

**CONTACT
INFORMATION**

School of Earth and Space Exploration
Arizona State University
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**RESEARCH
INTERESTS**

My research is aimed at studying galaxy evolution through the triad of parameters that dictate galaxy properties: **environment, mass, and time**. In particular, I focus on the most extreme end of these parameters: the dense regions of galaxy clusters, the most massive galaxies in the Universe, and the cosmic “high noon” of star formation. I utilize many space-based and ground facilities, including **ALMA**, *Herschel* (PACS, SPIRE), *Spitzer* (MIPS, IRAC), the **JCMT** (SCUBA-2), *HST*, and the **VLA**.

COLLABORATION I am an active member of:

- **SpARCS**: Spitzer Adaptation of the Red-Sequence Cluster Survey
- **GOGREEN**: Gemini Observations of Galaxies in Rich Early Environments
- **SPT**: South Pole Telescope

EDUCATION

Ph.D. McGill University - Department of Physics 2014

- Thesis: *Dusty Star-Forming Galaxies within High-Redshift Galaxy Clusters*
- Advisor: Tracy Webb

M.Sc. McGill University - Department of Physics 2009

- Thesis: *Submillimeter Imaging of High-Redshift Galaxy Clusters*
- Advisor: Tracy Webb

B.Sc. University of Wisconsin - Madison (Graduated with Distinction) 2007

- Dual Major: Honors in Physics and Astrophysics
- Certificate: Integrated Liberal Studies
- Honors Thesis: *The Wisconsin Small Telescope Array for Radio-waves*
- Advisors: Peter Timbie and Jay Gallagher

**PROFESSIONAL
EMPLOYMENT**

Assistant Professor 2019 – present

- Arizona State University

Postdoctoral Associate 2016 – 2019

- Massachusetts Institute of Technology, USA
- Advisor: Michael McDonald

Postdoctoral Fellow 2014 – 2016

- University of Toronto, Canada
- Advisor: Howard Yee

OBSERVING PROPOSALS

Principal Investigator/Science Lead Proposals

- **ALMA Cycle 7**, 5.8 hours: “Feeding the Beasts: Investigating Merger-Induced Growth of Main-sequence BCGs” 2019
- **ALMA Cycle 6**, 19.7 hours (in queue, high priority): “Kinematic Diversity at $z \sim 1.6$: Resolving CO (2-1) in Gas-rich Cluster Galaxies” 2018
- **ALMA Cycle 6**, 7 hours: “Feeding the Beasts: Investigating Merger-Induced Growth of Star-bursting BCGs” 2018
- **ALMA Cycle 5**, 4.4 hours: “Resolving the Unusual Molecular Gas Excess in $z = 1.6$ Cluster Galaxies” – [Noble et al. 2019](#) 2017
- **ALMA Cycle 5**, 7 hours (not completed): “Feeding the Beasts: Investigating the Merger-Induced Growth of Star-bursting BCGs from $0.7 < z < 1.7$ ” 2017
- **ALMA Cycle 3**, 13 hours: “The first glimpse of CO 2-1 in $z = 1.6$ cluster galaxies” – [Noble et al. 2017](#) 2015
- **JCMT (SCUBA2)**, 3 hours: “Discovery of an Extreme Star-Forming Central Galaxy within a Massive Galaxy Cluster at $z = 1.7$ ” – [Webb, Noble et al. 2015](#) 2014
- **JCMT (SCUBA2)**, 8 hours: “Submm imaging of a $z = 0.9$ merging supercluster: studying the nature of star formation and mass assembly in a vast range of environments” – [Noble et al. 2013](#) 2012
- **Herschel (PACS)**, 26 hours (priority 1): “Constraining the star-formation activity in 10 SpARCS clusters: star-formation in the densest regions at $z = 1$ ” – [Noble et al. 2016](#) 2011
- **Herschel (PACS)**, 37 hours (priority 2, only 16 hours partially completed): “Constraining the star-formation activity in very high-redshift clusters: Herschel observations of SpARCS clusters at $z = 1.6$ ” 2011

Co-Investigator Proposals

- I have been involved in an additional > 20 accepted proposals as a co-I for: *HST*, *Spitzer*, Gemini, Keck, ALMA, *Herschel*, SCUBA-2, VLA, *XMM*, Magellan, Subaru, CFHT, LMT.

OBSERVING EXPERIENCE

I have been a visiting observer at the following telescopes:

- Magellan (IMACS) – 3 nights Oct 2017
- Magellan (FourStar) – 3 nights Jan 2017
- Subaru (Suprime-Cam) – 2 nights May 2016
- Gemini-N (GMOS) – 4 nights May 2015
- Gemini-S (GMOS) – 8 nights Nov 2014
- JCMT (SCUBA-2) – 7 nights Sept 2012
- JCMT (SCUBA-2) – 5 nights Feb 2012
- Subaru (FMOS) – 1 night Oct 2011
- WIYN (0.9 meter) – 5 nights Mar 2007
- WIYN (3.5 meter) – 3 nights Dec 2006

INVITED SEMINARS & WORKSHOPS	<i>Apples to Apples: Confronting Simulations with Observations</i> , Hunter Valley, Australia	to come, Nov 2019
	<i>COSWEB: The Cosmic Web and Galaxy Evolution</i> , ISSI Workshop, Bern, Switzerland	to come, Oct 2019
	<i>Cluster Group Meeting</i> , Center for Astrophysics, Harvard, Cambridge, MA, USA	June 2019
	<i>Galaxy Evolution in the Cosmic Web</i> , Lorentz Center Workshop, Leiden, The Netherlands	Mar 2019
	<i>Physics Colloquium</i> , University of Milwaukee - Wisconsin, USA	Mar 2019
	<i>SESE Colloquium</i> , Arizona State University, USA	Feb 2019
	<i>Physics Colloquium</i> , University of Missouri - Kansas City, USA	Feb 2019
	<i>Physics Colloquium</i> , University of Toledo, USA	Feb 2019
	<i>Physics Colloquium</i> , University of Cincinnati, USA	Jan 2019
	<i>Submillimeter Array Seminar</i> , Center for Astrophysics, Harvard, Cambridge, MA, USA	Dec 2018
	<i>Gemini Observations of Galaxies in Rich Early Environments</i> , Workshop, University of Waterloo, Canada	Aug 2018
	<i>Cosmology Seminar</i> , Minnesota Institute for Astrophysics, Minneapolis, MN, USA	Nov 2017
	<i>Galaxies and Cosmology Seminar</i> , Center for Astrophysics, Harvard, Cambridge, MA, USA	Feb 2017
	<i>The Effect of Dense Environments on Gas in Galaxies</i> , ISSI Workshop, Bern, Switzerland	Oct 2016
	<i>Astrophysics Seminar</i> , University of Waterloo, Canada	Feb 2016
<i>Astrophysics Journal Club</i> , McMaster University, Canada	Jan 2016	
CONTRIBUTED TALKS	<i>GMT Community Science Meeting</i> , California, USA	Sept 2019
	<i>Linking Galaxies</i> , Sydney, Australia	Feb 2019
	<i>SnowCluster 2018</i> , Snowbird, Utah	Mar 2018
	<i>The Role of Gas in Galaxy Dynamics</i> , Valletta, Malta	Oct 2017
	<i>Early stages of Galaxy Cluster Formation</i> , Garching, Germany	July 2017
	<i>Galaxy Clusters Across Cosmic Time</i> , Aix-en-Provence, France	July 2017
	<i>Postdoc Symposium</i> , MIT, Cambridge, MA, USA	May 2017
	<i>Mapping Galaxy Transformation Across Time and Space</i> , Catalina Island, USA	Aug 2016
	<i>American Astronomical Society 227th Meeting</i> , Kissimmee, USA	Jan 2016
	<i>In the Footsteps of Galaxies</i> , Soverato, Italy	Sept 2015
<i>The Many Pathways to Galaxy Growth</i> , Prato, Italy	June 2015	
<i>Evolving Galaxies in Evolving Environments</i> , Bologna, Italy	Sept 2014	
PRESS RELEASES AND PUBLIC OUTREACH	<ul style="list-style-type: none"> ● Sky & Telescope interviewee – “14 Galaxies Might Become Universe’s Most Massive Structure” 	Apr 2018
	<ul style="list-style-type: none"> ● MIT/UC-Riverside News Release for Noble et al. (2017) – “Scientists Get Best Measure of Star-forming Material in Galaxy Clusters” 	July 2017

- Hubble Hangout participant on YouTube – “Vibrant Star Formation in the Heart of a Distant Galaxy Cluster” Sept 2015
- HST/Spitzer Joint Press Release for Webb, Noble et al. (2015) – “NASA Telescopes Find Galaxy Cluster with Vibrant Heart” Sept 2015
- Co-founder and presenter for Astronomy on Tap – Cambridge 2016 – 2019
- Volunteer at Astronomy on Tap – Toronto 2014 – 2016

**GRANTS/
AWARDS**

Observing Proposals (**Total: \$585k**)

- **PI** (science), *Herschel*, 2011: “Constraining the star-formation activity in 10 SpARCS clusters: star-formation in the densest regions at $z = 1$ ” \$98k
- **PI** (science), *Herschel*, 2011: “Constraining the star-formation activity in very high- z clusters: *Herschel* observations of SpARCS clusters at $z = 1.6$ ” (observations never completed) \$27k
- co-I, *HST*, Cycle 25: “The GOGREEN Survey: The Relationship between Quenching, Morphological Transformation and Size Growth of Satellite Galaxies” \$225k
- co-I, *HST*, Cycle 22: “Resolved $H\alpha$ Maps of Star-forming Galaxies in Distant Clusters: Towards a Physical Model of Satellite Galaxy?” \$139k
- co-I, *HST*, Cycle 21: “Is the Size Evolution of Massive Galaxies Accelerated in Cluster Environments?” \$96k

Research (**Total: \$25k**)

- **Core Team**, Royal Society International Exchange, 2018: “Mapping the Cosmic Web: Unifying Clusters and Protoclusters” \$15k
- ALMA Ambassador, 2019 \$10k

**FELLOWSHIPS/
SCHOLARSHIPS**

Total: \$55.5k

- Schulich Graduate Fellowship, 2012 \$25k
- McGill Departmental Fellowship, 2011 \$5k
- Molson and Hilton Hart Fellowship, 2010 \$2.5k
- Principal’s Graduate Fellowship, 2010 \$2.5k
- Provost’s Graduate Fellowship, 2009 \$2.5k
- Principal’s Graduate Fellowship, 2008 \$2.5k
- McGill Recruitment Excellence Fellowship, 2007 \$5k
- Fay Ajzenberg-Selove Award, 2007 \$3k
- UW-Madison Astronomy Department Graduate Award, 2007
- Chambliss Student Achievement Award at the AAS Meeting, 2007
- Wisconsin Space Grant Consortium Grant, 2006 \$2k
- Wisconsin Space Grant Consortium Scholarship, 2006 \$1k
- Phi Beta Kappa, 2006
- Dr. Maritza Irene Stapanain Crabtree Undergraduate Award, 2006 \$3k
- Bernice Durand Undergraduate Research Scholarship, 2004 \$1.5k

MENTORSHIP	Mie Beers (Undergraduate, McGill University)	Summer 2016
	<ul style="list-style-type: none"> • Primary supervisor of summer research student. • co-supervisor: Howard Yee • We had weekly group meetings, and one-on-one meetings with only me ~ 3 times per week. • She calculated the merger rate in $z \sim 1$ clusters and measured the star formation rate in galaxy pairs. 	
	Taylor Bell (Undergraduate, University of Saskatchewan)	Summer 2015
	<ul style="list-style-type: none"> • Primary supervisor of summer research student. • co-supervisor: Howard Yee • We had weekly group meetings, and one-on-one meetings with only me ~ 3 times per week. • He stacked <i>Spitzer</i> images of 3000 $z \sim 1$ cluster galaxies to measure clustercentric radial trends in star formation rates. 	
TEACHING EXPERIENCE	Professional Development	
	<ul style="list-style-type: none"> • Institute for Scientist and Engineer Educators Professional Development Program <ul style="list-style-type: none"> – Designed and implemented a day-long, inquiry-based learning activity for 12 undergraduate researchers – 150-hour development program 	2016
	Lectures and Tutorials	
	<ul style="list-style-type: none"> • Galaxies and Cosmology <ul style="list-style-type: none"> – Instructed one hour-long lecture 	Spring 2016
	<ul style="list-style-type: none"> • The Milky Way Inside and Out <ul style="list-style-type: none"> – Instructed three hour-long lectures 	Spring 2009, 2012, 2013
	<ul style="list-style-type: none"> • Optics and Electromagnetism <ul style="list-style-type: none"> – Prepared a weekly hour-long lecture – Held a weekly two-hour homework tutorial 	Spring 2010, 2011
	<ul style="list-style-type: none"> • Introduction to Astrophysics <ul style="list-style-type: none"> – Instructed one hour-long lecture 	Fall 2011
	<ul style="list-style-type: none"> • Our Evolving Universe <ul style="list-style-type: none"> – Instructed one hour-long lecture 	Fall 2010

PROFESSIONAL SERVICE	Telescope Committees	2015 – present
	<ul style="list-style-type: none"> • <i>HST</i> TAC, <i>Chandra</i> TAC, CFHT proposal referee 	
	Referee Service	2012 – present
	<ul style="list-style-type: none"> • ApJ, ApJ Letters, MNRAS Letters, A&A 	
	Organizing Seminars	
	<ul style="list-style-type: none"> • Co-organizer of MIT Brown Bag Lunch Seminar • Co-organizer of MIT Postdoc Symposium • Organizer of Galaxy Cluster Meetings at MIT (with CfA and BU) • Colloquium Committee, University of Toronto • Co-organizer, “Galaxy Cluster Seminar Series,” McGill University 	2018 – 2019 May 2017 2016 – present 2015 – 2016 2009
ADMIN ROLES	McGill Graduate Association of Physics Students (MGAPS) Society	
	<ul style="list-style-type: none"> • VP Secretary on the Executive board • International Student Committee • Salary Committee 	2008 – 2011 2010 – 2013 2010 – 2011
	McGill Post-Graduate Student Society Representative (PGSS)	2010 - 2011
REFERENCES	Professor Michael McDonald , Massachusetts Institute of Technology mcdonald@space.mit.edu <i>Prof. McDonald was my postdoctoral advisor at MIT.</i>	
	Professor Howard Yee , University of Toronto hyee@astro.utoronto.ca <i>Prof. Yee was my postdoctoral advisor at University of Toronto.</i>	
	Professor Adam Muzzin , York University muzzin@yorku.ca <i>Prof. Muzzin is a collaborator and co-PI of the SpARCS collaboration.</i>	
	Professor Tracy Webb , McGill University webb@physics.mcgill.ca <i>Prof. Webb was my PhD and MSc advisor at McGill.</i>	
	Professor Gregory Rudnick , University of Kansas grudnick@ku.edu <i>Prof. Rudnick is a collaborator.</i>	
	Professor Gillian Wilson , University of California, Riverside gillianw@ucr.edu <i>Prof. Wilson is a co-PI of the SpARCS collaboration.</i>	