DR. TOBY BROWN

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Department of Physics & Astronomy, McMaster University, Hamilton, Canada

RESEARCH INTERESTS

Galaxy evolution, star formation, multiwavelength astronomy

PROFESSIONAL EXPERIENCE

Postdoctoral Fellow October 2017 - present
McMaster University *Hamilton, Canada*

- PI of VERTICO, an ALMA Large Program that is mapping molecular gas in 51 Virgo Cluster galaxies
- Completing and publishing research in leading astronomy journals
- Supervising PhD and undergraduate students in astrophysics and machine learning
- Speaking at international conferences, research institutions, and public events

EDUCATION

Business Administration with Management May 2018 - present
McMaster University CCE *Hamilton, Canada*

Doctor of Philosophy (Ph.D.), Astrophysics October 2013 - August 2017
Swinburne University of Technology *Melbourne, Australia*

Astrophysics MPhys, Hons September 2009 - June 2013
University of Liverpool & Liverpool John Moores University *Liverpool, UK*

COMPETITIVE FUNDING AND HONOURS

ARCADE: ALMA Reduction in the CANFAR Data Environment (co-I, $250,000)	2019
MITACS Globalink Research Award ($6,000)	2019
NAASC ALMA Ambassador ($13,500)	2018
ASTRO-3D Science Visitor Program ($1,500)	2018
TMT Early-Career Workshop Grant ($1,800)	2018
ACURA Travel Award ($1,000)	2018
MacDATA Fellow Supervisor ($7,500)	2017
Famelab Australia Finalist	2016
ASA Travel Award ($1,000)	2015
SUPRA Graduate Scholarship ($98,000 + Tuition-fee Waiver)	2013

LEADERSHIP AND SERVICE ROLES IN ASTRONOMY

Principle Investigator, VERTICO July 2019 - present
Virgo Environment Traced in CO, ALMA Cycle 7 Large Program

- Awarded ∼200 ALMA hours as P.I. of VERTICO, the first Candian-led ALMA Large Program
- VERTICO will map the molecular gas content of 51 Virgo Cluster galaxies
- Recruiting and managing ∼30 world-class researchers for the VERTICO collaboration
- Ensuring maximum impact and legacy value by coordinating projects and collaborations

ALMA Ambassador December 2018 - present
North American ALMA Science Center

- Acting as an ALMA resource for the Canadian community
- Hosting ALMA preparation workshops and sharing ALMA/interferometry expertise

Postdoc Representative July 2018 - present
Department of Physics & Astronomy, McMaster University

Women in Astronomy Working Group Member November 2018 - present
International Astronomical Union

SKA HI Galaxy Science Working Group Member November 2018 - present
Square Kilometer Array Organisation

Steering Committee Member May 2016 - May 2017
Early Career Researcher Chapter, Astronomical Society of Australia

Student Mentor January - October 2015
Swinburne University of Technology

Scientific Organizing Committee Member June - September 2016
ICRARcon, Mandura, Australia

Local Organizing Committee Member June - September 2016
ICRARcon, Mandura, Australia

Local Organizing Committee Member June - September 2015
The Role of Neutral Hydrogen in Galaxy Evolution, Borneo, Malaysia

SUPERVISING AND TEACHING EXPERIENCE

MacDATA Fellow Supervisor March 2018 - December 2018
Dept. Physics & Astronomy, & MacDATA Institute, McMaster University *Hamilton, Canada*

- Supervisor of McMaster's MacDATA Graduate (PhD level) Fellow
- Won $7,500 grant to pay student salary for 9 month astronomy-data science collaboration

Integrated Science Project Supervisor November 2017 - present
McMaster University *Hamilton, Canada*

Teaching Assistant February - November 2016
University of Western Australia *Perth, Australia*

Teaching Assistant February - October 2015
Swinburne University of Technology *Melbourne, Australia*

Undergraduate Project Supervisor September 2014 - July 2015
Swinburne University of Technology *Melbourne, Australia*

LEADERSHIP ROLES OUTSIDE ASTRONOMY

Bargaining Committee Chair October 2018 - present
Canadian Union of Public Employees - Local 3906 *Hamilton, Canada*

- Elected to represent all postdocs in contract negotiations with McMaster University leadership

Field Director July - October 2018
Municipal Council Election Campaign *Hamilton, Canada*

- Devising campaign strategy and coordinating approximately 120 volunteers
- Campaign data analytics lead

Senior Field Organiser April - June 2018
Ontario New Democratic Party *Hamilton, Canada*

- Coordinating approximately 200 volunteers for ONDP leader's successful re-election campaign
- Led the campaign's final volunteer organisation phase and consulted on data analytics

Political Action Committee Member January - September 2018
Canadian Union of Public Employees - Local 3906 *Hamilton, Canada*

- Oversee political donations, events and awareness campaigns of union

CONTRIBUTED CONFERENCE TALKS

Total number: 8

Metals in Galaxis Near and Far, The Lorentz Centre, Leiden, Netherlands	2019
The Life and Death of Star-Forming Galaxies, Perth, Australia	2019
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

- 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

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

Media commentary

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

COLLOQUIA AND SEMINARS

Total number: 18

Swinburne University of Technology, Melbourne, Australia	2019
Carnegie Observatories, Pasadena, CA, USA	2018
York University, York, Canada	2018
Royal Military College of Canada, Kingston, Canada	2018
Queens University, Kingston, Canada	2018

University of Victoria, Victoria, Canada	2018
National Research Council Hertzberg Astronomy and Astrophysics, 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

VERTICO (Virgo Environment Traced in CO, PI Brown)

WALLABY (The ASKAP HI All-Sky Survey, PIs Koribalski, Staveley-Smith)

JINGLE (JCMT dust and gas In Nearby Galaxies Legacy Exploration, PI Wilson)

DINGO (Deep Investigation of Neutral Gas Origins, PI Meyer)

xGASS (extended GALEX Arecibo SDSS Survey, PI Catinella)

HIX (HI eXcess galaxy survery, PI Lutz)

DR. TOBY BROWN - LIST OF PUBLICATIONS (4 FIRST AUTHOR, 10 CO-AUTHOR)

14. Gao, Y.; Xiao, T.;, Li, C.; Jiang, X.; Tan, Q.; Gao, Y.; Wilson, C.D.; Bureau, M.; Saintonge, A.; Sánchez-Gallego, J.R.; **Brown, T.**; Clark, C.J.R.; Hwang, H.S.; Lamperti, I.; Lin, L.; Liu, L.; Lu, D.; Pan, H.; Sun, J.; Williams, T.G., 2019, *Estimating the molecular gas mass of low-redshift galaxies from a combination of mid-infrared luminostity and optial properties*, ApJ, submitted

13. Lamperti, I.; Saintonge, A.; De Looze, I.; Accurso, G.; Clark, C.J.R.; Smith, M.W.L.; Wilson, C.D.; Brinks, E.; **Brown, T.**; Bureau, M.; Clements, D.L.; Eales, S.; Glass, D.H.W.; Hwang, H.S.; Lee, J.C.; Lin, L.; Michalowski, M.J.; Sargent, M.; Williams, T.G.; Xiao, T.; Yang, C., 2019, *JINGLE V: Dust properties of nearby galaxies derived from hierarchical Bayesian SED fitting*, MNRAS, accepted, DOI: 10.1093/mnras/stz2311

12. **Brown, T.** & Wilson, C.D., 2019, *Extreme CO Isotopologue Line Ratios in ULIRGS: Evidence for a Top-heavy IMF*, ApJ, 879, 17

11. 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., 2019, *Atomic hydrogen in IllustrisTNG galaxies: the impact of environment parallelled with local 21-cm surveys*, MNRAS, 483, 5334

10. Roberts, I.D.; Parker, L.; **Brown, T.**; Joshi, G.; Hlavacek-Larrondo, J.; Wadsley J., 2018, *Quenching low-mass satellite galaxies: evidence for a threshold ICM density*, ApJ, 873, 42

9. Ellison S.L.; **Brown, T.**; Catinella, B.; Cortese, L., 2018, *Atomic gas fractions in active galactic nucleus host galaxies*, MNRAS, 482, 5694

8. 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

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*, ApJ, 868, 132

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