Continued education to ensure a strong foundation in business competencies, including finance, operations and general management
- Key modules: Business Foundations, Business Strategy, Organizational Behaviour

Doctor of Philosophy (Ph.D.), Astrophysics

October 2013 - August 2017

Swinburne University of Technology

Melbourne, Australia

- Using large multi-wavelength datasets and novel techniques to disentangle the secular and external processes that dictate the gas-star formation cycle of galaxies.
- Supervisors: Dr. Barbara Catinella (primary), A. Prof. Virginia Kilborn, Dr. Luca Cortese

Astrophysics MPhys, Hons

September 2009 - June 2013

University of Liverpool & Liverpool John Moores University

Liverpool, UK

- Received an Upper Second Class (2:1, GPA equivalent $\sim 3.33 - 3.67$)
- Science Editor at Liverpool Student Media, coordinating a team of student journalists

TEACHING EXPERIENCE

MacDATA Fellow Supervisor

March 2018 - present

Dept. Physics & Astronomy, & MacDATA Institute, McMaster University

Hamilton, Canada

- Supervisor of McMaster's MacDATA Graduate (PhD level) Fellow
- 9 month astronomy-data science collaboration

Integrated Science Project Supervisor

November 2017 - Present

McMaster University

Hamilton, Canada

- Supervisor for 8 high-achieving undergraduate students pursuing an Integrated Science degree
- Teaching and mentoring using problem-based learning

Teaching Assistant

February - November 2016

University of Western Australia

Perth, Australia

- Demonstrating, supervision and grading of *Quantum Mechanics and Electromagnetism* labs and tutorials.

Teaching Assistant*Swinburne University of Technology*

February - October 2015

Melbourne, Australia

- Demonstrating, supervision and grading of *Electronic Systems* labs and tutorials.

Undergraduate Project Supervisor*Swinburne University*

September 2014 - July 2015

Melbourne, Australia

- Supervised 4 final year Animation undergraduate student projects

LEADERSHIP AND VOLUNTARY ROLES

Field Director*Municipal Council Election Campaign*

July - October 2018

Hamilton, Canada

- Developing and delivering campaign messaging through voter contact
- Leading foot, phone and digital platform canvassing strategies
- Managing campaign's data analytics

Senior Field Organiser*Ontario New Democratic Party*

April - June 2018

Hamilton, Canada

- Organised teams of foot canvassers for party leader's successful re-election campaign.
- Led the campaign's final volunteer organisation phase and consulted on data analytics

Committee Member*Early Career Researcher Chapter*

May 2016 - May 2017

Astronomical Society of Australia

- Oversaw and reviewed policies for the Astronomical Society of Australia chapter
- Advocated for and represented early career astronomers in Australia

CONTRIBUTED CONFERENCE TALKS

KIAA Forum on Gas in Galaxies, Peking University, Beijing, China	2018
European Week of Astronomy, Liverpool, UK	2018
MockPerth, Perth, Australia	2017
Pathfinders HI Science Coordination Committee meeting, Cape Town, South Africa	2016
Drifting through the Cosmic Web, Aix-en-Provence, France	2015
The Many Pathways to Galaxy Growth, Prato, Italy	2015

PUBLIC SPEAKING AND COMMUNICATION

Award-winning public talks

2016 - present

- Speaking to audiences of 700+, including the March for Science, the British Council's Famelab Australia Final, British live event series Cosmic Shambles

Media coverage

2016 - present

- Providing comment on STEM issues for local and national media, including The Conversation, ABC Radio National, ABC 720 Perth, ABC Melbourne

Media commentary

2016 - present

- Stories on my research have been featured in Scientific American, News.com.au, The Daily Telegraph, Space.com, Gizmodo, IFL Science, among others

COLLOQUIA AND SEMINARS

University of Victoria, Victoria, Canada	2018
National Research Council Hertzberg Institute, Victoria, Canada	2018
University of British Columbia, Vancouver, Canada	2018
McMaster University, Hamilton, Canada	2017
Liverpool John Moores University, Liverpool, UK	2016
Max Planck Institute for Extraterrestrial Physics, Garching, Germany	2016
European Southern Observatory, Garching, Germany	2016
University College London, London, UK	2016
University of Hertfordshire, Hatfield, UK	2016
LERMA, l'Observatoire de Paris, Paris, France	2016
Institut d'astrophysique de Paris, Paris, France	2016
ICRAR, University of Western Australia, Perth, Australia	2015
Centre de Recherche Astrophysique de Lyon, Lyon, France	2015

SURVEY MEMBERSHIPS

JINGLE (JCMT dust and gas In Nearby Galaxies Legacy Exploration, PI Wilson)	2017
DEVILS (Deep Extragalactic Visible Legacy Survey, PI Davies)	2017
DINGO (Deep Investigation of Neutral Gas Origins, PI Meyer)	2016 -
xGASS (extended GALEX Arecibo SDSS Survey, PI Catinella)	2015 -
HIX (H I eXcess galaxy survey, PI Lutz)	2014 -

TOBY BROWN - LIST OF PUBLICATIONS (3 FIRST AUTHOR, 6 CO-AUTHOR)

9. Saintonge, A.; Wilson, C.D.; Xiao, T.; Lin, L.; Hwang, H.S.; Tosaki, T.; Bureau, M.; Cigan, P.J.; Clark, C.J.R.; Clements, D. L.; De Looze, I.; Dharmawardena, T.; Gao, Y.; Gear, W.K.; Greenslade, J.; Lamperti, I.; Lee, J.C.; Li, C.; Michałowski, M.J.; Mok, A.; Pan, H.A.; Sansom, A.E.; Sargent, M.; Smith, M.W.L.; Williams, T.; Yang, C.; Zhu, M.; Accurso, G.; Barmby, P.; Brinks, E.; Bourne, N.; **Brown, T.** and the JINGLE Survey Team, 2018, *JINGLE, a JCMT legacy survey of dust and gas for galaxy evolution studies - I. Survey overview and first results*, MNRAS, 481, 3497
8. Stevens, A.R.H.; Diemer, B.; Lagos, C.d.P.; Nelson, D.; Pillepich, A.; **Brown, T.**; Catinella, B.; Hernquist, L.; Weinberger, R.; Vogelsberger, M.; Marinacci, F., 2018, *Atomic hydrogen in IllustrisTNG galaxies: the impact of environment paralleled with local 21-cm surveys*, arXiv:1810.12158 (submitted)
7. Pan, H-A; Lin, L; Hsieh, B-C; Xiao, T; Gao, Y; Ellison, S.L.; Scudder, J.M.; Barrera-Ballesteros, J.; Yuan, F.; Saintonge, A.; Wilson, C.D.; Hwang, H.S.; De Looze, I.; Gao, Y.; Ho, L.C.; Brinks, E.; Mok, A.; **Brown, T.**; Davis, T.A.; Williams, T.G.; Chung, A.; Parsons, H.; Bureau, M.; Sargent, M.T.; Chung, E.J.; Kim, E.; Liu, T.; Michałowski, M.J.; Tosaki, T., 2018, *The Effect of Galaxy Interactions on Molecular Gas Properties*, arXiv:1810.10162
6. **Brown, T.**; Cortese, L.; Catinella, B.; Kilborn, V.A, 2018, *The role of atomic hydrogen in regulating the scatter of the mass–metallicity relation*, MNRAS, 473, 1868
5. Stevens, A. & **Brown, T.**, 2017, *Physical drivers of galaxy atomic gas content: exploring environmental and evolutionary effects with Dark Sage*, MNRAS, 471, 447
4. Lutz, K. A.; Kilborn, V.A.; Catinella, B.; Koribalski, B. S.; **Brown, T.**; Cortese, L.; Denes, H.; Jozsa, G. I. G.; Wong, O. I., 2017, *The HIX galaxy survey I: Study of the most gas rich galaxies from HIPASS*, MNRAS, 467, 1083
3. Janowiecki, S.; Catinella B.; Cortese, L.; Saintonge, A.; **Brown, T.**, Wang, J., 2017, *xGASS: Exceptionally gas-rich central galaxies in small groups and their connections to pre-processing and galaxy evolution*, MNRAS, 466, 4795
2. **Brown, T.**; Catinella, B.; Cortese, L.; Lagos, C.d.P. ; Dave, R.; Kilborn, V.A.; Haynes, M.P.; Giovanelli, R.; Rafieferantsoa, M., 2017, *Cold gas stripping in satellite galaxies: from pairs to clusters*, MNRAS, 466, 1275
1. **Brown, T.**; Catinella, B.; Cortese, L.; Kilborn, V.A.; Haynes, M.P.; Giovanelli, R., 2015, *The effect of structure and star formation on the gas content of nearby galaxies*, MNRAS, 452, 2479